SIU SCHOOL of MEDICINE

Office of Graduate Medical Education
Quality Improvement Poster Competition

April 2021

2021 GME QI Poster Competition
April 2021

Poster #	Judges	Resident(s)	Program	Project Title
1	Stewart, Greenwalt	Eman Mosleh, MD	Pediatrics	Improving Trainee Communication During Sub-specialty Consultation on the Inpatient Pediatric Service
2	Hawk, Callahan	Marion Were, MD & Adora Anudu, MD	Pediatrics	IMPROVING DIVERSITY IN SIU PEDIATRICS RESIDENCY
3	Carlson, Hawk	Sean O'Malley, MD	General Surgery	Optimization of Faculty Evaluation of VOPs for General Surgery PGY1 Residents
4	Carlson, Callahan	Radhika Deshpande, MD, Mary Dickerson (Medical Student)	Internal Medicine	Characterization of Lipid Profiles and Pharmacologic interventions for Lipid Management in Medicare Age Patients
5	Carlson, Greenwalt	Julie Anne Shepherd, MD; Kathryn Demitruk, MD; Tanner Eiben, DO; Tab Law, DO; Kathia Raphael, MD	Quincy Family Medicine	Improving Screening for Various Quality Health Measures with a Focus on Depression
6	Stewart, Hawk	Alyssa Ray (Medical Student) & Morton Machir, MD	Internal Medicine	Lipid Control in SIU Internal Medicine Medicare Patients
7	Stewart, Hawk	Mohammad Jaber, MD	Pediatrics	Improving resident confidence in neonatal resuscitation skills
8	Greenwalt, Callahan	Mohammad Jaber, MD	Pediatrics	Improving resident participation and leadership in routine newborn deliveries
9	Stewart, Carlson	Michael DiGiovanni, MD	Decatur Family Medicine	Improving Provider Education on Sodium Restriction in Patients with Hypertension
10	Hawk, Greenwalt	Lynn Nguyen, MD	OB/GYN	Improving the Process of Calculating Quantified Blood Loss during Cesarean Deliveries
11	Hawk, Carlson	Elizabeth Wieland (Med Student), Timothy Carroll, MD	Internal Medicine	Lipid Management in Medicare Age Patients with COPD in an Academic Internal Medicine Practice
12	Hawk, Stewart	Asad Naeem, MD	Decatur Family Medicine	Improving Colon Cancer Screening Through Provider Reminder about Patient Education
13	Callahan, Carlson	Nadine Seudeal, MD	Decatur Family Medicine	Improving the Documentation of Educating and Counseling on Healthy Forms of Weight Loss through Exercise and Diet
14	Callahan, Greenwalt	Timothy Carroll, MD	Internal Medicine	Lipid Control and Risk of Stroke in a Medicare age Population
15	Callahan, Stewart	Supriya Shah, MD	General Surgery	Effects of Implementing a Temporary Pacemaker Training Module

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16	Stewart, Callahan	Amal Hamdan, MD, Wenqi Ouyang, MD, Harvey Stephens, Emma James, MD, Erika Gonzalez-Osorio, MD, Kathleen Groesch, Teresa Wilson, Paula Diaz-Sylve	OB/GYN	Household Food Insecurity in the SIU Obstetric Population and Proposed Strategies of Mitigation
17	Greenwalt, Hawk	Deshpande, Carroll, Megeff (med student), Forbes (med student)	Internal Medicine	Comparison of lipid profiles of patients on various lipid-lowering regimens at SIU SOM
18	Greenwalt, Stewart	Megan Kauffman, DO	General Surgery	Implementation of Geriatric Screening in Selection Criteria for Kidney Transplant Recipients
19	Greenwalt, Carlson	Evyn Neumeister, MD	Plastic Surgery	Adherence to a Burn Resuscitation Protocol

Improving Trainee Communication During Subspeciality Consultation on the Inpatient Pediatric Service

Eman Mosleh, MD; Mary-Katherine Siebenaler, MD

Southern Illinois University – School of Medicine

Background & Study Aim

Safe and effective communication is necessary in delivering high quality inpatient pediatric care, particularly when consulting a sub-specialty service. Trainees, historically, and through a pre-survey conducted prior to this study showed varying levels of comfort and confidence in calling consults.

