The 29th Annual Northwell Health Department of Medicine Lawrence Scherr, MD, MACP Scholarly Activity Award Presentation & Housestaff Research Day

May 18, 2017
8:00AM
Rust Auditorium
Department of Medicine

2016-17
The Department of Medicine of the Northwell Health System dedicates its Annual Academic & Scholarly Awards competition with enormous gratitude to

The Memory of

Lawrence Scherr, MD, MACP
Academic Dean Emeritus, NSLIJHS/Chairman Emeritus Department of Medicine

For over 45 Years of Distinguished and Exemplary Service
to the North Shore-LIJ Health System,
In His Many Roles As
Chair of the NSUH Medical Board
Chair of the Department of Medicine
Professor of Medicine at Cornell University Medical College
David J. Greene Professor of Medicine at NYU School of Medicine
Betsey Cushing Whitney Dean & Chief Academic Officer of the NSLIJHS
Trustee of the North Shore Long Island Jewish Health System.

Dr. Scherr was a loyal, dedicated and hard-working icon, a master clinician-educator, a gentleman with extraordinary political capabilities and unique administrative talents. His remarkable perseverance and abiding belief in the strength and ultimate success of the Department of Medicine and our institution is henceforth recognized by naming our annual resident & fellow academic recognition event in his honor.

Awards Committee

Meggan Mackay, MD, MS - Chair, Scherr Awards Committee
Joseph Conigliaro MD, MPH
Michael Diefenbach, PhD
Steven Fishbane, MD
Karen Friedman, MD
Kyle Katona, MD
Thomas McGinn MD, MPH

Judges

Syed Ahmad, MD
Steven Allen, MD
Jacqueline Barrientos, MD
David Bernstein, MD
Catherine Benedict, PhD
Thomas Bradley, MD
Maurice Cerulli, MD
Kit Cheng, MD
Marcia Epstein, MD
Alice Fornari, EdD, RD
Richard Furie, MD
JoAnne Gottridge, MD
Negin Hajizadeh, MD, MPH
Yael Harris, MD
David Hirschwerk, MD
Jonathan Kolitz, MD
Sean LaVine, MD
Alexander Lee, MD
Ammad Makaryus, MD
John Makaryus, MD
Anna Mathew, MD, MPH
Lauren McCullagh, MPH

Perwaiz Meraj, MD
Alyson Myers, MD
Sonali Narain, MBBS, MPH
Renee Pekmezaris, PhD
Kanti Rai, MD
John Raimo, MD
David Rosenberg, MD
David Rosenthal, DO
Frances Santiago-Schwarz, PhD
Rifka Schulamn, MD
Julie Schwartzman-Morris, MD
Nagashree Seetharamu, MD
Hitesh Shah, MD
Pravin Singhal, MD
Liron Sinvani, MD
Arunah Talwar, MD
Stuart Weinerman, MD
Sindee Weiss, MD
Matthew Whitson, MD
Giselle Wolf-Klein, MD
Deyun Yang, MD
May 18th, 2017

Dear Colleagues:

The Department of Medicine of the Northwell Health System is proud to present the medical resident and sub-specialty fellow submissions to our annual Scholarly Activity Award competition.

This compilation of 161 submissions including clinical case reports and basic science projects reflects the work of 51 residents and 54 sub-specialty fellows, accomplished while fully engaged in the rigors of their training programs. Divisional leadership, training program leadership, and mentoring faculty are all to be commended for the time and effort they dedicated to making scholarly activities an integral part of trainee education.

It is particularly noteworthy that this Scholarly Activity Awards Competition is held in the name of Lawrence Scherr, MD, MACP, an institutional leader and former Department Chair who had always been an enthusiastic supporter of postgraduate medical education and scholarly achievement.

Congratulations to all participants!

Meggan Mackay, MD, MS    Karen Friedman, MD
Chair, Scherr Awards Committee   Residency Program Director
Hofstra Northwell School of Medicine   Vice Chair for Education
PARTICIPANTS

FELLOWS

Sina Aghaie (Geriatrics)
Abhinav Agrawal (Pulmonary/Critical Care)
Martin Miguel Amor (Cardiology)
Eric Anderson (Rheumatology)
Valerie Barta (Nephrology)
Allyn Behling-Rosa (Palliative Care)
Carolina Bernabe (Hematology/Oncology)
Haven Caldwell (Hematology/Oncology)
Sara Cerrone (Gastroenterology)
Marinos Charalambous (Cardiology)
Moshe Cohn (Palliative Care)
Melissa Devlin (Palliative Care)
Youran Gao (Gastroenterology)
Marzena Gieniusz (Geriatrics)
Bradley Goldberg (Hematology/Oncology)
Lawrence Ha (Infectious Disease)
Stella Hahn (Sleep)
Yasmin Hamzavi (Allergy/Immunology)
Dennis Han (Gastroenterology)
Ayelet Hilewitz (Pulmonary/Critical Care)
Chun Kit Hung (Gastroenterology)
Jamil Ibrahim (Nephrology)
Nina Kello (Rheumatology)
Tara Kim (Endocrinology)
Kinga Kiszko (Geriatrics)
Jason Ling (Endocrinology)
Sutapa Maiti (Geriatrics)
Aleksandr Melamud (Pulmonary/Critical Care)
Cheryl Mensah (Hematology/Oncology)
Naila Mirza (Palliative Care)
Jason Misher (Cardiology)
Sony Modayil (Palliative Care)
Brianne Navetta-Modrov (Allergy/Immunology)
Negin Niknam (Infectious Disease)
Roxanne Oriel (Allergy/Immunology)
Atul Palkar (Pulmonary/Critical Care)
Anish Patel (Gastroenterology)
Charmi Patel (Allergy/Immunology)
Karishma Patel (Geriatrics)
Christina Pentlow (Endocrinology)
Isabel Preeshagul (Hematology/Oncology)
Lubaina Presswala (Endocrinology)
Luis Quintero (Pulmonary/Critical Care)
Daniel Sammartino (Hematology/Oncology)
Ronak Shah (Pulmonary/Critical Care)
Evan Shlofmitz (Cardiology)
Anam Siddiqui (Nephrology)
Shailendra Singh (Cardiology)
Suraj Sookhu (Cardiology)
Lauren Sparber (Medical Ethics)
Ryan Sugarman (Hematology/Oncology)
Nupur Uppal (Nephrology)
Alexander Vołodarskiy (Cardiology)
Ji Can Yang (Cardiology)
RESIDENTS
David Alajajian
Natasha Bahri
Kush Bhorania
Alice Chau
Melissa Chamblain
Jeffrey Chi
Latoya Codougan
Sheila Firoozan
Ava-Dawn Gabbidon
James Gabriels
Jonathan Gong
Aryles Hedjar
Ryan Holstead
Fady Ibrahim
Mitchel Izower
Mahmuda Khan
Yuriya Khanin
Dae Hyeon Kim
Daniel Kornberg
Roshini Kuriakose
Irina Kushnir
Jessica Kvasic
Ying Ting Lau
Marci Laudenslager
Jeanie Lee
Huei-Wen Lim
Carlos Lopez
Chinedu Madu
Nichol Martinez
Jermaine Myers
Haider Nazeer
Diandra Nesbitt
James Newman
Rajvi Patel
Claire Popplewell
Craig Raphael
Juliana Rosentsveyg
Bhakti Shah
Dev Shah
Pooja Shah
Janice Shen
Joseph Simonson
Matthew Sinclair
Sara Tariq
Umair Tariq
Shankar Thampi
Joanna Troulakis
Allison Walker
Omar Waqar
Andrew Weber
Kelvin Wong
The Lawrence Scherr Scholarly Activity Awards
2017 Award Winners

**Original Research Projects: Educational**

WINNERS-

Simulation Based Training for Pulmonary and Critical Care Fellows in Urgent Endotracheal Intubation: Does Skill Transfer to the Clinical Arena?

**Original Research Projects: Clinical, Basic or Translational**

WINNERS-

The Impact of Steroid Use on Inpatients with Inflammatory Bowel Disease and PCR diagnosed *Clostridium difficile*: A Propensity-matched Analysis
Lim HW, Sultan K.

Arsenic Trioxide Metabolism in Patients with Acute Promyelocytic Leukemia

Agrawal A, Sickahi R, Sahni S.

**Honorable Mention**-

Sex-Specific Differences in ST-Segment Elevation Myocardial Infarction Lead to Increased Mortality and Worse Cardiovascular Outcomes
Singh S, Grayver E, Ahsan L, Rosen S.

**Case Reports**

WINNERS-

Renal Outcomes in Acute Post-Streptococcal Glomerulonephritis Superimposed on Diabetic Nephropathy
Uppal N, Mehta N, Shah H.

A Rare Case of Perineal Abscess Caused By Aerococcus Urinae
Ha L, Niknam N, Mankame S, Koshy R.
# Table of Contents

<table>
<thead>
<tr>
<th></th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do Older Adults Resume Driving After Sub Acute Rehabilitation (SAR)?</td>
<td>Aghaie S, Dashkova I, Patel K, Lolis J, Tommasulo B, Kline M, Williams M, Nouryan C, Uliano M, Wolf-Klein G.</td>
</tr>
<tr>
<td>2</td>
<td>Nationwide Trends in Inpatient Admissions of Pulmonary Hypertension in the United States from 2000 to 2013</td>
<td>Agrawal A, Sickahi R, Sahni S.</td>
</tr>
<tr>
<td>4</td>
<td>Interprofessional Management of a Psychiatric Emergency in the Primary Care Setting</td>
<td>Alajajian D, Coletti D, Rosenberg L, Cacace F.</td>
</tr>
<tr>
<td>5</td>
<td>Intractable Ventricular Tachycardia Secondary to Right Ventricular Outflow Tract Embryonal Rhabdomyosarcoma</td>
<td>Amor M, Patel A, Graver M.</td>
</tr>
<tr>
<td>6</td>
<td>Assessment of Disease Activity in Rheumatoid Arthritis – A Quality Improvement Initiative</td>
<td>Anderson E, Davidson A.</td>
</tr>
<tr>
<td>8</td>
<td>Biopsy Surprise: A Case of Pulmonary Epithelioid Hemangioendothelioma</td>
<td>Bahri N, Karim N.</td>
</tr>
<tr>
<td>9</td>
<td>Metastatic Follicular Thyroid Cancer Arising From Struma Ovarii</td>
<td>Bahri N, Seetharamu N.</td>
</tr>
<tr>
<td>10</td>
<td>When Lung Cancer Screening Leads To Lymphoma Capture</td>
<td>Bahri N, Cacace F.</td>
</tr>
<tr>
<td>13</td>
<td>Preliminary Observations Using Mechanical Oscillation Desensitization Therapy (Modt) For Chronic Pain Syndromes</td>
<td>Behling A.</td>
</tr>
<tr>
<td>14</td>
<td>When Pregnancy Becomes Malignant, an Unusual Case of Metastatic Choriocarcinoma</td>
<td>Bernabe C, Li JY, Savona S.</td>
</tr>
<tr>
<td>15</td>
<td>Bacteremia That Warrants Special Attention and a Hunt for Abscess</td>
<td>Bhorania K, Loukas E.</td>
</tr>
<tr>
<td>17</td>
<td>Single Institution Experience RIC Haploidentical Transplants</td>
<td>Gupta V, Caldwell H, Donahue L, Bayer R.</td>
</tr>
<tr>
<td>18</td>
<td>Successful Administration of Neostigmine in a Neutropenic Patient</td>
<td>Cerrone S, Markowitz B, Cheung M, Whitson M.</td>
</tr>
<tr>
<td></td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>19</td>
<td>Immunodeficiencies in Ehlers-Danlos Syndrome: A Case Series of Three Patients</td>
<td>Chau A, Jongco A.</td>
</tr>
<tr>
<td>20</td>
<td>Hypersensitivity Pneumonitis In A Bird Owner: The Importance Of Asking About Pets In The Social History</td>
<td>Chamblain M, Martinez J, Muzaffar Z.</td>
</tr>
<tr>
<td>21</td>
<td>Crossover rates in Transradial Catheterization: Are they really high?</td>
<td>Charalambous M, Soteriades E, Constantinides S, Christou C.</td>
</tr>
<tr>
<td>23</td>
<td>Pregnancy related HLH</td>
<td>Chen J, Jackson DA, Pereira S.</td>
</tr>
<tr>
<td>24</td>
<td>Blood Culture Negative Endocarditis with Lambl’s Excrescences</td>
<td>Codougan L, Hallbert T, Lagurerre M.</td>
</tr>
<tr>
<td>25</td>
<td>Suspected Isoniazid Toxicity during Treatment of Indeterminate Quantiferon Gold Result</td>
<td>Codougan L, Laguerre M.</td>
</tr>
<tr>
<td>26</td>
<td>Decision-Making in Medical Education: A Project in Experiential Learning</td>
<td>Cohn M, Williams M, Liberman T.</td>
</tr>
<tr>
<td>27</td>
<td>Measuring the Impact of Palliative Care Services on Clinicians in the ICU</td>
<td>Devlin M, Dauber M, Akerman M, Nouryan C, Park I.</td>
</tr>
<tr>
<td>28</td>
<td>Fulminant Liver Failure Caused by Dual Immunotherapy for Malignant Melanoma</td>
<td>Firoozan S, Boparai R.</td>
</tr>
<tr>
<td>29</td>
<td>An Innovative Hospital Medicine Elective: Not Just another Floor Month</td>
<td>Gabbidon AD, Kast C, LaVine S, Raimo J.</td>
</tr>
<tr>
<td>30</td>
<td>Clinical Significance of Nonsustained Ventricular Tachycardia on Stored Electrograms in Permanent Pacemaker Patients</td>
<td>Gabriels J, Wu M, Rosen L, Patel A, Goldner B.</td>
</tr>
<tr>
<td>32</td>
<td>Analysis of the Clinical Indications for Opiate Use in Inflammatory Bowel Disease.</td>
<td>Gao Y, Khan S, Akerman M, Sultan K.</td>
</tr>
<tr>
<td>34</td>
<td>A Case of Small Bowel Perforation in an Ecuadorian Female with ATLL.</td>
<td>Goldberg B, Seetharamu N.</td>
</tr>
<tr>
<td>Page</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>35</td>
<td>Acute Psychosis in a Patient with Multiple Sclerosis</td>
<td>Gong J, Khanin Y, Kurian L</td>
</tr>
<tr>
<td>36</td>
<td>Acute Respiratory Failure caused by HTLV associated Adult T-Cell Lymphoma</td>
<td>Gong J, Melamud A, Koenig S.</td>
</tr>
<tr>
<td>37</td>
<td>A Rare Case of Perineal Abscess Caused By Aerococcus Urinæ</td>
<td>Ha L, Niknam N, Mankame S, Koshy R.</td>
</tr>
<tr>
<td>38</td>
<td>Think Rather Of Zebras: A Rare Case of Streptococcus Gallolyticus Bacteremia and Meningitis Associated With Strongyloides Stercoralis Infection in an AIDS Patient</td>
<td>Ha L, Doan T, Niknam N, Mankame S, Edwards B.</td>
</tr>
<tr>
<td>40</td>
<td>The Role of Race in the Management of Peanut Allergy</td>
<td>Hamzavi Abedi Y, Sison C, Ponda P.</td>
</tr>
<tr>
<td>41</td>
<td>Success of Lumen Apposing Metal Stents (LAMS) For Drainage of Pancreatic and Gallbladder Collections: A Meta-Analysis</td>
<td>Han D, Sumant I, Miller L, Lee C, Trindade A.</td>
</tr>
<tr>
<td>42</td>
<td>Uncommon Presentation of a Common Hematologic Condition: Sickle Cell Disease</td>
<td>Hedjar A, Bhorania K, Silver J, Kast C.</td>
</tr>
<tr>
<td>43</td>
<td>CLL Pneumopathy: A Forgotten Diagnosis</td>
<td>Hilewitz A, Koenig SK, Khanijo S.</td>
</tr>
<tr>
<td>44</td>
<td>A Fear of Ghosts? Corticosteroids May Not Affect Primary Lymphoma Biopsy Sensitivity</td>
<td>Holstead R, Silver J.</td>
</tr>
<tr>
<td>45</td>
<td>Diagnostic Utility Of Liver Biopsy In Patients With Abnormal Liver Blood Tests And Inconclusive Laboratory And Radiographic Evaluation.</td>
<td>Hung CK, Jirik A, Ullah M, Passi M, Bernstein D, Crawford J, Lee TP.</td>
</tr>
<tr>
<td>46</td>
<td>Lithium-Induced Dress Syndrome: A Rare Entity</td>
<td>Ibrahim F, Raghavan S, Chi J.</td>
</tr>
<tr>
<td>47</td>
<td>High Risk Medication Discrepancies in Late Stage Chronic Kidney Disease</td>
<td>Ibrahim J, Sakhiya V, Fishbane S.</td>
</tr>
<tr>
<td>48</td>
<td>Evaluation of House Staff Burnout and Work Environment: How Can We Help?</td>
<td>Izower M, Martinez J, Yacht A.</td>
</tr>
<tr>
<td>49</td>
<td>An Expanding Spectrum of Rheumatic Immune-Related Adverse Effects of Immune Checkpoint Inhibitors</td>
<td>Kello N, Adamski R, Fahima D, Schwartzman J, Furie R, Davidson A.</td>
</tr>
<tr>
<td>50</td>
<td>Hidden Beneath the Surface: A Case of Chronic Lymphocytic Leukemia Manifesting As Acute Kidney Injury and Pancytopenia.</td>
<td>Mehtabdin K, Kello N.</td>
</tr>
<tr>
<td>51</td>
<td>Ormond’s Disease: A Case Report</td>
<td>Khan M, Chen P, Yoon J, Pereira S.</td>
</tr>
<tr>
<td>52</td>
<td>An Unusual Presentation of Lupus.</td>
<td>Khanin Y, Gong J, Kurian L.</td>
</tr>
<tr>
<td>53</td>
<td>“Can’t Seed, Can’t Pee, Can’t Climb a Tree”: A Case of Neurosarcoid Associated Myelopathy</td>
<td>Kim DH, Ahmad S.</td>
</tr>
<tr>
<td>54</td>
<td>Improvement of Giant Cell Tumors of the Jaw Treated with Denosumab: A Case Series</td>
<td>Kim T, Usera G, Weinerman S.</td>
</tr>
<tr>
<td>Page</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>55</td>
<td>Cobalamin as a Comarker for Prostate Cancer</td>
<td>Kiszko K, Sharma A, Patel K, Shah R.</td>
</tr>
<tr>
<td>57</td>
<td>Lupus Podocytopathy, an Unusual Variant of Lupus Renal Disease</td>
<td>Kornberg D, Fitterman N.</td>
</tr>
<tr>
<td>59</td>
<td>Got Ventricular Tachycardia? Let’s Not Be Rash: Mexiletine-Induced Dress Syndrome</td>
<td>Kuriakose R, Jiang C, Makhnevich A</td>
</tr>
<tr>
<td>60</td>
<td>There’s more to Factor In With a Spontaneous Bleed in the Elderly: Acquired Hemophilia A</td>
<td>Kuriakose R, Sinvani L.</td>
</tr>
<tr>
<td>61</td>
<td>Cardioembolic Stroke... What Lies Beneath?</td>
<td>Kushnir I, Newman J, Harris A.</td>
</tr>
<tr>
<td>65</td>
<td>Insane In the Membrane: A Rare Case of Viable Neurocysticercosis</td>
<td>Laudenslager M, Donovan M, Harris K.</td>
</tr>
<tr>
<td>66</td>
<td>Last Call for Alcohol - Identification of Predisposing Factors to Decompensation in Patients Admitted With Alcohol Withdrawal</td>
<td>Laudenslager M, Harisingani R, Harris K, Song J, Koenig S, Burke C, Karlin C.</td>
</tr>
<tr>
<td>67</td>
<td>Random Access Memories: A Rare Case of Autoimmune Limbic Encephalitis</td>
<td>Laudenslager M, Ahmad S.</td>
</tr>
<tr>
<td>68</td>
<td>A Rare Case of Vasculitis-Associated Cva In An Adult Patient With Henoch-Schonlein Purpura</td>
<td>Laudenslager M, Honigman J.</td>
</tr>
<tr>
<td>69</td>
<td>The Stakes Are High: Pleural Tuberculosis Poses a Diagnostic Challenge</td>
<td>Lee J, Kurian L.</td>
</tr>
<tr>
<td>70</td>
<td>Sclerosing Mesenteritis- A Curious Conundrum</td>
<td>Lim HW, Sultan K.</td>
</tr>
<tr>
<td>71</td>
<td>The Impact of Steroid Use on Inpatients with Inflammatory Bowel Disease and PCR diagnosed Clostridium difficile: A Propensity-matched Analysis</td>
<td>Lim HW, Sultan K.</td>
</tr>
<tr>
<td>72</td>
<td>A Rare Case of Insulin Allergies in A Pregnant Patient</td>
<td>Ling J, Romao I.</td>
</tr>
<tr>
<td>Page</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>73</td>
<td>Retrospective Review of Outcomes in Patients Undergoing Pancreatic Resections</td>
<td>Ling J, Myers A, Amodu L, Rilo H.</td>
</tr>
<tr>
<td>74</td>
<td>Type B Insulin Resistance Syndrome in a Patient with Systemic Lupus Erythematosus</td>
<td>Ling J, Schulman-Rosenbaum R.</td>
</tr>
<tr>
<td>75</td>
<td>At Wit's End: Unraveling an Unexpected Cause of Delirium</td>
<td>Lopez C, Kockenmeister E, Gupta V.</td>
</tr>
<tr>
<td>76</td>
<td>ACC/AHA Coronary Artery Calcium Score Guidelines May Underestimate Coronary Artery Disease Risk in Black Patients</td>
<td>Madu C, Niazi K, Kvasic J, Makaryus J.</td>
</tr>
<tr>
<td>79</td>
<td>Gastric Ischemia: A Rare Cause Of Melena</td>
<td>Martinez N, Cerrone S, Desai D, Whitson M.</td>
</tr>
<tr>
<td>80</td>
<td>Go for GOLD: Leukemic Bronchopulmonary Infiltrates as a Cause of Reversible Obstructive Lung Disease</td>
<td>Agrawal A, Melamud A, Khanijo S, Koenig S.</td>
</tr>
<tr>
<td>81</td>
<td>Intraperitoneal Chemotherapy in Ovarian Cancer in the Young and Elderly: A Retrospective Case Series</td>
<td>Mensah C, Cheng K.</td>
</tr>
<tr>
<td>82</td>
<td>Rituximab for Prophylaxis of Recurrent Acute Hyperhemolysis Crisis in an Adult Sickle Cell Disease</td>
<td>Mensah C, Hoffman M.</td>
</tr>
<tr>
<td>83</td>
<td>“Building Bridges: A case of a Patient with Borderline Personality and Terminal Illness.”</td>
<td>Mirza N, Anandan S, Earle B.</td>
</tr>
<tr>
<td>84</td>
<td>“When Opioids Are Framed: A case of Wernicke Encephalopathy”</td>
<td>Lopez S, Earle B, Lam WY, Mirza N.</td>
</tr>
<tr>
<td>85</td>
<td>Novel Technique To Avoid Diaphragmatic Paralysis During Focal Ablation Of A Nonpulmonary Vein Trigger Mapped To The Crista Terminalis.</td>
<td>Misher J, Zeitlin J, Khan M, Stuart Beldner S, Jadonath R, Patel A.</td>
</tr>
<tr>
<td>86</td>
<td>Last Wishes, a Case for the Use of Life Sustaining Therapies</td>
<td>Modayil S, Caldentey J.</td>
</tr>
<tr>
<td>87</td>
<td>Patients without a Voice</td>
<td>Modayil S, Lopez S.</td>
</tr>
<tr>
<td>89</td>
<td>To t-PA or not t-PA?...The Therapeutic Dilemma of Systemic Thrombolysis in Submassive Pulmonary Embolism</td>
<td>Myers J, Khan M, Hessel J.</td>
</tr>
<tr>
<td>90</td>
<td>A Comparison of the Gut Microbiome of Food Allergic Hosts and Their Mothers</td>
<td>Navetta B, Muzaffar Z, Kiehm J, Ponda P.</td>
</tr>
<tr>
<td>91</td>
<td>Persistent FPIES</td>
<td>Navetta-Modrov B, LaBarba S, Cauuto-Pettrizzo MA, Jongco AM.</td>
</tr>
<tr>
<td>Page</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>92</td>
<td>Hyponatremic Rhabdomyolosis?!</td>
<td>Nazeer H, Simonson J, Mynn P.</td>
</tr>
<tr>
<td>93</td>
<td>A Case of Pathologic Fractures due to Metastatic Hepatocellular Carcinoma (HCC)</td>
<td>Nesbit D, Pandya N.</td>
</tr>
<tr>
<td>94</td>
<td>A Case of Jejunal Perforation: A Diagnostic Challenge for Hospitalists</td>
<td>Newman J, Kushnir I, Yang D.</td>
</tr>
<tr>
<td>95</td>
<td>Acremonium Pneumonia in an AIDS Patient</td>
<td>Niknam N, Mankame S, Ha L, Gautam-Goyal P.</td>
</tr>
<tr>
<td>96</td>
<td>A Rare Case of Alveolar Hemorrhage Caused By Streptococcus Pyogenes</td>
<td>Niknam N, Ha L, Mankame S, Gautam P.</td>
</tr>
<tr>
<td>97</td>
<td>Recurrent Severe Respiratory Infections Due to Pathogenic Ariantin TeCPR2</td>
<td>Oriel R, Rosenthal D.</td>
</tr>
<tr>
<td>98</td>
<td>Underlying Chronic Urticaria in Patients with Multiple Drug Allergies: A Call for Screening</td>
<td>Oriel R, Innamorato A, Kaplan B.</td>
</tr>
<tr>
<td>100</td>
<td>SGLT2 Inhibitors: Mind the Gap</td>
<td>Palkar A, Jiang C, Gottesman E.</td>
</tr>
<tr>
<td>101</td>
<td>Acute Fulminant Hepatitis A in a Patient with Non-Alcoholic Fatty Liver Disease (NAFLD)</td>
<td>Patel A, Bernstein D, Lee TP.</td>
</tr>
<tr>
<td>102</td>
<td>Screening for Hepatitis A Immunity in Patients with Non-Alcoholic Fatty Liver Disease (NAFLD) at an Outpatient Hepatology Practice.</td>
<td>Patel A, Firoozan S, Tsai H, Lee TP.</td>
</tr>
<tr>
<td>103</td>
<td>Use of Infliximab for the Treatment of Sweet's Syndrome in a Patient with Inflammatory Bowel Disease (IBD)</td>
<td>Patel A, Jotwani P, Desai D, Sultan K.</td>
</tr>
<tr>
<td>104</td>
<td>Application of Clinical Scoring System to Distinguish Eosinophilic Esophagitis vs. Proton Pump Inhibitor-Responsive Esophageal Eosinophilia</td>
<td>Patel C, Ponda P.</td>
</tr>
<tr>
<td>106</td>
<td>Emerging Immunotherapeutic Agents and Their Undesired Side Effects</td>
<td>Patel R, Joasil P.</td>
</tr>
<tr>
<td>107</td>
<td>Hypoglycemia Secondary to Paraneoplastic Syndrome Mediated by Elevated Big IGF-2 in a Patient with Advanced Liposarcoma</td>
<td>Pentlow C, Schulman R.</td>
</tr>
<tr>
<td>108</td>
<td>Improving Microalbuminuria Screening in Patients with Diabetes Mellitus: A Quality Improvement Project</td>
<td>Popplewell C, Carter L, Cacace F.</td>
</tr>
<tr>
<td>109</td>
<td>It’s Getting Hot in Here: A Case of Heat Stroke Causing Hyponatremia and Subsequent Rhabdomyolysis</td>
<td>Popplewell C, Verbsky J.</td>
</tr>
<tr>
<td>110</td>
<td>Level of Concordance between P16 Immunohistochemical Staining and Human Papilloma Virus In-Situ Hybridization in Oropharyngeal Cancers – A Single Institution Retrospective Chart Review Study</td>
<td>Seetharamu N, Preeshagul I, Teckie S, Paul, D, Kohn N, Frank D.</td>
</tr>
</tbody>
</table>
| 111 | The Utilization of Pre-Treatment Neutrophil to Lymphocyte Ratio as A Predictive Marker for Efficacy of Immunotherapy In Non-Small Cell Lung Cancer.  
*Preeshagul I.*, Sullivan K, Paul D, Seetharamu N. |
| 112 | Hypercalcitoninemia Mediated Hypocalcemia in Medullary Thyroid Cancer: A Case Report  
*Presswala L.*, Skolnick A, Valsamis A. |
| 113 | Type 2 Diabetes Mellitus in a Patient with Bloom Syndrome: A Case Report  
*Presswala L.*, Schulman R. |
| 114 | Feasibility And Utility Of Competency Based Testing Using Video Recording Of Pulmonary/Critical Care Fellows In Performance Of Thoracentesis.  
*Quintero L.*, Dhar S, Mayo H, Singas E, Mayo PH. |
| 115 | Sweet Moves: A Case of Hyperglycemia-Induced Hemiballism  
*Raphael C.*, Goldin M. |
| 116 | Plasma Exchange: A Novel Approach for the Reversal of Severe Multi-Organ Failure Associated with a Sickle Cell Crisis  
*Rosentsveyg J.*, Koenig S, Zaidi G. |
| 117 | Chylothorax in Patients with Chronic Lymphocytic Leukemia: A Case Series  
*Sammartino D.*, Khanijo S, Koenig S, Rai K, Barrientos J. |
| 118 | A Colonic Cause of Meningitis  
*Shah B.*, Narasimhan M. |
| 119 | “A Tough Pill to Swallow: An Exceedingly Rare Case of Esophageal Lichen Planus”  
*Shah D.*, Kang S. |
| 120 | Not Your Typical Acute Respiratory Distress Syndrome : Rare Case of Acute Eosinophilic Pneumonia  
*Shah R.*, Esposito M, Talwar A, Singas E. |
| 121 | Simulation Based Training for Pulmonary and Critical Care Fellows in Urgent Endotracheal Intubation: Does Skill Transfer to the Clinical Arena?  
| 122 | Rash Ideas: Fever and Psychosis  
*Shah P.*, Kuperman S. |
| 123 | A Case of Severe Recurrent Dermatomyositis due to Testicular Cancer  
*Shen J.*, Boparai R. |
| 124 | Clinical Outcomes of Atherectomy Prior to Percutaneous Coronary Intervention (COAP-PCI Study)  
| 125 | A Case of Encapsulating Sclerosing Peritonitis in Renal Transplant Recipient.  
*Siddiqui A.*, Koncicki H. |
| 126 | Hyponatremic Rhabdo?!  
*Simonson J.*, Nazeer H. |
| 127 | An Unusual Case of Clozapine-Associated Leukocytosis  
*Sinclair M.*, Lavine S. |
| 128 | Using VARK to Assess Learning Style Preferences among Internal Medicine Interns  
*Sinclair M.*, Lavine S. |
| 129 | Decreased Time to Unloading with Impella Support in Patients with Severe Cardiogenic Shock Shows Improved Survival  
*Singh S.*, Litwok Y, Grayver E, Lee A. |
| 130 | Early Unloading with Impella Support in Acute MI with Cardiogenic Shock Linked to Decreased Infarct Size, In-hospital Mortality, and Hospital Length of Stay  
*Singh S.*, Litwok Y, Grayver E, Lee A, Rosen S. |
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>131</td>
<td>Postpartum STEMI in a High Risk Atherosclerotic Patient: Spontaneous Coronary Artery Dissection vs. Ruptured Plaque</td>
<td>Singh S, Ahsan L, Grayver E, Boutis L, Rosen S.</td>
</tr>
<tr>
<td>132</td>
<td>Sex-Specific Differences in ST-Segment Elevation Myocardial Infarction Lead to Increased Mortality and Worse Cardiovascular Outcomes</td>
<td>Singh S, Grayver E, Ahsan L, Rosen S.</td>
</tr>
<tr>
<td>134</td>
<td>Unresolved Peripartum Cardiomyopathy Complicated by Severe Mitral Regurgitation in Subsequent Pregnancy Requiring Hemodynamic Mechanical Support</td>
<td>Singh S, Grayver E, Rosen S.</td>
</tr>
<tr>
<td>138</td>
<td>Reconciling Surgical Outcome with Quality of Life: The Ethical Dilemma</td>
<td>Sparber LS, Warman A, McLeod-Sordjan R, Patel V, Barrera R, Doscher W.</td>
</tr>
<tr>
<td>139</td>
<td>The Desire To Die: Is Informed Consent Truly Possible After A Presumptive Suicide?</td>
<td>Sparber LS, McLeod-Sordjan R, Field D, Adler M, Doscher W, Packer S.</td>
</tr>
<tr>
<td>140</td>
<td>When Palliation Restores Personhood</td>
<td>Sparber LS, McLeod-Sordjan R, Patel V, Doscher W, Barrera R.</td>
</tr>
<tr>
<td>141</td>
<td>When the Decision is Indecision: An Ethical Dilemma in the SICU</td>
<td>Sparber LS, McLeod-Sordjan R, Patel V, Doscher W, Barrera R.</td>
</tr>
<tr>
<td>142</td>
<td>Occlusion of Right Middle Cerebral Artery as Initial Presentation of Thrombotic Thrombocytopenic Purpura</td>
<td>Sugarman R, Tufano A, Liu J, Nejat R, Katona K.</td>
</tr>
<tr>
<td>144</td>
<td>&quot;I Need To Get This Out Of My Chest&quot;; 6 Years of Atypical Chest Pain Caused By Missed Retained Catheter</td>
<td>Tariq U, Mullan C, Goldin M.</td>
</tr>
<tr>
<td>145</td>
<td>Return of the Eosinophils: A Unique Case of Right-Sided Heart Failure Due to Loeffler’s Endocarditis</td>
<td>Thampi S, Alam A, Saba A, Jermyn R.</td>
</tr>
<tr>
<td>146</td>
<td>Electrocardiogram Interpretation in a Man with Alcohol Withdrawal and Hypothermia</td>
<td>Troulakis J, Zeltser R, Makaryus A.</td>
</tr>
<tr>
<td>147</td>
<td>Acute Parvovirus B19-Associated Nephrotic Syndrome in a Patient with Sickle Cell Disease</td>
<td>Uppal N, Shah H.</td>
</tr>
<tr>
<td>148</td>
<td>Azithromycin-induced Severe Acute Interstitial Nephritis: Role of Corticosteroids</td>
<td>Uppal N, Parikh N, Shah H.</td>
</tr>
<tr>
<td>Page</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>149</td>
<td>Enhancing Interest and Learning in Nephrology: A Redesigned Elective Experience for Medical Students</td>
<td>Uppal N, Jhaveri K, Shah H.</td>
</tr>
<tr>
<td>150</td>
<td>Harvoni-associated Reversible Acute Kidney Injury</td>
<td>Uppal N, Lee TP, Shah H.</td>
</tr>
<tr>
<td>151</td>
<td>Renal Outcomes in Acute Post-Streptococcal Glomerulonephritis Superimposed on Diabetic Nephropathy</td>
<td>Uppal N, Mehta N, Shah H.</td>
</tr>
<tr>
<td>153</td>
<td>Recurrent Antibody-Mediated Autoimmune Encephalitis Masked by TCA and Benzodiazepine Overdose: A Case Report</td>
<td>Walker A, Raghavan S.</td>
</tr>
<tr>
<td>154</td>
<td>Acute Hyponatremia Secondary to Initiation of Duloxetine</td>
<td>Waqar O, Boparai R.</td>
</tr>
<tr>
<td>155</td>
<td>An Ixodes Threesome</td>
<td>Weber A, Mendez J, Reyes A.</td>
</tr>
<tr>
<td>156</td>
<td>PPIs: Proton Pump Inhibitors or Potential Pathways to Iatrogenic Side Effects</td>
<td>Weber A, Lucas E, Sharma S.</td>
</tr>
<tr>
<td>157</td>
<td>Tumor Induced Osteomalacia: A Case Report</td>
<td>Weber A, Kushnir I, Cohen J.</td>
</tr>
<tr>
<td>158</td>
<td>Nocardia? No Way!</td>
<td>Wong K, Curiale A, Katona K.</td>
</tr>
<tr>
<td>159</td>
<td>TB Considered: A Case of Tuberculous Sacroiliitis</td>
<td>Curiale A, Wong K, Katona K.</td>
</tr>
<tr>
<td>160</td>
<td>Cardiac Amyloidosis Presenting with Recurrent Syncope and Diagnosed following Exercise SPECT Myocardial Perfusion Imaging</td>
<td>Yang JC, Makaryus J.</td>
</tr>
<tr>
<td>161</td>
<td>Outcomes of Transcatheter Aortic Valve Replacement in Low Flow/Low Gradient/Low Ejection Fraction Severe Aortic Stenosis Are Similar Using Dobutamine Stress Echocardiography or Multislice Cardiac Computed Tomography</td>
<td>Yang JC, Chan N, Raphael C, Saba S, Henry S, Meraj P, Makaryus J.</td>
</tr>
</tbody>
</table>
Do Older Adults Resume Driving After Sub Acute Rehabilitation (SAR)? A Multi Centered Study


Background: Motor Vehicle Accidents are the leading cause of accidental death in adults aged 65-74. We studied older adults' attitudes on resuming driving after discharge.

Methods: A survey was administered face-to-face to alert and oriented residents in 4 SAR. A validated tool, the Adelaide Driving Self-Efficacy Scale (ADSES), measured driving efficacy perceptions, and ADL were recorded. Chi-square or Fisher's exact, as appropriate, was used for categorical responses and Kruskal-Wallis for continuous variables.

Results: Of 200 eligible subjects, 67 participated (mean age 77 ± 9.3; 50% male). The majority (86%) stated driving was important to them, with 48% driving ≥5 days/wk. They rated their driving skills as 8.5/10 and their ADSES averaged 89/120. Almost half (42%) stated that they should stop driving after discharge, and 39% stated they would. Women were more decisive than men about stopping, responding with either “No” (61% vs. 39%) or “Yes, permanently” (21% vs. 9%), whereas men were less decisive, responding with “I don’t know” (15% vs. 3%) or “Yes, temporarily” (36.4% vs. 15%), respectively (p=0.03). Younger subjects disagreed that they should stop driving, while older patients agreed (mean age 74 vs. 85; p=0.008).

Subjects with higher ADSES believed they should not stop driving, with mean ratings to “Yes, permanently” (36), “I don’t know” (87), “Yes, temporarily” (98), and “No” (100), (p=0.0003). Regardless of ADL status, there was no difference in perceived need for driving cessation. Those who claimed they should stop driving permanently also stated that driving was “not at all/slightly” important (p=0.002). When asked if a discussion had been initiated about the subject’s ability to continue to drive, the majority responded that no such conversation had taken place prior to the current hospitalization (72%), during (82%), or in SAR (81%).

Conclusions: Since 36 million drivers in the US are ≥65, we studied the discordance between subjects' realistic expectations of their driving abilities, particularly males, and lack of proactive discussions by health care professionals and family members with regards to driving cessation. In view of the growing safety concern for our older drivers, their passengers and the public at large, major initiatives need to be urgently developed.
Nationwide Trends in Inpatient Admissions of Pulmonary Hypertension in the United States from 2000 to 2013
Agrawal A, Sickahi R, Sahni S.

**Background:** Pulmonary Hypertension (PH) is a disorder of the pulmonary vasculature with high mortality and bears a large economic burden on the healthcare system. We conducted a review of the largest inpatient database in the United States and analyzed the trends in hospitalizations due to PH from the turn of the century (2000) to 2013 to evaluate the rate of hospitalizations and determine the cost and mortality associated with PH.

**Method:** We analyzed the National Inpatient Sample Database (NIS) for all patients in which PH (Primary or Secondary) or Cor pulmonale was the primary discharge diagnosis (ICD-9: 416.0, 416.8 and 416.9) from 2000 to 2013. The NIS is the largest all-payer inpatient database in the United States and contains data from approximately 8 million hospital stays each year. The statistical significance of the difference in the number of hospital discharges, lengths of stays and associated hospital costs over the study period was calculated.

**Results:** In 2000, there were 12,066 hospital admissions with the principal discharge diagnosis of pulmonary hypertension, which increased to 13,605 admissions in 2013 (P<0.001). The mean length of stay for PH increased from 5.89 days to 6.67 days during this period (P= 0.04). During the same period, the hospital charges increase by 174.5% from US$ 24,973 in 2000 to US$ 68,545 in 2013 (Adjusted for inflation). The aggregate cost of hospital visits of a patient increased by 209.5% from US$ 301,324,218 in 2000 to US$ 932,554,725 in 2013.

**Conclusion:** The number of inpatient discharges related to PH has increased even though the number of inpatient discharges with PAH has been reported to be lower in literature. The mean length of stay has also shown a mild increase. This increase is associated with a significant increase in the mean and aggregate cost. These inpatient costs associated with PH contribute significantly to the total healthcare burden. Further research on cost-effective evaluation and management of PH is required.
Nationwide Trends of Hospitalizations for Cystic Fibrosis in the United States
Agrawal A, Sikachi R, Wang J.

**Rationale:** Cystic Fibrosis (CF) is a multisystem autosomal recessive genetic disorder that is caused by mutations on two copies of the gene that encodes the cystic fibrosis transmembrane conductance regulator (CFTR) protein. Many advances have been made in the diagnosis and treatment of CF over the last decade. It is important to provide updated information regarding the epidemiology, demographics and cost associated with the evolving care of CF patients.

**Objectives:** We conducted a review of the largest inpatient database in the United States and analyzed the trends in hospitalizations due to CF from 2003 to 2013 to evaluate the rate of hospitalizations and determine the cost and mortality associated with CF.

**Methods:** We analyzed the National Inpatient Sample Database (NIS) for all patients in which CF was the primary discharge diagnosis (ICD-9: 277.0-277.09) from 2003 to 2013. The NIS is the largest all-payer inpatient database in the United States and contains data from approximately 8 million hospital stays each year. The statistical significance of the difference in the number of hospital discharges, lengths of stays and associated hospital costs over the study period was calculated.

**Results:** In 2003, there were 8,328 hospital discharges with the principal discharge diagnosis of CF, which increased to 12,590 discharges in 2013 (P<0.001). The mean length of stay for CF showed a marginal increase from 10.1 days to 10.3 days during this period. During the same period, the mean hospital charges increased by 57.64% from US$ 60,051 in 2003 to US$ 94,664 in 2013 (Adjusted for inflation). The aggregate cost of hospital visits of a patient increased by 138.31% from US$ 500,105,727 in 2003 to US$ 1,191,819,760 in 2013.

**Conclusion:** The number of inpatient discharges related to CF has increased from 2003 to 2013. This is most likely due to increased life expectancy of CF patients, resulting in increased disease prevalence. While, the mean length of stay has shown only a mild increase, there has been a significant increase in the mean and aggregate cost associated with CF admissions. These inpatient costs associated with CF contribute significantly to the total healthcare financial burden. Further research on cost-effective management model for inpatient treatment of CF is required.
Interprofessional Management of a Psychiatric Emergency in the Primary Care Setting

**Alajajian D, Coletti D, Rosenberg L, Cacace F.**

**Learning Objective #1:** Recognize and address social barriers to the treatment of acute psychiatric emergencies by collaborating with behavioral health professionals.

**Learning Objective #2:** Engage patients and behavioral health professionals in constructing a safe and sustainable plan to manage depression with suicidal ideation.

**Case:** “Carmen” is a 48-year-old Latina woman; history includes left breast LCIS (with lumpectomy) and a depressive disorder. She presents with severe anhedonia, insomnia, and worry about her medical and social situation, most notably her son’s welfare if she becomes ill again. She is undocumented, uninsured, and dependent on her income as a house cleaner (now part-time due to cancer treatments). Of primary concern is her report that she has frequent thoughts of jumping in front of a train near her home. However, she cites her 5 year-old son as a reason not to commit suicide, as worry about her son both exacerbates her anxiety and protects from self-harm. Carmen had been prescribed citalopram, which she took briefly but discontinued. She declines a referral for inpatient treatment because she can identify no one to care for her son. The team considers the risks and benefits of facilitating a psychiatric admission, which is likely to result in child protective service involvement. Furthermore, her insurance status complicates expediting referral to outpatient treatment. To address these barriers, an embedded Behavioral Health Consultant conducts a risk assessment during the office visit. She arranges a teleconference with a psychiatrist, who interviews Carmen and recommends resuming Citalopram at a higher dose in addition to a brief course of clonazepam. Carmen returns home with a safety plan. Meanwhile, the team monitors her clinical status with telephone calls, investigates child care support services that might facilitate hospitalization and aids with solution-focused counseling sessions. Her mood improves over the next several weeks and by the time a grandparent is identified to care for the child, hospitalization is deemed unnecessary.

**Impact:** Engaging a remote psychiatrist for a consultation is an efficient way to manage mental health crises in primary care. Psychosocial barriers can alter the costs/benefits of off-site evaluation and emergent hospitalization. On-site behavioral health consultants can provide crisis assessment and facilitate psychiatric evaluation to stabilize a patient and avoid hospitalizations that are ultimately unnecessary.

**Discussion:** The case of Carmen illustrates how outpatients with urgent psychiatric needs can be managed within an interdisciplinary team. This patient met criteria for hospitalization but practical barriers made this option untenable and might have even exacerbated her symptoms. Patients such as Carmen are less likely to pursue specialists, follow or adhere to medication regimens. An integrated behavioral health program provides an important clinical service for patient stabilization outside of the emergency room.
Intractable Ventricular Tachycardia Secondary to Right Ventricular Outflow Tract Embryonal Rhabdomyosarcoma

Amor M, Patel A, Graver M.

**Background:** Embryonal rhabdomyosarcomas are fairly rare cardiac tumors associated with significant morbidity and mortality due to systemic embolization, obstruction of circulation and mass effect resulting in mechanical and electrical cardiac complications.

**Case:** A 40-year-old male with a history of rhabdomyosarcoma of the right cheek was brought in for a witnessed syncopal episode. Upon presentation, the patient was pulseless and had refractory ventricular tachycardia. The patient was successfully resuscitated after 6 shocks, Amiodarone and Lidocaine boluses. Physical examination revealed jugular venous distention and a grade 3/6 holosystolic murmur in the left lower sternal border.

**Decision-making:** ECG showed sinus rhythm with frequent PVCs. Transthoracic echocardiography showed an echodensity protruding across the tricuspid valve, extending into the right ventricular outflow tract (RVOT). Transesophageal echocardiography revealed a large (7 x 3 cm) mass attached to the inferior wall of the RV. The mass prolapsed into the tricuspid valve and was intertwined with the subvalvular apparatus. Mass effect on the RV produced runs of NSVT. The patient underwent resection of the mass, tricuspid ring annuloplasty, reconstruction of the posterior tricuspid chordae and IABP placement. Histopathology revealed embryonal rhabdomyosarcoma. The postoperative course was complicated by mediastinal bleeding, requiring operative repair. Transthoracic echocardiogram on discharge revealed no residual mass and normal LV function. The patient was readmitted 2 months later for worsening respiratory distress. He was found to have a large amount of ascites consistent with metastatic adenocarcinomatosis, and multiple bilateral pulmonary metastases. Palliative care consultation was obtained and the patient eventually expired at the palliative care unit.

**Conclusion:** This case illustrates a rare case of embryonal rhabdomyosarcoma along the RV outflow tract resulting in refractory ventricular tachyarrhythmias and significant valvular regurgitation. While complete resection was done, most patients develop recurrent disease resulting in poor long-term clinical outcomes.
Assessment of Disease Activity in Rheumatoid Arthritis – A Quality Improvement Initiative

*Anderson E*, Davidson A.

**Introduction:** The regular assessment of rheumatoid arthritis (RA) disease activity is a quality indicator (QI) endorsed by the American College of Rheumatology (ACR)\(^1\), but adherence to this QI is poor.\(^2\)-\(^6\) Our objective was to measure and improve adherence at our rheumatology clinics. We hypothesized that the introduction of the Clinical Disease Activity Index (CDAI), an ACR-endorsed disease activity measure\(^7\), as a template in the electronic medical record (EMR) would improve adherence to the QI. We also hypothesized that the CDAI would be performed more frequently than alternative ACR-endorsed indices, such as the Disease Activity Score (DAS), because of its inclusion in the EMR.

**Methods:** We informed rheumatologists at both NSUH and LIJ outpatient clinics that the CDAI was implemented into the EMR in November of 2015, and encouraged using either the electronic CDAI or recording the DAS in the note. In November of 2016 we generated an EMR report that included all patients with an ICD9 code for RA and who had CDAI or DAS scores done between January 1, 2015 (before the announcement) and November 30, 2016. We quantified the number of CDAI and DAS scores that were done before and after our announcement.

**Results:** A CDAI and/or DAS was done in 4 out of 1,095 visits (0.4%) before our announcement in November 2015, versus in 94 out of 1,404 (7%) visits afterwards. CDAI comprised 72% of scores versus 28% for DAS. Moreover, there were more scores done over multiple visits (n=23) than single visits (n=14). The use of the CDAI and/or DAS was similar at both NSUH (scores recorded for 20 patients) and LIJ clinics (18 patients).

**Conclusions:** The RA “treat-to-target” goal of achieving remission improves outcomes\(^8\),\(^9\), and can be quantified by disease activity measures. A simple announcement regarding the introduction of an EMR template for disease activity measurement increased the use of these measures, and in the majority they were used over multiple visits to track disease activity. The CDAI was preferred, likely due to its ease of use as an EMR template. Because compliance with this QI is still poor, our future intervention is a handout that reminds providers about the CDAI.
Intraocular tuberculosis (TB) represents a diagnostic challenge, and is even more challenging when it arises secondary to corticosteroid use for another form of uveitis. We present the successful treatment of intraocular TB in a patient with Vogt-Koyanagi-Harada disease (VKH), and discuss important aspects of diagnosis in this novel case.

**Case:** A 41-year-old Colombian female had blurry vision for several months, along with headache, tinnitus and poliosis. Slit-lamp and fundus examination revealed anterior chamber and vitreous cells, and bilateral serous retinal detachments (Figure 1, A-C), and VKH was diagnosed. Prednisone 80 mg daily rapidly improved her symptoms and the detachments resolved (Figure 1, D). QuantiFERON-Gold TB test returned positive, with a negative chest x-ray, and she began rifampin therapy for latent TB. A workup for alternative autoimmune conditions was negative. The serous detachments recurred when the prednisone was tapered to 5 mg daily, and the dose was again increased. While on rifampin and 40 mg daily prednisone, new yellowish granulomatous-like lesions concerning for a tuberculous etiology were noted (Figure 2). Given the acute change, the prednisone was quickly tapered to 10 mg daily and the lesions were observed on rifampin, with ensuing regression of noted infiltrative material (Figure 3). It was decided to now proceed with 4-drug therapy for presumptive active intraocular TB, and the rifampin was transiently held. Meanwhile, the patient underwent extensive evaluation for systemic TB involvement, which was unrevealing. During the brief hiatus from anti-TB therapy a new, elevated lesion, another presumptive tuberculoma, arose in the left eye (Figure 4). Four-drug therapy was quickly initiated and the lesion resolved after 2 months. The patient remained on 4-drugs for 1 year, and there were no recurrent TB lesions thereafter. Azathioprine was soon initiated, but the patient was ultimately switched to adalimumab due to persistently active VKH. Although there was concern of potential TB reactivation with use of a biologic, the VKH was finally controlled without additional complications.

**Discussion:** To our knowledge, this is the first reported case of concurrent intraocular TB in a patient with VKH. VKH is an autoimmune condition that presents with bilateral posterior uveitis associated with exudative or serous retinal detachment. The patient’s presenting symptoms, large serous detachments, Dalen-Fuchs nodules seen in the chronic phase (Figure 5), and robust response to prednisone are classic VKH findings, and corticosteroids are first line therapy for VKH. It is likely that steroids in the setting of latent TB triggered the tuberculomas that not only regressed with anti-TB treatment, but also recurred off treatment, confirming the secondary diagnosis of ocular TB. This case is unique since two rare conditions arose in the same organ without any other systemic site of TB. It is well known that TB often targets the highly vascular and oxygenated choroid, and thus caution is necessary when giving steroids to uveitis patients with possible TB exposure. Though definitively proving the presence of mycobacterium within the eye is difficult (due to the impracticality of choroidal biopsy), the use of multimodal imaging can be instrumental in tracking response to treatment and thereby confirming the diagnosis, as highlighted here.
Biopsy Surprise: A Case of Pulmonary Epithelioid Hemangioendothelioma

Bahri N, Karim N.

