

Recognizing The Role of The Patient Centered Medical Home

Jumana Al-Deek, DO & Raj Mehta, MD

Introduction

In an effort to focus more on patient driven care and find lower costs for healthcare the United States has implemented the concept of the Patient Centered Medical Home (PCMH). The concept PCMH was first described in 1967 by The American Academy of Pediatrics (AAP). It has been widely implemented in many different patient populations over the last two decades. The PCMH benefits patients by allowing greater access to services, better quality of care, and greater focus on prevention and early management of health problems among. In 2007, The American Academy of Family Physicians, the American College of Physicians, and the American Osteopathic Association published "The Joint Principles of the Patient Centered Medical Home" to create a standardization of the PCMH.

While evaluating the role of PCMH, it is important to define the roles of family medicine in the medical home and the role of PCMH in the Health system. It is also important to evaluate the data behind the success of PCMH. The data does not show that PCMH has made large transformative changes, but smaller successes in specific patient populations and disease processes.

Finally, in order to better understand the role of PCMH, it is important to understand the accreditation processes that were involved in its creation. The PCMH has provided primary care practices a model to improve the quality, efficiency, and effectiveness of patient care by redesigning their practice. To streamline this process, several entities began offering medical home recognition or accreditation for PCMH's. The AAFP, AAP, ACP, and AOA developed the "Guidelines for Patient- centered Medical Home Recognition and Accreditation Programs" [23] to help create a standard for accreditation.

Methods

A literature review of studies and articles related to PCMH, accreditation bodies, health systems, public health, and health outcomes was conducted. The search was limited to articles and studies conducted in the last 5 years and in the United States of America.

Results

The results indicate that the PCMH role is helpful but difficult to implement. The practices with the most success require support over years to complete the necessary structural and cultural changes. Studies have also shown that a shift in reimbursement may be necessary to provide team and non-visit based care

While PCMH was originally introduced by the AAP, the AAFP and AACP have since developed their own models for improving patient care. The medical home's focus is the patient, and it is important not to lose sight of this among all the metrics. The most important aspect of primary care is the patient-physician relationship. It is important to keep in mind that, while the medical home is valued for its focus on this aspect, physicians should remind themselves of the importance of keeping that concept at the forefront of their minds.



Conclusion

The PCMH has been around for 2 decades but still requires more involvement from the community in order for PCMH interventions to be successful. Additionally, it is important to focus on the patient-physician relationship in the medical home and not lose sight of this among all the metrics.

Contact Information

Jumana.al-deek.do@adventhealth.com

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The Value of the Patient Centered Home

Leslie Bruce, MD
Raj Mehta, MD

Intro

As the United States grapples with the state of its health care system, the concept of the Patient Centered Medical Home (PCMH) has taken center stage. In an era of keeping costs low and providing the most value for the smallest price tag, the PCMH has shown itself to be a possible solution to many of our looming problems. How will one of the most advanced nations in the world provide evidence based, affordable medicine to millions of patients without losing billions in the process?

The patient centered medical home model has been widely implemented in many different patient populations over the last two decades. The cumulative available data offers a mixed picture that suggests a broad failure to deliver large transformative changes, but smaller successes in specific patient populations and disease processes. The confusing state of the PCMH literature underlies the importance of carefully reviewing the methodology of each paper, and subdividing based on differences between studying “characteristics” vs “interventions” . [3]

Background

Discussing evidence for PCMH should start with studies on “PCMH characteristics.” Research findings have shown that health care systems with greater “PCMH characteristics” tend to have a more positive impact on utilization, costs, quality of patient care, patient satisfaction and patient access. For example, a large VA study looked at a pool of 1,650,976 patients who were seen at their PCMH clinics and found that they had fewer ED visits [2]. Another study showed that for patients with diabetes who received care from a practice with more PCMH characteristics had 19% greater odds of having well controlled HbA1c values [1]. The same study also found African Americans had less benefit from efforts to improve blood pressure and HbA1c control, suggesting a persistence in social disparities that needs to consider community factors when implementing PCMH [1].

Unfortunately, despite the positive association between “PCMH characteristics” and healthcare outcomes, the studies on “PCMH interventions” have been much less successful. A prospective cohort study in 2016 with 438 primary care providers and 136,480 patients compared PCMH to non-PCMH practices over a 5-year period. Overall, they found patterns of quality were similar across groups, with some modest changes in utilization [4]. The Maryland Multipayer Patient-centered Medical Home Program involved 52 PCMH practices had mixed results, with lower costs among Medicaid beneficiaries, but no sustained lower costs in Privately Insured beneficiaries, no change in provider or patient satisfaction, and higher administrative burden [5].

The strongest null evidence comes from an RCT on Healthcare Hotspotting. This study on 800 hospitalized patients with very high use of healthcare services found 6-month interventions with intensive case management and coordination of outpatient care did not reduce emergency or hospital utilization. The study questions one key hypothesis of the PCMH model (practice changes can reduce healthcare utilization and costs), and suggests that if PCMH interventions are to be successful, they may require monitoring over a long period of time and with greater community involvement [6].

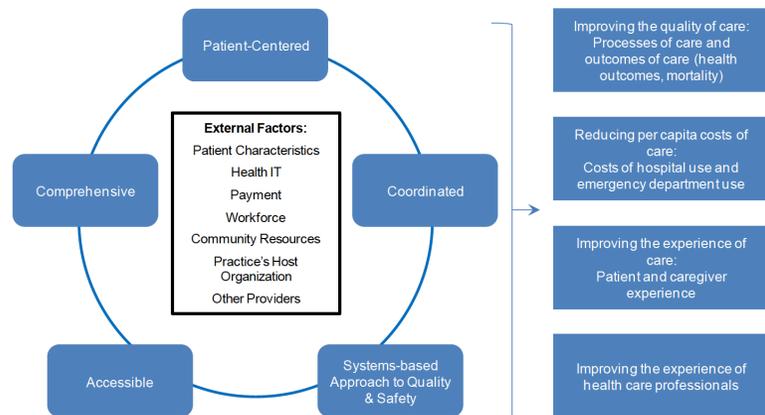
Methods and Conclusions

Methods:
Literature search and review of PCMH, primary care, health systems and health outcomes in relation to low-income populations, noncommunicable diseases and patient satisfaction on PubMed. This search was limited to articles published in the US in the last 5 years.

Conclusion:
Overall, the accumulation of disappointing or modest findings highlights the difficulty of implementing PCMH. Practices with greater success at transformation may require support over years to complete necessary structural and cultural changes. Providing team and non-visit based care is also difficult in fee for service models, and at least one study has suggested it may require a shift in reimbursement practices to higher levels of capitation payments [7].

Why the Medical Home Works: A Framework

Feature	Definition	Sample Strategies	Potential Impacts
Patient-Centered	Supports patients and families to manage & coordinate care and participate in fully informed patient & health care decisions	Dedicated staff help patients navigate system and coordinate care Focus on chronic & care plans Focus on chronic, trusting relationships with patients & care team Comprehensive and continuity oriented care	Patients are more likely to seek their care, in the right place, and at the right time
Comprehensive	A range of care provided, which is accessible for patient's physical and mental health care needs	Care team focuses on whole person and population health Primary care could be flexible with behavioral and/or oral health, vision, DT/OT, pharmacy Special attention is paid to chronic disease and complex patients	Patients are less likely to seek care from the emergency room or hospital, and delay or leave conditions untreated
Coordinated	Efficient care is organized across all elements of provider health care system, including specialty care, hospitals, home health care, community services & supports, & public health	Care is documented and communicated across providers and institutions, including patients, specialists, hospitals, home health and public health/social supports Communication and connectivity is enhanced to health information technology	Providers are less likely to order duplicate tests, labs, or procedures Better management of chronic diseases and other issues Improves health outcomes
Accessible	Enables convenient therapy services with shorter wait times, extended hours, 24/7 assistance or telephone access, and ongoing communication through health IT innovations	More efficient appointment systems offer same-day or next-day access to care Use of e-communication and telemedicine provide alternatives for non-acute visits and allow for after hours care	Focus on wellness and prevention reduces incidence / severity of chronic disease and illness
Committed to quality and safety	Demonstrates commitment to quality improvement through use of health IT and other tools to ensure patients and families make informed decisions	EMR, clinical decision support, medication management improve treatment & diagnosis Clinical staff monitor quality improvement goals and use data to track populations and their quality and safety outcomes	Cost savings result from: - Higher use of medicine - Fewer avoidable ER visits, hospitalizations, & readmissions



Contact Information

Leslie Bruce, MD, PGY-3, Advent Health Family Medicine Residency
Leslie.Bruce.MD@adventhealth.com
133 Benmore Dr, Winter Park, FL 32792

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Introduction

Hypertension is a common presentation in the primary care setting. Uniquely the term hypertension describes both the finding (high blood pressure) and the diagnosis (Primary Hypertension, Secondary Hypertension, etc). The most common cause of high blood pressure is Primary Hypertension, also called benign hypertension. Generally, the diagnosis does not require further investigation, beyond evaluation for end-organ harms and determining goals of care.

Despite the ubiquitous occurrence of primary hypertension, about 10% of high blood pressure is due to secondary hypertension. Epidemiologically, this is a classification of a group of disparate diagnosis that result in high blood pressure as a secondary phenomenon. As the etiology of secondary hypertension often carry harmful sequelae, it is important to recognize and investigate sources when they occur. Persistent hypokalemia is one such red flag that should trigger further inquiry.