- ❖ We aimed to improve trainee's level of comfort in calling consult by introducing an institution specific consult tool, to be utilized by trainees rotating through inpatient pediatrics

Study Design & Methods

- A **Quality Improvement** project with the main outcome measure being trainee (Southern Illinois University School of Medicine's pediatric residents, medical students) comfort in calling consultants as measured on a 5-point Likert scale survey (1: not at all comfortable, 5: extremely comfortable).

- S**MART Aim:** Improve the comfort of trainees on the inpatient pediatric service by 1 point over six months.

Plan-Do-Study-Act (PDSA) cycles.

- ❖ **Plan:** Presurvey to trainees through RedCap to identify comfort level and views on standardization of the consult process. Second presurvey of pediatric subspecialists to measure their level of satisfaction with trainee consults, as well as helped identify specific questions that each subspecialty deemed essential in a consult call – this was used to construct Figure 2.

- ❖ **Do:** A small group of trainees were introduced to the consult tool through presentation and e-mail formats, and participated in live simulation practice sessions. The consult tool was then colorfully displayed in high-traffic areas, and pocket-cards were printed. The tool was then incorporated into the monthly orientation given to trainees on day 1 of their inpatient rotation.

- ❖ **Study:** Assessed trainee comfort level via a monthly survey upon completion of their inpatient rotation.

- ❖ **Act:** peer-peer coaching and feedback sessions were regularly provided by senior residents.

Results

Pre-Intervention

- ❖ There were 60 responses to the trainee survey aimed at third year medical students and all pediatric residents

- ❖ Trainee survey showed that 40% of trainees did not feel comfortable at all with calling consults (average 2.7/5), 70% reported receiving no formal training on calling consults, and 83% strongly believed that standardizing the consult process would improve their confidence.

- ❖ There were 33 responses to the sub-specialist survey within the Pediatric department. Amongst them, 50% were not satisfied with trainee consults, and 82% believed that standardizing the consult process would improve their satisfaction and ultimately patient care

Post-Intervention

- ❖ A monthly two question survey aimed at trainees rotating through the inpatient Pediatric unit since the introduction of the tool (N= 23) revealed that 66% of trainees felt very comfortable (Avg 4.6/5) in calling consults.

- ❖ Amongst trainees surveyed, 86% (N=20) reported using the consult tool before calling a consult.

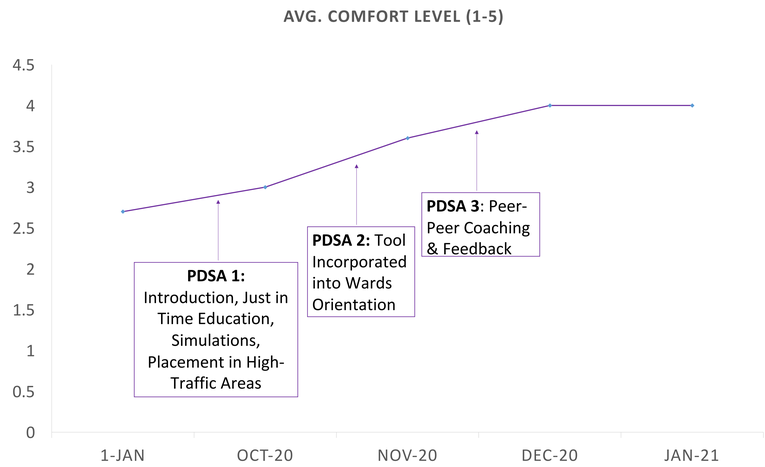

Figure1. Average level of comfort of trainees when calling a sub specialty consult

Figure2. Consult Tool (Compressed)

Discussion

In only three months following tool introduction, 66% of trainees reported feeling very comfortable with calling a consult, with an average comfort score increasing from 2.7 to 4 (48% Increase), exceeding our initial target. The vast majority of trainees stated that they have used the consult tool provided in the pediatric unit, and that it directly affected their level of comfort when contacting a subspecialty service.

