



# Case of Leptomeningeal Carcinomatosis in Metastatic Prostate Cancer

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## Introduction

Prostate Cancer is the second most common cause of cancer related death globally.<sup>1</sup> It is believed that prostate cancer spreads hematogenously following the lower paravertebral plexus.<sup>1</sup> Most patients who develop metastatic prostate cancer will eventually die from bone metastases.<sup>1</sup> Less commonly, prostate cancer may spread to the lungs, liver and even the brain.<sup>2</sup> There are very few documented cases in literature with leptomeningeal metastases from prostate cancer.

## Case Description

A 63 year old male with history of type 2 diabetes, hypertension, hyperlipidemia and erectile dysfunction presented to the clinic complaining of two months history of bone pain in both legs. He had his PSA drawn in 13 September 2016 which was 60.0 with a previous lab on 06 February 2008 of 0.58. Bone scan was positive for bone lesions. CT c/a/p confirmed intraabdominal lymphadenopathy and bone lesions. No liver or chest lesions were identified. Prostate core biopsies revealed right prostatic adenocarcinoma Gleason score 4+4=8 and Gleason 4+5=9 present. Left prostate was benign. PSA at time of diagnosis Jan 2017 was 440.

Patient was initially treated with androgen deprivation therapy (ADT) with triptorelin and bicalutamide for which he symptomatically responded. Patient's disease burden initially did not reflect the benefit of upfront chemotherapy and thus was not pursued. At that time; patient states that he had jaw numbness. He was already referred to neurology by his dentist. Patient was found to have bilateral cranial nerve V3 numbness (numb chin syndrome). His CSF was negative for malignant cells. Dural biopsy was performed to provide an expedient diagnosis. Dural biopsy revealed metastatic prostate carcinoma to dura matter with positive PSA and PSMA, negative for CD45, synaptophysin and TTF1. At that time, the specialists at MD Anderson recommended ADT would be sufficient to treat his disease at that time. Patient continued therapy with physicians at Keesler Medical Center.

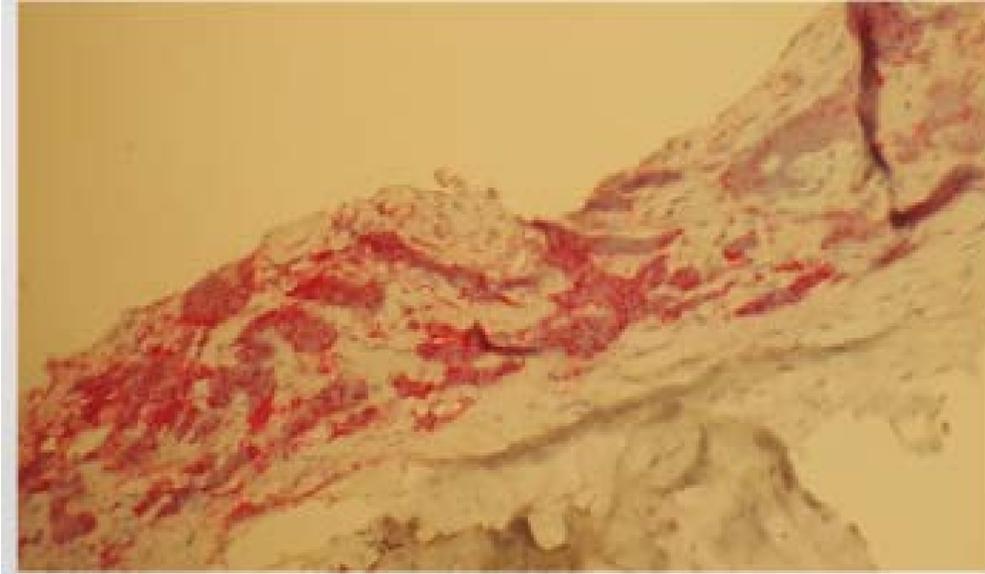


Figure 1: A cellular infiltrate is identified in the fibrous tissue which shows crush artifact without clear diagnostic features. The brain parenchyma was hypercellular, suggestive of reactive gliosis, and uninvolved by tumor.

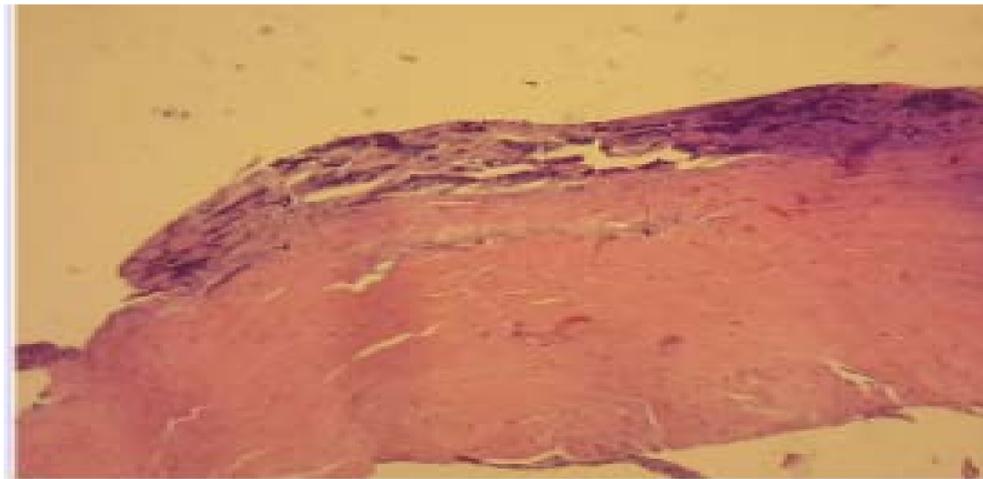


Figure 2: Immunohistochemical stains reveal positivity for PIN4 (tumor cells are racemase positive, shown above), show dot perinuclear positivity (cytokeratin cocktail), and strong positivity for PSMA, helping confirm tissue of prostate origin. The same cells are negative for CD45, synaptophysin and TTF1. These findings support a diagnosis of metastatic prostate carcinoma involving the dura matter.

Soon after; patient was found to be castrate resistant with some radiographic suggestion of progression and thus started on carboplatin and cabazitaxel. He had tolerated therapy well initially and did not appear to have any signs or symptoms of toxicity. There is some evidence that cabazitaxel can cross the blood brain barrier and potentially treat leptomeningeal disease.<sup>3</sup> A month later, patient was becoming increasingly weak, uses a wheelchair to ambulate. His PSA initially dropped after the first cycle of carboplatin and cabazitaxel but his PSA rose again to 1750. In the presence of his worsening functional status, chemotherapy was stopped. A month later, he developed sepsis and died in the ICU despite aggressive interventions.

## Conclusions

Leptomeningeal metastases are a late and rare finding in the evolution of a malignancy. Recent advances in prostate cancer systemic therapy prolong patients' lives and increase the incidence of leptomeningeal involvement.<sup>2</sup> There are no current guidelines on treating prostate specific leptomeningeal metastasis.<sup>4</sup> Depleting or blocking the action of androgens has been the standard care for patients with advanced prostate cancer. Androgen Deprivation therapy (ADT) has been the standard care for patients with advanced prostate cancer<sup>4</sup>, but patients could become resistant to it over time.<sup>2</sup> Our patient was started on ADT as he was naïve to hormonal therapy at the time of diagnosis. He very quickly developed castrate resistant prostate cancer and was refractory to systemic chemotherapy. His clinical course is similar to the typical course of leptomeningeal carcinomatosis for which prognosis is poor.

## References

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# Survival and Cost of Biologic DMARDs in a Military Medical Center: A Quality Improvement Opportunity

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## INTRODUCTION

This Quality Improvement initiative investigated the survival and cost of various biologic treatments for rheumatoid arthritis (RA) at Walter Reed National Military Medical Center (WRNMMC). Biologic therapy for RA is costly, ranging from \$7,000 to \$203,000 per patient annually, depending on the particular drug and dosing schedule selected. At our institution, the DoD cost for biologic therapies is not readily available to prescribing physicians. The usual care in the treatment of rheumatoid arthritis is to begin with oral DMARD therapy and add a biologic Tumor Necrosis Factor (TNF) inhibitor if disease control is inadequate. There is little guidance on the next best step in treatment if the initial TNF inhibitor fails and there is limited data to suggest that other biologic therapies are more or less effective than TNF inhibitors. Many rheumatologists first attempt a second TNF inhibitor (switch), while some will change to an alternative biologic with another mechanism of action (swap). As a Quality Improvement initiative, we investigated the DoD costs of various biologic treatments for rheumatoid arthritis and the prices associated with changes in treatment. We hypothesized that there would be a change in prescribing patterns and a substantial cost reduction if rheumatologists had readily available information on biologic medication prices.

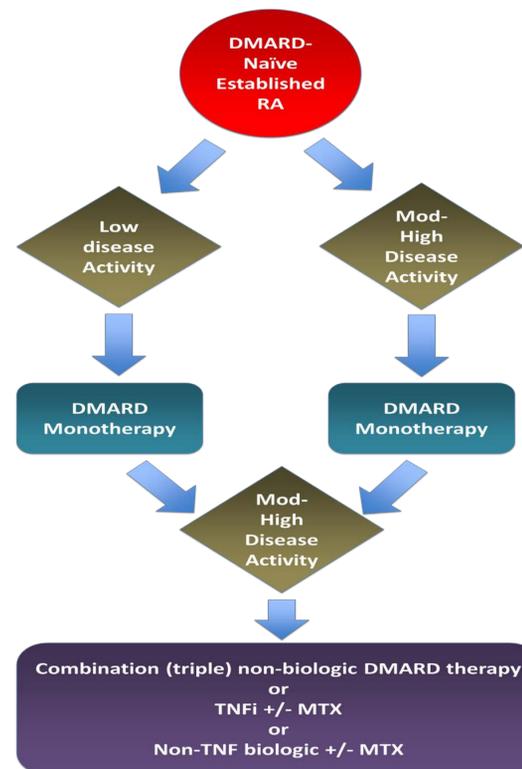


Fig 1. American College of Rheumatology guideline for the treatment of RA.

## METHODS

We obtained a list of FDA approved biologic therapies for RA prescribed in the WRNMMC rheumatology clinic between January 2015 and December 2016. We used AHLTA to search for charts with an ICD-9 code of 714.0 for rheumatoid arthritis determined by a rheumatologist. We documented biologic treatments for each patient, any switches or swaps in therapy, which agent was selected as next line treatment, the length of time each biologic agent was used, and the reason for the change of biologic therapy. We then assigned a monetary cost for each patient and assessed the overall impact on cost for each change in biologic therapy.

Biologic DMARD	ACR20 %
Adalimumab	63%
Etanercept	64%
Infliximab	54%
Toficitinib	59%
Rituximab	55%
Abatacept	65%
Tocilizumab	61%

Fig 2. Comparison of relative efficacy for biologic DMARDs when added to methotrexate in the treatment of RA as assessed by ACR20 (% of patients achieving at least a 20% improvement in RA).

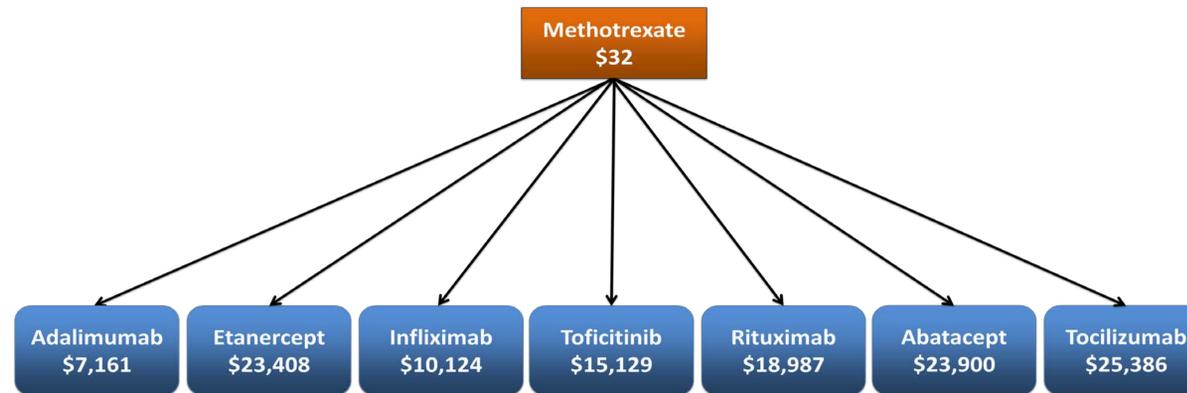


Fig 3. Annual cost to the DOD for individual biologic DMARD therapy in the treatment of RA. Based on current pricing data.

