SIU SCHOOL of MEDICINE

SIU GME Quality Improvement Poster Competition and Symposium

April 16, 2024

Pearson Museum

801 N. Rutledge St.

11:00am – 12:30pm

Antibiotic Use and Protocol Adherence Rate after Implementation of a Late Onset Sepsis Treatment Algorithm in the NICU

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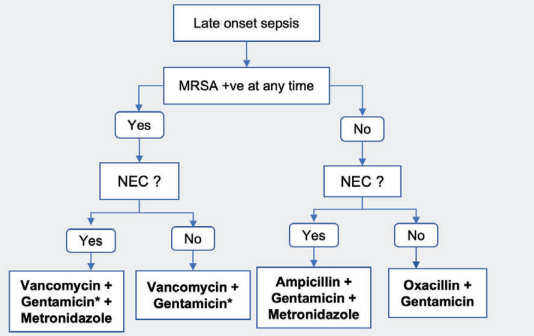
Background

- Neonatal late onset sepsis (LOS) predominantly affects extremely preterm and low birth weight neonates and it causes significant morbidity and mortality.
- The standard antibiotic regimen for LOS at our NICU was vancomycin and ceftazidime.
- CoNS, MSSA and *E. coli* were the most common pathogens isolated in infants in LOS between 2018-2019. MRSA was found in only 2% of all positive cultures.
- More than 90% of gram negatives were susceptible to gentamicin.
- Empiric antibiotic regimen for LOS was changed from **vancomycin + ceftazidime** to **oxacillin + gentamicin.**
- Vancomycin was restricted for patients with h/o MRSA colonization or infection (Figure 1).

Figure1. Empiric Antibiotic Therapy for Late Onset Sepsis, NICU-HSHS St. John's Hospital



*For patients < 1 kg or < 28 weeks, give ceftazidime instead of gentamicin
For suspected meningitis, initiate vancomycin + ceftazidime and consider ID Consult

Objective

- To evaluate antibiotic use and the protocol adherence rate in our NICU after implementing of key changes to our neonatal LOS empiric therapy.

Methods

- We designed a QI project to evaluate empiric antibiotic therapy for infants who underwent evaluation and treatment for LOS before (June 2018 to June 2020) and after (November 2020 to October 2022) the implementation of a new LOS algorithm.
- We evaluated source of LOS, antimicrobial utilization in the pre and post-implementation periods, measured the adherence to empiric antibiotic therapy algorithm and assessed AKI incidence.

Results

- A total of 308 newborns with LOS were evaluated; 180 patients in the pre-implementation period and 128 after implementation (Table 1).
- 60% of patients presented with LOS after 2 weeks of age.

Table 1. Demographics and Characteristics of infants evaluated for LOS

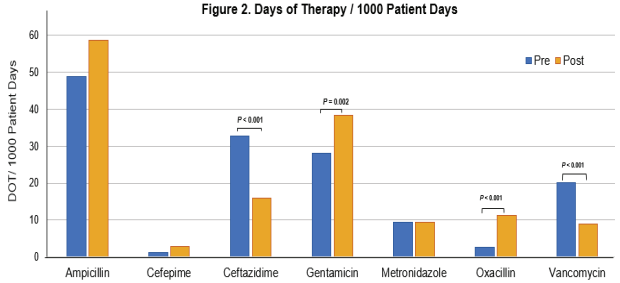
	Pre-implementation, N (%) N = 180	Post-implementation, N (%) N = 128
Gestational age		
Extremely preterm <28	92 (51.1)	63 (49.2)
Preterm <37	66 (37.2)	50 (39.1)
Full term	21 (11.7)	15 (11.7)
Race		
Caucasian	123 (68.3)	90 (70.3)
AA	45 (25.0)	33 (25.8)
Other	5 (2.8)	4 (3.1)
Declined	7 (3.9)	1 (0.8)
Gender		
Male	110 (61.1)	74 (57.8)
Female	70 (38.9)	54 (42.2)
Delivery Method		
Vaginal	60 (33.3)	36 (28.1)
CS	120 (66.7)	92 (71.9)
Birth Weight		
>1500 g	56 (31.1)	39 (30.5)
VLBW (≥ 1000, <1500 g)	34 (18.9)	33 (25.8)
ELBW (<1000 g)	90 (50.0)	56 (43.8)
Age at time of sepsis, days		
Median (IQR)	20.5 (10, 45.3)	23 (10, 40.5)
Source of LOS (1)		
MRSA	4 (2.2)	1 (0.8)
Bacteremia	26 (14.4)	19 (14.8)
Pneumonia	4 (2.2)	11 (8.6) *
Meningitis	2 (1.1)	0 (0.0)
SSTI	13 (7.2)	4 (3.1)
CLABSI	0 (0.0)	4 (3.1)*
Other	142 (78.9)	95 (74.2)
Central line	57 (31.7%)	37 (28.9%)
ID Consult	19 (10.6)	17 (13.3)

(1) Numbers exceed the total number of patients because more than one source can be reported per patient; * *P* value < 0.05.

- Vancomycin and ceftazidime standardized antimicrobial administration ratios (SAAR) decreased from 0.695 to 0.322 and from 5.642 to 2.811 respectively between study periods (p< 0.001).

- Empiric vancomycin and ceftazidime DOT/1000 patient days decreased by 50% between pre and post-implementation periods, while oxacillin DOT/1000 patient days increased by 300% and gentamicin DOT/1000 patient days increased by 30% (Figure 2).

Figure 2. Days of Therapy / 1000 Patient Days



- Adherence rate to the LOS algorithm was 76%.
- A total of 13 (7%) patients presented with AKI in pre-implementation period compared to 4 (3 %) after implementation.

Conclusions

- Implementation of a new LOS algorithm judiciously guiding antibiotic use, successfully led to a decrease in the use of broad-spectrum antibiotic in our NICU.
- However, adherence rate to our new LOS algorithm was suboptimal.
- Further stewardship interventions such as handshake round sin the NICU will foster collaboration with neonatologists, enhance adherence and promote overall antimicrobial stewardship efforts.

References

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A Well Spent Minute to Know your Clinical Staff

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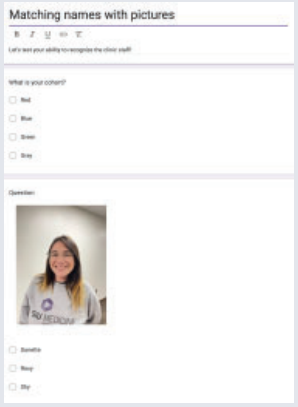
Introduction

The lack of familiarity between medical residents and clinic staff poses significant challenges in healthcare settings, including ineffective communication, collaboration issues, and reduced efficiency. This Quality Improvement Project aimed to enhance communication and teamwork by addressing this communication gap. Our goal was to create a more collaborative healthcare environment by improving familiarity between staff and residents.

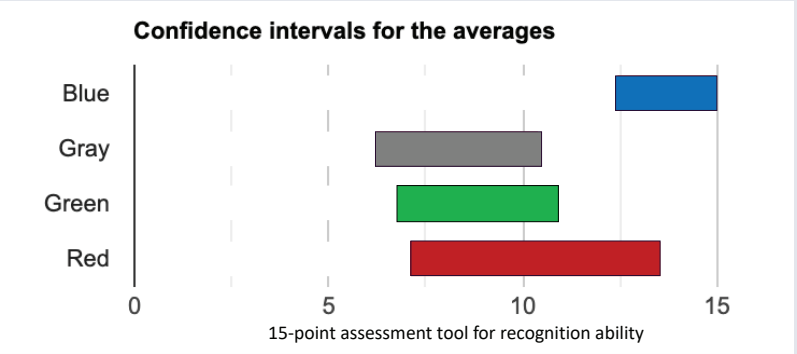
Methods

We employed a Plan-Do-Study-Act (PDSA) cycle methodology for this project. The intervention involved sharing pictures of all residents and clinic staff and conducting one-minute introductions between the intervention cohort (blue) residents and clinical staff. Residents were divided into four cohorts, identified by different colors, with one cohort undergoing the intervention while the others served as controls. After eight weeks, we evaluated residents' ability to match staff names with pictures through a survey. The results of the survey were statistically analyzed via ANOVA.



Results

Data analysis revealed that the intervention group, which underwent picture sharing and one-minute introductions, scored significantly higher in matching staff names with pictures compared to the control groups. Despite challenges in a fast-paced clinic environment, the intervention proved successful.



Source	F Stat	P-Value
Groups (between groups)	10.5726	**0.0000549**

Pair	Difference	SE	Q	Lower CI	Upper CI	Critical mean	P-Value
x1-x2	5.381	0.761	7.0708	2.4651	8.2968	2.9159	0.0001125
x1-x3	4.8571	0.8245	5.8908	1.6979	8.0164	3.1593	0.0012
x1-x4	3.381	0.8691	3.89	0.05078	6.7111	3.3302	0.04554

Conclusion

Our intervention directly addressed the issue of unfamiliarity between medical residents and clinic staff, fostering improved communication and teamwork. Knowing each other's names is the basic first step towards creating a positive work environment and enhancing patient care. This project emphasizes the importance of investing in simple initiatives to strengthen professional relationships for more effective and patient-centered care.

Acknowledgment

The completion of this study could not have been possible without the help of our clinic staff. A debt of gratitude is owed to all of them.

References

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Retrospective Quality-Improvement Project on Post-ERCP Pancreatitis at Springfield Memorial Hospital

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Abstract

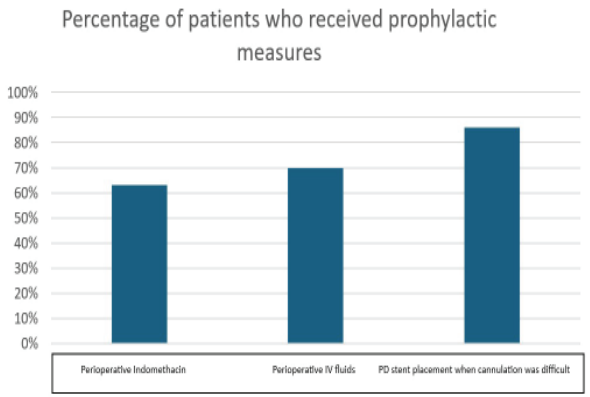
Post-ERCP pancreatitis (PEP) is a well-known complication of Endoscopic retrograde cholangiopancreatography (ERCP). Perioperative indomethacin, IV fluids, and pancreatic duct (PD) stent placement can lower the incidence of PEP. We conducted a retrospective chart review and analysis for all ERCP procedures performed by two SIU gastroenterologists between October 2019 and October 2023 at Springfield Memorial Hospital (SMH) to assess PEP rate and compliance with prophylactic measures. Our institution's calculated PEP rate was 4.3% (27/626). 62.96% (17/27) of patients received perioperative rectal indomethacin and 70.37% (19/27) received perioperative IV fluids. A PD Stent was placed in 85.7% (6/7) of patients with procedural difficulty. All patients required new or extended hospitalization with no mortality.
Our study shows that our complication rate for PEP is lower than the average published in the literature (8%-15%). However, the study does show that adherence to PEP prophylactic measures is suboptimal at our institution. We implemented a pre-operative sheet that will allow PEP prophylactic measures to be requested at the time of procedure order. We also plan to present our study findings at the SIU GI division meeting to further increase awareness among all staff members on this topic.