Next Steps:

- ❖ Post intervention survey of pediatric subspecialists to assess utility of the tool, satisfaction with consults, and future suggestions will be conducted in April 2021
- ❖ Making tool available via a smart phone application
- ❖ Expanding outcome measures to include factors directly related to patient care such as length of stay, time to first subspecialty contact, etc.

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SIU MEDICINE

Improving Diversity Among SIU Pediatric Residents-Quality Improvement Study

Marion Were MD, Adora Anudu MD
Southern Illinois University, Springfield, IL

INTRODUCTION

Background

- Underrepresented minorities (URM) in medicine include Blacks, Mexican-Americans, Native Americans (i.e, American Indians, Alaska Natives, and Native Hawaiians) and mainland Puerto Ricans.
- 16 % of the MD, 9.8 % of DO pediatric residents identify as URM as of 2020. URM make up 33% of the USA population.

Local Problem

- Over past 2 years no URM matriculated into the pediatric residency at Southern Illinois University (SIU).

Smart Aim:

- Increase the percent of URM residents that match into the SIU pediatric program by 10% over the next 3 years.

PDSA CYCLE 1

Change Idea

- Create a safe space for candidates to ask questions that they may not otherwise feel comfortable asking

Process Measure

- The SIU Pediatric Residency URM Mix and Mingle was added to the 2021 residency interview season.
- This session was led by current SIU Pediatric URM residents and consisted of two sessions that were held via zoom.

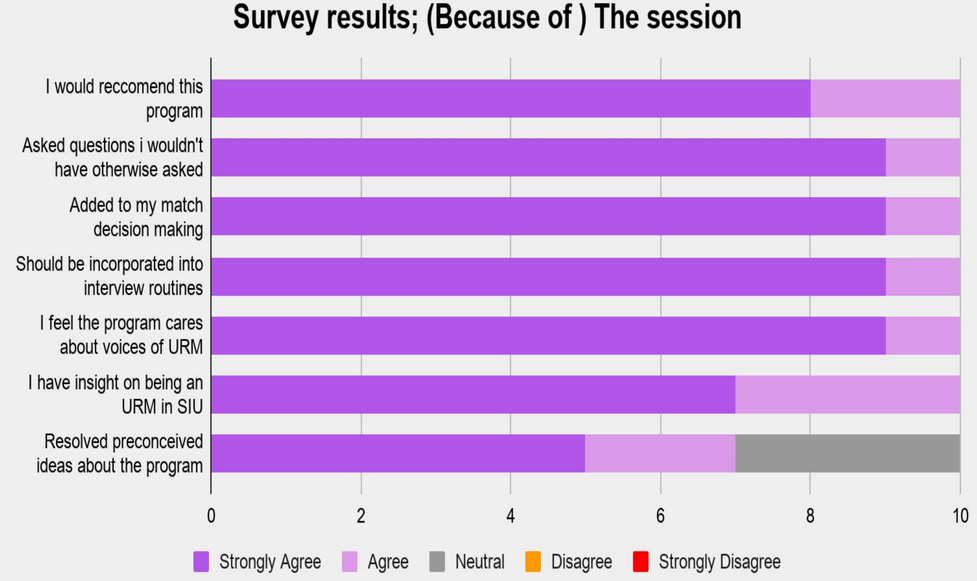
Process Outcome

- An anonymous survey using a Likert scale was sent to applicants that participated in the sessions. This was used to assess the applicants thoughts on the session.
- The number of URM who matriculated into the program in the 2020/21 cycle was assessed.