Discussion - Treatment

-Medical therapy: Mineralocorticoid receptor blockade with spironolactone or eplerenone, dietary sodium restriction <100 mEq/day, ideal BMI, avoid alcohol

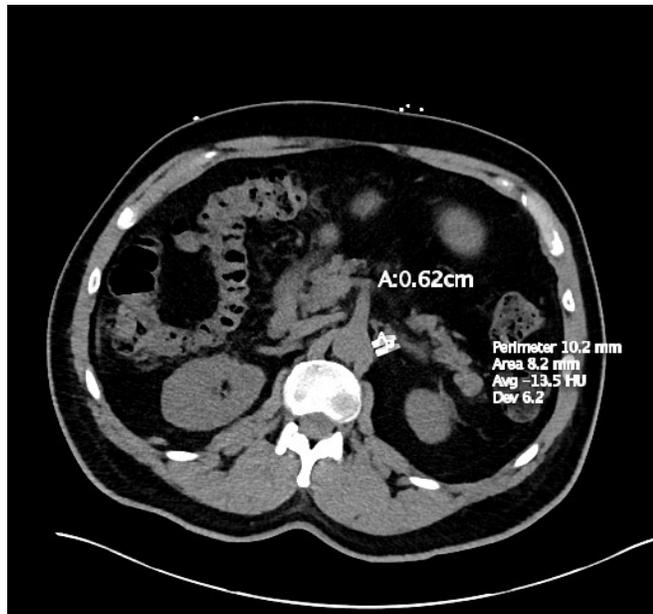
-Surgical therapy: for unilateral adenoma only: laparoscopic adrenalectomy

Case Report

The patient is a 58 year old male with a past medical history of difficult to control hypertension despite treatment with three or four agents, who presented to the hospital with chest tightness, weakness, and dizziness. The patient was found to have severe hypokalemia with a value of 2.4 mmol/L.

Chart review revealed patient had a history of prior admissions for similar symptoms and hypokalemic episodes in the past. Prior workup was started which revealed plasma aldosterone concentration (PAC) of 12.7 ng/dL, and plasma renin activity (PRA) of 0.3 ng/mL, giving a PAC/PRA ratio of 42.33. As levels >20 are suspicious for primary aldosteronism, we decided to perform a CT abdomen with and without contrast, which revealed a 6mm fat-containing low-density lesion in the left adrenal gland, consistent with an adrenal adenoma. CT image of adenoma is shown below.

The patient was diagnosed with primary aldosteronism secondary to adrenal adenoma, and general surgery was consulted for assessment of adrenalectomy. At the time of writing patient has been lost to follow-up during the COVID19 pandemic, despite many attempts at communication.



Discussion – Workup and diagnosis

-Initial: Rule out interfering drugs, esp. mineralocorticoid receptor antagonists (spironolactone, etc), but also ACE inhibitors, ARBs, and direct renin inhibitors

-Lab testing: Morning (8am) paired random PAC (aldosterone) and PRA (renin). PAC/PRA ratio >20 is considered suspicious for primary aldosteronism. Rule out other causes of HTN/hypoK combination with: ACTH, cortisol, plasma metanephrines

-Imaging: Once primary aldosteronism confirmed, distinguish unilateral adenoma from bilateral adrenal hyperplasia with adrenal CT and/or adrenal vein sampling



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A Case of Acquired Factor VIII Inhibitor

Emily Emmet, DO PGY-3 AdventHealth
Family Medicine Residency

Introduction

Acquired hemophilia is a rare autoimmune disorder characterized by bleeding that occurs in patients with a personal or family history negative for hemorrhages. In acquired hemophilia, the body produces antibodies that attack clotting factors, most commonly factor VIII, which results in a prolonged PTT in the absence of other lab abnormalities. The incidence of acquired hemophilia A is about 0.2 to 1.48 cases per 1 million individuals per year. It has been associated with several clinical conditions, including pregnancy, autoimmune or collagen vascular disorders, malignancies, drugs, respiratory disorders and infections. Symptomatic patients often present with large hematomas, extensive ecchymoses, or severe mucosal bleeding, including epistaxis, gastrointestinal bleeding and gross hematuria. Interestingly, although spontaneous hemarthroses are common in congenital hemophilia A, they rarely occur in the acquired condition. The diagnosis of AH is confirmed by aPTT mixing studies, where a sample of blood is taken and mixed with blood from a control subject. In individuals with a factor deficiency, the control plasma restores the test value to normal; in individuals with a factor inhibitor, it does not.

Case Description

57-year old female with a past medical history of ER Positive, PR negative, Her2Neu positive breast cancer s/p neoadjuvant chemotherapy (PTCH x6), bilateral mastectomy, Herceptin x1 year, hypothyroidism and essential hypertension presented to clinic with excessive bruising, swelling and fatigue for three months duration. Patient had no known personal or family history of bleeding or clotting disorders but had heavy menses as a child with frequent nosebleeds. Physical exam revealed scattered ecchymosis in various stages of healing throughout upper and lower extremities. She had 3+ pitting edema bilaterally and suspected hemarthrosis of the right elbow. Vital signs were stable and patient was in no acute distress. Initial lab work revealed hemoglobin of 9.6, platelets of 265, Pt 12.8, INR 0.97, APTT 79.8. Further labs revealed a Factor VIII level of <1 and a Factor VIII inhibitor level of 18.9. Von Willebrand Factor activity was 165. Autoimmune workup including ANA, dsDNA, Smith Ab, CCP Ab, and rheumatoid factor were all negative. Hepatitis panel and cancer markers were negative. CT scan of the chest/abdomen/pelvis was negative for metastatic disease although there was interval increase of a 1.2cm right axillary lymph node as well as marginal increase in size of a 5mm right lower lobe nodule. She was treated with IV solumedrol, weekly rituximab, and seven doses of IVIG. Feiba and cytoxan were added to her regimen while inpatient. She was discharged on a prolonged steroid taper as well as cytoxan with improvement in her factor VIII levels and frequent monitoring by hematology.

Acquired Hemophilia A	Congenital Hemophilia A
More commonly identified in older individuals	More commonly identified in young children
No known genetic inheritance pattern. Males and female equally affected.	Sex-linked inheritance pattern. More common in males.
No correlation between measured FVIII level and severity of bleeding. Severe spontaneous bleeding may occur with FVIII levels >5%.	Severe spontaneous bleeding generally occurs with FVIII levels <1%.
Extensive hematoma/bruising common.	Extensive hematomas/bruising rare.
Hemarthroses are rare.	Hemarthroses are common.
Mortality is increased.	Mortality is not increased.

Discussion

Factor VIII inhibitor is a cause of acquired factor VIII deficiency resulting in Hemophilia A that can result in significant internal bleeding and bruising. Many times there is no identifiable cause, but treatment can be successful in reversing and binding the factor VIII inhibitor. Given our patient's history of malignancy, it was imperative to rule out recurrence as a possible cause of her acquired Hemophilia A, but workup was largely negative. The most common treatment regimen includes glucocorticoids +/- cyclophosphamide and +/- rituximab. An adequate response to therapy is a complete absence of the Factor VIII inhibitor and cessation of clinically significant bleeding. Our patient responded well to treatment with rituximab, IVIG, anti inhibitor coagulant and a prolonged steroid taper.

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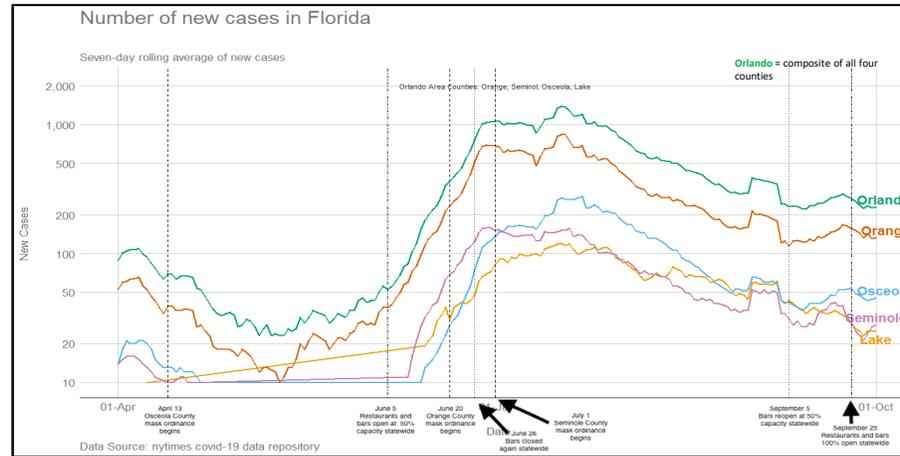
County Mask Ordinances, Restaurant Dining and Bars: Effects upon Orlando Metropolitan Area COVID-19 Case Rates

Eli Friedman, MD and Raj Mehta, MD
Advent Health Winter Park Family Medicine
Residency Program

Background

Coronavirus disease 2019 (COVID-19) is a respiratory disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Since the first case was discovered in Wuhan, China in early December 2019, the virus has spread worldwide and created the current ongoing pandemic. The response to COVID-19 in the United States began on January 31, 2020 when a public health emergency was declared, with the first COVID-19 deaths in the United States occurring in February 2020. On March 13, 2020 a national emergency was declared in the United States, and by the middle of April 2020, cases had been confirmed in all fifty states. COVID-19 is most commonly spread from close contact between people, with small droplets and aerosols from an infected person's nose and mouth spreading the virus. Symptoms of COVID-19 are highly variable but include fever, cough, fatigue, breathing difficulties, and loss of smell and taste. Infected individuals are often asymptomatic, so in order to prevent the spread of the virus from asymptomatic and pre-symptomatic individuals the World Health Organization and the United States Center for Disease Control and Prevention recommend the wearing of face masks to limit the volume and travel distance of respiratory droplets. For the purposes of this study, the Orlando Metropolitan Area is defined as Lake, Orange, Osceola and Seminole counties. Lake County did not pass a mask ordinance in response to COVID-19. Although some Florida cities passed mask ordinances in response to COVID-19, none elected to do so in the counties studied here. While mask ordinances vary in scope, they all generally require a person's mouth and nose to be covered while in public, and most make exceptions for patrons actively dining in restaurants and bars, exercising and sports participation, and children under two years of age. While mask ordinances in Florida were passed only at the city or county level, restaurant and bar closures were largely addressed at the state level, the Governor Ron DeSantis On September 25, 2020, Governor Ron DeSantis signed an executive order suspending COVID-19 related fines and penalties for individuals.