## RESULTS

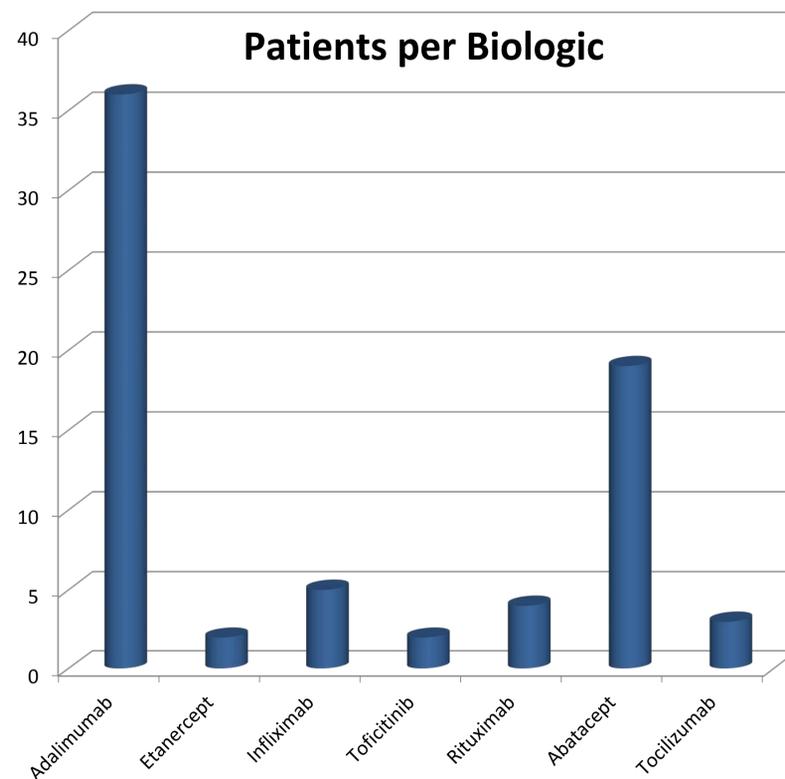


Fig 4. Number of patients given a new prescription for a biologic DMARD to treat RA from Jan 2015- Dec 2016 distributed by biologic DMARD.

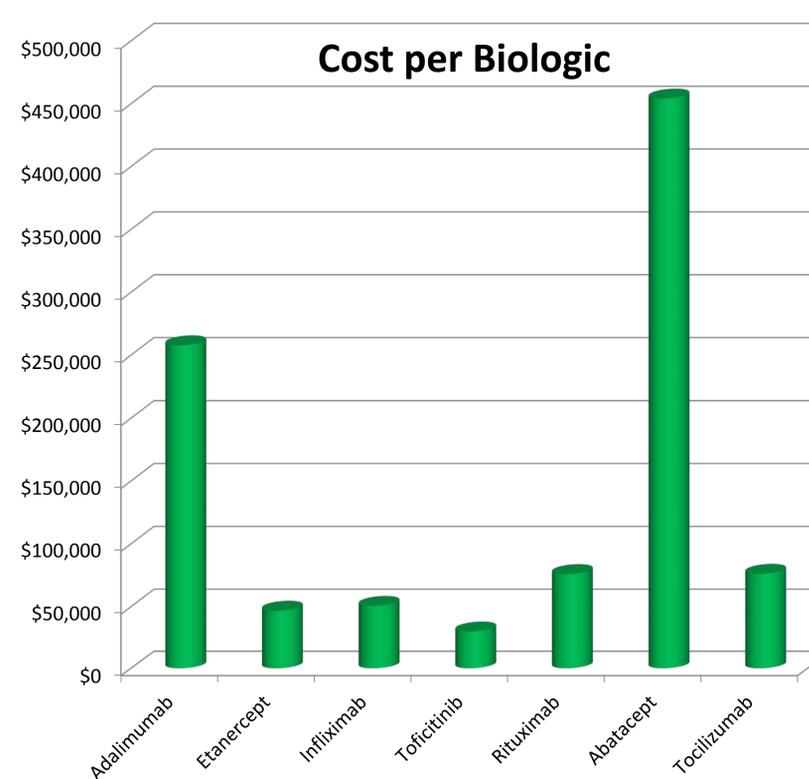


Fig 5. Based on current pricing data, total annual cost to WRNMMC for each biologic DMARD adjusted for the number of patients prescribed each biologic DMARD.

## DISCUSSION

The data demonstrate that providers in the WRNMMC rheumatology clinic follow the American College of Rheumatology recommendations for initiating a TNF inhibitor when oral DMARDs fail to achieve clinical remission in rheumatoid arthritis patients. We identified a lower overall use of biologic therapies outside of the family of TNF inhibitors. Among these biologic therapies, there was an increased use of rituximab (\$18,987.60/year) and abatacept (\$16,320-50,468/year) over the less costly tofacitinib (\$15,129/year).

As an example of potential cost saving, if each of the patients prescribed abatacept were alternatively prescribed tofacitinib, a savings of over \$166,000 would have been achieved during the 2 year study period (Fig 6).



Fig 6. Potential cost saving using a lower cost biologic DMARD with a different mechanism of action (swap).

We recognize that many next line treatment decisions involving the use of biologic therapies will be based upon patient preference, contraindications, and other patient specific factors. When efficacy data is similar, the rheumatologist may select a lower cost medication if that cost was readily known. We intend to disseminate cost data to the rheumatologists at WRNMMC and perform a follow up study to evaluate for changes in prescribing patterns.

Disclaimer: The opinions are solely those of the authors and do not represent an endorsement by the Department of Defense. This is a U.S. Government work. There are no restrictions on its use. There are no conflicts of interest, financial disclosures, grant support or writing assistance.

# Identifying Areas for Improvement in Lung Cancer Screening

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## **ABSTRACT**

**INTRODUCTION:** Lung cancer is the leading cause of cancer death in men and women and smoking cigarettes is the main risk for development of the disease. Early detection can decrease mortality. The Centers for Medicare and Medicaid Services (CMS) recommend screening for lung cancer with an annual low-dose CT scan of the chest in patients 55-77 years-old with a 30 or more pack-year smoking history who are either current smokers or who have quit within the past fifteen years. The majority of patients undergo screening through their primary care providers. Shared decision making and selecting the appropriate patient are two crucial factors necessary when deciding who to screen.

**METHODS:** We created an informational video about shared decision making for lung cancer screening. The video was targeted to patients and highlighted the risks and benefits of screening. Prior to releasing the video, we sought to obtain provider opinion via a short survey. The protocol was reviewed and approved by the institutional review board. An email was sent to health care providers in primary care, oncology, pulmonology, and thoracic surgery at Beaumont Health – Royal Oak, MI requesting their participation. After consenting to the study, participants completed a short electronic survey. Participants were asked about specialty, years in practice, and whether they currently used informational videos to educate patients. Three questions tested the provider's knowledge on the appropriate patient criteria for lung cancer screening (age range, smoking status, and pack-years smoking). Participants were then shown the video and asked if it would be helpful in their practice.

**RESULTS:** Eighteen providers responded (14 primary care, 2 pulmonology, 1 palliative care, 1 radiation-oncology) with years in practice ranging from one to 45 years. Six participants already used educational videos in their practice. Four providers correctly identified the appropriate age (2 primary care, 2 pulmonology), six correctly identified the appropriate pack year history (4 primary care, 2 pulmonology), and thirteen correctly identified the appropriate smoking status (10 primary care, 2 pulmonology, 1 radiation-oncology). Two providers correctly answered all three components, both were pulmonologists. Twelve of the participants believed the video would be useful in their practice.

**CONCLUSION:** Only two providers were able to correctly answer all three components required in selecting the appropriate patient for lung cancer screening. This demonstrates a gap in knowledge particularly in those who are the primary providers of preventative care. While many primary care providers can easily identify the appropriate patient to screen for breast, prostate, cervical, and colorectal cancer, lung cancer screening remains an area that needs more physician education. Educational videos may prove to be educational for both the patient and the provider and allow for improved quality in healthcare.

## **INTRODUCTION**

- Lung cancer is the leading cause of cancer deaths in both men and women
- Cigarette smoking is the main risk factor
- CMS recommends screening with annual low dose CT chest for those fulfilling three criteria:
  - Age 55-77 years
  - 30 pack year history
  - Current smoker or quit within past 15 years
- Shared decision making and correct patient selection are key to effectively screen the appropriate patient

## **METHODS**

- We made an informational video about shared decision making for lung cancer screening targeted to patients to highlight the risks and benefits of screening
- Provider opinion prior to video release was obtained through a survey with the video embedded within via an email with IRB approved protocol
  - Specialty
  - Years in practice
  - Current use of educational videos in their practice
  - Knowledge on appropriate patient criteria for screening (age range, smoking status, pack-years smoking)
  - Usefulness of this video and comments

## **RESULTS**

- 18 providers responded
  - 14 primary care
  - 2 pulmonology
  - 1 palliative care
  - 1 radiation oncology
- Years of practice ranged from one to forty-five years
- 2 providers correctly answered all 3 components

Specialty (n)	Age group	Pack year history	Smoking status
Primary care (14)	2	4	10
Pulmonology (2)	2	2	2
Palliative Care (1)	0	0	0
Radiation Oncology (1)	0	0	1

Figure 1. Correct answers to the three criteria for screening by specialty

## **CONCLUSIONS**

- Primary care providers are often the first contact for patients for preventive care and cancer screening
- Many primary care providers can easily identify the appropriate patient to screen for breast, prostate, cervical, and colorectal cancer
- This study shows a gap in knowledge of primary care providers in regards to appropriate screening for lung cancer
- Informational videos may be educational for both patient and provider leading to improved compliance with screening guidelines.

## **REFERENCES**

- American Cancer Society
- The Centers for Medicare & Medicaid Services



# Physician Suicide: A Scoping Review

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## IN BRIEF:

- ❖ Physician suicide is a significant problem for the medical community and general public, and is poorly understood.
- ❖ **Aim:** To conduct a *scoping review* to map the current landscape of published research and perspectives on physician suicide. Findings could serve as a roadmap for further investigations and potentially inform efforts to prevent physician suicide.

## INTRODUCTION:



❖ Over a century later, the topic of physician suicide has become recognized as a significant problem with leading medical organizations and advocacy groups launching initiatives.

❖ To identify important knowledge and implementation gaps in addressing physician suicide, this scoping literature review may serve as a collective reflection on our progress as a medical community in understanding and preventing physician suicide.

## METHODS:

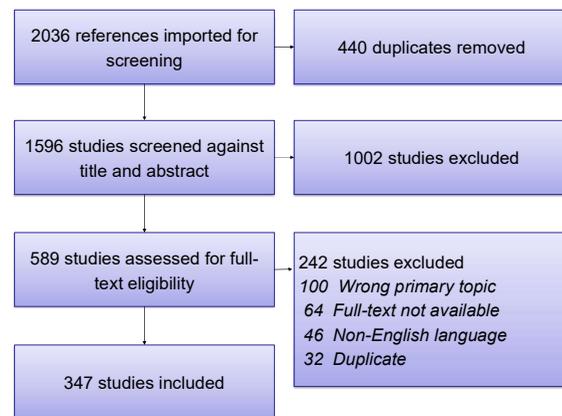
❖ A *scoping review* differs from other reviews, such as a systematic review which gathers and assesses the quality of quantitative evidence to report on the effectiveness of a particular intervention in achieve a certain outcome.

- ❖ **Databases:** Ovid MEDLINE, PsycInfo, Scopus
- ❖ **Dates searches were performed:** August 21, 2017 through April 28, 2018. 0

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> <li>✓ Primary outcome or thesis focused on suicide (including suicide completion, attempts, and thoughts or ideation)</li> <li>✓ ...AND among medical students, postgraduate trainees, or attending physicians</li> <li>✓ Opinion articles</li> <li>✓ No date boundaries</li> </ul>	<ul style="list-style-type: none"> <li>✓ Non-English language</li> <li>✓ Focused only on physician burnout, mental health or substance use disorders</li> </ul>

## RESULTS:

**Figure 1.** PRISMA diagram of study selection for inclusion.



**Table 1.** Characteristics of the 347 articles included in the scoping review of literature on physician suicide, 1903-2018

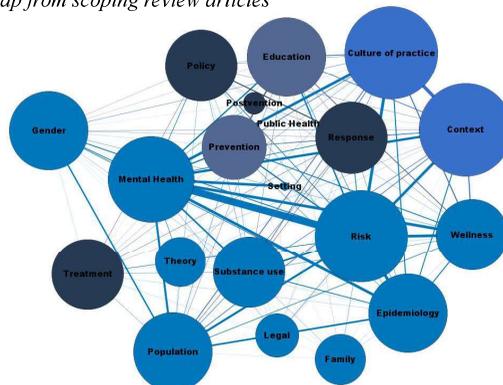
Publication date range	No. (%) of non-opinion articles	No. (%) of opinion articles
1900-1919	0	1 (0.7%)
1920-1949	0	1 (0.7%)
1950-1959	0	0
1960-1969	5 (2.4%)	9 (6.3%)
1970-1979	24 (11.7%)	19 (13.3%)
1980-1989	20 (9.8%)	18 (12.7%)
1990-1999	26 (12.7%)	14 (9.9%)
2000-2009	42 (20.5%)	37 (26.1%)
2010-2018	88 (42.9%)	43 (30.3%)

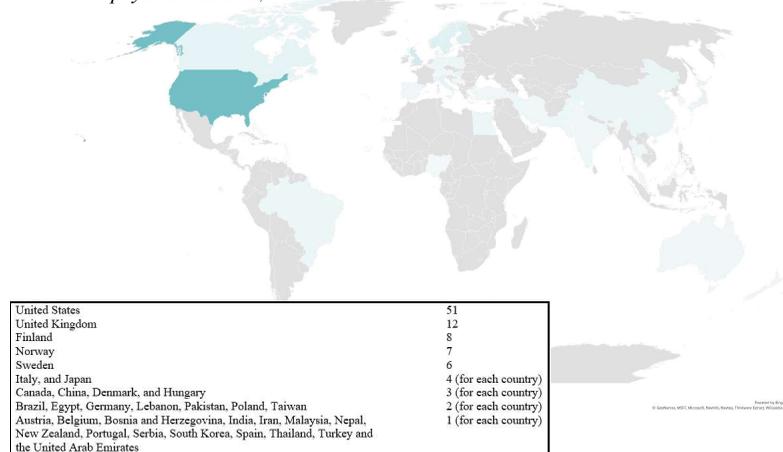
Study design or publication type	No. (%) of non-opinion articles	No. (%) of opinion articles
Cross-sectional studies	85 (41.5%)	N/A
Survey-based	63	
Review	34 (16.6%)	
Narrative	30	
Case report or case series	22 (10.7%)	
Case-control	19 (9.3%)	
Cohort studies	14 (6.8%)	
Intervention†	13 (6.3%)	
Other††	18 (8.8%)	

†Publications about an intervention at minimum describe the intervention.  
 ††Other study designs included included: qualitative studies or psychological autopsy (8), validation or evaluation of a survey instrument or screening question (3), news coverage (4), poetry (1), a discussion guide (1), or a correction (1).