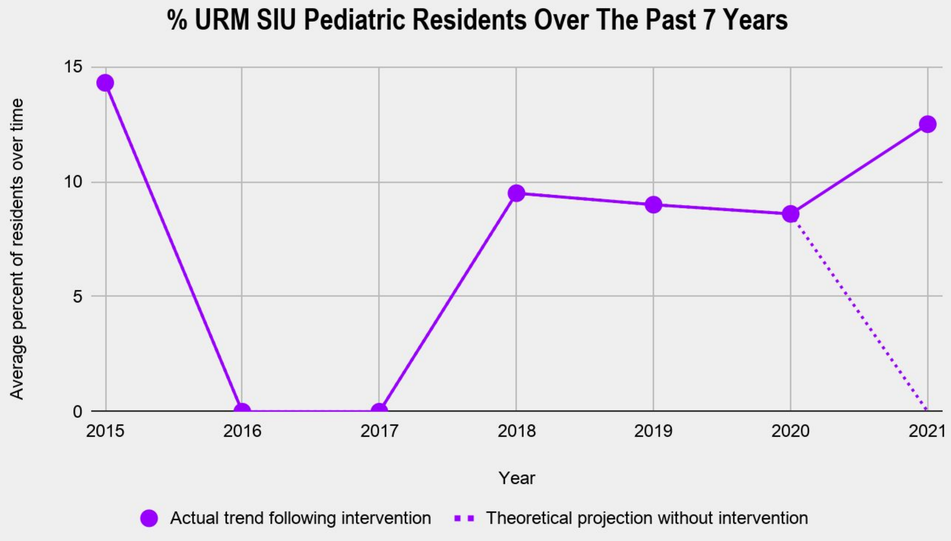
Next Steps

- Incorporate other URM faculty
- Include URMs from other specialties.
- Increase knowledge around implicit bias for those participating in interview process.

RESULTS



- 10 out of 12 candidates completed the survey



DISCUSSION

- There was a 38% increase in URM in the incoming intern class when compared to the previous two years.
- 3 of the 12 candidates that attended the Mix and Mingle matched into the incoming SIU pediatrics intern class.

Comments by candidates :

- *"The session was comprehensive, everyone felt easy speaking up their minds. I hope it continues to accommodate people of color in the future"*
- *"It answered questions that I was not comfortable asking during the interview process but was important in determine if the program and the area was a good fit and a safe fit.."*

Limitation:

- Given the small program size, one resident URM will lead to a significant increased change in percent of URM.

CONCLUSION & RECOMMENDATIONS

- After incorporating the URM mix and mingle we have seen an increase in URMs matching into the SIU pediatrics program.
- Consider making the mix and mingle event a part of the interview season.
- Continue to track the percent of URM in each class preferably yearly to ensure the improvements are sustained.

Optimization of Faculty Evaluation of VOPs for General Surgery PGY1 Residents

Sean O'Malley M.D., Janet Ketchum, CST CSFA, Prasad Poola M.D.
SIU School of Medicine- Department of General Surgery

Background

- Since 2005, SIU Surgery Department has employed the ACS (American College of Surgery) and APDS (Association of Program Directors in Surgery) basic surgical skills curriculum including VOPs (Verification of Proficiencies)
- Basic Surgical Skills being evaluated:
  - Knot tying (5 modules)
  - Basic suturing (3 modules)
  - Central venous access
  - Chest tube placement
  - Emergency surgical airway
- This type of proficiency- based training (PBT) has been found to result in fewer errors during operating room performances than learners that did not experience PBT.
- Various surgical specialty faculty are responsible for providing evaluations of VOPs that are performed in the beginning of the academic year for PGY1 surgical residents
- Surgical faculty view de-identified video of residents performing each surgical skill and subsequently fill out digital evaluation form at anytime

Subcuticular Skin Closure

Resident: _____ **Date:** _____

Skin Suturing Steps			Comments
Runs the suture, placing appropriate bites into dermal layer	Y	N	
Enters the dermal layer directly across from exit site	Y	N	
Avoids penetration of the epidermis	Y	N	
Avoids multiple forcep grasps of skin	Y	N	
Instrument ties with square knots	Y	N	
Approximates skin with appropriate tension	Y	N	