Case Positivity Rates and Mask Ordinances in Orlando Area Counties



Observations

Among the four counties in the Orlando metropolitan area, Osceola County passed the first mask ordinance effective April 13, 2020. At that time the initial "lockdown" was being widely observed and testing was not widespread. Restaurants were closed except for carry out; bars were closed. Although the number of new cases reported in Osceola County continued to drop following the beginning of the mask ordinance, case numbers in most of the other Orlando metropolitan area counties also continued declining. The relatively flat number of cases through early June 2020 in Lake, Osceola and Seminole counties may be related to the effectiveness of the "lockdown" and the relative unavailability of testing. In Orange County, home to multiple large hospital systems, there was likely superior access to testing early in the pandemic.

By June 20, 2020, when the Orange County mask ordinance became effective, new cases numbers had already begun to rise again. At the end of June, approximately ten days after the mask ordinance went in to effect, case numbers finally stopped rising and leveled out at over 500 cases a day. Around the same time, however, the other three counties also saw a leveling off of their new case counts.

Seminole County's mask ordinance became effective on July 1, 2020, and showed a steady number of cases followed by a gradual decline in new cases that began several weeks later. During this time the other three counties' followed a similar pattern to that of Seminole County, with falling new case rates.

In-restaurant dining and bar openings have an observational correlation with new cases numbers much more easily seen than the correlation with mask ordinances on the above graph. Following the opening on June 5 of restaurants and bars at 50% capacity, case numbers began to rise in all four counties studied. Case numbers did not begin to level out until shortly after June 26, when bars were again temporarily closed. On September 5, when bars were again allowed to reopen, new case numbers increased slightly.

Conclusions

Based upon the trends seen in the chart at the left, individual county mask ordinances likely have a small effect upon new case numbers in individual counties. In summer 2020, there appears to be a much stronger correlation between new case numbers and the open or closed status of restaurants and bars. By fall 2020, restaurants and bar reopenings had significantly smaller effects. This could be attributed to prior immunity of restaurant and bar patrons from earlier exposures, but it could also be a product of changed individual or society-wide behaviors such as avoidance of "superspreader" events. In addition, mask ordinances should be distinguished from mask efficacy, an area of high variability which could also have a considerable impact upon new case outcomes.

Mask ordinances alone are unlikely to have a significant impact upon new COVID-19 cases, but they may help to reinforce the importance of mask wearing to the general public. In-restaurant dining and bar openings, however, may be associated with a significant increase in new case numbers and warrant further study in this pandemic, as well as possible future pandemics.

Contact Information

Eli Friedman, MD – Advent Health Winter Park Family Medicine Residency Program, 133 Benmore Dr., Ste. 200, Winter Park, FL 32792
Eli.Friedman@adventhealth.com

Raj Mehta, MD – Advent Health Winter Park Family Medicine Residency Program, 133 Benmore Dr., Ste. 200, Winter Park, FL 32792
Raj.Mehta@adventhealth.com

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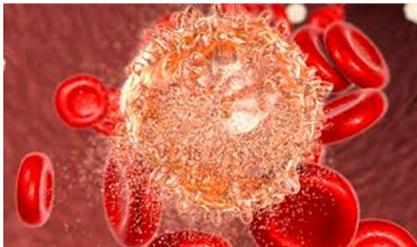
A Review of Hematologic Malignancies

Anusha Jagadish, DO. Raj Mehta, MD.

Introduction

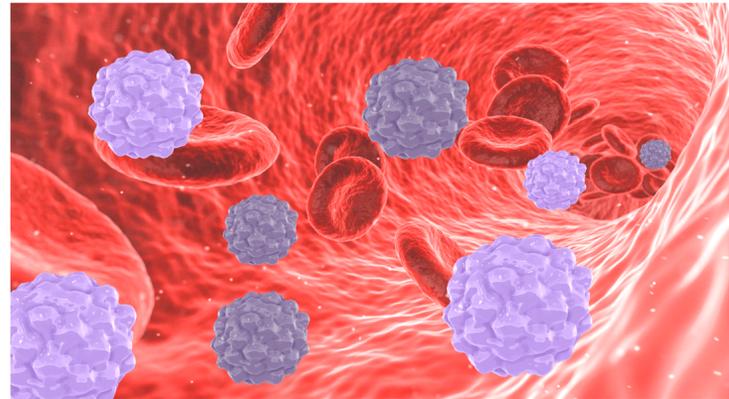
To discuss the epidemiology, symptoms, objectivity, treatment, and follow up of hematologic malignancies from a primary care perspective.

To explore the nature of multiple myeloma, myelodysplastic syndromes, and leukemia, and the signs and symptoms that may lead the family physician to consider a hematological malignancy in one's differential.



Contact Information

AdventHealth
Winter Park
Family Medicine Residency Program
O 407-646-7070



Results

There are certain tell-tale signs that fall under the malignancies reviewed. While multiple myeloma, myelodysplastic syndromes, and leukemia are different from one another, commonalities include malaise, fatigue, anemia, weight loss, infections and CBC abnormalities. If the ailment is discovered early in its disease course, the patient could be asymptomatic. Further evaluation for each of these disorders would include a peripheral blood smear and consulting with a hematologist/oncologist. Treatment varies for each of these disorders, but include hematopoietic stem cell transplant or chemotherapy, with specific recommendations made on an individual basis. Monitoring of labs and imaging for the rest of the patient's life is prudent to evaluate for the effects of treatment, the risk of relapse, or a secondary malignancy.

Conclusion

The characteristics between hematologic malignancies vary in nature with certain defining symptomatic similarities, and treatment and follow up is based on an individualized approach. It is in the family physician's best interest to have a good working knowledge and baseline understanding of hematologic malignancies since he/she is more often than not the initial provider to observe symptoms of a hematologic malignancy in a patient, review their initial labwork, and order further work up.

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Background

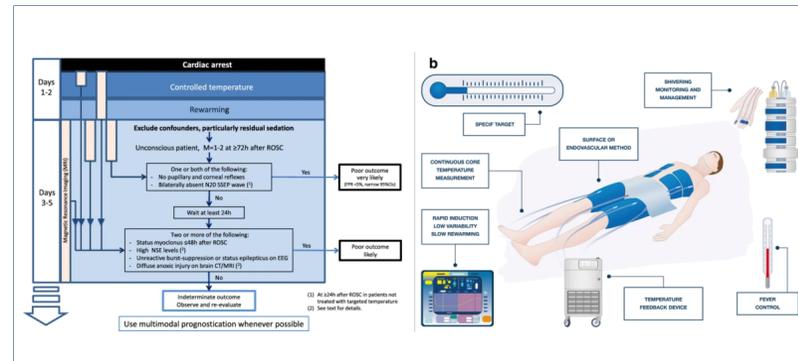
Presently 72 hours is the gold standard window of time to allow to lapse prior to prognostication in comatose patients after successful resuscitation efforts occur following cardiac arrest. In most scenarios, this is more than ample time to accurately diagnose Hypoxic-Ischemic brain injury (HIBI). This condition is hallmarked by loss of brainstem reflexes, abnormal activity on EEG, swelling or loss of grey-white differentiation on brain imaging to name a few.

Retrospective studies have demonstrated that failure to regain brainstem reflex or withdraw to pain after 72 hours are reliable in predicting unfavorable outcomes. Notable exceptions include sedatives, paralytics, hypothermia, severe electrolyte abnormalities, and so forth and must be eliminated when at all possible. Overall, the goal is to prevent withdrawal of care discussions and decrease clinician pessimistic bias.

Introduction

A patient was brought to the ICU after suffering cardiac arrest. Patient received immediate CPR and ROSC was obtained swiftly upon EMS arrival, however initial imaging and physical exam findings suggested devastating cerebral damage. Standard of care is that prognostication in claiming brain death cannot be performed prior to 72 hours, with ideal window for diagnosis between 72-120 hours. This case reiterates the need to adhere to evidence based standards of care to avoid coercion and bias from influencing family members/healthcare surrogates from making rushed decisions, specifically regarding the post cardiac arrest patients treated with hypothermia.

Figure 1-
Current Prognostication Algorithm, Components of High-quality TTM



Case Description

A young female adult arrives to ICU floor status-post cardiac arrest, with ROSC achieved after an estimated down time of 20-25 minutes. Patient was found down at home by family and had immediate CPR performed prior to emergency services arrival. Initial rhythm found by paramedics was documented as Ventricular Fibrillation, with ROSC achieved after 2 defibrillations. Early imaging suggested extensive and irreparable cerebral edema, including but not limited to, bilateral uncal herniation. Initial physical exam included absent cough, gag and corneal reflexes, decerebrate posturing and the patient was actively seizing upon arrival to ICU. All initial evaluation and imaging, including EEG, pointed towards a grim prognosis. Patient underwent therapeutic hypothermia for V. Fib cardiac arrest.

Approximately 48 hours after admission, patient's brain stem reflexes returned, and at 72 hours, patient was lucid, alert and following commands. Ultimately patient was extubated on Day 5 of her ICU admission. Neurologic imaging obtained after 5 days revealed several small strokes but no cerebral edema or herniation. Patient was officially discharged 11 days after her hospitalization, and after subsequent AICD placement.