Case Presentation: A 42-year-old male smoker with a past medical history of kidney stones presented with left sided pleuritic chest pain for 1 months duration. Patient presented to an outside hospital ER and was found to have patchy opacities at the left lung base on chest xray. He was treated for pneumonia, but had no improvement of symptoms. Upon re-evaluation, repeat chest xray showed progression of infiltrate. Patient denied fevers, chills, night sweats or cough. Physical exam was notable for reproducible pain with palpation of chest wall. Labs revealed no abnormalities. CT chest showed a moderate left pleural effusion and multiple irregular bilobed bilateral lung masses with calcifications. Diagnostic thoracocentesis was performed. Fluid was determined to be exudative without any growth of fungal or bacterial cultures. Blood cultures remained negative. US guided biopsy was performed with pathology revealing epithelioid hemangioendothelioma (EHE). Pain was controlled with toradol. Pleural effusions persisted. Patient was transferred for cardiothoracic surgical evaluation. VATS and decortication procedures were performed and pleurex catheter placed. Patient was planned for outpatient management by surgery and chemotherapy with oncology.

Discussion: Pulmonary epithelioid hemangioendothelioma is an aggressive vascular malignancy with histological features of both angiosarcoma and hemangioma. Pulmonary EHE represents less than .1% of all vascular tumors, with a prevalence of less than one in 1 million. It affects patients with a median age of 43 years old, and females are disproportionately affected (4:1). Incidental finding on chest radiograph in an asymptomatic patient is the most common presentation (50-76%). Characteristic findings are the presence of multiple nodules bilaterally less than 2 cm in size. Surgical resection is generally used for singular or grouped nodules. For non-resectable lesions a small review article evaluated current treatment regimens including: etoposide + carboplatin and bevacizumab + nab paclitaxel, Azathioprine, Thalidomide and IFN without determination of efficacy. Given the rarity of Lung EHE, insufficient data exists to determine a standard of treatment. Mean survival of all EHE is estimated to be only 4.6 years, with lung primary mortality to be 65%. Poor prognostic factors include multi-organ involvement, disease progression, age older than 55 years old, male sex and presence of pleural effusions.

Conclusions: This case serves to raise awareness amongst hospitalists about the potential of rare pulmonary epithelioid hemangioendothelioma presenting as multiple small bilateral lung nodules. Effective detection and diagnosis of these tumors by hospitalists is one of the first steps to generating further research towards developing effective treatment algorithms.
Metastatic Follicular Thyroid Cancer Arising From Struma Ovarii  
Bahri N, Seetharamu N.

**Case:** 48 yo woman with prior history of struma ovarii presented in March 2015 with incidental lung findings. Patient had had a R sided oophorectomy for struma ovarii-teratoma at the age of 21 and an abdominal surgery removing a duodenal mass with evidence of thyroid follicular tissue at the age of 44. An incidental finding on CXR in March of 2015 lead to a dedicated CT chest. Physical exam revealed no notable findings. CT of the chest revealed numerous pulmonary modules with the largest measuring 1.3 cm in the posterior R base. She underwent videoscopic wedge resection of the largest nodule which showed metastatic follicular thyroid cancer. Her labs were significant for thyroglobulin level of 857. She was evacuated by ENT and underwent total thyroidectomy. No malignancy was found in the thyroid tissue. Iodine uptake scan showed avid uptake in the lung nodules and liver and she was treated with 2.5 millicuries of I131. She had an excellent response with rapid decline in thyroglobulin levels and improvement in imaging studies. It was deemed that her cancer likely originated from her struma ovarii and the duodenal mass that was resected, though was believed to be secondary to benign thyroid, was in fact likely follicular thyroid cancer given their encapsulated appearance.

**Background:** Struma Ovarii (SO) is a rare ovarian tumor consisting of predominantly thyroid tissue. It compromises only 1% of all ovarian tumors and 2-5% of all ovarian teratomas, though it is the most common monodermal ovarian teratoma. There have been a handful of case reports that have identified metastatic follicular thyroid cancer resulting from a SO. The classification of a malignant SO is controversial given rarity but some authors suggest similar criteria as for the thyroid gland. SO metastatic disease has been reported in the liver, bone, lung and brain. When working up a case of malignant SO, it is necessary to rule out a metastatic primary thyroid cancer to the ovary. An ultrasound of the thyroid is needed for this purpose, as well as thyroglobulin levels which are a marker of metastatic disease. If metastatic disease is detected, treatment involves thyroidectomy prior to RAI. Follow up is recommended for at least one decade because recurrence after 20 to 40 years has been seen. The long term survival of patients is 84% at 25 years.

**Discussion:** Here we report and discuss the presentation of a case of follicular thyroid cancer arising from a struma ovarii. Even though these rare tumors are considered benign, they have been shown to metastasize. It is important to recognize the malignant potential of these tumors while following up these patients.
When Lung Cancer Screening Leads To Lymphoma Capture
Bahri N, Cacace F.

**Learning Objective #1:** Diagnose pulmonary marginal zone lymphoma.

**Learning Objective #2:** Recognize that increased lung cancer screening may lead to nodule biopsy or excision revealing non-lung cancer neoplastic pathologies.

**Learning Objective #3:** Recognize the varied presentations associated with marginal zone lymphomas.

**Case:** An 81 year-old Caucasian male with a pmhx of ischemic cardiomyopathy s/p AICD, COPD, and a 100 pack year smoking history, MGUS presented to an outpatient clinic with results from lung cancer screening performed at his VA provider where he receives part of his care. Patient denied any symptoms other than mild worsening of SOB from baseline. Physical exam revealed lungs clear to auscultation. No rales, rhonchi or wheezing detected. Patient appeared euvoletic. The routine screening low dose CT performed revealed RUL, RML, LUL and pleural cluster of nodules believed to be inflammatory versus post infectious changes with a 3-6 month follow up recommended. On follow up 6 month imaging the RUL nodule was determined to be spiculated with other features suspicious for malignancy. PET confirmed presence of three nodules, one in the RUL with SUV .78, and 2 in the RML with SUV 3.1 and 2.7. FNA biopsy revealed atypical epithelial cells. Patient was referred to a cardiothoracic surgeon who presumed a primary lung cancer in the RML with inflammatory related changes. Patient was scheduled for VATS with wedge resection. Surgical biopsy revealed marginal zone lymphoma involving the bronchus tissue with amyloid deposition rather than a primary lung malignancy. A 6 month follow up surveillance CT after wedge resection showed no recurrence of disease. An annual CT surveillance scan is planned for the upcoming year.

**Impact:** This presentation shows lung cancer screenings may lead to diagnosis of rare malignancies that may involve the bronchi. It is important to be aware of the possibility of BALT as a solitary presentation within the lung. Given that this disease is often disseminated, it is imperative to recognize and perform staging to look for lesions in other area of the body.

**Discussion:** Marginal Zone Lymphoma is a low grade B cell extra nodal lymphoma that is relatively rare, making up less than 7% of Non Hodgkin lymphomas. It primarily presents as a malignancy of the gastrointestinal tract in up to 85% of cases. Pulmonary cases of marginal zone lymphoma, otherwise known as Bronchus Associated Lymphoid Tissue (BALT), make up roughly 15% of all MALT cases. These presentations are often found on incidental screenings given one-third of cases are asymptomatic at diagnosis. The presentation of this tumor on lung CT scan varies from a singular nodule to multiple nodules without distinctive features. When performing imaging either for cancer screening in smokers or for other evaluations of the chest it is important to be aware of the possibility of BALT. When detected, extensive staging is usually necessary given that the BALT is often accompanied by extra pulmonary lesions 40% of the time. Once detected and treated, MALT tumors have a 5 year survival of 85%.
**Pregnancy Outcomes in Women on Hemodialysis: A National Survey**

*Barta V*, Sachdeva M, Thakkar J, Sakhiya V, Miller I.

**Background:** Pregnancy among women on chronic dialysis occurs in 1-7%. Experience regarding pregnancy and dialysis originates from anecdotal reports, case series, and surveys. This survey serves to update the U.S. experience of pregnancy on hemodialysis (HD) over the past five years. We evaluated maternal and fetal outcomes, certain practice patterns such as dialysis regimens utilized, and nephrologist knowledge and comfort level when caring for a pregnant patient on hemodialysis.

**Methods:** An anonymous internet based 23 question survey was electronically mailed to ESRD Networks of America and Program Directors of academic institutions and forwarded to practicing nephrologists.

**Results:** 196 nephrologists have responded to the survey, reporting more than 187 pregnancies. 45% of the respondents have cared for pregnant females on HD. There were 78% live births. 44% of the pregnancies were complicated by preeclampsia. There were no maternal deaths. Most nephrologists prescribe 4 to 4.5 hours of HD for six days per week. Interestingly, women dialyzed cumulatively for more than 20 hours per week were 2.2 times more likely to develop preeclampsia than those who received 20 hours or less HD per week.

**Conclusion:** Providing intensive hemodialysis is a common treatment approach when dialyzing a pregnant woman. Maternal and fetal outcomes can be improved. There is a trend toward better live birth rates with more intense hemodialysis. Whether more cumulative hours of dialysis per week increases risk of preeclampsia needs to be further investigated. Formal guidelines outlining the care of the pregnant woman on dialysis need to be established.
Preserved Renal Allograft Function While Using the PD-1 Pathway Inhibitor Nivolumab


Inhibition of immune checkpoints with the use of antibodies targeting programmed cell death 1 (PD-1) or monoclonal antibodies against cytotoxic T-lymphocyte–associated antigen 4 (CTLA-4) has been used clinically in patients with various types of cancer. In the limited number of reported cases in which these antibodies have been used in patients who have undergone kidney transplantation(1), these agents have been associated with cell-mediated and antibody-mediated rejection (see Table S2 in the Appendix) We report on a patient who received a renal transplant from a living related donor. In this patient, a regimen of a preemptive glucocorticoid and sirolimus (a mammalian target of rapamycin [mTOR] inhibitor) may have prevented the adverse immune response of nivolumab in the kidney transplant.

A 70-year-old man with end-stage kidney disease after bilateral nephrectomies for renal-cell cancer underwent a kidney transplantation in 2010, with one of six HLA mismatches between the recipient and the graft. The patient received basiliximab (an anti–interleukin-2 receptor antibody) and glucocorticoid induction followed by initial immunosuppression that included a glucocorticoid, tacrolimus, and mycophenolate mofetil.

In early 2015, the patient received a diagnosis of microsatellite-stable metastatic adenocarcinoma of the duodenum with intestinal obstruction and liver metastases. He did not have a clinically significant response to treatment that included the administration of standard chemotherapy and discontinuation of mycophenolate mofetil, decreased doses of tacrolimus, and intestinal stenting. Disease progression led to the initiation of nivolumab at a dose of 3 mg per kilogram of body weight intravenously every 2 weeks beginning in March 2016. Prednisone at a dose of 40 mg per day was administered preemptively, and tacrolimus was replaced by sirolimus. After the initiation of nivolumab, the patient’s body weight was stable at 90 kg, the serum albumin level was 3.5 to 4.0 g per deciliter, and the serum creatinine level and estimated glomerular filtration rate remained normal and stable (see Table S1 and Fig. S2 in the Appendix). Table 1 summarizes the regimen of immunosuppressive medications. The patient’s donor-specific antibodies remained absent. In October 2016, his serum creatinine level was 0.98 mg per deciliter (86.6 μmol per liter), and no further progression of cancer was evident on serial imaging (Fig. S1B in the Appendix). He had no other end-organ immune-related adverse events or toxic effects.

In the limited number of patients who have received these agents(1) it appears that PD-1 inhibitors could be more prone than CTLA-4 antagonists to cause rejection in the transplanted kidney. This is especially true when the patients receive anti–CTLA-4 agents before PD-1 inhibitor treatment (Table S2 in the Appendix). Blockage of the PD-1–PD-L1 interaction in the kidney tubular cells could impair the FOXP3+ regulatory T cell–mediated graft tolerance(2). In some trials, administration of glucocorticoids might have impaired the antitumor response of immune checkpoint inhibitors(3). Other studies have shown that overall survival and the time to treatment failure were not affected by the use of systemic glucocorticoids(4). The use of mTOR inhibitors (everolimus, temsirolimus, and sirolimus) has been well studied in many cancers(5). In this patient, sirolimus may have played a synergistic antitumor role in addition to being an immunosuppressive agent. The effectiveness of a combination of a glucocorticoid and sirolimus in preventing immune-related adverse events associated with PD-1 inhibitors is not known. Data from a large trial using this approach in patients who have undergone organ transplantation are lacking.
Preliminary Observations Using Mechanical Oscillation Desensitization Therapy (Modt) For Chronic Pain Syndromes

Behling A.

Background: The “Gate control” theory offered by Melzack and Wall in 1965 has led to the development of various electrostimulation methods for relieving pain. The most widely used of these methods is transcutaneous electrical nerve stimulation (TENS), which consists of stimulating the afferent fibres in the painful area by means of electrodes placed on the skin, so as to set up an inhibitory control on the pain pathways. The conventional application of TENS therapy involves use of high frequency, low intensity stimulations, which mainly recruits afferent fibres belonging to the A αβ group.

Mechanical oscillatory (vibratory) stimulation has been known to activating large diameter afferent A αβ fibres and their associated cutaneous mechanoreceptors. It has been used diagnostically across various disciplines. For example, the qualitative 128Hz tuning fork has been considered optimal for examination of peripheral neuropathy secondary to larger-diameter afferent A αβ nerve fibre dysfunction, with loss of vibration perception in the great toe in less than 10 seconds at any age being abnormal. The 128Hz tuning fork is also considered fairly effective in identifying. An interesting study has also supported use of the 64 Hz quantitative tuning fork for assessment of sensory changes over time, and has demonstrated that it is sensitive and predictive of SNAP amplitude.

Human subject testing has elucidated that there are various superficial and deep, slow and fast-adapting types of pain receptors highly sensitive to mechanical oscillation, and also respond to a wide range of frequencies (1 to 200-400 Hz), even despite low amplitudes.

In prior quantitative sensory testing evaluating the effects of vibratory stimulation of 100Hz in subjects with fibromyalgia, localized increases in heat and pressure pain thresholds during vibration, and of non-painful warmth perception thresholds following vibration occurred. Moreover, it was noted that FM patients did not differ from controls in the response to the vibratory stimulation.

Mechanical oscillatory stimulation has also been shown to have analgesic effects on both acute and chronic pain. Data has also demonstrated that muscle spindle endings (Ia) are also activated by mechanical oscillation, although to a lesser extent and generally at frequencies up to 100-150 Hz.

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When Pregnancy Becomes Malignant, an Unusual Case of Metastatic Choriocarcinoma

Bernabe C, Li JY, Savona S.

**Introduction:** Gestational Trophoblastic Neoplasia (GTN) is a rare type of malignancy that arises from the placental trophoblastic tissue. Choriocarcinoma is the most aggressive subtype and diagnosis is usually challenging due to its rarity. The malignancy is highly vascularized; presentation varies depending of which organ is involved. Here we report a patient with massive intracranial bleeding secondary to choriocarcinoma.

**Case Presentation:** A G1P1 19-year-old female who delivered a singleton male 6 months ago presented with a chief complaint of headaches for 2 days. She was transferred to North Shore Manhaset Emergency Department from Forest Hills Hospital January 2, 2017 after CT scanning revealed intracerebral bleeding and mass effect on the lateral ventricles (Fig 1). The transfer was necessary for emergency neurosurgical intervention; The patient was scheduled for decompressive surgery and evacuation of cerebral hematoma. The physical examination showed the patient to have decerebrate posturing with bilateral, fixed dilated pupils. CT of the head showed multifocal acute intraparenchymal hemorrhages in the left frontal, parietal and occipital areas. She had emergency left hemicraniectomy for decompression and evacuation of the hematoma.

Initial CBC showed: WBC 14.5 g/dl, hemoglobin 10.4 g/dl and platelets of 228. Chemistry revealed normal electrolytes and an initial B-HCG of 1459, which peaked on day 7 of her admission at 12842. Her hospital course was complicated with hypoxic respiratory failure secondary to pneumonia requiring mechanical ventilation.

Tissue sections from hematoma showed tiny foci of malignant poorly differentiated neoplasm in the leptomeninges with crushed artifact. The initial immunohistochemistry of the malignant tissue showed tumor cells are strong and diffuse positivity for GATA-3, pancytokerain and CK-7, but negative for S-100, synaptophysin, chromogranin, CD30, PAX-8, CK20, p40, ER, PR, CD 31, CD34, CD56, CD 117, CEA, PLAP, GCDFP-15, and mamaglobin (Fig 2). Unstained slides were sent out for beta HCG immunostain, which showed that scattered tumor cells for beta HCG. The findings are consistent with metastatic choriocarcinoma.

Radiologic imaging consisting of CT of the chest, abdomen and pelvis revealed multiple lung and liver metastases. Initial chemotherapy consisted of etoposide, methotrexate, actinomycin D, cyclophosphamide, and vincristine (EMA-CO). This chemotherapy regimen was repeated q 14 days and after 3 cycles of treatment the patient’s B-HCG was <2mIU/ml (Table 1).

At the current time the patient has partial motor function in the right lower extremity and she is able to communicate with her husband and family. She will continue chemotherapy.
Case Presentation: 68 year old male presented with sudden onset of fever, chills, left neck pain, left arm pain and dysphagia to solids and liquids. The pain was described as stabbing and radiated to the upper chest and back. Vital signs were remarkable for a fever of 102.7o F and a heart rate of 120 beats per minute. He was non-toxic appearing and demonstrated a warm fluctuant mass on left neck. Lab data revealed a white blood cell count of 17,000/mL with neutrophilic predominance. A CT scan of the chest, abdomen and pelvis with contrast revealed extensive phlegmonous changes of left chest wall, left cervical region, and superior mediastinum and abscess in left thyroid lobe. FNA drainage yielded purulent material, but no bacterial growth from the culture. ENT performed an incision and drainage procedure and culture grew Streptococcus intermedius. Initial blood cultures grew Streptococcus constellatus. Endocarditis was ruled out and dental consultation revealed no obvious oral source. The bacteremia was successfully treated with Ertapenem for one month duration.

Discussion: Three isolates including Streptococcus constellatus, Streptococcus anginosus, and Streptococcus intermedius are part of the Streptococcus milleri group which is a member of the viridans group of streptococci. All three organisms are normal commensal organisms of the oropharyngeal and gastrointestinal flora; however, they have been implicated in causation of abscesses involving the orofacial and sinus area, respiratory tract, and abdominal cavity. Several case reports have called to attention septic shock leading to mortality from bacteremia from these organisms. The virulence factors for each of these microbes have not been clearly elucidated but include a polysaccharide capsule that inhibits phagocytosis which often leads to development of rapid suppurative infections. The most severe complications involve airway obstruction and central nervous system involvement. Our case presents a patient who had bacteremia from Streptococcus constellatus which is an uncommon cause of bloodborne pathogen. This bacteria is typically implicated in superficial head and neck abscesses and the close proximity to central nervous system warrants early recognition and treatment. What is more impressing is that the culture from the abscess was consistent with Streptococcus intermedius but it was Streptococcus constellatus isolated in bloodstream. It is not uncommon for this presentation as many of these streptococcus species will often have synergistic relationship, even with anaerobes, in forming abscesses. Treatment is based on debridement and drainage when appropriate and use of beta-lactam antibiotics, particularly ceftriaxone as it has excellent tissue penetration and infrequent dosing. We chose ertapenem because of concern for co-infection with anaerobes in abscess formation.

Conclusions: Hospitalists are often the first line physicians confronted with the management of sepsis. It is imperative to know that bacteremia by any one of the streptococcus milleri group warrants imaging for evaluation of abscess, particularly, those involving the head and neck region which carries a higher risk of invasion to the central nervous system and mortality.
Background: Dose-dense chemotherapy is increasingly more utilized in the adjuvant treatment of patients (pts) with epithelial ovarian, fallopian tube, or primary peritoneal carcinoma (EOC), as compared to the conventional q3 week chemotherapy regimen. The safety and tolerability of the dose-dense regimen in pts ≥65 yrs old has not been well studied. We performed a retrospective analysis of pts with stage II-IV EOC treated at our institution with either regimen.

Methods: We identified pts with stage II-IV EOC treated at Northwell Health from 2010-2015 who received adjuvant chemotherapy with the dose-dense (carboplatin q3 weeks/weekly paclitaxel) or the conventional (carboplatin and paclitaxel q3 weeks) regimen. Pts who received IP chemotherapy were excluded. Demographics, adverse events (AEs), dose delays/reductions and efficacy outcomes were evaluated.

Results: 38 pts received conventional chemotherapy (median age 68 yrs) and 29 pts received dose-dense chemotherapy (median age 61 yrs). There were no differences in the frequency of grade ≥3 hematologic toxicities b/w the two arms. There were no differences in delayed or missed doses between the two arms but a higher proportion of dose reductions in the dose-dense arm ($P=0.0472$). Among pts treated in the dose-dense arm, 87.5% of women < 65 yrs old had at least one grade ≥3 AE when compared to 38.5% of women ≥ 65 yrs old ($P=0.0161$). There were no differences in dose delays, dose reductions, or missed doses when compared by age in the dose-dense arm. In the dose-dense arm, stage III-IV pts <65 yrs old had a median time to progression (TTP) of 13.0 mo (95% CI, 6.7-13.8) and a median overall survival (OS) of 48.3 months (95% CI, 11.5-48.3). Pts ≥ 65 yrs old had a median TTP of 10.9 mo (95% CI, 8.7-12.7) and median OS of 35.9 mo (95% CI, 30.8-not reached). There was no difference in TTP ($P=0.2154$) or OS ($P=0.9260$) between the two cohorts.

Conclusion: Our institutional experience of administering dose-dense adjuvant chemotherapy to women with EOC suggests that this regimen is likely safe in women ≥ 65 yrs old, with similar efficacy outcomes and should be considered for this population. Further study with larger sample sizes and in prospective trials is warranted.
Background and Methods: Allogeneic stem cell transplantation represents the only possible cure for many adults with myeloid malignancies. HLA matched related or unrelated donors are not always available for all patients in need of a stem cell transplant. Haplo-identical donors are a very reasonable alternative. We report a single institution experience with reduced intensity conditioning (RIC) haplo-identical transplantation in AML/MDS from the years 2014 to 2016. We retrospectively reviewed 23 cases. All patients had 2 or 3 loci mismatched. All received Fludarabine 30mg/m2 X 5 doses, CTX 14.5 mg/kg X 2 doses and TBI 200 centigray prior to the infusion of the HPC product and CTX 50mg/kg X 2 doses day 3, 4 after the infusion of the HPC product. Tacrolimus and MMF were started on day 5. HLA antibodies were performed for all patients. All patients received unmanipulated HPC, Apheresis products with a mean CD34 cell dose of 5.48 X10^6/kg, range 2.6 to 8.85.

Patient Characteristics: Mean age was 56.8 years, with range 21 to 73 years. Disease Status was CR1 in 14 patients with AML. Seven patients had a history of high risk MDS. Cytogenetics / Molecular abnormalities included Trisomy 1,8,9,11,21. Eight patients had FL+3 ITD mutations. Two patients had prior autologous transplants and two patients had prior allogeneic transplants. 11 patients were ABO mismatched, two of these mismatches were major. 11 patients were sex mismatched. Although HLA antibodies were positive for several patients, none were significant.

Results: Mean neutrophil engraftment was 19 days, with a range of 14 to 36. Seven of these patients experienced high fevers after cell infusion attributed to cytokine storm. Three patients developed acute renal failure, two requiring dialysis did not survive. One patient had primary graft failure. Four patients had secondary graft failure. Two of these patients received Azacitidine for graft immune modulation. Three of the four receive incremental DLI’s. One patient achieved full chimerism and count recovery with Azacitidine alone. One patient remains in remission 22 months after transplant on Azacitidine without evidence of engraftment of donor cells. Median overall survival was 284 days. Ten of these patients remain in CR with full donor chimerism at 9 months median follow up (range 9 to 33 months). Four of these patients had FLT 3 ITD mutations. None of these patients developed severe Acute GVHD grade 3-4 or extensive chronic GVHD.

Conclusions: T-replete RIC haplo identical transplant using post transplant Cytoxan is a promising alternative for patients with high risk AML/MDS and may prove to be more effective than fully matched donor transplants given the HLA disparity. However despite the disparity the incidence of grade 3-4 acute GVHD and extensive chronic GVHD is quite low. There did not appear to be any correlation with haplo storm and GVHD or survival. Neutrophil & platelet engraftment may be slightly delayed due to post transplant cytoxan. Azacitidine could be considered for post transplant maintenance
**Successful Administration of Neostigmine in a Neutropenic Patient**

Cerrone S, Markowitz B, Cheung M, Whitson M.

**Introduction:** In patients with acute colonic pseudo obstruction (ACPO) not responding to conservative care, neostigmine is an effective and safe treatment. Limited data is available regarding the safety of neostigmine in neutropenic patients.

**Case:** Our patient is a 59-year old female admitted for induction chemotherapy for Acute Myeloid Leukemia. Her course was complicated by neutropenic fever, *s. maltophilia* bacteremia, and thrombocytopenia. After completion of antibiotic treatment, the patient developed abdominal distension with pain, constipation and decreased flatus. CT imaging demonstrated ACPO. Conservative measures were taken. Nasogastric and rectal decompression (via tube or colonoscopy) were contraindicated given neutropenia and thrombocytopenia. She showed no clinical or radiologic improvement and after consultation with both surgical and oncologic teams was given 2mg of neostigmine. Patient had a large bowel movement two hours later, and continued to improve both clinically and on imaging. No side effects were reported and no additional doses were needed. Patient was ultimately discharged and followed up with no recurrence over 3 months.

**Discussion:** ACPO develops as a result of altered autonomic regulation of colonic function due to medications, metabolic derangements, or trauma. Without treatment, patient has an overall mortality rate of 25–31%, and 40–50% in the setting of ischemia or perforation. Non-invasive treatments provide a therapeutic benefit including early ambulation, early feeding, and laxatives. Colonoscopic decompression is successful in about 70% of cases, though with a 40% recurrence rate. Neutropenic and thrombocytopenic patients are at higher risk for the development of bacteremia and bleeding limiting the use of endoscopic intervention.

Neostigmine is an alternative method to treat ACPO. It is successful in over 90% of cases. Neostigmine has multiple side effects including: bradycardia, abdominal cramping, nausea and vomiting. It is contraindicated in cases of peritonitis and mechanical obstruction of either the intestinal or urinary tracts due to risk of perforation.

Little data exists to guide the management of ACPO in neutropenic patients. The risks of infection and bleeding are known to be increased in neutropenic patients with case reports of bowel perforation in patients with enterocolitis. It is unclear if these neutropenic patients with ACPO are at an additional increased risk. Given the limitations of decompression in these patients, neostigmine would appear to be a viable alternative. Yet, limited data exists describing the successful use of neostigmine in neutropenic patients. Our case suggests neostigmine may be a safe therapy in these patients. More studies are needed to fully explore the safety profile in this unique patient population.
Ehlers-Danlos Syndrome (EDS) is a constellation of heritable connective tissue disorders presenting with variable severity of symptoms including skin hyperextensibility, fragility, delayed wound healing with atrophic scars, easy bruising, joint hypermobility, muscle hypotonia, cardiovascular malformations (e.g., mitral valve prolapse), and arterial rupture. The literature suggests that the prevalence of primary immunodeficiencies may be increased in patients diagnosed with connective tissue disorders. Here, we describe three patients previously diagnosed with EDS that were found to have various immunodeficiencies. Case 1 is a 38 year old woman with EDS with hyperextensibility, arthralgias, Chiari malformation, increased skin elasticity, and easy bruising found to have transient IgG1 deficiency and low CH50 and C1r. Case 2 is a 49 year old woman with EDS with hypermobility with persistent idiopathic T cell lymphopenia and suspected mast cell disorder. Case 3 is a 25 year old woman with EDS consisting of hypermobility and tracheomalacia with IgA deficiency and recurrent sinopulmonary infections. More research is needed to determine the molecular and genetic underpinnings of immunodeficiency in EDS patients.
Hypersensitivity Pneumonitis In A Bird Owner: The Importance Of Asking About Pets In The Social History

Chamblain M, Martinez J, Muzaffar Z.

**Learning Objective #1:** Review the pathophysiology and management of hypersensitivity pneumonitis (HP)

**Learning Objective #2:** Raise awareness of the importance of conducting a thorough history, as early diagnosis and intervention can reverse a disease process

**Case:** A 57 year-old, previously healthy woman presented to the Emergency Department with chief complaints of a dry, progressive cough and subjective fevers for one month. All other organ systems were reviewed and were negative. She is an every day smoker. On physical exam, she was an overweight woman in mild distress, with a low grade fever and scattered expiatory wheeze. Routine blood tests (CBC, CMP, blood cultures, viral respiratory panel) were performed. Results showed a WBC of 12 and the rest of the work-up was negative. Additionally, a chest x-ray revealed multi-lobar opacities. Treatment for community-acquired pneumonia was initiated. A CT chest revealed bilateral ground-glass opacities. She progressively became hypoxic and tachypneic, requiring transfer to the Intensive Care Unit. In the team’s attempt to seek alternative diagnoses, her social history was revisited. It was found that she had purchased a parakeet about a month ago. In light of this new information steroids were started for presumed hypersensitivity pneumonitis. Within two days, she recovered clinically and was extubated.

**Impact:** This case highlights the importance of history taking. Studies dating back from the mid-twentieth century to most recently in 2012 attempted to measure the relative contribution of history taking, compared to physical exam and laboratory tests in obtaining a correct diagnosis. As suspected, the most important factor in both diagnosis and treatment lied in the history which decided more than half of diagnoses and therefore management (Markert, 2004). Diagnosing HP can be challenging; it requires known antigen exposure, clinical, radiologic, laboratory and pathologic findings validating a clinical suspicion. In mild HP, simple avoidance of the antigen in question may be sufficient. In severely symptomatic patients, a tapered steroid regimen is started and mechanical ventilation may be required. In the case mentioned above, perhaps such clinical course could have been avoided with thorough history taking.

**Discussion:** Histologically, HP presents as granulomatous lymphocytic alveolitis which can evolve into fibrosis in chronic advanced disease. On CT scan, ground glass opacities or nodules can be seen in acute/subacute cases whereas reticular opacities and traction bronchiectasis point towards a chronic disease. What remains intriguing is that only a few of the exposed develop the disease. A two-hit model (i.e. genetic and environmental factors) has been hypothesized to provoke an immune-complex mediated response in both the acute and subacute/chronic cases.
Crossover rates in Transradial Catheterization: Are they really high?
Charalambous M, Soteriades E, Constantinides S, Christou C.

**Background:** Transradial approach (TrA) has now been established as the routine method for coronary angiography and percutaneous coronary intervention (PCI) in many centers around the world. However, many operators still consider TrA as being technically difficult, leading to access failure and high crossover rates to femoral access. Our aim was to examine how frequent is the need to crossover from radial to femoral access and assess if this is a significant limitation of the transradial approach.

**Methods:** We performed 2372 cardiac catheterizations between Jan 2010 and Dec 2013. In our center, we established TrA as the routine method for elective, urgent and emergency procedures (primary or rescue PCI). Baseline characteristics, procedural success rates and major complications were recorded.

**Results:** In 2165 cases (91.3 % of all cases) the procedure was initiated and completed through radial access and in 202 cases (8.5% of all cases) through femoral access. In only 5 cases (0.2 % of all cases and 0.2 % transradial cases) was there a need to crossover from radial to femoral access. In all 5 cases the procedure was successfully completed through right femoral access. Radial access was unsuccessful because of spasm (2 cases), radial loops (2 cases) and in one case the procedure could not be completed through the right radial artery because of a small accessory radial artery. In 2 additional cases there was a need to insert an IABP and femoral access was required in addition to radial access.

**Conclusions:** The majority (91.3 %) of cases encountered in a cathlab can be successfully completed through radial access and in centers where transradial access is used as the routine method of access, the need to crossover from radial to femoral access is extremely low (0.2 %). These data should encourage operators to adopt the transradial approach.
Transulnar Access: a Feasible and Safe Bailout for Unsuccessful Transradial Access

Charalambous M, Soteriades E, Constantinides S, Christou C.

Background: Transradial (TR) approach has been established as the routine method for coronary interventions in many centers around the world. Despite its advantages, the access failure rate can range anywhere between 0.2% -15%. In such cases, most operators will attempt contralateral radial access or proceed to transfemoral access. An alternative is to obtain access through the ipsilateral ulnar artery (UA), however this approach is not widely used. Our aim was to examine the feasibility and safety of the transulnar approach.

Methods: We performed 2002 TR catheterizations between Jan 2012 -Dec 2015. In our center we established TR access as the routine method for elective, urgent and emergency procedures. Baseline characteristics, procedural success rates and major complications were recorded. We routinely gained access through the right radial artery (RA). If unsuccessful our next approach was the left RA. We only proceeded to femoral access, if we were unable to perform the procedure through both radial arteries and in cases where UA pulse was not palpable. In patients with LIMA (Left Internal Mammary Artery) grafts we initially attempted access through the LR.

Results: In 1983 cases (98.8 % of all TR cases) the procedure was initiated and completed through RA access. There were only 25 cases (1.2 % of all TR cases) where the procedure could not be completed through the initial attempted site and a crossover to another access site was required. Crossover from RR to LR: 9 cases, RR to Right Ulnar (RU): 6 Cases, RR to Right Femoral (RF): 2 cases, LR to RR: 2 cases, LR to Left Ulnar (LU): 3 cases. In 3 other cases the procedure could not be performed through any of the radial arteries but was eventually completed through the RU Artery (1 case) and the RF artery (2 cases). There were a total of 10 cases performed through the UA (7 RU and 3 LU cases). In these 10 cases, the procedure was successfully completed without any complications.

Conclusions: In centers where TR is used as the routine method of access, the need to crossover is very low. 99% of all cases can be initiated and completed through the initial radial access site. For that 1% of cases where crossover is required, the ipsilateral UA can be a feasible and safe access bailout.
**Pregnancy related HLH**

*Chi J, Jackson DA, Pereira S.*

**Introduction:** Hemophagocytic lymphohistiocytosis (HLH) is an aggressive and life-threatening syndrome of excessive immune activation. Timely treatment of HLH is essential for patient’s survival. However, due to its rarity and varied presentations, early diagnosis of HLH is challenging especially in a pregnant patient.

**Case presentation:** A 35 year old female with no significant past medical history developed fever late in the third trimester of her second pregnancy. The prior and current pregnancy had been uneventful. The fever was believed to be viral and she rested at home. After being seen by her OB with persistent fever, she was sent to the Hospital. Patient’s initial labs were significant for elevated liver enzymes, anemia, and elevated lactate dehydrogenase, concerning for HELLP syndrome. Labor was induced and she delivered without complication. After delivery she was again febrile and was empirically placed on broad spectrum antibiotic. Extensive infectious and rheumatologic workup was negative. Computed tomography (CT) of chest/abdomen/pelvis did not show any abnormality. Further work up revealed elevated ferritin (4300) and triglyceride level (507) suspicious for hemophagocytic lymphohistiocytosis. A bone marrow biopsy was performed and high dose dexamethasone was immediately initiated while awaiting for results. The patient defervesced and clinically improved. The bone marrow biopsy showed increased histiocytes with hemophagocytosis. Soluble CD25 (IL-2 receptor alpha) was elevated (1721 pg/ml). Patient met the ⅝ of 2004 HLH diagnostic criteria with fever, hypertriglyceridemia, elevated ferritin, hemophagocytosis in bone marrow, elevated soluble CD25 and was diagnosed with HLH. She remained afebrile for the rest of the hospital stay and discharged to home with oral prednisone. Outpatient follow up revealed that she remained afebrile. Her ferritin, triglycerides, and soluble CD25 levels normalized. She was tapered off steroid therapy.

**Discussion:** This case illustrates the diagnostic and therapeutic challenges of HLH in a pregnant woman. HLH can occur as a familial or sporadic disorder, and it can be triggered by a variety of events that disrupt immune homeostasis. Early diagnosis is challenging as HLH is rare and has a varied presentation. The diagnosis of pregnancy related HLH is even more challenging as presentation can overlap with other obstetrical conditions, i.e. HELLP syndrome, sepsis, and acute fatty liver in pregnancy. After ruling out other causes, high suspicion for HLH should be raised in the presence of persistent fever with elevated ferritin and triglyceride level. Currently there is no established treatment guideline for pregnancy related HLH. Literature search showed 13 case reports of HLH during pregnancy and successful treatment with combinations of high dose steroids, IVIG, chemotherapy, and hematopoietic stem cell transplantation. For our patient, monotherapy with high dose dexamethasone was used effectively. Choice of therapy should be tailored based on pregnancy stage, severity of disease, and the health of the fetus.
Blood Culture Negative Endocarditis with Lambl’s Excrescences

Codougan L, Hallbert T, Lagurerre M.

Case presentation: A 79 year old male with history of atrial fibrillation on coumadin, bradycardia status post pacemaker, presented with dysarthria, melanotic stools, left upper extremity swelling in the setting of INR of 15 and bandemia of 26%. The patient was afebrile and without any other signs of sepsis. CT head did not reveal acute intracranial hemorrhage. MRI was not obtained due to pacemaker. Infectious work up with chest x-ray, blood and urine cultures were negative. Inflammatory markers such as CRP and ESR were elevated. Transthoracic echocardiogram was unremarkable. CT of left upper extremity revealed moderate olecranon bursitis. Colonoscopy had multiple discrete areas of ulcerated mucosa with biopsy suggestive of ischemic colitis. Hospital course was complicated by acute left knee swelling and erythema. Arthrocentesis was consistent with septic joint but synovial fluid was negative for organisms. Other rheumatologic work up was negative. Transesophageal echocardiogram was performed given concern for embolic events. It showed Lambl’s excrescences and a mobile echodensity on pacemaker leads representing possible vegetation. The patient had previously received antibiotics for infection of unclear etiology, which was later changed to vancomycin and ceftriaxone for suspected blood culture-negative endocarditis. All blood cultures remained negative throughout hospitalization.

Discussion: Culture negative endocarditis remains a diagnostic challenge despite advanced echocardiography and blood culturing techniques. Etiologic factors include fastidious organisms that are not routinely cultured on medium such as Bartonella or Coxiella and nonbacterial pathogens. Risk factors for culture-negative infective endocarditis include exposure to fastidious organisms, valvular heart disease and the presence of a pacemaker. HACEK organisms were presumed to be the most common etiology agents for culture negative endocarditis; however with current blood culturing techniques these organisms can be easily isolated when incubated for at least 5 days. Studies have found that no blood cultures grew HACEK organisms when incubation was extended for 10 days. Other clinical clues that should prompt investigation of culture negative endocarditis include zoonotic or occupational exposures, immunosuppression, and chronic alcoholism. Among the differential diagnosis for culture negative endocarditis are Lambl’s excrescences, which are mobile strands on cardiac valves. These may be visualized via transesophageal echocardiography and often mistaken for vegetations.

Conclusion: Unusual clinical presentations after long diagnostic work up should raise suspicion of embolic events due to culture negative endocarditis. Cultures remain negative in less than 10 percent of patients with endocarditis even when appropriate caution is utilized in obtaining the proper number and volume of blood cultures.
Suspected Isoniazid Toxicity during Treatment of Indeterminate Quantiferon Gold Result

Codougan L, Laguerre M.

**Case Presentation:** A 54 year old female with recently diagnosed vasculitis involving the lung who was being treated with cyclophosphamide and high dose prednisone, and who was also on isoniazid (INH) for treatment of ‘latent tuberculosis’ presented from sub-acute rehab with acute onset right upper quadrant pain, severe transaminitis (AST/ALT 1000s/2000s) and impaired synthetic liver function. The patient had initially presented to an outside hospital about 2 months prior to her current presentation for vasculitis work up in the setting of chronic dyspnea. She was found to have ANCA and MPO positivity. She underwent a video-assisted thoracoscopic surgery (VATS) for lung biopsy at the outside facility, which was complicated by liver and stomach laceration causing hemoperitoneum. She required exploratory laparotomy and 15 units of packed red blood cells for hemorrhagic shock. No lung tissue was obtained during the VATS procedure.

She was then transferred to a different hospital for second rheumatologic opinion. In the setting of recent complicated VATS procedure, the risk of repeating the procedure to obtain tissue diagnosis was felt to outweigh the benefit. The patient was empirically treated for suspected vasculitis. A Quantiferon gold that had been obtained prior to cyclophosphamide therapy was indeterminate. She was started on INH with plan for 9 months of therapy as per infectious disease team recommendations. Upon re-admission to the hospital, no other etiology for the acute liver failure including acute portal vein thrombosis or viral hepatitis was found. She was started on N-acetylcysteine (NAC) protocol for suspected drug-induced hepatitis. The NAC protocol was stopped due to allergic reaction. All medications cleared through enterohepatic circulation including cyclophosphamide and atovaquone for pneumocystis pneumonia prophylaxis were held.

**Discussion:** Isoniazid is an antibiotic used to treat infection with Mycobacterium tuberculosis. Acute INH toxicity can manifest as altered mental status or seizures whereas in chronic toxicity, hepatic injury is more common. Chronic hepatotoxicity from INH typically occurs within the first 8 weeks but can be seen as late as 14 months from initiation of therapy. Isoniazid-induced hepatotoxicity is defined as an AST or ALT elevation of three to five times the upper limit of normal in a patient with abdominal pain, nausea, vomiting or jaundice. The prognosis for mild to moderate INH hepatotoxicity is excellent and most cases are self-limited. Management involves timely discontinuation of INH and other potential hepatotoxins and supportive care. Liver transplantation may be required in severe cases.

**Conclusion:** Clinicians should remember to review the indications and duration of INH therapy to minimize risk of adverse events including fatal hepatitis, which has been reported in patients without clear indication for the drug.
Introduction: Education in medical decision-making, particularly regarding end-of-life care, has evolved in the past decade. Modalities such as case vignettes, reflective writing, surveys on confidence and experience, and even drama and improvisational speaking courses, has made their way into medical schools and residency programs. While experts agree that this “hidden curriculum” training is important at all levels, there is inconsistent application of didactic and experiential opportunities through the many years of medical education. There is a need to incorporate communication skills in courses geared towards working professionals involved in end-of-life care and palliative care. We report preliminary observations from the first of a two-stage educational intervention.

Objectives: Our goal is to improve the comfort of medical trainees’ (students and residents) engagement with a key component of medical decision-making: identification of a surrogate. We hypothesize that focused education on surrogates and health care proxies (HCPs) will lead to improved trainee comfort in trainee-patient discussion of medical decision-making.

Methods: The project has two stages – didactic and experiential. Residents and medical students in Internal Medicine participated in two 45-minute, interactive sessions about the process of designating a surrogate decision-maker. Prior to the first session, each participant completed an anonymous survey about their experience and comfort with completing a HCP. Each participant was also tasked with designating their own surrogate and completing a HCP. Email reminders were sent to the participants, as well as to those unable to attend, a 1 week, followed by 1-month intervals over a 4-month period. The final email includes an anonymous survey about the personal experience of designating a health care surrogate.

Results: We received 29 completed surveys from the didactic sessions. Interns (PGY-1) comprised 58% (17/29). 72% reported having prior education on HCPs – 7 of 19 interns, 7 of 7 PGY-2s, and 3 of 5 PGY-3s. 72% (21/29) said they had assisted patients in completing a HCP, 27% had personal or family experience in completing a HCP, and only 6% (2/29) had their own designated surrogate. 72% said they felt comfortable guiding a patient in completing a HCP. Of those who did not have their own surrogate, approximately one-third would each choose their spouse, parent, or sibling.

Conclusions: Most of our trainees have received education on HCPs and self-identify and being comfortable guiding patients through the process. However, most trainees do not have personal experience with HCPs, and very few have completed one for themselves. We question whether the current paradigm of medical training includes sufficient experiential education toward successful shared medical decision-making. These observations, along with future results from the next stage of this research, will help guide resident and medical student education across our health system.
Measuring the Impact of Palliative Care Services on Clinicians in the ICU

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Introduction: In the USA, approximately 20% of patients die in the intensive care unit or shortly after their hospitalization in the intensive care unit.1 Despite advances in medical technology, a large portion of patients admitted to the Intensive Care Unit (ICU) do not survive their hospital stay.2-6 Palliative Care Medicine is a subspecialty of practice in which the physician (and the IDT?) guides the patient and family along the course of the disease process, from diagnosis to death. The main elements of Palliative Care are “the assessment and treatment of physical and psychological symptoms, identification of and support for spiritual distress, expert communication to establish goals of care and assist with complex medical decision-making, and coordination of care.”7 Palliative Care is an expanding field7,8 but demands for the presence of palliative care specialists in some ICU settings are not met9,10. Due to the heavy mental and emotional efforts put forth in both palliative and critical care practice, there is a high incidence of physician burnout.10-15

Burnout Syndrome affects many clinicians who work in the ICU setting: over 20% of clinicians working in the ICU setting show some indication of this.11,12 Burnout syndrome consists of symptoms of emotional distress and exhaustion, overexertion, depersonalization, and a reduced sense of accomplishment.10,13,16-19 Burnout can lead to “poor well-being, suicidal ideation, decreased professionalism, and compromised patient care.”10,19-24 In the critical care setting, practitioners must often confront ethical and moral dilemmas. Since ethical challenges can place heavy emotional burdens on clinicians, moral challenges can add to one’s sense of burnout.18,19

Moral distress occurs when one is prevented from doing what one believes is morally or ethically right.19,25 Critical Care scenarios are particularly challenging to providers in the realms of ethical and moral substance. Moral residue is the leftover effect of a moral distress episode19: Webster and Bayliss describe it as “that which each of us carries with us from those times in our lives when in the face of moral distress we have seriously compromised ourselves or allowed ourselves to be compromised.”26 As moral residue increases over time, the severity of one’s symptoms increases, potentially leading some to leave their jobs.19,27 Increases in moral residue can lead to increased episodes of emotional distress.19,27

The purpose of this survey was to quantitatively measure and assess rates of burnout among Intensive Care Unit clinicians and to determine the extent to which the presence of a palliative care physician reduces clinician burnout and moral distress. All responses were recorded anonymously.
Fulminant Liver Failure Caused by Dual Immunotherapy for Malignant Melanoma

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A 70 year old male with metastatic malignant melanoma on immunotherapy with nivolumab and ipilimumab was sent to the hospital by his oncologist for abdominal pain and elevated liver enzymes. His labs were notable for AST 275, ALT 1138, alkaline phosphatase of 394 and total bilirubin of 3.94. This patient had no known history of liver disease and had baseline normal liver enzymes. An abdominal CT ruled out hepatic metastases. Extensive infectious, autoimmune and toxicology evaluations returned negative. The patient was started on IV corticosteroids for suspected immune related hepatitis, with subsequent improvement in liver enzymes. The patient was discharged on oral steroids and abstained from further immunotherapy, but was readmitted five days later with fever, confusion, and was found to be in acute fulminant liver failure, with alkaline phosphatase of 225, AST of 1506 and ALT of 3190. His MELD score of 10 rose to 33 during his course of admission. The patient was covered empirically with broad spectrum antibiotics for suspected sepsis. He was treated again with corticosteroids for suspected immune related hepatitis, vitamin K for coagulopathy, and hydration. He was started on rifaximin and acetylcysteine. The patient remained lethargic and encephalopathic. The patient was deemed not a candidate for liver transplant given his metastatic melanoma. His family requested palliative and comfort measures, and the patient later expired after being transferred to inpatient hospice.

Immunotherapy is an emerging treatment which has been found in randomized controlled trials to increase survival and progression-free periods for a number of solid tumors. Immunotherapy promotes T cell activity to generate an antitumor effect, however studies have found as many as 85% of treated patients experienced toxicities including colitis, renal dysfunction and hepatitis. Ipilimumab and nivolumab have been associated with hepatic infiltration of T cells, resulting in immune-mediated hepatitis affecting 13% of patients, a higher rate than when these agents are used individually. This patient experienced acute hepatic failure in the absence of previous hepatic disease suggesting that the dual agents may have synergistic hepatotoxicity. Immune related hepatitis is typically treated with high dose corticosteroids. Here we report an unusual case of fulminant hepatic failure secondary to dual immunotherapy which did not respond to steroids.

It is important to recognize immune related organ damage in patients undergoing immunotherapy for solid tumors. Early intervention with high dose steroids may reverse immune mediated damage in some cases. Other therapeutic options include mycophenolate and TNF inhibitors. Larger studies will be necessary to investigate if patients may benefit from evaluation for pre-existing liver disease prior to initiating dual immunotherapy or routine liver enzyme monitoring while undergoing therapy.
An Innovative Hospital Medicine Elective: Not Just another Floor Month

Gabbidon AD, Kast C, LaVine S, Raimo J.

**Background:** Hospital Medicine is a rapidly growing specialty and a higher percentage of patients are under the care of hospitalists across the country. Like other internal medicine subspecialties, an increasing number of residents have expressed interest in a career in hospital medicine and have requested an elective in the field. In prior years our Hospitalist Elective consisted of little more than a traditional inpatient medicine rotation and was often viewed as just another floor month. The challenge facing programs is how to design an elective experience that showcases both the clinical and non-clinical aspects of academic hospital medicine. As the need for new hospitalists grows, divisions need to find high quality applicants with an understanding of what academic hospital medicine entails. Our goal was to improve our Hospitalist Elective to move from a more traditional floor rotation to more accurately depict the day to day experience of an Academic Hospitalist.

**Methods:** The new elective includes clinical time on a non-resident covered accountable care unit, orthopedic surgical perioperative comanagement, and medical management of psychiatric patients at an inpatient psychiatric facility. Additionally rotators participate in committee work and attend a series of short lectures in areas of hospital medicine, i.e. an introduction to quality improvement, medical clearance for the surgical patient, and pain management in the inpatient setting. Rotators also attend our division’s weekly academic conference on topics pertinent to hospital medicine.

**Results:** Residents who completed the revamped elective were surveyed (response rate = 78.6%). Residents were asked to rate their comfort level with various aspects of hospital medicine as compared with prior to the elective. The percentage of residents who felt comfortable or very comfortable in these aspects were: Surgical comanagement – 73%; Perioperative care – 73%; Inpatient consultations – 82%; Psychiatric comanagement – 73%. 82% reported good or very good understanding of the non-clinical aspects of hospital medicine and how the non-teaching service functions. Resident satisfaction with the elective was 91% and the same percentage rated good or very good understanding of what a career in hospital medicine entails.

**Conclusions:** We developed an innovative and highly-rated Hospital Medicine elective that lead to high comfort levels among resident rotators in the areas of surgical and psychiatric comanagement, perioperative care, and inpatient consultations. Additionally a high number of rotators reported a good understanding of careers in hospital medicine. Our hope is that this experience allows trainees to be more confident with a career choice in hospital medicine and helps our division retain more graduating residents. Future directions include expansion into other venues of hospital medicine i.e. discussion of hospitalist metrics, billing, teaching to teach, and patient satisfaction.
Clinical Significance of Nonsustained Ventricular Tachycardia on Stored Electrograms in Permanent Pacemaker Patients

Gabriels J, Wu M, Rosen L, Patel A, Goldner B.

**Background:** Permanent pacemaker electrograms record a variety of arrhythmias including nonsustained ventricular tachycardia (NSVT). Little has been reported regarding incidence and clinical significance of NSVT in pacemaker patients after long term monitoring.

**Methods:** Records from all patients implanted with Medtronic pacemakers at a single institution from January 1st 2009 through February 27th 2012 were reviewed. Demographic characteristics, imaging studies, pacemaker interrogations and the Social Security Death index were examined in patients older than 18 years of age who had ≥ 2 follow-up device interrogations.

**Results:** A total of 262 patients with an ejection fraction (EF) > 40% were included in the final analysis with a mean follow up of 29.2 months. Of these patients, 83.2% (n = 218) had hypertension (HTN) and 45.4% (n = 119) had NSVT. Among patients with an EF≥55%, hypertensive patients had a NSVT burden 2.46 times greater than normotensive patients (incidence rate ratio: 2.46, 95% CI: 1.10-5.50; P < 0.028). NSVT was not associated with increased mortality (P < 0.1229).

**Conclusion:** In this cohort of patients there was a high prevalence of HTN and while hypertensive subjects had a significantly higher NSVT burden, NSVT was not associated with an increased mortality.

**Key Words:** Permanent pacemaker, Hypertension, Nonsustained ventricular tachycardia

**Abbreviations:** NSVT: nonsustained ventricular tachycardia
Embolization of Watchman Device Following a Hybrid Radiofrequency Ablation of Atrial Fibrillation and Watchman Implantation Procedure


Introduction: Watchman device embolization occurs rarely post-implant. It is unclear whether performing a hybrid procedure involving an atrial fibrillation ablation and Watchman implantation leads to a higher rate of Watchman embolization.