	1	3	5
Economy of Time and Motion	Many unnecessary / disorganized movements	Organized time / motion, some unnecessary movement	Maximum economy of movement and efficiency

Final Rating	Other Summative Comments:
○ Demonstrates proficiency ○ Requires further practice	Evaluator

Figure 1. Example of VOP evaluation form

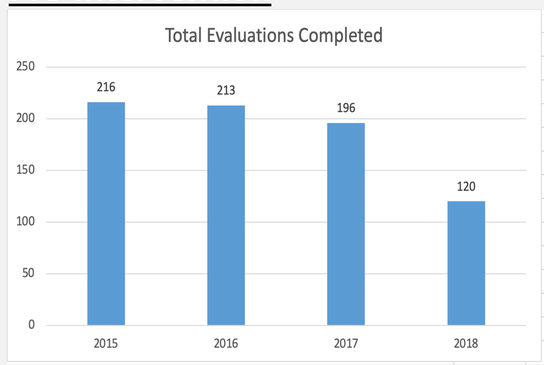
- **Problem**: Increasing variability and total time to faculty evaluation

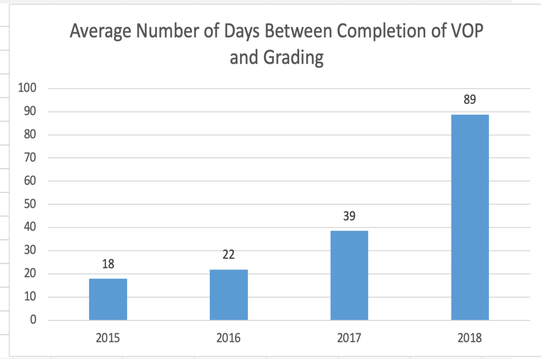
Methods

- Evaluated time from resident completion of VOP to completion of faculty evaluation (total number of days)
- Pre-Intervention Data collected 2015-2018
- Post-Intervention Data collected 2019
- **Intervention employed**: Faculty scheduled to view de-identified video of VOPs in real-time at remote location and complete evaluation at the time of VOP completion

Results

Pre-Intervention





Post-Intervention

- Total Evaluations Completed: 84 (2019), 77 (2020)
- Average Number of Days Between Completion of VOP and Grading: 0 (2019 & 2020)

Discussion

- When this program of evaluation began in 2005, faculty were initially given unlimited amount of time to evaluate VOPs in order to increase participation and compliance, however over time the time to evaluation steadily increased, causing difficulties with scheduling remediation at an appropriate time of the PGY1 year
- SIU's commitment to surgical education allowed block scheduling of attending surgeons in order to complete VOP evaluation in real-time
- Timely feedback allows residents ample time to remediate skills if they do not pass initially, which leads to earlier and improved performance in the OR
- Further areas of investigation include analysis of scalability and ability to replicate findings at other institutions

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Characterization of Lipid Profiles and Pharmacologic interventions for Lipid Management in Medicare Age Patients with Coronary Artery Disease

Department of Internal Medicine, Southern Illinois University School of Medicine

By: Radhika Deshpande MD [1], Mary Dickerson B.S. [1] Mark Graves MD, Kaley Nguyen B.S.

Abstract

Introduction: Cardiovascular disease is the leading cause of death in the United States, accounting for nearly 1 in 3 deaths annually[1]. Elevated blood lipids have been well-documented as potentially remediable cardiovascular risk factors.

Methods: A 2-year retrospective database review of patients enrolled in GIM clinic

Results:

- 1360 primary care patients from SIU GIM clinic
- 278 patients have CAD. 223 out of 278 patients have lipid profiles on file.
- 107/223 patients with CAD had LDL >70
- 79/223 patients with CAD had TG>150.
- 102/223 patients were **not** on statin therapy.