Discussion

Anoxic brain injury is a well documented, well-known complication that often accompanies cardiac arrest. Initial physical exam, imaging, EEG as well as subsequent evaluation and repeat diagnostic procedures at 24 hour intervals can be relatively reliable at predicting poor outcomes, even from the first initial follow-up exam. That being said, patients who have undergone V fib arrest and had ROSC achieved, who then subsequently underwent therapeutic hypothermia were noted to follow a different paradigm that was consistent and led to a different set of criteria.

One of the most notable difference is that absent motor responses to stimuli on day 3 after ROSC is generally considered synonymous with poor outcomes, but are unreliable in hypothermic patients, requiring more delayed prognostication. The learned objective here is that post-hypothermic ROSC patients often require closer to 120 hours of observation prior to attempted prognoses being made. This case highlighted that all physicians should strive to uphold standards as well as preventing general biases from interfering with patient centered care. In a world where evidence based medicine is constantly evolving, this case equally highlighted the importance to be constantly aware of minute differences between cases that can drastically change clinical outcomes and objectives.

Contact Information

Morgan Nichols, MD is currently a PGY 3 Family Medicine resident at AdventHealth Allopathic Family Medicine Residency Program in Winter Park, FL

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Glucose Management of Non-critically Ill Diabetic Patients Receiving Steroid Therapy

Tariq Patel, MD

Introduction

Glucocorticoids are widely prescribed anti-inflammatory and immunosuppressive drugs to treat a wide range of diseases most with the common side effect being hyperglycemia.

Hyperglycemia has been shown to negatively affect hospital outcomes, even in those without diabetes with a 16% in-hospital mortality rate for those patients with new hyperglycemia compared with an in-hospital mortality rate of only 1.7% for those with normal glycemic control. (P < 0.001)¹

Currently there is little guidance offered by the ADA or other authoritative bodies with respect to glucocorticoid therapy and glycemic management. The lack of official direction appears to stem from the lack of RCT trials investigating this topic. One could postulate that the frequency of those with T2DM concurrently requiring steroid therapy was previously a low occurrence.

However with the emergence of COVID19 the need for understanding prospective glycemic control is paramount.

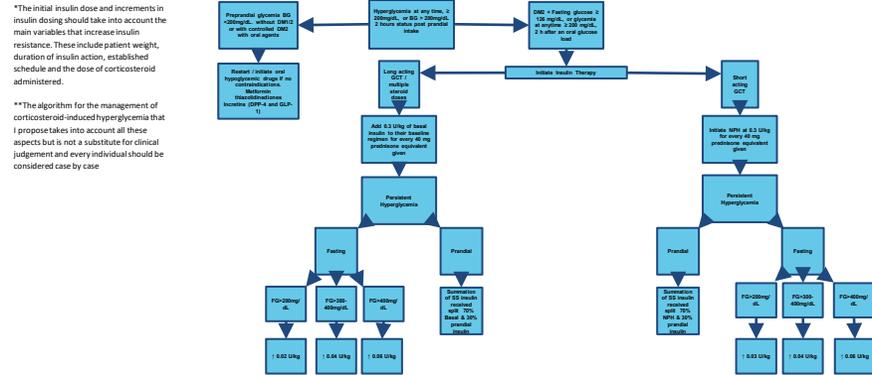
Diagnostic Criteria⁴

- Insulin therapy should be initiated for treatment of persistent hyperglycemia starting at a threshold ≥ 180 mg/dL. Once insulin therapy is started, a target glucose range of 110–180 mg/dL is recommended **A**
- More stringent goals, such as 110–140 mg/dL, may be appropriate for selected patients, if this can be achieved without significant hypoglycemia. **C**
- Basal insulin or a basal plus bolus correction insulin regimen is the preferred treatment for noncritically ill An insulin regimen with basal, prandial, and correction components is the preferred treatment for noncritically ill hospitalized patients with good nutritional intake. **A**
- Sole use of sliding scale insulin in the inpatient hospital setting is strongly discouraged. **A**
- Diagnosis of steroid induced hyperglycemia is hyperglycemia at any time, ≥ 200 mg/dL, or BG > 200mg/dL 2 hours status post prandial intake after initiation of GCT. **A**

Literature Review

A literature search of MEDLINE/PubMed (2000 to March 2021) was conducted using the search terms steroid, glucocorticoid, corticosteroid, hyperglycemia, and diabetes as well via review of literature citations.

Proposed Prospective Treatment Algorithm



Pharmacodynamic Properties of Insulins and Synthetic Cortisol Derivatives⁵

Glucocorticoid	Potency (dose)	Duration of half life (hr)	Potency and half-life of steroids				Pharmacokinetics of Commonly Used Glucocorticoids	
			Rapid Acting	Short Acting	Intermediate Acting	Long acting / Basal insulin	Prednisone and Methylprednisone	Dexamethasone
Hydrocortisone	25 mg	8 hr					Peak plasma Concentration	1 hour
Prednisolone	5 mg	16 – 36 hr					Elimination of half – life	2.5 hours
Methylprednisolone	4mg	18 – 40 hr					Glycemic profile	
Dexamethasone	0.75 mg	36 – 54 hr					Onset	4 hours
Betamethasone	0.7						Peak	8 hours
								24 – 36 hours
Medication	Aspart Lispro Glulisine	Regular Insulin	NPH	Gargine Detemir Degludec				
Onset (min)	10-15 min	30-60 min	60-120 min	60 – 300 min				
Peak (hours)	1 hours	2-4 hours	3-8 hours	No true peak				
Duration (hours)	3-4 hours	6-8 hours	12-15 hours	22-48 hours				

Study Reviews

Ant i- Gly ce mic age nt	RCT Primary Outcomes
DP P4 inhib itors	H van Raalte et al. demonstrated treatment with the glucagon-like peptide receptor agonist exenatide prevents prednisone induced glucose intolerance. During the study the exenatide restored GC impaired b-cells and significantly improved a number of variables such as decrease in plasma insulin levels and improved glucose tolerance relative to the control. ² Another retrospective cohort study of 15 patients with T2DM on chronic glucocorticoid therapy. Initiating sitagliptin was associated with an improvement in mean blood glucose from baseline (121 vs 195 mg/dL, P = 0.004), lower A1C (6.5% vs 7.6%, P < 0.001), and lower mean total body weight (58.9 vs 61.6 kg, P = 0.001).
NP H Ins ulin	Gerards et al. aimed to compare the effectiveness and safety of NPH vs SSI on patients receiving recurrent high dose glucocorticoid-containing chemotherapy. The study was low powered, enrolling 26 patient. Findings revealed that glucose values were in the target range 34.4% of the time when using NPH compared to 20.9% when using SSI (difference 13.5% ± 19.1, p < 0.001). There was an overall reduction of total daily insulin, 40.3 units, compared to 26 unit. It was also noted that glucose levels were lower during treatment at each time point compared to SSI ³
Lon g Acti ng Bas al Ins ulin	Kowaja et al performed a randomized, prospective, non-blinded study where patients received NPH insulin based on their weight compared to control patients in the control arm who were continued on basal insulin + correction scale. Primary outcome revealed glucose was lower in the intervention group than the usual care group [226.12 vs 268.57 mg/dL, respectively, (95% CI for difference - 63.195 to - 21.695), p < 0.0001. Significant differences in mean glucose level were noted at fasting [170.96 vs 221.13 mg/dL, respectively, (95% CI for difference - 72.70 to - 27.63), p \ 0.0001] and prelunch [208 vs. 266.48 mg/dL, respectively, (95% CI for difference - 86.61 to - 30.36), p \ 0.0001] but not pre-dinner [283.17 vs. 307.77 mg/dL, respectively ⁴
Lak hani et al	conducted a randomized, open-labeled, parallel arm trial. The study was underpowered with only 67 patients of which 33/67 were in the experimental group and 34/67 patients in the control group. The mean blood glucose when comparing the experimental group vs the control group was 170.32 ± 33.46 mg/dl and 221.05 ± 49.72, respectively (P = 0.0001). The variability was significantly lower when comparing the experimental vs the control group with comparable hyperglycemic incidences. ⁴
Lon g Acti ng Bas al Ins ulin Plus Prandi al Ins ulin	Brady et al, used a multi-dose insulin approach at 1–1.2 units/kg/day distributed 25% to basal and 75% to prandial over 3 meals. Almost all patients had better glycemic control compared to the normative therapy. 9 of the 23 patients had at least one glucose value <70 mg/dL, which accounted for 1.3% of all recorded glucose values and none of the patients had severe hypoglycemia. This was a small, low powered study, done with high dose steroids and not readily generalizable, but they did show the use of adding an insulin regimen to non-diabetic patients receiving steroids as a potential form of therapy. ⁷

and treatment of steroid diabetes are needed in order to prevent complication and poor future outcomes.

Contact Information

Tariq Patel MD
AdventHealth - AdventHealth Medical Group Family Medicine at Winter Park
133 Benmore Drive Suite 200, Winter Park FL



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Introduction / Background

The eligibility criteria for thrombolytic therapy may differ between acute ischemic stroke patients (AIS) with and without incidence of obstructive sleep apnea (OSA). In this study, we determine the effect of specific comorbidities in the exclusion and inclusion for recombinant tissue plasminogen activator (rtPA) administration in the AIS population with OSA.

Methods

Retrospective data from a stroke registry was analyzed for baseline clinical and demographic factors in AIS patients with OSA for rtPA therapy from January 2010 to June 2016. The logistic regression model was developed to identify each of the variables predicting inclusion for or exclusion from rtPA. We estimated the odds of the inclusion or exclusion of a particular demographic and clinical risk factor in AIS with and without OSA for tPA therapy. The validity of the model was tested using a Hosmer-Lemeshow test and the sensitivity of the model was determined using a Receiver Operating Curve (ROC).