Methods and Results: This case describes a twenty-four year-old male who underwent a concomitant atrial fibrillation ablation and implantation of a Watchman device. Forty-eight days later the device had embolized to his abdominal aorta and was subsequently retrieved.

Conclusion: To our knowledge, this is the first reported case of an embolized Watchman device following a combined atrial fibrillation ablation and Watchman implantation procedure.

Key Words: Atrial Fibrillation, Ablation, Complications, Embolism, Watchman
Background/Aims: Opiate use for inflammatory bowel disease (IBD), particularly high-dose (HD) use, is associated with increased mortality. It's assumed that opiate use is directly related to IBD-related complaints, although this hasn't been well defined. Our goal was to determine the indications for opiate use as a first step in developing strategies to prevent or decrease opiate use.

Methods: A retrospective cohort was formed of adults who were diagnosed with IBD and for whom outpatient evaluations from 2009 to 2014 were documented. Opiate use was defined if opiates were prescribed for a minimum of 30 days over a 365-day period. Individual chart notes were then reviewed to determine the clinical indication(s) for low-dose (LD) and HD opiate use.

Results: After a search of the electronic records of 1,109,277 patients, 3,226 patients with IBD were found. One hundred four patients were identified as opiate users, including 65 patients with Crohn's and 39 with ulcerative colitis; a total of 134 indications were available for these patients. IBD-related complaints accounted for 49.25% of the opiate indications, with abdominal pain (23.13%) being the most common. Overall, opiate use for IBD-related complaints (81.40% vs. 50.82%; P=0.0014) and abdominal pain (44.19% vs. 19.67%; P=0.0071) was more common among HD than among LD.

Conclusions: Our findings show that most IBD patients using opiates, particularly HD users, used opiates for IBD-related complaints. Future research will need to determine the degree to which these complaints are related to disease activity and to formulate non-opiate pain management strategies for patients with both active and inactive IBD.
Percutaneous Feeding Tubes in Patients with Advanced Dementia: Why Are Physicians Not “Choosing Wisely®”?


**Background:** Despite national recommendations against percutaneous endoscopic gastrostomy (PEG) tube placement in patients with advanced dementia (AD), PEG tubes are still commonly offered, requested, and utilized in this population.

**Objective:** To evaluate current knowledge and perceptions of physicians about the AGS/ABIM *Choosing Wisely®* recommendations regarding PEG tube use in patients with advanced dementia (AD).

**Design:** A multicenter, anonymous questionnaire administered to physicians.

**Setting:** Three tertiary care and four community hospitals in NY.

**Participants:** Medicine and medicine-subspecialty physicians.

**Measurements:** Investigator developed measures of physician knowledge and perceptions of PEG feeding in patients with AD.

**Results:** Our sample (N=168) consisted of physicians. The majority (98.8%) had cared for patients with AD and 82% had been involved in PEG decision-making. Over a third (37.6%) of physicians were unsure whether the *Choosing Wisely®* recommendations advise for/against PEG tubes in AD patients. Physicians who agreed that “there is enough evidence to recommend against PEG placement for patients with AD”, were significantly more likely to know the recommendation (83.33% vs 16.67%, p<0.0001). Half (51.8%) felt “in control” of the decision to place a PEG and patient/decision-maker request (70.2%) was the most common factor influencing physicians’ decision. A quarter (26.5%) expressed concerns about potential litigation. Almost all (96.3%) would not want a PEG tube if they had AD.

**Conclusions:** Physicians do not strongly advocate against PEG placement in patients with AD, despite scientific evidence recommending against its use, in a healthcare system which provides incentives for PEG placement. Initiatives such as *Choosing Wisely®* along with change in culture, policy, and financial incentives, can increase physician utilization of evidence-based practice that will alter health care practice.
A Case of Small Bowel Perforation in an Ecuadorian Female with ATLL.

Goldberg B, Seetharamu N.

Introduction: Adult T cell leukemia-lymphoma, also known as ATLL, is formally defined as the peripheral T cell neoplasm that is associated with an infection with the human T-lymphotropic virus type 1 (HTLV-1). HTLV-1 is a retrovirus that infects around 10-20 million people around the globe as estimated by studies of seroprevalence. Disease is only associated with approximately 5% of these individuals. The onset of this illness is typically delayed for around 20-30 years after the viral infection. HTLV-1 is endemic in southern Japan, the Caribbean, South America, the Melanasian islands, Papua New Guinea, the Middle East, and in West, Central and Southern Africa.

Several clinical variants of ATLL have been described. The four major groups of variants include acute, lymphomatous, chronic, and smoldering, and they all have unique genomic profiles and clinical courses. The most common of these is the acute variant, and occurs in around 60 percent of cases. These patients often present with systemic symptoms, organomegaly, lymphadenopathy and circulating malignant cells. 40-50 percent of these patients will have hypercalcemia at presentation. In the following case, we encountered a woman who presented with disease in this very manner.

Our patient was a 70 year old Spanish speaking female from Ecuador (immigrated in 1986 to USA) with a history of diabetes, hypertension, arthritis, osteoporosis and hypothyroidism who initially noted a rash and swelling over her face in October 2016. She was evaluated by her primary medical doctor who thought it was a possible drug reaction and prescribed her an oral steroid. This actually resulted in the rash becoming worse, and she went to see a dermatologist. The dermatologist prescribed topical treatments and took punch biopsies. The punch biopsy showed CD30+ cells in the epidermis with TCR gamma immunostain negative, CD25+, TCR beta gene rearrangement +, which was consistent with a clonal lymphoid population infiltrating the epidermis likely representing a t-cell lymphoproliferative disorder. In December 2016, she was evaluated by an oncologist but on December 27th was admitted to Long Island Jewish medical center with constipation and severe abdominal pain and was found to be hypercalcemic. The patient was treated with zolendronate and IVFs with improvement in symptoms of hypercalcemia as well as normalization of serum calcium levels. Flow cytometry at that point from peripheral blood was found to have an aberrant T-cell population which represented 36% of the cells and was + for TCR alpha/beta, CD2, CD3, CD5, CD4, and partial CD38, and was negative for CD7, CD8, CD 16, CD 56, and CD 34. B cells were also seen to be decreased which was consistent with a T-cell lymphoproliferative disorder. At this time, HTLV-1 serology was sent and bone marrow biopsy was performed which showed involvement by peripheral T-cell lymphoma with trilineage hematopoiesis with maturation present. Cytogenetics showed a normal female karyotype, with FISH showing deletion of 5’ region of BCL6 gene in 17.5 % of cells, which did not affect diagnosis. Patient was discharged in stable condition with short interval hematology follow up.
Acute Psychosis in a Patient with Multiple Sclerosis  
Gong J, Khanin Y, Kurian L.

Case Presentation: A 49 year old female with a history of Depression and Multiple sclerosis (MS) presented with acute psychosis in the setting of recent polysubstance abuse. The patient endorsed both visual and auditory hallucinations; stating she saw bugs and could hear her dead father calling her. The patient’s only other known psychotic episode occurred 10 years prior and was attributed to steroids administered for an MS flare.

On initial evaluation in the ED the patient was found to have a toxicology screen positive for Cocaine, Cannabinoids, Benzodiazepines. A head CT scan revealed a new hypodense lesion in the left frontal lobe. The psychosis was originally attributed to recent cocaine use, however the patient’s delusions persisted. An MRI revealed 5 ring lesions in the left cerebral hemisphere that were consistent with acute plaques of demyelination (figure 1). The patient was started on IVIG for 5 days. Her hallucinations and delusions dissipated shortly after IVIG therapy, however the patient did not return to her cognitive baseline during hospitalization.

Discussion: Multiple sclerosis is an inflammatory disease of the central nervous system, causing motor and sensory impairment by progressive demyelination. The neurological manifestations of MS are well known, but involvement of psychiatric presentations are relatively limited.

Our patient had one episode of steroid induced psychosis upon initial diagnosis 10 years prior to admission, however, her presentation could be confounded by her co-ingestants including cocaine, alcohol and benzodiazepines. Brief psychotic episodes – mainly comprising religious or persecutory delusions and hallucinations – have been associated with MS. Psychosis in MS distinctly differs from schizophrenia as it has a later age of onset, quicker resolution, fewer relapses, better response to treatment and a better prognosis. Our patient’s frontotemporal involvement as revealed on MRI could explain her cognitive dysfunction.

Our patient had gone over 10 years without an MS flare. We suspected that the patient was non-compliant with her Fingolimid, which led to a severe MS exacerbation with cognitive and psychotic features.

Conclusion: As in this case, psychosis caused by active MS exacerbation should be considered when certain territories are involved and after alternate etiologies have been entertained.
Acute Respiratory Failure caused by HTLV associated Adult T-Cell Lymphoma  
Gong J, Melamud A, Koenig S.

**Introduction:** Pulmonary manifestations are frequently seen with HTLV associated Adult T-Cell Lymphoma (ATLL), in the form of opportunistic infections and rarely with acute respiratory failure requiring ventilator support directly related to lymphadenopathy from ATLL.

**Case Presentation:** A 75 year-old Jamaican male presented with 8-months of worsening dyspnea, productive cough and weight loss. Eight months prior to admission, he was diagnosed with chronic sinusitis requiring surgical drainage. His chronic cough persisted, which prompted CT imaging, where imaging revealed left-sided hilar lymphadenopathy. Transbronchial needle aspiration revealed necrotizing lymphadenitis and culture from an alveolar lavage revealed numerous organisms including: pseudomonas, streptococcus viridans, aspergillus flavus, and Pencillium species. Despite antimicrobial therapy, his symptoms progressed ultimately requiring non-invasive ventilator support, and was transferred to our tertiary care hospital for further diagnosis and treatment. He denied recent travel, alcohol, or illicit drug use or high risk sexual behaviors. Repeat CT of the chest revealed significant lymphadenopathy with a necrotic central mass and left lower lobe atelectasis. Bronchoscopy showed purulent material in all bronchial segments of the left lung and a large mass obstructing the left lower lobe bronchi and a bronchoesophageal fistula. Biopsy of a sub-carinal lymph node revealed: large atypical lymphocytes, with flow cytometry consistent with peripheral T cell lymphoma. Serum samples revealed HTLV-1 positive serology.

**Discussion:** The prevalence of HTLV-1 in the US has been reported at 0.1-0.2% and only a minority of these patients will develop ATLL. Pulmonary manifestations from ATLL are rare, and most cases of respiratory failure occur from opportunistic infections rather than direct tumor involvement. Typical systemic findings of HTLV-1 ATLL include hypercalcemia, hepatosplenomegaly, jaundice, and metastatic bony involvement, which were not present in our case. His initial diagnosis of sinusitis, pneumonia and necrotizing lymphadenitis along with his weight loss and dyspnea undoubtedly was related to his ATLL. Initiation of chemotherapy with CHOP and placement of an esophageal stent improved his respiratory status; however, he died from respiratory failure 4 weeks later.

**Conclusions:** This case represents a rare presentation of pulmonary HTLV-1 ATLL and highlights the need for a high clinical suspicion in patients from endemic populations present with mediastinal lymphadenopathy and constitutional symptoms.
A Rare Case of Perineal Abscess Caused By Aerococcus Urinae

Ha L, Niknam N, Mankame S, Koshy R.

Aerococcus urinae, a previously misidentified pathogen, has become increasingly recognized to cause severe and even fatal infections. Aerococcus-related perineal abscess infections have not previously been reported in the literature. Most reported cases of infections caused by Aerococcus are urinary tract infections, bacteremia, and even rare cases of endocarditis. We report an unusual case of a perineal abscess caused by Aerococcus urinae.

Introduction: Aerococcus is a gram positive organism that has been emerging as an important human pathogen, including Aerococcus urinae and Aerococcus sanguinicola [1–3]. Aerococcus urinae in particular has been associated with urinary tract infections [1,4,5], bacteremia [6–8] and rarely has been reported to cause endocarditis [8–12]. Aerococcus historically has been previously misidentified, and with more widespread use of improved diagnostic tools, such as matrix-assisted laser desorption ionization-time of flight mass spectrometry, there has been an increase in the identification of this pathogen [1,6]. Abscess infections due to Aerococcus species are exceedingly rare. To date, there is one case of a hip abscess due to Aerococcus urinae [13] and another case of a para-aortic abscess formation post-heart transplantation with Aerococcus viridians [14]. We report an unusual case of a perineal abscess where the causative pathogen isolated was Aerococcus urinae.

Presentation of Case: We present a case of a 54 year-old male with a history of autism, bipolar disorder, intellectual disability, and urinary incontinence that presented to the emergency department with scrotal swelling for the past day. In the emergency department, the patient was unable to provide any further history. From medical records from prior visits, the patient has had no surgeries in the past, no toxic habits such as smoking, alcohol use, or drug use, and his family history was noncontributory. His blood pressure was 131/83 and was found to be febrile with a temperature of 101.2F with a maximum temperature of 103F, tachycardic with a heart rate of 111 beats/min, and respiratory rate was 16 breaths/min saturating at 100% on room air. On physical exam, the patient was awake, but disheveled, disoriented and not following commands. Cardiac, respiratory, and gastrointestinal exam was unremarkable. The scrotum was noted to have swelling and erythema. Laboratory results were remarkable for a leukocytosis of 20k/uL (neutrophil predominance of 74% and bandemia of 5%). The patient was also found to have acute renal injury with a creatinine of 1.38 mg/dL and lactatemia of 1.8 mmol/L. Urinalysis was remarkable for pyuria with WBC >50 cells/hpf, leukocyte esterase concentration large, and RBC 10-25 cells/hpf. Blood and urine cultures were sent from the emergency department.
Think Rather Of Zebras: A Rare Case of Streptococcus Gallolyticus Bacteremia and Meningitis Associated With Strongyloides Stercoralis Infection in an AIDS Patient

Ha L, Doan T, Niknam N, Mankame S, Edwards B.

Summary: Streptococcus gallolyticus is a gram-positive organism that is associated with human infections, including bacteremia, endocarditis, biliary tract infection, neonatal infections, and meningitis. In this case report, we present an AIDS patient that was found to have Streptococcus gallolyticus bacteremia and meningitis in the setting of Strongyloides stercoralis infection. Streptococcus gallolyticus bacteremia associated with Strongyloides stercoralis has been reported in the literature; however, it is rarely seen in the setting of AIDS.

Background: Streptococcus gallolyticus causing meningitis is rare. In the literature, a cohort study by van Samkar et al. found that only 5 of 1561 patients in their cohort were found to have Streptococcus gallolyticus infections [1]. They also identified through a literature search that 14 of 42 patients with Streptococcus gallolyticus meningitis also had strongyloidiasis, and in 13 the strongyloides infection was associated with an underlying disease such as HTLV-1, HIV, or immunosuppressive medications.

In this case report, we present a case of an AIDS patient that was found to have Streptococcus gallolyticus bacteremia and meningitis in the setting of Strongyloides stercoralis infection. This presentation is exceedingly rare with only two other reported cases in the literature [2-3].

Case Presentation: A 35 year old HIV-infected male presented to the emergency department after waking up during the night with stomach pain, headache, photophobia, and fever. He self-administered aspirin with moderate relief. He began to have emesis and requested his partner to bring him to the hospital.

His medical history was significant for HIV on Stribild, which he was not taking consistently, hypertension, and alcohol use. The patient endorsed heavy drinking over the past 1.5 years. He was not using drugs, however, had used marijuana, cocaine, and ecstasy in the past, and smoked cigarettes occasionally. His family history was significant for hypertension and lupus. The patient was from Peru and immigrated to the United States when he was 14 years old. He has been living with his male partner for the past 6 years with one dog and two birds. His surgical history was significant for liposuction and anal wart removal.
The Role of Inspiratory Muscle Function in Obesity Hypoventilation Syndrome

Introduction: Obesity hypoventilation syndrome (OHS) is associated with reduced central ventilatory drive. The role of respiratory muscle dysfunction, which affects transduction of neural drive to ventilation, has not been established. [1,2]
We investigated respiratory muscle function in stable, untreated, eucapnic and hypercapnic, obese, OSA patients using ultrasound assessment of diaphragm function, maximal inspiratory pressure (PImax), and noninvasive measurement of tension time index of inspiratory muscles (TTmus) [3]. TTmus reflects functional reserve of inspiratory muscles as expressed by the duty cycle and magnitude of inspiratory muscle pressure generation during tidal breathing in relation to maximal capacity [4]. The fatiguing threshold for TTmus was previously determined to be 0.33 [3].

Methods: Patients underwent PFTs and polysomnography with transcutaneous CO2 monitoring. Ultrasound measurements included inspiratory and expiratory diaphragm thickness during tidal breathing. TTmus (PI/PImax x Ti/Ttot) was assessed by extrapolating PI from the mean of several P

Results: Obese hypercapnic, compared with eucapnic OSA subjects, had lower FEV1, FEV1/FVC, and TLC. Overall AHI was significantly higher with a greater T90%. PI max was lower in the hypercapnic group along with increased diaphragm thickness and TTmus.

Conclusions: The obese hypercapnic group demonstrated reduced inspiratory muscle strength with greater inspiratory/expiratory diaphragm thicknesses and TTmus. The reduction in PImax may contribute to hypoventilation. Higher TTmus indicates inspiratory muscles in the hypercapnic group are closer to the fatiguing threshold potentially impairing ability to compensate for ventilatory loads contributing to development of hypercapnic respiratory failure. The etiology of respiratory muscle dysfunction in OHS may be due to more severe hypoxia and hypercapnia. The greater AHI in the hypercapnic group results in more inspiratory muscle loading due to repeated ventilatory efforts against an occluded upper airway. Lower FEV1 and TLC in the hypercapnic group indicates more severe restrictive ventilatory defect that contributes to greater mass loading of the respiratory muscles. These factors may lead to diaphragm hypertrophy and dysfunction in OHS.
The Role of Race in the Management of Peanut Allergy

Hamzavi Abedi Y, Sison C, Ponda P.

**Introduction:** Food specific IgE levels are used to predict the likelihood of clinical reactivity. Recent publications have implicated race as a factor in food sensitization, but how this may affect management of food allergy (FA) has not been elucidated. The primary objective of this study was to identify the impact of race on the rate of decline in peanut IgE.

**Methods:** We conducted a retrospective chart review of 250 patients, aged 0 to 17 years, of which 193 were diagnosed with peanut allergy. Peanut IgE levels, obtained during clinic visits between 01/01/2001 and 05/31/2016 were reviewed for each subject. A mixed models approach to repeated measures analysis of variance (RMANOVA) was used to compare race groups (White, Black, Asian) with respect to the patterns of change in peanut IgE over time.

**Results:** A significant increase in peanut IgE over time was observed among all races (p<0.0002). The rate of change in peanut IgE over time was not significantly different between Black, White and Asian children, after adjusting for age and atopic dermatitis. White and Asian children showed an increasing trend in peanut IgE, while Black children demonstrated a decreasing trend over time (p<0.099).

**Conclusion:** Our data show an increase in food allergic individuals’ peanut IgE over time across races. Although the rate of change was not significantly different between races, larger studies exploring factors (changes in testing methods, food avoidance, increasing sensitization, etc.) for the noted increase are warranted. Understanding the changes in peanut sensitization over time is a crucial step in determining likelihood of clinical reactivity.
Success of Lumen Apposing Metal Stents (LAMS) For Drainage of Pancreatic and Gallbladder Collections: A Meta-Analysis  
Han D, Sumant I, Miller L, Lee C, Trindade A.

**Background and Aims:** EUS guided transmural drainage using lumen apposing metal stents (LAMS) is becoming a popular and promising therapeutic approach for drainage of intra-abdominal fluid collections. There has been an increasing number of studies evaluating LAMS for drainage of pancreatic pseudocysts (PP), walled off pancreatic necrosis (WOPN), and gallbladder (GB) drainage. The aim of this meta-analysis is to analyze the literature to date regarding the clinical success, technical success and adverse events of LAMS in treatment of pancreatic fluid collections and gallbladder drainage.

**Methods:** A systematic search was performed of MEDLINE, EMBASE, CINAHL, the Cochrane central register of controlled trials and the Cochrane Specialized Trials Register for publications from 1/2010 through 9/2016 using the keywords ‘endoscopic drainage’, ‘lumen apposing metal stent’, ‘AXIOS (Boston Scientific, Natick, MA)’, ‘pancreatic fluid collections’, ‘pancreatic pseudocyst’, ‘walled off necrosis’, ‘gallbladder drainage’, ‘acute cholecystitis’. Human studies with at least 10 subjects were included which examined the efficacy, feasibility and safety of LAMS in treating PP, WOPN and GB drainage. Pooled clinical success, technical success and adverse events were calculated. A random effects meta-analysis using the restricted maximum likelihood (REML) method was conducted. Heterogeneity across studies was assessed using the $Q$ statistic, the $I^2$ statistic, and $\tau^2$. All statistical analysis were conducted in Open Meta-Analyst software version 4.16.12 (Tufts University).

**Results:** A total of 1114 patients (701 – WOPN; 222 – PP; 191 – GB drainage) underwent drainage from 21 trials. For drainage of WOPN, the pooled technical success was 98.9% (95% CI: 98.2% to 99.7%) and clinical success was 88.5% (95% CI: 84.8% to 92.2%) ($\tau^2 = 0.003$) (Figure 1). For drainage of PP, the pooled technical success was 97.4% (95% CI: 95.3% to 99.4%) and clinical success was 97.8% (95% CI: 95.9% to 99.7%), ($\tau^2 = 0.000$) (Figure 1). For GB drainage, the pooled technical success was 95.5% (95% CI: 91.6% to 99.4%) and clinical success was 92.0% (95% CI: 86.8% to 97.3%), ($\tau^2 = 0.001$) (Figure 1). Adverse events occurred in 10% of patients. There was no evidence of publication bias in this meta-analysis.

**Conclusions:** EUS guided transmural drainage using LAMS is a promising therapeutic approach for the treatment of PP, WOPN and GB drainage with high clinical and technical success rates and few adverse events. Limitation of this meta-analysis is the retrospective nature of the selected studies. Further prospective randomized trials reporting long term clinical efficacy and cost-effectiveness are needed to validate LAMS as a therapeutic modality for pancreatic and gallbladder collections.
31-year-old homeless male, Jehovah’s Witness, with a history of sickle cell disease (admitted 1 month prior for pain crisis), presented with 2 days of lower back and lower extremity pain. His presenting BUN was 62 mg/dL, creatinine 2.93 mg/dL, total bilirubin 5.9 mg/dL, and hemoglobin 3.7 g/dL with a Hemoglobin S fraction of 95%; transfusions were deferred secondary to religious beliefs. During his admission, vital signs remained stable, but his pain became difficult to control on IV narcotics, along with worsening jaundice, epistaxis, and anuria. After repeated discussions of risk versus benefit, the patient agreed to blood product transfusion; subsequent labs showed a total bilirubin of 76 mg/dL (direct fraction of 65 mg/dL), PT 36 sec, aPTT 172 sec, INR 3.3, creatinine 5.4 mg/dL, with AST 83U/L, ALT 25U/L, and GGT 140U/L. Viral hepatitis and autoimmune panel were negative. A non-contrast abdominal MRI showed cholelithiasis, new cirrhosis, and biliary ductal dilation with an 8-mm stone in the common bile duct. He received 15-units of packed red blood cells, fresh frozen plasma, and prothrombin complex concentrate, as well as exchange transfusion twice, which improved his anemia and decreased his HbS fraction to 7%. However, his symptoms persisted, including requiring medical intensive care unit transfer for urgent hemodialysis due to uremic bleeding. Despite extensive therapy, his liver failure progressed to overt coagulopathy with multiple subdural bleeds, multi-organ failure, and eventual death.

**Discussion:** Sickle cell disease (SCD) is a common hematologic condition but its hepatic manifestations (under the umbrella term “sickle cell hepatopathy”) pose particularly significant challenges. Our patient had Sickle Cell Intrahepatic Cholestasis (SCIC), a rare (only about 50 reported cases) but fatal condition, thought to arise from deformed red blood cell adhesion to the hepatic vascular endothelium, leading to congestion and tissue ischemia. Liver biopsy is a relative contraindication in active sickle crisis but direct bilirubin is a mortality predictor. Numerous case reports have advocated early & aggressive exchange transfusion, sometimes for several months before clinical improvement. Currently, the role of liver transplantation is not clearly defined. Of note, hydroxyurea, which our patient was not taking, decreases pain crises but does not affect hepatic sequestration or overall mortality.

**Conclusion:** Our case presentation highlights SCD-induced acute liver failure and the vast differential diagnosis that can delay care and increase mortality risk. Often, hospitalists care for such patient populations during sickle crises and complications, and so should have a high index of suspicion. Although limited evidence shows the benefit of exchange transfusion in these instances, as our case demonstrates, this is unfortunately a condition that carries a high mortality.
CLL Pneumopathy: A Forgotten Diagnosis
Hilewitz A, Koenig SK, Khanijo S.

**Rationale:** Chronic Lymphocytic Leukemia (CLL) is the most common adult leukemia, particularly in older patients. Thoracic complications are prevalent, including pneumonia, pleural effusions, and drug toxicities. However, direct infiltration of the parenchyma is under-recognized due to its similarity in presentation to pneumonia. Limited data exists for the incidence of bronchopulmonary leukemic infiltrates (BPLI). One cohort of patients with pulmonary symptoms and radiographic signs of pneumonia had a 9% incidence of BPLI when a biopsy was performed. Physicians treating these patients may not consider BPLI a potential cause due to its similarity to pneumonia, but also due to radiology reports not including BPLI in the differential diagnosis. In this study, we reviewed radiology reports in a cohort of CLL patients with respiratory symptoms to determine if BPLI is offered as a potential diagnosis.

**Methods:** A retrospective chart review of 50 patients with CLL, pulmonary symptoms, radiography and lower respiratory track biopsy was performed. Each patient had a biopsy proven diagnosis of either infection, BPLI, or organizing pneumonia secondary to drug toxicity.

**Results:** Of 50 patients’ charts reviewed: 16 were infectious, 28 were BPLI and 6 were organizing pneumonia. In the group of infectious cases the median age was 64, 81% were male and 75% had a high Rai stage. The predominant radiographic interpretation was consolidation pattern. In the group with BPLI, the median age was 70, 72% were male, 71% had a high Rai stage and 85% had been on antibiotic treatment. The predominant radiographic findings were consolidation, ground glass opacities and tree-in-bud opacities. Lastly, in the group with organizing pneumonia, the median age was 72, predominantly male, all had a high Rai stage, and been treated with antibiotics. The predominant radiographic findings were ground glass opacities and consolidations. 47 of the 50 radiology reports did not list BPLI as a possible diagnosis.

**Conclusion:** The incidence of BPLI may be increasing due to longevity, advanced treatment paradigms, and recognition of biopsy for non-resolving infiltrates. The radiographic interpretation of chest CTs is invaluable in helping clinicians with a differential diagnosis, as a diagnosis of BPLI impacts the treatment plan. If BPLI is not offered as a differential diagnosis, treatment is often delayed. Of the 28 BPLI patients reviewed only 2 had BPLI listed as a possible diagnosis. On the basis of these findings we recommend that in CLL patients with respiratory symptoms that BPLI be considered as part of the differential diagnosis.
A Fear of Ghosts? Corticosteroids May Not Affect Primary Lymphoma Biopsy Sensitivity

Holstead R, Silver J.

**Introduction:** Primary CNS lymphomas (PCNSL) are extra-nodal malignant non-Hodgkin lymphomas, arising anywhere within the CNS in the absence of a peripheral lymphoma. These are rare diseases, accounting for 3% of all CNS tumors [1] but have been increasing in prevalence, possibly due to aging population or improvements in diagnosis [2]. They carry a poor prognosis with a mean survival of 3 years following diagnosis. PCNSL usually present with cognitive dysfunction and focal neurological symptoms dependent on their location [3]. Diagnosis is made with pathological analysis of tissue biopsy. Up to 12% of confirmed PCNSL require a repeat biopsy to make the diagnosis. In order to maximize biopsy yield, the general recommendation is to avoid corticosteroids until biopsy has been completed [4].

**Case:** Patient is a 81 year old male with a past medical history of atrial fibrillation, not on anticoagulation, hypertension, depression who presented following a fall at home. Per patient’s family, over the preceding three days, he had become increasingly forgetful, confused and lethargic. For the past 4 months, he had been depressed following his wife’s death, however he had remained independent for all ADLs until this acute change. He reported vertigo, but denied fever, cough, chest pain, nausea, vomiting, night sweats, loss of consciousness, diplopia, weakness, dysuria, or urinary frequency. He stated that his wife was still alive and living at home with him. His home medications include aspirin 81 mg, enalapril-hydrochlorothiazide 10 mg-25 mg daily, metoprolol ER 25 mg daily. On admission, patient was afebrile, blood pressure 164/77, heart rate 79, and had an SpO2 100% on RA. He was only oriented to self, but otherwise exam was unremarkable. CT head without contrast revealed a 3.3 x 5.7 x 3.5 cm isodense-to-hyperdense lesion in the left temporal and anterior occipital lobes with surrounding vasogenic edema. There was a 3 mm left-to-right shift. An MRI of head with gadolinium contrast was scheduled. Patient was unable to initially complete this study due to his confusion, resulting in a three-day delay in order to have the study performed under anesthesia. MRI revealed diffuse enhancement of ependymal lining of lateral ventricles with a focal enhancing mass in the left temporal lobe measuring 8.5 x 2.8 x 4 cm along with a peripheral nodular focus of enhancement in the left temporal region measuring 5 x 6 x 5 mm. He was scheduled for a stereotactic needle biopsy. The morning of the surgery, patient had a generalized seizure, and was started on valproic acid. Biopsy was performed without further complication. Dexamethasone 4mg IV Q6H was initiated following the biopsy. PCR analysis of the tissue revealed T-Cell population consistent with primary T-cell lymphoma.

**Discussion:** In 1984, Coca et al reported a case of a “ghost tumor”, which was a PCNSL that completely resolved on imaging following the administration of corticosteroids [5]. Further cases were published showing similar results, where biopsies were indeterminate. In all cases, this dramatic response to steroids was transient and the lymphoma would return no longer responsive to steroids [6,7]. Thus guidelines have evolved for diagnosis and management of PCNSL, which recommend avoidance of corticosteroids prior to biopsy to maximize diagnostic yield[1]. In 2005 a Norwegian retrospective case series of 74 patients looking at delays in diagnosis of PCNSL did not find a significant effect of pretreatment with steroids on non-diagnostic biopsies [8]. In 2008, a retrospective series looked at 109 patients diagnosed with PCNSL and did not find a statistically significant difference on steroid effect on biopsy yield. There has not been any large study comparing the use of steroids that has found a significant difference in biopsy rates [9]. The patient described in this case had a sudden development of symptoms, imaging showing a midline shift, and ultimately suffered a seizure prior to receiving a biopsy. This complication may have been avoided if corticosteroids were used to reduce the edema surrounding the tumor. Without larger scale studies, it is difficult to say at this time if the vanishing tumor phenomenon should be viewed as the exception or as the rule.
Diagnostic Utility Of Liver Biopsy In Patients With Abnormal Liver Blood Tests And Inconclusive Laboratory And Radiographic Evaluation.

Hung CK, Jirik A, Ullah M, Passi M, Bernstein D, Crawford J, Lee TP.

**Background:** A multitude of laboratory tests and advanced radiographic imaging are commonly used in the workup of abnormal liver blood tests. In equivocal cases, invasive liver biopsy remains the last diagnostic modality. However, it remains unclear whether liver biopsy is informative in this group of patients.

**Aim:** To evaluate whether liver biopsy demonstrates specific and diagnostic pathological abnormalities in guiding medical management in patients with abnormal liver blood tests and inconclusive laboratory and radiographic evaluation.

**Methods:** A retrospective study of all liver biopsies performed between January 2010 and December 2015 at Northwell Health System on patients age 18 years and older was conducted. Demographics, medical records, liver biopsy reports, and clinical courses were reviewed. Subjects with AST, ALT, and/or alkaline phosphatase (ALP) above 1.5 times the upper limits of normal on 2 or more occasions were included. Those with documented inconclusive laboratory tests for autoimmune disease, copper and iron overload disorders, viral hepatitis, sarcoidosis, and indeterminate hepatobiliary imaging (MRI, CT or ultrasound) were enrolled. Known drug induced liver injury was excluded.

**Results:** Of the 1505 patients who underwent liver biopsies, 52 met inclusion criteria. Males and females comprised 50% of the study population respectively. Mean age was 54.5 years. The average AST was 167.1 U/L, ALT 178.3 U/L, ALP 277.5 U/L. Twenty-six (50%) of biopsy reports noted a microscopic description of hepatitis with no clear etiology. Nine of these 26 patients had steatosis without steatohepatitis. Ten (19.2%) of the 52 patients had histologically confirmed steatohepatitis, all being overweight or obese with an average BMI of 39. Six of the 10 had increased echogenicity on imaging suggestive of steatosis.

In addition, there were 6 subjects with bile duct injury, 3 malignancies, 2 secondary hemochromatosis, 3 granulomas, 1 of mastocytosis, and 1 congestive hepatopathy. Overall, 26 (50%) of all the liver biopsies provided guidance in medical management.

**Conclusion:** Our study showed that liver biopsy is likely to be informative in patients with abnormal liver blood tests and inconclusive laboratory and radiographic testing. Although liver biopsy is invasive and has an inherent limitation of sampling error, pathological diagnoses have impact on half of our study patients. Therefore, clinicians need to be cognizant of the potentially favorable role of liver biopsy in the evaluation of this particular group of patients.
Lithium-Induced Dress Syndrome: A Rare Entity

Ibrahim F, Raghavan S, Chi J.

Case Presentation: A 31-year old woman with a history of bipolar disorder presented to the hospital with generalized coarse tremors of the extremities for 2 weeks duration following initiation of lithium for hypomanic episode. Initial vital signs were T 39 °C, HR 103 bpm, BP 98/59 mmHg, RR 16, and O2 saturation 100% on room air. Physical exam was remarkable for facial edema and coarse extremity tremors. Admission labs showed elevated lithium (Li) level 2.56 mEq/L, serum creatinine 2.88 mg/dl, and CPK 5316 u/L, suggestive of lithium toxicity. EKG revealed sinus tachycardia. Renal ultrasound and CT scan of the head were normal. The patient was admitted to telemetry for monitoring and aggressively resuscitated with IV crystalloids for AKI and rhabdomyolysis.

On day 2 of admission, the patient had a fever to 40 °C associated with new diffuse morbilliform rash over the chest and lower extremity swelling. Further studies showed elevated eosinophils, transaminitis, and worsening AKI. The patient became progressively oliguric with persistently elevated Li levels requiring transfer to the MICU for urgent hemodialysis. Her CPK and LFT’s continued to rise despite normalization of Li levels with hemodialysis. The patient’s clinical findings were consistent with drug reaction with eosinophilia and systemic symptoms (DRESS) due to lithium. Systemic corticosteroids were started immediately with resolution of her symptoms and normalization of CPK and LFT levels soon thereafter.

Discussion: DRESS is a rare type of drug hypersensitivity which occurs 2-8 weeks after drug initiation most commonly with use of antiepileptics, antibiotics and HAART. Diagnosis of DRESS requires three of the following criteria: acute rash, fever above 38 °C, lymphadenopathy at two sites, involvement of at least one internal organ, thrombocytopenia, or elevated lymphocyte or eosinophil counts. Li-induced DRESS is a rare occurrence with only a few case reports in the literature. The diagnosis can be challenging due to overlapping signs of Li toxicity including AKI and rhabdomyolysis. Our patient’s presentation of morbilliform rash and facial edema were initially concerning for an allergic reaction or even angioedema due to an unknown trigger. However, development of fever, eosinophilia, transaminitis, and worsening renal function led to a diagnosis of Li-induced DRESS. Treatment includes immediate discontinuation of the insulting drug, systemic corticosteroid therapy, and occasionally IVIG.

Conclusions: Diagnosis of DRESS is challenging due to its rarity, evolving diagnostic criteria, and lack of specific laboratory testing. Thorough medication review both on admission and hospitalization is essential for diagnosis. Lithium-induced toxicity is known to cause renal dysfunction and less commonly dermatoses, but the presence of fever, hematologic disturbance, or underlying organ involvement should raise suspicion for Li-induced DRESS.
High Risk Medication Discrepancies in Late Stage Chronic Kidney Disease

Ibrahim J, Sakhiya V, Fishbane S.

**Background:** Late stage chronic kidney disease (LS-CKD) is defined by glomerular filtration rate (GFR) 0-30 ml/min; but with patients not yet on dialysis. It is a period likely to be at high risk for medication errors because of the diminished renal clearance of medications, frequent hospitalizations and fragmentation of care between multiple physicians involved in patients’ treatment. In this study we sought to characterize high risk medication discrepancies in LS-CKD.

**Methods:** We analyzed patients enrolled in Northwell’s Healthy Transitions in Late Stage CKD program (funded by the CMS Innovations Center). All patients had GFR 0-30 ml/min (stage 4-5 CKD). Enrollment was from October, 2011 – September 2016. Medications were reviewed by a nurse at a home visit, which is the first direct program contact. The patient presents their medication bottles, with careful review for which medications are actually being used and how they are being taken. The patient’s medication usage and practice are compared to the nephrologist’s electronic health record (EHR) or other medication list. All discrepancies were characterized. We defined high risk discrepancies as those where the patient was, 1) not taking a listed medication, 2) taking a different dose, 3) taking a different frequency or any combination of these. Discrepancies with laxatives, vitamins or herbals were not considered high risk.

**Results:** All 716 patients enrolled were reviewed. There were 395 (55.1%) patients with medication discrepancies. Of patients with discrepancies, the number per patient ranged from 1-18. High risk for harm discrepancies occurred 553 times in 285 patients (39.8% of all patients). High risk discrepancies occurred most commonly with antibiotics, cardiovascular medications, analgesics and treatments for renal mineral and bone disorder. An examination of patients’ characteristics revealed none to be a significant predictor of high risk discrepancies.

**Conclusion:** High risk medication discrepancies are very common in LS-CKD. The lack of identified predictors indicated that all patients with LS-CKD are at high risk. Improved systems of care are needed to avoid medication errors and resulting patient injury.
Evaluation of House Staff Burnout and Work Environment: How Can We Help?

Izower M, Martinez J, Yacht A.

**Introduction:** Burnout is a stress reaction that adversely affects house staff health, patient care and satisfaction, and self-perceived errors. The ACGME is focusing on burnout management and mitigation, but methods to decrease burnout are needed. We sought to evaluate, source, and find means to improve house staff burnout.

**Methods:** A cross-sectional study of Northwell Health house staff was performed. House staff received a Mini-Z survey regarding burnout and work conditions, and 2 open-ended questions. Content analysis was performed on open-ended question responses.

**Results:** Among 1652 house staff surveyed, 611 responded (37%). High stress was present in 52%, and 24% reported burnout. 47% reported an excessively busy workplace. 32% felt dissatisfied with control of their work. 33% felt they had insufficient time for documentation. 11% described excessive home EMR time.

Responses to “What suggestions do you have that would improve your well-being?” were classified. Requested activities included more physical activity (59%) and social events (21%). Services included improved nutrition (29%) and an on-campus gym (25%). Support/work-life changes included decreased work hours (46%). Work flow/dynamic suggestions included EMR improvements (28%), more clinical support staff (23%), and better team dynamics (17%). Training/education suggestions included more educational time (35%).

Responses to “If you could change one thing to improve your work life, what would it be?” were classified. Requested work flow/dynamic changes included EMR improvements (44%) and more efficient workflow (19%). Program changes included reduced work hours (34%) and schedule improvements (20%). Services included improved nutrition (27%). Personal wellness suggestions included more exercise (34%) and sleep (19%).

**Conclusions:** Due to burnout’s deleterious effects, programs should seek to reduce house staff burnout. The Mini-Z survey is an efficient method to evaluate burnout and burnout sources, and feedback should be solicited to address burnout.

In our sample, sizable numbers of house staff were experiencing burnout. Many reported high stress, an excessively busy workplace, and dissatisfaction with their control of work, time for documentation, and home EMR use. House staff felt their wellbeing and work life would improve with changes to physical activity, exercise, nutrition, social activities, educational time, scheduling and work hours, clinical support staff availability, team dynamics, workflow, and EMR functionality. Programs should optimize these factors to decrease burnout.
With the advent of immune checkpoint inhibitors (ICI) as efficacious agents for cancer, there is increasing awareness of immune-related adverse effects (IRAE) that most often involve dermatologic, pulmonary, gastrointestinal and endocrine systems. Rheumatic complications of ICI reported thus far include arthralgias, myalgias, sicca syndrome, seronegative arthritis and inflammatory myositis. Herein, we report three unusual complications of ICI.

Case 1. A 68 year-old female with metastatic non-small cell lung cancer (NSCLC) and a prior history of Raynaud's syndrome developed a morbilliform drug reaction, conjunctivitis, sicca symptoms, bilateral hand and wrist arthritis, sclerodactyly, telangiectasias, and nailfold capillary dilation after receiving atezolizumab. The aforementioned scleroderma-like IRAE have not been reported to date.

Case 2. A 63 year-old male smoker with NSCLC developed symmetric polyarthritis shortly after the first infusion of nivolumab. RF was above 650 IU/mL, and CCP was above 250U. He required high doses of prednisone and methotrexate despite cessation of ICI therapy. Inflammatory arthritis can present as mild or severe, oligo- or polyarticular, but it is generally seronegative and often more resistant to therapeutic intervention than rheumatoid arthritis. Seropositivity was an aspect of his illness that warranted reporting.

Case 3. A 76 year-old female with NSCLC, Hashimoto’s thyroiditis and mild paraneoplastic dermatomyositis developed myalgias, muscle weakness and worsening erythematous rash nine days after receiving her third cycle of nivolumab. She had elevations of creatine kinase and thyroid-stimulating hormone. Her manifestations were consistent with worsening of underlying dermatomyositis and thyroiditis. She responded promptly to high doses of methylprednisolone with resolution of symptoms and normalization of CK. Observational studies suggest that up to 40% of patients with underlying autoimmunity will have a recurrence of their autoimmune disease following ICI therapy.

With the increased use of ICIs and increased survival of treated patients, the incidence, spectrum, characteristics and pathogenesis of rheumatic IRAE need to be better understood. The association of rheumatic IRAE with dose, and types of cancer needs to be investigated. In addition, the utility of screening for autoimmune disease prior to initiating ICI needs to be assessed. Treatment regimens that are safe to use in this patient population need investigation as well. Some of these issues will be addressed by the upcoming ASCO and NCCN guidelines expected later this year.
Hidden Beneath the Surface: A Case of Chronic Lymphocytic Leukemia Manifesting As Acute Kidney Injury and Pancytopenia.
Mehtadbéin K, Kello N.

Introduction: Chronic lymphocytic leukemia (CLL) is a neoplastic disease of B cells, usually involving hematopoietic organs such as the bone marrow, blood, lymph nodes, liver and spleen. There are rare instances where extra-hematopoietic manifestations can occur. This is a case of a patient presenting with acute kidney injury and pancytopenia treated for presumed lupus nephritis despite negative serologies with pulse steroids and subsequently develops worsening leukocytosis.

Case: A 55 year old female with no significant past medical history presents with recurrent fevers, polyarthritis and diarrheal illness. Labs reveal pancytopenia, AKI with peak Cr 5.26mg/dl, hematuria, subnephrotic proteinuria of 1.8 on spot ratio and hypocomplementemia. Chest radiography demonstrated slight left lower lobe pulmonary infiltrates and borderline mediastinal lymphadenopathy. ANA was 1:80 and all other secondary serological testing was negative, (ANCA, anti-GBM, cryoglobulins, hepatitis, HIV). The patient was started on pulse steroids (1gm for 3 days) for presumptive seronegative lupus nephritis with rapid improvement in renal function and resolution of pancytopenia within days. A kidney biopsy was performed during the resolution phase of the AKI. After steroids were started, the patient developed leukocytosis (up to 60 K/uL), with significant lymphocytosis and smudge cells noted on smear. Flow cytometry was consistent with small lymphocytic leukemia, a form of CLL. The bone marrow testing confirmed 20-30% involvement with CLL. The kidney biopsy confirmed resolving interstitial nephritis and tubular damage but was negative for any infiltrative malignant CLL cells.

Discussion: This patient’s case demonstrates the various manifestations, including both renal and rheumatologic complications of chronic lymphocytic leukemia. Interstitial nephritis has been reported with CLL and can respond to steroids alone albeit treatment of CLL. It is presumed to be a reactive inflammatory process from small pockets of malignant cells. Autoimmune processes have also been reported with CLL. The pancytopenia and clinical manifestation might have been a paraneoplastic autoimmune process seen with CLL. The patient’s kidney function is now normal and steroids are being tapered. The physician should be aware of renal insufficiency present in 7.5% of patients at the time of CLL diagnosis and in an additional 16.2% during the course of the disease.
Ormond’s Disease: A Case Report

Khan M, Chen P, Yoon J, Pereira S.

Case: A 32 year old male with recently diagnosed hypertension was admitted for worsening abdominal pain and 20 lbs of unintentional weight loss over 4 months. He reported intermittent abdominal pain for a year associated with constipation, nausea, nonbloody nonbilious emesis, and low back pain radiating to the legs with weakness limiting ambulation. Associated symptoms included difficulty urinating, lightheadedness, and dyspnea on exertion. He recently immigrated from Haiti two weeks ago. Physical exam was significant only for tenderness in the periumbilical area. Labs were significant for elevated inflammatory markers and acute kidney injury. CT chest/abdomen/pelvis demonstrated homogeneous soft tissue encasing the left kidney/adrenal gland, renal vessels, juxtarenal aorta and IVC with mild bilateral hydronephrosis, bladder wall thickening, retrocrural lymphadenopathy and chronic splenic vein occlusion. The initial diagnosis was lymphoma. IR performed left pararenal soft tissue core biopsy and FNA, which demonstrated increased IgG and IgG4 plasma cells (IgG/IgG4 <50%) consistent with IgG4 related disease/retroperitoneal fibrosis. Serum IgG was diffusely elevated. Serological and infectious workup was negative. The patient was started on prednisone with significant improvement in his abdominal pain and urinary symptoms. Repeat CT in two months showed improving retroperitoneal fibrosis with persistent, but decreasing right hydronephrosis. He was switched to mycophenolate as a steroid sparing agent.

Discussion: In our case, the encasement of the ureters explained the bilateral hydronephrosis and AKI on admission. Initially, this patient was suspected to have lymphoma; however, it is important to remember that both RF and lymphoma have similar presentations. CT imaging and histopathology can be utilized to differentiate: in RF, the fibrosis encases, but does not displace, the vessels as opposed to lymphoma, which does displace the vessels. As in this case, definitive diagnosis is made by biopsy demonstrating sclerosis and infiltration of mononuclear cells primarily IgG4 positive.

Conclusion: Retroperitoneal fibrosis (RF), or Ormond’s Disease, is a rare condition of unclear etiology characterized by chronic non-specific inflammation of the retroperitoneum. Idiopathic RF, accounting for 70% of cases, is an IgG4 related disease characterized by inflammation and fibrosis surrounding intraabdominal organs. Secondary causes of RF are drugs, malignancy, infection, radiation, surgery, and environmental exposures: smoking. Early symptoms are non-specific such as lower back pain, weight loss, nausea, vomiting, and fevers. Most cases will present after urologic or renal involvement. Choice of imaging is CT scan to visualize extent of fibrosis. Medical treatment of idiopathic RF is glucocorticoids, which alleviated this patient’s symptoms. Mycophenolate or methotrexate are used if unresponsive to glucocorticoids. This case is an important reminder of the subtle presentation of this rare disease.
An Unusual Presentation of Lupus.

Khanin Y, Gong J, Kurian L.

Case: A 45-year-old female with a history of GERD arrived with a 3-week history of pain in her phalanges with associated discoloration. She had a constant, severe, sharp pain in her fingers, which progressively worsened and was associated with bluish lesions on bilateral fingertips, palms, toes, and plantar surfaces of the feet. She endorsed chills, dysphagia, and a 15-pound weight loss since being diagnosed with GERD one year ago. Her outpatient EGD only revealed gastritis 6 months ago. She denied any fever, night sweats, other rashes, arthralgia, joint swelling, or myalgias.

During the hospitalization, a wrist brachial index with digit waveforms revealed diffuse vasospasm of the digits not improved with warming. She was subsequently started on Nifedipine and Imdur for possible vasospastic disease. A heparin drip was initiated for the possibility of small vessel vasculitis and microthrombotic disease given her lack of response to the calcium channel blockers and nitrate. Her rheumatology panel revealed a low C3 and C4, and elevated dsDNA, Anticardiolipin IgM and IgG consistent with SLE with possible small vessel vasculitis. She was started on steroids in addition to heparin and noted improvement of her pain and digital discoloration. The patient was transitioned to warfarin and prednisone for discharge.

Discussion: We present a case of single-organ cutaneous small vessel vasculitis secondary to SLE. The patient met two of the 11 ACR criteria for the classification of systemic lupus erythematosus; ANA and immunologic disorders. Based on the ACR criteria a person is said to have SLE if any 4 or more of the 11 criteria are present. A variety of vascular abnormalities can occur in patients with SLE. Our patient presented with vasospasms affecting the small arteries supplying the digits in the hands and feet.

We suspect that the vasospasms our patient experienced was a presentation of Lupus Vasculitis. Skin is the most commonly affected organ in Lupus Vasculitis, being involved in up to 85% of cases. Patients may present with palpable purpura, petechiae, papulonodular lesions, livedo reticularis, cutaneous infarction, erythematous plaques, erythema with necrosis, panniculitis, splinter hemorrhages and superficial ulcerations. Given the concern for microinfarction of her digits, the patient was started on anticoagulation with some symptomatic improvement. Cutaneous vasculitis often responds to antimalarials (hydroxychloroquine), dapsone, or thalidomide. Short courses of corticosteroids may also be used for a rapid response. The combination of high dose steroids with anticoagulation resulted in resolution of our patient’s symptoms. Skin and nerve biopsies are often required for confirmation of Lupus Vasculitis.

Conclusion: We present a case of Lupus Vasculitis who presented with single organ involvement. Skin is the most common organ system affected and it has a variable clinical presentation that may often be misdiagnosed.
“Can’t Seed, Can’t Pee, Can’t Climb a Tree”: A Case of Neurosarcoid Associated Myelopathy

Kim DH, Ahmad S.

A 42-year-old male with a history of T2DM, subacute bilateral LE weakness and paresthesia presented with UTI, urinary retention and anejaculation. One month prior to admission the patient was taken to the ED after a fall with worsening bilateral lower extremity weakness. An MRI of the lumbosacral spine was performed which showed an L5-S1 disk protrusion with S1 nerve root impingement and he was discharged from the ED. The patient returned to the ED with complaints of dysuria and difficulty voiding. He also reported sexual dysfunction as he was unable to ejaculate for the last 2 months. Upon examination he was found to have 4/5 BL lower extremity weakness as well as a positive Babinski’s sign. An MRI of the Thoracic spine showed diffuse edema and expansion of the thoracic spinal cord from C7-T7 levels with increased T2 signal. Present were underlying areas of nodular and patchy enhancement. A CT scan of the chest was performed to assess for possible lymphadenopathy which showed extensive enlarged mediastinal lymph nodes. A biopsy of a lymph node showed a granulomatous inflammatory process consistent with sarcoidosis. The patient was subsequently started on high dose steroids and after showing mild improvement, was discharged home. Sarcoidosis is a multisystem disorder of unknown etiology characterized by the accumulation of non-caseating granulomas in involved tissues. Neurosarcoidosis represents just 5% of all patients with sarcoidosis and with less than 1% of patients having spinal cord sarcoidosis. The most commonly presenting symptom of neurosarcoidosis is cranial nerve deficit, with only 10% of the patients presenting with myelopathy. Diagnosing neurosarcoidosis can be challenging as no single serum or imaging test is specific or sensitive enough for a conclusive diagnosis. Often diagnosis is via an extra-neural biopsy of a granuloma since a biopsy of the brain, spinal cord or meninges can be technically difficult and poses greater risk to the patient. No randomized, double blind treatment trials have been performed for neurosarcoidosis. The current treatment recommendation is administering an initial high dose of steroids with immunosuppressive therapy for chronic/recurrent neurosarcoid. As demonstrated in this case it is important for the inpatient team to isolate and localize the CNS lesion via a thorough history and examination of patients presenting with new onset myelopathy. Spinal cord sarcoidosis is an uncommon cause of myelopathy but should be considered in the differential diagnosis in patients with new spinal cord lesions. Once imaging establishes the location of the lesion, the gold standard for diagnosis is a biopsy of the neuronal tissues though an extra-neuronal biopsy is often used.
Giant cell tumors (GCTs) of bone are lesions characterized by multinucleated osteoclast-type giant cells that express RANK ligand. The majority of these lesions occur in the long bone, with surgery being the typical therapeutic option. Denosumab as a treatment modality is a fairly new concept that has been used effectively in treatment of long bone lesions. There is less experience, however, with its use for jaw lesions. This 4-case series describes the effective use of low- and high-dose Denosumab in the treatment of GCTs of the jaw.