Introduction

ERCP is a widely used procedure for treating conditions of the bile ducts and pancreas. Despite its efficacy, ERCP is associated with several complications, one of which is PEP. PEP is a potentially serious complication that can result in prolonged hospital stays, increased healthcare costs, and patient morbidity and mortality. The incidence of PEP varies widely, ranging from 8% to 15%, depending on the population studied and the criteria used for diagnosis. ASGE 2023 guidelines recommended perioperative hydration, perioperative rectal Indomethacin, and, in high-risk patients, the use of prophylactic pancreatic duct stents to lower the incidence of PEP.
The primary objective of this quality improvement (QI) project is to evaluate the incidence of PEP and the adherence to preventive interventions that are known to reduce the risk of developing PEP to identify opportunities for improvement in the management of patients undergoing ERCP.

Methods and Results

A retrospective electronic chart review of all ERCP cases conducted in SMH by two SIU advanced endoscopists between October 2019 and October 2023 was performed. Each of the two endoscopists had over 10 years of experience in performing ERCPs. The diagnosis of PEP was made if the patient developed new or worsening abdominal pain after ERCP and had elevated lipase (>3 times the upper limit of normal more than 24 hours after ERCP) or imaging findings suggestive of acute pancreatitis. A total of 626 ERCPs were reviewed, and 27 patients developed PEP, fulfilling the criteria mentioned previously. The average age for patients who developed PEP was 57 and 66.6% of the patient population identified were females, a known risk factor for PEP development. The calculated PEP rate at SMH was 4.3%.



Our analysis showed that 62.96% (17/27) of patients received perioperative rectal indomethacin and 70.37% (19/27) received perioperative IV fluids. The use of PD stents, an invasive intra-op intervention, is typically reserved for cases involving pancreatic duct manipulation or cannulation difficulties. The PD stent was used in 85.7% (6/7) of patients with difficult cannulation and in 22.22% of the total number of patients who developed PEP regardless of technical difficulty (Figure 1). All patients required new or extended hospitalization after developing PEP. The average duration of hospitalization after the complications was 5 days. There was no mortality or need for ICU admission in any of the subjects.

Discussion

Published literature suggests that the risk of developing PEP can range between 8% in average patients to 15% in high-risk patients. Our study shows that our complication rate for PEP is lower than the average published in the literature. This reflects high quality care provided by the SIU GI team and the technical skills of the endoscopists performing those procedures. We did note, however, that our adherence to PEP prophylactic measures could be improved. As mentioned previously, 62.96% of patients received perioperative rectal indomethacin and 70.37% received perioperative IV fluids.

From those who developed PEP, four patients (14.8%) received no prophylactic measures and only 11 patients (40.7%) received two out of 3 prophylactic measures. It's important to highlight that in at least two cases, pre-op precautions were omitted due to NSAID allergy and concerns about fluid overload in a heart failure patient. A PD stent was used in 85.7% (6/7) of patients with difficult cannulation. Our goal in the next 3 years is to apply PEP preventive measures to 90% when they are indicated and no contraindication is present.

Our research project's objective was to identify our complication rate and adherence to prophylactic measures to increase the awareness in our division about the importance of PEP preventive measures. In addition to presenting our findings to GI division faculty and staff, we implemented a pre-operative order sheet that will allow providers to order the prophylactic measures at the same time of procedure request.

Conclusion

In conclusion, we found that the incidence rate of PEP at SMH is below the reported average in literature. Furthermore, preventive methods have been implemented in our practice at an acceptable, but suboptimal rate. We hope that this project will increase awareness to adherence to PEP prophylactic measures to further reduce the risk of this serious complication.

Environmental Impact of TKA: Waste Audit of Hospital Operating Room Compared to Ambulatory Surgery Center

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Introduction

- Climate change and human waste are of increasing global importance
- Healthcare facilities produce 1,814,369,480 kg of waster per year[1]
- Operating rooms account for 20% to 70% of hospital waste[1]
- Total knee arthroplasty (TKA) generates 13.3 kg of waste on average[2]; volume expected to grow 85% by 2023[3]
- Synthetic implants account for 15% of carbon footprint in some centers[4]
- Aim of study to evaluate waste of TKA in hospital setting vs ambulatory surgery center
- Hypothesize less waste generated in ambulatory center overall

Figure 1 (Left): Trash collected and streamlined into one of six categories

Methods

- Waste audit of cemented total knee arthroplasties
- Five to be performed in ambulatory surgery center and five performed in hospital operating rooms
- Single surgeon with similar sized team
- Waste organized into six categories: solid landfill waste, recyclable plastics, biohazard waste, laundered linens, sharps, and polypropylene blue sterile wrap
- Waste weighed on digital scale and volume estimated using a measuring tape/stick

.Bibliography
1) Lee, R.J. and S.C. Mears, *Greening of orthopedic surgery.* Orthopedics, 2012. **35**(6): p. e940-4
2) Stall, N.M., et al., *Surgical waste audit of 5 total knee arthroplasties.* Can J Surg, 2013. **56**(2): p. 97-102
3) Sloan, M., A. Premkumar, and N.P. Sheth, *Projected Volume of Primary Total Joint Arthroplasty in the U.S., 2014 to 2030.* J Bone Joint Surg Am, 2018. **100**(17): p. 1455-1460.
4) P., P., et al., *THE ENVIRONMENTAL INPACT OF LARGE JOINT ARTHROPLASTY.* Orthopaedic Proceedings, 2010. **92-B**(SUPP_IV): p. 498-498

Figure 2 (Right): Examples of how streamlined trash is weighed using digital scale

Results

- Blue sterile waste consistently accounted for most volume and mass of waste
- Sharps followed by biohazard waste was consistently the lowest volume and mass of waste
- Ambulatory center cemented TKAs averaged 12.82 kg total waste to date
- Ambulatory center cemented TKAs averaged 435.8 m^3 total waste volume to date
- Hospital cemented TKAs averaged 19.8 kg total waste
- Hospital cemented TKAs averaged 407.2 m^3 total waste volume

Waste Stream	Ambulatory Waste (kg)	Hospital Waste (kg)
Solid landfill	2.6	4.34
Recyclable plastics	1.1	0.61
Biohazard	0.41	0.51
Blue sterile	5.9	10.21
Laundered linens	2.63	3.78
Sharps	0.18	0.36
Total	12.82	19.8

Table 1 (Above): Average mass of waste collected from each facility based on streamlined category

Discussion

- Ambulatory centers cut costs; likely generating less waste
- Fewer trays opened at beginning of case; more items individually wrapped
- Hospital often opens entire trays to obtain individual items
- Specific items at ambulatory center individually wrapped
- Ambulatory center utilizes many more reusable items (i.e. sterile towels)
- Utilize reusable gowns and towels to decrease blue sterile waste
- Implement recycling stream for plastics
- Utilize ambulatory centers more given their cost effectiveness and sustainability
- Can be difficult to assess waste volume given our technique

Figure 3 (Right): Demonstration of how streamlined trash was measured to assess the volume of waste

Conclusion

- Significant amount of waste from TKAs in both settings
- TKAs performed at ambulatory surgery centers produce less waste overall by mass
- Must continue to attempt to decrease waste and improve sustainability

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Obstructive Sleep Apnea (OSA) Quality Improvement Project

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SIU Family and Community Medine Quincy, *Faculty Mentor

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Background

- There is a linear correlation between obesity and obstructive sleep apnea (OSA). Adams county where our clinic is located has one of the highest rates of obesity in the state of Illinois. About 37% of residents are considered obese which is 8% above the average for the state of Illinois(1). We suspected that many of our obese patients may have undiagnosed OSA.
- We used a BMI of >35 to prompt OSA screening using the STOP-BANG Questionnaire.

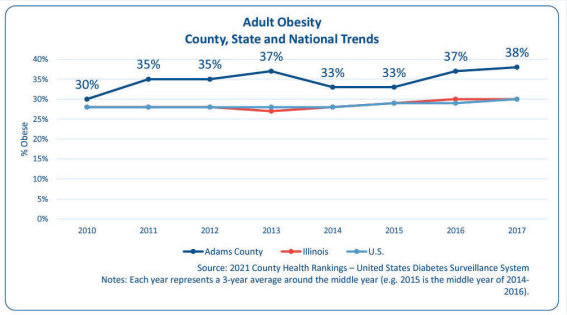


Figure 1. Adult Obesity
Comparison of obesity rates in Adams County, Illinois and the entire U.S. from 2010-2017

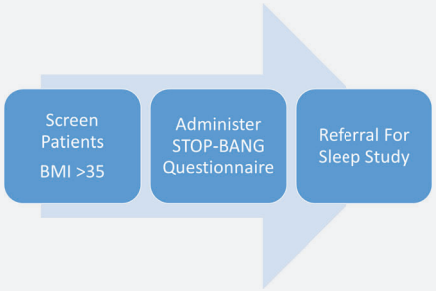
High Blood Pressure	
Adams County	34.8%
Illinois	32.2%
U.S.	32.5%

High Cholesterol	
Adams County	38.6%
Illinois	31.5%
U.S.	33.3%

- The prevalence of OSA in the general population is 3-7% for men and 2-5% for women. The rates are higher for those who are obese. The prevalence of OSA in obese people who undergo bariatric surgery is 77%.(2)
- Episodes of hypoxemia in OSA patients can drop SPO2 from 95% to 80%. During hypoxic episodes, overproduction of reactive oxygen species causes increased oxidative stress, resulting in endothelial dysfunction and eventually atherosclerosis.
- OSA is associated elevated levels of leptin which is also strongly associated with obesity.

Methods

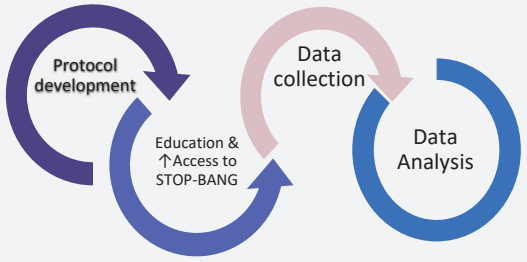
All adult patients seen in clinic >18yo were screened for BMI>35 when an updated weight was recorded. Once BMI was verified, we proceeded with STOP-BANG Questionnaire and discussed results. The questionnaire was added to the EHR provider note template for ease of administration and documentation. A quicklink for entering sleep study referrals was also added.



STOP-BANG Questionnaire

1. **S**noring (Do you snore loudly?)
2. **T**iredness (Do you have daytime fatigue?)
3. **O**bserved Apnea (Anyone told you that you stop breathing or gasp during sleep?)
4. High Blood **P**ressure (BP treatment?)
5. **B**MI (BMI >35)
6. **A**ge (Older than 50 years?)
7. **N**eck Circumference (Circumference >40 cm)
8. **G**ender (Are you male?)

After Score of ≥4 on STOP-BANG questionnaire, a referral was sent for sleep study.



PDSA Cycle

Results

We compared the average number of sleep study referrals per month for suspected OSA in the 3-month periods before (blue) and after implementation of our screening protocol. Clinic wide, there was no significant change in the referral rate, however the number of referrals coming from resident providers increased.