Results

A total of 170 AIS patients with OSA were identified, of which, 125 did not receive rtPA while 45 received rtPA. Adjusted analysis showed that in the AIS population with OSA, administration of rtPA was associated with a history of dyslipidemia (OR=3.192, 95% CI, 1.148-8.88, p=0.026), direct admission into a Comprehensive Stroke Center (OR=3.248, 95% CI, 1.06-9.95, p=0.039), and ambulatory improvement (OR=3.556, 95% CI, 1.428-8.86, p=0.006). There were no significant factors associated with rtPA exclusion in the AIS population with OSA.

Conclusion

The prevalence of OSA in our AIS population was low and no clinic risk factor was associated with the exclusion of patient with AIS and OSA from thrombolytic therapy. Future studies are necessary to explore the effect of OSA in AIS patients to improve eligibility for rtPA therapy for more patients.

Table 2:

Charlert score	NO Sleep Apnea			Sleep Apnea			P-Value
	no OSA	rOSA	no rOSA	OSA	AS	AS	
Number of patients	4,817	3,282		325	45		
Age Group: No. (%)							
<50 years	459 (11.4)	185 (14.4)	0.001**	8 (6.4)	0 (0.0)	0.237	
50-59	709 (17.5)	254 (19.7)		33 (29.4)	7 (15.6)		
60-69	948 (23.9)	506 (24.9)		35 (29.4)	10 (22.2)		
70-79	969 (23.6)	272 (21.2)		33 (28.4)	17 (37.8)		
>=80	998 (24.8)	264 (20.6)		18 (14.4)	5 (11.1)		
Age Mean ± SD	67.77 ± 14.77	65.74 ± 14.82	<0.001**	66.25 ± 11.76	66.51 ± 13.77	0.906	
Sex: No. (%)							
White	3,323 (77.7)	1,023 (79.7)	0.302	107 (85.6)	18 (40.4)	0.851	
Black	756 (18.8)	228 (17.2)		18 (14.4)	7 (15.6)		
Other	340 (8.5)	39 (3.0)		0 (0)	0 (0)		
Race: No. (%)							
Female	2,398 (57.7)	640 (49.9)	0.15	50 (40.0)	19 (42.2)	0.795	
Male	1,519 (37.8)	642 (50.1)		75 (60.0)	26 (57.8)		
Hispanic: No. (%)	55 (1.4)	30 (2.3)	0.016**	0 (0)	0 (0)		
Hispanic Mean ± SD	27.99 ± 6.87	28.66 ± 6.76	0.002**	34.33 ± 6.76	33.95 ± 7.31	0.797	
Medication History: No. (%)							
Aspirin	684 (17.0)	302 (23.2)	0.228	29 (23.2)	9 (20.0)	0.639	
Controlled Hypertension	1,208 (30.7)	382 (29.3)	0.832	54 (43.2)	17 (37.8)	0.527	
Controlled Artery Hypertension	257 (6.6)	54 (4.2)	0.001**	11 (8.8)	2 (4.4)	0.346	
Hyperlipidemia	458 (11.4)	179 (14.0)	0.014**	58 (46.4)	76 (16.7)	0.891	
Diabetes	1,450 (36.3)	386 (30.1)	<0.001**	70 (56.0)	29 (64.4)	0.325	
Weight or Alcohol	753 (19.3)	24 (5.8)	0.496	7 (5.6)	3 (6.7)	0.794	
Hypertension	1,373 (34.9)	605 (46.7)	0.099	84 (67.2)	37 (82.2)	0.056	
Weight Family History	345 (8.6)	138 (10.6)	0.127	19 (15.2)	2 (4.4)	0.06	
Heart Failure	430 (10.7)	126 (9.8)	0.578	23 (18.4)	11 (24.4)	0.385	
Stroke or Reperfusion Therapy	45 (1.1)	30 (2.3)	0.013**	1 (0.8)	0 (0)	0.946	
Hypertension	3,351 (78.4)	1,001 (76.3)	0.785	111 (88.8)	43 (95.6)	0.383	
Diabetes	1,212 (30.7)	42 (3.1)	0.014**	7 (5.6)	3 (6.7)	0.794	
Cholesterol	1,520 (37.8)	639 (49.8)	<0.001**	113 (90.4)	19 (42.2)	0.485	
Previous Stroke	1,392 (34.2)	282 (21.0)	<0.001**	42 (33.6)	8 (17.8)	0.046**	
Previous TIA (>24 hours)	323 (8.0)	139 (10.8)	0.027**	11 (8.8)	4 (8.9)	0.986	
Previous MI	52 (1.3)	30 (2.3)	0.136	0 (0)	0 (0)		
Previous Cerebral Aneurysm	307 (7.8)	76 (5.9)	0.164	16 (12.8)	3 (6.7)	0.444	
Current Heart Disease	344 (8.6)	24 (5.8)	0.011**	24 (19.2)	3 (6.7)	0.216	
Smoker	1,379 (34.9)	382 (29.3)	0.041**	19 (15.2)	6 (13.3)	0.767	
Medication History: No. (%)							
Antiplatelet	7,752 (88.5)	904 (70.5)	0.176	99 (79.2)	19 (42.2)	0.777	
Cholesterol Medication	1,729 (43.0)	604 (46.9)	0.010**	67 (53.2)	14 (31.1)	0.075	
Diabetes Medication	1,208 (30.7)	382 (29.3)	0.014**	58 (46.4)	76 (16.7)	0.425	
Aspirin resistant	433 (10.8)	196 (15.4)	<0.001**	56 (44.8)	24 (53.3)	0.325	
Lab values: Mean ± SD							
Total cholesterol	173.10 ± 53.73	167.62 ± 46.41	0.008**	170.50 ± 49.34	168.81 ± 46.82	0.449	
Triglycerides	38.75 ± 104.54	54.03 ± 108.8	0.718	154.41 ± 90.91	160.62 ± 71.69	0.698	
HDL	41.91 ± 11.95	41.96 ± 13.70	0.908	37.78 ± 12.15	37.21 ± 11.15	0.798	
LDL	105.41 ± 42.10	102.69 ± 39.11	0.042	104.69 ± 40.69	97.72 ± 38.11	0.333	
Lipids	6.62 ± 6.84	6.28 ± 1.50	<0.001**	7.09 ± 2.10	6.77 ± 1.86	0.454	
Blood Glucose	148.85 ± 83.08	144.24 ± 72.06	<0.001**	180.74 ± 76.46	174.09 ± 128.61	0.523	
Serum Creatinine	1.14 ± 1.28	1.14 ± 0.75	<0.001**	1.17 ± 1.03	1.26 ± 0.55	0.491	
Weight: Mean ± SD	1.17 ± 0.57	1.16 ± 0.85	<0.001**	1.19 ± 0.48	1.16 ± 0.34	0.006**	
Heart Rate	82.07 ± 18.99	81.88 ± 17.7	0.736	82.05 ± 17.17	79.91 ± 14.10	0.458	
Blood Pressure Systolic	152.14 ± 29.91	144 ± 26.86	0.258	147.00 ± 31.22	156.24 ± 28.23	0.083	
Blood Pressure Diastolic	82.33 ± 19.29	82.95 ± 18.71	0.328	80.84 ± 21.76	82.78 ± 21.07	0.606	
Adjusted on Status for no. (No. (%))							
Adjusted on Status for no. (No. (%))	3,519 (87.6)	1,216 (49.9)	<0.001**	109 (87.2)	43 (95.6)	0.358	
Adjusted on Status with Acetaminophen	177 (4.4)	27 (2.1)		7 (5.6)	0 (0)		
Adjusted on Status with Aspirin	115 (4.6)	19 (1.5)		7 (5.6)	1 (2.2)		
Adjusted on Status with Beta-blocker	114 (3.3)	25 (2.0)		6 (4.8)	0 (0)		
Adjusted on Status on Admission: No. (%)							
Adjusted on Status on Admission: No. (%)	1,357 (26.3)	222 (17.3)	<0.001**	42 (33.6)	10 (22.2)	0.554	
Adjusted on Status on Admission: No. (%)	1,221 (31.5)	290 (22.6)		59 (47.2)	16 (35.6)		
Adjusted on Status on Admission: No. (%)	1,213 (30.7)	468 (36.2)		14 (11.2)	16 (35.6)		
Adjusted on Status on Admission: No. (%)	466 (11.8)	107 (8.2)		8 (6.4)	3 (6.7)		
Adjusted on Status on Discharge: No. (%)							
Adjusted on Status on Discharge: No. (%)	1,458 (36.3)	638 (49.8)	<0.001**	58 (46.4)	20 (44.4)	0.373	
Adjusted on Status on Discharge: No. (%)	1,435 (35.7)	136 (10.5)		11 (8.8)	18 (40.0)		
Adjusted on Status on Discharge: No. (%)	823 (20.5)	257 (19.9)		25 (20.0)	5 (11.1)		
Adjusted on Status on Discharge: No. (%)	312 (7.5)	31 (7.3)		11 (8.8)	2 (4.4)		
Emergency Department	1,179 (30.1)	979 (76.7)	0.012**	106 (85.5)	33 (73.3)	0.184	
Emergency Department	797 (20.1)	296 (23.3)		18 (14.4)	11 (24.4)		
Emergency Department	1,210 (29.7)	668 (51.5)	<0.001**	31 (27.0)	21 (46.7)	0.009**	

Table 2

Demographic and clinical characteristics of ischemic stroke patients stratified by use of rtPA with or without presence of obstructive sleep apnea (OSA). Results for continuous variables are presented as Mean ± SD, while discrete data are presented as percentage frequency. Pearson's Chi-Square is used to compare differences between demographic and clinical characteristics in groups with or without rtPA use in acute ischemic stroke patients.