Our first case is a 20 y.o. woman diagnosed with Noonan Syndrome at a young age with a GCT of the jaw diagnosed in 2002. She was initially treated with 18-months of calcitonin 100 IU SC daily, with good short-term response. Two years later, she had progressive disease. DXA revealed normal BMD, but labs showed 25 OH-D of 9.8 ng/mL and an elevated NTx of 71 nM BCE/mM cr. Treatment was initiated with 60 mg of Denosumab every 6 months and vitamin D replacement. After 1 month of therapy, there was marked improvement in NTx levels. Panoramic jaw X-rays after 1 year of therapy showed complete resolution of the GCT.

The second patient is a 34 y.o. man in good health with no prior history of metabolic bone disease found to have 25 OH-D level of 22.6 ng/mL started on Vitamin D supplementation. The patient developed right jaw pain and imaging established a lytic lesion. He was diagnosed with GCT of the jaw. 120 mg of Denosumab was started monthly. 7 months after the initial dose, repeat imaging showed denser lesions without regression in size. Given low NTx levels at the time, Denosumab was decreased to 60 mg at 2-3 month intervals. Repeat biopsy 1 year post treatment showed no evidence of GCT.

The third patient is a 14 y.o. man with no significant medical or family history found to have 25 OH-D level of 14.2 ng/mL started on vitamin D supplementation. The patient was diagnosed with GCT when a lytic lesion of the mandible was identified during routine orthodontic follow-up. Labs revealed NTx of 157 nM BCE/mM cr and he was started on 120 mg of Denosumab monthly. After 2 doses, NTx decreased to 14 nM BCE/mM cr.

Our last case is a 31 y.o. man diagnosed with GCT when he noticed a lesion in the jaw. On initial CT, the lesion was expansile measuring 2.5 X 2.5 X 2.2 cm. Prior to establishing endocrine care, he was treated with steroid injections with little effect. The decision was made to start treatment with 120 mg of Denosumab monthly. The patient has received 3 treatment doses and the plan is to follow bone turnover markers and X-rays. We report 3 cases of successful treatment of jaw GCTs with both low and high dose Denosumab. The last case is at an earlier stage in the treatment course and we are awaiting therapeutic response.

We conclude that Denosumab at both the 60 mg and 120 mg doses may be considered for treating GCTs of the jaw.
Cobalamin as a Comarker for Prostate Cancer

Kiszko K, Sharma A, Patel K, Shah R.

**Background:** A review of the literature demonstrates an association between elevated cobalamin and increased cancer risk, as well as faster disease progression and higher mortality. Collin et al found a positive association between elevated cobalamin and prostate cancer risk (Cancer Epidemiol, Biomarkers Prev 2010). In a large study of 25,017 subjects using the Danish medical registry, Arendt et al reported a significant association between elevated cobalamin and increased mortality within the first year of diagnosis (Cancer Epidemiology, 2016).

Yet, the pathophysiology leading to elevated B12 in prostate cancer is poorly understood. Proposed theories have focused on an altered cobalamin metabolism, others link elevations in B12 to an inflammatory response. Further clarification is needed to better identify the mechanism for elevated B12 and prostate cancer.

**Case:** A 79 year old male with prior medical history of diabetes mellitus, hypertension, thyroid cancer, post resection, presented to the ED with severe low back pain after a fall. No prodromal symptoms were reported. He was diagnosed with an L1 compression fracture and discharged home with pain medication. His pain remained uncontrolled; he developed constipation and returned to the hospital within 2 weeks. Upon admission, the patient was found to have normocytic anemia, with Hte 32.4, Hgb 10.4 and MCV 92.6. Workup revealed an unexpected markedly elevated vitamin B12 (cobalamin) of 1266 pg/ml (N=243-894 pg/ml). A neurosurgical evaluation, together with the MRI of the lumbar spine, ruled out cauda equina syndrome. However, a CT of abdomen and pelvis did reveal a heterogeneous prostate with an asymmetric enlargement of the right seminal vesicle, suspicious for prostatic neoplasm. PSA level was 2.63, and free PSA % was 20.1. Urology was consulted and recommended an outpatient workup and follow up with primary care physician.

At his two month follow up with his PCP, the patient's low back pain remains severe, requiring opioid narcotics. After long discussion with the patient and his devoted wife, the PCP agreed to defer urology consultation, pending better pain control.

In view of the high prevalence of prostate cancer in older males, and the persistent debate about screening guidelines, including the reliability of PSA testing, we hope that this case report will help increase health care practitioners' awareness to elevated cobalamin as potential comarker for undiagnosed prostate cancer, as well as a tool for prognostication.
Older Adults’ Perspectives on Medical Marijuana (MM) Use


Background: The use of Medical Marijuana (MM) was legalized in 2014 in NY State and took effect January 6, 2016 for designated serious conditions including: cancer, HIV/AIDS, ALS, Parkinson’s disease, MS, spinal cord injury with spasticity, epilepsy, IBD, neuropathy, and Huntington’s disease.

Methods: A multicenter anonymous survey was administered to older patients in two geriatric outpatient practices, two physical therapy centers, and one family health center. Chi-square or Fisher's exact, as appropriate, was used for categorical responses and Kruskal-Wallis for continuous variables.

Results: In the 93 surveys collected, average age was 71 (±13), with 69% female, 58% White, 22% Black and 10% Asian; 70% had a college degree. Among the 25 subjects experiencing poorly controlled pain, average pain score was 6.1/10 (±2), 71% had chronic conditions and 25% reported chronic pain. Overall, 57% had used CAM in the previous year, 33% used OTC analgesics ≥1/week, while over the last month, 43% had used prescription painkillers and 38% alternative modalities.

Half (51%) knew that MM was legalized in NY, but only 3% received a prescription; 19% reported previous use of recreational marijuana. A third (36%) stated they would be unlikely or extremely unlikely to try MM, if prescribed. MM concerns included side effects (30%), addiction (19%), legal (9%), lack of acceptance from loved ones (8%) and medical providers (3%).

There was no significant association between willingness to try MM and age group (p<0.72), gender (p<0.47), college education (p<0.92), chronic pain (p<0.27), pain level ≥5 (p<0.80), daily OTC use (p<0.39) and presence of any chronic condition (p<0.94). However, previous recreational usage of marijuana (p<0.001), use of CAM (p<0.005) and the belief that legalization of MM does not “promote inappropriate use” (p<0.001) were associated with willingness to try MM if prescribed.

Conclusions: Older adults appear reluctant to consider MM, primarily because of anticipated side-effects, regardless of pain, and medical status. Since over half of subjects are open to CAM, health care providers should consider educating older adults on this newly approved therapy.
Lupus Podocytopathy, an Unusual Variant of Lupus Renal Disease
Kornberg D, Fitterman N.

**Case Presentation:** A 66-year-old female with a history of hypertension presented to the emergency department with one week of lower extremity edema, nausea, and vomiting. On admission, the patient was found to be hyponatremic, hypoalbuminemic, with nephrotic range proteinuria (urine protein-to-creatinine ratio of 8.5 g/g) and acute kidney injury. During the hospital course, the patient’s AKI rapidly progressed, and she showed worsening signs of fluid overload. She had no arthralgias, rash or other peripheral stigmata of an autoimmune disease. Her PTT was found to be elevated to 54.9 seconds with a normal PT/INR. A mixing study found the presence of an inhibitor. A dilute Russel’s viper venom time and a silica clotting time were abnormally prolonged, and anticardiolipin antibodies were elevated. The ANA titer was 1:640, and anti-RNP, anti-SSA, and anti-SSB antibodies were positive. A renal biopsy was done and the patient was begun on 1g methylprednisolone per day with rapid improvement of her creatinine from 4.95 to 1.33 mg/dL within three days along with normalization of her hyponatremia.

The kidney biopsy showed features consistent with focal segmental glomerulosclerosis with tubuloreticular inclusions and epithelial cell foot process defacement. In consideration of the patient’s serologies, her abnormal coagulation tests, and a family history of SLE, the patient was diagnosed with lupus podocytopathy.

**Discussion:** Lupus podocytopathy is a diffuse epithelial cell foot process defacement in the setting of SLE that differentiates itself from lupus nephritis by the absence of glomerular immune complex deposits and glomerular proliferation. The pathogenesis of the disease is direct podocyte damage as opposed to being immune-complex mediated as with lupus nephritis. The mechanism is possibly related to aberrant T cell activation and functioning. The morphological features of lupus podocytopathy are similar to those seen in minimal change disease or focal segmental glomerulosclerosis. Clinically, acute kidney injury is seen in the majority of cases of lupus podocytopathy. Mild to no microscopic hematuria is found in contrast to the often large hematuria seen in lupus nephritis. Remission is achieved in the vast majority of patients after treatment with glucocorticoids, similar to treatment of adult minimal change disease. Lupus podocytopathy is an infrequent cause of renal disease in lupus, accounting for only a small percentage of cases.

**Conclusions:** Hospitalists are often confronted with acute kidney injury. While prerenal causes are the most common, intrarenal causes must be considered. Lupus podocytopathy can present with AKI and nephrotic syndrome, with or without other clinical signs and symptoms of SLE. The disease can progress rapidly and is highly responsive to treatment with steroids. Clinical suspicion and pathologic confirmation are needed to avoid missing this treatable condition.
Charlson Comorbidity Index for Predicting Short-Term Outcomes in Hospitalized Older Adults


Background: The Charlson comorbidity index (CCI) has been one of the most commonly used and validated prognostication tools. In addition to being a valuable resource for health services researchers, the CCI is being used in clinical practice by hospitals to identify patients at risk for poor outcomes. The use of the CCI in older adults has been controversial as it does not account for measures such as functional status and severity of dementia. The objective of this study was to evaluate the Charlson Comorbidity Index (CCI) for the prediction of short-term outcomes in hospitalized older adults.

Methods: A cohort study comparing length of stay (LOS), in-hospital mortality, and 30-day readmissions in hospitalized medical patients 75 years and older with different levels of comorbidity at baseline. Administrative data (ICD-9-CM adaptation) was used in translating documented ICD-9 codes in the electronic medical record (EMR) into the comorbidity score. EMR documentation used to obtain the CCI included any past medical history indicated on the present admission as well as any diagnosis documented on any prior admission. Two CCI was calculated using the traditional Quan index. Logistic regression was used to determine the predictive ability for the CCI in regards to in-hospital mortality and 30-day admissions. The Pearson correlation coefficient was used to determine the association of the CCI with the LOS.

Results: Of the 2,990 patients, the average age was 84.6, 59.7% were female, 78.1% were white, and 9.5% black. The majority of subjects were married (45.9%) and widowed (39.2%). The average LOS was 6.3 days (median 5 days), with 2.0% (59 patients) in-hospital mortality, and 20% were readmitted within 30-days. There was a significant association between the CCI and in-hospital mortality (OR=1.20; 95% CI: 1.08, 1.32) as well as 30-day readmissions (OR=1.17; 95% CI: 1.11, 1.22). However, both models had demonstrated a poor predictive ability (AUC of 0.6319, 95% CI: 0.5622-0.716 and 0.5962, 95% CI: 0.5624-0.6300, respectively). In addition while the CCI showed a significant association with LOS, the model had poor predictive accuracy (rho=0.12, p<0.0001).

Conclusions: The study demonstrates that despite a small but significant association the CCI is not a reliable predictor of short-term outcomes in a cohort of hospitalized medical older adults. Today, Medicare patients account for over 50% of hospital days and over 30% of all hospital discharges in the United States. While improving quality of care for all older adults is essential, tools that can identify patients that are at high risk of poor outcomes are critical in order to better allocate resources. Comprehensive tools that account for more comprehensive measures, such as functional and cognitive status are critical in identifying this vulnerable population.
Got Ventricular Tachycardia? Let's Not Be Rash: Mexiletine-Induced Dress Syndrome

Kuriakose R, Jiang C, Makhnevich A.

Case Presentation: 84 yo M with a history of CAD with HFrEF presented for a routine BiV AICD upgrade whose course was complicated by VT storm requiring amiodarone and lidocaine before conversion back to his outpatient medication mexiletine. Postoperatively, the patient developed a morbilliform rash, which was attributed to an antibiotic allergy as the patient was given perioperative cefazolin. However, acute kidney injury, acute liver injury, and eosinophilia were noted prompting further investigation with a skin biopsy. The biopsy showed an eosinophilic and lymphocytic infiltrate in the superficial dermis, findings suggestive of Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) syndrome. Medication review, with the understanding that DRESS presents a few weeks after medication initiation, showed the only medication started within the past three months was mexiletine and it was discontinued. Although initially hesitant to use corticosteroids in the setting of heart failure and recent ICD placement, prednisone was dosed due to progressively worsening liver and kidney injury. Following this, there was improvement in his skin rash and multi-organ injury.

Discussion: DRESS syndrome is well known in textbooks, but often masquerades as a number of other clinical entities. The incidence of DRESS ranges from 1/1000 to 1/10,000 drug exposures. DRESS is unique compared to other drug reactions in that it can have a latent period up to 3 months and for its multi-organ involvement, most commonly the skin, liver, and kidneys. Commonly implicated drugs are anticonvulsants, such as carbamazepine and phenytoin. In one literature review of 172 case reports, between 1997-2009, only 5 cases involved mexiletine. Attention to detail is vital to proper diagnosis, as a thorough physical exam and lab values point to DRESS. There are no definitive criteria for DRESS, although a morbilliform rash, liver abnormalities, and eosinophilia can point to the diagnosis as in this case. Fever and lymphadenopathy can also be seen. Mortality can range from 10-20% from multi-organ failure and thus discontinuation of the drug and possible steroids are important steps in treatment. Treatment decisions were complicated as the risks/benefits of stopping mexiletine along with the risks/benefits of starting prednisone had to be balanced against the effects of DRESS syndrome.

Conclusions: This case highlights the importance of having a high clinical suspicion of complicated drug rashes. It shows how, in the right clinical setting, a thorough medication review along with knowledge of the timeline of the DRESS syndrome will help establish the diagnosis. A rash should always be investigated with appropriate blood work and a thorough physical exam and not just be attributed to a drug reaction. Identifying DRESS is vital, since if left unrecognized, the disease can progress causing organ failure and ultimately death.
Case Discussion: A 94-year-old Female with chronic kidney disease (stage 4), recurrent urinary tract infections (UTIs), and hypertension presented with a 3 day history of worsening general weakness, left thigh soreness, and a left thigh hematoma which was noted by the home health aide. The patient had a hospitalization 1 month prior in which she was noted to have a UTI and a drop in hemoglobin (from admission Hg of 10.6g/dL to 6.7g/dL) requiring blood transfusion. The patient deferred GI work-up at the time. On arrival to the emergency department vital signs were stable. Physical exam revealed a posterior left thigh hematoma expanding from the bottom of the buttock to the knee. Blood results revealed a hemoglobin of 9.6g/dL, an elevated PTT of 71.0 sec (upper limit of normal: 37.4 s), and a normal INR and aPTT. The patient required two units of blood and her hemoglobin remained stable. A mixing study revealed partial correction with a PTT of 65.2. Further workup demonstrated a Factor VIII assay as <1, and normal levels of Von Willebrand factors. These studies indicate the presence of an acquired factor VIII inhibitor. The patient was started on a steroid taper (starting dose 1mg/kg daily) and her red blood cell indices remained stable throughout the remainder of the hospital course.

Discussion: Acquired Hemophilia A (AHA) is a rare disease, with 1.5 cases per million patients. AHA occurs more commonly in older age. Typical conditions associated with AHA are autoimmune disorders, malignancy, and pregnancy, but 50% of cases can be idiopathic. Patients typically present with spontaneous hemorrhages, including hematoma into muscles and soft issue, epistaxis, and hematuria. Early diagnosis is crucial as significant bleeding is what attributes to its high mortality. There are two parts to treatment: hemostatic therapy and elimination of the inhibitor. Depending on the severity of the bleeding, DDAVP, recombinant factor VIII or VIIa, or activated prothrombin complex concentrate can be used. Patients are still prone to bleeding until the inhibitor is eliminated with immunosuppressive therapy. Treatment with cyclophosphamide in addition to steroids has been shown to be superior in achieving remission compared to steroids alone, however no differences in survival were found. Ongoing research is investigating alternative therapy options, such as rituximab, as a second line treatment. Prompt treatment and recognition of the disorder is vital in order to stabilize the bleeding.

Conclusion: While older patients are more likely to have AHA, they are more likely to go undiagnosed. This is particularly important in older adults who often present with hematomas often attributed to falls and medications. Hospitalists should think of AHA when a patient is presenting with an unexplained bleed and isolated elevated PTT levels.
**Cardioembolic Stroke... What Lies Beneath?**

*Kushnir I, Newman J, Harris A.*

**Case Presentation:** This is a case of a 67-year-old male with history of strokes in 2012 & 2014 with residual right (R) sided upper and lower extremity weakness, blindness, and hearing loss, Coronary Artery Disease status post (s/p) Myocardial Infarction (MI) and Congestive Heart Failure s/p AICD, atrial fibrillation (AF) on coumadin, hypertension, hyperlipidemia, chronic kidney disease stage 3, presenting from home with acute kidney injury (Cr 2.2) and R ankle pain causing immobility. After appropriate work-up, patient was diagnosed and treated for gout with resolution of symptoms, and started on Levaquin for a right upper lobe pneumonia incidentally identified on imaging. On hospital day 3, patient’s course was complicated by new bilateral (BL) dysmetria, dysdiadochokinesia, and left sided visual deficits. A stroke code was called, with immediate CT Head showing new acute R parieto-occipital, and BL subacute cerebellar infarcts. Decision was made not to perform CTA Head/Neck given patient’s acute on chronic kidney disease, and high suspicion for cardioembolic etiology of the new infarcts based on his presentation. A transesophageal echocardiogram (TEE) was sought and performed the same day, revealing severe, complex, bulky atherosclerotic plaque with mobile components throughout the descending aorta and aortic arch, as well as a patent foramen ovale. Of note, patient’s INR on HD 3 was supratherapeutic (3.1).

**Discussion:** Cardioembolic strokes (CES) are rare, accounting for ~ 20% of all strokes. The characteristic clinical features of CES, many of which were noted in this case, include sudden onset with maximal deficits on initial presentation, infarcts within multiple different vascular (most often posterior) territories, and higher hemorrhagic conversion rate (~42%) due to propensity for spontaneous dissolution, with peak onset 2-4 days post event. Although transthoracic echocardiograms are the customary diagnostic imaging modality for work-up of new strokes, we elected for TEE because of the high pre-test probability for aortic/valvular pathology, and history of AF in our patient, both of which support TEE as the appropriate first choice. It is essential to note that aortic arch atheromas can only be diagnosed on TEE, and had we proceeded with the archetypal approach, our diagnosis would have been delayed.

**Conclusions:** Once the etiology of our patient’s CES was elucidated, new questions arose; in patients with stroke due to aortic thrombi, does anticoagulation improve clinical outcomes, and when should it be initiated? To date, there is no evidence to support use of aspirin, clopidogrel, and/or coumadin for management of CES due to aortic atheromas. The ARCH Trial (2015) suggested that use of aspirin and clopidogrel reduced the rate of recurrent stroke, MI, peripheral embolism, and vascular death by 24%, but lacked power required for analysis, and could have been the result of chance (adjusted P=0.5). More research in this field is required.
The Shingles Vaccination Initiative- Increasing Rate of Immunization against Herpes Zoster in an Eligible Outpatient Population.

Kushnir I, Ali I.

**Question:** How to improve the quality of preventive care at the Long Island Jewish Ambulatory Care Unit (LIJ ACU) by increasing the rate of Shingles vaccination.

**Objectives:** The primary objective of our initiative was to increase the number of patients at LIJ ACU who received a vaccine against Herpes Zoster. Our secondary objectives were to increase provider and patient awareness of the shingles vaccine, and to identify the barriers to administration of the vaccine which was being underutilized at our clinic.

**Description:** Our initiative was implemented at a resident run clinic where the patient population is predominantly socioeconomically underprivileged and elderly. We first identified and educated all health care personnel and patients about the benefits, harms, and indications for the Zoster vaccine. All patients over the age of 60 who do not have specific contraindications are eligible for the vaccine; we identified our population of interest with the help of a database provided by IT. We also identified barriers to administration of the vaccine, in particular lack of financial coverage by certain insurance companies, and collaborated with pharmacists to address these barriers.

**Measures:** We used quantitative metrics to measure the success of our initiative by comparing the number of individuals vaccinated with Zoster in the ACU clinic prior to initiation of our Quality improvement project, and then at its completion. We also measured the amount of individuals vaccinated for Zoster each year, and analyzed the trend over the years, with particular attention to the trend from 2014 to 2016, from before the initiation to after the conclusion of our project.

**Findings:** We found that after implementation of our intervention, the rate of shingles immunizations rose drastically at our clinic. We began to implement our intervention after the advent of the 2015 academic year, and watched the rate of vaccinations practically quadruple from 14 vaccinated individuals in 2014 to 42 patients in 2015. We had completed our quality improvement project by the end of the academic year in 2016, and by July 2016, there were already 28 vaccinated patients in 2016. When simply comparing vaccination rates prior to and after implementation of our project, our findings were even more remarkable. A total of only 35 eligible patients received the Zoster vaccine between 2012 and 2015, compared to 91 patients that were vaccinated between July 2015 and 2016, the rate of vaccinations had nearly tripled in 1/3 the studied time after implementation of the zoster vaccination initiative.

**Key Lessons:** Our takeaway point from our quality improvement project is that a multidisciplinary approach should be employed, and that the benefits, harms, degree of efficacy and monetary cost of an intervention must always be addressed prior to its implementation.
Assessing the Predictive Capability of the ACC/AHA ASCVD Risk Score Index in African American Patients


**Introduction:** There are well-established differences between races in regard to virtually all aspects of cardiovascular disease including prevalence, presentation, prevention, and management. The 2013 ACC/AHA ASCVD risk score plays a central role in risk stratification, treatment, and prevention of CAD. We aimed to determine whether there are racial differences in the capability of the ACC/ASCVD risk score in estimating risk compared with objective data gathered from coronary computed tomographic angiography (CTA).

**Methods:** Single center coronary CT angiography studies were reviewed from 2013-2014 in patients presenting to the ED for chest pain. Demographic information and data to calculate ASCVD risk were obtained from patient charts. We correlated the ASCVD risk score to CTA findings of stenosis >70%, >50%, and >1% in at least one major vessel.

**Results:** Data from 90 white and 82 black patients was analyzed. For an ASCVD risk score of 7.5%, whites tended to have more significant CAD compared to blacks as seen by the odds ratio (OR) of those with high risk scores and stenotic lesions >70%, >50% and >1%. For those with > 70% lesion: OR 13.3 (95CI 1.6-110.6 p=0.02), > 50% lesion OR 14.5 (p= 0.01), >1% lesion OR 13.3 (p=0.01) for whites. For blacks the association in the >70% lesion group did not meet significance; >70% lesion OR 17.6 (95CI 0.97-321.3 p=0.052) and the association of CAD in the other groups was less than that of whites; >50% lesion OR 12.7 (p=0.01), >1% lesion OR 9.2 (P=0.01).

**Conclusions:** There was a higher association between a high ASCVD risk score and significant CAD (Stenosis >70%) for the white cohort of patients as compared to the black cohort. The use of the ASCVD score as a predictor of CAD may help clinicians risk stratify patients in a more objective fashion. However, blacks with similar risk profiles as their white counterparts tended to have less severe CAD on CTA suggesting that non-traditional risk factors may be at play in these patients. Further research and population data analysis may help to establish a tool for more effective race-specific cardiovascular risk estimation.
Adenovirus-Associated Ascending Flaccid Paralysis and Recurrent Fever in a Long Term HIV Patient
Ida J, Lau YT, Ibrahim F, Zolli J, Conigliaro J.

**Learning Objective(s):** To include adenovirus and poliovirus (from OPV reactivation) in the differential diagnosis when evaluating immunocompromised patients with ascending flaccid paralysis, polymyelitis and fever of unknown origin.

**Case:** G.L. is a 48-year-old female with past medical history of HIV infection (diagnosed more than 20 years ago, on HAART, CD4 count was 167 two months prior to admission, no detectable HIV viral load) and cervical intraepithelial lesion of undetermined significance, who presented with progressive, ascending upper and lower proximal muscle weakness, fever and night sweats over the past five months, to the extent that she was unable to walk and became bedbound. *Patient continued to have fevers up to 103°F throughout hospitalization. She* was evaluated by ID, Neurology, Rheumatology, Psychiatry and Hematology for a full work up of her unexplained weakness and fever, including negative findings in various tests (CT & MRI head, MRI cervical/thoracic/lumbar spine, CT & MRI of abdomen and pelvis, lumbar puncture, JC virus, lyme, CMV, West Nile virus IgM, Toxoplasmosis IgM, Cryptococcus, HSV 1 &2, parvovirus IgM, Chlamydia, Gonorrhea, Syphilis, blood/urine/spinal fluid culture, drug screen, ANA, RF, antibodies for Myasthenia Gravis, EMG, echocardiogram, muscle biopsy and bone marrow biopsy). *Patient was diagnosed with HIV-induced myopathy and discharged home with physical therapy. During a post-discharge outpatient visit 6 weeks later, her clinical condition deteriorated and she had respiratory muscle weakness. This prompted a literature search with emphasis on ascending paralysis in an HIV patient. Citations were found on polymyelitis from reactivation of Poliovirus from oral polio vaccine. Polio titer was checked and confirmed immunity. A literature search for other causes of flaccid paralysis showed adenovirus may be a causative agent. Adenovirus PCR (stool specimen) was checked by NYS Virology Lab and confirmed positive adenovirus (subtype is pending at this time), in the absence of gastrointestinal symptoms. IVIG was suggested for treatment of adenovirus-associated ascending flaccid paralysis.*

**Impact:** With early initiation of HAART, there is an increasing population of long term immunocompromised HIV patients. These patients are susceptible to rare viral infections with atypical presentations. This case broadens the differential diagnoses to include poliovirus and adenovirus when evaluating flaccid paralysis in this population, despite presenting in a Polio-free era.

**Discussion:** We learned that with review of medical records, collaboration with other specialties, literature search and maintenance of board differentials, a correct diagnosis of adenovirus-associated ascending flaccid paralysis in an HIV patient was made.
Insane In the Membrane: A Rare Case of Viable Neurocysticercosis
Laudenslager M, Donovan M, Harris K.

Case Presentation: A 23-year-old Central American male with a past medical history significant for an isolated seizure one year prior to present admission presents with seizure and headache. Vital signs, examination and laboratory studies at time of admission were unremarkable. CT head revealed a small eccentric nodule within a 1.0 x 0.8 x 1.1 cm cystic lesion within the right parietal lobe and a punctate parenchymal calcification within the right temporal lobe. MRI brain revealed a boomerang-shaped enhancing structure within the previously demonstrated right parietal cystic lesion. Lesion was without surrounding edema. Ventricular involvement was not observed. Radiologic findings were pathognomonic for viable neurocysticercosis. Ophthalmologic examination was within normal limits. Quantiferon Gold assay and strongyloides antibodies were negative. Decadron and levetiracetam therapies were initiated and followed by albendazole and praziquantel treatment. Patient was discharged to home with plan for repeat MRI brain in two months following hospitalization.

Discussion: Neurocysticercosis is a neuroparasitic pathology caused by ingestion of eggs of the tapeworm Taenia solium. Neurocysticercosis is the most common parasitic disease of the nervous system in developing countries. In the United States, neurocysticercosis is almost exclusively observed in immigrant populations. Seizure and headache are common presenting symptoms of parenchymal neurocysticercosis. Encephalopathy and loss of consciousness are associated with ventricular disease. Radiographic progression of neurocysticercosis involves a viable cyst with indwelling scolex followed by cyst inflammation and subsequent resolution with residual calcification. Identification of a scolex within a cystic lesion is the only pathognomonic radiographic finding for neurocysticercosis. Seizure commonly occurs during the inflammatory phase but may affect all stages. Tenets of therapy include antiepileptic, antiparasitic and anti-inflammatory modalities. Patient should be screened for tuberculosis (TB) and strongyloides prior to initiation of steroid therapy as patients with TB or strongyloides are at risk for dissemination of disease following immunosuppression with steroid therapy. All patients should additionally be evaluated for ocular or ventricular involvement as these disease subtypes require urgent evaluation.

Conclusions: Here we describe a case of neurocysticercosis in a Central American male presenting with seizure. Seizure one year prior to current evaluation was likely due to evolving neuroparasitic disease as evidenced by a punctate calcification within the temporal lobe. Progression from a viable to an inflammatory cyst likely resulted in recurrence of seizure in this patient. Though a rare etiology of seizure in the United States, neurocysticercosis is the primary cause of acquired epilepsy worldwide. A diagnosis of neurocysticercosis should be considered in patients from endemic regions who present with seizure.
Last Call for Alcohol - Identification of Predisposing Factors to Decompensation in Patients Admitted With Alcohol Withdrawal


**Background:** Monitoring of clinical withdrawal symptoms is a critical component in the care of patients presenting with alcohol intoxication and withdrawal. Quantification of symptoms allows for identification of patients at risk for progression to advanced stages of withdrawal and delirium tremens. While the Clinical Institute Withdrawal Assessment (CIWA) score aids in the management of high risk patients, a multidisciplinary understanding of this protocol is essential to its effectiveness and execution.

**Purpose:** We aimed to identify predisposing factors to decompensation and Intensive Care Unit (ICU) admission in patients presenting with alcohol intoxication and withdrawal. We additionally sought to uncover modifiable deficiencies in health care delivery to this subset of patients. We established a multidisciplinary team charged with improving implementation of CIWA protocols in patients admitted with alcohol withdrawal. The focus of this team is to reduce withdrawal-associated morbidity, hospital length of stay and overall cost of care.

**Description:** A total of 381 patients were admitted to the Long Island Jewish Medical Center Emergency Department in 2015 with a primary or secondary diagnosis of alcohol intoxication or withdrawal. A second data set from 2014 has been collected and analysis is in progress. Of the patients admitted in 2015, 22 were transferred to the ICU for reasons related to alcohol withdrawal. Of the 22 patients analyzed, 4 distinct trends (incorrect CIWA order set, medication adverse event, delay in care, improper CIWA assessment) were noted as contributing factors to patient decompensation. Delay in care was found to be the most prominent contributing factor to ICU admission. Delays included the following: delay in ED provider assessment, delay in medicine provider assessment, delay in patient transfer from the ED to medical ward, absence or delay in CIWA monitoring and absence or delay in administration of PRN medications for given CIWA scores. Following the identification of these vulnerable points of care, we formed a multidisciplinary team consisting of Internal Medicine, Intensive Care and Psychiatry providers. The team is presently charged with modulating provider work flows and engineering educational plans for multiple levels of providers including physicians and nurses within the ER, Medicine and ICU departments. The primary aim of this team is to improve the above areas of deficiency in care in an effort to reduce rates of decompensation, length of stay and cost of care with respect to patients admitted with alcohol intoxication and withdrawal.

**Conclusions:** Fastidious monitoring of clinical withdrawal symptoms is critical in the care of patients with alcohol intoxication and withdrawal. Multidisciplinary cooperation and collaboration, however, is additionally necessary in the execution of CIWA protocols in a hospital setting. We have identified several modifiable facets of care within our institution that are associated with patient decompensation in the setting of withdrawal. Elucidation of these factors has informed the establishment of a multidisciplinary team aimed at improving implementation of CIWA protocols in our hospital.
Case Presentation: A 35 year-old female with a past medical history significant for type 2 diabetes mellitus, polycystic ovarian syndrome and migraine headache presented with alteration of mental status for 2 weeks. Patient endorsed progressive, generalized fatigue with intermittent episodes of confusion, behavioral disturbance, hypersomnia and short-term memory loss. Vital signs on admission were significant for tachycardia to 111. Physical examination was significant for confusion and short-term memory loss. Neurologic examination was otherwise unremarkable. Laboratory studies revealed leukocytosis (19.5) and thrombocytosis (506). Basic metabolic panel was initially within normal limits though patient developed hyponatremia throughout the course of hospitalization. Urine and blood cultures were negative. Toxicology screen was negative. Acyclovir was initiated given concern for herpes encephalitis. Lumbar puncture was performed – studies were significant for mild glucose elevation. An extensive infectious evaluation of cerebrospinal fluid (CSF) was unremarkable. Acyclovir was discontinued. MRI brain revealed abnormal signal of the bilateral medial temporal lobes. Findings were suggestive of limbic encephalitis. Patient was found to have voltage-gated potassium channel (VGKC) antibody (Ab), leucine-rich glioma inactivated 1 (LG1) Ab and glutamic acid decarboxylase (GAD) Ab positivity. Remaining autoimmune and paraneoplastic markers were negative. CT chest, abdomen and pelvis was negative for primary malignancy. EEG revealed rhythmic delta activity concerning for electrographic seizure. Patient was without clinical seizure activity. Levetiracetam and IVIG therapy was initiated. Patient completed 5 days of IVIG followed by 5 days of solumedrol. Repeat MRI revealed mild improvement in temporal lobe enhancement. Gradual improvement in short-term memory was noted. Patient was discharged to home with plan for outpatient neurology follow up and continued IVIG infusions.

Discussion: Limbic encephalitis is broad diagnosis that comprises infectious, autoimmune and malignant pathologies. VGKC is a rare subset of non-paraneoplastic limbic encephalitis characterized by cognitive decline and seizure. Patients may additionally develop hyponatremia secondary to SIADH. Treatment involves immunotherapeutic modalities including steroids, plasma exchange and IVIG. GAD positivity may be associated with treatment-resistant epilepsy.

Conclusions: Here we report a case of VGKC complex antibody-associated limbic encephalitis in a patient presenting with memory loss with subsequent development of hyponatremia. VGKC encephalitis is often overlooked due to the rarity of this condition and its clinical similarity to other infectious, autoimmune and malignant encephalitides. SIADH is associated with VGKC encephalitis and hyponatremia may be an important diagnostic element. A high index of suspicion is required in the diagnosis of VGKC encephalitis; prompt diagnosis is required in order to prevent seizure and amnesia.
A Rare Case of Vasculitis-Associated CVA In An Adult Patient With Henoch-Schonlein Purpura

Laudenslager M, Honigman J.

Case Presentation: A 64 year-old male with a past medical history significant for COPD presented with fever, abdominal pain and rash. Patient endorsed fever and chills for 2 weeks prior to inpatient hospitalization. Patient subsequently noted intermittent generalized abdominal pain associated with hematochezia. Patient noted onset of bilateral lower extremity rash the day of hospital admission. Vital signs on admission were significant for tachycardia and hypotension responsive to intravenous fluids. Physical examination revealed mild, diffuse abdominal tenderness, palpable purpura of the lower extremities and fine petechiae of the lower extremities and abdomen. Laboratory studies revealed leukocytosis, hematuria and proteinuria. Skin biopsy was performed given concern for Henoch Schonlein Purpura (HSP). Biopsy revealed granular IgA deposits within dermal vessel walls. Prednisone therapy was initiated. Hospital course was complicated by arthralgias, progressive vasculitic rash and AKI. Twenty-four hour urine protein was elevated to 1358 mg. Patient was placed on IV steroids and underwent renal biopsy. Biopsy revealed mesangial and focal proliferative glomerulonephritis with scattered mesangial deposits. Findings were consistent with mildly active HSP. Renal function improved on IV steroids. Course further complicated by blurred vision and diplopia. MRI revealed punctate acute infarcts in the right midbrain and left occipital lobe. CTA was significant for high-grade stenosis of the intracranial left vertebral artery. Pulse steroid therapy was administered given concern for a vasculitic etiology of cerebrovascular accident (CVA). Patient improved on high dose steroid therapy and was transitioned to oral prednisone. Patient was discharged to home with plan for multidisciplinary outpatient follow up.

Discussion: HSP is a small vessel vasculitis that typically presents with purpura, arthralgias, abdominal pain and nephritis. HSP is primarily a disease of childhood and rarely presents in adults. CVA in the setting of HSP vasculitis is exceedingly rare. Four similar reports are described in the current medical literature with only one case report noted in an adult patient. Given the paucity of available literature, treatment options for HSP-associated CVA are ambiguous. Pulse dose steroids and cyclophosphamide have been reported as proposed therapeutic modalities.

Conclusions: Here we report a rare case of HSP and vasculitis-associated CVA in an adult patient presenting with fever, abdominal pain, rash, nephritis and arthralgias. This is the second report of its kind and the first to be reported in the United States. Therapeutic guidelines for the management of HSP-associated CVA are nonexistent given the rarity of this condition. Pulse steroids, however, are often used and were effective in the treatment of this patient.
Introduction: Pleural tuberculosis comprises 3-5% of patients with Mycobacterium tuberculosis infection in the United States. Pleural effusion develops when the organism enters the pleural space and causes a delayed hypersensitivity reaction. Diagnosis of pleural tuberculosis can be challenging since tuberculin skin tests, sputum microscopy and culture, and pleural effusion cultures have low diagnostic yield.

Case Presentation: A 34 year-old Mexican man with no past medical history presented with pleuritic right lower back pain, shortness of breath, and a nonproductive cough for one week. He also reported associated weight loss and fatigue. He immigrated from Mexico 14 years ago, works at a horse-racing track stable, and lives in the track dormitory. On exam, he had decreased breath sounds at the right lung base. Chest X-ray showed a right pleural effusion and CT of the chest further revealed moderate loculated right pleural effusion with prominent nodular contour of the pleura in the right upper lung.

Although he initially denied any sick contacts, there was a reported case of active tuberculosis at the dormitory a few weeks prior to our patient’s admission. He was placed on airborne precautions with high suspicion for tuberculosis. However, quantiferon gold and three serial acid-fast bacillus sputum cultures were negative. Pleural fluid analysis showed an exudative lymphocytic-predominant pattern with negative AFB. Adenosine deaminase was also negative. Pleura biopsy revealed necrotizing granulomas. A chest tube was placed and he was started on RIPE therapy. AFB stain of multiple pleura biopsies and culture, however, did not grow acid-fast bacilli. Follow up with his outpatient PMD revealed that patient’s symptoms have improved and repeat CXR showed no effusions.

Discussion: Pleural tuberculosis is the second most common extrapulmonary manifestation of TB and should be considered in all undiagnosed pleural effusions. Pleural fluid analysis typically shows an exudative lymphocytic-predominant pattern. Pleural fluid adenosine deaminase level above 70U/L is highly suggestive of TB, but it can be falsely low in the early phase of the disease. Pleural biopsy with combined histology showing granulomas and culture is the gold standard. Although definitive diagnosis requires growth of acid-fast bacilli, pleural cultures have a 56% positive yield and can be negative in clinically active TB.
Sclerosing Mesenteritis- A Curious Conundrum

Lim HW, Sultan K.

Introduction: Sclerosing mesenteritis is a rare idiopathic inflammation and fibrosis of the mesentery [2,3]. The first known series was published in 1924 and it was familiarly typified by the terms ‘refractile mesenteritis’, ‘mesenteric lipodystrophy’, ‘mesenteric panniculitis’, or ‘mesenteric sclerosis’ [1,10,12]. Its etiology and pathogenesis remains obscure. A retrospective study of computed tomography images reports a prevalence of 0.54%-0.9%, with a median age of 65 years [1,2,4,11]. It has been linked to peritoneal dialysis likely causing abdominal trauma, recent abdominal surgery, idiopathic inflammatory disorder, paraneoplastic syndrome, ischemia/infection and autoimmunity [2,10]. Abdominal CT is the most sensitive imaging modality, and diagnosis is usually confirmed by surgical biopsy [5,6]. Patients most often present with abdominal pain, nausea, vomiting, diarrhea, weight loss and rarely ascites and small bowel obstruction [1-4]. Physical exam findings include a palpable abdominal mass that is deep seated and poorly defined in up to 50% of patients, abdominal tenderness and distention [2-4]. Sclerosing mesenteritis is a debilitating self-limiting disorder that can rarely become fulminant largely due to the effects of intestinal obstruction, epitomized by our patient [2]. We present a rare case of small bowel obstruction due to sclerosing mesenteritis causing focal perforation of the small bowel leading to the demise of our patient.

Case: An eighty-year-old male with a history of end stage renal disease (ESRD) on peritoneal dialysis presented with increasing hematemesis, abdominal distention and tenderness over the past 5 months. On presentation, patient was found to be hypotensive requiring vasopressor support. On physical exam, his abdomen was distended, tympanic to percussion and had decreased bowel sounds. Laboratory testing was notable for hemoglobin of 7.3g/dL (normal level 13.0-17.0g/dL), which blood cell count (WBC) of 13.1K/uL (normal level 3.8-10.5K/uL), creatinine of 7.41mg/dL (normal level 0.50-1.30mg/dL), albumin of 1.8g/dL (normal level 3.3-5.2g/dL) and C-reactive protein of 25.6mg/dL (normal level 0.00-0.40mg/dL). CT of the abdomen was performed, revealing multiple small bowel loop distention and ascites, peritoneal calcifications and calcifications along the serosal surfaces of small bowel, as well as circumferential soft tissue density around the superior mesenteric artery. Initial nasogastric tube placed for decompression yielded thick, melenic fluid and he was made NPO (nothing by mouth). Serial imaging confirmed the diagnosis of sclerosing mesenteritis given unchanged calcifications. Surgery was consulted, and patient was deemed a poor surgical candidate given his multiple comorbidities and hemodynamic instability. Unfortunately, corticosteroid treatment for the disease was held in light of a recent Clostridium Difficile infection and patient was started on total parenteral nutrition. His hospital course was complicated by increasing ascites requiring multiple ultrasound-guided paracentesis worsening leukocytosis (WBC of 45.9) and persistent hypotension post-dialysis requiring pressor support. Patient became persistently septic with ascitic fluid growing vancomycin resistant Enterococcus and multidrug resistant Kiebiella Oxytoca despite antibiotic. Interval imaging revealed focal perforations of his small bowel. After careful discussion with the patient and his family, the decision was made to transfer the patient to the palliative care unit for comfort measures.
The Impact of Steroid Use on Inpatients with Inflammatory Bowel Disease and PCR diagnosed Clostridium difficile: A Propensity-matched Analysis

Lim HW, Sultan K.

Introduction: The incidence of Clostridium difficile (C-diff) in patients with inflammatory bowel disease (IBD) is rising. Treatment of IBD with C-diff represents a clinical dilemma: steroids may be needed to treat IBD flare, but have been associated with worse outcomes in those with C-diff diagnosed by less sensitive enzyme immunoassay testing. More sensitive C-diff PCR testing complicates this further, raising the possibility of colonization without infection. Our goal was to analyze the impact of steroids on IBD with C-diff diagnosed by PCR.

Methods: We reviewed all inpatients with IBD and PCR diagnosed C-diff from 01/01/2011 to 06/01/2016. A propensity-adjusted regression analysis of the impact of steroid use on colectomy risk, ICU admission, length of hospital stay, 30 and 90-day readmission were preformed. Propensity scores were generated adjusting for markers used to measure clinical severity such as patient’s age, body mass index, admission, albumin, creatinine, hemoglobin, white blood cell count and hypotension at admission. Colectomy patients were censored for readmission outcomes.

Results: We identified 154 patients with IBD and C-diff, of which 28 (18.2%) were on steroids before admission. Thirty-six (40.9%) patients received steroids after admission, before C-diff diagnosis, with 57 (37.0%) continuing steroids after C-diff diagnosis. The median length of stay was 7 days (IQR 4-11 days), with 8 (5.2%) patients requiring a colectomy, all from the group continuing steroids. Fourteen (9.1%) and 23 (14.9%) patients were readmitted at 30-days and 90-days, respectively. On propensity-adjusted regression, post C-diff diagnosis steroid use was associated with a higher risk of colectomy (odds ratio (OR) 20.0, 95% confidence interval (CI) 1.2-324.1, p=0.035), ICU admission (OR 7.1, 95% CI 1.1-45.1, p=0.037) and prolonged hospitalization (+5.6 days, 95% CI +1.1-+10.2 days, p=0.016). However, post C-diff diagnosis steroid was associated with a decreased risk of 90-day readmission (OR 0.140, 95% CI 0.03-0.61, p=0.009), and a trend towards a lower 30-day readmission (OR 0.195, 95% CI 0.034-1.123, p=0.067, table). Pre-admit and pre-diagnosis steroid use was not associated with length of hospital stay (p=0.796 and p=0.713 respectively), risk of colectomy (p=0.162 and p=0.102 respectively), risk of 90 day readmission (p=0.231 and p=0.326 respectively) or need for ICU admission (p=0.355 and p=0.983 respectively).

Conclusion: Among IBD inpatients with PCR diagnosed C-diff, continued steroid use was associated with an increased risk of colectomy, ICU admission and prolonged hospitalization. These adverse outcomes, along with continued steroid use, may reflect greater IBD severity, but this is countered by the observation that this was not the case with pre-admit and pre-diagnosis steroid use. Our findings further suggest that steroid use in IBD with C-diff, whether colonization or infection, is associated with negative outcomes.

Table. The impact of post Clostridium Difficile diagnosis steroid use on clinical outcomes, adjusting for patient characteristics, presenting acuity, pre-admit and pre-diagnosis steroid use.

<table>
<thead>
<tr>
<th>Clinical outcomes</th>
<th>Odds ratio/Coefficient (95% C.I.)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colectomy</td>
<td>20.0 (1.2-324.1)</td>
<td>0.035</td>
</tr>
<tr>
<td>ICU admission</td>
<td>7.1 (1.1-45.1)</td>
<td>0.037</td>
</tr>
<tr>
<td>Length of hospital stay, days</td>
<td>+5.6 (+1.1-+10.2)</td>
<td>0.016</td>
</tr>
<tr>
<td>30-day readmission</td>
<td>0.2 (0.03-1.1)</td>
<td>0.067</td>
</tr>
<tr>
<td>90-day readmission</td>
<td>0.1 (0.03-0.6)</td>
<td>0.009</td>
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A Rare Case of Insulin Allergies in a Pregnant Patient

Ling J, Romao I.

Objective: To document a rare case of insulin allergies in a pregnant patient with Type 2 Diabetes Mellitus.

Case: A 36 year old 28 week pregnant female with a history of Type 2 Diabetes Mellitus (DM) was evaluated in the endocrinology clinic for DM management. She was diagnosed with DM 8 years ago and was treated with Metformin 1,000 mg extended release with good glycemic control. After pregnancy, her glucose was uncontrolled so Glyburide 6.25 mg twice daily was added however her glucose was still high. She was then switched to insulin detemir and insulin aspart. About one week after she started insulin detemir, she noticed itchy, red and blotchy hives around the site of her injection. She did not notice any reactions to insulin aspart. Even when she changed the sites of her insulin detemir injections, she would get hives at the new sites. Due to her reaction, insulin detemir was discontinued and she was started on regular human insulin. With regular human insulin, she developed hives two days after throughout her entire body. She was then switched to insulin aspart and still noticed hives throughout her body. Prior to her pregnancy, she never had any hives with any medications. The hives were concerning because they left a hyperpigmented mark, which may be indicative of a vasculitis process, however the vasculitis workup was later negative. Physical examination was significant for acanthosis nigricans, however no rash was seen on the initial visit. She underwent percutaneous skin test and intradermal allergic testing and was found to have a strong Type 1 Immunoglobulin-E mediated reaction to insulin detemir, and delayed reactions to regular human insulin and human aspart. She tested negative to insulin glulisine, insulin lispro and insulin glargine. She was then hospitalized for an insulin challenge test with insulin lispro. She was given insulin lispro and observed for 48 hours for an acute or delayed reaction, and had no complications. The patient was placed on a V-Go insulin pump using insulin lispro and tolerated that well, and was discharged home with the V-Go insulin pump. She maintained good glycemic control during the rest of her pregnancy.

Discussion: Allergic reactions are rare in pregnant females due to altered immune reactions during pregnancy. There are only two cases reported in the literature. Our patient demonstrated local reactions to different kinds of insulin, including insulin detemir, regular human insulin and insulin aspart. After being monitored in a hospital setting, she responded well to insulin lispro.

Conclusion: We report an uncommon case of allergic reaction to different kinds of insulin in a pregnant patient that was successfully managed after an inpatient insulin challenge.
Retrospective Review Of Outcomes In Patients Undergoing Pancreatic Resections

**Ling J, Myers A, Amodu L, Rilo H.**

**Background:** Surgery on the pancreas remains one of the major methods of treating pancreatic disease. Parts of the pancreas, or the whole pancreas may be surgically removed as part of treatment. The loss of pancreatic parenchyma resulting from pancreatic resection causes an extreme disruption of glucose homeostasis known as pancreateogenic diabetes. The incidence of new onset diabetes mellitus after pancreatic resection increases as the follow-up period after surgery becomes longer and is related to the progression of underlying disease, the type of surgery and the extent of resection. Our study looked at how many patients had pancreatic surgery in our health system for pancreatic disease, benign or malignant, over the last 10 years. We looked at the differences between patients who had partial or complete removal of pancreatic tissue and see the incidence of postoperative diabetes in these patients. We looked at how often Hemoglobin A1c (HgbA1c) or other screening methods for diabetes were checked prior to resection and post-operatively. We also looked to see if having pre-existing diabetes prior to resection portends a higher mortality rate in the patients undergoing partial or total pancreatic resection.

**Methods:** We evaluated patients who had pancreatic surgery for benign or malignant disease in our health system over the past 10 years using ICD-9 codes between 1/1/2004 to 12/31/2015. We did a chart review to see the incidence of new onset of diabetes post pancreatectomy, to see if there any risk factors associated with new onset of diabetes, to see how often HbA1c was checked prior to resection and post-operatively, and to review if there is an association between mortality rate and new onset of diabetes.

**Results:** A total of 383 patients underwent pancreatic surgery (271 at North Shore University and 111 at Long Island Jewish Hospital). 119 patients (31%) had a history of diabetes and 264 patients did not (69%). 150 patients had benign pancreatic disease and 231 patients had malignant disease. The results showed that 26 patients had their HbA1c checked on admission prior to pancreatic surgery and 357 patients did not. 52 patients who had no history of diabetes had their HbA1c checked after surgery, and 20 patients (38%) had new onset of diabetes (defined as HbA1c >6.5%). There was no association between patient’s gender, ethnicity, BMI, smoking, alcohol use, benign or malignant disease with new onset of diabetes. We did find that there was a significant difference in the age distributions between the patients who did and did not have new onset diabetes. The results indicate that patients with new onset diabetes tend to be significantly younger than patients without new onset diabetes (58 vs. 65, respectively; p=0.0451). We also noted there was a significant association between mortality rate and history of diabetes. A higher percentage of patients with a history of diabetes were deceased compared to those who lived (38.5% vs. 25%; p=0.007).

**Discussion:** New onset of diabetes after pancreatic surgery at North Shore University and Long Island Jewish hospital is consistent with data reported in the literature. Age is one possible risk factor that could account for new onset of diabetes. Pre- and post-operatively HbA1c needs to be evaluated more frequently. Limitations in our study include small sample size, patients who may have followed outside of our health system, and using only HbA1c as a measure for diabetes mellitus.
Type B Insulin Resistance Syndrome in a Patient with Systemic Lupus Erythematosus

Ling J, Schulman-Rosenbaum R.

Objective: Type B insulin resistance syndrome (TBIR) is an autoimmune disorder in which autoantibodies are produced against insulin receptors resulting in glucose abnormalities, most commonly hyperglycemia from severe insulin resistance. Our objective is to document a case of suspected TBIR in a patient with Systemic Lupus Erythematosus (SLE).