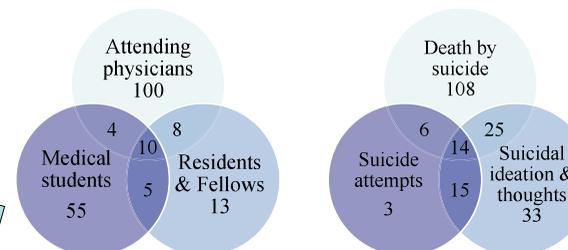
**Figure 4.** Topic map from scoping review articles



**Figure 2.** World map of articles published (non-Opinion, non-review) about physician suicide, 1903-2018.



**Figure 3.** Primary outcome/thesis & subpopulation(s) studied (non-Opinion)



## Risk factors for physician suicidal behaviors

- ❖ **Unique risks:**
  - ✓ Specialized knowledge
  - ✓ Access to lethal methods
  - ✓ Specialty:
    - ✓ Psychiatry
    - ✓ Anesthesiology
    - ✓ Surgery
- ❖ **Less-studied risks include:**
  - ✓ Personality traits (self-selected by the profession)
  - ✓ Adverse childhood events
  - ✓ Relationship status with a partner
  - ✓ Relationship with parents
  - ✓ Economic burdens
  - ✓ Religiosity
  - ✓ Cultural upbringing

The **Interpersonal Psychology Theory (IPT)** posits three necessary and sufficient precursors to death by suicide:

- ✓ thwarted belongingness
- ✓ perceived burdensomeness
- ✓ acquired capability

**Role strain** = a mismatch between social and institutional norms and the physician's roles

## CONCLUSIONS:

❖ Most peer-reviewed literature has been published in the last two decades. Various approaches are used to estimate physician suicide incidence, but a lack of consistent and reliable data & information limits prevention efforts.

❖ Physicians have unique risk factors for death by suicide. This concerns the medical community internationally and unique cultural contexts, including country of practice or ethnic and racial minority group status, may need to be studied further.

❖ Additional populations & subtopics less well-studied include:

- ✓ Minority groups, including by gender identity or orientation, racial background
- ✓ Suicide attempts
- ✓ Residents and fellows
- ✓ Certain risk factors (see table)

❖ Stigma and reputational concerns contribute to barriers to accessing treatment, which are reinforced by inconsistent and potentially punitive requirements for medical licensing as well as board investigations.

❖ Interventions at multiple levels are needed:

- ✓ Policy reform
- ✓ Organizational programs
- ✓ Education reform
- ✓ Cultural and behavioral change

## REFERENCES:

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 or [pendharkars0@gmail.com](mailto:pendharkars0@gmail.com)



## Acknowledgements:

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# “It makes me respect what they do a whole lot more.” Evaluation of how interprofessional point-of-care ultrasound education impacts participants’ perceptions of interprofessional learning and stereotypes

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## Objective

Exam if interprofessional POCUS training impacts participants' perceptions towards interprofessional education, collaboration, and stereotypes.

## Background

- POCUS training is rapidly expanding in medical education, but lack of trained faculty is a major barrier for many institutions (1-2). Interprofessional education (IPE) and peer teaching are possible solutions to this problem.
- IPE interventions tend to have favorable outcomes (3-5), but medical trainees have less positive attitudes towards IPE than other professions (6-7).
- Peer teaching can create a more comfortable learning environment and has shown promise in POCUS training of medical students (8).
- A prior study of near-peer POCUS IPE involving sonography students and residents demonstrated strong performance on a standardized exam (9), but did not explore participants' perceptions of IPE.

## Methods

- Setting: Large health sciences university in the Midwest
- Teachers: Diagnostic Medical Sonography (DMS) students (n=6)
- Learners: First-year internal medicine (IM) residents (n=24) with minimal exposure to abdominal POCUS
- Intervention:
  - Train-the-trainer session for DMS coaches
  - IPE Workshops
    - Flipped classroom with pre-course videos
    - Live-model scanning, 2:1 learner-to-teacher ratio
- IPE Assessment
  - Pre/post-survey of attitudes towards IPE (10-11) and stereotypes towards other professions (12).
  - Focus group interviews with narrative analysis.

## Results

### IM Residents' Perceptions of Sonographers (n=24)

	Before	After	p-value
Academic ability	3.7	4.3	<b>0.00</b>
Professional competence	4.2	4.5	<b>0.02</b>
Interpersonal skills	4.0	4.5	<b>0.00</b>
Leadership abilities	3.3	4.0	<b>0.00</b>
The ability to work independently	4.1	4.5	<b>0.01</b>
The ability to be a team player	4.0	4.5	<b>0.00</b>
The ability to make decisions	3.3	4.2	<b>0.00</b>
Practical skills	4.3	4.8	<b>0.01</b>
Teaching skills	3.6	4.3	<b>0.01</b>



### IM Residents' Perceptions of IPE (n=24)

	Before	After	p-value
Shared learning will help me to think positively about other professionals	4.2	4.8	<b>&lt;0.01</b>
Learning with other health professionals is a worthwhile use of my time	4.2	4.6	<b>0.01</b>
I would welcome the opportunity to work on more small-group projects with other health professionals	4.0	4.5	<b>&lt;0.01</b>
Interprofessional learning better utilizes resources	4.0	4.7	<b>&lt;0.01</b>
It is important for my training program to provide interprofessional learning opportunities.	4.0	4.5	<b>&lt;0.01</b>
I like courses taught by faculty from other colleges or departments	3.7	4.4	<b>&lt;0.01</b>
I like courses that include students from other colleges or departments	3.9	4.4	<b>0.01</b>
It is beneficial to learn clinical problem-solving skills from professionals outside my own college or department	4.3	4.6	<b>0.03</b>
Shared learning will help me to understand my own limitations	4.4	4.7	0.08
Interprofessional learning should be a goal of my training program	4.0	4.4	0.09
Learning with other professionals will help me become a more effective member of a healthcare team	4.5	4.7	0.10

## Themes from Focus Group Interviews

### Positive Learning Environment

“It made it easier to just try and see what happens. If you fail, you have students teaching and they’re very willing to work with you. It’s not like having a faculty [instructor]...”  
IM resident

“[It] helps you become a better scanner yourself because you really have to sit there and think about what you want them to do to make the image better.” DMS coach

### Appreciation for Other Professions

I just thought it was like being a LPN..but they have so much training..it made me feel a lot more comfortable in their decision-making capabilities.” IM resident

“You have the impression that doctors should know it all... now being their teachers and I know something that you [doctors] don’t.” DMS coach

### Interest in Additional IPE

“I think in nursing, some of the practical stuff we don’t have a full understanding of. When we put in order and what that actually means to have it executed.” IM resident

“I think it would be helpful if other people in the hospital knew what we were doing and what our schedules look like.” IM resident

## Discussion

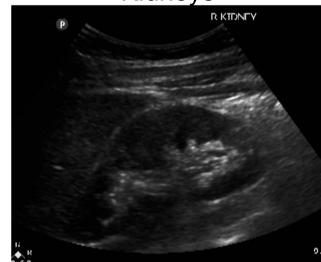
- Interprofessional POCUS education can dispel stereotypes among health professionals and improve perceptions towards interprofessional education and collaboration.
- IM residents had misconceptions corrected and gained new respect for DMS professionals.
- DMS students’ perceptions of physicians remained very positive following the workshops
- IM residents expressed interest in seeking additional IPE opportunities not related to POCUS, including nursing and physical therapy.
- DMS students gained confidence and felt the experience improved their sonography skills through deliberate practice.

References available in separate handout or by request (csmithj@unmc.edu)

### Exam Preparation



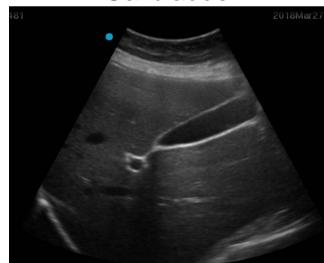
### Kidneys



### Bladder



### Gallbladder



# Improving the Compliance to The Joint Commission Discharge Summary Requirements and Reduction of 30-day Medicine Readmission Rate

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## BACKGROUND

Hospital discharge summaries serve as the primary documents communicating a patient's care plan to the post-hospital care team. High-quality discharge summaries to include The Joint Commission (TJC) required components are essential toward promoting patient safety during care transitions and potential reduction in 30-day readmission rates. A study was conducted to examine the presence of the discharge summary in the electronic medical record, the completeness according to The Joint Commission required components, and the impact on 30-day Medicine readmission rates.

## OBJECTIVE

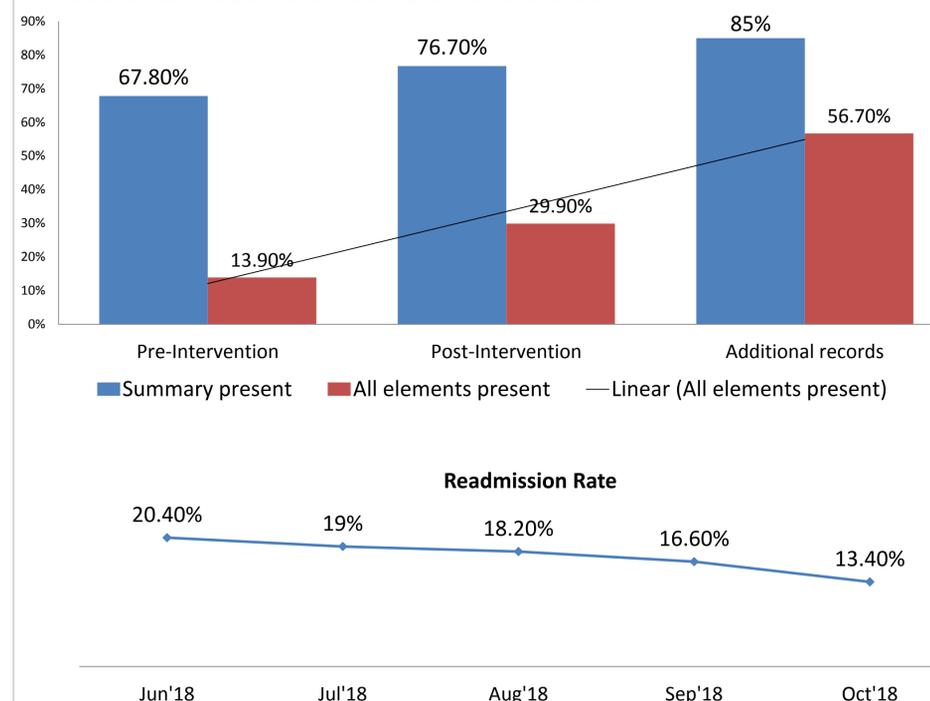
The objective of this project is to improve compliance with a standardized discharge summary to include TJC standardized components, and reduce 30-day Medicine readmission rates through provider education.