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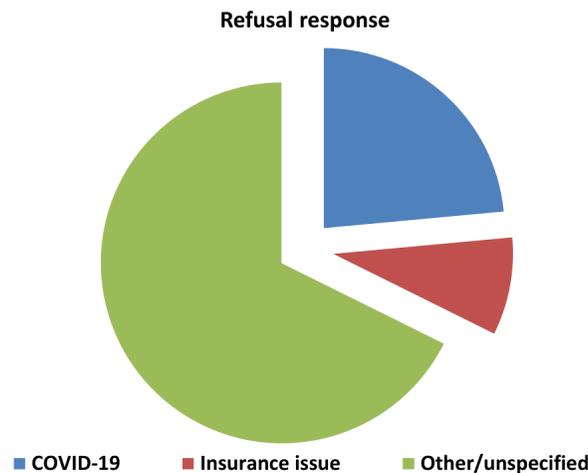
Is Detection of Hypermethylated Septin 9 DNA the “Test of Choice” for the Non-Adherent Unscreened?

Marni Venter, MD; Meade Wallman;
Alexander Fishberg

Background
<ul style="list-style-type: none"> In the United States, colorectal cancer (CRC) is the 3rd most common cancer as well as the 3rd leading cause of cancer death¹ Rapid declines in CRC incidence have tapered since the early 2000s during widespread adoption of colonoscopy² Current screening modalities include colonoscopy (gold standard), sigmoidoscopy, stool-testing (gFOBt, FIT, FIT-DNA), computed tomography colonography, blood-based markers³ 1/3 eligible patients are non-adherent with recommended CRC screening guidelines⁴ In 2016, FDA approved Epi proColon, a blood test detecting hypermethylated Septin 9 DNA, as a screening modality for patients at average risk, ≥ 50 years of age, and unable or unwilling to attain recommended modalities⁵ Epi proColon has equivalent sensitivity 68% to FIT⁶, and an 80% specificity Previously 83% of patients non adherent to colonoscopy preferred blood-based testing over 16% FIT⁷
Purpose
<p>The purpose of this study was to determine if patients non-compliant with colonoscopy would be more adherent with a blood test, such as Epi proColon, for colorectal cancer screening</p>

Methods
<ul style="list-style-type: none"> Inclusion criteria for the study included patients at average risk for CRC and non-adherent to colonoscopy Demographics collected included age and gender Patients were contacted, offered the Epi-proColon Test and response recorded Epi-proColon Test completion and results were recorded
Results
<ul style="list-style-type: none"> Two hundred and five (n=205), 84(40.98%) males and 121(59.02%) females, were recruited for this study Ages: 69 (33.66%) participants < 50 years of age; 124(60.49%) participants 50-75 years of age; 12 (5.85%) participants > 70 years of age Of the 205 patients contacted; 83 were unreachable, 2 rescheduled colonoscopy and 102 Epi proColon Tests ordered 1 Epi proColon Test completed; resulting negative Approximately 1/3 of patients who indicated no interest in testing referenced COVID-19 pandemic

Conclusions
<ul style="list-style-type: none"> We could not replicate previously published outcomes for nonadherent patients' acceptance of blood-based colorectal screening We believe the COVID-19 pandemic has affected compliance for simple blood work



Contact Information
marni.venter.md@adventhealth.com
References
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Introduction

Retinal Detachment (RD) is a rare ocular emergency that requires a high clinical suspicion, speedy diagnosis, and prompt follow up with an Ophthalmologist. Per the Centers of Disease Control and Prevention Morbidity and Mortality Weekly Report, May 2013, between the years of 2007-2010, there was an average of 2.4 million eye related emergency department visits per year.¹ The 2010 Nationwide Emergency Department Sample Database, which tracks emergency department visits by ICD9 codes, ophthalmic visits (more specifically retinal disorders) accounted for 0.9% of all emergency department visits.²

Chief Complaint

I cannot see out of my right eye.

History of Present Illness

This is a 66-year-old female with past medical history of diabetes, hypertension, and hyperlipidemia presenting to the emergency department with 29 hours of atraumatic right eye visual field loss. Patient reports she was driving her car when she suddenly witnessed a "small wave of darkness and flashing lights" occlude her vision similar as her eyelid covering her eye. No preceding ocular trauma, sudden movements, or strain reported. No associated eye pain, headache, or other focal neurological deficits noted by the patient.

Physical Exam

Constitutional: Anxious, well nourished

Head: Atraumatic; normocephalic

Eye exam: Complete visual deficit in the right eye from the 11 o'clock position to the 2 o'clock position, pupils are equal, round, and reactive to light, extraocular movements are intact, normal lids, no ptosis, normal conjunctiva, cornea clear, normal iris, no fluorescein uptake, intraocular pressures normal bilaterally, no evidence of trauma, sclera noninjected, Fundoscopic exam not tolerated by patient, and visual acuity OD: limited OS: 20/20 with corrective lenses

Neuro: Alert and oriented to person, place, time, and situation, 5/5 strength and sensation to the bilateral upper and lower extremities, and face, no facial droop, normal speech, normal coordination and gait. Otherwise, normal physical exam

No labs were drawn

Point-of-Care Ultrasonography

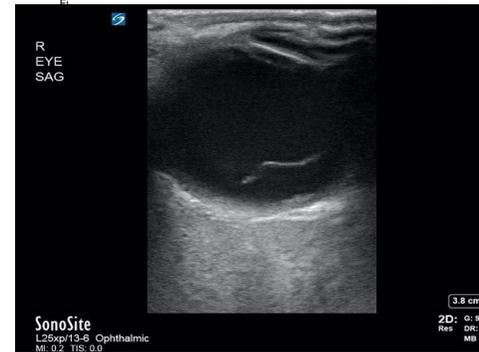


Figure 1,2,&3: Point of care ultrasound (POCUS) demonstrating a hyperechoic linear abnormality floating in the vitreous humor in the patient's affected eye--consistent with RD.

Clinical Course

PoCUS: bright, echogenic mobile continuous linear density within the vitreous, no foreign body, no increase in size or echogenicity of the lid, normal diameter of optic nerve sheath, normal lens

Ophthalmology was consulted, an appointment was secured for the patient early in the morning, and patient was discharged with ophthalmology follow up.

Discussion

-RD generally presents as painless monocular vision loss with preceding flashing lights and floaters

-Spontaneous occurrences likely due to aging vitreous contracting and tugging on retina causing tear and dissection

-Risk factors: near sightedness, hx of eye surgery, glaucoma, cataracts, previous history RD³

-Differential Diagnosis for RD: vitreous hemorrhage, central retinal arterial occlusion, central retinal vein occlusion, choroidal mass⁴

-POCUS aids in diagnosing posterior segment abnormalities⁵

-2 types: macular region of retina is attached (mac-on) or separated (mac-off, worse prognosis) which changes the urgency of the situation

Pearls

-DDx for painless monocular vision loss includes vitreous hemorrhage, retinal detachment, CRAO, CRVO, posterior vitreous detachment, and choroidal mass

-Hallmark symptoms of RD include floaters, flashes of light, and curtain like effect upon vision loss

-POCUS can be useful in evaluation of urgent eye conditions in the ED

-Once RD is diagnosed, prompt ophthalmology consultation is warranted

Resources:

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Misty Coello, MD
Ricardo J. Hernandez, MD
Amanda Roycik, MD

Introduction

Cryptococcus is usually seen as a systemic opportunistic mycosis. Primarily occurring among adult patients with significant immunologic impairment. It is rarely seen in the pediatric population and even less in immunocompetent pediatric patients. Most of the data has been recorded from cases and studies also mostly reported outside of the United States. There has not been that many cases reported in the United States of cryptococcus meningitis in a healthy immunocompetent

Presentation

HPI: 10-year-old male with no PMH and vaccines up to date presents to the ED for altered mental status and headache. On the day of presentation, patient woke up with worsening headache with episodes of nausea and emesis. Patient was incoherent and confused. Emergency medical services reports on route patient became more irritable and aggressive. In the ED he was confused, responding to internal stimuli. He was able to be reoriented but required constant reorientation

VS: Within normal limits, except for tachycardia

PE: No nystagmus, able to follow simple commands, but unable to follow complex commands. Good strength, and normal sensation on all extremities and face. No nuchal rigidity. Confused, responding to active hallucinations.

Plan: Discussed with mother to obtain laboratory, imaging, lumbar puncture and admission due to acute changes in neuro status.