Case: A 29 year old female with Type 2 Diabetes Mellitus (DM) presented to an oral surgeon for evaluation of mouth ulcers for 7 months. She was given topical steroids and told to follow up. At her next visit, she was sent to the hospital for tachycardia and 40 pounds weight loss. She had a prolonged hospitalization for diabetic ketoacidosis, severe insulin resistance, a new diagnosis of SLE and secondary adrenal insufficiency from topical steroids. Her physical examination was significant for her weight-41 kg, height-142 cm, BMI 20.2 and prominent skin darkening around the eyes and neck, suspicious for Addison’s disease. During the hospital course, she had required exceedingly high doses of insulin (insulin drip up to 19 units per hour). For evaluation of her mouth ulcers, she was found to have SLE. Based on case reports of association of TBIR and SLE, TBIR was suspected and insulin receptor antibodies were sent. She was treated with intravenous immunoglobulin for 5 days however her high insulin requirements did not decrease. She was eventually discharged with insulin glargine 60 units twice daily, insulin lispro 52 units with each meal, and hydroxychloroquine for SLE. 2 months after discharge, she was tapered off hydrocortisone with normal cortisol. 7 months after discharge, her insulin requirements drastically decreased after episodes of hypoglycemia. Unfortunately, we were unable to obtain the results of her insulin receptor antibodies due to lab error, so TBIR was never confirmed.

Discussion: TBIR is rare, with only several cases reported in the literature. It is associated with autoimmune diseases, the majority with SLE. Given her severe insulin resistance and SLE, we strongly suspect she had Type B insulin resistance syndrome. Her SLE treatment may have led to the remission of her TBIR 7 months after her initial presentation.
At Wit’s End: Unraveling an Unexpected Cause of Delirium

**Lopez C,** Kockenmeister E, Gupta V.

**Case:** A 75-year old woman with osteoarthritis treated with a left knee replacement presented to her primary doctor with worsening left knee pain. She was sent to the emergency room when her CBC showed a platelet count of 33k and an absolute neutrophil count of 320, which were subsequently found to be due to acute myeloid leukemia. Arthrocentesis of the knee showed hemoarthrosis without evidence of infection or crystallopathy. After developing neutropenic fevers without a clear source of infection, she was started on cefepime. She started induction chemotherapy with decitabine the next day. Two days after starting induction, she developed progressively worsening hypoactive delirium, lethargy, disorientation, slurred speech, dysphagia, and tachypnea; symptoms persisted even after completing induction. An MRI was negative for leptomeningeal disease, ischemic stroke, or hemorrhage. Serial ABGs showed normal pH, pCO2 and pO2 levels. Mild hypercalcemia (ionized calcium 1.47 mmol/L) was noted, which when treated failed to resolve her encephalopathy. Ammonia levels were normal; both hepatic function and renal function were normal. She was started on lactulose for constipation, though mental status failed to improve despite having regular soft bowel movements. Serial lumbar punctures were negative for malignant cells or infection. A video EEG showed moderate diffuse nonspecific slowing without epileptiform abnormalities. Opiates and patient’s home oxybutynin and cyclobenzaprine were held without improvement. Despite normal renal function (baseline creatinine clearance of 93 mL/min), cefepime was switched to meropenem due to concern for CIE. The patient’s encephalopathy, tachypnea, and dysphagia markedly improved, returning to baseline over the next 24 hours.

**Discussion:** This case shows that CIE can go unrecognized when competing etiologies are present. It can present with delirium, myoclonus, hallucinations or seizures. It is particularly important to suspect CIE in patients with seizures prior to initiating anti-epileptics, as symptoms typically resolve within 48 hours of stopping cefepime. The proposed mechanism for CIE is through an increase in excitatory neurotransmission by inhibiting the release of GABA from nerve terminals. Retrospective cohort studies of patients with hematological malignancies show that patients with renal dysfunction are at greater risk of developing CIE, even when properly dosed; this is thought to be due to an increase in blood-brain permeability due to the effects of accumulated organic acids. However, as our case shows, having normal renal function is not completely protective against CIE.
ACC/AHA Coronary Artery Calcium Score Guidelines May Underestimate Coronary Artery Disease Risk in Black Patients

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**Background:** Based on the 2013 ACC/AHA Guidelines on the Assessment of Cardiovascular Risk, expert opinion recommends revising a patient’s risk assessment upward when they have either a CAC score ≥ 300 Agatston units or a Multi-Ethnic Study of Atherosclerosis (MESA) percentile ≥ 75%. Data has shown that African-American patients tend to have lower calcium scores than their white counterparts. This study looks at whether the ACC/AHA guidelines can be applied uniformly across different races.

**Methods:** Single center coronary CT angiography studies were reviewed from 2013-2014 in patients presenting to the emergency department with chest pain. From the CT angiography report, CAC scores, MESA percentiles, and percentage of stenosis of the major coronary arteries were recorded for patients who had a CAC score greater than 0. Demographic information was obtained from the electronic medical record.

**Results:** Data from 156 white patients and 37 black patients were analyzed. White patients had a higher average CAC score of 417.55, as opposed to 150.03 for black patients (p = 0.01). The odds ratio for a white patient having a CAC of 300 or more compared to a black patient was 3.58 (95CI 1.32-9.72, p = 0.01). The odds ratio for a white patient having a MESA percentile over 75% compared to a black patient was 2.18 (95CI 1.04-4.56, p = 0.03).

**Conclusions:** Our data found that black patients who presented to the emergency room with chest pain had lower average calcium scores and were less likely to have a CAC score ≥ 300 or MESA percentile ≥ 75% than white patients of the same age, gender and risk profile. Considering that black patients generally tend to be higher risk for CAD, and that a significant number of black patients are falling short of the ACC/AHA thresholds, there is a chance that the guidelines may be underestimating the risk of these patients who may require further testing, such as a stress test or coronary angiogram. Further studies are needed to assess long-term outcomes and whether the CAC guidelines should be adjusted downward for black patients.
**Opiate Prescribing in Hospitalized Older Adults: Patterns and Outcomes**


**Introduction:** As of December 2015, 49 states initiated the CMS mandated legislation on “Prescription Drug Monitoring Programs.” Yet, opiates continue to be commonly prescribed in older adults, despite their well-known risks. This study aims to determine patterns of opiate prescribing, specifically in hospitalized older adults and their impact on outcomes.

**Methods:** This one-year retrospective cohort study of hospitalized medical patients, aged 65 and older, in a large academic tertiary care facility in the New York metropolitan area, compared subjects who received opiates to those that did not. Data collected included opiate use prior to admission, concurrent use of Potentially Inappropriate Medications (PIMs), adverse events, discharge disposition, length of stay (LOS) and 30-day readmissions.

**Results:** Of the 10,529 subjects, 12.5% reported opiate use prior to hospitalization. During hospitalization, a third of patients (29.3%) received opiates, and 83.9% were newly initiated. Only 11.2% were prescribed opiates at time of discharge. There was no significant difference between those who received and those who did not receive opiates with regards to age, race, gender, ethnicity, and Charlson Comorbidity Index. However, patients who were married were less likely to receive opiates (47.4% vs. 50.1%, p<0.0001), and so were patients with dementia (10.06 vs. 19.38, p<0.0001). Patients who received opiates were more likely to be restrained (4.67 vs. 1.81, p<0.0001), to be NPO (47.78 vs. 30.98, p<0.0001), to have indwelling bladder catheters (25.80 vs. 12.69, p<0.0001), and to have bed rest orders (30.70 vs. 21.44, p<0.0001). They were also more likely to receive benzodiazepines and diphenhydramine (19.77 vs. 10.92 and 8.65 vs. 3.41, p<0.0001, respectively). Patients on opiates had a longer LOS (6 vs. 4 days, p<0.0001) and were more often readmitted within 30-days (21.88 vs. 19.53, p=0.0063).

**Conclusions:** While patterns of opiate prescribing in the hospital did not seem affected by recent CMS regulations, practitioners appeared more cautious at time of discharge. In addition, the use of opiates during hospitalization was associated with multiple negative outcomes, of particular concern for the geriatric population.
Does Placement of Self-Expandable Metallic Stents (SEMS) Increase Risk of Post-ERCP Pancreatitis (PEP) in Patients with Biliary Obstruction?

**Martinez N,** Firoozan S, Inamdar S, Han D, Lee C, Miller L, Trindade A, Sejpal D.

**Background and Aims:** Pancreatitis is the most common post procedure complication of ERCP, with a reported incidence of 3.5% and is associated with increased morbidity, mortality and health care costs. Prior studies including meta-analyses have shown a slightly higher risk of post-ERCP pancreatitis (PEP) in patients with self-expandable metallic stents (SEMSs). However these studies are limited by a small number and all these studies were done in patients with malignant obstruction. Over the last few years SEMS have been used for benign indications. The aim of our study was to compare rates of PEP in patients who underwent biliary drainage (both for malignant and benign indications) with SEMSs versus polyethylene stents (PS).

**Methods:** We performed a retrospective, case–control study of patients who underwent ERCP and received SEMS or PS for biliary obstruction at a tertiary-care, academic medical center between 01/2015 and 09/2016. All ERCPs were performed by experienced endoscopists, each having performed more than 500 cases. We included all patients with malignant or benign biliary obstruction who underwent ERCP. While the primary outcome of interest was incidence of PEP among patients with SEMS compared to PS, we also evaluated clinical predictors for PEP that are associated with placement of SEMS. Univariate, bivariate and multivariate analysis were done using SAS 9.4 (SAS Institute Inc., Cary, NC, USA) to analyze the data.

**Results:** We identified 404 patients (202 – SEMS, and 202 – PS) who underwent ERCP for biliary obstruction. Patients receiving SEMS were significantly more likely to have malignant obstruction compared to patients receiving PS, however no other differences were noted between the two groups (Table 1). The rate of PEP was higher in the SEMS group (4.7%) versus the PS group (3.5%) (OR 1.4 [95% CI: 0.7-2.9]) for all patients (malignant and benign), but not statistically significant. On univariate analysis, a history of PEP, biliary sphincterotomy and placement of PD stent were all found to be significant predictors of PEP (Table 2). Sub-groups analysis of patients with benign biliary obstruction showed lower rate of PEP in patients with SEMS (2.1%) compared to PS (4.7%); whereas among patients with malignant obstruction had higher rate of PEP in patients with SEMS (7.0%) compared to PS (2.4%), but this was not statistically significant.

**Conclusion:** This study did not find any significant difference in the PEP rates among patients receiving SEMS compared to PS for either benign or malignant obstruction. Interestingly, the rate of PEP was higher among patients with SEMS malignant biliary obstruction compared to any other group. Further prospective studies are needed to evaluate the relative risk for PEP in this particular group and also identify factors associated with PEP in patients receiving SEMS.
Gastric Ischemia: A Rare Cause of Melena

Martinez N, Cerrone S, Desai D, Whitson M.

**Introduction:** Upper gastrointestinal bleeds are a common consult for GI physicians in the hospital setting. While entities such as ulcer disease are common, rarer causes of bleeding such as gastric ischemia may present similarly while requiring a vastly different treatment.

**Case Presentation:** Our case is of an 83-year-old female with history of coronary artery disease and a remote history of ulcer disease who presented with syncope in the setting of epigastric pain and melena. Her vitals were stable, but her hemoglobin was 7.8. On endoscopy (EGD), nonspecific gastric erythema was seen and colonoscopy revealed no bleeding source. Biopsies were unrevealing, and the patient was discharged on proton pump inhibitor (PPI) therapy.

She re-presented 1 week later with a presyncopal episode and melena. Repeat EGD was performed showing ulcerated gastric mucosa with surrounding dusky, blanched mucosa. CT-Angiography demonstrated obstruction of the Celiac and Superior Mesenteric arteries (SMA) and pathology revealed gastric ischemia. The patient underwent a successful open retrograde bypass from the right common iliac artery to the SMA and was ultimately discharged home.

**Discussion:** Gastric ischemia results from the decreased blood supply to the stomach, and it is rarely clinically significant due to an extensive collateral blood supply from the celiac artery. Diagnosis usually requires a combination of endoscopy, histology, and imaging as endoscopic findings may underestimate the extent of ischemia. Acute gastric ischemia presents with abdominal pain and distention, overt bleeding, nausea, and vomiting. However, chronic gastric ischemia typically presents with post-prandial abdominal pain, nausea, and weight loss.

Causes of gastric ischemia include shock, volvulus, thrombosis, and vasculitis. Our patient had risk factors for and evidence of atherosclerosis. This was the most likely cause. Prompt intervention likely prevented her condition from deteriorating, as with no intervention, the mortality from mesenteric ischemia can be upward of 60%. There is no specific data about mortality in gastric ischemia. Management of gastric ischemia generally includes nasogastric tube decompression, IV PPI, fluid resuscitation, reperfusion strategies, and repair of the underlying cause (i.e. reduction of a volvulus).

Literature discussing gastric ischemia is scarce. We present a case of acute gastric ischemia due to dual Celiac and SMA blood clots in a patient with no recognized precursors to this entity, in itself a rare event. Few case reports have previously reported the dual occlusion of both SMA and celiac arteries, usually in pro-thrombotic disorders such as essential thrombocytopenia. A high index of suspicion for gastric ischemia is crucial to the early diagnosis of and the treatment of this disease given the high mortality in untreated patients.
Go for GOLD: Leukemic Bronchopulmonary Infiltrates as a Cause of Reversible Obstructive Lung Disease
Agrawal A, Melamud A, Khanijo S, Koenig S.

**Introduction:** The potential causes of pulmonary infiltrates in patients with chronic lymphocytic leukemia (CLL) are varied, including infection, chemotherapy associated pneumonitis, radiation-induced inflammation or leukemic bronchopulmonary infiltration (LBPI). LBPI in patients with CLL can present as obstructive airway disease. Unlike typical obstructive lung disease this type of obstructive defect can be reversed with treatment of the underlying CLL.

**Case:** A 68-year-old man with CLL controlled on Ibrutinib, hypertension, obesity and history of smoking originally presented with increasing dyspnea on exertion and cough. He had no fevers or sputum production but had rhonchi on examination. A CT scan of the chest showed scattered areas of mucoid impaction and nodularity in all lobes with predominant tree-in-bud opacities in the right upper, middle and lower lobes. His PFTs were consistent with obstructive lung disease with an FEV1 1.14L and FVC 2.20L. He was given a course of levofloxacin without improvement. The patient’s CLL was thought to be under control. His lymphadenopathy had resolved and he had a normal lymphocyte count. Given his persistent symptoms there was concern for LBPI. He underwent a diagnostic bronchoscopy with transbronchial biopsy. The bronchoalveolar lavage was negative for malignant cells, mycobacterium and pneumocystis. Transbronchial biopsies showed an infiltrate composed mainly of B cells which were CD23+ and cyclin D1-, consistent with CLL. The patient was treated with high dose methylprednisolone and rituximab. His symptoms and his need for supplemental oxygen resolved, his FEV1 and FVC increased to 2.02L and 3.94L respectively, indicating that LBPI can be a treatable and potentially reversible cause of obstructive lung disease.

**Discussion:** In conclusion, a patient with CLL can have LBPI even in the setting of otherwise controlled CLL. Making this diagnosis requires a high index of suspicion. Bronchoscopy with transbronchial biopsy is an effective tool for establishing diagnosis and guiding management. LBPI can cause significant pulmonary symptoms and obstructive lung disease. It is possible, although not proven, that newer treatment agents such as Ibrutinib may not penetrate the lung parenchyma and therefore alternative therapies, like rituximab, may be necessary to treat patients with LBPI associated with CLL.
Intraperitoneal Chemotherapy in Ovarian Cancer in the Young and Elderly: A Retrospective Case Series

Mensah C, Cheng K.

**Introduction:** The main site of ovarian cancer is the peritoneal cavity. There is improved survival with intraperitoneal chemotherapy in patients with advanced ovarian cancer after optimal cytoreductive surgery based on the results of the Gynecologic Oncology Group (GOG) 172 clinical trial. Only 42% of patients in GOG 172 completed six cycles of intraperitoneal chemotherapy. Our case series highlights the feasibility of intraperitoneal platinum based chemotherapy.

**Methods:** We retrospectively reviewed five patients who received intraperitoneal chemotherapy between 2008-2012 at our cancer center. Patients were included if they had ovarian, fallopian, or peritoneal cancer. Ages ranged from 42 to 76 years at diagnosis. All patients had an Eastern Cooperative Oncology Group (ECOG) performance status of 0 or 1. All the patients received standard doses of intraperitoneal paclitaxel. However, four of the five patients received reduced dose cisplatin. All patients had stage IIIc disease and optimal debulking. Two of the patients received neoadjuvant chemotherapy prior to cytoreductive surgery.

**Results:** All the patients experienced toxicities after administration of intraperitoneal chemotherapy. Only two patients completed six cycles of intraperitoneal chemotherapy, however these were the patients under the age of 65. One patient completed treatment after a dose reduction. Two patients, over the age of 65, required cessation of intraperitoneal chemotherapy. The other patient over the age of 65 had a delay after cycle 3 of intraperitoneal chemotherapy, and stopped after four cycles.

**Conclusions:** A 2015 study by Wright et al, found fewer than 50% of eligible patients at National Comprehensive Cancer Network centers received intraperitoneal chemotherapy. In this case series, only the patients under 65 completed all six cycles of chemotherapy. More studies should be taken in stage IIIC ovarian cancer patients under the age of 65 to see if intraperitoneal chemotherapy can become the community standard of care.
Rituximab for Prophylaxis of Recurrent Acute Hyperhemolysis Crisis in an Adult Sickle Cell Disease

Mensah C, Hoffman M.

**Background:** Sickle Cell Disease is a heterogeneous group of hemoglobinopathies characterized by production of abnormal hemoglobin which polymerizes under hypoxic conditions. Due to this, patients have a variety of complications driven by mechanisms of inflammation, vaso-occlusion, and ischemia. Treatment options for sickle cell disease are limited to hydroxyurea and red cell transfusion therapies.

Red cell transfusions including simple and exchange transfusions are common for the treatment of sickle cell related complications such as acute chest syndrome, stroke, and multiorgan failure. For all patients who receive transfusions, antibodies can develop against non-self RBC (red blood cell) antigens. These alloantibodies develop in a process called alloimmunization which can occur from exposure during transfusions or pregnancy. However in sickle cell disease the rate of alloimmunization is estimated to be much higher around 20-50%. In one third of patients these RBC alloantibodies will quickly become undetectable. The remainder sickle cell patients will have persistent alloantibodies.

These persistent RBC alloantibodies can lead to a delayed hemolytic transfusion reaction (DHTR) with hyperhemolysis, a potentially life-threatening complication. This reaction occurs after a subsequent red cell transfusion in patients with persistent alloantibodies. These antibodies are not detectable on routine pretransfusion screening test due to remote exposure of RBC alloantigens. After red cell transfusion and challenge of the immune response, there is destruction of donor and recipient red blood cells.

The destruction of donor and recipient red blood cells leads to rapid drop in hemoglobin, organ failure, and even death. In order to prevent these life-threatening complications, early recognition, diagnosis and treatment is needed. The treatments for hyperhemolytic crises in sickle cell patients consist of immune modulating and immunosuppression interventions such as intravenous immunoglobulin and corticosteroids. In recent literature, other agents have been used for treatment and prophylaxis of sickle cell related hyperhemolymic crises including cyclosporine, azathioprine, rituximab, and eculizumab.
“Building Bridges: A case of a Patient with Borderline Personality and Terminal Illness.”

Mirza N, Anandan S, Earle B.

**Background:** The recognition and care of patients with personality disorders in palliative medicine and hospice care can be challenging. Our case will discuss a patient at the end of life admitted to a palliative care unit with complex multi-factorial medical and psychiatric problems and how we tailored the care to her complex needs.

**Case Description:** Our case is a 54-year-old female with past medical history significant for metastatic breast cancer, involving lung and bone, for which she opted for homeopathic treatment over chemotherapy and radiation. She presented for worsening dyspnea in the setting of pneumonia treated with outpatient doxycycline, as well as neoplastic pain and fever, to our palliative care unit. Also, she had a history of pericardial effusion, malignant pleural effusions with pleurex catheter placement. Initially, she was very resistant to opioid medications to treat her dyspnea and neoplastic pain, primarily located in her abdomen. Much of her resistance to her care was due to her underlying personality disorder which the community social worker made us aware of during her admission. Once recognized, the interdisciplinary team (IDT) conducted multiple goals of care discussions with her, focusing on the importance of maintaining her comfort and building the trust in the IDT. The approach included setting practical goals, communicating with her providers, and keeping a consistent goal of focusing on her quality of life. These efforts required identification by the IDT and carefully tailored conversations to build a strong rapport with this terminally sick patient. The patient was discharged home with hospice care services with goals to maintain her quality of life and avoid rehospitalization.

**Conclusion:** 50-70% of palliative patients with underlying psychiatric disorders go unrecognized and undiagnosed. Prioritizing the psychiatric and physical processes together would alleviate the redundancy of workup, as well as promote a better quality of life and care for patients if recognized earlier in the care of these sick patients.
“When Opioids Are Framed: A case of Wernicke Encephalopathy”
Lopez S, Earle B, Lam WY, Mirza N.

**Background:** The National Consensus Project for Quality Palliative Care developed guidelines to promote quality palliative care. The physical domain emphasizes the multidimensional aspects of pain and the importance of managing them in a safe and timely manner. It evaluates barriers to the use of opioids related to misconceptions of side effects (1). Apprehension about opioids may not only prevent providers from appropriately treating patients’ symptoms (2) but also blind them from considering other diagnoses when adverse effects of these medications are suspected.

**Case:** A 36 year old female with metastatic ovarian cancer post chemotherapy and radiation therapy complicated by ileitis/proctitis and a self-contained bowel perforation presented with intractable nausea, vomiting, poor oral intake, and abdominal pain. The patient was treated with Fentanyl patch and breakthrough Hydromorphone without adverse effects. Patient continued to have persistent pain and poor oral tolerance. She was found to have a pelvic abscess. She underwent a procedure during which the pelvic abscess was drained and a bowel segment resected. Post-operatively, the patient developed encephalopathy, memory impairment, nystagmus, ataxia, and tachycardia. The primary team attributed the symptoms to opioid treatment. As such, a PCA was stopped but around the clock and breakthrough doses of Hydromorphone were continued. The palliative care team proposed an alternative diagnosis of a neurologic disorder associated with Thiamine deficiency, in the setting of malabsorption/malnutrition. Patient was started on thiamine supplementation. Neurology evaluation suggested ruling out brain metastasis and seizures. An MRI of the brain suggested Wernicke Encephalopathy. Thiamine deficiency causes Wernicke encephalopathy “…an acute syndrome requiring emergent treatment to prevent death and neurologic morbidity (3).” With treatment, the patient’s deficits improved, and she was discharged to rehab.

**Conclusion:** Avoiding stigma toward and improving knowledge about opioid treatments may facilitate appropriate symptomatic treatment and also treat alternative diagnoses that may cause life threatening situations.
Novel Technique To Avoid Diaphragmatic Paralysis During Focal Ablation Of A Nonpulmonary Vein Trigger Mapped To The Crista Terminalis.


Introduction: Almost 90% of triggers for atrial fibrillation (AF) are believed to originate from the pulmonary veins (1) and pulmonary vein isolation is the mainstay of therapy for patients with paroxysmal atrial fibrillation (2). Patients who demonstrate recurrent atrial fibrillation despite pulmonary vein isolation highlight the challenge and need of identifying non-pulmonary vein triggers. Reproducibility and inherent risk of the location of these foci may limit the success.

We present a 51 year old female with recurrent symptomatic paroxysmal AF despite antiarrhythmic therapy and two ablation attempts. The patient had a medical history of gastroesophageal reflux disease, Schatzki ring, and Barrett’s esophagus. She was initially diagnosed with paroxysmal AF two years prior, and underwent radiofrequency ablation for pulmonary vein isolation under general anesthesia. Dobutamine infusion post isolation did not induce any triggers or atrial arrhythmias. Her post procedural course was complicated by pericarditis and episodes of atrial tachycardia which were felt to be related to inflammation. She was started on Flecaïnide. She had ongoing palpitations and an event monitor five months post ablation demonstrated recurrence of AF. The patient then underwent redo ablation at which time all four veins were found to be isolated from the prior procedure. High dose Dobutamine infusion again failed to trigger atrial ectopy. Empiric posterior wall isolation, cavo-tricuspid isthmus ablation, and superior vena cava isolation was performed. The following day in the hospital the patient again had episodes of atrial tachycardia. The patient continued to have atrial fibrillation after the blanking period and thus a third ablation was discussed with a focus on non-pulmonary vein triggers while awake.

Her third procedure was performed with no sedation and it was only at this study that she had reproducible premature atrial contractions and atrial tachycardia with Dobutamine infusion. Earliest activation was found at the mid crista terminalis using the Biosense CARTO® 3 system. Unfortunately, she demonstrated phrenic nerve capture at the site of early activation and after brief and unsuccessful radiofrequency applications it was decided to try cryoablation. A 6 mm cryocatheter (Freezor® Xtra) was advanced into the right atrium and visualized with the Biosense CARTO® 3 system. A quadripolar catheter was advanced into the right subclavian until reliable phrenic capture was achieved from the distal poles. Successful ablation was performed with the cryocatheter with continuous phrenic nerve pacing from the subclavian. Five total four minute applications of cryoablation were performed to the area, and the atrial tachycardia terminated with the first application. After a 40 minute waiting period, there was no further evidence of atrial tachyarrhythmias. There was diaphragmatic contraction noted throughout the duration of cryoablation. In follow up the patient has been free of atrial fibrillation for 6 months.
Objectives: 1. Identify personal goals of care and align them with a patient’s medical prognosis.  
2. Setting limits on goals of patients when they lack capacity

Background: Acknowledgment of personhood is the foundation of decision making and preservation of dignity in patient-centered care. The family often plays a central role in this process. Everyone has personal wishes and goals that they hope to accomplish in their lifetime. No two individuals have the same sense of what brings them the greatest joy and contentment. As the illness progresses, patients may modify these personal goals. When people are diagnosed with terminal conditions often time, they long to have meaningful moments with special people. As healthcare professionals, we must assess the benefits versus burdens to get people to reach this goal.

Case Description: 22-year-old male with T-ALL complicated by CNS relapse presents with back pain and extremity numbness consistent with leptomeningeal disease. Although he has his father at his side, he longs for the presence of his mother who resides in Honduras, whom he has not seen in the past three years. He has maintained a daily phone relationship with his mother. Over the course of the hospitalization, his mental status worsens. His father attempts to maintain his son’s communication with his mother over the phone. Despite the patient’s inability to communicate with his mother verbally the sound of her voice brings him to tears. The palliative care team writes a letter to the embassy to allow for his mother to travel to the US to visit her dying son. Since this process cannot be completed expeditiously, the mother requests all medical interventions be performed to keep her son alive so as to give them a chance to spend his final hours together. The patient is made DNR but placed on mechanical ventilation with vasopressor support, anti-seizure medications, and artificial nutrition.

Conclusion: The focus of palliative care is acknowledging peoples’ goals, alleviating and preventing burdensome symptoms. Families play a central role in the establishment of personhood. As such, sometimes extreme medical measures are taken to be able to reach one’s personal goal in order for them to ultimately be at peace and to honor their personhood.
Objective: Setting limits on goals of patients when they have court-appointed guardians

Background: With advances in medical technology and research we can offer patients various interventions, and as such, patients with complex medical problems are living far longer than 20-30 years ago. It is important to begin early discussions with patients and families about goals of care and advanced directives. What happens to the subset of patients who have outlived their loved ones, don't have any family or friends who are reachable, or have an underlying developmental disability? For those with developmental disabilities, there are organizations such as Mental Hygiene Legal Services and the Office for Persons with Developmental Disabilities. There are representatives who will review patient cases with any family and practitioners to avoid the burden of futile and non-beneficial medical interventions. However, the second subset of patients relies on court-appointed guardians who are limited in their ability to make decisions regarding end of life care. These decisions must be presented to a judge.¹

We present two cases that demonstrate the limitation of palliative care services in these patients leading to more medical interventions and patient suffering with minimal improvement in the quality of life.

Case Descriptions: Patient A is a 76-year-old female with dementia, residing at a long term care facility, who presented to the hospital after an unwitnessed fall where she was found to have a large, acute, holo-hemispheric subdural hematoma with massive leftward midline shift. She had a poor neurologic exam and was kept on mechanical ventilation for 30 days with nasogastric feeds before being transitioned to hospice. Patient B is a 65-year-old bed bound male with atrial fibrillation, pacemaker, congestive heart failure, dementia, multiple embolic strokes with residual deficits, hydrocephalus with ventricular shunt, diabetes, dysphagia s/p gastrostomy feeding tube, presents to the hospital with hypoxemic respiratory failure requiring intubation and mechanical ventilation. He had a tracheostomy performed after 30 days of mechanical ventilatory support and was transferred back to a long-term care facility on a respirator.

Conclusion: Our cases show the need for a better approach to patients without capacity and a legal guardian as we feel they are unfortunately involved in the process of repeated hospitalizations, unnecessary interventions, and overall prolonged suffering as they are facing life threatening conditions.
Not Just B12: Subacute Degeneration of the Dorsal Cervical Spine due to Isospora belli Infection

Myers J., Ojuok E, Belletti L.

Case Presentation: Our patient is a 37-year-old gentleman with history of colonic Burkitt’s Lymphoma, in remission since 2010, eosinophilic colitis (on a prolonged steroid taper), CMV colitis, and common variable immunodeficiency, who presented with acute on chronic diarrhea. He incidentally noted worsening bilateral lower extremity weakness over the past 2 years, requiring the use of a cane to ambulate. He underwent upper endoscopy, enteroscopy, and colonoscopy, with biopsies positive for Isospora belli.

His diarrhea subsided on Trimethoprim-Sulfamethoxazole and intravenous fluids with aggressive electrolyte repletion. However, the patient’s lower extremity weakness persisted. Physical examination was notable for 5/5 strength of the upper extremities and 3/5 strength of the lower extremities, with weakened (2/5) plantarflexion of the left foot. Initially, there was concern for steroid-induced myopathy, given the patient’s chronic use of Prednisone. Initial work up, including VDRL, HIV, HTLV-1/2, West Nile, Lyme titers, autoimmune serologies, and lumbar puncture were negative. MRI showed dorsal segment abnormality concerning for subacute combined degeneration of the cervical spine. Given the patient’s MRI findings, serum B12, folate, methylmalonic acid were checked, but all returned normal. Zinc (43, 56-134 ug/dL), copper (10, 72-166 ug/dL), homocysteine (4.5, 5-15 umol/L) and ceruloplasmin (4, 20-60 mg/dL) were, however, all abnormally low. His ataxia was attributed to hypocupremia, in the setting of chronic malabsorption from Isospora belli.

Discussion: Copper is a cofactor in several important mechanisms, including the electron transport chain anti-oxide defense. Absorption occurs in the stomach and proximal duodenum, therefore deficiency is often seen in patients with prior surgeries or malabsorption syndromes. Gastric acid solubilizes the copper, which is then bound to proteins and transported to the liver where it is incorporated into ceruloplasmin for cellular delivery. A normal Western diet provides adequate amounts of copper. Symptomatic hypocupremia in the United States is thus rare. Patients often present with sensory ataxias and imaging can show increased T2 MRI signal, particularly of the dorsal cervical spine. Treatment involves copper supplementation and cessation of excessive zinc intake—as zinc blocks copper uptake. There is no report of clinical reversal of neurological symptoms, but patients have reported subjective sensory improvement with effective copper supplementation.

Conclusions: While hypocupremia has been consistently linked to hematologic derangements, neurologic abnormalities, including subacute degeneration of the dorsal cervical spine, has emerged a salient manifestation of copper deficiency. Copper deficiency mimics B12 deficiency. Hypocupremia should, thus, be considered in patients presenting with intractable neurological deficits, where all other workup for infectious and autoimmune etiologies proves unrevealing.
To t-PA or not t-PA?...The Therapeutic Dilemma of Systemic Thrombolysis in Submassive Pulmonary Embolism

*Myers J.*, Khan M, Hessel J.

**Case Presentation:** Our patient is a 24-year-old male with a family history of Antithrombin III (ATIII) deficiency and cerebral aneurysm. He was transferred to our hospital for management of syncope in the setting of a pulmonary embolism (PE). While at work as a landscaper, he felt lightheaded and diaphoretic. The following day, he syncopized, had bladder incontinence, without seizure-like activity, tongue biting, preceding chest pain or palpitations. Prior to his transfer, the patient syncopized twice, both in the setting of standing from a supine position. On admission, vital signs were notable for a heart rate of 123, but he was otherwise stable. He endorsed dyspnea and anxiety, but denied pre-syncpe, chest pain, or palpitations while supine. EKG showed sinus tachycardia, and the S1Q3T3 morphology of right heart strain (see Figure). The Troponin-T was 0.508. CTA-Chest showed bilateral saddle PE, extending into the segmental and subsegmental branches. Bedside transthoracic echocardiography (TTE) confirmed right heart strain. He was monitored in the ICU on systemic heparin, with the anticipation that if he decompensated, he would immediately receive systemic fibrinolysis.

**Discussion:** In a young, otherwise healthy patient with a submassive PE the role of systemic fibrinolysis is often controversial. According to the PEITHO trial, among patients with submassive PE, systemic fibrinolysis prevents hemodynamic decompensation. However, this was associated with an increased risk of major adverse bleeding. The MOPETT Trial later showed that administration of tissue plasminogen activator (tPA) in addition to anticoagulation decreased the long-term risk of pulmonary artery hypertension. However, given the often unpredictable clinical course of such patients, there remain uncertainties regarding the optimal timing of systemic thrombolysis. Thus, in addition to serologic and radiographic considerations, the decision to administer tPA relies on intensive clinical monitoring to detect subtle changes that could signal impending hemodynamic collapse. This would make tPA more palatable, especially in a patient like ours with a family history significant for cerebral aneurysm. After 36 hours in the ICU, the patient began to have episodes of severe hypoxia and chest pain, which prompted the administration of tPA. His symptoms resolved completely thereafter, and he had considerable improvement in right heart size and function. While testing could not be done in the setting of an acute thromboembolic event, in the absence of other risk factors, ATIII deficiency was likely the culprit of his thrombosis.

**Conclusions:** The decision to administer systemic thrombolytics in patients with submassive PE must weigh the benefits of preventing immediate hemodynamic compromise and the risks of pulmonary hypertension, with the grave risks of severe complications such as intracranial hemorrhage. However, there may be a subgroup of patients with submassive PE in whom the benefits of thrombolysis far outweigh the risks, beyond rigid parameters outlined by research trials to date.
A Comparison of the Gut Microbiome of Food Allergic Hosts and Their Mothers

Navetta B, Muzaffar Z, Kiehm J, Ponda P.

**Rationale:** The gut microbiome of infants and toddlers has been shown to be influenced by method of delivery. The relationship between the microbiome of food allergic children (FAC) and their mothers has not been explored.

**Methods:** This study is a subgroup analysis of an IRB approved study in the food allergic host. We compared the microbiome of 8 allergic children (age < 3 years) with their mothers (M) and healthy controls (HC). Bacterial DNA extracted from fecal samples of those with food allergy (based on appropriate clinical history and serum IgE > 95% predictive of reaction) to milk, egg, or peanut were assessed. Samples were amplified, sequenced using Nextgen sequencing, and analyzed for bacterial taxonomic classification using the V1-9 variable region differences. Sequence data was processed through MiSeq Reporter Metagenomics16S application and the Greengenes 16S ribosomal gene database.

**Results:** Upon comparison, as expected, we noted close similarity in bacterial representation at the phylum, class and order levels of only 3 mother-child pairs. 46% of HC and 37% of FAC were delivered via C-section, and there was no clear difference in the percent breastfed. M had 47%, FAC 18%, and HC 49% representation of Firmicutes at the phylum level.

**Conclusion:** Gut microbiome in mother-food allergic infant/toddler pairs is not always similar, and this is unrelated to breastfeeding or mode of delivery. There is preliminary evidence of gut microbial alterations in FAC when compared to HC and M. Given the small sample size, conclusions are limited but larger studies are necessary.
**Persistent FPIES**

*Navetta-Modrov B, LaBarba S, Cavuoto-Petrizzo MA, Jongco AM.*

**Introduction:** FPIES is a non-immunoglobulin E (IgE) mediated food hypersensitivity which presents with vomiting and diarrhea after ingestion of a food allergen. Cow’s milk is a common allergen and usually resolves by age 3. Oral food challenge (OFC) is the gold standard of diagnosis. We present a case of an 8 year old male with FPIES to cow’s milk.

**Methods:** During infancy he developed vomiting, lethargy and respiratory distress after cow’s milk formula. There was no evidence of cow’s milk-specific IgE on skin prick or ImmunoCAP testing. Despite strictly avoiding cow’s milk, he failed two subsequent OFCs in the intensive care unit at age 4 and 6 years. He continued to avoid cow’s milk until age 8 years, when he decided to undergo another FPIES challenge to cow’s milk. During the OFC, he had vomiting and an increase in the absolute neutrophil count (2.0 to 4.6 x 10^3/μL).

**Conclusion:** The follow-up evaluation for FPIES should include testing for food-specific IgE prior to OFC as patients initially presenting with or later developing food-specific IgE antibodies are at risk for persistent FPIES. Further studies are needed to establish the timing of follow-up challenges. The optimal timing for re-challenge in the setting of persistent IgE negative FPIES is unknown. It is also unclear how many attempts should be made and when to declare that FPIES is unlikely to resolve.
Hyponatremic Rhabdomyolsis?!  
Nazeer H, Simonson J, Mynn P.

**Case Report:** A 60 year old woman with a history of hypertension and low back pain was brought it by family after she was found unresponsive in bed. According to the patient’s family, at baseline the patient was a highly successful lawyer. Her husband and daughter reported that she stayed home from work the previous day because she experienced nausea and a small amount of vomiting. She had been taking percocet occasionally for her chronic back pain but was otherwise in her usual state of health. On admission, the patient was occasionally opening her eyes, moving all extremities but not following commands, and nonverbal. CT Head was negative for intracranial bleed. Urine and serum toxicology was unrevealing. The patient was found however to have a sodium of 114 with a creatinine kinase of 17,000 with normal renal function. The patient was admitted to the medical ICU. The patient appeared euvolemic and her serum osmolarity, urine osmolarity, and urine sodium were consistent with SIADH in the context of back pain and nausea as the inciting events. The patient was treated with three percent sodium chloride. Her mental status improved to baseline and her sodium level normalized. Upon further questioning the patient reported no recent traumas, no extended falls, no immobility, no recent strenuous exercise and no recent new medications. Her creatine kinase also trended down with intravenous fluids. She was transferred to the medical floors and discharged home soon after.

**Discussion:** Hyponatremia, defined as a plasma sodium level < 135 mEq/l, is the most common disorder of body fluid and electrolyte balance encountered in clinical practice. Hyponatremia has many well known sequelae including nausea, vomiting, lethargy, seizure, and coma. One of the underreported sequela is rhabdomyolysis. Rhabdomyolysis is a syndrome classically characterized by muscle necrosis with characteristically elevated creatinine kinase levels with or without impaired renal function. The causes of rhabdomyolysis are typically broadly grouped into 3 categories. (1)Traumatic, (2)Nontraumatic exertional, (3)Nontraumatic nonexertional. The pathophysiology for these processes converge into one final path that compromises the adenosine triphosphate (ATP) synthesis and the functioning of the Na+/K+ and Na+/Ca++ pumps in muscle cell membranes. It is thought that Hyponatremia induced rhabdomyolysis centers around the effect of decreased levels of sodium on the Na+/Ca++ pump. Hyponatraemia reduces the gradient of Na+ input within the muscle cell and reduces the Ca++ output. This increase in intracellular Ca++ starts an enzymatic activation and cellular death process resulting in breakdown of muscle cells.

**Conclusion:** We present a case of hypotonic hyponatremia and subsequent development of rhabdomyolysis. Hyponatraemia is a rare cause of rhabdomyolysis and can go unnoticed if not suspected. When obvious causes are not elucidated during the history taking process, it is important to remember the profound effect electrolyte disturbances can have on the muscle cell membranes.
A 65 year old African American man with history of a nondisplaced pathologic right femur fracture of unclear etiology, alcohol abuse with reported use of 10 or more drinks of whiskey a day and HTN, presents with worsening right lower extremity swelling and pain for 2 weeks. Patient reported 7/10 sharp stabbing pain worse with movement and associated with swelling. Patient was previously seen by an Orthopedist for a pathologic fracture in which he underwent an IR guided biopsy; results pending. Exam showed asymmetric edema of the RLE with evidence of a non-scaly erythematous maculopapular rash located on the inner thigh and anterior right leg. ROM and strength in right lower extremity was limited due to pain.

Vital signs were significant for T98.4 HR110 BP139/93 RR18 98%O2 on room air. Labs showed no leukocytosis, mild anemia 12.3/34.7, mild elevation in transaminases 66/43. CRP 8.1, ESR 28. Doppler was negative for DVT. X-ray of femur, knee, tibia and fibula showed a previously non-displaced femoral neck fracture now displaced superior-laterally with evidence of a lytic destructive metastatic lesion in the inferior right pubic bone region.

Dermatology, Orthopedics and Oncology were involved in the patient’s care. Patient completed a 5-day course of Clindamycin for presumed cellulitis likely superimposed on chronic stasis dermatitis. Results of the biopsy showed metastatic hepatocellular carcinoma with positive staining for HEPAR and AMACR. Hepatitis panel was significant for positive HCV infection with genotype 1a. Patient underwent right femur open-reduction internal fixation (ORIF) with no complications and was discharged to rehab with appropriate follow up with outpatient oncology.

**Discussion:** HHC is an aggressive malignant tumor that occurs in the setting of cirrhosis, most commonly due to chronic viral infections, hepatitis B and C, and chronic alcohol abuse. Presenting symptoms are often non-specific: Abdominal pain, malaise, anorexia, nausea and vomiting. Extrahepatic metastasis is often an indicator of poor prognosis and decreased life expectancy with the most common sites of metastasis being lung, intraabdominal lymph nodes, bone and adrenal glands. Skeletal metastasis, although a less frequent clinical finding, usually presents with bone pain and can occur before typical clinical symptoms of liver disease. Skeletal lesions seen in metastatic HCC are usually hypervascular, osteolytic, and expansile. Skeletal metastasis is often treated with radiation; however, surgery is often indicated in cases of pathologic fractures of the femur or humerus and in cases where decompression is required.

**Conclusion:** In patients with findings consistent with pathologic fractures, hepatocellular carcinoma should be considered as a possible diagnosis. Workup should include alcohol, drug use and sexual history, transfusion and transplant history.
A Case of Jejunal Perforation: A Diagnostic Challenge for Hospitalists

Newman J, Kushnir I, Yang D.

Case: A 71 year old man with a history of multiple sclerosis and gout (on Methylprednisolone) presented with weakness. Patient was diagnosed with a UTI on recent hospital admission for fever and weakness. He improved on IV antibiotics and was discharged home to complete a 7-day PO course, but returned 9 days later after his symptoms recurred along with 2-3 episodes of NBNB emesis. Physical exam showed a low-grade fever of 100.3 and a fairly benign abdomen. Labs were significant for a WBC of 16.46. Patient was started on IV Ceftriaxone for suspected undertreated UTI yet his weakness progressed despite 5 days of antibiotics. Blood cultures, urine culture, and UA were negative. On hospital day (HD) 6, patient became unresponsive with rigors and was found to have a fever of 103.4. Labs showed a lactate of 3.0. Patient's mental status improved to baseline and his fevers resolved after he was given IV Vancomycin, IV Zosyn, and 1 liter of normal saline. On HD 7, patient was well appearing. He denied abdominal pain and he reported a normal BM the night prior. Repeat lactate was 0.9. A CT A+P was ordered to evaluate for sources of infection and a perforated loop of jejunum was identified. Patient underwent exploratory surgery with bowel anastomosis and wash-out, and had an uneventful post-op recovery. Surgical pathology report confirmed diagnosis of diverticulitis.

Discussion: In our patient without any history of gastrointestinal disease or recent trauma, determining the underlying etiology of his jejunal perforation required some detective work. Review of patient's imaging with a Radiologist revealed that our patient likely had jejunal diverticuli that ruptured and walled off. Jejunal diverticulitis is a rare process that most commonly affects males between 60-70 years old and poses a vast diagnostic challenge because it is usually asymptomatic or presents with non-specific symptoms. In 15% of cases, it progresses to complications such as diverticulitis and perforation. Small bowel perforation has a 40% mortality rate because it is so difficult to diagnose. Given the complexity of its presentation, biomarkers that can aid in diagnosis are especially useful. A CRP > 200mg/L can strongly correlate to a diagnosis of acute diverticulitis complicated by perforation and fecal calprotectin, which is commonly used in patients with IBD, is closely associated with subclinical intestinal inflammation, serving as a useful marker of diverticular disease. Use of chronic steroids, as in this case, can further complicate diagnosis by masking the typical signs of bowel perforation such as chest or abdominal pain that are mediated by inflammatory immune response.

Conclusion: A high degree of clinical suspicion is required to diagnose jejunal perforations, especially in cases confounded by steroid use. This case highlights the need for vigilant consideration of risk factors and past medical history when working up sepsis of unknown etiology, and to pursue use of imaging as well as targeted laboratory tests when standard work-up provides inconclusive answers.
Acremonium Pneumonia in an AIDS Patient

Niknam N, Mankame S, Ha L, Gautam-Goyal P.

Acremonium is a saprophytic fungus mostly causing superficial skin, nail, or ocular infections after traumatic inoculation. However, it is being recently recognized as one of the opportunistic infections in immunocompromised patients including neutropenia, malignancies, chronic granulomatous disease (CGD) and transplant recipients. To our knowledge there have been no reported cases of Acremonium infection, related to HIV or AIDS. We present a case of Acremonium pneumonia in a patient with no past medical history who was found to have AIDS.

Introduction: Acremonium is a genus of fungi, formerly known as Cephalosporium, from which cephalosporin antimicrobials were derived. The genus contains about 150 species, most of which cause opportunistic infections in humans and animals such as eumycetomas and onychomycosis. Most reported cases were cutaneous infections or keratitis but pneumonia and systemic infections have been rarely reported and only in the setting of malignancy, neutropenia, transplant or other type of immune deficiency (1, 2). There have been case reports of Acremonium pneumonia in a diabetic patient who was otherwise immunocompetent (3) and a lung abscess in a young patient with no other known risk factors who were successfully treated with amphotericin and itraconazole(4). However Acremonium pneumonia has not yet been reported in HIV/AIDS patients.
A Rare Case of Alveolar Hemorrhage Caused By Streptococcus Pyogenes

Niknam N, Ha L, Mankame S, Gautam P.

S. pyogenes is the cause of many important human diseases, ranging from mild superficial skin infections to life-threatening systemic diseases. The post streptococcal syndromes are immune mediated phenomena including Henoch-Schönlein purpura (HSP).

HSP is more common in children and usually self limited but it can cause skin, joint, renal, gastrointestinal and rarely respiratory involvement. We present a case with streptococcus pyogenes pneumonia that presented with respiratory failure, pulmonary hemorrhage, extensive rash and renal failure.

**Introduction:** Group A Streptococcus (GAS), also known as Streptococcus pyogenes, cause a broad range of infections and complications such as glomerulonephritis and vasculitis. Henoch-Schönlein purpura (HSP), also called immunoglobulin A vasculitis (IgAV) [1], is the most common form of systemic vasculitis in children. It is less common in adults and reported with worse renal outcomes [2, 3]. About one-half of the cases of HSP (IgAV) are preceded by an upper respiratory tract infection, especially those caused by streptococcus. Other infectious agents, vaccinations, and insect bites also have been implicated as possible triggers for HSP (IgAV) [4, 5].

HSP usually involves kidneys, joints, gastrointestinal system and skin but severe lung involvement such as pulmonary hemorrhage is very rare [6].

We present a rare case of severe streptococcal disease causing systemic vasculitis and alveolar hemorrhage.
Recurrent Severe Respiratory Infections Due to Pathogenic Ariantin TeCPR2
Oriel R, Rosenthal D.

7 yo Bukharian male with severe central sleep apnea, epilepsy, and global developmental delay was followed longitudinally for recurrent bacterial/viral pneumonias requiring multiple PICU admissions/intubations.

**Immune evaluation (age 2):** low B-cells, normal T/NK-cells; protective titers to tetanus, non-protective titers to *S. pneumoniae*; normal CH50 and neutrophil oxidative burst. Immune evaluation (age 5): persistent B cell lymphopenia; normal lymphocyte proliferation to PHA and PWM, quantitative IgG/IgA/IgM; protective titers to diphtheria, *H. influenza* type b, and neutralizing Ab to polio, yet persistently low *S. pneumoniae* titers despite Prevnar-13® vaccination.

Whole exome sequencing (WES) identified a TECPR2 c.3416delT frameshift mutation previously implicated in autophagy dysfunction and consequent hereditary spastic paraparesis, which has been associated with gastroesophageal reflux, but not immunodeficiency.

To our knowledge, this is the sixth case of a Bukharian patient with this pathogenic variant and progressive neurologic decline. WES should be considered if an underlying etiology for recurrent severe infections cannot be identified. Although this patient did not have a primary immunodeficiency, the recurrent infections merited WES. As more cases of TECPR2 mutations are identified, the mechanism of recurrent infections can be better characterized.
Underlying Chronic Urticaria in Patients with Multiple Drug Allergies: A Call for Screening

Oriel R, Innamorato A, Kaplan B.

Rationale: Among other triggers, medications and underlying infections may cause worsening of chronic urticaria (CU). We hypothesize that a significant proportion of patients labeled with multiple drug allergies have an underlying, undiagnosed chronic or recurrent urticaria ultimately leading to overdiagnosis of drug hypersensitivity.

Methods: A retrospective chart review was performed on drug allergic pediatric and adult outpatients evaluated by the division of Allergy & Immunology. Multiple drug allergies were defined as reaction to 2 or more chemically unrelated drugs. Demographics, drug allergy class, atopic conditions, and presence or absence of screening questions for urticaria were recorded.

Results: Seventy charts from patients in the division of Allergy from 8/2013-7/2016 were reviewed. Forty-one patients met our definition of multiple drug allergies. 24.4% (10/41) of patients with multiple drug allergies had a concomitant diagnosis of CU. Of those patients, 90% were female and 90% had atopic disease. Antibiotics were the most common culprits (80%), with sulfonamides and beta-lactams comprising 87.5% and 62.5%, respectively. Notably, 65.9% (27/41) of the patients included in our study were not asked screening questions for chronic or recurrent urticaria.

Conclusions: Prevalence of reported drug allergy in CU patients is dramatically higher in comparison to that of the general population. With increasing importance on accuracy of drug allergies reported in medical records, it is prudent that patients with multiple drug allergies be screened for chronic or recurrent urticaria. Further studies are needed to evaluate if patients with CU have increased prevalence of drug hypersensitivity, or if underlying, untreated urticaria accounts for misdiagnosed drug allergy.

Keywords: Multiple drug allergies, Chronic Urticaria
Serial Lung and Diaphragm Ultrasonography to Predict Successful Discontinuation of Mechanical Ventilation


**Introduction:** This study seeks to evaluate the performance of serial bedside ultrasonography to assess lung aeration and diaphragmatic function during weaning from mechanical ventilation (MV).

**Methods:** Study subjects were patients in the medical intensive care unit who required endotracheal intubation with MV and who was under consideration for extubation. When the patient was ready for extubation as per standard clinical criteria, bedside ultrasonography was performed on three occasions: (1) on assist control mode with consistent ventilator triggering (2) following spontaneous breathing trial (SBT) for 30 minutes (CPAP 5cmH2O/PS 5cmH2O) (3) 4-24 hours after extubation. Ultrasonography was used to assess lung aeration pattern in 8 predefined thoracic regions, and to measure diaphragm thickness fraction (calculated as percentage from: thickness at end inspiration – thickness at end expiration / thickness at end expiration), diaphragm excursion, and diaphragm contraction velocity. Failure of weaning from mechanical ventilation was defined as either the need for non-invasive ventilation or re-intubation within 48 hours of extubation. The success of removal from mechanical ventilation was co-related with the above measurements using the Mann-Whitney test.

**Results:** Forty one patients were enrolled in the study (21 males, mean age 68.9 years, and mean duration of MV 4.9 days). The most common diagnosis was septic shock. Ten patients had failure of removal from MV. There was no significant difference between patients that were successfully removed from MV and those who failed with respect to clinical characteristics, rapid shallow breathing index, MV duration, and absolute values for diaphragm thickness fraction, excursion and contraction velocity. During SBT and following extubation, diaphragm excursion (p<0.001) and velocity (p=0.006) were significantly reduced while lung aeration score was significantly worse (p=0.0001) in the patient group that failed removal of MV when compared to patients who were successfully extubated.

**Conclusions:** These results show a significant difference between groups with successful and failed extubation with regards to serial evolution of diaphragm function and lung aeration pattern on ultrasonography following removal from MV.

**Clinical Implications:** Serial ultrasound assessment of diaphragmatic function and lung aeration pattern may be useful to predict successful removal from MV.