## REFERENCES

Joint Commission on the Accreditation of Healthcare Organizations. Standard IM.6.10, EP 7 Website. Available at: [http://www.jointcommission.org/NR/rdonlyres/A9E4F954-F6B5-4B2D-9ECFC1E792BF390A/0/D\\_CurrenttoRevised\\_DC\\_HAP.pdf](http://www.jointcommission.org/NR/rdonlyres/A9E4F954-F6B5-4B2D-9ECFC1E792BF390A/0/D_CurrenttoRevised_DC_HAP.pdf)

## RESULTS

Pre-intervention data showed 158 (67.8%) of records revealed a clearly-identified discharge summary documented in the medical record with only 22 (13.9%) with all of TJC required components. Post-implementation, 244 records showed 187 (76.7%) records with a discharge summary, and 56 (29.9%) records containing all TJC required elements, showing an 8.8% and 16% improvement respectively. An additional set of data of 60 eligible charts was reviewed 2 months after the one-on-one education to further assess compliance with results of 51 (85%) overall compliance, and 34 (56.7%) with all TJC elements, or 17.2% and 42.8% further improvement in compliance. In addition, 30-day readmission rates were reviewed for the months of June – October 2018 revealing 30-day readmission rates for Medicine discharges at 20.4%, 19.0%, 18.2%, 16.6%, and 13.4% respectively, showing a 6.6% reduction between June and October.



## METHODOLOGY

Data was obtained between June – September 2018 through randomly-selected retrospective chart review including only adult, Medicine admissions. The pre-intervention data was reviewed for a) the completion of the discharge summary and b) the compliance to all of The Joint Commission discharge components. Intervention included a discharge summary fact sheet distributed to all providers and communicated through medical staff meetings outlining the rationale for the discharge summary, its importance in patient safety and efficiency, required components, and instructions with how to access it in the electronic medical record. Education continued with the identified top non-compliant providers on a one-on-one basis with the hospital's chief physician clinical officer. Post intervention data was collected test effectiveness of the education on compliance, and the impact on Medicine 30-day readmission rates.

## CONCLUSION

Given the discharge summary's pivotal communication role in care transitions, omitted patient discharge summary information is a concern and may affect patient safety. Data from this study shows a correlation with increased compliance to The Joint Commission standardized discharge summary criteria and a reduction in 30-day readmissions for patients with a medical discharge diagnosis.



# Antisynthetase Syndrome with Concurrent Anti-PL12 and Anti-Ro52 Positivity— A Case Series of a Distinct Clinical Phenotype

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## Introduction

Antisynthetase syndrome is a rare autoimmune disease characterized by variable expression of myositis, interstitial lung disease (ILD), arthritis, and Raynaud’s phenomenon.

The serologic hallmark of the disorder is the presence of myositis specific autoantibodies (MSA) directed against an aminoacyl transfer RNA (tRNA) synthetase.

The most common tRNA synthetase is anti-Jo1, which is associated with a higher rate of muscle and joint involvement.<sup>1</sup>

The phenotypic expression of anti-PL12, a rare tRNA synthetase, is not well established. Limited reports suggest it presents with a higher rate of ILD and less myositis and arthritis.<sup>1-4</sup>

Concomitant expression of myositis associated antibodies (MAA), the most common of which is anti-Ro52, have been proposed to have prognostic ramifications.<sup>5</sup>

Anti-Ro52 positivity has been associated with increased rate of ILD in connective tissue diseases.<sup>6</sup>

Co-expression of anti-Jo1 and anti-Ro52 appears to present with a clinically distinct phenotype of greater joint involvement and more severe myositis.<sup>1</sup>

The clinical phenotype of concomitant anti-PL12 and anti-Ro52 has not been well described in literature.

## Case Description

We present six cases of anti-PL12 positive patients as established by immunoprecipitation or line blot immunoassay. Two of the patients were also positive for anti-Ro52 via enzyme-linked immunosorbent assay (ELISA). The other four were positive for anti-Ro via multiplex flow immunoassay, which did not differentiate between the 52Kd and 60Kd antibody. Skin findings included one patient each with Gottron’s sign, Gottron’s papules, heliotrope rash, and two patients with mechanics hands. Severe gastric reflux was present in four of the six patients. Interstitial lung disease was present in all six patients, and arthritis was present in five patients. Proximal muscle weakness was documented in five patients, and elevated creatine kinase (CK) was noted in five out six patients (83%) with mean a CK level of 1,743 U/L (range 66– 7264 U/L).

Table One

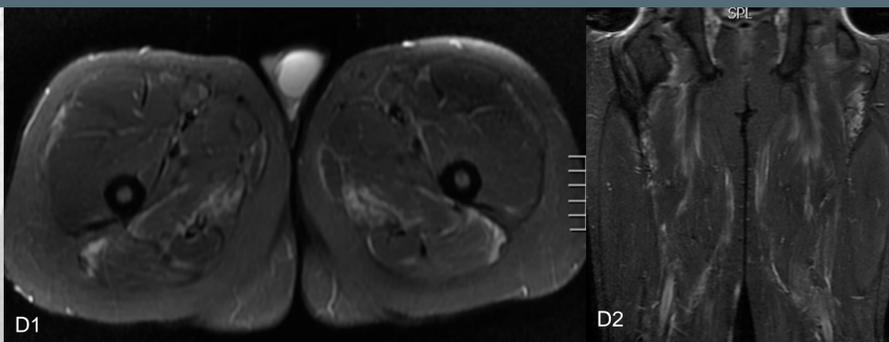
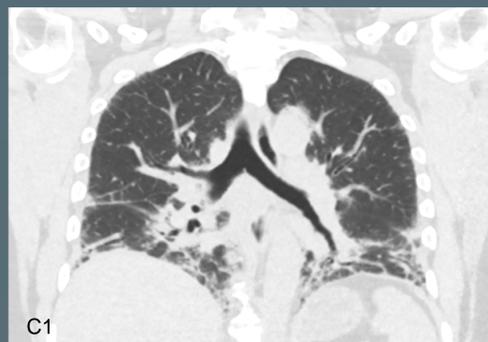
Gender	Age	tRNA Antibody	Other Antibody	Arthritis	ILD	Cutaneous Manifestation	Myositis	Clinical Weakness	CK U/L
M	26	PL12	ANA, Ro, RF	+	+	Mechanic’s Hands Gottron’s Sign	No	-	251
F	24	PL12	RNP, Ro, Smith	+	+	Heliotrope Rash	Muscle Biopsy	+	471
F	51	PL12	RNP, P-ANCA, RF, Ro	+	+	Gottron’s Papules	MRI	+	1015
M	28	PL12	RNP, Ro, Smith, Th/To	+	+	Morphea	MRI	+	7264
M	58	PL12	NXP-2, RF Ro52	-	+	Mechanic’s Hands Hiker’s Feet	EMG	+	1394
F	61	PL12	RF, CCP, Ro52, Mi-2	+	+	None	MRI	+	66



(A) Hyperkeratosis and fissuring of the sides and volar aspect of fingers of bilateral hands consistent with mechanic’s hands



(B) Hyperkeratosis and fissuring of toes of bilateral feet consistent with hiker’s feet



(C1, C2) High resolution chest CT in coronal (C1) and axial (C2) plane showing basilar and hilar subleural reticulation, fibrosis, and bronchiectasis with small surrounding areas of consolidation and ground glass opacities consistent with nonspecific interstitial pneumonia (D1, D2) Magnetic Resonance Imaging in axial view (D1) and coronal view (D2) showing increased patchy Short T1 Inversion Recovery (STIR) signal consistent with myositis involving the bilateral semi-membranous, gracilis, adductor magnus and brevis, gluteus maximus, obturator externus, and vastus lateralis

The views expressed in this poster are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of the Army, The department of Defense, or the United States Government

## Discussion

Recent studies have found a low rate of myositis in anti-PL12 positive patients diagnosed with antisynthetase syndrome, with rates of myositis of 19%-41% and mean CK levels generally within normal limits. Arthritis has been reported in between 40-52% of these patients.<sup>1-4</sup>

Our series demonstrates clinically significant myositis in 83% of the patients with a mean CK level of 1,743 U/L.

Incidence of muscle involvement and degree of CK elevation are higher than other PL12 positive cohorts; a higher rate of ILD and arthritis was also noted.

This preliminary data suggests that concomitant anti-Ro52 and anti-PL12 positivity predicts a distinct clinical phenotype of antisynthetase syndrome characterized by increased incidence of myositis with higher mean CK levels. A high rate of arthritis and ILD was also present.

## Take Home Points

Myositis associated antibodies co-occurring with myositis specific antibodies can predict a clinically distinct phenotype.

Patients with anytisynthetase syndrome and concomitant anti-PL-12 and anti-Ro52 positivity appear to have a higher rate of myositis and arthritis than is reported in literature in anti-PL12 positive patients.

Anti-Ro52 positivity should be determined in all anti-PL12 positive patients with antisynthetase syndrome, and further studies should be performed to elucidate the precise clinical phenotype and response to treatment regimens.

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Cleveland Clinic

# Impact of Atrial Fibrillation on 30 days Readmission Rate Of Takotsubo Cardiomyopathy : A Nationwide Analysis.

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## BACKGROUND

- Takotsubo Cardiomyopathy (TC) has been known to be associated with many common arrhythmias including Atrial fibrillation, but it is unknown whether these arrhythmias have impact on readmission of these patients.

## METHODS

- Nationwide readmission database (NRD) for year 2014 was queried for patients admitted with primary diagnosis of Takotsubo Cardiomyopathy using ICD-9 diagnosis code 429.83.
- Readmission rate was determined. Arrhythmias including Atrial fibrillation, Atrial flutter, Ventricular fibrillation and Ventricular tachycardia were determined using separate ICD 9 Diagnosis codes.
- Logistic regression analysis was used to determine impact of arrhythmias on readmission.

## RESULTS

- A total of 7618 weighted discharges were analyzed. Over all Mean age was  $66.68 \pm 12.9$ , among them 91.8% were females. In this cohort 17% (n=1296) patients had documented Cardiac arrhythmias. Atrial Fibrillation (12.9%) was the most common arrhythmia followed by Ventricular Tachycardia (3.8%), Atrial flutter (1.6%), Ventricular fibrillation (1.2%) and Paroxysmal Supra-ventricular tachycardia (0.6%).
- 30 days readmission rate was significantly higher among patients with arrhythmias as compared to patients without arrhythmias 15.6% vs 8.4% p-value < 0.01.
- Atrial Fibrillation (OR 1.93, 95% CI: 1.5-2.35, p-value < 0.01) and Ventricular Tachycardia (OR: 2.32, 95% CI 1.68-3.203, P-value < 0.01) were determined to be independent risk factors for 30 days readmission after adjusting for age, gender, hypertension, history of congestive heart failure, diabetes complicated and uncomplicated, obesity, and history of chronic renal failure.

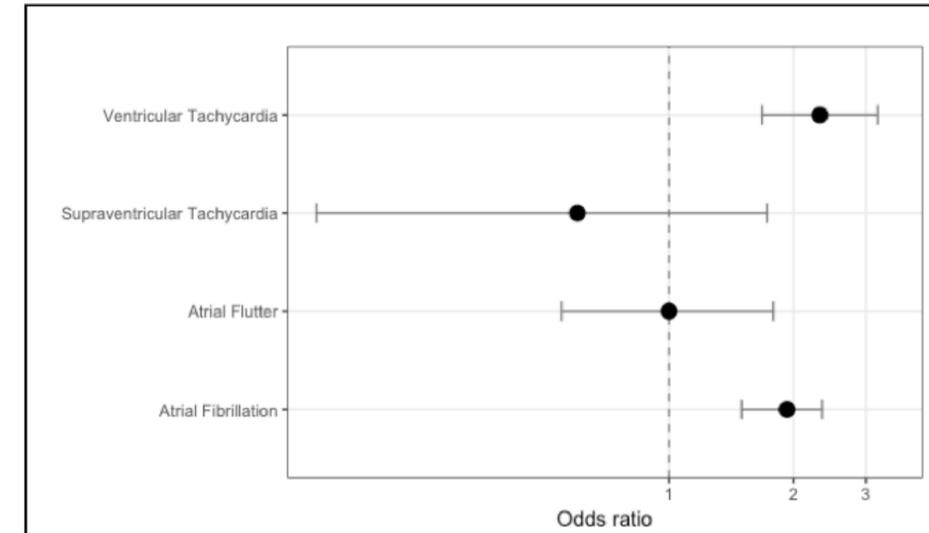


Figure 1 shows Odds ratio of Readmission rate for Arrhythmias

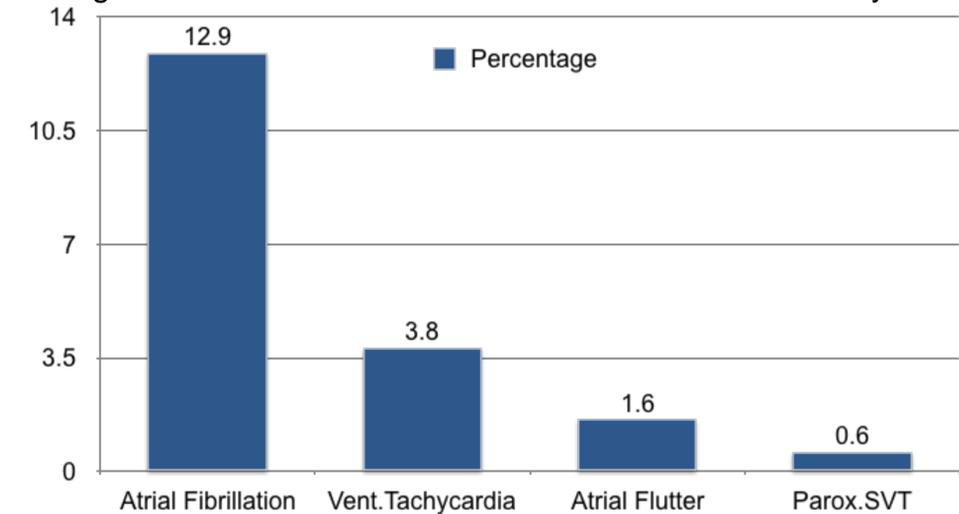


Figure 2: Shows Percentages of Arrhythmias in TC patients

## CONCLUSIONS

- Arrhythmias, notably atrial fibrillation and ventricular tachycardia have significant impact on 30 days readmission rate for patients admitted with TC. Strategies aiming towards mitigating these factors can have useful impact on healthcare utilization.