Laboratory and Imaging

CBC, CMP, Ammonia levels, Acetaminophen, Salicylate, Ethanol, Urine toxicology, and CT where unremarkable

CSF Analysis

CSF Tube Number	3	CSF HSV 1 PCR Qual	NOT DETECTED
CSF Color	COLORLESS	CSF HSV 2 PCR Qual	NOT DETECTED
CSF Clarity	CLEAR	CSF E coli K1 PCR	NOT DETECTED
CSF Nucleated Cells	* 4	CSF H influenza PCR	NOT DETECTED
CSF RBCs	H 340	CSF L monocytogenes PCR	NOT DETECTED
CSF Xanthochromia	NEGATIVE	CSF N meningitidis PCR	NOT DETECTED
CSF Neutrophils	H 9	CSF S agalactiae PCR	NOT DETECTED
CSF Lymphocytes	78	CSF S pneumoniae PCR	NOT DETECTED
CSF Monocytes	7	CSF CMV PCR	NOT DETECTED
CSF Eosinophils	0	CSF Enterovirus PCR	NOT DETECTED
CSF Macrophages	6	CSF HSV 1 PCR	NOT DETECTED
		CSF HSV 2 PCR	NOT DETECTED
CSF Glucose	58	CSF Herpesvirus 6 PCR	NOT DETECTED
CSF Protein	20	CSF Parechovirus PCR	NOT DETECTED
CSF NMDA Receptor Ab	* < 1:1	CSF Varicella zoster PCR	NOT DETECTED
CSF Aquapor 4 Rec IgG	* < 1:1	CSF Cryptococcus PCR	* a DETECTED
Fresh Water Exposure?	UNKNOWN	CSF Meningo/Enceph Pnl Comment	* CSF ME PCR PANEL COMMENT
		HSV PCR Qual Src	CEREBROSPINAL FLUID
		CSF Cult w GS	CSF Cult w GS

Disposition

Patient was admitted to the pediatric unit and was subsequently started on Amphotericin B, Rocephin, and flucytosine for treatment for cryptococcus. During his stay, several other testing were performed.

Further Test during Admission: COVID-19 PCR, TSH, anti-TPO antibody, ammonia level, UDS, Rheumatoid Factor, ANA, SSA antibody, SSB antibody, NMDA antibody, Aquaporin 4 IgG, Vit. B12, folate, ceruloplasmin, copper, CMV, EBV, Mycoplasma which all were unremarkable. Patient was also evaluated and rule out for acute psychosis.

Patient stayed in the hospital for 10 days and at the time of discharge was back to his cognitive baseline and with no neurological deficits.

Discussion

During his presentation, a broad range of differential diagnoses and testing was considered and performed for the child. Physicians in the emergency department are used to keep a broad differential diagnosis to have higher sensitivity to catch disease. However, even taking that into consideration, their first thought is not cryptococcus meningitis. The reason lies in cryptococcus being an opportunistic fungus targeting those who are immunocompromised. In addition, data that has been seen in immunocompetent individuals has not been broadly in the United States. These studies have been mostly done in Brazil, Colombia, and China.

Conclusion

We must create awareness and alert general pediatricians, family and emergency physicians to consider cryptococcus infections as a possible cause of meningitis; especially in healthy pediatric patients with no explanation of AMS who resides in the United States

Contact Information

Misty Coello, M.D, PGY-3 Emergency Medicine Advent Health Program
misty.coello.md@adventhealth.com
Ricardo Hernandez, PGY-2 Emergency Medicine Advent Health Program
Ricardo.Hernandez.md@adventhealth.com

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Do ED Residents have as much Attention Deficit Hyperactivity Disorder as they claim?

Misty Coello, M.D
 Bob Cambridge, D.O, MPH
 Yuan Du, M.S Biostatistician

Introduction

One of the appeals for medical students to join the specialty of emergency medicine (EM) is the great variety on the day to day. Emergency medicine equips them with a great variety of patients from many different walks in their lives. If you talk to an emergency medicine resident about why they chose emergency medicine as a field, you might hear them talk about the challenge of managing multiple patients or the excitement of not knowing what is coming through the door next. One of the challenges that come with the specialty is the intense multitasking as well as countless interruptions. However, many medical students and residents claim these are strengths to their certain ADHD personality traits. Which has led to be postulated by attendings that ED residents have some degree of ADHD and that it may explain why we all ended up in emergency medicine rather than other fields. However, there has not been any documented studies whether these traits significantly exist in emergency medicine physicians.

Methods

A prospective non-randomized research study was performed by administering an e-mail linked survey constructed using two adult self-reporting ADHD exams. The validated Adult ADHD Self-Report Scale (ASRS-v1.1) and the scalable Jasper/Goldberg (JG) Adult ADD Test. Surveys were sent to all accredited residency training programs for 16 different specialties. In total there were 4300 responses. When excluding responses that were not complete or met exclusion criteria there were 3421 responses

Subject Characteristics Table

Table 1.1 Subject comparison by EDprogram

Variable	Non-ED Program	ED Program	P-value
	Median (IQR)/ Freq (%)		
JS Score	20(12-31)	24(16-36)	<0.0001
ASRS	2(1-3)	2(1-3)	<0.0001
Sex	Female	203(10.8)	0.0004
	Male	229(14.87)	
Age Range			0.6246
	21-25	63(90)	
	26-30	2012(86.87)	
	31-35	684(88.6)	
	36-40	148(86.55)	
	41-45	55(87.3)	
	46-50	13(81.25)	
JG70	51+	12(100)	0.0044
	0	2955(87.53)	
ASRS4	1	33(73.33)	0.0018
	0	2535(88.11)	
	1	453(83.27)	

Multiple Logistic Regression Tables

Table 4.1 Multiple logistic regression to examine the EDprogram effect on JS Score (n=3419)

Variable	Estimate	Adjusted Odds Ratio (CI)	P-value
Sex Female vs Male	0.085	1.185(0.652,2.156)	0.5775
Edprogram 1 vs 0	0.4773	2.598(1.328,5.081)	0.0053
Edprogram unadjusted Odds Ratio (CI): 2.5524(1.308,4.9807)			

Table 4.2 Multiple logistic regression to examine the EDprogram effect on ASRS Score (n=3419)

Variable	Estimate	Adjusted Odds Ratio (CI)	P-value
Sex Female vs Male	-0.2208	0.643(0.535,0.773)	<.0001
Edprogram 1 vs 0	0.1816	1.438(1.116,1.852)	0.005
Edprogram unadjusted Odds Ratio (CI): 1.489(1.1575,1.9155)			

Results

It was found that residents who are in the field of emergency medicine will have a higher rate/degree of ADHD symptoms than residents in other specialties. It had a significant effect on JG score (≥ 70 vs < 70) with p-value 0.0053 and Odds Ratio 2.598(1.328,5.081) with sex held at constant. Also, it has significant effect on ASRS score (≥ 70 vs < 70) with p-value 0.005 and Odds Ratio 1.438(1.116,1.852) with sex held at constant.

Conclusion

The claim that residents in emergency medicine have more ADHD than other specialties in general, holds some validity.

Contact Information

Misty Coello, M.D, PGY-3 Emergency Medicine Advent Health Program
misty.coello.md@adventhealth.com
 Bob Cambridge D.O, PI Faculty, Critical Care Advent Health
Robert.Cambridge.DO@AdventHealth.com

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Introduction

Percutaneous coronary intervention (PCI) while therapeutic carries its risks, one rare complication being coronary artery perforation. Factors that increase the risk of perforation during PCI include larger balloon angioplasty, guide wire perforation, and stent placement.⁵ The incidence of coronary artery perforation ranges from 0.1% to 0.7% but mortality is as high as 7-17%.⁴ A major complication due to coronary artery perforation is pericardial effusion and tamponade. Due to delayed bleeding, patients may develop late-presenting tamponade that can be seen up to 9 days post PCI.⁵ This can result in significant mortality with increased long-term complications.¹

Initial presentation

A middle-aged male presented to the ER one evening complaining of palpitations that started in the afternoon. His heart rate on his home monitor ranged from 160-180 bpm prior to arrival. The patient was 13 days out from PCI after suffering a STEMI where two drug-eluting stents were placed within the LAD. The patient reported compliance with anti platelet and antibiotic therapy after found to be COVID positive prior to the procedure, though he was asymptomatic.

Upon arrival to the ED, the patient was noted to be in atrial fibrillation with rapid ventricular response on initial EKG. The patient's vitals were stable and IV boluses of Diltiazem and Metoprolol were given for rate control. Shortly after, the patient remained in Afib with RVR, and an Amiodarone drip was started for rate control.

Findings

Chest X-ray: acutely, significantly enlarged cardiac silhouette compared to imaging from 10 days prior, concerning for pericardial effusion or acute congestive heart failure

Point of care thoracic ultrasound: moderate to large pericardial effusion with partial collapse of the right ventricle

CT Chest: large hemorrhagic pericardial effusion with near-tamponade physiology.

Transthoracic Ultrasound



Figure 1:
Point of care thoracic ultrasound showing large pericardial effusion

Case Progression

Thoracic surgery and Cardiology consulted; patient was emergently transferred to the main hospital and underwent surgery for a pericardial window after formal trans thoracic ECHO. The patient recovered well without complications and was discharged home nine days later on antiplatelet therapy with follow-up.

Discussion

- Coronary artery perforation should be a differential when caring for patients post PCI.
- Patients suffering coronary artery perforation have increased hospital stays and ventricular tachycardia arrests complicated with tamponade³
- Acute tamponade post PCI is obvious to recognize and treat with pericardiocentesis, but has an increased risk of mortality from procedures, complications, and cardiogenic shock.^{2,3}
- Late presenting pericardial

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Effect of an Online Orientation to the Emergency Department for Family Medicine Residents

Thomas William Lawyer, MD, Samuel M. Muniz, MD, Caroline M. Molins, MD, MSMEd, Carmen Julia Martinez Martinez, MD, MSMEd

Introduction/ Intent

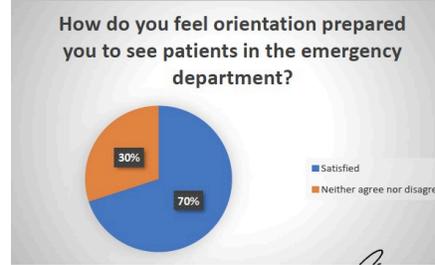
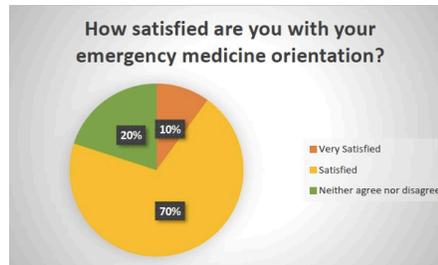
Emergency Medicine rotation is a requirement for residents from other specialties. In our institution, Family Medicine residents (FM) have Emergency Medicine (EM) rotation as part of their curriculum prior to graduation. This requirement is difficult to achieve without guidance and support. For FM residents, the Emergency Department (ED) can be an unfamiliar setting as it relates to the physical layout, electronic medical record (EMR) and ED processes. In a pre-curriculum survey, FM residents responded that a structured and comprehensive orientation could be helpful for the efficiency of FM residents during their clinical rotation and their learning experience in their EM rotation. The purpose of this study is to evaluate the effectiveness of an online orientation of the ED for family medicine residents. We hypothesized that the residents' experience, comfort level in the ED, and proficiency with EMR will improve after the online orientation.