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S= successful liberation from MV

F= failure of liberation from MV
Introduction: Sodium Glucose Co-transporter 2 (SGLT2) inhibitors are being increasingly prescribed for Type 2 diabetes mellitus (DM). Our case describes euglycemic diabetic ketoacidosis (DKA) in a patient with Type 1 DM in the setting of SGLT2 inhibitor use.

Case Description: A 20-year old woman presented with polydipsia, anorexia and a blood glucose level of 300 mg/dL on her home blood glucose monitor. She had type 1 DM controlled on insulin pump for the past 10 years. Two weeks prior to admission she was started on Canagliflozin, an oral SGLT2 inhibitor. She was admitted with DKA, anion gap of 29 mmol/dL and serum glucose of 289 mg/dL. Insulin pump was discontinued and she was initiated on insulin infusion. Within 12 hours, anion gap closed and she was transitioned to long acting insulin. However, DKA relapsed within 1 day. She had no precipitating factors for DKA except persistent heavy glycosuria. We hypothesized that she had insulin deficiency despite near normal blood glucose level likely due to persistent glycosuria as a result of ongoing SGLT2 inhibition and impaired glucose reabsorption in the proximal renal tubules. She was subsequently initiated on higher insulin infusion with 10 % Dextrose infusion to allow metabolism of ketones and prevent hypoglycemia. She required insulin infusion for 4 days before closure of anion gap. Large level of glycosuria persisted for 7 days before showing a declining trend. She was discharged on subcutaneous insulin regimen.

Discussion: SGLT2 inhibitors promote weight loss and may have cardiovascular benefits. While SGLT2 use may be feasible\(^1\), no randomized trials have established their efficacy or safety in Type 1 DM. SGLT2 use in T2 DM precipitating euglycemic DKA is well described.\(^2\) DKA in the setting of SGLT2 inhibitor use may be diagnosed late due to relatively normal blood glucose level. Insulin infusion may be required at a higher dose and for prolonged periods with dextrose infusion due to continued glycosuria and relative normoglycemia.

Conclusions: With recent popularity of this drug class, physicians should be aware of refractory euglycemic DKA and persistent glycosuria precipitated by SGLT2 inhibitors.
Acute Fulminant Hepatitis A in a Patient with Non-Alcoholic Fatty Liver Disease (NAFLD)

Patel A, Bernstein D, Lee TP.

**Introduction:** Fulminant hepatitis A with liver failure is rare but potentially fatal. Acute liver failure due to hepatitis A virus (HAV) infection has up to a 50% mortality rate without liver transplantation (OLT). Patients with chronic liver disease (CLD) are at higher risk of fulminant hepatitis A with liver failure. HAV immunization is indicated in patients with all etiologies of CLD such as non-alcoholic fatty liver disease (NAFLD) with non-alcoholic steatohepatitis (NASH) to prevent morbidity and mortality.

**Case:** A 73-year-old woman with coronary artery disease s/p stent placement and diabetes (DM) presented with generalized weakness for 2 days. She was found to have diabetic ketoacidosis and suspected sepsis. She denied recent travel or sick contacts. She endorsed nausea but denied anorexia, vomiting, abdominal pain, diarrhea or dark color urine. Blood work on admission showed AST 171 U/L, ALT 122 U/L, INR 1.26 and normal creatinine. Toxicology studies were negative. Abdominal ultrasound showed diffuse hepatic steatosis. Acute hepatitis B and C viral infections were ruled out but anti-HAV IgM was positive. Over the next 3 days, her liver enzymes continued to rise. AST increased to 8632 U/L, ALT to 4149 U/L (see figure 1). Total bilirubin increased to 2.2 mg/dL, INR to 2.72. Creatinine remained normal. Her mental status deteriorated. Head CT showed no acute intracranial process. Blood cultures, urine culture and chest xray were negative. She was then transferred to a Liver Transplant Center for acute liver failure. Her INR worsened, and she developed stage 3-4 encephalopathy. She was successfully transplanted 10 days following initial presentation. The liver explant showed steatohepatitis.

**Discussion:** We report a case of fulminant HAV in a previously unexposed, non-vaccinated patient with NASH who required OLT. Acute HAV infection is generally a self-limiting disease. Acute HAV infection with liver failure requiring OLT has significantly decreased in the US. The Centers of Disease Control (CDC) recommends that individuals with CLD should receive HAV vaccination. NAFLD is becoming the most common liver disease in the US and worldwide. The prevalence of NAFLD in the US is about 30%, and 2-3% of the general population has NASH. Vaccination rates of HAV in those with NAFLD and DM reportedly have increased but continue to remain low at 15-20%. Increased awareness with better implementation of HAV vaccination recommendations is warranted for these populations.
Screening for Hepatitis A Immunity in Patients with Non-Alcoholic Fatty Liver Disease (NAFLD) at an Outpatient Hepatology Practice.  

**Patel A, Firoozan S, Tsai H, Lee TP.**

**Background:** The Centers of Disease Control (CDC) reported an average of 1600 cases of acute hepatitis A virus (HAV) infection throughout the US annually. This incidence has not significantly decreased since 2009. HAV infection is preventable by vaccination. It is usually a self-limited disease and treatment in general is supportive care. Acute fulminant hepatitis A is uncommon, about 1%. But it can be life threatening requiring liver transplantation. Underlying chronic liver disease such as non-alcoholic fatty liver disease (NAFLD) with non-alcoholic steatohepatitis (NASH) may increase the morbidity and mortality of HAV infection. The CDC recommends that individuals with chronic liver disease such as NASH should receive HAV immunization.

**Aim:** To study the HAV immunity in patients with NAFLD who had NASH or significant fibrosis, and provide immunization to susceptible individuals.

**Methods:** We retrospectively reviewed the serological testing of hepatitis A IgG antibody in patients diagnosed with NAFLD who had NASH proven by a liver biopsy, or significant fibrosis of F2 disease or greater demonstrated by Fibroscan at the Northwell Health Hepatology practice from January 1st to August 31st 2016. Patients with coexistent chronic liver diseases such as chronic hepatitis B or C virus infection, alcohol, autoimmune, iron or copper related liver diseases were excluded.

**Results:** Six hundred and ninety three patients were diagnosed with NAFLD over the past 8 months, of which 425 had either a liver biopsy or Fibroscan. Seventy patients with other coexistent chronic liver diseases were excluded. There were a total of 125 patients diagnosed with NASH by liver biopsy, or F2 and greater fibrosis on Fibroscan - which comprised 73 men (58%), 52 women (42%), 75 Caucasians (60%), 30 Hispanics (24%), 10 African Americans (8%), 8 Asians (6.4%) and 2 others (1.6%). Forty five out of 125 patients (36%) had immunity against HAV infection.

**Conclusion:** We conducted a retrospective review of the HAV immunity in patients diagnosed with NAFLD who had NASH, or F2 and greater fibrosis at an outpatient hepatology practice. The prevalence of NAFLD has increased to 30% of the general US population, and up to 10% has NASH. NASH is one of the chronic liver diseases that may increase HAV associated morbidity and mortality. Thirty-six percent of our studied patients had immunity to hepatitis A. The remaining 64% patients who were susceptible to HAV infection were offered hepatitis A immunization. The HAV immunity rate was low- it is important for health care providers to be vigilant in screening and reinforcing HAV immunization in patients with NASH or significant fibrosis to reduce HAV associated morbidity and mortality.
Use of Infliximab for the Treatment of Sweet's Syndrome in a Patient with Inflammatory Bowel Disease (IBD)

Patel A, Jotwani P, Desai D, Sultan K.

Introduction: Sweet’s Syndrome is characterized by fever, neutrophilia, painful erythematous skin lesions (papules, nodules, plaques) and a diffuse neutrophilic infiltrate in the upper dermis of the skin. It can be idiopathic, malignancy-associated or drug-induced.

Case: A 47 year old female with Ulcerative Colitis diagnosed in 2010 presented with 3 days of nausea, vomiting and watery diarrhea. She had been receiving Azathioprine 100mg daily for 3 years. Laboratory studies were significant for: WBC 18.4 (89% neutrophils), ESR 20, CRP 14. Infectious stool studies and clostridium difficile toxin were negative. CT scan showed diffuse colonic, gastric antral & duodenal wall thickening. Upper endoscopy revealed diffuse gastric erythema, and shallow ulcerations in the duodenum (pathology showing acute & chronic duodenitis). Flexible sigmoidoscopy showed confluent ulcerations & mucus exudates in the recto-sigmoid colon (pathology showing chronic active colitis). Three days after admission, she developed high grade fevers (102.4°F), and new erythematous tender papules on the torso and extremities (figure 1). Biopsy of the papules showed moderate interstitial neutrophilic infiltrate in the upper dermis consistent with Sweet’s Syndrome (figure 2). The patient declined steroid therapy due to a previous adverse reaction of increased intraocular pressures. She agreed to treatment with Infliximab at a dose of 5mg/kg. Her skin lesions & fever resolved within 2 days, and she had improvement of her gastrointestinal complaints. She was discharged, and continued on outpatient Infliximab therapy and is currently in clinical remission.

Discussion: We report a case of Sweet’s Syndrome in a patient with inflammatory bowel disease (IBD) successfully treated with Infliximab. Sweet’s Syndrome is a rare extra-intestinal manifestation of IBD presenting independent of IBD activity and should be considered in the differential diagnosis of a patient with IBD who develops skin lesions. Its skin manifestations can last for weeks to months without treatment. Systemic corticosteroids are the gold standard therapy. The success of Infliximab in the treatment of our patient supports the role of tumor necrosis factor (TNF) in the pathogenesis of Sweet’s Syndrome. Few case reports have shown the successful treatment of Sweet’s Syndrome associated with Crohn’s Disease with the use of infliximab at doses of 5mg/kg and 10mg/kg. Our case suggests that Infliximab & other anti-TNF agents can be successfully used as a second line therapy for Sweet’s Syndrome in those with IBD.
Application of Clinical Scoring System to Distinguish Eosinophilic Esophagitis vs. Proton Pump Inhibitor-Responsive Esophageal Eosinophilia

Patel C., Ponda P.

**Rationale:** Diagnosis of Eosinophilic Esophagitis (EoE) is evident with biopsy, but differentiating between EoE and proton-pump inhibitor-responsive esophageal eosinophilia (PPI-REE) using clinical history continues to pose difficulty. We use a clinical score that aims to discriminate the two entities.

**Methods:** The scoring system by Mulder et al. was applied to fourteen patients with known esophageal biopsy of ≥15 eosinophils per high-power field (hpf). The scoring system uses clinical and endoscopic features at initial presentation to determine an odds ratio. This odds ratio accuracy was then assessed based off histological findings after treatment with a PPI.

**Results:** Of the fourteen patients, eleven had scores ≥100 with a 0.85 relative odds of EoE. Three patients had a score of ≤100 of which two had a score of 26 and 93 with a 0.21 and 0.80 relative odds of EoE respectively. Both had PPI-REE. One patient had a score of 0 and <0.21 relative odds with EoE. The remainder of the eleven patients had >15 eosinophils/hpf on repeat endoscopy after PPI trial with a diagnosis of EoE.

**Conclusion:** This scoring system correctly identified eleven out of twelve patients with EoE and one out of two patients with PPI-REE. A large number of more evenly distributed PPI-REE and EOE patient populations are needed to validate this scoring system. However, this has the potential to be applied to suspected EoE patients on initial evaluation to expedite management (performance of skin tests) prior to histologically assessing PPI-responsiveness in patients with higher likelihood of having EoE.
Obtaining Do-Not-Resuscitate Orders in Older Patients during Hospitalization: Is It Too Late?


Background: Despite increasing regulations regarding advance care planning (ACP), there is great variability in the implementation and documentation of Do-Not-Resuscitate (DNR) orders. However, there is a dearth of research investigating the significance of the timing of a DNR order in a large medical cohort.

Methods: In this one-year retrospective cohort study of medical hospitalized patients aged 65 and older, propensity score matching (PSM) was utilized, using demographics and Charlson Comorbidity Index (CCI). Patients receiving early DNR orders (within 24 hours) were compared to patients with late DNR orders (after 24 hours) on outcomes including: length of stay (LOS), discharge disposition, 30-day readmission and in-hospital mortality.

Results: When comparing the DNR group (N=1,347) with the No-DNR group (N=9,182) before PSM, the DNR group was significantly older (85.8 vs. 79.6, p<0.0001), with more comorbid conditions (3.0 vs. 2.5, p<0.0001). After PSM, 1,329 of the 1,347 DNR patients were pair-matched with 1,329 of the 9,182 non-DNR patients, yielding matches for 98.7% of the DNR patients. DNR patients had a significantly longer LOS (9.7 vs. 6.0 days, p<0.0001), increased discharge to hospice (6.5% vs. 0.7%, p<0.0001), and increased mortality (12.2% vs. 0.8%, p<0.0001).

Patients with an early DNR order were older than those with a late DNR order (86.7 versus 84.4, p<0.0001). Patients with an early DNR were less likely to: spend any time in the ICU (10.57 vs. 17.31, p=0.0004), have a palliative care consultation (8.21 vs. 11.97, p=0.02), have restraints (5.85 vs. 11.60, p=0.0002), be NPO (50.12 vs. 55.99, p=0.03), have an indwelling-bladder catheter (31.72 vs. 40.88, p=0.006), and have in-hospital mortality (10.2 vs. 15.47, p=0.0039). Patients with an early DNR were more likely to be discharged home (65.55 vs. 58.20) and less likely to be discharged to home hospice (2.24 vs. 4.6), p=0.01. There was a significant difference in LOS for those with a DNR ≤ 24 hours vs. DNR > 24 hours (median 6 days vs. 10 days respectively, p<0.0001).

Conclusions: Our study reveals that the presence of a DNR in a cohort of medical inpatients is a strong predictor for poor short-term outcomes. Further, the timing of the DNR order is significantly associated with quality of life metrics. Thus, this study underscores the importance of ACP and DNR discussions prior to an acute illness as opposed to during hospitalization.
Case Presentation: This is a 76-year-old woman, former heavy smoker with history of Hashimoto’s thyroiditis and breast cancer in remission. She was diagnosed with dermatomyositis in 2015 when she developed a heliotrope rash. As part of the paraneoplastic workup, she underwent imaging which revealed a left lung mass and abdominal lymphadenopathy. Biopsy of lung mass was consistent with non-small cell lung cancer (NSCLC). Patient received 6 cycles of carboplatin and gemcitabine but had disease progression. An immunotherapeutic agent called Nivolumab was initiated in September 2016 and she completed 3 cycles. As a consequence, she was admitted to the hospital in October 2016, with debilitating, progressive proximal upper and lower extremity weakness and tenderness most notably in the right shoulder. Her right shoulder x-ray was unremarkable. Labs revealed an elevated creatinine kinase (CK) level of 1220 (U/L) and thyroid-stimulating hormone (TSH) of 24.6 (uIU/ml). These values were normal 10 months ago. She was admitted for a dermatomyositis flare and uncontrolled hypothyroidism. Rheumatology and Endocrinology consultations assessed that Nivolumab was likely the inciting agent for flare-ups of her autoimmune conditions. Methylprednisolone 1mg/kg was started and levothyroxine dose was increased. Patient’s condition improved significantly since admission. She was transitioned to prednisone and discharged to a rehabilitation facility. Outpatient labs one month later revealed normal TSH and CK levels of 5.34 (uIU/ml) and 446 (U/L) respectively.

Discussion: Checkpoint inhibitors have emerged as new agents in treatment of cancer. Since 2011, the FDA has approved three immune checkpoint inhibitors (Ipilimumab, Pembrolizumab, and Nivolumab) for advanced melanoma and metastatic NSCLC. Nivolumab is an anti-PD1 antibody and was approved by the FDA in 2014. These agents compared to conventional therapies have shown greater survival benefit through up-regulation of anti-tumoral immune response. However, they can also cause aberrant immune activation leading to undesirable off-target inflammation and severe immunotherapy-related adverse events (irAEs). In a recent study that reviewed 250 cases of patients on immunotherapy, Nivolumab was implicated primarily in autoimmune thyroid disease and pneumonitis. In another study looked at adverse effects of immunotherapy in patients with pre-existing autoimmune disorders (AD) and found 20 out of 52 patients experienced a flare of AD requiring immunosuppression. Our case demonstrates a patient with dermatomyositis and hypothyroidism who experienced exacerbation of both conditions after initiation of Nivolumab.

Conclusion: With the emerging immunotherapy agents in the field oncology, it is important for a physician to be aware of their side effects. Potential toxicities have been reported for almost every organ system. The main stay treatment for irAEs is steroids and discontinuation of immunotherapy agent.
Hypoglycemia Secondary to Paraneoplastic Syndrome Mediated by Elevated Big IGF-2 in a Patient with Advanced Liposarcoma

Pentlow C, Schulman R.

**Introduction:** Hypoglycemia is known to be caused by paraneoplastic elevation of IGF-1 and -2 levels. Big IGF-2 has been shown to cause hypoglycemia when IGF-2 levels are normal. The IGF-2: IGF-1 ratio is used to reflect such levels, with a ratio >10 being significant.

**Clinical Case:** An 84 year old male with history of de-differentiated recurrent liposarcoma, post excision several years prior, presented with altered mental status. He was found to have a fingerstick value of 25 mg/dl. Mental status was reported to improve with D5W. CT scan of the abdomen revealed large heterogeneous intraabdominal masses measuring approximately 20 x 15 cm on the right and 26 x 20 cm on the left. Initial serum glucose was 24 mg/dl. 3 AM cortisol level was 13 ug/dl (8AM, 8-19). C peptide and insulin levels drawn at the time of a serum glucose of 56 mg/dl were 0.1 ng/ml (0.8-3.90) and <0.2 uU/ml (3-17) respectively. Sulfonylurea screen was negative. IGF-1 was 24 ng/ml (34-165), and IGF-2 was 647 and 517 ng/ml on repeat (333-967). His IGF-2: IGF-1 ratio was found to be elevated at 27.

For management, in conjunction with D10W, he was started on prednisone 30 mg daily. He was titrated to hydrocortisone 75 mg IV q 8h due to persistent hypoglycemia, and D10W was continued. He was continued on this regimen until partial surgical resection was performed. Postoperatively he was successfully tapered off steroids and maintained a normal glucose without the need for intravenous dextrose. Pathology revealed recurrent de-differentiated liposarcoma.

He was readmitted 8 days after discharge with shortness of breath and found to have a right sided pulmonary embolus. He was also found to have hypoglycemia with a serum glucose of 47 mg/dl. He was placed on prednisone, which was titrated to 15 mg twice daily. The patient and his family ultimately made the decision to transfer to hospice care.

**Conclusion:** We present a rare case of hypoglycemia due to paraneoplastic elevation of big IGF-2.
Improving Microalbuminuria Screening in Patients with Diabetes Mellitus: A Quality Improvement Project

Popplewell C, Carter L, Cacace F.

Objectives: The objectives of this intervention were to increase the microalbuminuria screening rates for diabetic patients and to create opportunities for patient education regarding microalbuminuria and diabetes.

Description of Intervention: A group of resident physicians created a poster that featured a urine sample collection device and used simple language (in both English and Spanish) to describe a microalbuminuria screening test. This poster was displayed in all patient exam rooms in the outpatient clinic. There were several goals of this poster design. First, the poster’s presence in exam rooms was intended to empower patients to ask physicians about microalbuminuria screening and in turn learn more about diabetes. In addition, the poster acted as a reminder to physicians to order the microalbuminuria test in patients with diabetes. The patient population that was studied was a group of 88 resident clinic patients who carried a diagnosis of diabetes mellitus. All of these patients had already established care with the clinic and had been seen in the clinic within the previous year. The mean patient age was 56.7 years, and the group included 41 men and 47 women.

Measures of Success: The intervention was evaluated by assessing the number of patients who had appropriate microalbuminuria screening at baseline (screening performed within the previous year) and after the poster had been posted for a total of 6 months.

Findings to Date: At baseline, 43 of the total 88 patients had been screened for microalbuminuria within one year (48.8%). After the poster had been displayed in the clinic for 6 months, 55 of the total 88 patients had been screened for microalbuminuria within one year (62.5%).

Discussion: This quality improvement project showed that using a simple tool, such as a poster, could improve the quality of care given to patients. This poster acted as a reminder to physicians to order an appropriate screening test, but it also served as a means to empower patients to learn more about their medical condition. In the future, different distribution of the poster may be considered as a way to reach more patients. For example, we may consider displaying the poster in restrooms or the clinic waiting room. It would also be useful to study how exposure to a poster such as this would affect screening rates in a larger patient population.
It’s Getting Hot in Here: A Case of Heat Stroke Causing Hyponatremia and Subsequent Rhabdomyolysis

*Popplewell C.* Verbsky J.

**Case:** A 49-year-old man was brought to the Emergency Room in July by his family due to altered mental status. The patient had been in his usual state of health until 8 days prior to presentation when he developed headaches and malaise. He was diagnosed with a viral syndrome by his physician, but his symptoms worsened over the next few days with development of abdominal pain and nausea. On the 8th day, his family found him in bed confused and brought him immediately to the hospital.

His medical history was significant for chronic hepatitis B, for which he had been taking Viread for years. He had no significant surgical or family history. He denied toxic habits. He worked in a warehouse and had been working more lately due to layoffs. He did a great deal of manual labor, and the warehouse was not air-conditioned during the hot summer. He frequently skipped meals and did not stay well-hydrated at work.

Upon presentation to the ER, the man was afebrile and normotensive. His exam was significant for agitation. Labwork showed a sodium level of 112, a serum osmolality of 255, and a creatine kinase (CK) level of 4338. The patient was admitted to the Medical Intensive Care Unit with severe hypovolemic hyponatremia caused by heat stroke. Sodium correction was initiated, but as the patient’s sodium level corrected, his CK levels rose to above 200,000. The patient’s IV fluids were then changed to include both 0.045% Normal Saline and Lactated Ringers, in an effort to correct his hyponatremia and manage his rhabdomyolysis. The patient’s mental status improved with sodium correction, and CK levels improved with aggressive hydration. The patient was discharged with a sodium level of 139 and CK level of 11,405.

**Discussion:** Hyponatremia should be considered in a patient presenting with altered mental status. A comprehensive history can provide clues as to the etiology of the hyponatremia. Rhabdomyolysis is a serious complication of hyponatremia that occurs infrequently, and it is an important consideration for anyone diagnosing or treating this condition. Rhabdomyolysis is a complication of both hyponatremia and its correction; the literature shows few case reports of this phenomenon. Fluid management is very important in patients with both hyponatremia and rhabdomyolysis.
Level of Concordance between P16 Immunohistochemical Staining and Human Papilloma Virus In-Situ Hybridization in Oropharyngeal Cancers – A Single Institution Retrospective Chart Review Study
Seetharamu N, Preeshagul I, Teckie S, Paul, D, Kohn N, Frank D.

Human Papilloma Virus (HPV) related oropharyngeal squamous cell cancer (OPSCC) is distinct from that attributable to tobacco/ETOH use, with a favorable prognosis and treatment response. Currently HPV status does not influence treatment choices. Clinical trials are underway exploring de-intensification strategies for HPV+ OPSCC with the rationale of providing effective but less toxic therapies. Presently, no gold standard diagnostic tests exist. Immunohistochemistry (IHC) for p16, a surrogate marker for HPV, and HPV DNA in-situ hybridization (ISH) are often used. Discordance between the two tests is common. 3.8%–7.3% of non-HPV+OPSCC stain positive for p16 and HPV ISH is associated with 13%–41% false-negative rate. This discrepancy is secondary to the limitation of p16 as a surrogate marker, as it is also expressed in non HPV related basaloid carcinomas. Mutation/methylation of the p16 gene or inactivation of the pRB pathway are other possible mechanisms of discrepancy. We evaluated the utilization of HPV p16 and HPV ISH tests in OPSCC in our health care system with the following specific aims.

Cases of OPSCC diagnosed between 2012 - 2014 were reviewed. Data included age, gender, stage, smoking, primary site, and HPV status.

50 patients analyzed. 39 male (78%). Median age 60.6 years. Most common primary site was base of tongue (n=28, 56%), tonsil (n=19, 38%). Most patients had advanced disease: 16 stage III (32%), 31 stage IVA (62 %), 1 stage IVB (2%). All HPV ISH positive tumors stained for P16 (100%).

Discrepancies between p16 IHC and HPV ISH are high and could result in undertreating a proportion of false positive HPV OPSCC patients. p16 is more sensitive in never-smokers. HPV ISH may be less reliable, therefore, the utilization of p16 IHC is recommended for diagnostic purposes in OPSCC while improved modalities are developed. The sensitivity of HPV detection using massive parallel DNA/RNA sequencing as well as mass spectrometry may result in more frequent utilization of these modalities. As we advance towards HPV-specific protocols, accurate assessment of HPV status is essential.
The Utilization of Pre-Treatment Neutrophil to Lymphocyte Ratio as A Predictive Marker for Efficacy of Immunotherapy In Non-Small Cell Lung Cancer.

Preeshagul I, Sullivan K, Paul D, Seetharamu N.

Background: Recently, the tumor immune environment has been found to play an intricate role in lung cancer progression. Studies have demonstrated that cancer cells can attract neutrophils into the tumor stroma through precise chemokine signaling pathways. Consequently, neutrophils promote angiogenesis, metastasis and inhibit apoptosis, whereas lymphocytes assist with tumor defense. Increased peritumoral neutrophil-to-lymphocyte ratio (NLR) has been shown to mediate T cell anergy and tumor immune evasion. Elevated blood NLR has been shown to correlate with increased tumor neutrophil infiltration and decreased CD3 (+) T-cell infiltration in various solid tumor pre-clinical models. Immune checkpoint inhibitors, which harness endogenous lymphocytic response to fight cancer, have recently emerged as the most promising anticancer therapies in Non-Small Cell Lung Cancer (NSCLC). We hypothesized that peripheral blood NLR could be a predictive marker for clinical benefit from immune checkpoint inhibition.

Methods: We performed a single institution retrospective analysis of 50 patients with NSCLC treated with Nivolumab from July 2015 to April of 2016. Each patient’s NLR was evaluated prior to starting therapy with Nivolumab. A cut-off of 5 was used to classify NLR as high or low based on prior studies. The presence or absence of clinical benefit to therapy was determined. Clinical benefit was defined as objective response or stable disease as per RECIST criteria after at least 3 months of therapy. Descriptive statistics were utilized to summarize the data. Chi-square test was used to compare clinical benefit from Nivolumab in low and high NLR populations.

Results: There were 48 evaluable patients. 32 patients (66.7%) had a low pre-Nivolumab NLR. 24 (75%) of these patients were noted to have a clinical benefit at 3 months of Nivolumab treatment. 16 patients (33.3%) of patients had a high NLR, of whom only 3 patients experienced a clinical benefit (18%). This difference was statistically significant (P=0.05). 2 patients with low NLR were lost to follow up and were not included in the analysis.

Conclusion: The immune response to cancer is lymphocyte dependent. Lymphopenia, or neutrophilia, resulting in a high NLR may predict for a lack of clinical benefit from Nivolumab. In our study, the majority of patients with low pre-treatment NLR experienced clinical benefit from Nivolumab whereas most of the patients with elevated NLR did not achieve a clinical benefit. Our data suggests that NLR as a predictive biomarker for clinical benefit from immune checkpoint inhibitors should be further investigated in large prospective studies.
Introduction: Medullary thyroid cancer (MTC) originates from the neural crest derived parafollicular chief cells (C-cells) of the thyroid gland\(^1\). Calcitonin, a 32-amino acid polypeptide released by C cells, serves as a tumor marker in MTC to monitor for disease recurrence and prognosis\(^2\).

Case: 83-year-old male with metastatic MTC (to the liver) and post-surgical hypothyroidism after total thyroidectomy presented to the hospital with weakness, diarrhea, dyspnea, and dysphagia. Home medications included levothyroxine (LT4) 100 mcg daily and Armour® thyroid 120 mg daily. On physical exam, he was cachectic, with a well healed thyroidectomy scar, and no neck masses or lymphadenopathy. He had mild hyperreflexia and hepatomegaly. Labs revealed thyroid stimulating hormone less than 0.01 uIU/ml (0.27 – 4.20 uIU/ml), free thyroxine 2.1 ng/dl (0.9 – 1.8 ng/dl) and total triiodothyronine 54 ng/dl (80 – 200 ng/dl). Potassium was 2.7 mmol/L (3.5 – 5.3 mmol/L), corrected calcium 7.59 mg/dl (8.5 – 10.5 mg/dl), ionized calcium 0.86 mmol/L (1.05 - 1.34 mmol/L), intact PTH 82 pg/ml (15 – 65 pg/ml), phosphorous 2.1 mg/dl (2.5 – 4.5 mg/dl), vitamin D 1,25-OH 70.7 pg/ml (19.9 – 79.3 pg/ml), vitamin D 25-OH 33.2 ng/ml (30 – 100 ng/ml), and serum calcitonin 46557 pg/ml (<=8.4 pg/ml). Renal function and magnesium were normal. He was diagnosed with aspiration pneumonia, iatrogenic hyperthyroidism, and hypocalcemia. He received supportive care with intravenous (IV) fluids, antibiotics, potassium and phosphorous replacements, IV calcium gluconate, and 3 tablets oral calcium carbonate 1250 mg three times a day with meals. Armour® thyroid was discontinued. Serum calcium improved to 8.36 mg/dl with symptom resolution.

Discussion: The physiologic role of calcitonin is not known but its release is stimulated by hypercalcemia\(^2\). Calcitonin salmon, a pharmaceutically engineered version of the hormone is highly effective in the treatment of hypercalcemia caused by a myriad of diseases and is a common short-term treatment. The mechanism of hypocalcemia in MTC is unknown and limited to the knowledge of hypercalcitoninemia induced hypocalcemia, as seen previously in cases of toxic shock syndrome\(^3\) and pulmonary tuberculosis\(^4\).

Conclusion: Hypercalcitoninemia can be considered in the differential diagnosis for hypocalcemia in patients with medullary thyroid cancer.
Type 2 Diabetes Mellitus in a Patient with Bloom Syndrome: A Case Report  
Presswala L, Schulman R.

**Introduction:** Bloom syndrome (BS) is an autosomal recessive disorder characterized by chromosomal instability and severe pre-natal and post-natal growth retardation\(^1\). The germline mutation in *BLM* gene fosters cellular aging and increases risk of cancer, causing death in the 2nd or 3rd decade of life\(^2\). Patients are frequently predisposed to type 2 diabetes mellitus.

**Case Presentation:** 23-year-old male with BS presented for T2DM management. Past medical history included hypogammaglobulinemia, hypertension, and hypertriglyceridemia. Home medications were intravenous immunoglobulin every 6 weeks, glipizide, enalapril, and fenofibrate. He was 40.45 kg, 4'9” tall with a BMI of 19 kg/m\(^2\). Glycosylated hemoglobin A1c (A1c) was 6.4%. He developed acute myeloid leukemia (AML) requiring inpatient chemotherapy. He was discharged on prednisone, metformin 1000mg twice daily, lantus 36 units daily and humalog 26 units with each meal. He underwent remission and prednisone and insulin were discontinued. His A1c was 4.9% only on metformin concordant with self-monitored blood glucose (SMBG) readings of less than 150. Five months later, he had a relapse of AML requiring chemotherapy, insulin, and prednisone. To date, he is repeatedly hospitalized for neutropenic fevers. Insulin doses are adjusted based on SMBG for persistent discordance in A1c due to pancytopenia.

**Discussion:** Patients with BS are burdened with high morbidity and mortality\(^1\)-\(^3\). The correlation of obesity and insulin resistance is extensively studied\(^4\) but the mechanism of insulin resistance is unclear. It is postulated that insulin resistance stems from underlying genetic defects in lean individuals\(^5\) and may be the cause in patients with BS. A1c is falsely low due to pancytopenia and SMBG readings are best for T2DM management. Newer chemotherapeutic agents have lowered mortality but there is scarce data on managing T2DM with a better survival rate.

**Conclusion:** This case series provides an opportunity to understand and treat the complexities of T2DM in patients with Bloom syndrome.
Feasibility And Utility Of Competency Based Testing Using Video Recording Of Pulmonary/Critical Care Fellows In Performance Of Thoracentesis.

Quintero L, Dhar S, Mayo H, Singas E, Mayo PH.

Introduction: Competence in thoracentesis is a required part of training for pulmonary/critical care (PCCM) fellows. Traditional methods of determining procedural competence are generally based on numerical requirement or subjective faculty opinion. We developed an objective method for competency based testing of thoracentesis using video recording during patient thoracentesis. Our literature review indicates this is the first example of video based scoring of a PCCM procedure to test for competency.

Methods: 12 PCCM fellows performed a thoracentesis with video recording of the procedure using a camera (GoPro) attached to their forehead with headgear. Recording started with patient identification and safety check and ended with check for pneumothorax using ultrasonography. Video recordings were reviewed by two separate observers using a standardized checklist designed to capture 30 scorable elements of the procedure. The scoring tool was developed in iterative fashion by a working group of PCCM fellows and attendings. The fellow was judged to be competent only if they achieved a perfect score on the checklist. All patients gave consent for video recording of the procedure. A supervisory attending was present during the procedure but was not involved with scoring of the video record.

Results: Twelve fellows performed a thoracentesis with video recording. All fellows reported that the camera did not hinder their performance of the procedure. 11/12 (91.6%) fellows achieved a perfect score. In one case, the recording was terminated prematurely at the time of catheter removal before the check for post procedure pneumothorax. One fellow neglected to check for pneumothorax pre- and post-procedure but otherwise had a perfect score. Inter-observer variability was 0%.

Conclusion: Video recording of thoracentesis is feasible and offers an accurate, low cost, and useful means of competency based testing for thoracentesis performed by PCCM fellows. It avoids problems inherent to determination of competence based on numerical requirements and subjective judgment of faculty who also are trainers. Further studies are needed to see if the same results can be applied to high risk procedures such as intubations and central line placement.
Sweet Moves: A Case of Hyperglycemia-Induced Hemiballism  

**Raphael C., Goldin M.**

**Case:** An 82-year-old man with a past medical history of coronary artery disease, atrial fibrillation, heart failure with reduced ejection fraction, stroke, non insulin-dependent diabetes mellitus and chronic kidney disease stage III presented to the hospital with uncontrollable movements of his right-side upper and lower extremities. His symptoms began spontaneously two weeks earlier and his symptoms waxed and waned in severity. He denied other neurological symptoms except for occasional right-sided headaches. Vital signs were normal, and neurological exam was notable for spontaneous choreiform movements of the right arm and leg, but strength and sensation were intact. Labs were significant for elevated blood glucose (500 mg/dl) without ketones in the serum or urine. CT of the head revealed only a pituitary macroadenoma without hemorrhage or infarct; cranial nerves were intact and serum levels of pituitary hormones were unremarkable. Weight-based insulin therapy was begun to rapidly correct hyperglycemia, and neurological signs and symptoms resolved rapidly after glycemic control was achieved.

**Discussion:** Ballism is a neurological phenomenon characterized by uncontrollable, involuntary movements of extremities, typically affecting only one side of the body (hemiballism). Hemiballism differs from typical chorea as it involves large amplitude movements that are fidgeting/kicking in nature. It is most commonly attributed to dysfunction of the basal ganglia, specifically the subthalamic nucleus. Whereas acute stroke is felt to be the most common cause of this dysfunction, a less common and underreported etiology of hemiballism is nonketotic hyperglycemia. The pathophysiology of this phenomenon is poorly understood, but the prevailing theory is that decreased glucose metabolism reduces perfusion of the basal nuclei, leading to cytotoxic edema of astrocytes. Another theory is that hypoperfusion may deplete the inhibitory neurotransmitter GABA, leading to uninhibited movement of the extremities. Imaging of the brain by CT or MRI may reveal contralateral striatal hyperintensities; however, the absence of this finding does not exclude the diagnosis. The preferred treatment of this condition is aggressive glycemic control, and patients typically experience rapid resolution of symptoms as seen in our case above.

**Teaching point:** Nonketotic hyperglycemia should be high among the differential diagnoses for patients presenting with hemichorea/hemiballism with no evidence of acute stroke. Rapid correction of hyperglycemia frequently results in complete resolution of this unusual movement disorder.
Plasma Exchange: A Novel Approach for the Reversal of Severe Multi-Organ Failure Associated with a Sickle Cell Crisis

Rosentsveg J, Koenig S, Zaidi G.

**Introduction:** Red blood cell exchange transfusion (RBCE) has evolved as standard of care for severe sickle cell disease (SCD) associated vaso-occlusive crisis (VOC) and multi-organ failure (MOF). We describe the use of plasma exchange (PLEX) as an adjunct to RBCE for a patient refractory to traditional therapy.

**Case:** A 29-year-old man with SCD presented with chest pain typical of his VOC crisis. On admission physical exam was unremarkable. Initial laboratory values and radiology showed: hemoglobin (Hb) 10.4 g/dl, platelets 257K/µL, reticulocytes 9.7%, lactate dehydrogenase (LDH) 374 U/L, bilirubin 2.9 mg/dl, normal creatinine/liver function tests, and clear chest x-ray. He was managed with supplemental oxygen, intravenous fluids, and opioid analgesia. On hospital day 2 he developed acute respiratory failure and was transferred to the intensive care unit (ICU) on non-invasive ventilation. Repeat values showed Hb 8.2 g/dl, platelet count 93K/µL, LDH 1293 U/L, reticulocytes 6.6%, creatinine 2.39 mg/dl, and bibasilar pulmonary consolidations on ultrasound. The patient was diagnosed with acute chest syndrome and received broad-spectrum antibiotics and RBCE. He continued to deteriorate with evidence of myocardial ischemia, shock, hepatic and renal failure, microangiopathic hemolytic anemia, and thrombocytopenia (platelets 21K/µL). PLEX therapy was initiated with dramatic improvement in hemodynamic and respiratory status. He received daily PLEX for three days and was discharged home with complete resolution of organ dysfunction.

**Discussion:** The pathogenesis of VOC is complex and involves hypoxia-induced polymerization of hemoglobin S, followed by red blood cell injury, sickling, and microvascular occlusion. Ischemic tissue damage leads to lymphocytic activation and cytokine release, while hyper-hemolysis causes aberrant release of extracellular heme into plasma. Resultant activation of the inflammatory cascade exacerbates systemic microvascular ischemic injury and precipitates acute MOF. Although the exact mechanism of plasma exchange therapy’s effect in SCD associated VOC and MOF is unknown, it is likely that removal of pathological components of inflammation from plasma prevents disease progression. Our patient’s dramatic response to PLEX suggests that this should be considered in all cases with refractory sickle cell crisis and MOF.
Chylothorax in Patients with Chronic Lymphocytic Leukemia: A Case Series

Sammartino D, Khanijo S, Koenig S, Rai K, Barrientos J.

Chronic Lymphocytic Leukemia (CLL) is the most common adult leukemia in the Western Hemisphere. During the course of the disease, CLL patients may develop thoracic complications including pleural effusions. However, there is scant literature describing the pleural effusions related to CLL. One type of effusion, known as a chylous effusion, is defined by the presence of chyle, a lymphocyte rich fluid, accumulating in the pleural space, often secondary to disruption or obstruction of the thoracic duct. While chylous effusions may be caused by malignancy, they are rarely found in patients with CLL. We report 3 cases in which patients with CLL were found to have chylous effusions at varying stages of disease. This series examines these unique patients and their treatment courses. We also review the literature for reported cases of chylothorax in the setting of CLL, as well as common therapies. Possible treatments include thoracentesis, diet modification, talc pleurodesis, and indwelling pleural catheters. Pleuroperitoneal shunting, thoracic duct ligation and radiotherapy are less common interventions. Given that chyle contains significant quantities of lymphocytes as well as fat soluble vitamins, it is important to entertain the possibility of a chylothorax in the workup of a pleural effusion in patients with CLL, as this diagnosis should factor into the clinicians overall treatment decision making process and initiation of treatment for CLL.
A Colonic Cause of Meningitis

Shah B, Narasimhan M.

**Case Presentation:** Our patient is a 35-year-old Mexican male with a history of HIV infection. He is compliant with anti-retroviral therapy and also has a history of alcohol abuse. He presented to the ED with acute onset of headache and confusion associated with vomiting for 6 hours. On admission, he was unable to provide history, but his partner reported recent binge drinking without sick contacts or recent travel. In the ED, he was found to be febrile, tachycardic, and agitated, requiring admission to the MICU for acute encephalopathy. Initial CT Head, Abdomen and Pelvis as well as urine toxicology were negative. His mental status deteriorated, requiring intubation. His lumbar puncture was consistent with bacterial meningitis and he was placed on appropriate antibiotics. His blood cultures ultimately revealed *Streptococcus Gallalyticus*. Transthoracic echocardiography and then transesophageal echocardiography were both negative and ruled out endocarditis. Cerebral spinal fluid cultures remained negative and his CD4 count was 83. A repeat CT Abdomen was performed which showed evidence of colitis. His stool cultures were positive for many *Strongyloides* Larve and Ivermectin was initiated. Given culture speciation antibiotics were deescalated to Ceftriaxone and he had a rapid resolution of symptoms. He was extubated, transferred to a medicine floor and was eventually discharged with plans for outpatient colonoscopy and Infectious Disease follow up.

**Discussion:** *Streptococcus Gallalyticus*, formerly known as *Streptococcus Bovis*, is a Gram positive bacteria known to be linked to colorectal disease and endocarditis. First identified in cattle, it was later detected in gut flora in up to 15% of humans. There is also an association with *Strongyloides* which, in theory, may increase bowel wall permeability and thus facilitating translocation of gut flora. *S. Bovis* is identified as a rare cause of bacterial meningitis. In one study, only five of 1561 patients with bacterial meningitis were infected with *S. Bovis*. In their literature review, Samkar and colleagues found risk factors (including immunosuppressive therapy, cancer, alcoholism, etc.) for 50% of patients with *S. Bovis meningitis*. Of those patients, 15 out of 24 patients had colonic disease and 5 of 27 had endocarditis. Surprisingly, 41% of patients were found to have co-infection with *Strongyloides* sterilcaris, several of which also had HIV or HTLV.

**Conclusions:** As this organism is not well known to cause meningitis, suspicion must remain high. Especially in patients that are immunosuppressed, such as our patient with HIV and low CD4 count, a broader differential diagnosis is required. Input from both cardiology and gastroenterology is advised as there is a likelihood of colon disease or endocarditis. Concomitant infection with *Strongyloides* should also be evaluated especially in patients who originate from or traveled to endemic areas.
“A Tough Pill to Swallow: An Exceedingly Rare Case of Esophageal Lichen Planus”
Shah D, Kang S.

Case: A 51 year old woman with lichen planus presented with dysphagia to solids and liquids, excess oral secretions, and a globus sensation. History included hypothyroidism, GERD, and episodic dysphagia for two years. Prior endoscopy showed nonspecific esophagitis. Family history was noncontributory. She had no toxic habits and a ROS was unremarkable. The patient was non-toxic appearing with normal vitals. Pertinent findings included gray-white patchiness of her lateral tongue, buccal mucosal ulceration, and diffuse hyperpigmented patchy lesions. CBC, CMP, PT/INR, TSH and CXR were non-diagnostic. She began solumedrol, pantoprazole, and empiric nystatin solution. Endoscopy revealed upper third food impaction, two separate proximal esophageal stenoses, esophagitis with diffuse desquamation and highly friable mucosa with multiple bullae. Perforation risk from mucosal friability precluded endoscopic dilation. She improved on day three of IV therapy and tolerated an oral diet. Esophageal biopsy showed nonspecific chronic inflammation negative for metaplasia. She was discharged on a long term oral steroid taper, carafate and protonix for Esophageal Lichen Planus.

Discussion: Our case illustrates an exceedingly rare cause of a common presenting inpatient complaint. Lichen planus itself is rare; <1% have esophageal involvement, and only about 80 cases have ever been reported. Patients usually present with episodic dysphagia or odynophagia. Endoscopic findings include pseudomembranes, friable enflamed mucosa, submucosal papules, lacy white plaques, erosions, strictures, and bullae, sparing the lower third of the esophagus. Histological findings include saw-tooth epidermis with “Civatte Bodies”, or apoptotic keratinocytes at the dermoepidermal junction. Our patient had many classic findings associated with the disease; however, biopsy results were nonspecific. The presumptive diagnosis was strongly supported by the degree of mucosal friability in a patient with known cutaneous and oral lichen planus and localization of findings to the upper two thirds of the esophagus, highly characteristic of esophageal lichen planus.

Conclusion: Esophageal lichen planus is a rare entity with the potential for significant morbidity. A paucity of literature and standardized diagnostic criteria underscores the need for clinical diagnosis, as biopsy alone often is insufficient. Esophageal dilation carries a risk of perforation and management often relies on empiric steroid therapy.
Not Your Typical Acute Respiratory Distress Syndrome: Rare Case of Acute Eosinophilic Pneumonia

Shah R, Esposito M, Talwar A, Singas E,

**Introduction:** The case illustrates that ARDS without a cause should be aggressively pursued for diagnosis, if not to at least to rule out infection prior to trial of steroids for any possible steroid responsive disease.

**Case:** A 54-year-old woman with 30 pack-year smoking history presented with dyspnea, productive cough, and subjective fevers for five days. She had no recent exposures or any recent travel. The patient was febrile, hypoxemic, and had significant respiratory distress. Her CT scan showed diffuse bilateral ground glass opacities. She did not improve with aggressive diuretics, broad spectrum antibiotics, and low dose of prednisone. Patient continued to decompensate and was taken to the intensive care unit where she was intubated for severe acute respiratory distress syndrome. Patient received a bronchoscopy with bronchoalveolar lavage [BAL], which showed 11% eosinophils. Cultures were all negative. She underwent an open lung biopsy, which showed diffuse alveolar damage with moderate interstitial eosinophils, consistent with acute eosinophilic pneumonia. Patient was given pulse dose steroids for three days, during which her oxygenation improved and she was extubated. She was slowly weaned off her steroids and tapered off her oxygen over the next three months.

**Discussion:** Idiopathic acute eosinophilic pneumonia [AEP] is a rare, but severe and rapidly progressing lung disease that can lead to respiratory failure. It is imperative to differentiate it from other similar clinical entities, such as acute respiratory distress syndrome [ARDS], acute interstitial pneumonia [AIP], fulminant cryptogenic organizing pneumonia, and eosinophilic granulomatosis with polyangiitis [EGPA], as AEP has great prognosis and is easily treated. The diagnostic criteria of AEP include an acute onset of febrile illness [less than 1 month], hypoxemic respiratory failure, diffuse pulmonary opacities, pulmonary eosinophilia with exclusion of any other known causes. In most cases, lung biopsy is seldom needed for diagnosis as most patients have more than 25% eosinophils in the BAL. If performed, then the biopsy is done to rule out other diseases, such as fungal. Blood eosinophilia is usually not prominent abnormality in AEP, distinguishing it from EGPA.

Even though in our patient, it was unusual that the BAL had only 11% eosinophils, the pathology and her rapid improvement with pulse dose steroids supported the diagnosis of AEP. Perhaps the low dose prednisone days prior may have affected the amount of eosinophils in the BAL.
Simulation Based Training for Pulmonary and Critical Care Fellows in Urgent Endotracheal Intubation: Does Skill Transfer to the Clinical Arena?


**Purpose:** Simulation-based training (SBT) for high-risk, low-frequency clinical events such as urgent endotracheal intubation (UEI) is a widely used training tool. Training effect is generally demonstrated by testing the learner on the simulator. We studied whether SBT for UEI performed by pulmonary/critical care medicine (PCCM) fellows transferred to real-life UEI.

**Methods:** In July of 2015, four first-year PCCM fellows attended 15 mandatory training sessions to develop skill at UEI. Each session included a short didactic discussion followed by SBT using a computerized patient simulator (CPS). Sessions emphasized task training, crew resource management (CRM) communication, mastery of a Do/Confirm 46-point checklist, standard crew assignments, and combined team tactics. The fellows executed multiple scenarios of increasing complexity and stress with one fellow assigned to be team leader while the others assumed the roles of crew members on a rotating basis. Each scenario was followed by a formal debriefing session. At the end of the entire training period, each fellow was tested on the CPS while wearing a body mounted video camera. The same video assessment was done on the fellow’s first real patient UEI to evaluate if SBT translated to real-life patient encounter. Video recordings were scored by two independent investigators using a standardized score sheet. Forty of the 46 items on the checklist could be scored from the video recordings.

**Results:** Results of testing on the CPS for execution of the checklist ranged from 36/40 (90%) to 40/40 (100%). Results of testing on real-life patient UEI for execution of the checklist ranged from 37/40 (92.5%) to 39/40 (97.5%). Use of task training, CRM, and combined team tactics was excellent with the CPS and real-life UEI with all fellows. There was minimal inter-observer variability in scoring.

**Conclusions:** SBT is an effective approach to train PCCM fellows in UEI. Video recording is a useful method to objectively assess the training effect of SBT for real-life patient UEI.

**Clinical Implications:** SBT for UEI appears to be effective and offers a safe means of training PCCM fellows in this high-risk, low-frequency event. Video recordings of real-life patient UEI are an important method to assess transfer of training effect to the clinical arena as well as to evaluate competency.
Rash Ideas: Fever and Psychosis
Shah P, Kuperman S.

Case Presentation: A fifty-nine year old female presented with a nine-day history of low-grade fevers, headache, myalgia, weakness, and waxing and waning confusion. Collateral history from family described intermittent psychotic symptoms including auditory and visual hallucinations, as well as short-term memory deficits. Review of systems was otherwise negative. Patient had no significant past medical or social history. On exam, patient was afebrile and had normal vital signs. She was alert and oriented to person, place, and time. She had a confluent erythematous rash on bilateral cheeks sparing the nasolabial folds. She had no focal neurologic deficits, but had anomic aphasia and perseverating behavior. Remainder of the exam was normal. Routine chemistry, CBC, Respiratory viral panel, blood cultures and urinalysis were within normal limits. There was a mild elevation of transaminases on liver tests. Lumbar puncture was done and CSF showed normal cell counts, negative cultures and viral studies, and mild elevation in protein. CT head showed chronic lacunar infarcts and MRI brain showed no signal abnormalities. Further testing revealed positive ANA titer 1:320 and Anti-DS DNA of 67U/ml. She was evaluated by rheumatology and diagnosed with Systemic lupus erythematosus.

Discussion: Systemic Lupus Erythematosus (SLE) is a systemic disease that can manifest in almost any organ system including the brain. Neuropsychiatric symptoms are present in about five percent of patients with SLE. Some patients feature psychotic symptoms including delusions and hallucinations. Patients may also present with a fluctuating delirium, poor attention span, easy distraction, misinterpretation of surroundings, agitation, and/or combative behavior. The mechanism is thought to be secondary to presence of antineuronal antibodies.

Diagnosis requires meeting 4 out of 11 of the 1997 American College of Rheumatology (ACR) criteria or the 2012 Systemic Lupus International Collaborating Clinics (SLICC). Neuropsychiatric symptoms are one criteria present in both ACR and SLICC. A psychiatric disturbance due to lupus is a diagnosis of exclusion and other organic causes of psychosis need to be ruled out. In our patient, the negative head imaging and infectious work up ruled out most common etiologies of encephalopathy. In addition to neuropsychiatric symptoms, our patient exhibited a malar rash, had positive ANA and had elevated Anti-dsDNA antibodies.

Conclusion: Our patient did not present with the common manifestations of lupus such as, arthritis and hematologic or renal abnormalities. However, she did meet 4 /11 ACR criteria required for diagnosing lupus. Her only symptoms were a malar rash and psychosis. The psychosis was characterized with confusion, memory loss, and auditory/visual hallucinations. When dealing with cases involving psychosis, autoimmune etiologies are important to discuss on the differential. Once the diagnosis was confirmed, our patient was started on steroids and her symptoms improved.
Case Presentation: A 22 year-old-male with recently treated nonseminomatous testicular cancer (embryonal carcinoma with lymphovascular invasion) s/p right radical orchiectomy and chemotherapy presented with worsening facial swelling, erythema, dysphagia and hoarseness. A recent shave biopsy of his rash had shown superficial perivascular infiltrate of lymphocytes consistent with dermatomyositis. Patient was admitted for an acute dermatomyositis flare; he received high dose steroids and two doses of IVIG with improved symptoms and was discharged two days later. He returned to the hospital after one month for another exacerbation characterized by significant myopathy with distal, proximal and bulbar weakness. He was unable to ambulate or swallow and was intubated for hypoxemic respiratory failure due to epistaxis. Patient endured an extensive stay in the MICU, where a PEG tube was placed with initiation of tube feeds for severe dysphagia. Respiratory status subsequently improved and he was successfully extubated. He was started on Rituximab given frequent exacerbations. Patient was eventually discharged home with instructions to follow up with rheumatology to receive regular IVIG at an outpatient infusion center. No evidence of cancer recurrence was found during admission.