Conclusions: The study population has appreciable dyslipidemia and are not at goal per ACC/AHA guidelines in terms of pharmacologic therapy, LDL goals or TG goals.

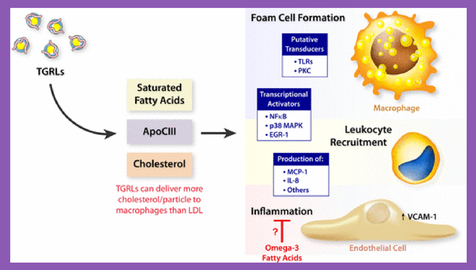

Figure 1: proposed atherogenic mechanism of triglyceride rich lipoproteins (TGRLs) that contribute to vascular dysfunction and increased cardiovascular risk[12]

INTRODUCTION

Cardiovascular disease is a major problem in our current society:

- the leading cause of death in the United States, accounting for nearly 1 in 3 deaths annually[1]
- each year an estimated 635,000 individuals have a new coronary event[2]
- current direct and indirect costs of cardiovascular disease and stroke total >$330 billion[1]
- by 2030, these costs are projected to rise to more than $818 billion[3]

Elevated blood lipids have been well-documented as potentially remediable cardiovascular risk factors. **Elevated LDL-C has been widely studied** in its role as a contributor to the development of atherosclerotic cardiovascular disease (ASCVD). Statins are currently the primary target for pharmacologic intervention and are the preferred first line pharmacologic intervention given evidence from numerous studies such as WOSCOPS (West of Scotland Coronary Prevention Study) and HOPE-3 have significant reductions in cardiovascular risk and death from their use[4,5].

While LDL-C has long been the central focus for intervention of ASCVD, emerging evidence from the REDUCE-IT (Reduction of Cardiovascular Events with Icosapent Ethyl–Intervention Trial) trial has fostered an interest in **the role of triglycerides (TGs) as independent risk factors for cardiovascular events**[6].

Concurrent with the growing epidemic of obesity and metabolic syndrome in the modern era with strong links to poor diet and sedentary lifestyle, the associated problem of increased serum LDLs and hypertriglyceridemia in our society is ongoing[7]**. Current ACC/AHA guidelines define**:

- normal fasting TG levels as <150 mg/dL (1.7 mmol/L)
- mild hypertriglyceridemia as 150-175 mg/dL
- moderate as 175-499 mg/dL
- severe as ≥500 mg/dL[8].

ACC/AHA guidelines denote persistently elevated TGs ≥175 mg/dL as an enhancer for ASCVD risk[9]. ACC/AHA guidelines state that for patients with CAD, the target LDL is <70. While previous pharmacologic agents targeted at treating hypertriglyceridemia have not shown significant reduction in cardiovascular events**, high dose eicosapentaenoic acid (EPA) has proven successful in reducing risk in patients already being treated with statin therapy**[10].

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AIM

The purpose of this study is to **evaluate the magnitude of dyslipidemia** (LDL > 70 or triglycerides > 150) in patients with coronary artery disease at SIU SOM GIM through retrospective data analysis. By identifying potentially remediable vectors, processes, procedures and interventions can be developed that will both improve patient's health and reduce cardiovascular adverse events with their associated costs. The goal of our study is to characterize-interventions that may **reduce healthcare costs and improve future outcomes**.

METHOD

This QI project is conducted to evaluate if the population from Springfield, Il in SIU GIM is receiving the same standard of care in terms of lipid management as recommended by the guidelines for high-risk patients with coronary artery disease.

A 2-year retrospective database review from the timeframe 9/1/2016 to 8/31/2018 was conducted. All patients with an age more than 65 years and with an Internal Medicine primary care physician formed the cohort for the study.