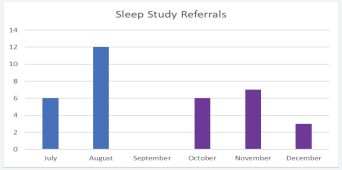


Figure 2. Sleep Study Referrals.
Referrals ordered before (blue) and after (purple) implementing screening protocol.

Discussion

This project increased awareness of OSA and its connection to obesity which is especially relevant to our patient population. Based on positive results and favorable feedback from providers, the EHR tools for screening and referral process will be retained.

One issue we came across is that most insurance companies required "daytime somnolence" as a symptom. In the future we will include daytime somnolence in addition to BMI as criteria for staff to prompt administering the rest of the STOP-BANG questionnaire.

This project focused on the initial step in the process of addressing sleep apnea and its complications. It is our hope that by screening for OSA, fewer cases will go untreated. Logically this should lead to increased quality of life in the short term through better sleep as well as in the long term by decreasing rates of OSA sequelae. Ideal next steps would be analyzing patient follow-through on referrals, outcomes of sleeps studies, treatment adherence, and addressing barriers to any of these aspects.

References:

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3. Walia R, Achilefu A, Crawford S, Jain V, Wigley SD, McCarthy LH. Are at-home sleep studies performed using portable monitors (PMs) as effective at diagnosing obstructive sleep apnea (OSA) in adults as sleep laboratory-based polysomnography (PSG)?. J Okla State Med Assoc. 2014;107(12):642-644.

Amending Adult Burn Resuscitation Protocol to Improve Patient Outcomes

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Introduction

Adult patients with burn injuries are comanaged by the Plastic Surgery and Trauma Surgery services at Springfield Memorial Hospital (SMH). Patients who meet criteria are started on the Resuscitation Protocol to manage fluid administration in the first 24 hours post-injury.

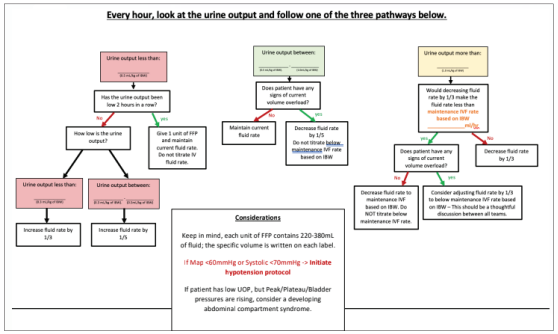
Resuscitation Protocol Criteria:
>20% TBSA OR >10% + ≥ Grade II inhalation injury

At each hourly interval, titrate Lactated Ringers based on the hourly urine output.

Classification	Absolute Numbers	Action Required	Considerations
Low Urine Output	LESS THAN: _____ (0.3 mL/kg of IBW)	Increase fluid rate by 1/3	If patient has low UOP, but Peak/Plateau/Bladder pressures are rising, consider a developing abdominal compartment syndrome. Keep in mind, if you give IV Lasix, fluids cannot be titrated based on urine output for ~6 hours while the Lasix is working. You would need to look toward other end points of resuscitation including respiratory function, hgb trends, BMP values, blood pressure etc.
	BETWEEN: _____ (0.3 mL/kg of IBW) – _____ (0.5m./kg of IBW)	Increase fluid rate by 1/5	
Urine Output Within Goal	BETWEEN: _____ (0.5mL/kg of IBW) – _____ (1.0mL/kg of IBW)	Maintain current fluid rate	
High Urine Output	MORE THAN: _____ (1.0 mL/kg of IBW)	Decrease fluid rate by 1/3 Do not titrate below maintenance IVF rate (_____mL/hr) unless there are signs of lung compromise.	

Fluids are titrated hourly based on urine output.

Most patients need colloid (albumin) in addition to crystalloid to be resuscitated. This initiates the Difficult to Resuscitate Protocol and changes the hourly titration:



If urine output is still inadequate after adding albumin, patients receive fresh frozen plasma (FFP) transfusions. When urine output is not responsive to these interventions, patients get resuscitated with higher total fluid volumes that increases risks of poor outcomes such as acute respiratory distress syndrome, abdominal compartment syndrome, and third spacing.

Methods

An analysis of burn patients in 2022-2023 was conducted to assess fluid resuscitation volumes and patient outcomes at SMH.
A literature review was performed to review other institution's protocols, the pathophysiology of burn injury, and mechanisms and benefits of colloid administration. Specifically, FFP was investigated.

FFP specifically has benefits in burn resuscitation by:
- Healing endothelial glycocalyx
- Decreasing total fluid administration

Results

14 patients met resuscitation criteria in studied period. Injury data was collected, as was outcome information.

Patient Characteristics

Pt	%TBSA	Inhalation Injury	DTR	FFP Given	Max IVF Rate	24hr Total	ml/kg/%TBSA
1	26	No	No	No	253	6143	3.38
2	80	Presumed	Yes	Yes	1720	12768	2.8
3	35	No	Yes	Yes	297	5793	3.18
4	27	No	Yes	No	513	7469	3.79
5	33	Yes	Yes	Yes	355	8369	4.61
6	52	Presumed	Yes	Yes	769	14517	4.17
7	20	No	No	No	122	2929	2.48
8	67	Presumed	Yes	Yes	707	11478	2.72
9	27	Yes	Yes	Yes	864	8452	4.29
10	22	Yes	Yes	Yes	1355	10975	6.4
11	21	Yes	Yes	Yes	400	6764	5.03
12	57	No	Yes	Yes	676	13619	3.62
13	33	No	Yes	Yes	397	7561	3.14
14	27	No	Yes	Yes	628	10705	4.51

Table 1. Patient Demographics

Patient Outcomes

- Lung injury
  - Acute Respiratory Distress Syndrome (ARDS)
  - Pneumonia
- Kidney injury
  - Acute Kidney Injury
  - Creatinine 3x baseline or > 4
  - Urine Output < 0.3ml/kg/hr
  - Diuresis
  - Continuous Renal Replacement Therapy
- Abdominal compartment syndrome

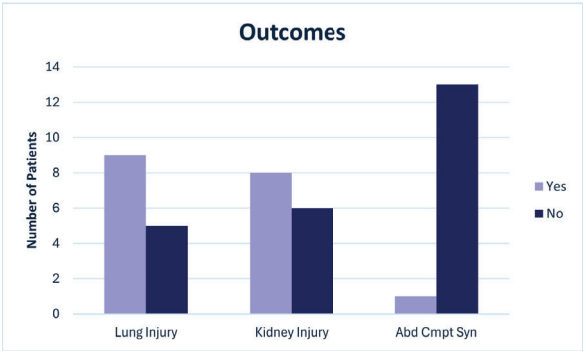


Figure 1. Patient Outcomes

Discussion

Qualifying adult burn patients at SMH are treated with a resuscitation protocol to manage fluid administration during the critical initial 24 hours post-injury. To assess the Protocol's efficacy, total fluid volumes and outcomes were analyzed. This indicated patients often received too much fluid and had subsequent sequalae. To mitigate this, earlier administration of FFP was proposed, as FFP has been shown to reduce fluid resuscitation volumes and have physiologic benefits to the endothelium. This Protocol change has been in effect for 6 months and its impact will be studied. Trends so far indicate a positive effect on resuscitation outcomes.

This process has established a framework for further evaluation and assessment of the Protocol for evidence-based interventions to improve patient care and outcomes.

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SIU MEDICINE

Guideline-Directed Screening to Determine the Prevalence of Non-Alcoholic Fatty Liver Disease (NAFLD) and Advanced Fibrosis in Diabetes Mellitus Type 2 (DM2)

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INTRODUCTION

- Prevalence of NAFLD in patients with DM2 is ~ 70%
- NAFLD in DM2 increases risk of cirrhosis and guidelines advise screening all patients with DM2.
- We determined prevalence of intermediate or high risk of NAFLD in endocrinology clinic and rate of appropriate evaluation and management.

METHODS

- Prospective study of adults, age 18-69 years, with DM2 seen for follow-up visit in 11/2023-02/2024, managed ≥2 y prior to current clinic visit.
- Fibrosis-4 (FIB-4) score for each patient was used for risk stratification as per guidelines (Table 1).
- Factors predicting appropriate intervention for patients were assessed.

Table 1. Risk Stratification and Intervention by FIB-4 Score

FIB-4 Score	Fibrosis Risk	Intervention
<1.3	Low	Repeat FIB-4 in 2 y
1.3-2.67	Indeterminate	FibroScan
>2.67	High	NAFLD clinic

RESULTS

Table 2. Key Patient Characteristics by Fibrosis Risk Stratification

Parameter	Low (N = 57)	Indeterminate (N = 21)	High (N = 0)	P-value
Age (years ± SD)	53.5 ± 10.9	63.6 ± 4.7	---	**<0.001**
Male	29.8%	66.7%	---	**0.004**
Caucasian	77.2%	76.2%	---	0.72
BMI (kg/m^2 ± SD)	37.8 ± 10.3	36.0 ± 6.6	---	0.36
Diabetes duration (years [IQR])	10 [6-14]	13 [9-16]	---	0.09
Average A1c (% [IQR])	7.6 [6.7-8.7]	7.3 [7.0-8.0]	---	0.56
Hypertension	82.5%	95.2%	---	0.27
Hyperlipidemia	84.2%	90.5%	---	0.72
Smoker	14.0%	19.0%	---	0.45
Metformin use	49.1%	47.6%	---	1.00
GLP-1 agonist (GLP-1 Ra) use	61.4%	33.3%	---	**0.04**
Basal insulin use	63.2%	52.4%	---	0.59

Means were compared by Student's t-test, and proportions were compared by Fisher's exact test

Figure 1. Factors Associated with Fibrosis Risk

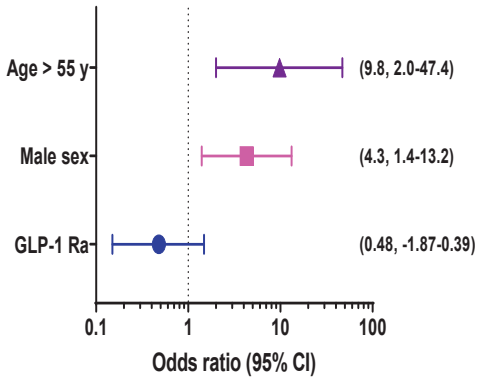
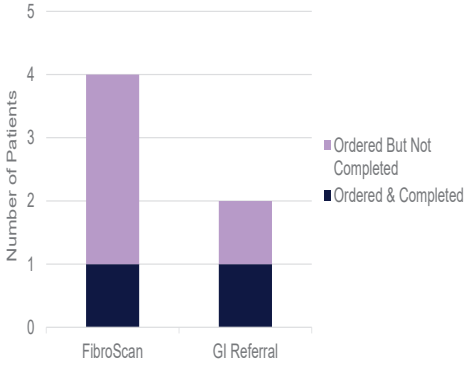


Figure 2. Frequency of Intervention



DISCUSSION

- During the first 4 months of screening, 26.9% of patients had indeterminate fibrosis risk, while 0% had high fibrosis risk, lower than anticipated.
- DM2 comorbidities and duration, A1c, marital status, insurance type, BMI, and medications were not shown to be associated with fibrosis risk (Table 2).
- Age >55 years and male sex were associated with increased fibrosis risk by multivariate logistic regression (Figure 1).
- Only 19% of patients with indeterminate fibrosis risk had a FibroScan ordered, and only 25% of these patients completed the imaging (Figure 2).
- Of the patients with indeterminate fibrosis risk, 9.5% were referred to SIU GI NAFLD clinic, and 50% of those patients attended the appointment (Figure 2).