Methods

An online orientation was created for the Emergency Medicine rotation. The orientation consisted of 4 components – Review of rotation objectives, Videos, Pre/Post Tests, and Resident Survey. An EM Rotation Pre-Test was given to assess prior knowledge about the ED and its EMR. Next, there were a total of 6 videos discussing EMR and ED Processes and one video tour of the physical ED layout. Each video had a post-test to ensure knowledge acquisition. The videos varied in length from about three and a half minutes to almost 13 minutes, with average length just over 8 minutes. The online orientation was accessed through Google Classroom. Each FM resident was invited to the Google Classroom through their AdventHealth email approximately 1 week prior to the beginning of their rotation. Pre/post tests and surveys were distributed via Google Forms, which then extrapolated into Google Sheets. The data was then extracted and analyzed using Microsoft Excel.

Results

There are two Family Medicine residencies that rotate at our ED. Both residencies have assigned their PGY 1 residents to the EM rotation. An EM rotation consists of a 4-week block with approximately 10-12 shifts. A total of 20 FM residents will rotate through EM during the 2020-2021 academic year. Preliminary data was chosen and FM residents that rotated through the EM rotation from July 27, 2020 to February 8, 2021 were included. Thirteen FM residents rotated during this time period. Only 2 residents did not register for the online orientation. Over 75% of FM residents completed the resident survey. The majority of respondents were either “very satisfied” or “satisfied” with how the online orientation prepared them to use the EMR (Graph 1) and to see patients in the ED (Graph 2). Eight out of ten were either “very satisfied” or “satisfied” with the EM orientation as a whole. FM residents suggest that they would like to see the orientation with more anticipation of their EM rotation.



Conclusions

In conclusion, Family Medicine resident's proficiency with the EMR and level of comfort in the emergency department improved after the creation and implementation of an online orientation for the emergency medicine rotation.

Contact Info/ References

Contact Information

Thomas.lawyer.md@adventhealth.com
Samuel.muniz.md@adventhealth.com
Caroline.molins.md@adventhealth.com
Carmen.martinezmartinez.md@adventhealth.com

Funding Support

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Direct Observation Teaching Shifts (DOTS): An Approach to Using 360-degree Assessments

Caroline M. Molins MD MSMEd & Carmen J. Martinez Martinez MD MSMEd, AdventHealth Emergency Medicine Residency; AdventHealth East Orlando

Introduction

The Accreditation Council for Graduate Medical Education (ACGME) requires that residencies must provide evaluation and feedback from multiple evaluators such as faculty, fellow residents, medical students, patients and ancillary staff.¹ These are called Multisource feedback (MSF) or 360-degree assessments.² Direct observation of resident's patient encounters and their individual performance is an essential aspect of competency-based education.³ Recognizing the value of MSF, our program sought ways to increase the frequency, thus we created the direct observation teaching shifts (DOTS). DOTS are scheduled shifts in which paired faculty/residents were assigned a chief complaint-based patient encounter in which faculty can provide individualized learning and the 360-degree assessment was used as the evaluation tool. The purpose of this study was to examine how the implementation of DOTS directly impacted EM resident's perception and number of timely completed 360-degree evaluations, over a 12-week period. We hypothesize that the implementation of DOTS will increase the number of 360-degree evaluations completed by EM residents and improve their perceptions

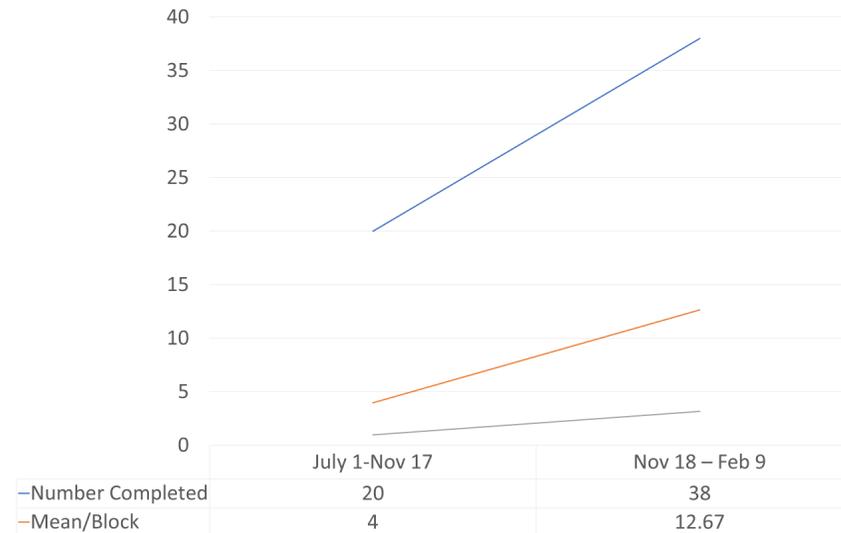
Methods

During the 2019-2020 academic year, emergency medicine residents that were scheduled to the EM rotation, over a 12-week period (November 18, 2019 - February 9, 2020), were assigned DOTS paired with a designated faculty member. Specific lower volume shifts were chosen to maximize educational opportunities. All 18 residents had the opportunity to have at least 1 DOTS. At the completion of the 12-week period, the EM residents were surveyed on their perception of the learning experience. Surveys were sent using Microsoft Forms and analyzed using Microsoft Excel.

Results

Dates (2019-2020)	# of Blocks	# of Weeks	# of 360 evaluations completed	Mean # completed per block	Mean # completed per week
July 1-Nov 17	5	20	20	4	1
Nov 18 – Feb 9	3	12	38	12.67	3.17

Effect of DOTS on 360-evaluations



Results

After completing the 12-week period, we saw over a 3-fold increase in the number of 360 evaluations completed. At least, half (3) of the PGY 1, five out of six PGY2 and all the PGY3 had at least 2 DOTS. Most of the residents felt that they received individualized learning (83%) from the attending physician during their DOTS and benefited from the learning experience. The majority (75%) of the EM residents responded that they would like to continue to be scheduled DOTS.

Conclusion

In conclusion, the implementation of DOTS was well received by EM residents and it tripled the number of completed 360 evaluations and provided direct observation periods with feedback from multiple sources.

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Contact Information

Caroline M. Molins MD MSMEd
Caroline.Molins.MD@adventhealth.com
 Carmen J. Martinez Martinez MD MSMEd

Methods

A survey was sent to off-service residents from all residencies involved. The survey collected residents' perceptions of their perceived personal competence, level of experience, and comfort level in the ED and their orientation process to the ED which includes the electronic medical records (EMR) and physical ED.

Conclusion

In conclusion, this study shows the need to have a more precise and comprehensive orientation for the Emergency Medicine rotation. The addition of a structured and comprehensive orientation can help foster off service residents in becoming more efficient in the ED.

Contact Information

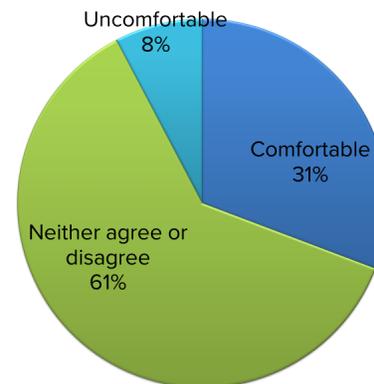
Samuel Muniz MD – samuel.muniz.md@adventhealth.com
 Thomas Lawyer MD – thomas.lawyer.md@adventhealth.com
 Caroline M. Molins MD – Caroline.Molins.MD@AdventHealth.com
 Carmen J. Martinez Martinez MD - Carmen.MartinezMartinez.MD@adventhealth.com

Introduction

Emergency Medicine rotation is a requirement for residents from other specialties. In our institution, Family Medicine residents (FM) and Pediatric residents (Ped) have Emergency Medicine (EM) and Pediatric Emergency Medicine (PEM) rotations as part of their curriculum prior to graduation. These requirements are difficult to achieve without guidance and support. In addition, the emergency department physical layout and process are different from the inpatient setting. These factors will affect the efficiency of off service rotators during their clinical rotation. The purpose of this study is to assess off service residents' perceptions of their preparedness in the Emergency Department (ED). We hypothesized that the residents' experience, comfort level in the ED, and proficiency with EMR are consistent with residents feeling uncomfortable and having limited proficiency.

Results

How do you feel orientation prepared you to see patients in the ED?



Results

The majority of the participants were PGY1 and PGY2 residents in the pre curriculum design survey. Most residents have completed 1-2 rotations in Emergency Medicine before answering the survey. Also, most participants did not read the EM/PEM curriculum assigned with 30% stating they did not receive orientation material. Most participants were neutral/uncomfortable in seeing patients (Graph 1), placing orders, and unprepared for their rotation after completing part of the orientation. Multiple freeform responses stated wanting an enhanced orientation, primarily concerned about how to navigate the EMR efficiently.

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