RESULTS

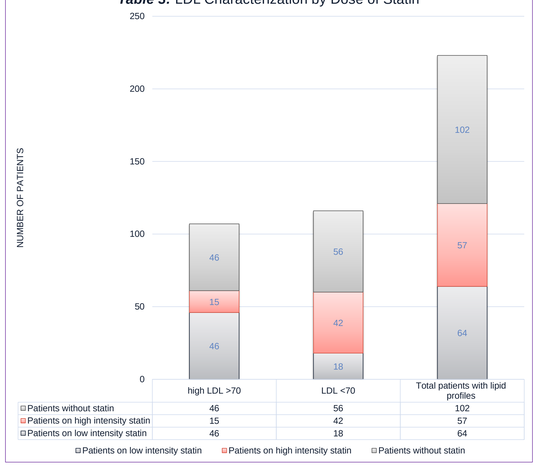
Total Number of patients	1360
Gender	573 Male 784 Female 3 Other
Average age (years)	74.2
GIM visits in 2 year study interval	2.4
# of patients with any Cardiology visits in 2 year study interval	159
# of cardiology visits in those patients seeing cardiology	2.8
# with a dx of coronary artery disease	278
# with a dx of cerebrovascular disease	88
# with a dx of peripheral vascular disease	82
# with chronic lung disease	270
# of patients who have a hospitalization at Memorial or St. John's in 2 year study period	373
Average # of hospitalizations in those who have any hospitalizations	2.1
# of patients who have an ER visit at Memorial or St. John's in 2 year study period	149
Average # of ER visits in those who have any hospitalizations	1.7

Table 1: Characteristics of the general study population

Triglyceride level	Number of patients with CAD
150-175 Mild Hypertriglyceridemia	19
175-499 Moderate Hypertriglyceridemia	59
>500 Severe Hypertriglyceridemia	1

Table 2: Triglyceride characterization in patients with CAD

Table 3: LDL Characterization by Dose of Statin



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DISCUSSION

Population studies have shown that the optimal total cholesterol level is 150 mg/dL with an LDL-C of 100 mg/dL[8]. The results of this study suggest that there is appreciable dyslipidemia in the subject population that would qualify for initiation or adjustment of current pharmacologic therapy under current guidelines. Results of the PROVE-IT-TIMI 22 study have shown that in patients with recent acute coronary syndrome, high dose statin is more effective at reducing future cardiovascular events than moderate dose[11]. Current recommendations for clinical ASCVD include initiation of a high-intensity statin regimen as primary therapy, or medium-intensity if this cannot be tolerated, with a goal of LDL-C reduction by ≥50%. Additional PSK9 inhibitor therapy in conjunction with a statin may reduce LDL-C by 43% to 64% and aid in achieving maximal LDL reduction when high intensity statin cannot be tolerated[8].

Although there is not currently a recommended pharmacologic therapy for patients with hypertriglyceridemia under ACC//AHA guidelines, recent studies have suggested a benefit in the use of EPA for this population. Evidence from the REDUCE-IT trial supports a reduction in cardiovascular events by up to 25% in patients with established cardiovascular disease or diabetes mellitus with one other risk factor with the use of EPA. The JELIS trial preceded REDUCE-IT in the demonstration of the ability of EPA to reduce coronary events in conjunction with a statin rather than statin monotherapy. Although there was no TG minimum for inclusion in this study at the time, there was a demonstrated 19% reduction in overall events for the EPA group[12]. Post hoc analysis of subjects in the trial with a TG level of ≥150 mg/dL and HDL-C <40 mg/dL showed a coronary risk suppression of 53%[13].

Strengths and limitations

- A **large sample size** of adults of varying race, age, and gender at SIU SOM GIM with data collection spanning a 2 year period.
- Results can be largely **generalized** to the greater population of the United States.
- Patients were **randomly selected** based on the inclusion criteria thus minimizing selection bias.
- One of the study's limitations is that relative to the entire SIU SOM GIM population, only adults aged 65 and older on Medicare were analyzed. Medicare aged patients were chosen for study to provide some insurance uniformity to the study group. Age is a risk factor for development of ASCVD and our results may not be applicable to a greater population.
- Our study also did not include patient information regarding tobacco and alcohol use, current diagnoses of diabetes mellitus, or hypertension, or family history which are also risk factors for ASCVD that could potentially confound results.