CONCLUSION

- Age > 55 y and male sex are independent risk factors for FIB-4 scores indicating indeterminate risk of NAFLD.
- Work flow needs to be changed to improve guideline directed management of patients with indeterminate or high FIB-4 scores.

It's Time To Weigh In: Body Mass Index

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SIU School of Medicine Department of General Internal Medicine

Introduction

We chose to undertake this project because of the pervasive nature of the effect of body mass index (BMI) in all aspects of health. BMI and its implications in areas of biological and psychological health. The impacts of BMI in underserved communities.

S.M.A.R.T. Goal Format:

- Specific Objective:
  - Encourage discussion about weight between patient & doctor --> follow-up plan --> and documentation
- Measure:
  - Frequency of documentation of weight discussion using pre-designed templates in clinic visit notes
  - Goal -- > increase discussion and documentation of weight at least once a year by 3% across all patients
- Achievable:
  - Clinic handouts that resident physicians could easily share with patients. Verbal and e-mail reminders to resident physicians to discuss weight with patients
- Relevant
  - Begin taking steps towards improving public health
- Timing
  - Time to perform intervention: 4-12 weeks (4 weeks to design the intervention and educate other cohorts 4-8 weeks to gather data)

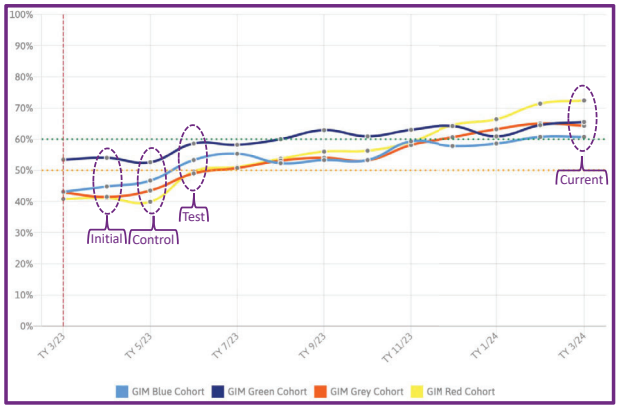
Methods

Plan-Do-Study-Act (PDSA) quality improvement methodology

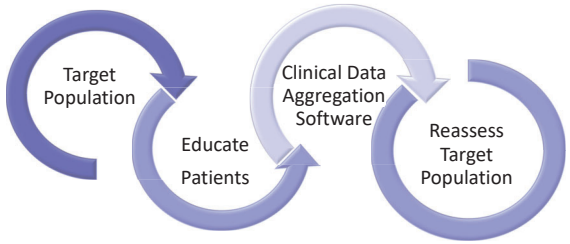
1. **P**lan: increase discussion regarding weight and documentation of follow-up plan for patients 18 years and older with a BMI outside of normal parameters (Normal BMI is >= 18.5 and < 25.)
2. **D**o: weight assessment & counselling. Educated regarding risk for developing many preventable conditions. Weight reduction and overall health. Healthier food choices.
3. **S**tudy: via "Azara DRVS" clinical software
4. **A**ct: providing in-clinic/visit education and information and documentation

Results

1. How many patients studied? --> 1,762 patients
2. How many residents participated? --> 56 residents in 4 cohorts continuing cycle of 4 weeks, 1 cohort each week.
3. Each cohort acted as their own control (pre- & post-intervention)
4. Data collection period of 4 weeks
5. Target 60%



Cohort	April '23 % (Initial)	May '23 % (Control)	June '23 % (Test)	March '24 % (Current)
Grey	42	44.....+2%	49.....+5%	64
Blue	45	47.....+2%	53.....+6%	61
Green	54	53.....-1%	59.....+6%	66
Red	41	40.....-1%	50.....+10%	72
All Cohorts	45	46.....+1%	53.....+7%	66



Education Materials

- Below are two examples of educational material offered to qualifying patients
- Currently these handouts are available in patient rooms

Discussion

- Initial problem: documenting how we help patients develop an understanding of BMI.
- Intervention: Flyers & in-office visit education. In-note documentation tracked by clinical software (DRVS)
- Conclusion: All cohorts able to surpass goal of targeting 60% of eligible patients during clinic visits
- Other benefits: Residents' confidence in speaking with patients about BMI and implications of BMI on patient health.
- Future directions:
  - Measure clinic referral orders to nutritionists, registered dieticians and counseling
  - Measure prescriptions ordered for weight reduction medications
- Limitations: Educating new residents. Changes in DRVS software.

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SIU MEDICINE

Assignment #9

Sharing the Patient Rooming Process with General Internal Medicine Clinic Staff

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Background

Traditional Rooming Model

- Patient arrival and registration
  - Confirm insurance, contact information
  - Patient status entered as "Arrived"
- Nurse or medical assistant monitor patient panels and "room patient"
  - Obtain vitals, confirm pharmacy, smoking status, +/- complete screen questionnaires, inquire about vaccination status, chief compliant, start note in EMR
  - Patient status updated to "Provider Ready"
  - Provider proceeds with patient encounter

"Team Rooming Model " [1]

- Provider and medical assistant work collaboratively to conduct patient visits
  - One member of the health care team enters data into EHR/places orders. Other health care member obtains history.

Purpose of Project

- Main Objective: Improve rooming time of patients
  - Multiple patients have similar appointment times for different providers
    - Clinic has 14-15 residents along with another 5-7 providers (APRN/MD faculty) seeing patients
  - Delay in rooming due to GIM staff being overloaded with patients arriving in quick succession
  - Due to delays in rooming, appointment times start behind schedule
  - Additive effect of multiple delays leading to patients waiting for provider
- AIM: Sharing the patient rooming process with General Internal Medicine clinic staff to reduce the time taken to room the patient by 3 minutes

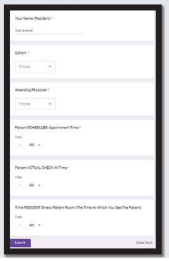
Rooming Procedure

1. Identify available room
2. Go to the arrived patient stickers and place sticker on patient label sheet (signify start of rooming process) with rooming time and room number
3. Obtain vitals sheet, follow-up appointment request form, and place patient labels on paperwork
4. Mark patient appointment time with room number on main clinic board with provider initials
5. Call the patient back from waiting room
6. Get patient weight and document on the vitals sheet
7. Take them to the room
8. Place the papers on the door, with the name sticker facing the door
9. Medical assistant will view main clinic board and complete patient rooming

Methodology

Utilized Plan-Do-Study-Act cycles

- 2 control cycles without intervention
- 2 cycles with intervention
  - Internal Medicine resident physicians initiating rooming procedure
- Residents collected specific patient times and entered values into a Google Form
  - Patient appointment time
  - Patient check in time
  - Patient/provider start time
- Data complied in Google Sheets



Results

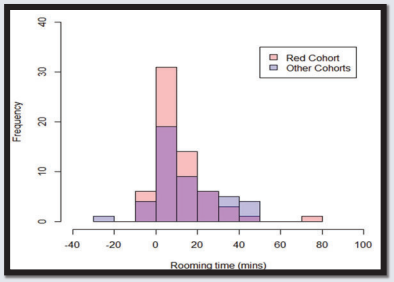


Figure 1
Histogram of rooming time separated by whether or not the intervention was implemented. Outliers were determined to be those with rooming times greater than 20 mins before the scheduled appointment time or those with rooming times longer than 70 mins after the scheduled start/arrival time

Data analyzed	Total N (Red/Others)	Mean difference (red cohort vs. everyone else)	95% confidence interval	p-value
All	110 (62/48)	-3.57	(-9.47, 2.33)	0.24
Outliers removed	**108 (61/47)**	**-5.50**	**(-10.76, -0.25)**	**0.04**
On-time	78 (43/35)	-3.84	(-11.12, 3.44)	0.31
On-time, outliers removed	**76 (42/34)**	**-6.62**	**(-12.86, -0.37)**	**0.04**
Late	32 (19/13)	-0.86	(-2.36, 0.64	0.27
Late, outliers removed	32 (19/13)	-0.86	(-2.36, 0.64	0.27

Table 1
Comparisons of rooming times between the Red Cohort and all other cohorts. Linear regressions were used to generate comparisons. The Subgroup of data analyzed is provided (stratified by on-time and whether or not outliers were included). Interactions between appointment time (afternoon or not) and the intervention were also tested but not found to statistically significant

Discussion

- In a study by Brandt et al. [2], team-based rooming model was trialed.
  - Mammogram ordering rates increased from 10% to 25% ($p < 0.0001$). After Visit Summary (AVS) print rates increased by 12% ($p < 0.0001$). Visit Turn-Around-Time (TAT) decreased 3.1 minutes per visit ($p = 0.0001$).
- Resident clinics are unique in the sense that multiple providers are seeing patients, with minimal support staff.
  - 1 attending, 2-4 residents, 1 MA, 1 nurse.
  - 16-24 patients in a half day of clinic.
  - In the private sector may be 1 attending, 1 MA, 1 nurse.
  - 10-30 patients in an entire day of clinic.
- In the intervention group, rooming time was decreased by 5 mins per patient.
- Some outliers are noted based upon arrival time, which may effect the average effect of rooming.
  - Some patients rely on third parties for transportation (medical transport, public transportation, family member, etc).
  - If the patient arrived exactly at their scheduled appointment time they were considered "late."
- Support staff were familiar with the rooming process, while Internal medicine residents were not initially.
- The first appointment may be the most important appointment to enact changes to the rooming process, as clinic typically sees a surge in patient arrivals at that time.
  - Multiple providers waiting for patients to be roomed.
- Enacting a simple intervention with no financial cost, such as having residents aid in the initial rooming of patients, may lead to decreased appointment time delays.
- Decrease in patient appointment time may lead to increased time for support staff to aid in vaccination, office testing, and patient calls/tasks. Additionally, decrease in delays may allow providers to discuss patient concerns in detail and improve patient satisfaction.

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PREVENTING HOSPITAL VISITS WITH COPD RESCUE PACKS

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SIU MEDICINE

Introduction

Chronic obstructive pulmonary disease (COPD) is very common amongst SIU Quincy's patient population. Over 15 million people in the United States have COPD, resulting in ~150,000 deaths per year. Our patient population consists of COPD patients who are non-compliant and many of whom are underserved. The goal of this study was to decrease Emergency Department (ED) visits due to COPD exacerbations with mild symptoms. This was performed by researching outpatient treatment protocols (COPD rescue pack). The study was conducted to identify those patients that may benefit from a COPD rescue pack. The COPD Rescue pack contains prednisone and azithromycin, and treatment is initiated at the onset of exacerbation symptoms. Patients were identified and, if eligible, were provided with the COPD rescue pack and close follow up. The aim was to identify 50 patients within a year and prescribe the COPD rescue pack. We will then later measure how many patients utilize the COPD rescue packs over time and predict how many hospital visits were prevented by using this initiative.