Discussion: Dermatomyositis (DM) is a rare idiopathic inflammatory myopathy characterized by classic cutaneous findings and proximal muscle weakness. It has a prevalence of between 0.5 to 1 case per 100 people. It can rarely present as a paraneoplastic syndrome associated with an underlying malignancy. The incidence of cancer in patients with DM increases five- to seven-fold when compared to the general population. In most cases, DM improves as the cancer is being treated. The patient in our case continued to have severe recurrent DM flares despite orchiectomy and chemotherapy with no further evidence of disease.

Conclusion: This case highlights the importance of recognizing various temporal presentations of DM, namely before, during or after a cancer diagnosis. Physicians must pay close attention to typical manifestations of DM in order to screen for possible neoplasms. It is important to remain vigilant for possible dermatomyositis even after successful treatment of the underlying cancer.
Clinical Outcomes of Atherectomy Prior to Percutaneous Coronary Intervention (COAP-PCI Study)

Shlofmitz E, Doshi R, Patel A, Kaplan B, Jauhar R, Meraj P.

**Purpose:** Coronary artery calcification presents many challenges to successful interventions. As a result, lesion preparation has become increasingly important prior to percutaneous coronary intervention (PCI). Atherectomy is an important tool for optimal lesion preparation. There have been no studies that have compared the outcomes of orbital atherectomy and rotational atherectomy. We sought to examine the safety and efficacy of patients with calcified coronary artery disease who underwent atherectomy prior to PCI.

**Methods:** This observational, multicenter analysis compared orbital atherectomy and rotational atherectomy in patients with coronary artery calcification who had atherectomy prior to PCI. 35,590 patients from 5 tertiary care hospitals who had PCI between January 2011 to April 2016 were identified. All patients who had orbital or rotational atherectomy prior to PCI were included in our analysis. A total of 708 patients were included.

**Results:** 292 patients were in the orbital atherectomy arm and 416 patients were included in the rotational atherectomy group (Table 1). Procedural data is presented in Table 2. The primary endpoint, death on discharge occurred in none of the 292 patients in the orbital atherectomy group compared with 6 of the 416 patients in the rotational atherectomy group (0% vs. 1.4%, p=0.018). The rate of secondary outcomes for myocardial infarction and stroke were similar between groups. There was no significant differences in procedural safety endpoints including dissection, perforation, tamponade, need for new dialysis or major bleeding complications. Non-inferiority analysis showed orbital atherectomy was non-inferior to rotational atherectomy for the primary and secondary endpoints. Endpoint data and adverse events are presented in Table 3. Fluoroscopy time was significantly decreased with orbital atherectomy compared with rotational atherectomy (22.07 vs. 27.67 mins., p = 0.00).

**Conclusions:** In patients with coronary artery calcification who undergo atherectomy prior to PCI, orbital atherectomy was associated with significantly decreased in-hospital mortality, and procedural radiation time compared with rotational atherectomy.
A Case of Encapsulating Sclerosing Peritonitis in Renal Transplant Recipient.

Siddiqui A, Koncicki H.

Encapsulating Sclerosing Peritonitis (EPS) is an uncommon form of peritoneal inflammation characterized by fibrous thickening of the visceral and parietal surfaces of the peritoneum. Peritoneal dialysis (PD) treatment is the major risk factor for EPS, and it is specifically the duration of the treatment that is most important to its development. Patients who have received PD treatment for 4 to 5 years have a higher incidence of EPS as compared to patients who have been on PD therapy for less than two years. More than half of all cases of peritoneal sclerosis are seen in patients who have been withdrawn from PD therapy, while fewer cases of EPS are observed among cases of patients currently receiving PD treatment. EPS is categorized by the adhesion of intestines and the subsequent capsule, composed primarily of Fibrin, formed around the adhered lesion. It is the deposition of this capsule that leads to EPS. The clinical indicators of patients developing EPS while on PD treatment are ineffective clearance and ultrafiltration failure. Patients who have been withdrawn from PD treatment and are developing EPS present with small bowel obstruction.

Case: We report a case of a 49-year old male, former PD patient of 5 years, with history of hypertension, on metoprolol, and renal transplant recipient. Patient presented 1-2 years after renal transplantation with a month-long history of abdominal discomfort, nausea, and vomiting. CT imaging revealed small bowel obstruction. Patient was conservatively managed with improvement in symptoms and discharged home. After one week, patient presented again with similar symptoms. He was again found to have a high-grade small bowel obstruction. Despite the initial conservative treatment, for persistence of symptoms, he underwent surgical treatment. Biopsy then revealed EPS as cause of his recurrent small bowel obstruction.

Discussion: Our patient was found to have Encapsulating Peritoneal Sclerosis, a rare disease which caused him to have small bowel obstruction. Our patient’s history of long term PD treatment was the main cause that led him to develop EPS. Like many other EPS patients, he also had a history of renal transplant, though no formal correlation has been drawn between the two. Another known contributor to EPS is the use of betablockers. Our patient was using Metoprolol for hypertension. While its specific mechanism remains unclear, one possible explanation is that betablockers have an inhibitory effect on surfactant release. The role of surfactant in the peritoneum has been compared to that of surface-active phospholipids, which prevent intra-abdominal adhesions.

Only surgical treatment is exclusively recommended for patients with EPS. While the use of medical treatments including corticosteroids and methotrexate have been proposed on the basis of their use in other fibrotic diseases, there is insufficient data to support these therapeutic options.

Conclusion: In more than half of all cases, EPS occurs following PD withdrawal, as was observed with our patient. Thus, despite its rarity, it is imperative to strictly monitor a long-term PD patient upon withdrawal from PD therapy for symptoms of intestinal obstruction.
Hyponatremic Rhabdo?!
Simonson J, Nazeer H.

**Case Presentation:** A 60-year-old woman with a history of hypertension and low back pain was brought to the hospital by family after she was found unresponsive in bed that morning. According to family, at baseline the patient was a highly successful lawyer. Her husband and daughter reported that she stayed home from work the day prior to admission because she experienced nausea and a small amount of vomiting. She had been taking percocet occasionally for her chronic back pain but was otherwise in her usual state of health. On admission, the patient was obtunded but had a nonfocal neurological exam. CT head was negative for intracranial bleed. Urine and serum toxicology was unrevealing. The patient was found however to have a sodium of 114 with a creatine kinase of 16,984 with normal renal function. The patient was admitted to the medical ICU. The patient’s serum osmolarity, urine osmolarity, and urine sodium were consistent with SIADH, and her recent bout of worsening back pain with nausea were seen as the inciting cause. She was treated with three percent sodium chloride. Her mental status improved to baseline and her sodium level normalized. Upon further questioning the patient reported no recent trauma, no falls, no immobility, no recent strenuous exercise, and no new medications. Her creatine kinase trended down with IV fluids.

**Discussion:** Hyponatremia, defined as a plasma sodium level < 135 mEq/l, is the most common disorder of body fluid and electrolyte balance encountered in clinical practice. Hyponatremia has many well known sequelae including nausea, vomiting, lethargy, seizure, and coma. One of the underreported sequelae is rhabdomyolysis. Rhabdomyolysis is a syndrome classically characterized by muscle necrosis with characteristically elevated creatinine kinase levels with or without impaired renal function. The causes of rhabdomyolysis are typically broadly grouped into 3 categories. (1)Traumatic, (2)Nontraumatic exertional, (3)Nontraumatic nonexertional. The pathophysiology for these processes converge into one final path that compromises the adenosine triphosphate (ATP) synthesis and the functioning of the Na+/K+ and Na+/Ca++ pumps in muscle cell membranes. It is thought that Hyponatremia induced rhabdomyolysis centers around the effect of decreased levels of sodium on the Na+/Ca++ pump. Hyponatraemia reduces the gradient of Na+ input within the muscle cell and reduces the Ca++ output. This increase in intracellular Ca++ starts an enzymatic activation and cellular death process resulting in breakdown of muscle cells.

**Conclusions:** We present a case of hypotonic hyponatremia and subsequent development of rhabdomyolysis. Hyponatraemia is a rare cause of rhabdomyolysis and can go unnoticed if not suspected. When obvious causes are not elucidated during the history taking process, it is important to remember the profound effect electrolyte disturbances can have on the muscle cell membranes.
An Unusual Case of Clozapine-Associated Leukocytosis

Sinclair M, Lavine S.

A 57-year-old man with schizophrenia on Clozapine presented to the ED from a psychiatric hospital with reported hypoxia and agitation. Initial vitals were T 102.2°F, HR 145, BP 161/103, RR 22, and 97% O₂ saturation on room air. On physical exam, the patient appeared severely agitated. Speech was garbled and incoherent. Neurological exam showed no focal deficits. Kernig’s and Brudzinski’s signs were negative. He was not rigid on exam. The patient received multiple IV pushes of Diazepam and Lorazepam with his HR and BP subsequently decreasing to within normal limits. Labs were notable for WBC 19.07 with an ANC 17,360. CK was normal at 198. Chest X-ray was done and showed underinflated but otherwise normal lungs. UA was within normal limits. The patient was monitored on a psychiatry floor where his O₂ Sat remained >96% on room air at all times. The patient’s Clozapine dose was decreased from 275 mg daily to 100 mg daily. The patient’s fever resolved and his WBC count improved to 15.78 with ANC 13,360. Blood and urine cultures both grew no organisms after 48 hours of incubation. The patient’s agitation improved so the patient was discharged back to the psychiatric hospital where his WBC count and temperature continued to be monitored on an every-other-day basis. Within one day of discharge the patient’s WBC count decreased to 9.75, ANC decreased to 7,520, and he remained afebrile. The patient’s WBC count on the current dose of Clozapine would remain normal a week post-discharge, after which point every-other-day CBC monitoring ceased.

Clozapine is an atypical antipsychotic medication that is used in patients with schizophrenia who have been refractory to other antipsychotic medications. It is associated with a number of hematologic adverse effects including agranulocytosis, neutropenia, fever, and leukocytosis. In cases in which a patient presents with fever, leukocytosis, and AMS, neuroleptic malignant syndrome (NMS) must be ruled out as a potential etiology. However, the lack of rigidity and normal CK in our patient on admission made the diagnosis of NMS unlikely. Clozapine associated leukocytosis is a rare phenomenon, seen in fewer than 1% of patients. There are several mechanisms by which drug-induced leukocytosis is proposed to occur. These mechanisms include decreased apoptosis of leukocytes, increased production of leukocytes in the bone marrow, and demargination of leukocytes from the endothelial lining of blood vessels. The long term effects of Clozapine-induced leukocytosis are unclear, and thus, there are no set guidelines regarding lowering the dose versus stopping Clozapine in patients who develop leukocytosis.

We report a rare case of Clozapine-induced leukocytosis in a schizophrenic patient. It is important that physicians are aware of this phenomenon and that they are able to differentiate it from life-threatening NMS, so that the appropriate decision of whether or not to stop the pharmacologic agent is made.
Using VARK to Assess Learning Style Preferences among Internal Medicine Interns

Sinclair M, Lavine S.

**Background:** Among learners, preferred styles of learning vary based on the individual. These learning styles are influenced by a number of factors that play a role in how well the learner is able to interpret the material with which he or she is being presented. The Visual Aural Read/write Kinesthetic (VARK) learning questionnaire is a validated tool that has been used to identify and categorize preferred learning styles, specifically defined as preferred modes of accepting information. VARK analysis stratifies participants into preferred learning modalities. Some learners have a single preferred modality. Others have more than one preferred learning style (multimodal).

**AIM:** This study sought to ascertain the preferred learning modalities of incoming internal medicine interns using the VARK questionnaire in an effort to potentially tailor future teaching strategies to these learners.

**Methods:** We conducted an anonymous survey of incoming internal medicine interns at the Hofstra Northwell Health Internal Medicine Residency program using a paper version of the VARK questionnaire. Interns were surveyed prior to the start of the academic year during orientation. All participants were a combination of categorical and preliminary interns.

**Results:** Fifty-seven of sixty-six first year interns completed the questionnaire (86% response rate). Results were tabulated and analyzed by the VARK Research Service. Thirty-two of fifty-seven participants (56%) showed a preference for a single modality. The most common preferred modality was Visual (23%), followed by Kinesthetic (16%), Aural (11%), and Read/Write (7%). Twenty-five of fifty-seven respondents (44%) showed a multimodal preference. Eighteen of these respondents (72% of multimodal learners; 32% of all participants) were classified as VARK Type I learners, meaning they have 2, 3, or 4 almost equal preferences in their VARK score.

**Conclusions:** Internal medicine residents have a variety of preferred learning modalities. Most residents surveyed (56%) did have a single modality preference. However, given the variety of learning styles present in resident learners, a multimodal approach to presenting information to residents for learning should be employed. Visual (graphic), Aural (heard or spoken), Read (information displayed as words), & Kinesthetic (experiential or practice) modes should all be used to
Decreased Time to Unloading with Impella Support in Patients with Severe Cardiogenic Shock Shows Improved Survival

**Singh S, Litwok Y, Grayver E, Lee A.**

**Background:** Use of the Impella as a left ventricular assist device for management of cardiogenic shock during acute MI (AMI) has increased over the past decade. We hypothesize that by decreasing the time in AMI with severe cardiogenic shock (SCS) to onset of mechanical support use, with the therapy focused on reducing myocardial oxygen demand and supporting systemic hemodynamics, it will subsequently decrease the prolonged need for ionotropic/vasopressor support, improve stability during angioplasty and intervention, allow for earlier improvement in hemodynamics which ultimately will lead to improved in-hospital survival.

**Methods:** A retrospective, multi-center observational analysis was performed on patients who had received an Impella device at our institution from 2012-2016 (n=72). We compared the time to placement of the Impella with in-hospital mortality. Patients were divided into three groups: Impella placement within 2 hours, 2 to 48 hours, and after 48 hours of admission.

**Results:** In 2015, patients that received an Impella within 2 hours (n=9) had a survival rate of 78%, compared to 50% in patients having an Impella placed within 2 to 48 hours (n=8), and 20% in patients receiving an Impella at least 48 hours into admission (n=5). In 2016, patients that received an Impella within 2 hours (n=6) had a survival rate of 83%, compared to 33% when the Impella was placed within 2 to 48 hours (n=6), and 17% in patients receiving an Impella after 48 hours (n=6).

![Time to Impella Placement vs Survival](image)

**Conclusions:** Decreased time to Impella placement correlated with improved survival. The Impella improved mortality in the acute setting of cardiogenic shock, but showed no benefit later in the hospital course. In patients suffering from cardiogenic shock, if an Impella is to be placed, it should occur early based on our data.
Early Unloading with Impella Support in Acute MI with Cardiogenic Shock Linked to Decreased Infarct Size, In-hospital Mortality, and Hospital Length of Stay

Singh S, Litwok Y, Grayver E, Lee A, Rosen S.

Background: Acute MI (AMI) complicated by cardiogenic shock (CS) continues to yield a devastating challenge with high mortality rates. Hemodynamic stabilization before and/or after early revascularization remains the primary goal in these patients. In addition to hemodynamic support by inotropes and vasopressors, support with percutaneous mechanical circulatory support devices such as intra-aortic balloon pumping (IABP), and percutaneous left ventricular assist devices (LVAD- e.g. Impella) have become an integral component to cardiovascular treatment options. Unfortunately, there are no large randomized data from studies evaluating treatment with mechanical support systems compared to standard treatment with respect to the clinical outcome of patients and no head-to-head comparison of different devices is available.

Methods: We performed a retrospective, multi-center observational study of 72 consecutive patients (58 men, 14 women) who presented with refractory cardiogenic shock to North Shore University Hospital and Long Island Jewish Medical Center part of Hofstra Northwell Medical School from January 2012 to July 2016. The baseline demographic, echocardiographic, and angiographic test results were retrieved from medical files and the hospital database. All patients were found to be in refractory cardiogenic shock and taken to the cardiac catheterization laboratory for mechanical support implantation.

Results: The total sample consisted of 72 patients presenting to our institutions with refractory CS. The indications for mechanical support mainly comprised patients who presented with ACS and concomitant CS. We are able to see a statistically significant decrease in time of presentation to device implantation. This decrease in time interval represents the time to “LV unloading,” which has consistently decreased with significance from 2013 to present day. Due to recently increased volume and expertise with improved devices and technology, our results specifically focus on data involving the year 2015 to present day. In order to establish a baseline for admission hemodynamics, we determined that all incoming patients in all years had similarly elevated initial LVEDP, Creatinine Kinase, and Troponin T. Also we illustrate the recent trends in the types of mechanical support used. By decreasing the time interval to Impella support, we also found improved survival. Patients who had Impella support placed earlier in their presentation were found to have quicker hemodynamic improvement, decreased infarct-size and decreased length of stay. Peak CK-MB was significantly less in the 2016 population which reflects decreased infarct-size. When comparing patients hospital length of stay, the patients who presented in 2015 had significantly longer hospital stays in comparison to patients treated in 2016. This is coupled by an interesting finding that patients in 2016 who were found to have improved cardiovascular outcomes were also found to have a shorter duration of mechanical support. This finding then may support the idea behind early LV unloading leading to prevention of LV remodeling and therefore decreased need for prolonged mechanical support.

Conclusions: The present study is the only study to date to demonstrate the fact that earlier implantation of Impella support in AMI complicated by refractory cardiogenic shock improved early hemodynamics leading to rapid decrease in pressor/ionotropes support, with improved cardiovascular outcomes and shortened hospital length of stay. We strongly believe that earlier LV unloading with Impella support may prevent LV remodeling and decrease cardiac work which was associated with several advantages. These advantages are more transparent as time moves forward and our experience with Impella increases which can be seen in our outcomes from 2015 to present. Moreover, our data suggests that quicker implantation leads to the rapid weaning ability which decreases duration of Impella use. This furthermore then limits downstream complications associated with prolonged percutaneous mechanical support. Even with shortened Impella duration, our patients benefitted from decreased infarct size and decreased in-hospital mortality with shortened hospital length of stay.
Postpartum STEMI in a High Risk Atherosclerotic Patient: Spontaneous Coronary Artery Dissection vs. Ruptured Plaque

Singh S, Ahsan L, Grayver E, Boutis L, Rosen S.

Case Presentation: 27 year old woman with diabetes, recent pregnancy complicated by eclampsia requiring early cesarean section at 33 weeks, presents 6 days postpartum with progressively worsening substernal chest pain for 36 hours and shortness of breath. Family history is significant for premature coronary artery disease (CAD) in mother and brother. EKG showed ST-elevations in V2-V6. Patient was taken emergently to cardiac catheterization for acute coronary syndrome (ACS).

Cath revealed 90% stenosis of proximal left anterior descending artery (LAD) and 100% stenosis of distal LAD. A drug eluting stent was placed in proximal LAD. Thrombectomy, ballooning, stenting and repeat ballooning was attempted without any improvement. Distal nicardipine and nitroglycerine were administered along with local IIb/IIIa inhibitor without change in stenosis. No re-flow was established despite repeated attempts at distal thrombectomy with an extraction catheter. The lack of response to thrombectomy, young age of the patient and postpartum setting was concerning for spontaneous coronary artery dissection (SCAD) as opposed to pure atherosclerotic plaque rupture.

Interestingly, our patient was also at an increased risk of premature atherosclerotic CAD. She had elevated LDL cholesterol(198mg/dL), LDL particle(2581nmol/L), and triglycerides(324mg/dL) indicative of familial combined hyperlipidemia. She also had elevated Lipoprotein-A(146nmol/L). This combined with history of diabetes and eclampsia places patient at significantly high risk of atherosclerosis. We therefore present a unique case of ACS in a young postpartum patient whose angiographic findings are suspicious for SCAD but whose risk factors are high for atherosclerotic CAD.

Discussion: SCAD is a separation of the coronary arterial walls leading to formation of an intramural hematoma that compresses the lumen. It occurs in 3-4% of patients presenting with ACS and can also cause sudden cardiac death. Coronary angiography shows a double lumen within the arterial wall. However, it often mimics atherosclerotic plaque. Intracoronary imaging techniques such as intravascular ultrasound (IVUS) and optical coherence tomography (OCT), provide morphological information on coronary lesions and on the location of dissection planes enabling for definitive diagnosis.

SCAD is classically non-atherosclerotic. It occurs in conditions that weaken the arteriolar wall integrity such as in connective tissue disorders, Fibromuscular Dysplasia, chronic inflammatory states. It is also seen in peripartum healthy young women likely secondary to hormonal changes affecting vessel wall and increased circulatory volume worsening wall stress. Non-atherosclerotic SCAD tends to affect long segments of coronary artery.

Conclusion: Young patients presenting with ACS should be evaluated for atherosclerotic risk factors and SCAD. Intracoronary imaging can help to distinguish between lesion types.
Sex-Specific Differences in ST-Segment Elevation Myocardial Infarction Lead to Increased Mortality and Worse Cardiovascular Outcomes

Singh S, Grayver E, Ahsan L, Rosen S.

**Introduction:** Several decades of study on the gender-specific aspects of women and heart disease has led to a 30% decline in mortality for American women. Several factors have been credited with this improvement including enhanced awareness among women and clinicians and advances in the gender-based aspects of heart disease resulting in gender-specific guidelines for practice. Despite such advances, coronary artery disease (CAD) remains the leading cause of morbidity and mortality in women, affecting 6.6 million every year.1 Sex differences in clinical presentation among patients with acute coronary syndrome (ACS) have been extensively reported in literature,2,3 and, women are more likely than men to present with atypical symptoms during acute myocardial infarction.4,5 Clinical presentation has consequences for timely identification of ischemic symptoms, appropriate triage, and judicious diagnostic testing and management especially in the setting of ST-segment elevation myocardial infarction (STEMI) where an early invasive strategy has been demonstrated to be extremely beneficial. Recent studies have shown that women have significant delays to first ECG and primary percutaneous coronary intervention (PCI), which are associated with increased morbidity and mortality when compared to men.6,7,8,9,10,11 Women treated for STEMI also have echocardiographic evidence of decreased systolic and diastolic left ventricular function in comparison to men,12,13,14 likely related, at least in part, to delays related to atypical presentation.

Despite significant improvement in mortality rates for women in the past two decades, CAD remains understudied, underdiagnosed, and undertreated in women. In fact, mortality rate as well as the absolute number of deaths from cardiovascular disease remains higher in women compared to men.15,16 There remains the need to better understand the factors that contribute to higher mortality rates in women. We conducted a comprehensive analysis to examine whether sex differences in clinical presentation led to delayed Electrocardiogram (ECG) in the emergency department setting. We also examined sex disparities in length of hospital stay, left ventricular ejection fraction, and factors that affected prehospital delays. Our study sought to evaluate sex-based differences related to ED presentation of STEMI with the goal of identifying opportunities to reduce mortality and morbidity for women.
Unloading the Mystery: Serum Lactate Clearance
Used as an Early Beneficial Prognostic Marker for Survival in Severe Cardiogenic Shock
Requiring Impella Support
Singh S, Litwok Y, Grayver E, Lee A.

**Background:** The introduction of percutaneous left-ventricular assist devices (pLVADs) such as the Impella over the past decade have provided new tools for management of severe cardiogenic shock (SCS) during acute MI (AMI). However, given the often sudden and critical nature of patients in SCS, it is challenging to conduct randomized controlled trials with these devices. While pLVADs have shown to be very useful in certain patients, they do carry a large risk for vast complications and morbidity. Therefore it is imperative to discover new ways to quickly evaluate which patients will have the greatest benefit with such devices.

**Methods:** A retrospective, multi-center observational analysis was performed on patients who had received an Impella device at our institution from 2012-2016. A total of 72 patients had an Impella placed. Of these patients 34 expired during their hospital course, 9 were transferred to outside facilities, and 29 were discharged. We compared the serum lactate level prior to and six hours post placement of Impella CP in patients with SCS in AMI.

**Results:** In 2015, patients that survived (n=11) had a pre-Impella lactate of 3.5, compared with those that expired (n=10) who had a level of 6.0. Lactate levels 6 hours post implantation improved in both groups in 2015, but were significantly lower in the survival group, at 2.5, compared to 4.3 in the group that did not survive. In 2016, patients that survived (n=9) had a pre-Impella lactate of 4.7, compared to the expiration group (n=10) with 4.0. However 6 hours post Impella the survival group had a lactate level of 2.6, compared with 7.4 in the other group. Please refer to the following data supplement for graphs illustrating data distribution.

**Discussion:** Lack of early improvement of lactic acidosis within six hours after Impella placement in SCS with AMI can be an indication of poor prognosis and therefore possibly inadequate hemodynamic assistance. Our evidence strongly suggests that higher lactate levels can be observed on admission in non-survivors and that higher lactate clearance is associated with better outcome post Impella placement.
Unresolved Peripartum Cardiomyopathy Complicated by Severe Mitral Regurgitation in Subsequent Pregnancy Requiring Hemodynamic Mechanical Support  
Singh S, Grayver E, Rosen S.

Background: Peripartum cardiomyopathy is a potentially life-threatening pregnancy-associated disease that typically arises in the peripartum period and is marked by left ventricular dysfunction and heart failure. Women often recover cardiac function, but long-lasting morbidity and mortality are not infrequent. Management of peripartum cardiomyopathy is largely limited to the same neurohormonal antagonists used in other forms of cardiomyopathy, and no proven disease-specific therapies exist yet. Research in the past decade has suggested that peripartum cardiomyopathy is caused by vascular dysfunction, triggered by late-gestational maternal hormones.

Case: A 27-year-old women with hypertension, diabetes, prior peri-partum cardiomyopathy with subsequent severe mitral regurgitation, moderate-severe pulmonary hypertension and systolic heart failure presents at 35 weeks gestation of her 3rd pregnancy for planned cesarean section. In order to optimize cardiac hemodynamics for pregnancy, patient was scheduled for elective cesarean section.

Decision-making: Upon admission to the telemetry unit, patient received an echocardiogram, which confirmed severe pulmonary hypertension and LV dysfunction with severe mitral regurgitation. Overnight the patient was found to be hypotensive with respiratory distress. The patient was started on intravenous diuretics, pressor support and right heart catheterization was completed. Due to low cardiac index and unsatisfactory hemodynamics, intra-aortic balloon pump was placed emergently. The patient underwent emergent cesarean section with mechanical hemodynamic support.

Conclusion: Cardiomyopathy in the setting of severe valvular regurgitant disease during pregnancy poses great risk to the fetus and child especially in low cardiac output states. Emergent mechanical circulatory support may provide safe and more favorable hemodynamics in the setting of cesarean section during the late stages of high risk pregnancy.
Background?Study Objectives: PFO’s are prevalent in the population. Guidelines recommend the use of echo contrast (EC) in patients with poor acoustic windows (approx. 20% patients). However, EC use has been contraindicated in patients with intracardiac right-left (R-L) shunting due to theoretical risk of systemic embolic phenomena. Thus, there is limited information regarding the safety of EC in patients with PFO’s, leading to wide variability in clinical use.

Methods: We conducted a retrospective multicenter study among six tertiary care teaching centers spread across the NYC/Chicago metropolitan areas. We included the following institutions: North Shore University Hospital (Manhasset, NY), Long Island Jewish Medical Center (New Hyde Park, NY), St Luke’s –Roosevelt Hospital Center (NY, NY), St Francis Hospital (Roslyn, NY), Northwestern Memorial Hospital (Chicago, IL), Elmhurst Medical Center (Elmhurst, NY), and Mount Sinai Medical Center (NY, NY). Initial IRB approval for this study was obtained within the North Shore- LIJ Health System in November 2011. We searched our echo databases and included all patients who received EC and were found to have a PFO. We performed retrospective chart reviews to assess for adverse events related to EC (death, TIA/CVA, or other peripheral embolic phenomena).

Results: We included 339 pts with PFO’s who received EC between 2004-2016 (67% inpatients). 80% patients received Definity and the rest Optison. The main indication for EC was LV opacification in 96% of patients. 86% of patients received EC during transthoracic echo (TTE), 11% during stress TTE, and the rest during transesophageal echo (TEE). PFO’s were diagnosed by TTE in 30%, TEE in 49%, and both in 21% cases. Shunt size could be determined in 92% patients (69% were small, the rest were mod-large). R-L shunting was evident in 28% patients, while 28% had bidirectional shunting.

Conclusion: No adverse events were noted in a large cohort of patients with PFO’s who received EC. We believe this to be important, as a significant number of such patients are frequently denied the benefits of EC resulting in potential negative impact on clinical care and healthcare cost.
“Boxing Helena” – A Modern Day Venus de Milo: An Ethical Lived Experience of a Four Limb Amputation in a Young Female.

Sparber LS, McLeod-Sordjan R, Field D, Adler M, Doscher W, Packer S.

“Beauty is in the eye of the beholder” was first described in early Greek literature and has remained throughout literature until the present day. Its literal meaning is that the perception of beauty is subjective. The Venus de Milo is a work of enduring beauty and mystery, even though her arms are missing. In this present case, we explore an ethical philosophical approach that could have altered the focus of a holistic experience of a young female. Phenomenology best describes this “lived experience” of this young woman. The ethical issue raised is equating a very visible disability as a potential extraordinary suffering. As clinicians, is our perspective biased so that we cannot participate in a true shared decision making process? Can we envision this type of disability as something we can find worth living or are we horrified at the prospect of a four limb amputation? True autonomy in this situation was never ascertained as the young woman ultimately wanted life, even without all four limbs, as opposed to the acceptance of death after awakening from her obtunded neurologic status. This proposal aims to examine the ethical issues surrounding the shared decision making process in a young female faced with loss of limbs or death.
Changing the Culture in SICU: Integrating Palliative Care and Ethics - A Novel Initiative.


**Learning Objectives:** Few published studies have focused on the effects of a collaborative approach between palliative care, ethics, and Surgical Intensive care Unit (SICU). Once a week the SICU team at Northwell Health - Long Island Jewish Medical Center meet with the Ethics and Palliative Care Services to discuss new and ongoing patient cases. This meeting allows the SICU clinical team to discuss complicated patients, creates a sense empowerment among staff, and improves patient management. The aim of this study is to highlight the role of this novel initiative towards improving overall outcomes.

**Methods:** 213 surgical patients required Palliative Care and/or Ethics consults (June 2014 and June 2016). Of those patients, 99 patients required SICU admission. Weekly SICU meetings began September 1, 2015. The patients were divided into two mutually exclusive categories and demographic and clinical data was collected. Standard statistical analysis was performed to evaluate variations in consult patterns as well as end of life decision making.

**Results:** Overall, 46% of consults requested came from SICU. Prior to September 2015, Palliative Care received 45 (45.45%) consults and Ethics received 2 (2.02%). Since September 2015, the number of consults have increased for both Palliative Care (53; 53.53%) and Ethics (9, 9.09%). DNR orders have also increased since the SICU intervention from 6 (6.06%) to 32 (32.32%).

**Conclusions:** Weekly meetings have a significant impact on empowering the SICU staff to place consults for both Palliative and Ethics, thereby increasing consults to both services and increasing the number of patients with advance directives. Goals of care discussions secondary to the increased number of DNR orders were a positive outcome. Education and collaboration permit a harmonious and cooperative multidisciplinary team approach as well as improving patient overall satisfaction.
Reconciling Surgical Outcome with Quality of Life: The Ethical Dilemma

*Sparber LS, Warman A, McLeod-Sordjan R, Patel V, Barrera R, Doscher W.*

**Introduction:** Due to modern resuscitative technologies, critically ill patients undergoing major emergent operations frequently survive to face a post-surgical quality of life quite different than their pre-morbid state. Post-surgical increased morbidity requires the surgical team to communicate harms and benefits of continued interventions in a time sensitive manner. Multidisciplinary meetings including caregivers, the patient, the clinical team, palliative care, clinical ethicists, social work, nursing and chaplaincy can facilitate surrogate decisions regarding goals of care. This pilot study sought to describe the ethical framework necessary to guide medical decision making when patients and caregivers face unexpected near-fatal sequela after surgical intervention.

**Methods:** Between July 2011 and June 2016, a retrospective study of all ethics consultations was performed. Demographic and clinical data was collected. 22 SICU patients required Ethics consultations. Of those 22 patients, 15 patients were facing end of life. Fourteen (93.3%) patients were in multi-system organ failure post-operatively. The overall median age was 68 years. Six (40.0%) of the patients were female. The average length of stay until clinical ethics was consulted was 28.4 days. Descriptive statistical analysis was utilized to evaluate variations in ethical dilemmas as well as goals of care variations in advanced planning decisions.

**Results:** The primary outcome was successful mediation of the initial reason the ethical consultation was called. Major ethical dilemmas included mediation of goals of care (33.3%); mediation of goals of care including withdrawal of life sustaining treatments (53.3%) as well as identifying an appropriate surrogate decision maker (13.3%). The secondary outcome was death during incident hospitalization (73.3%, N = 10). Two (13.3%) patients were discharged but subsequently died on average 60 days after discharge. Two (13.3%) patients remained alive to hospital discharge. Twelve (80.0%) patients at onset of surgical intervention had capacity. Six (40.0%) patients had Health Care Proxy documents. Eight (53.3%) patients had surrogates who were family, while one (6.67%%) patient had an assigned legal guardian. Three (20.0%) patients had capacity/restored capacity during their hospital stay.

**Conclusion:** Patients and their surrogates frequently experience significant distress when patients initially survive high risk interventions but then suffer declining quality of life during the post-operative recovery period. Additionally, when the patient experiences incapacity post-operatively either due to chemical sedation or physiologic distress, the burden of surrogate decision making may not necessarily accurately reflect the patient’s autonomous choice. It is imperative to recognize this ethical dilemma to be able to reconcile the conundrum that “surgical success” is not equivalent to “high quality of life.” Additional studies are required to validate the findings of this small study.
There is an issue of bias surrounding a patient with a psychiatric diagnosis and suicide attempt. A patient’s capacity during the trajectory of their illness will be pondered as a key factor in ascertaining their direct participation in the informed consent process. Even with a designated health care proxy as well as a Living Will, which represents a patient’s substituted judgment prior to hospitalization, ethical and legal issues will arise regarding the patient’s current substituted judgment. Proportionality (assessment of beneficence versus non-maleficence) balanced by autonomy is a prudent ethical framework for determining best interests of a patient. Enteral nutrition, as decided by the health care agent, was a beneficial action in the hopes that the patient might be able to regain capacity and participate in medical treatment. The Living Will stated specifically that a desire to forgo artificial nutrition was for end of life and at the time, the conditions described by the Living Will were not evident. Subsequently, the medical team was able to prognosticate that a chance of a neurologic recovery was not likely to happen. Can autonomy be restored to a patient deemed without capacity for an attempted suicide? Does the patient get to participate in shared decision making at some juncture? This proposal aims to examine the ethical issues associated with informed consent after a presumptive suicide.
When Palliation Restores Personhood

Sparber LS, McLeod-Sordjan R, Patel V, Doscher W, Barrera R.

We report a case of a 79 year old hypertensive man on maintenance hemodialysis (HD) for end stage renal disease who underwent an emergent extensive small bowel resection with extended right colectomy for acute mesenteric ischemia. He is initially left in enteric discontinuity and temporary abdominal closure for ongoing resuscitation and goals of care discussion with his family. Options included return to the operating room for ostomy maturation, abdominal closure and total parenteral nutrition (TPN) initiation for short gut syndrome versus discontinuation of HD and palliative care. Given his ongoing respiratory insufficiency and need for mechanical ventilation precluding his participation, his daughters acting as his surrogate decision makers felt their father’s substituted judgment would be palliation having lost their mother two years prior. Remarkably, once he was extubated, his mentation improved and he requested re-institution of HD. The issue in question is to appreciate the sensitivity that is required to balance patient autonomy, physician autonomy, beneficence and non-maleficence, as well as the family’s wishes to prevent suffering to the patient by informing him of his medical condition. The possible alternatives for treatment that were initially presented were anastomosis of the remaining bowel or creation of an ostomy, both of which would likely cause short bowel syndrome given the extent of the resection. Both decisions would require the patient to be on long term TPN and daily hemodialysis. Therefore requiring that the patient remains institutionalized for the remainder of his natural life. The surrogate decision maker in this case chose a course of action she believed her father would have chosen. Although the family desired comfort measures and minimize stress with the information that he is dying; the patient clearly wanted to be involved in his own care and end of life decisions. The patient underwent completion surgery and was discharged home on TPN with outpatient hemodialysis only to die of liver failure within 3 months.
When the Decision is Indecision: An Ethical Dilemma in the SICU  
Sparber L, McLeod-Sordjan R, Patel V, Doscher W, Barrera R.

We report a case of an 88 year old male with severe Alzheimer’s dementia, triple coronary bypass, open AAA repair, COPD and significant smoking history, who underwent an emergent sigmoidectomy with end colostomy for perforated sigmoid volvulus. The patient tolerated the procedure well until he was re-intubated for acute respiratory distress due to aspiration pneumonia. The patient subsequently developed shock requiring IV vasopressor support along with fluid hydration. Advanced directives and goals of care conversations had been ongoing with his wife by multiple disciplines, but his wife had expressed difficulties with decisions regarding consenting to a tracheostomy in the face of declining prognosis. In this case, the patient’s wife is struggling with shared decision making due to distrust, anger and emotional turmoil. At issue becomes her competence to decide on behalf of her spouse. In this case, while the patient’s wife may be able to discuss the various decisions and procedures that are available to the patient, she was not willing to read over information about tracheostomy and other therapeutic options. Her inability to make a decision because, as she stated, of her “emotional state,” precluded her from making a decision within an immediate time frame. Her competence or lack thereof can be mediated by an attempt to have her defer decision making to someone she trusted. However, she refused to defer decision making to her nephew. Sustaining an endotracheal intubation for prolonged periods of time potentially impairs this patient from experiencing a quality of life without continual mechanical ventilation and sedatives. A month later, the patient’s wife was able to make a decision for discontinuation of mechanical ventilator support. The biggest hurdle in this case was competence of the surrogate and ways to effectively deliver care and achieve goals of care by protecting the autonomy of the patient.
Occlusion of Right Middle Cerebral Artery as Initial Presentation of Thrombotic Thrombocytopenic Purpura


Summary: We report a case of a 67-year-old woman with chief complaint of dysarthria secondary to occlusion of the right middle cerebral artery. Laboratory tests revealed microangiopathic hemolytic anemia and thrombocytopenia. Thrombotic thrombocytopenic purpura (TTP) was diagnosed, and therapeutic plasma exchange (TPE) was performed, with partial resolution of symptoms. Although the gold standard TTP treatment is TPE, it is unknown whether thrombolytic therapy would provide additional benefit, as its use has only been reported once in the literature.

Introduction/Background: Thrombotic thrombocytopenic purpura (TTP) is an uncommon disease with an incidence of three cases per million adults per year. It is characterized by the classic pentad of thrombocytopenia, microangiopathic hemolytic anemia, acute kidney injury, fever and neurologic symptoms. TTP results from inherited deficiency or acquired inhibition of the enzyme ADAMTS13, which is responsible for cleaving von Willebrand factor (vWF) into smaller multimers. The presence of ADAMTS13 inhibitor distinguishes acquired TTP from the congenital type. Diminished ADAMTS13 activity results in larger multimers of vWF, which causes increased platelet adhesion at sites of endothelial injury, resulting in thrombi formation [3]. Prognosis is generally good when diagnosed early and treated with therapeutic plasma exchange (TPE).

Approximately 90% of TTP cases involve the central nervous system. Of these, 50% present with neurologic deficit at the onset. Neurologic involvement is believed to be secondary to thrombi development in the small vessels of the brain. Neurologic features include fluctuating or persistent alterations of level of consciousness, confusion, aphasia, visual disturbance, paresthesias, motor deficits, and seizure. These can be attributed to ischemia of the cerebral cortex and/or subcortical white matter causing transient occlusion or microinfarcts. However, these changes are transient, and most patients who survive the acute presentation enjoy return of functional status [1]. In contrast, large cerebral artery occlusion (LCAO) in TTP is very rare, with only nine prior reports identified after extensive literature review. Of these, only four cases report cerebral vascular occlusion occurring at initial presentation. Here we report a patient with TTP who presented with right middle cerebral artery (MCA) occlusion, causing permanent neurologic deficit. Decreased platelet count precluded use of thrombolytic therapy in this patient.
Arsenic Trioxide Metabolism in Patients with Acute Promyelocytic Leukemia

Introduction: Arsenic trioxide (ATO) is a mainstay of therapy for Acute Promyelocytic Leukemia (APL). Its long term effects and pharmacokinetics have not been well described. ATO is metabolized by a series of reactions involving inorganic arsenic (iAs) methylation and electron reduction steps resulting in methylated (MAs), di- (DMAs) and trimethylated arsenic (TMAs) metabolites which are subsequently excreted in the urine:

\[ \text{iAs}^{\text{III}} \rightarrow \text{MAs}^{\text{V}} \rightarrow \text{MAs}^{\text{III}} \rightarrow \text{DMAs}^{\text{V}} \rightarrow \text{DMAs}^{\text{III}} \rightarrow \text{TMAs}^{\text{V}} \rightarrow \text{TMAs}^{\text{III}} \]

Individual polymorphisms in arsenic methyltransferase, a key enzyme in this reaction, contribute to differences in the metabolism of arsenic trioxide. iAs\text{III}, MAs\text{III} and DMAs\text{III} are more biologically active and more toxic than pentavalent forms. In this study, we measured the total iAs, MA and DMA’s in plasma and urine.

Methods: Blood and urine samples from 10 control patients and 26 APL patients treated with ATO were collected. The treated patients had blood drawn immediately prior to and at 1, 2, 4, 6, and 24 hours, days 4, 8 and 15, and 4 weeks after the administration of ATO. Total iAs (iAs\text{III}+iAs\text{V}), MAs (MAs\text{III}+MAs\text{V}) and DMAs (DMAs\text{III}+DMAs\text{V}) were measured in plasma using specific hydride generation-cryotrapping. The same arsenic species were measured in spot urine at several time points.

For statistical analysis, repeated measures analysis of variance (RMANOVA) were done to compare subject groups over time. Two subjects were missing iAs urine values at 24 hours and so were excluded from this analysis.

Results: Inorganic arsenic iAs levels differed over time (p<0.0001), with a rapid increase noted after ATO administration followed by a linear decline, reaching minimum levels by 4-6 hours. Between 6 hours and 24 hours, two distinct groups of iAs metabolizers became apparent: 15 subjects had stable or decreased iA levels at 24 hours (Group A) versus 9 subjects with at least a 5% increase in iAs at 24 hours (Group B). Arsenic metabolites in the urine were also higher at all measured time points in Group A versus Group B; however, the difference between the two groups was statistically significant only for urine DMAs (p<0.0390).

Conclusions: Chronic arsenic exposure has been associated with increased risk of diabetes and lung, bladder and skin cancer. In patients treated with therapeutic dose ATO, we identified 2 distinct groups of arsenic metabolizers: Group A patients who rapidly converted iAs to MMA and DMA and excreted the metabolites in the urine, and Group B patients who metabolized arsenic slowly and had a lower rate of excretion of metabolites in the urine. These results suggest that Group B patients had a longer exposure time to arsenic metabolites and may be more susceptible to ATO toxicity. Prospective clinical trials are needed to determine long term ATO toxicity in these patients.
"I Need To Get This Out Of My Chest"; 6 Years of Atypical Chest Pain Caused By Missed Retained Catheter

**Tariq U, Mullan C, Goldin M.**

**Case Presentation:** A 29-year-old woman with treatment refractory hyperemesis gravidarum requiring total parental nutrition via indwelling tunneled catheter 6 years prior to admission presented with a prolonged history of intermittent chest pain. The retrosternal pain was 5/10 in severity, present on deep inspiration or with large meals, and typically lasted 5 minutes, resolving without intervention. Pain was attributed to possible scarring from prior catheter, or gastroesophageal reflux disease, but episodes persisted despite maximal PPI and H2 blockade along with lifestyle modification.

Initial examination revealed stable vital signs and normal cardiac, chest, pulmonary, and abdominal exam. Complete blood count and basic metabolic panel were unremarkable. ECG showed normal sinus rhythm, normal axis, normal intervals, without ST segment or T wave changes. Lateral and PA chest x-rays revealed a 10 cm narrow foreign body within the right atrioventricular region consistent with a retained catheter fragment. Transthoracic echocardiography revealed no gross abnormalities of the right ventricle, right atrium, or tricuspid valve.

The patient underwent successful fluoroscopy-guided removal of the fragment via the right common femoral vein, revealing the fragment to be greater than 11 cm long and providing complete resolution of symptoms.

**Discussion:** More than 5 million central venous catheters are placed annually within the United States and most are removed in a timely manner without complications. Catheter fracture occurs in approximately 0.1% of patients and potential complications include thromboembolism, infection, cardiac arrhythmias, and mechanical events like pneumothorax or myocardial rupture. Some factors which may contribute to retention of catheter fragments may include operator inexperience, prolonged placement of catheter that allows additional time for catheter fracture, and peripheral insertion of catheter. Measures such as documentation of the length of the catheter removed, use of a universal checklist for catheter removal, and a follow up chest x-ray may reduce the chance of catheter retention. A high index of suspicion is required, especially in the setting of chronic, unexplained symptoms.

**Conclusions:** A retained central catheter fragment is a potentially fatal complication and clinicians must have a high index of suspicion to detect them. To our knowledge, fragment retention for this length of time has never been reported. Most reports describe either guidewire retention or immediate suspicion of catheter fracture, making this presentation extraordinary in its rarity. Without consideration of a retained fragment in the differential diagnosis, it is possible that inattentional blindness contributes to missed radiographic findings or pertinent history. Potential complications of a retained fragment can include sepsis, thromboembolism, or arrhythmias. Risk factors for fractured catheters include a peripherally inserted line, operator inexperience, and prolonged indwelling time.
Loeffler’s endocarditis is a rare restrictive cardiomyopathy caused by abnormal endomyocardial infiltration of eosinophils, with subsequent tissue damage from degranulation, eventually leading to fibrosis. Although an uncommon entity, it is still a disease with significant morbidity and mortality. Often identified only at late stages, treatment options are limited once fibrosis occurs, usually requiring heart failure medications or surgical intervention. We present a unique case of a woman with remote history of infliximab-induced hypereosinophilic syndrome who presented with symptoms of heart failure refractory to medical management and was found to have Loeffler’s primarily affecting the right side of the heart. The severe progression of the disease required surgical intervention with endocardial stripping to relieve the right-sided diastolic heart failure.

Key Words: Loeffler’s Endocarditis, eosinophilic cardiomyopathy, hypereosinophilic syndrome, endocardial stripping

**Introduction:** Loeffler’s endocarditis describes a rare restrictive cardiomyopathy associated with eosinophilia in which there is impaired ventricular filling and diastolic dysfunction due to endomyocardial fibrosis. First described by Loeffler in 1936, the process involves the abnormal infiltration of eosinophils into the endomyocardium, with subsequent tissue damage from degranulation, eventually leading to fibrosis. Predisposition for this condition can occur from any eosinophilic state, including drug reaction, parasitic infection, eosinophilic leukemia, and most commonly hypereosinophilic syndrome, a myeloproliferative disorder marked by persistent peripheral eosinophilia (>1.5 x 10^9/L) and end-organ damage. Although an uncommon entity, the disease causes significant morbidity and mortality. Diagnosis often only occurs once the patient has become symptomatic from fibrosis, at which point management options are limited, usually requiring treatment with heart failure medications or surgical intervention. We report a case of a 58-year-old woman who presented with clinical signs and symptoms of heart failure. The patient was found to have a primarily right-sided restrictive cardiomyopathy due to Loeffler’s, and underwent successful endocardial stripping. This case demonstrates the efficacy of endocardiectomy for the treatment of an unusual case of right-sided heart failure.
A 60-year-old man with paroxysmal atrial fibrillation, hypertension, seizure disorder, and alcohol abuse was unresponsive on presentation at the hospital. Laboratory tests revealed hypokalemia (2.5 mg/dL), hypomagnesemia (1.3 mg/dL), and no elevation in cardiac biomarkers. The patient’s admission electrocardiogram (ECG) showed an undetermined rhythm, with further interpretation limited by motion artifact. He was admitted with a diagnosis of alcohol withdrawal and hypothermia. During his hospital stay, he was monitored on telemetry for cardiac manifestations of electrolyte abnormalities. The covering physician was urgently called for suspicious telemetry events that prompted the completion of the following ECG (Fig. 1).

**Fig. 1**

What is the most appropriate next step in treating this patient?
A) Perform prompt, unsynchronized electrical defibrillation.
B) Initiate pharmacologic therapy with intravenous magnesium sulfate followed by isoproterenol infusion, if necessary.
C) Perform a full physical examination.
D) Withdraw any provocative agents.
E) Start temporary transvenous overdrive pacing (atrial or ventricular).

**Answer C) Perform a full physical examination.**

The patient’s ECG patterns (Fig. 1) can be confused with those of torsades de pointes, a form of polymorphic ventricular tachycardia. The characteristics of torsades de pointes include a heart rate of 150 to 300 beats/min, irregular RR intervals, a prolonged QT interval in the last sinus beat, progressive twisting of the QRS complex that leads to a complete 180° twist in 10 to 12 beats, and a sinusoidal change in amplitude of the QRS complexes in each cycle. Although the patient’s ECG resembles torsades de pointes, further inspection suggests otherwise. The twisted QRS complexes are discernible in leads V3, V4, and V5 (Fig. 2).

In the patient’s telemetry strip (Fig. 3), the oscillating axis that suggest torsades de pointes is again seen. However, it shows a regular rhythmic rate of 70 beats/min with narrow QRS complexes – characteristics not associated with torsades de pointes.

In this case, a motion artifact in the presence of alcohol withdrawal resulted in a rhythm strip and an ECG pattern that can be confused with torsades de pointes, not an unreasonable presumption in this patient with electrolyte abnormalities and hypothermia. Whereas all 5 answer choices might be appropriate in the treatment of torsades de pointes, the most appropriate next step would be to perform a physical examination, including auscultation and palpation of the patient’s pulse to help ascertain the presence of an arrhythmia. Torsades de pointes and other ventricular arrhythmias are often associated with hemodynamic instability that manifests itself as hypotension, syncope, dyspnea, or chest pain. The absence of these signs should alert the clinician to the possibility of an alternative explanation for bizarre ECG abnormalities, including tremor-induced artifact.
Acute Parvovirus B19-Associated Nephrotic Syndrome in a Patient with Sickle Cell Disease

Uppal N, Shah H.

**Introduction:** Human parvovirus B19 (HPV B19) infection is a common cause of transient aplastic crisis (TAC) in patients with sickle cell disease (SCD). However, nephrotic syndrome (NS) has been rarely associated with acute HPV B19 infection in patients with SCD. We present an interesting case of abrupt onset severe NS and AKI secondary to acute HPV B19 infection.

**Case description:** A 37-year-old African American female with history of SCD was hospitalized with fever and severe anemia. Both serum creatinine (Scr) and albumin were normal on admission. Pt. was found to have TAC secondary to acute HPV B19 infection. HPV B19 DNA by PCR was elevated (1.8 X 10^8 IU/ml). HPV B19 IgM was positive. Scr rapidly increased to 1.9 mg/dL during hospitalization. Pt. was thought to have prerenal AKI. There was no obstructive uropathy on renal ultrasound. Pt. received IV fluids and Scr decreased to 1.8 mg/dL on the day of discharge. Five days later, pt. presented to the clinic with worsening lower extremity swelling, abdominal distention and 35 lbs weight gain. Pt. was noted to have significant lower extremity pitting edema on exam. Urinalysis showed microscopic hematuria and proteinuria. Spot urine total protein to creatinine ratio (TP/CR) was elevated at 56. Serum albumin was low at 1.8. Scr remained elevated (1.8 mg/dL). Serological work up for other secondary causes including HIV infection was negative. Pt. was subsequently rehospitalized for management of edema that was resistant to oral diuretic therapy. Kidney biopsy performed subsequently revealed collapsing FSGS that was thought to be secondary to acute HPV B19 infection. Scr peaked to 3.4 mg/dL during that hospital stay. Pt. subsequently received IVIG for persistent NS and viremia. Nine months after initial presentation, Scr remains elevated (4.7 mg/dL). Pt. also continues to have significantly elevated spot urine TP/CR (26.8) despite decreasing HPV B19 DNA levels.