## Introduction

- Lightheadedness, feeling dizzy or faint is a common presenting complaint, especially in the elderly population and often accompanied with falls. Orthostatic hypotension is a common cause of this presentation.
- It is important for clinicians to differentiate orthostatic hypotension with appropriate chronotropic response, such as due to hypovolemia, sepsis and medication side effects, from orthostatic hypotension with an impaired chronotropic response, suggesting either AV nodal blockade or dysautonomia.
- We present a case of severe orthostatic hypotension in a middle-aged female due to acute autonomic ganglionopathy.

## Case Description

- A 56-year-old woman with severe spinal stenosis, chronic pain and resistant hypertension on several antihypertensive medications who presented with lightheadedness and dizziness resulting in a fall. She reported postural worsening in her symptoms. She reported good fluid intake and denied any diarrhea, polyuria, fever, loss of consciousness, palpitations, dry eyes, dry mouth or urinary retention.
- Vital signs on presentation were notable for low normal blood pressure despite stopping anti-hypertensives. Orthostatic vital signs revealed a 40-point drop in systolic blood pressure and only 5-10 beats per minute increase in her heart rate. She was given intravenous fluids and all her anti-hypertensive medications were held without any improvement.
- Telemetry did not reveal any arrhythmias and endocrine workup was unremarkable. Echocardiogram and MRI brain did not reveal a cause for her severe orthostasis. CSF studies and rheumatological serologies were unremarkable. The absence of chronotropic response despite holding beta blockers raised concern for autonomic dysfunction.

## Images

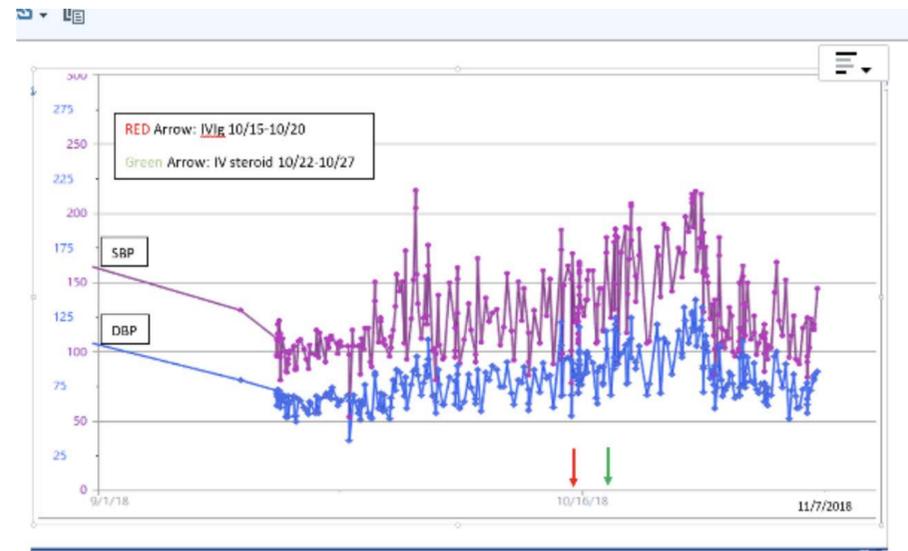


Figure 1

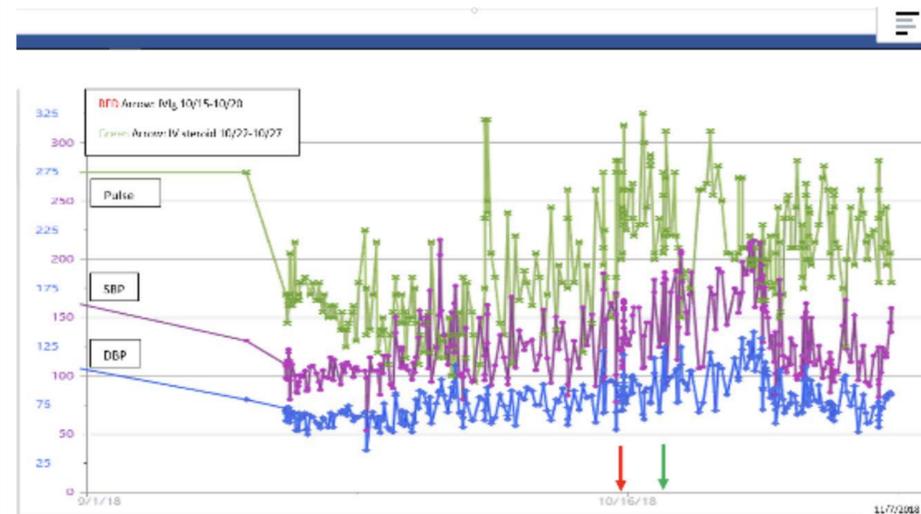


Figure 2

Figure 1 and 2 demonstrate the response to IVIG treatment with improvement in orthostatic blood pressure and heart rate (marked by red and green arrow)

## Contd.

- The patient was evaluated by dysautonomia specialist and autonomic testing confirmed the patient's diminished sympathetic response. Acetyl Choline neuronal antibody and paraneoplastic antibody panel were unremarkable. She was diagnosed with acute seronegative autoimmune autonomic ganglionopathy.
- She was treated with intravenous immunoglobulins and intravenous methylprednisone with improvement in orthostatic hypotension and remarkable improvement in her symptoms.

## Discussion

Autoimmune autonomic ganglionopathy is a rare cause of neurogenic orthostatic hypotension. More common causes being either pre-ganglionic, such as Parkinson's disease, Lewy Body Dementia, and Multiple Systems Atrophy or post-ganglionic, such as autonomic dysfunction related to Diabetes, HIV etc. Common presenting symptoms of autonomic ganglionopathy include orthostatic hypotension, anhidrosis, dry eyes, dry mouth, impaired pupillary reflexes, urinary retention and sexual dysfunction. This multisystem involvement makes it extremely debilitating for many patients and makes prompt diagnosis and treatment very important. Most patients have a good response to immunomodulating treatments like high dose steroids, intravenous immunoglobulins, mycophenolate and plasmapheresis. This case highlights the importance of physiologic understanding of orthostatic hypotension. Orthostatic hypotension is a commonly encountered presentation for many internists. A better understanding of the pathophysiology, as well as awareness about autonomic disorders, can help in early diagnosis which carries huge implications on patient outcomes.

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# GIVE US A BREAK! EVALUATING RATES OF OSTEOPOROSIS TREATMENT FOLLOWING FRAGILITY HIP FRACTURES IN A COMMUNITY HEALTH SETTING



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## Introduction

Hip fractures are associated with a one year 25% mortality rate.

Consequences of sustaining a hip fracture:

- Loss of independence
- Decrease in overall mobility
- Increased likelihood of repeat hip fracture (2-4x more)

Increased bone fragility and loss of muscle mass in the elderly population puts individuals at risk of falls and fractures.

Benefits of treatment with osteoporosis medication:

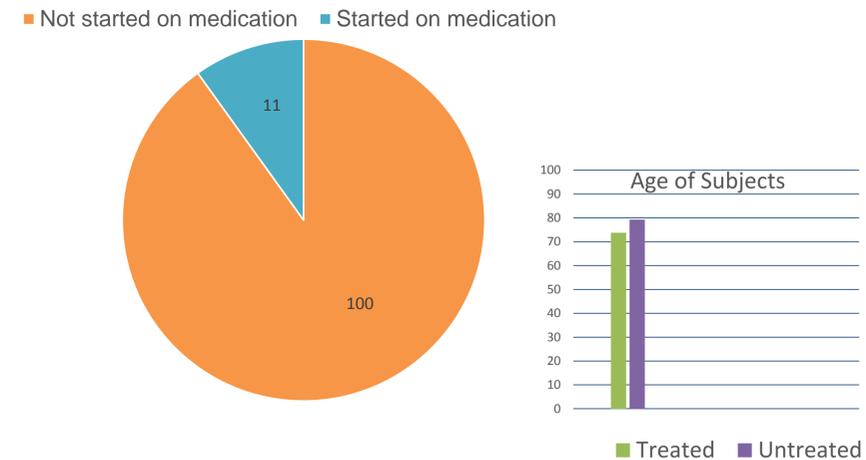
- Reduced risk of subsequent fractures
- Reduced mortality
- Improved quality of life

Multiple studies have shown low rates of pharmacological treatment of osteoporosis following fragility fractures, ranging from 3-40%. The aim of this study was to investigate our institution's rate of effective pharmacologic treatment of osteoporosis following hip fracture.

## Methods

A retrospective chart review was utilized to identify new diagnoses of hip fracture within a community hospital system from January 2017 through December 2017. Charts with both inpatient and outpatient records were reviewed to determine if an osteoporosis treatment was prescribed or recommended during a 12 month follow up.

Osteoporosis medication initiation:



## Discussion

Close to 10% of individuals who experience a hip fracture will sustain another hip fracture within 1 to 5 years. Current recommendations for treating osteoporosis suggest concurrent use of vitamin D and calcium supplementation, weight-bearing exercise, reduction in alcohol consumption, and smoking cessation.

Prescription pharmacologic options for treating osteoporosis:

- bisphosphonates (alendronate, ibandronate, risedronate, and zoledronic acid)
- RANKL inhibitors (denosumab)
- Calcitonin
- selective estrogen-receptor modulators
- teriparatide

Bisphosphonate therapy decreases bone resorption and remodeling. Randomized trials have shown both oral and parenteral bisphosphonate therapy after a vertebral or hip fracture to significantly decrease future fractures and disabilities.

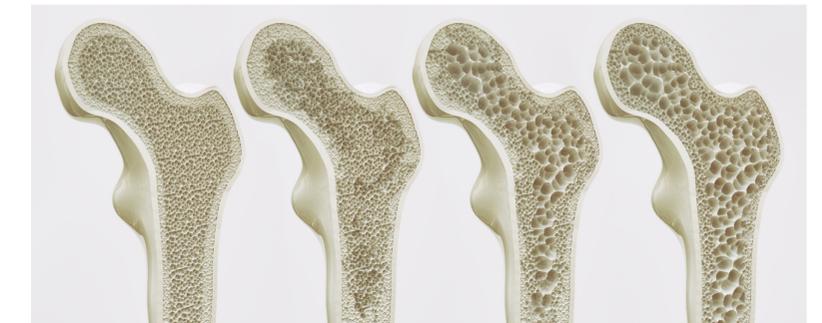
Potential barriers to treatment:

- cost
- side effects
- impaired renal function
- limited life expectancy
- lack of familiarity with alternatives

Several reports based in the U.S. have demonstrated that less than one third of patients receive osteoporosis treatment after a hip fracture, with overall declining rates of optimal treatment. This community hospital had similar subpar treatment rates.

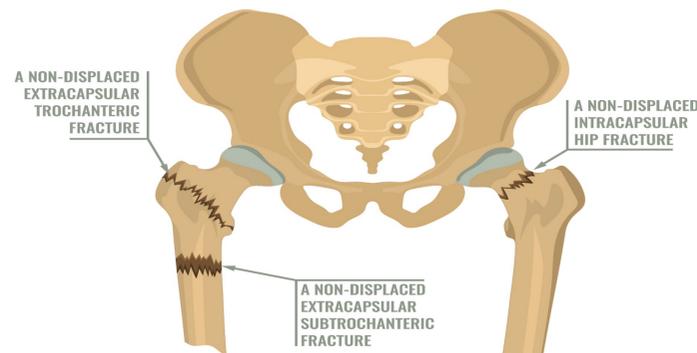
## Conclusions

There is a substantial treatment gap in patients with fragility fractures receiving recommended drug treatments for osteoporosis. This community hospital demonstrated suboptimal rates of post fracture treatment. Fracture Liaison Services have demonstrated improved rates of secondary preventive treatment and could be explored at this institution and analyzed for cost effectiveness.



Normal bone -> Osteopenia -> Osteoporosis

## TYPES OF HIP FRACTURE



## Results

Of 206 charts with hip fracture diagnoses, 111 subjects met inclusion criteria.

11 patients, 9.9%, were started on osteoporosis treatment (95% CI 5.5-17%).

Mean age of subjects: 79.12 years (SD 9.5).

Mean age of those treated: 73.7 years (SD 7.9).

Difference in age was not statistically significant (p=0.070).