Results

The SIU Quincy clinic patient population is approximately 8,000 patients with roughly 554 with COPD diagnosis, 166 were newly diagnosed in 2023. Of those 554 patients, 56 patients had a follow-up appointment in our clinic for a COPD exacerbation hospital visit. There were 56 encounters for these patients cumulatively during January 1st to December 31st, 2023. After identification, 16 patients were dispensed the first COPD rescue packs:

- 12 patients from our outpatient clinic.
- 4 patients from nursing home.

It was found that a majority of patients that were dispensed the COPD rescue packs from the Primary Investigators and Nursing home coordinator did avoid an hospital visit. Of the patient population it was found that nursing home patients had better follow up than patients who lived at home due to appointment cancellations or no shows.

Methods

Initially, we identified patients in our clinic with COPD diagnosis by working closely with IT for a data report. We also spoke with the IT department in the hospital who provided a list of all SIU patients who presented to the ED with a primary COPD diagnosis. An approximation of patients who would potentially benefit from having a rescue pack was performed, a proposal was drafted and sent to the FCM Internal Review Board(IRB) for exemption. Our team performed a few PDSA cycles. An initial step was to meet with the team and it was decided that the COPD rescue packs were going to include Prednisone 40 mg daily x 5 days and Azithromycin 500 mg x 1 day and then 250 mg x 4 days. Using the previous reports pulled from IT in the clinic and hospital, we deduced who would most benefit from the intervention of a COPD rescue pack. Shared decision making was made with this patient population and the rescue packs were distributed as appropriate. Patients were instructed to take medications at onset of symptoms and to schedule an outpatient visit. 16 rescue packs were dispensed and those patients were followed closely with the SIU providers.

Figure 1: COPD Rescue Pack Process

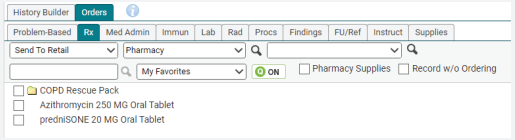

Figure 2: COPD Rescue Pack Order Set

During the second PDSA cycle, an order set was established in our EHR. This was performed alongside IT to streamline the COPD rescue pack orders and grouping all components in one folder for ease of access. We then followed up at our monthly QI meetings to discuss and monitor progress. We worked closely with a nurse practitioner to collaborate with nursing home patients who would also benefit from the pack. This further expanded our patient population for this study. This study is still ongoing; eligible patient are being dispensed COPD rescue packs and data is continuing to be collected regarding how many times each patient uses the pack with the goal of decreasing ED visits and hospital admissions.

Discussion

Many of our patients, particularly nursing home residents, have made good use of the rescue packs. It was noticed that many patients, even those who had previously been non-compliant, made use of the rescue pack 1 or more times. The intervention helped identify patients with multiple COPD rescue packs dispensed to be re-evaluated by their PCP to discuss additional maintenance treatment. COPD rescue packs are useful tools to help decrease hospital visits for patients with frequent COPD exacerbations. Next steps include quantifying how many packs were successful at preventing ED visits over the course of year and to expand our reach to more COPD patients without hospital admission.

Limitations

- Inconsistent utilization of the COPD rescue pack order set in the EHR; the data could be incomplete
- Multiple settings may be using the rescue packs including our rural clinic in Golden, results are not site-specific
- Small sample size for this first round pilot, not all our providers are utilizing the COPD rescue packs.

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Increasing Access to Naloxone Prescriptions for Patients on Long-Term Schedule II Opioids

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Introduction

From 1999-2021, nearly 645,000 Americans died from an overdose involving prescription or illicit opioids.

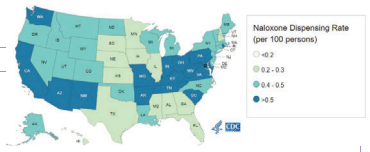
- Of the nearly 107,000 drug overdose fatalities in 2021, over 75% involved an opioid.
- In Illinois in 2022, there were 3,261 opioid overdose fatalities
  - more than twice the number of fatal motor vehicle accidents
  - more than twice the number of homicides

The CDC identifies several factors that increase the risk of opioid overdose:

- **High-risk daily MME (50+)**
- **Concurrent benzodiazepine use**
- Patients at risk for returning to a higher dose for which they lost tolerance (e.g., dose being tapered down, release from incarceration)
- Sleep-disordered breathing
- History of overdose
- Substance use disorder
  - Estimated 1:4 patients on chronic opioid therapy

Naloxone dispensing rate in 2022 is relatively low

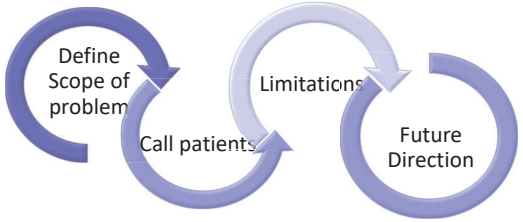
- National: 0.5 naloxone prescriptions per 100 persons
- Illinois: 0.3 naloxone prescriptions per 100 persons
  - Bottom 25%



Methods

Plan-Do-Study-Act

Aim: increase naloxone prescriptions for patients on high-dose, long-term opioids and/or concurrent benzodiazepines to 100%.



Methods

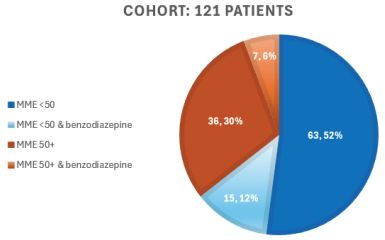
- IRB approved retrospective cohort study
  - 03/01/2022 - 02/28/2023

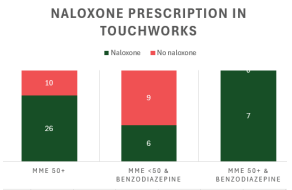
Inclusion Criteria	Exclusion Criteria
☐ Opioid managed by SIU GIM	☐ Any opioid prescription from non-SIU, non-GIM physician
☐ Stable dose of Schedule II Opioid	☐ Titration of Schedule II Opioid

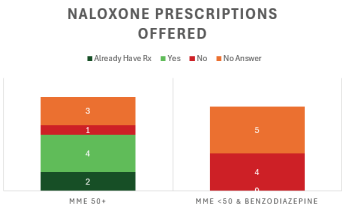
- Intervention: call identified patients
  - Counsel risks and benefits of naloxone
  - Offer naloxone prescription

Results

- Most frequently prescribed Schedule II opioid:
  - hydrocodone (n = 104)







New naloxone prescriptions: 6

Discussion

- Intervention did not show statistical significance, but every naloxone prescription could be life saving.
- Reasons patients said no:
  - Feeling stigmatized as an opioid abuser
  - Cost
  - Not knowing where to obtain naloxone
  - Transportation issues
- Bias: all patients of Dr. Graves that were contacted agreed to prescription.
  - Patients may be more open to naloxone if conversation occurs with their primary care provider
- Several naloxone prescriptions did not have a prescription date listed and are possibly outdated.
  - Unknown if patients with prescription have naloxone available at home
  - Unknown if patients know how to administer naloxone
- Patients who had opioid doses being tapered were excluded as they could not reliably be classified into high-risk or low-risk groups.

Future Direction

- Expand project to include IM residents
  - Special focus on highest risk groups, especially previously excluded patients
  - Confirm if patients have naloxone
- Protocol: distribute IDHS Recognizing and Responding to an Opioid Overdose brochure and prescribe naloxone every time a Controlled Substance Agreement is signed
- Create a naloxone awareness poster for patients and clinicians to put on walls in the clinic with information on naloxone and where to get it locally

References:

1. "Fact Sheets." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 8 Feb. 2022, www.cdc.gov/opioids/naloxone/factsheets/index.html.
2. "Statewide Semiannual Opioid Reports." Illinois Department of Public Health, Oct. 2023, dph.illinois.gov/topics-services/opioids/idph-data-dashboard/semiannual-opioid-reports.html.
3. "Understanding the Opioid Overdose Epidemic." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 8 Aug. 2023, www.cdc.gov/opioids/basics/epidemic.html.

SIU MEDICINE

Increasing the rates of HIV screening

Authors: Jesse Schmidt MD, Justin Parker MD, Nicole Tenegra MD, Johnny Tenegra MD
SIU Family Medicine Decatur Residency

Introduction

"Knowing your HIV status helps you make decisions to prevent acquiring or transmitting HIV"

Human immunodeficiency virus (HIV) became known to the United Stated in the 1980's, during the rise of the Acquired Immunodeficiency Syndrome (AIDS) epidemic. Since then, HIV has become treatable and AIDS - preventable.

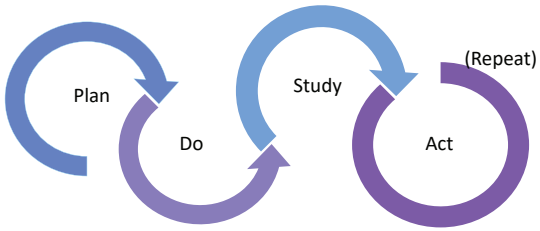
In 2021, there was 1.2 million people in the U.S. living with HIV. Approximately 85% were previously aware of their diagnosis and 15% were newly diagnosed. It is the World Health Organization's (WHO) goal to reduce incidence rate of newly diagnosed HIV cases by improving the percent of known HIV+ status to 95%. That way, ideally those who are living with HIV will be provided treatment, and education on transmission prevention.

There are many barriers on the road to 95% - including stigma, healthcare disparities, and intertwined in each of these is education.

Our aim:
To increase the overall compliance rate of HIV screening. Though there are many barriers, the first step is to educate providers of the criteria for HIV screening and to normalize the conversation by combining it with other routine health screening.

Methods

Our quality improvement project incorporated the "Plan-Do-Study-Act (PDSA) model" for implementing change.



USPSTF guidelines: "At least a one-time HIV screening between the ages of 15 to 65"

Methods Cont.

Inclusion criteria: all patients ages 15 to 65 that had an office visit at SIU Decatur Center for Family Medicine during two 6-month time frames. Pre-intervention was from 7/22/22 to 1/23/23) and post-intervention from 4/1/23 to 9/20/23.

In each group, we compared the percentage of patient's that have any available "HIV-1/2 Ag/Ab" lab results within the EHR. For the intervention, providers were educated with a 20-minute presentation. They were provided educational handouts on the HIV screening guidelines, and tips on how to facilitate the conversation on HIV screening.