**Discussion:** Collapsing FSGS as a result of acute HPV B19 infection has been rarely described in patients with SCD. Optimal therapy and renal outcomes in such cases are unknown. Our patient continues to have progressive renal failure and severe NS, 9 months after initial presentation.
Introduction: Acute interstitial nephritis (AIN) is a form of acute kidney injury (AKI) characterized by rapid deterioration of renal function with inflammatory infiltration of the renal interstitium. Drug induced acute allergic interstitial nephritis is the most common etiology of AIN. Many drugs including β-lactam antibiotics, NSAIDs and proton pump inhibitors have been recognized as the leading causes of AIN, however any drug can potentially cause AIN. We present a rare case of AIN following treatment with oral azithromycin that was successfully treated with use of corticosteroids.

Case Description: A 73-year-old Caucasian female with history of hypertension, hyperlipidemia, and glaucoma presented to the hospital for evaluation and management of elevated serum creatinine (Scr) of 6.8 mg/dL that was noted on outpatient labs performed by her primary care physician (PCP). Her baseline Scr was 0.7 mg/dL, approximately 6 months prior to this presentation. There was no previous known history of kidney disease. Her only home medication was Crestor and was on diet control for blood pressure (BP) management. Patient was asymptomatic at the time of presentation. 5 weeks earlier, she had completed a course of azithromycin for upper respiratory tract infection (URI). Her BP was elevated at 160/75 and physical examination was unremarkable. Renal ultrasound performed on admission did not show any evidence of obstructive uropathy, however showed bilateral enlarged kidneys. Urinalysis was positive for trace blood and proteinuria with 5-10 white blood cells (WBCs). Spot urine total protein to creatinine ratio was elevated at 1.1. Urine examination under light microscopy showed numerous WBCs, however did not show any dysmorphic red blood cells (RBCs) or RBC casts. Serological work up revealed negative results for anti-neutrophil cytoplasmic antibodies (ANCAs) and anti-glomerular basement membrane (GBM) antibody. C3 and C4 levels were not low. Hepatitis B surface antigen and hepatitis C antibody were non-reactive. Serum immunofixation was negative for monoclonal gamopathy. Anti-nuclear antibody (ANA) titer was elevated at 1:160, however anti-double stranded DNA (dsDNA) was negative. Scr peaked to 7.6 mg/dL; however patient remained non-oliguric and did not require hemodialysis. A kidney biopsy was performed that revealed findings consistent with drug induced acute allergic interstitial nephritis that was thought to be secondary to recent azithromycin use. Patient received intravenous pulse dose corticosteroid (solumedrol) treatment for 3 days, followed by oral prednisone (60 mg daily). 2 weeks later, Scr decreased to 2.4 mg/dL and the dose of prednisone was gradually tapered over the following 8 weeks. AKI continued to resolve and Scr decreased to 1.2 mg/dL during the 8th week of oral prednisone treatment. A week after completion of prednisone therapy, Scr remains continue to improve to 1.1 mg/dL.

Discussion/Conclusion: Azithromycin is a readily available and widely used macrolide antibiotic for treatment of URI all over the world. This drug is considered generally well tolerated with most common side effects being diarrhea, nausea, abdominal pain and vomiting. Fewer than 1% of people stop taking the drug due to side effects. To our knowledge, only four cases of kidney biopsy proven AIN associated with azithromycin use have been reported in the literature. Clinicians including primary care physicians, nephrologists and infectious disease specialists should be aware of this potential serious nephrotoxic effect of this agent. Our patient responded well to a prolonged course of corticosteroid therapy with significant improvement in renal function.

Azithromycin-induced Severe Acute Interstitial Nephritis: Role of Corticosteroids

Uppal N, Parikh N, Shah H.
Enhancing Interest and Learning in Nephrology: A Redesigned Elective Experience for Medical Students

Uppal N, Jhaveri K, Shah H.

Introduction: Interest in fellowship training in nephrology continues to decline in the United States. Applications for pursuing nephrology fellowship training have dramatically decreased amongst both US and international medical graduates. This dwindling interest is occurring at a time when demand for nephrologists is increasing. Several factors can influence medical trainees’ career choices, including intellectual interest in a particular field, the presence or lack of a significant procedural component, income potential, job opportunities, financial debts, family commitments, and geographical constraints, among others. Exposure to various subspecialties during medical school may be one such variable that can strongly influence career choices. Although many factors may play a role in attracting medical students into nephrology, one important factor may be how well nephrology is presented to them. Some of the reasons that have been reported in the past for this declining interest in nephrology careers have included lack of mentorship, difficult-to-understand or unstimulating nephrology courses in medical school, disheartening inpatient elective experiences, a lack of representative nephrology elective experience during medical school, and few opportunities to experience other aspects of nephrology careers such as outpatient nephrology clinics, outpatient dialysis, and kidney transplantation. Other reasons include a perceived heavy workload and poor remuneration in nephrology, and interaction with nephrology fellows or attending physicians who are less satisfied or dissatisfied with their career choice. It is likely that the type of nephrology elective that medical students experience may have an important influence on their choice of nephrology as a career.

Medical school training typically includes rotations in various medical subspecialties. These subspecialty rotations generally consist of blocks of time spent on an inpatient consult service. In addition to being heavily weighted toward inpatient experiences, consult activities are often driven by service needs and may not provide optimal educational benefit to the trainee, a problem noted in a prior survey of medical residency training programs. Inpatient-based subspecialty rotations do not give the medical student a representative view of the full spectrum of what physicians in those subspecialties do in their careers, such as outpatient care, education, and research. In addition to having educational experiences, the nature of subspecialty rotations may influence medical students’ career choices as well.

One way of addressing the declining interest in nephrology as a career may be restructuring the nephrology elective that is offered to medical students. Currently, the most common format of such an elective is an inpatient consultative-based experience that heavily exposes students to acute kidney injury, fluid and electrolyte disorders, intensive care nephrology, and acute illnesses in patients with end-stage kidney disease. However, as with all specialties, nephrology is a multifaceted field, and its scope extends far beyond the inpatient realm and the conditions seen there. For a medical student to learn not only the full scope of nephrology but also what fellowships and careers in nephrology entail, a much broader experience is required. In our view, an ideal elective would include a component of inpatient nephrology, a component of outpatient nephrology, and a strong emphasis on education rather than service. Ample exposure to areas such as peritoneal dialysis, outpatient hemodialysis, and transplant medicine also would be needed. In addition, the elective should give medical students access to as many faculty members as possible, enabling numerous mentoring opportunities. Hence, with the goal of enhancing learning, as well as creating career interest in nephrology, we restructured the nephrology elective for all rotating medical students.
Harvoni-associated Reversible Acute Kidney Injury

Uppal N., Lee TP, Shah H.

Introduction: Harvoni (ledipasvir and sofosbuvir), is a novel combination agent that has been approved in the United States by the Food and Drug Administration (FDA) for treatment of chronic hepatitis C virus (HCV) genotype 1 infection since October 2014. Although initial trials did not reveal any nephrotoxicity associated with Harvoni, renal toxicity of Harvoni remains unknown. We present a suspected case of Harvoni-associated acute kidney injury (AKI).

Case Description: A 54-year-old Asian female presented to our clinic for evaluation of elevated serum creatinine (Scr) of 1.7 mg/dL. The patient had a prior history of chronic HCV infection, cirrhosis and thrombocytopenia. At the time of initiation on Harvoni treatment her serum creatinine was 1.1 mg/dL (WNL). Five weeks after initiation of Harvoni, Scr increased to 1.4 mg/dL. Subsequently, at week 11 as Scr further increased to 1.7mg/dL, Harvoni was then discontinued. Scr remained elevated at 1.7mg/dL, two weeks after discontinuation of Harvoni; hence, she was referred for nephrology consultation. The patient denied any family history of kidney disease. Patient had not taken any known nephrotoxic agents. Patient had BP of 110/68 mm Hg. Physical exam was unremarkable. There was no clinical or lab data suggestive of prerenal disease. There was no evidence of obstructive uropathy on renal ultrasound. There was no proteinuria or microscopic hematuria on urinalysis. Spot urine exam revealed normal TP/CR (0.1). C3 and C4 levels were not low. Hepatitis C viral load was undetectable on PCR; hence patient was not thought to have any HCV related kidney disease. Serum IFE was also negative for monoclonal gammopathy. There was no other apparent cause of AKI. Kidney biopsy was indicated to determine the etiology of underlying kidney disease, however could not be performed as patient had chronic persistent thrombocytopenia. It was recommended to continue to hold Harvoni. Patient was followed clinically. Scr decreased to 1.5mg/dL eight weeks after discontinuation of Harvoni. Fourteen weeks after discontinuation of Harvoni, Scr normalized to 1.1mg/dL.

Discussion: Harvoni is a fixed dose combination pill that contains two direct acting antiviral agents (ledipasvir and sofosbuvir) which act by inhibiting proteins required for HCV replication. Since FDA approval of Harvoni treatment for HCV infection in 2014 (4), it has been increasingly used in a number of trials and has proven to be safe and effective for treatment of patients with HCV genotype 1 and compensated cirrhosis (5). Based on ION-1 (1) and ION-3 (2) clinical trials, Harvoni is considered generally well tolerated with most common side effects being fatigue, headache, nausea and insomnia. No cases of nephrotoxicity associated with Harvoni were reported in these trials. We believe Harvoni was responsible for AKI in our patient. The underlying etiology of kidney disease leading to AKI in our case however is unclear. It is unknown if our patient developed acute interstitial nephritis (AIN) or acute tubular injury (ATN) from Harvoni use. However, serum creatinine normalized in our patient, nearly 3.5 months after discontinuation of Harvoni. Hence, the clinical picture, time course of development of renal impairment and reversal to normal kidney function is more suggestive for AIN. A recent case report suggested Harvoni as cause of AKI in their patient (3). In that case, serum creatinine worsened with Harvoni use. Kidney biopsy showed AIN. After discontinuation of Harvoni and initiation of steroids, serum creatinine stabilized with no further worsening. While clinical trials have highlighted the safety and efficacy of Harvoni, leading to the rapid approval of this therapy for treatment of HCV infection, renal toxicity of this novel agent is currently unknown. Clinicians including hepatologists, nephrologists and infectious disease specialists should be aware of this potential nephrotoxic effect of this novel agent.
Renal Outcomes in Acute Post-Streptococcal Glomerulonephritis Superimposed on Diabetic Nephropathy

Uppal N, Mehta N, Shah H.

The incidence of acute post-streptococcal glomerulonephritis (PSGN) superimposed on diabetic nephropathy (DN) is reported to be less than 1%. Renal outcomes in such cases remain unknown. We report 2 cases of acute PSGN superimposed on DN with renal outcomes. We also review the literature on this subject.

Introduction: Postinfectious glomerulonephritis (PIGN) is an immune-mediated glomerular injury that occurs as a result of host response to an extra renal infection. The classic example is poststreptococcal glomerulonephritis (PSGN), which often manifests days to weeks after a streptococcal infection. It primarily occurs in children in developing countries with the estimated annual incidence of 24.3 cases per 100,000 individuals. Patients frequently present with acute nephritic syndrome with laboratory data revealing proteinuria, hematuria, renal insufficiency, elevated antistreptolysin O (ASO) titers and hypocomplementemia. PSGN is generally a self-limited disease and treatment is mainly supportive. The prognosis is excellent with complete recovery in children and adolescents reported to be > 90%. Complete recovery in adults has been reported to range between 50%-70% with progression to ESRD being rare. Poor prognostic factors include elderly age, acute kidney injury, nephrotic syndrome, crescents on renal biopsy and underlying kidney disease.

A recent renal biopsy study by Sharma et al reported the incidence of acute PIGN superimposed on diabetic nephropathy (DN) to be less than 1% of patients with diabetes who underwent renal biopsy. Renal outcomes in such cases are not well known with only limited data available regarding the long-term outcomes of patients with acute PIGN complicating DN. Prior studies from Yum et al and Chihara et al suggest excellent renal outcomes, with only 18% and 10% of patients, respectively, progressing to ESRD. However, a more recent study by Nasr et al reported five cases of PIGN superimposed on DN in which 4 of 5 patients developed ESRD. These patients developed PIGN following staphylococcal infection, with poor renal outcomes associated with advanced age. We report two cases of acute PIGN superimposed on DN with progression to ESRD following streptococcal infection.
**Thoracic Impedance & Pulmonary Artery Pressure Monitoring in Prevention of Heart Failure Hospitalizations**

*Volodarskiy A.*, Nazeer H, Rosen L, Patel A, Jermyn R.

**Introduction:** According to 2006 estimates, there are over 5.1 million patients with heart failure in the United States, with the incidence expected to increase. Heart failure patients also account for over a million hospitalizations each year with up to a 24% readmission rate. New technologies such as thoracic impedance monitoring and pulmonary artery (PA) pressure monitoring have been developed to detect early heart failure exacerbation and prevent rehospitalizations. It is currently unknown whether one technology is superior to the other in preventing hospitalizations.

**Objective:** Evaluate whether thoracic impedance or PA pressure correlate and predict heart failure hospitalizations.

**Methods:** Patients with a CardioMEMs PA pressure sensor and a Medtronic Automatic Implantable Cardioverter Defibrillators with thoracic impedance (OptiVol) sensor were recruited from the NSUH and LIJ heart failure clinics. Data was abstracted from the patients' devices and charts were reviewed for hospitalizations for heart failure. Analysis was then performed for overall correlation between the two modalities as well as in changes in each modality in the 14 days preceding the patients' hospitalizations for heart failure.

**Results:** 15 patients with an average age of 65.7 years, predominantly men (80%), 67% of whom had ischemic cardiomyopathy and an average ejection fraction of 34% were recruited for the study. Over the average period of 15.4 month, 7 patients had 11 hospitalizations for heart failure. There was only a weak negative correlation of -0.31 between all the available PA diastolic and thoracic impedance measurements. In the two weeks preceding each hospitalization, there was no clear pattern in changes in PA diastolic pressure or thoracic impedance that would allow for prediction of hospitalization.

**Conclusions:** In a small cohort of heart failure patients, PA diastolic pressures and thoracic impedance measurements did not correlate and did not predict impending hospitalization for heart failure. Larger randomized trials are needed to confirm these findings.
Case Presentation: A 55 year-old woman with a history of antibody-mediated autoimmune encephalitis (AME) treated 1 year ago presented to the hospital with confusion and hyperactivity following intentional overdose of amitriptyline and clonazepam. 1 week prior, the patient reported increasing her amitriptyline dose for worsening headache. 5 days later, she took four times the prescribed dose of clonazepam for increasing anxiety and reported a fall on the day of admission. On presentation, her vital signs were T 36.6 °C, HR 96, BP 127/88, RR 16, and O₂ saturation 100% on room air. Exam was significant only for an anxious appearing woman with stuttering speech and tangential thought process.

EKG revealed prolonged QTc interval (508 ms). Initial blood work was significant for WBC count 14.42 x 10⁹/L with negative toxicology panel. CT scan of the head was normal. The patient was admitted to telemetry for monitoring following discontinuation of amitriptyline and clonazepam. Over the next 3 days, the patient became progressively agitated and paranoid, which was attributed to benzodiazepine withdrawal. Clonazepam was restarted with some improvement in agitation, but on subsequent evaluation she was delusional with visual hallucinations. The patient complained of intermittent tremors, for which valproic acid was started. An MRI of the brain revealed no abnormalities, and 24 hour VEEG showed no epileptiform activity.

A serum paraneoplastic panel was significant for elevated VGCC antibody and CSF encephalitis panel was significant for VGCC antibody as well as glutamic acid decarboxylase antibody (GAD-65). The patient was started on IVIG and steroids, but continued to experience tremors. She was started on rituximab for recurrent AME and had complete resolution of her symptoms 1 month after discharge.

Discussion: AME is characterized by acute to subacute cognitive dysfunction, mood or behavior changes, and/or seizures in the presence of one or more antibodies against a neuronal target. Symptoms are often non-specific and patients are often misdiagnosed as psychiatric conditions early in the course of disease. Development of neurological symptoms should prompt further evaluation.

Our patient had been misdiagnosed with schizophrenia prior to discovering high titers of VGCC antibody in both serum and CSF samples. Recurrence of disease was masked by amitriptyline overdose, which may present with confusion, agitation, and hallucinations. Benzodiazepine withdrawal can manifest with agitation, delirium and seizures, delaying diagnosis even further. Treatment of AME due to VGCC and GAD-65 antibodies involves IVIG, steroids and rituximab. Plasma exchange has also been reportedly successful.

Conclusions: AME is a disorder characterized by non-specific neuropsychiatric symptoms and is often misdiagnosed on initial presentation. Patients without a known cancer at time of diagnosis should have workup for malignancy.
Acute Hyponatremia Secondary to Initiation of Duloxetine

Waqar O, Boparai R.

Case Presentation: A 77 year old female with paroxysmal atrial fibrillation, diabetic neuropathy, spinal stenosis, disk herniation with h/o laminectomy and spinal compression presented with left upper quadrant abdominal pain.

CT of the abdomen and pelvis showed no intraabdominal pathology, but did revealed a severe compression deformity of the T11 vertebral body and chronic grade 1 anterolisthesis of L5 over S1. Pain was felt to be neuropathic in nature, possibly secondary to spinal nerve root compression. The patient was initiated on duloxetine in addition to her home Neurontin. She developed diarrhea for one day which spontaneously resolved. The abdominal pain improved. Serum sodium at discharge was noted to be 130 mmol/L. The patient was discharged home on duloxetine 30 mg daily.

She returned to the hospital three days later with complaints of recurrent diarrhea. Found to be hyponatremic with a sodium level of 121 mmol/L. Urine studies showed a sodium of 108 mmol/L and osmolality of 360 mos/kg with serum osmolality being 251 mos/kg. The patient was diagnosed with syndrome of inappropriate antidiuretic hormone (SIADH) secondary to duloxetine and the duloxetine was discontinued.

She received IV hydration with normal saline and was placed on a fluid restricted diet. Serum sodium level improved to 133 mmol/L, fluid restriction and IV hydration were discontinued. Sodium level at discharge was 139 mmol/L and her symptoms had resolved.

Discussion: Hyponatremia is a commonly faced issue in inpatient medicine. The clinical implications of hyponatremia include confusion, fatigue, nausea, vomiting and extreme cases seizures and coma. A common culprit in the precipitation of hyponatremia is initiation of a new medication. It’s a known side effect of many selective serotonin reuptake inhibitors (SSRIs) but there are few reported cases of selective norepinephrine reuptake inhibitors causing hyponatremia.

SSRIs typically precipitate their hyponatremic effects over the course of 13 days to 21 days after the initiation of the medication, whereas the patient in this case developed hyponatremia just 3 days after initiation of the duloxetine.

Furthermore, SSRI associated hyponatremia is typically associated with elderly females who have low BMIs, and while this patient was elderly and female, her BMI was 33. SIADH secondary to SNRIs is typically associated with use of thiazide diuretics and a history of hyponatremia, however this patient had neither.

Conclusions: While the mechanism by which SSRIs and SNRIs can cause hyponatremia is still under investigation, it is important to be cognizant of this relationship. Additionally, while the typical patient who develops SSRI or SNRI induced hyponatremia is an elderly female with a low BMI and history of thiazide diuretic use, it is important to keep this possibility in the differential diagnosis for patients who do not fit that typical profile.
An Ixodes Threesome
Weber A, Mendez J, Reyes A.

Case Presentation: A 69-year-old male presented to our hospital with 2 weeks of fever, dark brown urine, fatigue and diarrhea. He has a past medical history of hypertension and hyperlipidemia. The patient lives on Long Island and was recently in Rhode Island 2 weeks ago on vacation when the symptoms began. He enjoys an active lifestyle which includes yardwork. On physical examination, he was febrile to 103F, had icteric sclera and hepatomegaly in the absence of neurologic or musculoskeletal deficits. Laboratories were significant for hemoglobin of 10 g/dL, platelets of 78,000 K/uL, total bilirubin of 3.7 mg/dL (primarily indirect), haptoglobin of < 20 mg/dL, and LDH of 1489 U/L. AST was 445 u/L, ALT was 129 u/L, and creatinine was 2.89 mg/dL. Lyme western blot was positive. Co-infection was strongly suspected as our patient had atypical symptoms for Lyme disease, specifically hemolytic anemia, thrombocytopenia, and acute kidney injury (AKI). A peripheral smear later showed erythrocyte inclusions compatible with babesia infection and human granulocytic anaplasmosis (HGA) IgM were found to be positive as well, confirming triple infection. He was started on doxycycline, atovaqone, and azithromycin for suspicion of co-infection of Lyme disease and babesia. The patient’s anemia, hyperbilirubinemia, elevated transaminases, and AKI resolved with antibiotics and supportive care. He was discharged home on oral antibiotics.

Discussion: Lyme disease, babesia, and HGA are arbovirus infections hosted by the same deer tick, Ixodes scapularis. Coinfection should be considered in patients who presents with more severe initial symptoms than are commonly observed with a single disease alone. Those who have high-grade fever for >48 hours despite appropriate antibiotics or those who present with unexplained leukopenia, thrombocytopenia, or anemia should raise heavy suspicion for co-infection other than Lyme. Lyme and HGA are typically responsive to doxycycline while babesia is susceptible to the combination of atovaqone and azithromycin.

Our patient was appropriately tested for coinfection as the patient endorsed high-risk outdoor activities in 2 regions with high Ixodes tick populations and had symptoms unexplained by a single arbovirus infection. Triple infections is exceedingly rare and raises the suspicion that our patient had incurred multiple tick bites over a short period of time. He was subsequently placed on appropriate therapy and made a full recovery.

Conclusion: A rare triple infection with Lyme, babesia, and HGA can be a devastating clinical scenario without proper clinical suspicion and diagnosis. A thorough patient history can dictate which infections are probable. This case serves to demonstrate that a high degree of suspicion of co-infection must be kept when dealing with patients who have atypical symptoms of vector borne diseases.

Keywords: Lyme, babesia, anaplasmosis, HGA, tick, triple infection, Ixodes scapularis
**PPIs: Proton Pump Inhibitors or Potential Pathways to Iatrogenic Side Effects**

*Weber A*, Lucas E, Sharma S.

**Case presentation:** A 53-year-old female presented to our hospital with diffuse, severe, and crampy abdominal pain for 1 week associated with generalized weakness and fatigue. She has a past medical history of hypertension, hyperlipidemia, type 2 diabetes, and scleroderma (maintained on prednisone and mycophenolate) complicated by GERD (maintained on pantoprazole). On physical exam her temperature was 100.1F, her heart rate was 100bpm. She was found to have diffuse abdominal tenderness to palpation, hyperactive deep tendon reflexes throughout with positive Trousseau and Chvostek signs. Her labs were significant for calcium of 6.4 mg/dL (7.2 mg/dL corrected), magnesium of 0.8 mg/dL, and creatinine of 0.74 mg/dL. Electrocardiogram was unremarkable. In the hospital mycophenolate and prednisone were continued. There was a high suspicion that proton pump inhibitor (PPI) was the causative agent of her electrolyte derangements, and PPI therapy was withheld. She was repleted with IV magnesium oxide and IV calcium gluconate until steady electrolyte levels were reached. With electrolyte stabilization her low grade fever dissipated, her abdominal pain resolved and her neurologic exam normalized. PPI therapy was withheld indefinitely upon discharge.

**Discussion:** PPIs control the basal and food-stimulated acid secretions from the parietal cells in the stomach. PPIs have continued to grow in popularity and are now currently in the top 5 of the most commonly prescribed medications in the country. Recently, their appropriate use has come under scrutiny as a number of harmful side effects from their use have been proposed and include hypomagnesemia, increased risk of osteoporosis, increased risk of enteric infections, dementia, acute interstitial nephritis, gastric polyps and gastric carcinoids.

In this case, our patient had systemic scleroderma with known esophageal dysfunction and acid-related esophageal injury. The prescription for a PPI in this patient was appropriate as there was an acid-based dysfunction that could be targeted with an anti-secretory drug. Unfortunately, we believe the use of PPI caused her hypomagnesemia that led to her hypocalcemia which ultimately resulted in her presenting symptoms. Despite appropriate use of this medication, our patient experienced profound electrolyte disturbances.

**Conclusion:** PPIs are generously prescribed and are often overlooked in clinical practice. The use of PPIs can have serious and potentially life-threatening complications with acute or chronic use in certain patients. This case should not dissuade the use of PPIs, but rather demonstrate that all medications, even common ones, need to be always subjected to judicious stewardship.

**Keywords:** PPI, scleroderma, stewardship, electrolytes, hypomagnesemia, hypocalcemia, secondary hypoparathyroidism
**Tumor Induced Osteomalacia: A Case Report**  
*Weber A*, Kushnir I, Cohen J.

**Case Presentation:** 71 year old Hindi speaking female with a past medical history of pulmonary fibrosis, group 3 pulmonary hypertension (maintained on 2L nasal cannula and chronic prednisone 10mg daily), essential hypertension, type 2 diabetes mellitus, coronary artery disease (stenting in 2008; triple CABG in 2010), atrial fibrillation (on Dabigatran), congestive heart failure with preserved ejection fraction (EF: 67%), gastroesophageal reflux disease, chronic kidney disease stage II/IIIA (baseline creatinine 1.3 mg/dl) presented with 3 hospitalizations over the course of 6 months. The patient had identical complaints heralding each hospitalization that consisted of profound diffuse weakness and shortness of breath. With each hospital visit, the patient was found to have profoundly low phosphorous levels of less than 1mg/dl as well as a hemoglobin less than 6 g/dl. Each hospitalization required aggressive oral and intravenous phosphorous repletion with packed red blood cell transfusions. During workup, she was found to have low vitamin D (25-hydroxy) levels, vitamin D (1, 25-hydroxy) levels, normal parathyroid hormone (PTH) levels, elevated 24 hour-urine phosphorous levels, and an elevated fibroblast growth factor 23 (FGF23) level consistent with the paraneoplastic syndrome of tumor-induced osteomalacia (TIO). An FDG\(^{18}\)-labeled PET/CT scan as an inpatient was negative for tumors. The patient was stabilized and discharged on a regimen of 18mg/kg/day of elemental phosphorous and is currently awaiting an Indium\(^{111}\)-tagged Octreotide scan as an outpatient for tumor localization.

**Discussion:** A combination of hyperphosphaturia, low vitamin D, intact PTH, and hypophosphatemia highly suggests the diagnosis of FGF23-mediated TIO. In years’ past, TIO and TIO-like syndromes were poorly understood and their existence often went unnoticed, delaying the length of time from symptom onset to diagnosis. Due to recent advances regarding diagnosis and an understanding of the molecular properties of these mesenchymal tumors that secrete FGF23, the standard of care for patients has evolved greatly.

In our patient, there was a confounding picture in the clinical presentation as the patient presented with weakness, shortness of breath, and debility. These symptoms were initially, but inevitably incorrectly attributed to the patient’s recurring anemia. An extensive workup of this anemia revealed an idiopathic etiology. With repeated hospitalization and in the context of persistent and profound hypophosphatemia despite anemic improvement, the patient was then able to be properly worked up for hyperphosphaturia and the correct diagnosis could be uncovered. Our patient is currently pending an octreotide scan for mesenchymal tumor identification after having found to be FDG\(^{18}\)-labeled PET/CT scan negative.

**Conclusion:** TIO is a rare paraneoplastic syndrome that has become more understood and is now recognized as being caused by mesenchymal tumors that secrete FGF23. Our patient demonstrates typical barriers to care that are experienced when a rare disease entity presents in the context of a much more commonly identifiable, but unfortunately incorrect diagnosis. This case serves to underscore the importance of considering the entire clinical picture during diagnostic workup and constantly revisiting diagnostic pathways when the patient’s presentation is at odds with the current hypothesis.

**Keywords:** Tumor-Induced Osteomalacia, TIO, hypophosphatemia, osteomalacia, FGF23, fibroblast growth factor 23, rickets, vitamin D resistant rickets
**Nocardia? No Way!**  
*Wong K,* Curiale A, Katona K.

**Case:** A 29 year old man with Systemic Lupus Erythematosus, on Prednisone and mycophenolate mofetil (MMF), and history of an open left ankle dislocation 1 year prior requiring surgical repair without hardware presented with left ankle pain and swelling.

2 weeks prior to admission, he developed worsening pain and swelling of the left ankle. He denied any fevers, chills, or recent trauma. Vital signs were within normal limits. Exam was noted for left ankle tenderness, erythema and swelling. Initial work up was notable for an ESR of 67 mm/hr, and a leukocytosis to 19.8K.

MRI showed a large tibiotalar joint effusion of which aspiration showed a cell count of 325K/uL consistent with septic arthritis. Patient was treated empirically with IV vancomycin and piperacillin/tazobactam for concern of cellulitis or joint infection. Patient's MMF was held and prednisone was halved. Despite two washouts and empiric antibiotics, the patient’s pain persisted and his leukocytosis worsened. When preliminary cultures showed gram positive beaded filamentous rods, there was a concern for Nocardiosis. His antibiotic regimen was changed to trimethoprim/sulfamethoxazole (TMP-SMX) and imipenem. However, the patient developed acute kidney injury so TMP-SMX was replaced with linezolid. Shortly after, the patient began to clinically improve with resolving leukocytosis.

**Discussion:** Nocardiosis is an uncommon and typically opportunistic infection. Risk factors for infection include an immunocompromised state such as prolonged glucocorticoid therapy, malignancy, or organ transplantation. Virtually every organ system can be infected, with the most common sites being pulmonary, the central nervous system and cutaneous involvement. However, joint involvement is rarely reported, especially isolated articular disease with no systemic involvement. Nocardia can be identified as partially acid fast, gram positive beaded filamentous rods. Here, we see a rare case of Nocardia septic arthritis in a lupus patient on glucocorticoid therapy and MMF. The mechanism of infection was unknown with no evidence of extra-articular disease, hematogenous dissemination or direct inoculation via trauma.

Another interesting aspect of this case concerned therapy. Sulfonamides have been considered the standard of therapy for nocardiosis with TMP-SMX as first line drug of choice. In this case, the patient's lupus nephritis and acute kidney injury precluded the use of TMP-SMX. However, our patient clinically improved post washout on an empiric regimen of linezolid and imipenem.

**Conclusions:** Septic arthritis is a disease process that carries significant morbidity and mortality. In an immunocompromised patient, atypical pathogens should be considered. Close attention should be paid to preliminary joint fluid cultures, gram stain and acid fast stain, as they may give clue to any atypical infections. In our patient, when gram positive beaded filamentous rods were identified, empiric therapy was quickly changed to cover likely Nocardiosis.
**Case:** A 70 year old female with recently diagnosed right sacroiliitis presented with worsening right hip pain. Five months prior to admission, patient was hospitalized at an outside hospital for right hip pain and fevers. Imaging was suggestive of sacroiliitis. Cultures were negative for pathogens and biopsy showed inflammation. Patient was diagnosed with likely autoimmune inflammatory disease and sent home.

Patient was initiated on prednisone with transient improvement but pain eventually progressed. Given the patient’s worsening symptoms, her rheumatologist planned to prescribe a trial of Etanercept. While awaiting insurance approval, patient had significant acute worsening of her pain 3 days prior to admission prompting her presentation to the emergency department. Patient acknowledged subjective fevers, chills and decreased appetite. Exam was noted for a temperature of 102.7 and significant pain with active and passive ROM of the right hip. Labs showed an ESR of 94 mm/hr, with a normal WBC.

CT showed erosive changes at the right sacroiliac joint with soft tissue material extending into the right iliacus muscle concerning for infectious vs inflammatory arthritis.

CT guided biopsy was consistent with inflammatory process with negative cultures. Orthopedics was consulted and performed surgical drainage and washout. Tissue and fluid samples again showed no organisms, however, rare acid fast bacilli were noted in the fluid. Additional PCR testing confirmed mycobacterium species. Cytology report was compatible with necrotizing granulomatous inflammation. Also of note, patient was found to be Quantiferon Gold positive. Patient was started on RIPE therapy, consisting of Rifampin, Isoniazid, Pyrazinamide, and Ethambutol.

**Discussion:** Since the 1950s, the incidence of tuberculosis (TB) in the United States has shown a logarithmic decline. From 1993 to 2014, according to the CDC, there were 341,511 reported cases of TB. 19% of total cases were extrapulmonary of which 10% were instances of skeletal TB. With declining incidences and low prevalence, TB is often overlooked as a possible culprit in a patient presenting with joint pathology, leading to delayed diagnoses or misdiagnoses.

TB arthritis can occur in any joint, but most commonly affects the hip or knee. It usually presents as progressive swelling, pain and loss of joint function over the course of weeks to months. A characteristic finding is a “cold” joint with absent erythema and warmth that would be present in most other acute infections. Constitutional symptoms, fever and weight loss occur in only about 30 percent of cases.

**Conclusion:** In presentations of progressive subacute/chronic joint diseases of unknown etiology, TB arthritis should be considered and the appropriate workup pursued. Special consideration should also be given to the role of PCR in the diagnosis of TB arthritis, given the high sensitivity and specificity as well as shorter turnaround time compared to more conventional techniques.
Cardiac Amyloidosis Presenting with Recurrent Syncope and Diagnosed following Exercise SPECT Myocardial Perfusion Imaging

Yang JC, Makaryus J.

**Background:** Cardiac amyloidosis can present with a multitude of clinical signs and symptoms.

**Case:** A 53-year-old woman without prior cardiac history presented to the emergency department with several episodes of syncope. EKG revealed sinus rhythm with first degree heart block, right axis deviation, Q-waves in precordial leads with poor R-wave progression, along with diffuse low voltage. Transthoracic echocardiography showed an ejection fraction of 71% without valvular pathology, but with increased wall thickness and small pericardial effusion. The patient was referred for radionuclide Tc99m sestamibi SPECT myocardial perfusion imaging to rule out ischemic heart disease as potential cause of syncope and abnormal EKG. Prior to exercise the patient’s heart rate was 79 beats per minute. By stage 3 of the Bruce protocol her heart rate had increased to 110 beats per minute. The patient then complained of lightheadedness and noted failure of the heart rate to increase with exercise. Due to near-syncope the test was terminated. EKG revealed frequent blocked atrial premature contractions, with drop of heart rate to 80 during peak exercise. Nuclear stress testing was then carried out with regadenoson infusion. The perfusion images demonstrated a small, mild distal anterior defect that was reversible suggestive of mild ischemia.

**Decision-making:** Due to the abnormal perfusion images, coronary artery catheterization was performed but revealed no evidence of obstructive coronary disease. Given the low voltage EKG and abnormal transthoracic echocardiogram findings, cardiac MRI with gadolinium was obtained and confirmed the presence of circumferential left ventricular subendocardial delayed hyperenhancement suspicious for cardiac amyloidosis. Endomyocardial biopsy findings confirmed light-chain AL amyloidosis. As results, she was referred for hematopoietic stem cell transplantation. Although there is no one particular gold standard imaging modality for cardiac amyloidosis, making the diagnosis requires the integration of the appropriate clinical context, the combination of information from multiple imaging modalities, and appropriate use of cardiac biopsy. In our case, a provocative exercise stress MPI raised the strong clinical suspicion of an infiltrative process that affected the cardiac conduction system and prompted further testing that enabled diagnosis of an often elusive disease process.

**Conclusion:** Cardiac amyloidosis can masquerade various clinical pathologies, and infiltrative cardiac disorders including amyloidosis can lead to false positive SPECT findings, as in this case, likely due to underlying microvascular disease. Syncope can also result from autonomic failure and arrhythmias with the most common being atrial fibrillation, sinus node dysfunction and atrioventricular heart blocks. There is no one particular gold standard imaging modality for cardiac amyloidosis. To make the diagnosis requires the integration of the appropriate clinical context, different unique imaging modalities findings, and appropriate timing of biopsy for the definitive diagnosis.
Outcomes of Transcatheter Aortic Valve Replacement in Low Flow/Low Gradient/Low Ejection Fraction Severe Aortic Stenosis Are Similar Using Dobutamine Stress Echocardiography or Multislice Cardiac Computed Tomography

Yang JC, Chan N, Raphael C, Saba S, Henry S, Meraj P, Makaryus J.

Background: The diagnosis of low flow (LF; stroke volume index <35ml/m²) and low gradient (LG; mean gradient ≤40mmHg) severe aortic stenosis (AS, aortic valve area [AVA] ≤ 1.0cm²) with reduced left ventricular systolic function (LVEF <50%) often requires dobutamine stress echocardiography (DSE) to differentiate “true” severe aortic stenosis from “pseudo-aortic stenosis.” However, dobutamine is contraindicated in certain patients. The degree of aortic valve calcification assessed by multi-slice computed tomography (MSCT) has also been used to help identify “true” aortic stenosis. This study aims to determine outcomes of this group of patients undergoing transcatheter aortic valve replacement (TAVR) with prior diagnostic workup with DSE versus MSCT.

Methods: Between 2011 and 2015, we identified 28 patients with LF, LG, low EF AS who underwent TAVR. Fifteen patients had a standardized DSE protocol performed to assess for “true” aortic stenosis and contractile reserve (CR) prior to TAVR, and thirteen patients had TAVR performed without dobutamine stress testing but with reported aortic valve calcium score (AoV-Ca) by MSCT using 320-multidetector row CT (Toshiba Aquilion ONE®) and standard CAC parameters (2.5 mm slices at 120 kV, 120 mA). Outcomes were compared between the two groups including 30-day and 1-year all-cause mortality; length of hospital stay; and 30-day readmission rate.

Results: The baseline characteristics of the two groups were similar. The average AVA by echocardiography in the DSE and MSCT groups were 0.74cm² and 0.70cm², respectively; stroke volume index (SVi) 25ml/m² vs. 28ml/m²; and baseline ejection fraction (EF) 27% vs. 33%. In the MSCT-group, the average AoV-Ca was 3000 Agatston units. Mortality within 1-year was 33% in the DSE-group and 23% in the MSCT-group (p=0.68). The differences in lengths of stay and readmission rates between both groups were also insignificant, with p-values of 0.84 and 0.72 respectively.

Conclusion: From this retrospective analysis, we found that patients with LF, LG, low EF severe aortic stenosis undergoing TAVR, who were previously assessed and confirmed by either DSE or MSCT, showed no differences in mortality, length of hospital stay, and readmission rate after the procedure. Future prospective studies on a larger sample size can shed further light on the diagnostic necessity of dobutamine stress echocardiography for pre-TAVR assessment and explore the alternative use of MSCT alone in patients with contraindications for dobutamine.


**Oriel RC**, Bonagura VR, Belostotsky, O. Underutilization of Penicillin Skin Testing: A Call for Verifying Penicillin Allergy and Antibiotic Stewardship. American Academy of Allergy, Asthma & Immunology Annual Meeting, Los Angeles, CA. 03/16

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Patel C, Oriel RC, Farzan S. Angioedema As A Primary Manifestation of Mast Cell Activation Syndrome. Long Island Allergy and Asthma Society Meeting, Montauk, NY. 09/16


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2017 Publications:


Division of Cardiology
Cardiology Fellowship Program

Cardiology Fellow Presentations 2016/17

Refractory Atrial Fibrillation Secondary to Contrast-Induced Thyroid Storm in a Patient With Amiodarone-Induced Hyperthyroidism Charalambous, Marinos ACC 2017, Washington DC

Cardiogenic Shock secondary to Acute Right Ventricular Failure from Iatrogenic Right Coronary Artery Dissection managed with Impella 2.5 and Impella RP Charalambous, Marinos ACC 2017, Washington DC

"Crossover Rates in Transradial Catheterization - Are they really high?" Charalambous, Marinos ACC 2017, Washington DC

Clinical Outcomes of Atherectomy Prior to Percutaneous Coronary Intervention in Patients with Radial Access (COAP-Radial Study). Society for Cardiac Angiography and Interventions Shlofmitz, Evan SCAI 2016 - Orlando, FL
Clinical Outcomes of Atherectomy Prior to Percutaneous Coronary Intervention in Patients with Diabetes (COAP-DM Study). **Shlofmitz, Evan** SCAI 2016 - Orlando, FL

Safety of Orbital Atherectomy In Patients With Left Ventricular Systolic Dysfunction. **Shlofmitz, Evan** CRT 2017 - Washington, DC

Clinical Outcomes of Atherectomy Prior to Percutaneous Coronary Intervention In Females (COAP-Female Study) **Shlofmitz, Evan** CRT 2017 - Washington, DC

Clinical Outcomes of Atherectomy Prior to Percutaneous Coronary Intervention In The Elderly (COAP-75 Study). **Shlofmitz, Evan** CRT 2017 - Washington, DC

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Outcomes of Orbital Atherectomy In Patients With Severe Left Ventricular Systolic Dysfunction **Shlofmitz, Evan** EUROPCR 2016, Paris, France

Outcomes Of Orbital Atherectomy In Patients With End Stage Renal Disease On Dialysis **Shlofmitz, Evan** EUROPCR 2016, Paris, France

Direct stenting after orbital atherectomy **Shlofmitz, Evan** EUROPCR 2016, Paris, France

Women Received Delayed Admission ECG with Typical Symptom Presentation in ST-Segment Elevation Myocardial Infarction **Singh, Shailendra (Sunny)** TCT 2016, Washington, DC

An Unusual Pattern of Myocardial Perfusion Defects Observed on SPECT-Myocardial Perfusion Imaging in a Patient with Hypereosinophilic Syndrome **Singh, Shailendra (Sunny)** SCAI 2017 , New Orleans

Early Unloading with Impella Support in Acute MI with Cardiogenic Shock Linked to Decreased Infarct Size, In-hospital Mortality, and Hospital Length of Stay **Singh, Shailendra (Sunny)** ACC 2017, Washington DC

Left Main STEMI Complicated by Cardiogenic Shock. **Singh, Shailendra (Sunny)** TCT 2016, Washington, DC

Significant Sex-Specific Differences in ST-Elevation Myocardial Infarction Lead to Increased Mortality and Worse Cardiovascular Outcomes **Singh, Shailendra (Sunny)**

Significant Sex-Specific Differences in ST-Elevation Myocardial Infarction Lead to Increased Mortality and Worse Cardiovascular Outcomes. **Singh, Shailendra (Sunny)** Eleventh Annual Northwestern Cardiovascular Young Investigators’ Forum 2016, Chicago, IL

Unloading the Mystery: Serum Lactate Levels and Clearance Used as an Early Beneficial Prognostic Marker for Survival in Severe Cardiogenic Shock Requiring Impella Support. Society for Cardiovascular Angiography and Interventions **Singh, Shailendra (Sunny)** SCAI 2017, New Orleans
Pentlow C, Schulman R. Hypoglycemia Secondary to Paraneoplastic Syndrome Mediated by Elevated Big IGF-2 in a Patient with Advanced Liposarcoma. Poster session at: Endocrine Society Conference; 2017 April 1-4; Orlando, Fla.

Kim T, Usera G, Weinerman S. Improvement of Giant Cell Tumors of the Jaw Treated with Denosumab: A Case Series. Poster presented at the ASBMR Annual Meeting; 2016 September 16-19; Atlanta, GA.

Patel AV, Bernstein D, Lee TP. Fulminant Hepatic Failure Secondary to Hepatitis a in a Patient with Non-alcoholic Fatty Liver Disease. Poster presented at: American College of Gastroenterology (ACG) Meeting; 2016 October 16-18; Las Vegas, NV.

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Hung CK. Malignant Cholangiocarcinoma Arising from Biliary Hamartoma: A Rare and Potentially Misdiagnosed Entity. Poster presented at American College of Gastroenterology (ACG) Meeting; 2016 October 15-18; Las Vegas, NV.


Gieniusz M, Kozikowski A, Williams M, Sinvani L, Pekmezaris R, Kohn N, Nouryan CN, Wolf-Klein G. Peg Tubes in Patients with advanced dementia: Are We Choosing Wisely? Manuscript presented at:

When Pregnancy Becomes Malignant, an Unusual Case of Metastatic Choriocarcinoma
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A Case of Small Bowel Perforation in an Ecuadorian Female with ATLL.
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Occlusion of Right Middle Cerebral Artery as Initial Presentation of Thrombotic Thrombocytopenic Purpura
Ha L, Niknam N, Mankame S, Koshy R A Rare Case of Perineal Abscess Caused By Aerococcus Urinae

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Mohammad Elfekey, MBBS, Siddhi Mankame, MD (presenting), Joseph McGowan, MD, Rebecca Schwartz, PhD-Analysis of a New Algorithm for the Diagnosis of Syphilis among Patients with HIV infection-IDSA October 2016

Negin Niknam MD, Prashant Malhotra MD, Angela Kim MD, Seth Koenig MD-Disseminated Histoplasmosis presenting as diabetic keto-acidosis in an immunocompetent patient-LIIDS

Negin Niknam MD, Henry Donaghy MD-Recurrent prosthetic joint infection and osteomyelitis due to TB-LIIDS

Bruce Farber MD, Aradhana Khameraj RN MSN, Susan Wirostek RN, Liana Rodriguez, Todd Hall, Tanzila Salim, MBBS-Red Box: Creating a Safe Zone to Improve Communication with Isolated Patients
Division of Kidney Diseases and Hypertension
Nephrology Fellowship Program

Nephrology Fellow Presentations in 2016/17


Barta VS, Sachdeva M. Pancreaticobiliary Adenocarcinoma Secreting Fibroblast Growth Factor 23. Poster session presented at: American Society of Nephrology Kidney Week; 2016 November 17; Chicago, Illinois


**Barta VS, Uppal NN, Wanchoo R, Pullman JM, Jhaveri KD.** Combined Anti-CTLA-4 and Anti-PD1 Immunotherapy Induced AIN. Poster session presented at: American Society of Nephrology Kidney Week; 2016 November 18; Chicago, Illinois

**Barta VS, Bhaskaran M, Jhaveri KD, Ali N, Amin VG, Barnett RL.** Preserved Renal Allograft Function While Using the PD-1 Pathway Inhibitor Nivolumab. Poster session presented at: American Society of Nephrology Kidney Week; 2016 November 19; Chicago, Illinois

**Mehtabdin K, Sachdeva M.** Rothia Mucilaginosa Peritonitis. Poster session presented at: American Society of Nephrology Kidney Week; 2016 November 19; Chicago, Illinois

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Hirsch JS, Wanchoo R, **Barta VS, Jhaveri KD.** Devoe C. Incidence of AKI with Immune Checkpoint Inhibitors at a Single Center. Poster session presented at: American Society of Nephrology Kidney Week; 2016 November 19; Chicago, Illinois


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**Uppal NN, Barta VS, Wanchoo R, Pullman J, Jhaveri KD.** Imatinib Associated Acute Kidney Injury. Poster session presented at: National Kidney Foundation Spring Clinical Meetings; 2017 April 19-21; Orlando, Florida
Palliative Fellow Presentations in 2016/17

Preliminary Observations Using Mechanical Oscillation Desensitization Therapy (Modt) For Chronic Pain Syndromes

Behling A.

Decision-Making in Medical Education: A Project in Experiential Learning

Cohn M., Williams M, Liberman T

Measuring the Impact of Palliative Care Services on Clinicians in the ICU

Devlin M., Dauber M, Akerman M, Nouryan C, Park I.
Luis Quintero DO - A case of a rare neurological disorder exposed with the help of critical care ultrasound-CHEST 2016

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Luis Quintero, DO - competency Based testing using video recording of pulmonary critical care fellows in performance of thoracentesis.-ATS May 2017

Ronak Shah MD, Atul Palkar MD, Mangala Narasimhan MD, Adey Tsegaye MD-Anti-TNF agent growing miliary seeds-CHEST 2016

Ronak Shah MD - SBT for PCCM fellows in UEI. Does skill transfer to the clinical arena-American Association of Physicians of Indian Origin

Ronak Shah, MD - Case Report-Rare case of acute eosinophilic pneumonia-ATS May 2017

Karan Singh, MBBS - Safety and feasibility of transesophageal echocardiograms performed by MICU fellows-CHEST 2016

Karan Singh MBBS, Atul Palkar MD - Serial lung –and diaphragm ultrasonography to predict successful discontinuation of mechanical ventilation-CHEST 2016

Karan Singh MBBS - Fatigue in Pulmonary Hypertension-CHEST 2016

Karan Singh, MBBS - Pseudomembranous tracheitis when occams razor fails: Obstructive urinothra after a nephrostomy. Confirmation of io positions using colour Doppler ultrasound-ATS May 2017

Atul Palkar, MD, C Jiang, Eric Gottesman MD - SGLT-2 inhibitors: Mind the Gap-CHEST 2016

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Abhinav Agrawal MBBS, Atul Palkar MD, Sonu Sahni, Nina Kohn, Rakesh Shah, Arunabh Talwar-Diagnostic Performance of PA: A Ratio Combined with Contrast Reflux Grade on CT for Pulmonary Hypertension-American Association of Physicians of Indian Origin

Abhinav Agrawal, MBBS - High-Attenuation Mucoid Impaction-ATS May 2017
Abhinav Agrawal, MBBS-Leukemic Broncho pulmonary infiltrates in patients with chronic lymphocytic leukemia: the culprit of a bystander-ATS May 2017

Abhinav Agrawal, MBBS-Go for GOLD-Leukemic Broncho pulmonary infiltrates as a cause of reversible obstructive sleep apnea-ATS May 2017

Karan Singh, MBBS-Using Lung Ultrasound to predict extubation readiness-American Association of Physicians of Indian Origin

Ronak Shah MD-NSLIJ Ultrasound Cases-Stressed Induced Cardiomyopathy-RESUS Conference

Ayelet Hilewitz, MD-CLL Pneumopathy: A forgotten diagnosis-ATS-May 2017
Assessment of Disease Activity in Rheumatoid Arthritis – A Quality Improvement Initiative

Anderson E, Davidson A.

“Treating Blindly”: Intraocular Tuberculosis and Uveitis in Vogt-Koyanagi-Harada Disease

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Hypersensitivity Pneumonitis In A Bird Owner: The Importance Of Asking About Pets In The Social History
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Izower M, Martinez J, Yacht A.

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The Shingles Vaccination Initiative- Increasing Rate of Immunization against Herpes Zoster in an Eligible Outpatient Population.
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At Wit's End: Unraveling an Unexpected Cause of Delirium
Lopez C, Kockenmeister E, Gupta V.

It’s Getting Hot in Here: A Case of Heat Stroke Causing Hyponatremia and Subsequent Rhabdomyolysis
Popplewell C, Verbsky J.
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Bhorania K, Loukas E.

Pregnancy related HLH
Chi J, Jackson DA, Pereira S.

TB Considered: A Case of Tuberculous Sacroiliitis
Curiale A, Wong K, Katona K.

Fulminant Liver Failure Caused by Dual Immunotherapy for Malignant Melanoma
Firoozan S, Boparai R.

Acute Psychosis in a Patient with Multiple Sclerosis
Gong J, Khanin Y, Kurian L.

Uncommon Presentation of a Common Hematologic Condition: Sickle Cell Disease
Hedjar A, Bhorania K, Silver J, Kast C.
An Innovative Hospital Medicine Elective: Not Just another Floor Month
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Lithium-Induced Dress Syndrome: A Rare Entity
_Ibrahim F_, Raghavan S, Chi J.

Ormond’s Disease: A Case Report
_Khan M_, Chen P, Yoon J, Pereira S.

“Can’t Seed, Can’t Pee, Can’t Climb a Tree”: A Case of Neurosarcoid Associated Myelopathy
_Kim DH_, Ahmad S.

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_Kornberg D_, Fitterman N.

Charlson Comorbidity Index for Predicting Short-Term Outcomes in Hospitalized Older Adults

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There’s more to Factor In With a Spontaneous Bleed in the Elderly:
Acquired Hemophilia A
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Cardioembolic Stroke... What Lies Beneath?
_Kushnir I_, Newman J, Harris A.

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_Laudenslager M_, Ahmad S.

A Rare Case of Vasculitis-Associated Cva In An Adult Patient With Henoch-Schonlein Purpura
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_Myers J_, Ojuok E, Belletti L.

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_Myers J_, Khan M, Hessel J.

A Case of Jejunal Perforation: A Diagnostic Challenge for Hospitalists
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A Case of Pathologic Fractures due to Metastatic Hepatocellular Carcinoma (HCC)
_Nesbitt D_, Pandya N.
Emerging Immunotherapeutic Agents and Their Undesired Side Effects
*Patel R,* Joasil P.

Sweet Moves: A Case of Hyperglycemia-Induced Hemiballism
*Raphael C,* Goldin M.

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*Shah B,* Narasimhan M.

“A Tough Pill to Swallow: An Exceedingly Rare Case of Esophageal Lichen Planus”
*Shah D,* Kang S.

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*Shah P,* Kuperman S.

Hyponatremic Rhabdo?!?
*Simonson J,* Nazeer H.

Recurrent Antibody-Mediated Autoimmune Encephalitis Masked by TCA and Benzodiazepine Overdose: A Case Report
*Walker A,* Raghavan S.

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*Weber A,* Lucas E, Sharma S.

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2017 Society of Hospital Medicine
Las Vegas, Nevada