Mean time to onset of treatment was 137 days (SD 153).

$$\text{Bone Strength} = \text{Bone Density} + \text{Bone Quality}$$

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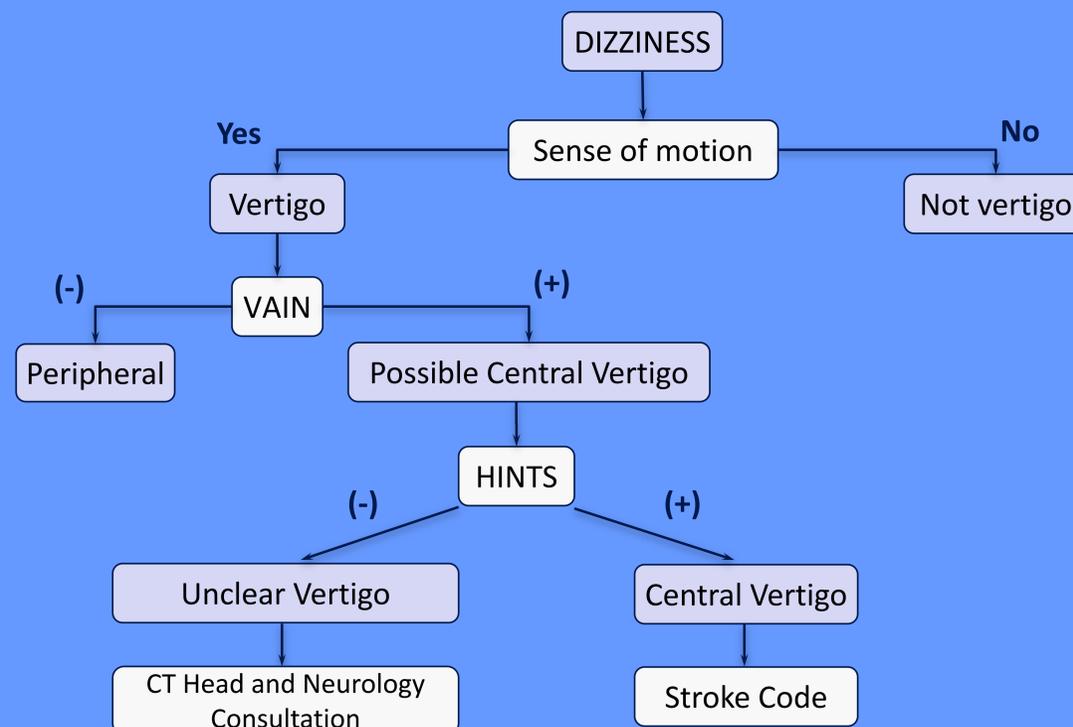
## INTRODUCTION

- Acute vertigo can be the sole manifestation of a vertebral stroke.
- An estimated 1/6 to 1/3 of these posterior circulation strokes presenting as isolated vertigo are missed in the ED.
- The existing studies for evaluation of central vertigo focused on physical exam findings like HINTS (Head-Impulse, Nystagmus, Test-of-Skew).
- We designed this study to evaluate the clinical predictors of central vertigo in the ED, which can improve the sensitivity of detecting or excluding central vertigo early, as delayed recognition or missed diagnosis can have devastating consequences.

## METHODS

- Retrospective chart review of all the adult patient visits, who presented to the NYC Health+ Hospitals/Jacobi ED with dizziness or vertigo in 2016.
- Only patients with a final diagnosis of vertigo were included in the analysis.
- Data for 46 variables regarding demographics, history, symptoms, signs, and imaging were obtained.
- MRI was considered the gold standard to diagnose central vertigo.
- Chi-square test and univariate logistic regression were used to evaluate statistical correlation and to calculate prevalence odds ratio (POR).
- Sensitivity, specificity, positive likelihood ratio (LR+) and negative likelihood ratio (LR-) were calculated using the 2X2 table created by cross tabulation.

Factors assessed (selected)	Number of patients	Central vertigo				Peripheral vertigo			
		sensitivity	specificity	LR +	LR -	sensitivity	specificity	LR +	LR -
ASCVD risk factors	177	68.8%	39.8%	1.14	0.78	60.2%	31.2%	0.87	1.2
ASCVD equivalent	177	18.8%	69.6%	0.61	1.16	30.4%	81.2%	1.61	0.85
Thromboembolic risk factors	177	12.5%	90.7%	1.34	0.96	9.3%	87.5%	0.744	1.03
Chronicity	177	43.8%	56.5%	1	0.99	43.5%	56.2%	0.99	1
Symptoms at rest	113	73.3%	52%	1.52	0.51	48%	26.7%	0.65	1.94
Positional changes	124	40%	12.8%	0.45	4.68	87.2%	60%	2.18	0.2
Ear symptoms	156	13.3%	76.6%	0.56	1.13	23.4%	87.6%	1.88	0.87
Nystagmus	147	40%	75.8%	1.65	0.79	24.2%	60%	0.6	1.26
Cerebellar signs	157	25%	98.6%	17.8	0.76	1.4%	75%	0.056	1.3
Dix-Hallpike	37	0%	45.7%	NA	NA	54.3%	100%	NA	NA



## RESULTS

- 249/505 (49.3%) of patients presenting with dizziness had actual vertigo, out of which 16 (6.4%) were found to have central vertigo.
- Statistically significant subjective variables were constant symptoms of vertigo ( $p < 0.000$ - POR 10.067) and no change in symptoms with head movement ( $p < 0.001$ - POR 5.61).
- Regarding the physical examination signs, dysmetria ( $p < 0.000$ - POR 16.833) and unsteady gait ( $p < 0.000$ - POR 10.063) were found to be statistically significant.
- The sensitivity to detect central vertigo was 100% if the patient had either no change in symptoms with head movement, or unsteady gait, or constant symptoms (the VAIN triad: Vertigo- Ataxia, Incessant, Non-positional).
- The combination of ear symptoms and changes of symptoms with head movement was found to have a sensitivity of 100% to rule-out central vertigo.
- The combination of a positive Dix-Hallpike test and changes of symptoms with head movement had a sensitivity of 100%, as well.

## CONCLUSIONS

- The sensitivity to detect central vertigo was 100% in patients with either constant symptoms or no change in symptoms with head movement, or unsteady gait (the VAIN triad: Vertigo- Ataxia, Incessant, Non-positional).
- We suggest that the triage RN apply the VAIN triad in patients with vertigo and if positive, the ER provider to be involved immediately.
- The VAIN triad can be a simple and effective tool against missing central vertigo diagnosis.

## A case of adult lead toxicity masquerading as acute porphyria

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### Introduction

- Lead toxicity is a rare diagnosis encountered during medical practice.
- Chronic lead toxicity is challenging to diagnose. It can present with fatigue, constipation, abdominal pain, irritability, and other nonspecific symptoms.<sup>1</sup>
- Due to a low incidence, it is often not considered in the differential diagnosis of patients presenting to the hospital which can lead to unnecessary testing or misdiagnosis.
- It may also masquerade as acute porphyria.

### Case

- A 47 year old woman visiting from Iran presented to the ER with diffuse, severe, colicky abdominal pain.
- She had a prior diagnosis of acute porphyria and hypertension.
- Her initial CT scan in ED showed some thickening of colon wall. She was treated for nonspecific colitis. Her pain responded to analgesics. She tolerated a diet the next day and was discharged home.



Lab	Value
WBC	10.8
H/H	12.6/35.5
Platelets	182
Creatinine	0.6
AST	24
ALT	18
Lipase	24

CT scan A/P done at patients first admission showing diffuse circumferential colonic wall thickening involves the entire colon with some questionable minimal pericolonic hazy inflammation. This has the appearance of a diffuse colitis.

### Case continued

- She was readmitted in 2 weeks with persistent abdominal pain. This time, she had a repeat abdominal CT scan which showed resolving colitis. EGD and colonoscopy were negative.
- With no apparent cause found for her abdominal pain, focus was shifted to porphyria as the cause of her pain.
- Hematology was consulted and recommended treatment with hemin for porphyria which patient refused because of cost issues.
- Her total urine porphyrin level was high. However her urine porphobilinogen level was negative.
- With no clear diagnosis, her lead level was tested and returned after her discharge from hospital at 149 mcg/dL (Range <10 mcg/dL).

Lab	Value
Serum total porphyrins	<b>1847.3 mcg/24hr</b> (35-210.7)
Random urine porphobilinogen	0.0 mg/g
Uroporphyrin I	10.7 mcg/24h (4.1-22.4)
Uroporphyrin III	2.4 mcg/24h (0.7-7.4)
Heptacarboxy porphyrin	1.1 mcg/24 hr ( < 3.3)

**Lead level 149 (Range < 10.0 mcg/dL)**

### Diagnosis and Treatment

- After an extensive history to find the source of lead, patient did admit to using “Surma” (an eye cosmetic with variable lead levels).<sup>2</sup> However, environmental cause can not be ruled out.
- With an extremely high lead level, patient was advised to present to the hospital to undergo chelation. However, because of cost issues she refused.
- She travelled back to Iran against medical advice the day after diagnosis and was admitted at a hospital there for chelation. Unfortunately, we do not exactly know what treatment/chelation therapy she received in Iran.
- She is currently doing well after treatment at my two follow up calls with patients family residing in United States.

### Discussion

- Lead toxicity is a rare yet potentially fatal diagnosis.
- There are multiple sources of lead including gasoline, paint, cosmetics like lipstick, cookware and herbal medicines.
- A cosmetic used as eyeliner, “surma” also contains unregulated and potentially high levels of lead.<sup>2</sup>
- In our patient, the diagnosis was challenging given the prior diagnosis of acute porphyria which proved to be erroneous as well as normal hemoglobin, and liver function.
- The abdominal pain is generally associated with lead levels of 46-200 mcg/dL<sup>3</sup>.
- A false positive urine porphyrin test can result from porphyria induced by liver cancer, hepatitis and heavy metal poisoning.
- It is important to consider lead toxicity in the case of no clear etiology of abdominal pain, inconclusive testing for porphyria and/or no response to hemin.
- Treatment of lead toxicity depends on the lead level as well as the presence of symptoms. Chelation is the mainstay of treatment if blood lead level is >80 mcg/dL. Most commonly used chelation agents are Succimer and Calcium disodium EDTA.



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## Absence Makes The Colon Grow Fuller

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### Introduction

While underdiagnosed in the adult population, **intestinal hypoganglionosis** should be considered as a potential diagnosis for patients with chronic refractive constipation, resistant to measures including aggressive bowel regimens, enemas, and disempaction.

### Case Presentation

A 59-year-old Hispanic male was admitted to the hospital with **severe, acute-on-chronic refractory constipation**, last bowel movement noted eight days earlier. Two months earlier, the patient had a thirty-day admission to another hospital with a similar presentation, with no improvement from any attempted treatment modalities, and inability to complete two separate colonoscopy attempts due to poor prep. Past medical history was significant for achalasia, for which the patient reported a corrective surgery in Puerto Rico many years ago.

On physical examination, the patient's abdomen was markedly distended, with **multiple palpable sections of bowel filled with stool**.



### Imaging



### Case Presentation (cont.)

The patient was subsequently started on an aggressive bowel regimen with multiple enema attempts; however, after no improvement, the general surgery service was consulted and performed **sigmoidoscopy with fecal disempaction**, finally yielding significant symptom alleviation. However, when the patient's constipation worsened again immediately after a diet was restarted, computerized tomography of the abdomen showed increasing cecal dilation, with leukocytosis noted on bloodwork. The decision was made to pursue a **subtotal colectomy with ileostomy** for more definitive symptom control. Concomitantly, concern for colorectal inertia secondary to an undiagnosed motility disorder increased, and colorectal biopsies were sent for pathological review. Pathology results revealed an **absence of colorectal submucosal and myenteric nerve plexuses, with only rare single ganglion cells seen**. No neural hypertrophy or other features of Hirschsprung's disease were seen; findings were compatible with a diagnosis of **hypoganglionosis**.

In outpatient follow-up, the patient's constipation symptoms were improved status-post ileostomy, with only occasional diarrhea now complicating his quality of life; additional rectal biopsy performed six months later showed **no ganglion cells on 10 separate samples of varying depths**.

### Discussion

While congenital causes of chronic refractory constipation, such as Hirschsprung's disease or intestinal neuronal dysplasia, are predominantly diagnosed during early childhood, these conditions should remain on the differentials in constipated adults as well, particularly those revealed to have milder forms of the underlying intestinal pathology. These diseases are frequently overlooked and misdiagnosed in adults, leading to a likely underestimation of their overall incidence in the adult population. Typically, patients seek medical attention with a longstanding history of constipation requiring frequent laxative use. An accurate diagnosis in adults often requires **colorectal wall biopsy, with findings of reduced or absent ganglion cells and submucosal/myenteric nerve plexuses**.

Patients with intestinal hypoganglionosis are at risk for severe complications including fecaloma, intestinal perforation, and respiratory compromise due to intestinal expansion into the thoracic cavity. Diagnosis of intestinal hypoganglionosis in adults often necessitates surgical intervention as treatment, such as ileostomy, to eliminate the likely return of refractory constipation during attempts of nonsurgical treatments. The surgery is considered curative.