Results

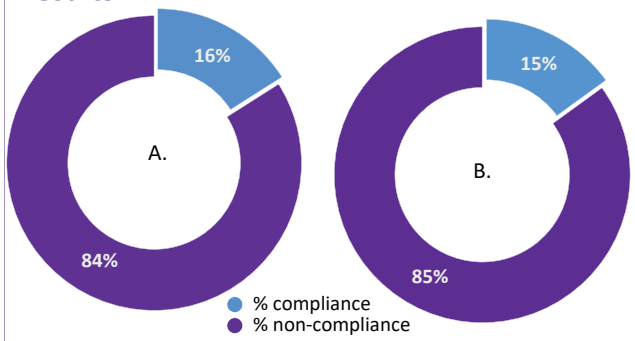


Figure 1. Percent HIV screening compliance rate
SIU Decatur Center for Family Medicine during two 6-month periods; A.) pre-intervention (7/22/22 to 1/23/23) and B.) post-intervention (4/1/23 to 9/20/23)

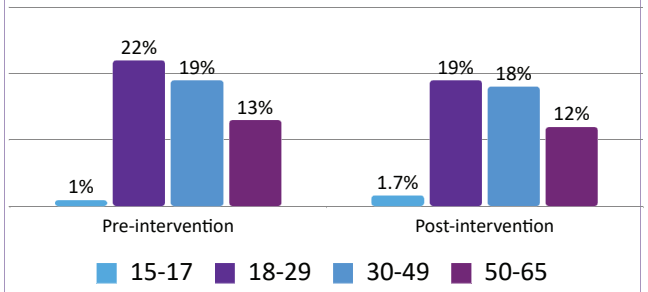


Figure 1. Percent compliance rate of HIV Screening amongst age groups

Results Cont.

An example of disparity in testing compliance is shown in the difference between age groups. The majority of completed screening is within the 25-45 age group.

- Percent compliance rate decreased by 1% between pre & post -intervention
- Calculations of percent compliance obtained only from number of patient's seen within office during the allotted time frames:

$$\frac{\text{\# patient's with HIV-1/2 Ag/Ab result in EHR}}{\text{Total \# patient's}}$$

Discussion

This project had a negligible decrease in compliance rates between the two study periods. This alone provides limited utility for application to practice.
However, the process proved to unfold numerous future QI project ideas. We found that there are significant disparities of compliance amongst patient groups, and data-gaps due to inconsistencies in how, or if, results are stored within the EHR system. This likely contributed to and ultimately skewed our results. It is important to recognize the role of the patient in successful screening. As they can decline the test, or not complete the blood work.
Therefore, though it is important to educate and encourage providers and patients to "know their status". It is equally as important that we strive to improve the EHR documentation of screening results.

References:

1. Centers for disease control and prevention (CDC)
2. World Health Organization (WHO)
3. USPSTF
4. HIV.gov

SIU MEDICINE

Increasing the rates of pediatric obesity counseling in the Caucasian population

Authors: Oladipupo Osunbunmi, MD; Justin Parker, MD; Johnny Tenegra, MD
Southern Illinois University Family Medicine Residency Program

SIU MEDICINE

Approximately one-third of children and adolescents in the United States are either overweight or obese; above the 85th percentile of body mass index (BMI) adjusted for a patient's sex and age.
Documentation of both weight assessment and counseling for nutrition and physical activity is a screening tool that can provide information to garner a healthier lifestyle in pediatric patients.

In our Federally Qualified Health Center (FQHC), documentation for nutrition and physical activity occurred in 64% of obese or overweight children.

- The Caucasian population comprises 49% of the population in our practice; with compliance in the documentation of 61% in that specific population. This is 3% below our overall documentation rate.
- The second most populated group is the black and African American which comprised 31% of the population; and had a documentation rate of 66%.

Methods

The objective of this quality improvement project is to improve documentation of the counseling rate in the entirety of the population by ensuring counseling and documentation are allocated to every demographic, and not just focusing on persons from an ethnic minority.

We screened patients 3-17 years of age who have a diagnosis of obesity or were overweight who had an outpatient visit at our clinic.
The initial documentation of screening with checkboxes for diet, nutrition, and physical activity was not only documented but discussed with parents and caregivers.

- Ensuring weight and height are documented to calculate BMI.
- Then an adjustment to the documentation process through the Electronic Medical Record (EMR) was made; documentation was made more visible and accessible for providers.

Main Finding

The documentation of not only weight assessment but also counseling for nutrition and physical activity

- is a great screening tool to help facilitate a healthier lifestyle in pediatric patients.
- It can help improve risk assessment of weight related comorbidities and in this population parent/caregiver knowledge.

Discussion

The initial problem was the overlooking of the Caucasian population in documentation. I anticipated a more tangible rise in benchmark documentation. Nonetheless, by the end of 6 months, documentation compliance was noted and resulted positive

Moving forward, this outcome will allow more attention to not only documenting but also following up to monitor progress in patient's BMI.

The most useful part of this activity is that it created a strong desire to implement changes in the surrounding health system.

Results

We found that the provision of BMI calculation in children 3-17 was adequately provided by clinic staff through the attainment of vital signs. Results showed that our center had a slight improvement in documentation of height, weight, and BMI along with counseling for nutrition and physical activity, not only in the Caucasian population to 70%, but in the whole population of children aged 3-17 years to 70.8%.

Race	% population	Before intervention	After intervention
Caucasian	49%	64%	70%
African American	32%	66%	67%
Unreported	14%	71%	81%
More than one race	4%	67%	80%
Total		64%	71%

Table 1.
Shows the Total percent population in the clinic outlined by race and the UDS measurement after 6 months.

References

1. Centralized Data reporting and analytics
2. Ogden CL, Freedman DS, Hales CM. CDC Extended BMI-for-Age Percentiles Versus Percent of the 95th Percentile. Pediatrics. 2023 Sep 1;152(3):e2023062285. doi: 10.1542/peds.2023-062285. PMID: 37615069..

Feeding Springfield: A QI Comprehensive Approach to Identifying and Addressing Food Insecurity in At-Risk Communities

Maria J Vides Sanchez; Allison Mool; Neil Patel; Shreepada Tripathy: Kerby Scanlan; Enas Shanshen
Sothern Illinois University School of Medicine - Pediatrics

Introduction

- Food insecurity, defined as the limited or uncertain access to adequate food, has a critical effect on a child's health and development.
- The AAP recommends generalized screening for food insecurity.
- SIU Pediatrics clinics were not routinely screening patients.
- The aim of this study is to increase screening from zero to 50% by March 2024.

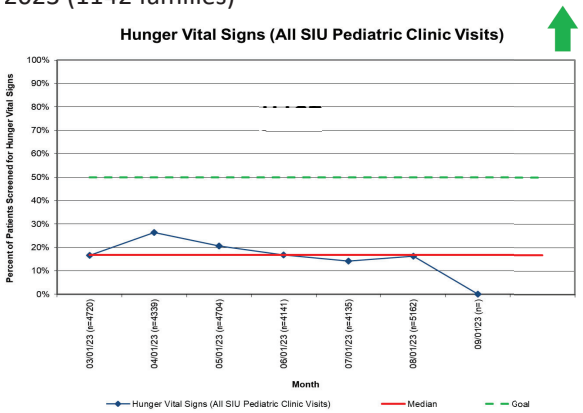
Methods

- Hunger Vital Sign (HVS) questions were introduced in clinic screening.
- Staff were educated about the importance of screening patients.
- If the screen was positive, the family received:
  - Brochure with resources

  - Contact with clinic social worker
- Staff were given "Nutrition Champion" pins to reward and encourage participation

Results

- Hunger vital signs questions were introduced to initial screening when a patient comes to clinic on March 2023
  - ***Within the past 12 months we were worried whether our food would run out before we had money to buy more***
  - ***Within the past 12 months the food we bought just didn't last and we didn't have the money to get more***
- During the first month screening was at 20 %
- Maximum screening percentage was 25% on April 2023 (1142 families)

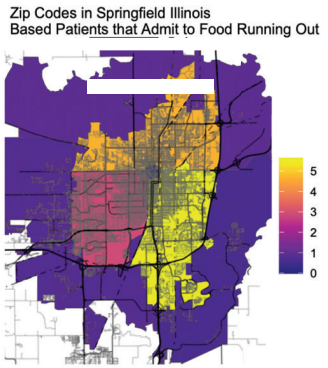


Problems

- Screening was seen to decrease as time from initial introduction went by
- Some parents refused to be screened
- Screening was limited during busy and specialty clinics
- Screening is adding an extra burden on the staff

Results

- There is a significant difference on the prevalence of food insecurity between black and white families
- Zip codes more commonly affected surround downtown area of Springfield



Discussion

- By educating and encouraging our SIU pediatric outpatient clinic staff to screen for nutrition insecurity using the screening method recommended by the AAP, which is the Hunger Vital Signs, we have increasingly detected the population at risk.
- Our intervention currently involves providing the SIU food security brochure and connecting with our patient population to educate them about local resources. We hope to soon expand this screening to our inpatient population.
- We are working on establishing a food pantry in our pediatric outpatient clinic to provide emergency food basket of nonperishable food available for those families that screen positive.

References:

1. Hager, E. R., Quigg, A. M., Black, M. M., Coleman, S. M., Heeren, T., Rose-Jacobs, R., Cook, J. T., Ettinger de Cuba, S. A., Casey, P. H., Chilton, M., Cutts, D. B., Meyers A. F., Frank, D. A. (2010). Development and Validity of a 2-Item Screen to Identify Families at Risk for Food Insecurity. Pediatrics, 126(1), 26-32. doi:10.1542/peds.2009-3146.

2. Hartline-Grafton H, Hassink SG. Food Insecurity and Health: Practices and Policies to Address Food Insecurity among Children. Acad Pediatr. 2021 Mar;21(2):205-210.

SIU MEDICINE

Strategies to Increase HgA1c Testing in an Outpatient Internal Medicine Clinic

Kristen Lu M.D., Rajanbir Singh M.D., Genan Arman M.D., Hajar El-Amri M.D., Ahmed Elsheikh M.D., Yogitha Dadi M.D., Samie Gilani M.D., Ying Ying Hu M.D., Abubaker Kallan M.D., Syeda Kamal M.D., Luke Schiller M.D., Mohammad Sukkari M.D., Aneeq Yasin M.D.
Faculty: Akshra Verma M.D., Andrew Varney M.D.
Southern Illinois University - Department of Internal Medicine

SIU MEDICINE

Introduction

- **Nature of the Problem:** Diabetes Mellitus affects 11.6% or 38.3 million members of the U.S. population. [1]
- **Significance:** Suboptimal control can lead to significant health complications including severe end-organ damage. It can also lower patients' quality of life and increase healthcare costs.
- **Rationale:** This continuing project aims to address the critical need for regular Hemoglobin A1c (HgbA1c) testing and improved management of Diabetes Mellitus among SIU General Internal Medicine primary care patients.

Methods

1.The quality improvement methodology Plan-Do-Study-Act (PDSA) Cycle was utilized.

2.DRVS (a centralized data reporting and analytics software) was used to identify diabetic primary care patients of the SIU General Internal Medicine (GIM) Clinic who qualify for HgA1c testing. Inclusion criteria were patients with existing diagnosis of Diabetes Mellitus who either had a HgbA1c above 9 or who were untested in the previous 12 months.

3.In PDSA Cycle 1, resident physicians involved in the development this project were trained on the use of DRVS. Residents contacted their patients who met criteria to discuss the importance of and elicit barriers to obtaining routine HgbA1c (Primary Intervention). HgbA1c lab testing was ordered. The outcome measured was the percentage of patients who obtained the HgbA1c test following the intervention (Figure 1).

4.In PDSA Cycle 2, each resident was paired with 2-3 co-residents, and the previous step was replicated. Residents were able to assign tasks to each other through the electronic medical record regarding the need for testing. Common barriers elicited during the first cycle was outlined in a flow chart with potential solutions. This time, the residents would also offer the solution outlined in the flow chart (Figure 2) targeting that patient's self-reported barriers (Secondary Intervention). The outcome measured remained the same (Figure 3). Data displayed was collected as of 03/01/2024.