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#### Special Thanks To Dr. Alice Beckman

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# From Hospital to Home: Creating Care Transitions Standards from Consensus Using Nominal Group Technique

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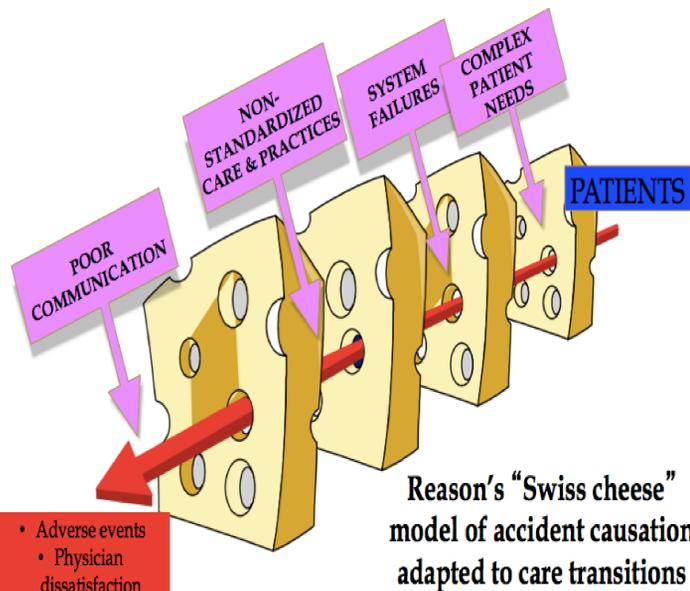
## Background

Failed care transitions result in patient harm<sup>1,2</sup>. The key tenets of care transitions efforts are to:

- Decrease adverse events at key patient transition points
- Improve communication among providers
- Standardize the process of care transitions
- Focus on patient centered care
- Provide appropriate resources at discharge

Under-appreciated areas of care transitions efforts include:

- Consensus around the MOST important parts of physician practices at discharge
- Education regarding communication skills for effective and safe care transitions practices



## Aims and Objectives

Use nominal group technique (NGT) to engage key stakeholders for the following purposes:

- Highlight elements that are important for patient safety during the discharge process
- Generate consensus to create hospital standards for discharge practices

## Description of our Innovation

We created a consensus using NGT amongst local primary care physicians, hospitalists, geriatricians and sub-specialists

- These are key stakeholders most impacted by care transitions hand-offs
- Convening practitioners from different backgrounds offered unique perspectives
- Nominal group technique (NGT) is a structured consensus method that is used to achieve a general agreement or convergence of opinion around a particular topic
  - NGT is often used for gathering consumer recommendation on product development

### Nominal group technique

- Facilitator explains session
- Silent generation of ideas
- Round-robin sharing of ideas
- Discussion, clarification, and consolidation of ideas
- Individual ranking of ideas
- Tally of scores and final ranking



## Results

- Twenty elements were identified by 14 participants after round-robin reporting and idea generation

Care Transitions Element	Rank
Creating accurate discharge medication lists	1
Writing accurate discharge summaries	2
Identifying patients requiring a warm handoff	3
Accurate patient-centered discharge instructions	3
Arranging appropriate discharge appointments	4
Ensuring a safe and stable home environment	5
Appropriate discharge arrangements	6
Using teach-back techniques at the time of discharge	7
Identification and reporting of pending studies	8
Correct identification of primary care physician	9
Appropriate arrangement of home care/DME	10
Identifying and reporting new diagnoses	11
Ensuring medication access after discharge	12
Identifying and reporting new allergies	13
Arranging for post-discharge transportation	14
Discussion and documentation of code status and goals of care	15
Explicit follow up instructions	16
Documentation of mental status at the time of discharge	17
Ensuring accurate demographic contact information	18
Identification of potential insurance issues	19

## Outcomes

This approach facilitated:

- Positive reactions from all the providers based on informal feedback
- Dynamic dialogue amongst outpatient and inpatient physicians
- Relationship building between key stakeholders
- Standardization of discharge practices at the hospital level

## Discussion

- Nominal group technique can be applied to care transitions process improvement models
- This demonstrated successful application of a commonly used technique from business models
- The technique allowed us to gain consensus amongst providers from various clinical settings
- This has served as the catalyst for change within the hospital structure

## Application and Future Directions

**Hospital Applications:** The consensus gathered by providers from the NGT is currently being applied to various efforts throughout the hospital structure:

- Reformatted discharge summaries to highlight:
  - Home Care/DME arrangements
  - Pending studies
  - New diagnoses
  - Follow up instructions/recommendations
- Patient experience:
  - Patient friendly discharge instructions
  - Educational videos
- Pharmacy:
  - Team based model
  - Optimize medication reconciliation
  - Access to discharge medications
  - Patient education
- Community Health Workers:
  - Appropriate follow-up resources

**Educational Applications:** These fundamentals have been utilized to create an innovative care transitions curriculum for internal medicine residents integrated with ACGME and CLER expectations:

- Teach standardized practices
- Optimize meaningful communication between disciplines
- Focus on patient centered care

**Future Goals and Initiatives:** Although the activity was limited to one institution's experience, we believe it can be applied across multiple institutions to:

- Standardize provider training in safe discharge practices
- Reduce adverse events following discharge
- Optimize multidisciplinary elements of safe discharge transitions
- Streamline workflow for residents, hospitalists, and outpatient providers

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# Septic Pulmonary Emboli From Common Iliac Vein Thrombosis Caused By Anaerobic Bacteria

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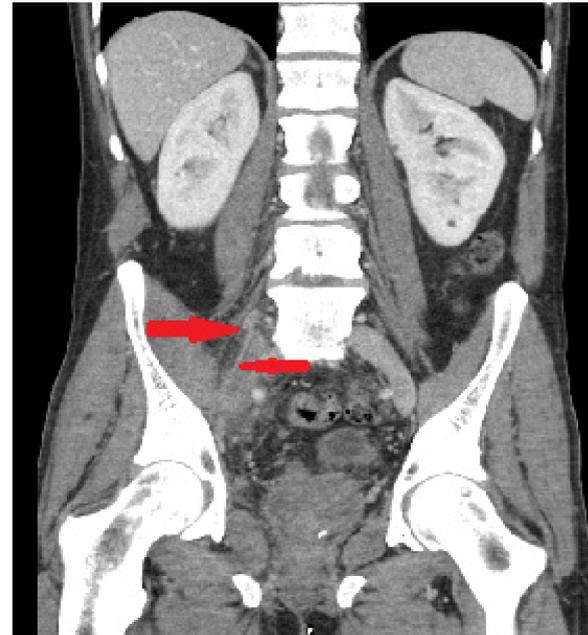
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## Introduction

Lemierre's Syndrome is described traditionally as an infectious thrombophlebitis of the Internal Jugular veins. However, uncommon variants have been described such as gynecological variant and a gastrointestinal (GI) variant. We present one such uncommon variant of septic thrombophlebitis arising from GI tract.

## Case Presentation

59 year old African-American Male with past medical history of cerebrovascular accident presented to the emergency department with complaints of pain and swelling of the right leg since 2 weeks. He associated chills and weight loss. His vitals at presentation were a heart rate of 109, blood pressure of 118/84 mmHg, respiratory rate of 16, temperature of 98.1° F. Physical examination revealed an erythematous and warm right leg. Venous ultrasound showed an extensive thrombosis from the femoral vein through the right popliteal vein. A Computerized Tomography (CT) abdomen done to evaluate the extension revealed an extension into right common iliac vein. Heparin drip was started and an inferior vena cava filter was placed given the extension. After admission, the patient had a temperature of 102.9° F and had a lactate of 2.3, so blood cultures were ordered and no antibiotics were started since the source of infection was unknown. With a suspicion of pulmonary embolism (PE) with such an extensive clot burden, CT chest done showed a tiny subsegmental PE.



The blood cultures on day 5 after collection grew *Fusobacterium Necrophorum* (NF). Infectious diseases were consulted and they recommended Metronidazole. Interventional radiology performed pharmacomechanical thrombectomy of the right common iliac to the popliteal vein with stenting of the right common iliac vein. The patient denied sorethroat or recent appendicitis to explain bacteremia with NF in the blood. The only reasonable explanation is was that the bacteria that colonized the gastrointestinal tract migrated to the common iliac veins because of the close proximity and even caused septic emboli in the lungs. The patient received 14 days of Metronidazole and repeat blood cultures were negative. The patient was eventually discharged on Warfarin.

## Discussion

NF is an anaerobic gram negative bacteria which is normally colonized in the pharyngeal, gastrointestinal or genitourinary tracts. Our patient had a gastrointestinal source of origin which resulted in the migration of bacteria to the common iliac veins causing stasis and a subsequent deep venous thrombosis.

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### Background

- Point of Care Ultrasound (POCUS) use has dramatically increased in Hospital Medicine
- Internal Medicine Residency POCUS Training Programs are rapidly expanding
- Current training programs for hospitalists are time intensive and opportunities for continued education are still limited
- The I-AIM (Indication, Acquisition, Interpretation, and Medical decision making) and Delphi Consensus Survey are widely accepted frameworks for assessing POCUS competency

### Objectives

**To test and compare POCUS knowledge of Attending Hospitalists and Internal Medicine Residents in the same Academic Medical Center**

### Methods

- Developed a 15 item test (<10 minutes) designed to assess the intellectual domains of the I-AIM and Delphi frameworks using common applications of POCUS in hospital medicine

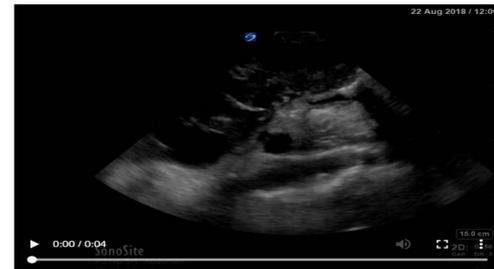
### Domains of Competency Assessed

- Indication for Exam
- Image Interpretation
- Medical Decision Making
- Understanding of Limitations\*
- All questions were multiple choice and based on video clips
- The test was electronically distributed to all residents (n=180) and hospital medicine attendings (n=97)
- Test results were adjudicated and then compared using unpaired t-tests and analysis of variance (ANOVA)

\* Not an official I-AIM category

### Sample Question

Q7) Based on this image, is this hypotensive patient likely to be responsive to fluid?



- Yes, the IVC is <1.5 cm and collapses more than 50% with inspiration
- No, the IVC is >2.5 cm and does not collapse with inspiration
- Cannot tell from this image
- Not Sure

### Assessment of Aorta in place of the IVC for Volume Status

- Residents: 55.2 % correct
- Attendings: 45.9 % correct

### Results

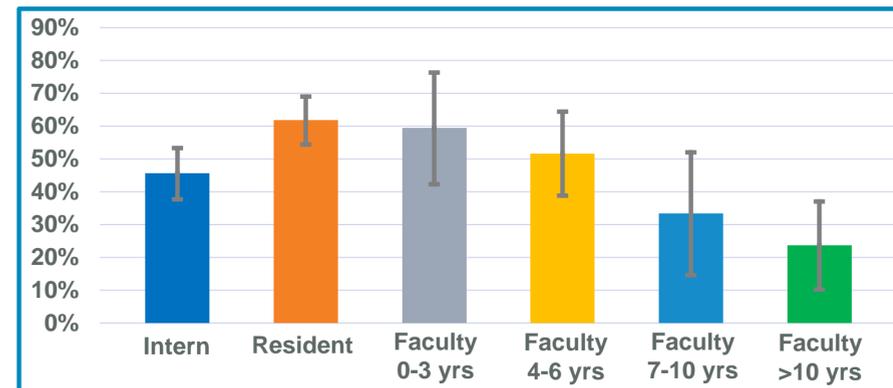
#### Score (% Correct) by Domain

Domains of Competence	Residents (% correct)	Faculty (% correct)	p-value
Total Score	55.6%	45.3%	0.022*
Indication for Exam	79.3%	57.3%	0.001*
Image Interpretation	51.1%	40.2%	0.023*
Medical Decision Making	44.8%	37.4%	0.147
Understanding of Limitations	73.3%	61.0%	0.034*

- 58 residents (32% response rate) and 41 attendings (41% response rate) completed the test
- Total score mean difference of 10.3% (95% CI 0.32-20.3; p=0.022)
- Attendings performed significantly worse in domains of **indication for exam, image interpretation, and understanding of limitations**

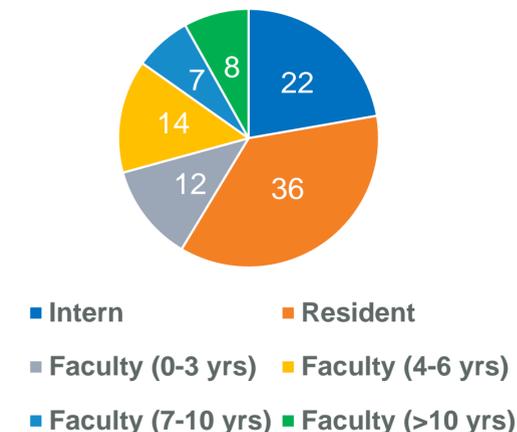
### Results

#### Analysis by Level of Training



**Figure 1: Total Test Score Categorized by Level of Training**  
Interns scored a mean of 45.5%, Senior Residents 61.7%. Faculty of 0-3 years' experience scored a mean of 59.3%, 4-6 years 51.6%, 7-10 years 33.3%, and faculty with >10 years' experience, a mean of 23.6%, (p = 0.0002; ANOVA).

#### Respondent by Level of Training



### Summary/Discussion

Our study revealed that, while resident physicians at our institution have limited knowledge and require supervision, our hospital medicine faculty had significantly lower baseline POCUS knowledge than the residents they supervise.

- Residents scored higher in the domains of: indications for exam, image interpretation, knowledge of limitations.
- Residents scored lowest in medical decision making likely due to receiving limited education while practicing in real clinical environments.
- Hospitalists more recently out of training scored higher than those with more clinical experience which may reflect the recent wave in POCUS training in the last 5 years.

### Limitations

- This study is at a single center, and did not address some domains of the I-AIM framework or Delphi Consensus Survey for POCUS Competence including: knowledge of ultrasound equipment, image acquisition, systematic examination, and documentation of examination.

### Conclusions

**At our institution a supervision safety gap exists, as attending hospitalists currently lack the knowledge to guide resident physicians in the practice of POCUS use in Hospital Medicine.**

### Future Directions

- We have developed a novel faculty curricula focused on intellectual approaches to supervision, appropriate use, and knowledge of limitations to more rapidly address this potential safety gap as hospitalist and trainees continue to gain this important skill.

# The effects of platelet rich plasma, medical honey and matrix wound dressings in a chronic non healing Cesarean section wound

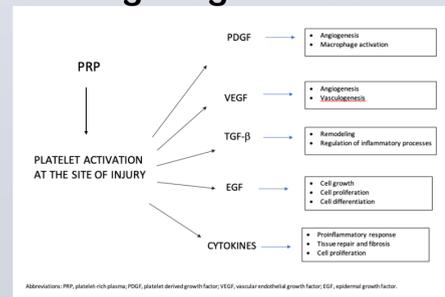
Cynthia L. Vuittonet, MD and Robert S. Aaron, MD

## INTRODUCTION

Platelet Rich Plasma (PRP) has been used in the treatment of tendonitis, osteoarthritis, skin grafting and chronic wounds. Honey has been used to treat burns, diabetic foot ulcers and chronic non healing wounds. This case report describes the role of using PRP, honey and matrix wound dressings (Iodoform packing) to heal a chronic non healing Cesarean section (C-section) wound in an otherwise healthy patient.

## BACKGROUND

PRP is a concentration of activated platelets, and compared to whole blood, has a 3 to 8 fold increase in autologous growth factors. In a limited number of clinical trials PRP is shown to stimulate skin and cartilage regeneration.



Medical honey has both antibacterial, anti-inflammatory, and pH optimizing properties which aid in wound healing.

Iodoform packing is a matrix wound dressing that prevents recurrent infections, absorbs exudate and prevents premature closure.

## CASE DESCRIPTION

A 27 year old woman presented to the office with a C-section wound that persisted for six months. Her prenatal and postpartum course were uncomplicated until she lifted her daughter causing a wound dehiscence. The patient was not a candidate for secondary closure and was initially managed with daily Iodoform packing.

Physical exam revealed an obese young woman with stable vital signs. Two openings along the C-section wound each measuring 0.2cm in width, 0.1cm in length, and 4.5cm in depth. Culture of each wound revealed heavy growth of Group B Streptococcus.

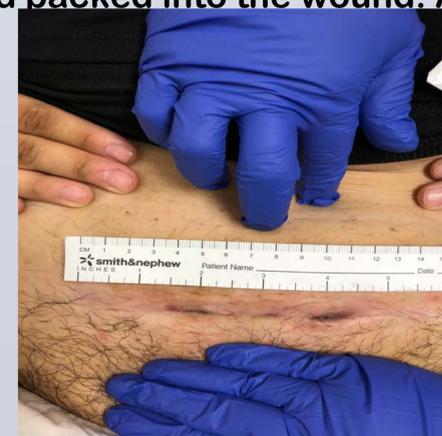
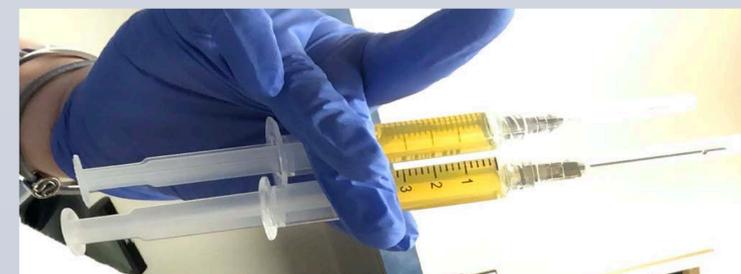
After a week of oral antibiotics (cephalexin) and iodoform packing, depth of each wound decreased to 2.5cm. Subsequently, there was no further improvement in the wound depth. Repeated cultures were negative. Ultrasound and CT scan did not reveal an underlying abscess or fistula.

The patient underwent a treatment of PRP. In the office, 5mL of blood was drawn into a red top BD Vacutainer Serum Tube. The tube was centrifuged and PRP was separated using a sterile spinal needle. Iodoform packing was saturated with PRP and placed in the wound. PRP was also injected into the wound bed. One week later depth of wound was 1cm.

After two weeks, there was no further improvement wound depth. To optimize the wound bed and healing, medical honey was added to the patient's regimen. The Iodoform packing was saturated with medical honey and packed into the wound. After two weeks, the wound closed.



Left: medical honey  
Right: Iodoform packing  
Bottom: PRP



Patient's non healing wound. Depth at the time of this picture was 2.5cm

## DISCUSSION

C-section deliveries represent 31.9% of all US births, and wound dehiscence can occur in 4-30% of all C-sections. There are some studies that suggest obesity is a major risk factor for C-section wound dehiscence. There are many options for treatment of wound dehiscence, which include wet to dry dressings, packing, negative pressure therapy, and secondary closure. There are limited studies using PRP and honey in C-section wound dehiscence.

This case highlights the future of in office treatment with PRP, medical honey, and matrix wound dressings to treat wound dehiscence in c-section patients. Identifying patient's at greatest risk for complications and prompt management of wound dehiscence can dramatically decrease time to heal and improve

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# Preference of Care: An Outpatient Study

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## Introduction

- Outpatient practices are evolving into nontraditional models of care in an effort to maximize patient volume and improve efficiency.
- This has led to team-based medical practice models, which have expanded roles for mid-level providers, and the integration of technology such as virtual visits
- As patients now receive direct care, as well as information regarding their care, from multiple sources and providers, we wished to study patient preferences when receiving their care and the role of the provider-patient relationship.

## Material and Methods

- A 13-question survey was distributed to all patients in the outpatient internal medicine clinic of Mayo Clinic Arizona over a 6-week period.
- Four discrete choice experiment questions were used to assess patients' preferences when accessing care delivered by multiple types of providers, in different care delivery settings, and with varying schedule flexibility.
- Initial analysis was with a sample size of 800 out of 1731 eligible patients with P-values less than 0.05 being considered significant.
- Descriptive statistics and chi-squared tests were used for categorical variables. A Mann-Whitney rank-sum test was used for continuous variables.

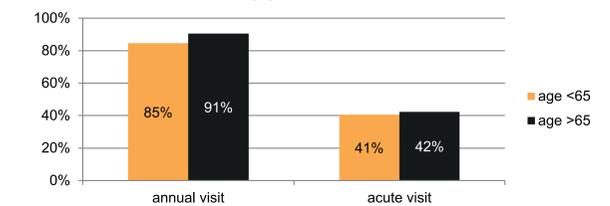
## Example of Discrete Choice Question

6. When making appointments, sometimes patients need to choose between getting an appointment at a time that is convenient for them and seeing their preferred primary care provider. Which best describes your preference in the following two scenarios? Please choose one box for each scenario.

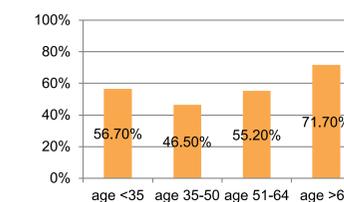
	Seeing my preferred provider is much more important than getting an appointment when I want it	Seeing my preferred provider is somewhat more important than getting an appointment when I want it	I have no preference either way	Getting an appointment when I want it is somewhat more important than seeing my preferred provider	Getting an appointment when I want it is much more important than seeing my preferred provider
When visiting the clinic for yearly physicals and/or routine medical follow-up					
When you are sick (for example, with the flu), or have a new health concern					

## Results

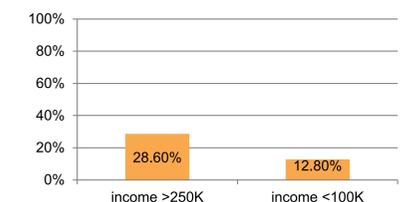
### Seeing regular provider vs. Timely appointment



### Preferred Face-to-face visit



### Preferred prompt virtual visit



## Respondent Demographics

Age		Gender		Level of education		Time at Mayo Clinic	
<35	4%	Male	44%	High school	8%	<1 year	13%
35-50	10%	Female	56%	Some college	24%	1-5 years	21%
51-64	28%	Income		Bachelors	33%	>5 years	66%
65 or older	58%	<50,000	10%	Masters	20%		
		50-100,000	22%	Professional	8%		
		100-250,000	40%	Doctoral	7%		
		>250,000	28%				

## Conclusion and Discussion

- A 13-question survey was distributed to all patients in the outpatient internal medicine clinic of Mayo Clinic Arizona over a 6-week period.
- Four discrete choice experiment questions were used to assess patients' preferences when accessing care delivered by multiple types of providers, in different care delivery settings, and with varying schedule flexibility.
- Initial analysis was with a sample size of 800 out of 1731 eligible patients with P-values less than 0.05 being considered significant.
- Descriptive statistics and chi-squared tests were used for categorical variables. A Mann-Whitney rank-sum test was used for continuous variables.

# This Spirochete Waits For No Man: When Rushing Is The Right Choice.

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## Introduction

- Acute respiratory distress syndrome (ARDS) has different etiologies. We present an unusual case caused by a spirochete.

## Case Presentation

- 27-year-old Peruvian man presented with 5 days of fever, malaise, weakness, myalgia, arthralgia and abdominal pain. He also had diarrhea for two days. He denied jaundice or dark urine. No prior diseases or sick contacts. He worked as a pig breeder.
- On initial presentation, he had fever (101.5 F) and dry cough; his oxygen saturation was 98% in room air. There was an erythematous rash and conjunctival suffusion. No lymphadenopathy, petechiae or icterus were seen. Lungs were clear to auscultation. His abdomen was soft but mildly tender; slight hepatomegaly was noted. Myalgia in lower extremities was worse with palpation.
- The laboratory data showed thrombocytopenia (120,000/mL) and elevation of ESR and CRP. Other biochemical tests, urinalysis and coagulation profile were normal.
- Chest x-ray was normal.
- Abdominal ultrasound demonstrated hepatosplenomegaly.
- Standard bacterial, fungal and mycobacterial cultures from blood, urine and stool were negative. Serology for HIV, hepatitis, HTLV-1, Salmonella, Brucella and syphilis were negative. Thick smear was negative. Serology for yellow fever, dengue, and leptospirosis were pending.
- After three days, his course was complicated by worsening thrombocytopenia (98,000/mL) and mild anemia (11gr/dL) without bleeding or hemolysis. Empiric ceftriaxone for possible leptospirosis was started.

## Case Presentation

- At night, the patient had hemoptysis and became hypoxic. Chest x-ray revealed diffuse bilateral infiltrates. Labs were significant for acute anemia (9.5 gr/dL) and severe hypoxic respiratory failure.
- The diagnosis of ARDS and diffuse alveolar hemorrhage (DAH) were made. Additional tests for influenza, hantavirus and autoimmune diseases were sent.
- Leptospira IgM was positive and microagglutination test (MAT) was reactive (Serovar Canicola 1/25 600 and Serovar icterohaemorrhagiae 1/12 800). ANA, ANCA, rheumatoid factor, serology for yellow fever, dengue, hantavirus and influenza were negative.
- The patient had a satisfactory recovery during the subsequent days.



Figure 1. Chest XR showing diffuse bilateral infiltrates.

## Discussion

- Leptospirosis is a widespread zoonotic infection caused by spirochetes of the *Leptospira* genus. There are nine known pathogenic species divided into serovars.
- Although rats are well-known reservoirs, *Leptospira* can infect all mammals.
- The serovars found in our patient are associated to infection in pigs.
- This illness has a wide variety of clinical manifestations and it is usually characterized by fever, rigors, myalgia and headache.
- Anicteric leptospirosis is usually mild and self-limited.
- DAH is one of the most severe complications and can be seen in icteric and anicteric forms.

## Conclusion

- ARDS and DAH are severe complications of leptospirosis which warrant empiric antibiotic therapy while awaiting confirmatory testing. A delay in treatment may have fatal consequences.

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