Results

PDSA Cycle 1

- April to June of 2023
- The percentage of SIU GIM patients meeting the testing criteria decreased from 32.1 to 30.6%.

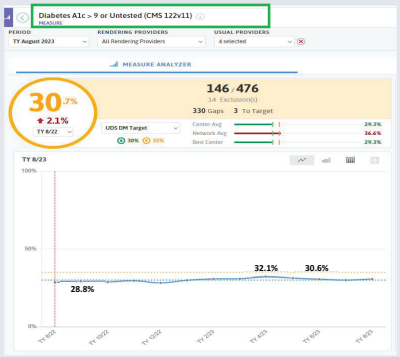


Figure 1: DRVS Graph demonstrates percent change in patients with uncontrolled DM after Cycle 1.

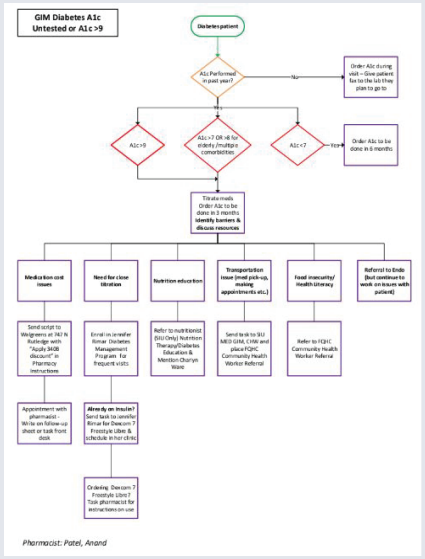


Figure 2: This flow chart details the approach taken for individuals diagnosed with Diabetes Mellitus.

PDSA Cycle 2

- September to November 2023
- Changes incorporated:
  - use of flow chart (Figure 2)
  - pairing of residents
- The percentage of SIU GIM patients meeting the testing criteria decreased further to 28.4%.

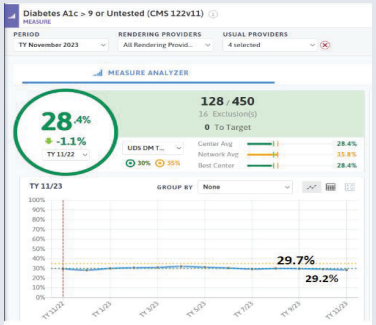


Figure 3: DRVS Graph demonstrates percent change in patients with uncontrolled DM after Cycle 2.

Notable Findings

- Three months following Cycle 2, there was an increase in percentage change in patients who met criteria to 30.5%.
- Overall, the percentage of patients with HgbA1c >9 who had not been tested in over 1 year decreased from 19% to 17%.
- The residents that originated this project (Green Cohort) and have implemented both Cycle 1 and 2, remains the cohort with the lowest percentage of patients who still meet test criteria at 25.2%..

Discussion

The optimization of Diabetes Mellitus care, from initial patient contact to well-controlled status requires interdisciplinary team collaboration, elimination of barriers to care, and innovations in technology.

This quality improvement initiative shows promise in a systematic approach for increasing HgbA1c testing in the outpatient clinic. Both Primary and Secondary interventions introduced appear to have a measurable impact that is observed quickly (within months). Altogether, the project was able to incorporate resident rapport with their primary care patients to identify and target specific barriers to testing and adherence to care recommendations. Interdisciplinary engagement was crucial to addressing psychosocial factors as evidenced by the flow chart algorithm.

Challenges encountered included the wait time of 3 months prior to the next HgbA1c monitoring, inherent difficulties of complex disease management, and reliance on the proactivity of individuals (both the residents' effort, and the patients' follow through). The omnipresence of insurance and pharmaceutical factors cannot be discounted.

As this project continues to evolve, future cycles can conduct an impact assessment on each factor within the Primary and Secondary interventions to delineate those that produce sustainable results. These interventions can then be adjusted based on data analysis to enhance their effectiveness. Building upon patient portals to support timely notifications for HgbA1c testing can also be explored.

References:

1. Centers for Disease Control and Prevention. (n.d.). National Diabetes Statistics Report. Retrieved from https://www.cdc.gov/diabetes/data/statistics-report/index.html

Going Round & Round: Improving Rounding Efficiency on the 2 Team Pediatric Hospitalist Service

Shachi Daru, Connor Vorreyer, & Majo Vides
SIU Pediatrics

OUR PROBLEM

- Inefficient rounding structure despite having 2 teams
  - Many learners: students + residents + NPs
  - Connect calls, nursing calls, questions, and updates lead to many interruptions
  - Family centered approach
  - Balancing optimal patient care with education, individual tasks, and work flow
- Target interruptions to improve efficiency
  - Universal structure
  - Clear roles
  - Delegation of duties

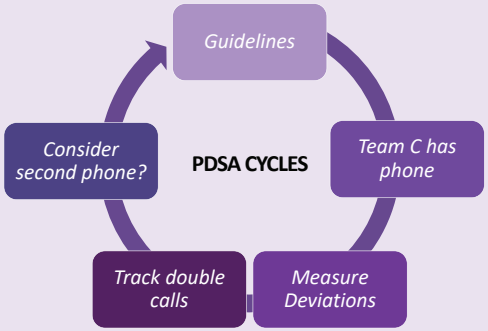
SMART AIM

Decrease number of interruptions on Team A by 25% by May 2024

METHODS

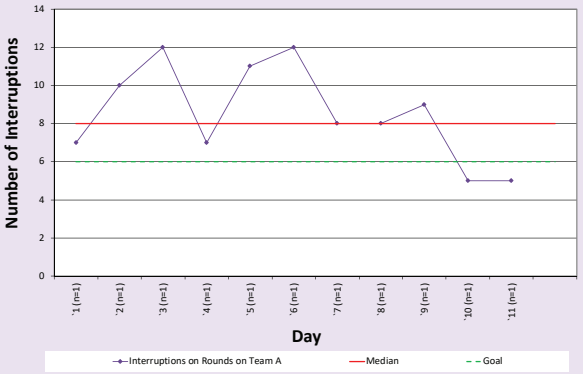
Process/Outcome Measure(s): Number of Interruptions on Team A Rounds; total time to round

Balancing Measure(s): Teaching time, double calls



BASELINE DATA

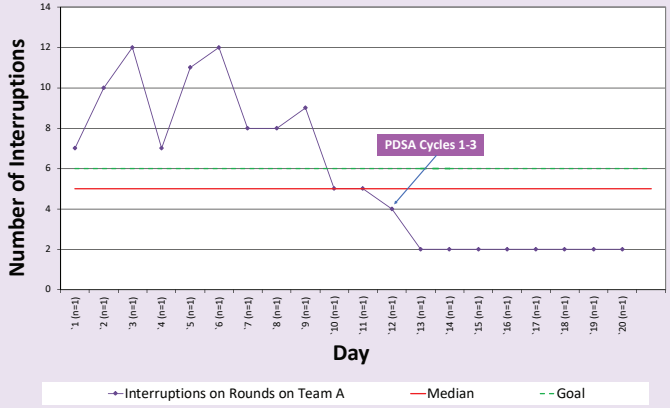
Interruptions on Rounds on Team A



RESULTS

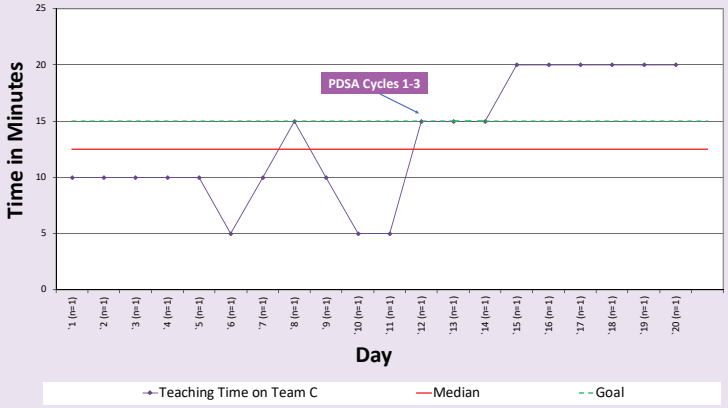
PROCESS MEASURE

Interruptions on Rounds on Team A



BALANCING MEASURE

Teaching Time on Team C



DISCUSSION

- Median interruptions dropped from a baseline of 8 to 5, below our goal of 6 with just 3 interventions
  - Creating guidelines
  - Assigning phone to smaller team (C) with lesser patients
  - Measuring deviations from established standards
- Decreasing interruptions did not seem to impact patient care
- Did NOT decrease, but actually allowed an increase, in teaching time
- Improved structure, assignment of clear roles, and enforcement of duties lead to improved efficiency by utilizing both teams to their maximum potentials

NEXT STEPS

- Fixing data collection issues with 2 QR codes – separate for each team
- Measuring double calls, total rounding time, transfers to PICU additionally for other measures of balance
- Comparing teaching time for same attending when on A vs C
- Transitioning to bootcamp with new interns
- Very promising so far, but much more room to go in optimization

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1. Unaka NI, Herrmann LE, Parker MW, Jerardi KE, Brady PW, Demeritt B, Lichner K, Carlisle M, Treasure JD, Hickey E, Statile AM. Improving Efficiency of Pediatric Hospital Medicine Team Daily Workflow. Hosp Pediatr. 2019 Nov;9(11):867-873. doi: 10.1542/hpeds.2019-0094. Epub 2019 Oct 18. PMID: 31628203.
2. Vats A, Goin KH, Villarreal MC, Yilmaz T, Fortenberry JD, Keskinocak P. The impact of a lean rounding process in a pediatric intensive care unit. Crit Care Med. 2012 Feb;40(2):608-17. doi: 10.1097/CCM.0b013e318232e2fc. PMID: 21983366.

Standardizing the Postpartum Care of Obstetric Anal Sphincter Injuries

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Department of [1]Obstetrics and Gynecology, [2]Center for Clinical Research, and [3]Clinical Affairs, Maternal Fetal Medicine

Southern Illinois University - School of Medicine

SIU MEDICINE MATERNAL-FETAL MEDICINE

Introduction

- Perineal lacerations at delivery are fairly common, occurring in 53-79% of all vaginal deliveries.
- 3rd- and 4th-degree lacerations involving the anal sphincter complicate up to 11% of vaginal deliveries and have higher associated morbidity.
- Obstetric anal sphincter injuries (OASIS) are associated with increased risk of wound breakdown, infection, dyspareunia and long-term fecal incontinence.
- At HSHS St. John's Hospital (SJH) Labor and Delivery there are many providers who care for obstetric patients and, while the repair of OASIS has become more standardized, the postpartum care and documentation of such has not.
- Our aim is to optimize postpartum care after OASIS based on the American College of Obstetricians and Gynecologists (ACOG) recommendations.

Methods

PLAN:	• Analyze postpartum care for all patients delivering at SJH after OASIS from 01/01/2018 - 06/30/2023 • Focus analysis on pain management, bowel regimen and antibiotic regimen • Assess the consistency of injury and care documentation in postpartum notes and discharge summaries • Determine the average time to follow-up currently being recommended
DO:	• Implement education sessions with resident physicians focused on ACOG-recommended postpartum care following OASIS • Implement a "dot phrase" in the Electronic Health Record (EHR) for standardized documentation of postpartum care plans in both postpartum notes and discharge summaries
STUDY:	• Obtain post-intervention data and compare documented postpartum care practices to pre-intervention data
ACT:	• Determine if resident education and standardization of documentation impacts postpartum care • Potentially implement annual resident training sessions

Postpartum care recommendations following OASIS:

1. A single dose of antibiotics should be given at time of laceration repair
2. A multi-modal bowel regimen should be prescribed with a laxative and stool softener
3. A multi-modal pain regimen should be prescribed for adequate pain control
4. Lacerations and postpartum care should be documented in postpartum notes and discharge summaries
5. Providers should recommend close outpatient follow-up within two weeks of hospital discharge

Data collection and analysis:

We conducted a retrospective chart review of all patients who had a 3rd- or 4th-degree laceration documented at SJH. Clinically relevant data were collected for each patient from SJH's EHR, EPIC, from 01/01/2018 - - 06/30/2023.

Continuous variables are summarized as means ± S.E.M. and categorical variables are reported as frequencies (percentages).

Results

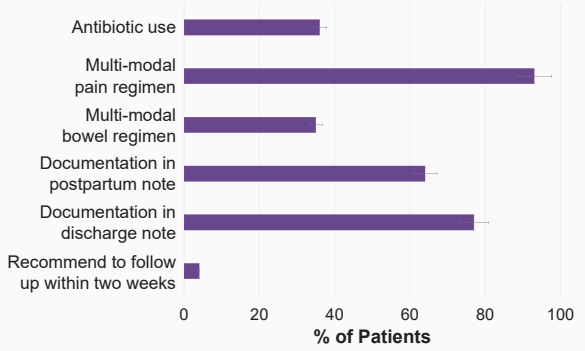
- 10,514 total deliveries with n = 118 documented 3rd or 4th degree OASIS cases at SJH from 01/01/2018 – 06/30/2023

Continuous variable	Mean ± S.E.M.
Age at delivery	28.9 ± 0.50
BMI pre-pregnancy	26.1 ± 0.51
BMI at delivery	30.8 ± 0.50

Variable		N (%)
Race	White or Caucasian	95 (80.51%)
	Black or African American	6 (5.08%)
	Asian	6 (5.08%)
	Native American or Alaska Native	1 (0.85%)
	Other	10 (8.47%)
Prior Parity	0	95 (80.51%)
	1	20 (16.95%)
	2	3 (2.54%)
Patients with previous vaginal delivery		13 (11.02%)
Prior 3rd-4th degree laceration	No	113 (95.76%)
	Yes	4 (3.39%)
	Unknown	1 (0.85%)

Results (cont.)

Provider Compliance to ACOG Recommendations



Discussion/Conclusions

- Pre-intervention analysis suggests several areas for education and improvement including multi-modal bowel regimens, antibiotic therapy, standardized documentation and follow-up recommendations.
- While the majority of patients (95%) had at least a laxative or a stool softener, we aim to improve the rate of prescribing both of these agents concurrently (currently 35%).
- Improving the rate of antibiotic usage at time of laceration repair (currently 36%) may help decrease the rate of wound infection which has been associated with significant morbidity such as wound breakdown, dyspareunia and anal incontinence.
- We aim to increase documentation in both postpartum and discharge notes (currently 64% and 77%, respectively). Accurate and thorough documentation is essential for effective patient handoff.
- We aim to change the standardized recommendation for follow-up time to 14 days, as OASIS requires frequent follow-up to ensure adequate healing and monitoring for infection.

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Addressing Social Determinants of Health (SDOH) to Improve Health Equity and Health Outcomes within our Obstetric Population at SIU Ob/Gyn

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Introduction

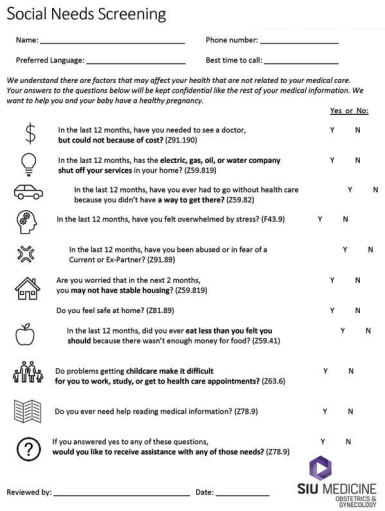
Background:

- Social determinants of health (SDOH) are non-medical factors that have been shown to influence health outcomes; Access to food, transportation, stable housing and utility needs, are examples of social needs that can affect patient's health during pregnancy
- To potentially improve health outcomes within our own obstetric population, we focused on identifying social needs of our patients, providing information to patients to assist them with accessing resources and evaluating how the needs are addressed in our clinic

Objectives:

PLAN:	• Determine the number of pregnant women who have social needs. • Determine the type of social needs that are more prevalent in our obstetrical population • Assess if needs are documented and addressed.
DO:	• Implement a "Social Needs Screening tool" to identify and address the social needs within our obstetric population at their first prenatal and postpartum visit. • Implement the use of a "SDOH Provider Tip Sheet" as a guide for providers and staff on how to address positive screens, how to link patients to resources, add SDOH ICD-10 codes to the electronic medical record and refer patients to the Office of Community Care, the Nurse Family Partnership and the Sangamon County Department of Public Health, WIC/Family Case Management/Better Birth Outcomes program.
STUDY:	• Assess if needs are documented and addressed. • Determine if patients were able to access resources.
ACT:	• Reassess needs at the postpartum visit. • Do needs affect maternal or neonatal outcomes? • Identify factors that could affect patient willingness to accept assistance and accessibility to resources for those who are willing.

Methods



Social Needs Screening

Name: _____ Phone number: _____

Preferred Language: _____ Best time to call: _____

We understand there are factors that may affect your health that are not related to your medical care. Your answers to the questions below will be kept confidential like the rest of your medical information. We want to help you and your baby have a healthy pregnancy.

Yes or No:

- In the last 12 months, have you needed to see a doctor, **but could not because of cost?** (Z91.190) Y N
- In the last 12 months, has the **electric, gas, oil, or water company shut off your services** in your home? (Z59.819) Y N
- In the last 12 months, have you ever had to go without health care because you didn't have **a way to get there?** (Z59.82) Y N
- In the last 12 months, have you felt overwhelmed by stress? (F43.9) Y N
- In the last 12 months, have you been abused or in fear of a Current or Ex-Partner? (Z91.89) Y N
- Are you worried that in the next 2 months, you **may not have stable housing?** (Z59.819) Y N
- Do you feel safe at home? (Z81.89) Y N
- In the last 12 months, did you ever **eat less than you felt you should** because there wasn't enough money for food? (Z59.41) Y N
- Do problems getting **childcare make it difficult for you to work, study, or get to health care appointments?** (Z63.6) Y N
- Do you ever need help reading medical information? (Z78.9) Y N
- If you answered yes to any of these questions, **would you like to receive assistance with any of those needs?** (Z78.9) Y N

Reviewed by: _____ Date: _____

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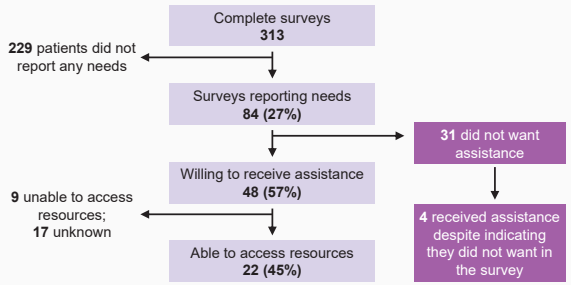
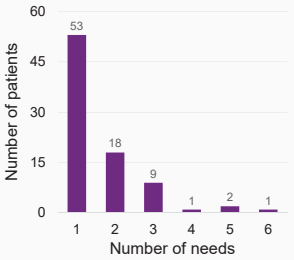
Data collection and analysis:

Answers to survey questions as well as relevant clinical information extracted from the Electronic Health Records (EHR) were entered into a web-based, HIPAA compliant research data capture system (REDCap).

Data are shown as mean ± S.E.M., Median (range) or N (%) as appropriate. Comparisons were performed using t-test (continuous variables), Mann Whitney test (discrete variables) and Chi-square or Fisher's test as appropriate for categorical variables.

Results





- The most common need was childcare with 31 patients positive for this need. This was followed by utility insecurity (21 patients) and food insecurity (20 patients).
- Of the 84 patients reporting needs in our survey, our providers documented this for 47 (56%) patients by stating the needs were addressed or at least acknowledged.

Results (cont.)

Variable		Patients **without** needs	Patients **with** needs	P-value
Race	White	86 (57.3%)	35 (61.4%)	0.773
	African American	46 (30.7%)	17 (29.8%)	
	Other/multi-racial	18 (12.0%)	5 (8.8%)	
Hispanic Ethnicity		7 (3.5%)	3 (4%)	0.999
Body Mass Index		31.2 ± 0.58	32.4 ± 1.17	0.301
Age		26.09 ± 0.36	28.02 ± 0.66	0.007*
Gravidity		3 (1-13)	4 (1-17)	<0.001*
Parity		1 (0-10)	2 (0-15)	0.018*
Comorbidities	Hypertension	46 (20%)	12 (13%)	0.242
	Diabetes	30 (13%)	4 (5%)	0.036*
	Depression	72 (31%)	42 (50%)	0.003*
	Obesity	108 (47%)	37 (44%)	0.624
Alcohol use	Never	198 (90.4%)	63 (85.1%)	0. 310
	Pre-pregnancy	18 (8.2%)	10 (13.5%)	
	Current	3 (1.4%)	1 (1.4%)	
Tobacco use	Never	148 (64.6%)	41 (51.9%)	<0.001*
	Pre-pregnancy	31 (14.0%)	5 (6.3 %)	
	Current Occasional	5 (2.3%)	3 (3.8%)	
	Current Daily	38 (17.1%)	30 (38%)	
Drug use	Never	133 (61.9%)	35 (45.5%)	0.045*
	Pre-pregnancy	26 (12.1%)	9 (11.7%)	
	Current Occasional	25 (11.6%)	16 (20.8%)	
	Current Daily	31 (14.4%)	17 (22.1%)	

Many of the patients who completed the survey are still pregnant, we will continue to collect postpartum data including birth outcomes, adherence to prenatal care and maternity morbidity factors.

Discussion/Conclusions

- SDOH can greatly influence health outcomes. Indeed, mental health is especially affected by SDOH, as patients with needs have a higher incidence of depression, tobacco and drug use.
- Women reporting needs are older, have been pregnant more times and have a higher number of children when compared to those who did not report any needs.
- Unfortunately, only 45% of patients willing to receive assistance were able to access resources, indicating our providers need assistance linking patients to available resources.
- Our goal is to utilize our newly implemented social needs screening tool to prove that additional funding is necessary to enhance our providers ability to discuss and address the needs of our patients with the assistance of a licensed clinical social worker (LCSW).
- A LCSW working with our providers in the obstetrical clinic may also help our patients be more willing to accept resources within our community. Once all patients in this initial assessment have delivered, we plan to further investigate how addressing social needs may impact birth outcomes (i.e., preterm birth, NICU admissions) and maternal morbidity factors.