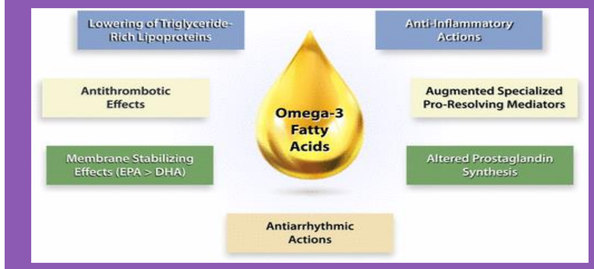

Figure 2: Cardioprotective effects of omega-3 fatty acids. This study will incorporate the use of EPA, which has shown to have significant reduction of cardiovascular events[12]

SUMMARY AND CONCLUSIONS

- Analysis of this data shows that many patients who qualify for statin therapy are not presently taking a statin. Even if they are placed on a statin, they are not placed on the effective dose indicated for their condition per guidelines.
- Every patient with ASCVD should be on statin if tolerable and LDL target should be <70.
- Triglyceride levels should be lowered to <150 per guidelines as 79 patients have elevated triglyceride levels.
- The goal of this project is to ensure that patients who qualify for a statin are on statin therapy and to escalate therapy with moderate to high intensity statin, addition of ezetimibe and PCSK9 inhibitors as needed to achieve goal LDL levels and using EPA as needed to achieve goal TG levels.
- This will be achieved by enrolling these patients into a lipid clinic and following them closely with labs every 4-12 weeks as recommended by AHA/ACC guidelines. During each visit, the patients will be counseled about dietary and lifestyle modifications and pharmacologic therapy will be escalated until LDL and TG goal is achieved.
- Improvements in lipid parameters is expected to reduce adverse vascular events by at least 25% in the vulnerable Medicare age patients managed in GIM.
- A lipid clinic is now available at SIU SOM GIM for consultation/management of cholesterol medications. (consult Beaux Cole PharmD, email bcole24@siumed.edu)

SIU SCHOOL of MEDICINE

Improving Screening for Various Quality Measures with a Focus on Depression

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SIU MEDICINE

Background and Objectives

-Current screening for methods for preventive medicine are underutilized and/or under-reported at SIU Center for Family Medicine in Quincy, Illinois

-The goal of our project was to increase screening and documentation of when (if applicable) patients last had a colonoscopy, pap smear, mammogram, and depression screening [Table 1]

-Our project focused specifically on the results of the depression screening and documentation

-Additionally, we sought to identify shortcomings within our system to improve preventive medicine measures

-Project can be expanded in the future to include other preventative health quality measures

-Emphasis was placed on improving follow up on patients who newly screened positive for depression or who are already being treated

Study Methods

-Patients selected were 18 years or older who were seen in the clinic
-Patients who were excluded:
- Children 17 years old and younger
- Patients with moderate to severe dementia
- Any patient who was unable to comprehend the screening questions

-Information collected included:
- Paper surveys on colonoscopies, depression, mammograms, and pap smears (when applicable)
- Patient Health Questionnaire-2 (PHQ-2) - a standard questionnaire given to all clinic patients annually
- Electronic health record (EHR) documentation on depression

-In our EHR, there is a "depression" selection listed under "plan"
-Within this submenu there are multiple boxes regarding treatment/counseling that can be checked and a dialogue box where free text can be placed

Methods Cont'd

-Paper survey [Table 1] was given to patients when they were being roomed by office staff, prior to the provider seeing the patient

-Investigation of documentation and reporting of depression were done

-Currently clinic uses PHQ-2 and the subsequent PHQ-9 to screen patients for symptoms of depression

-Our clinic attempts to do this annually as it is a quality measure for Federally Qualified Health Centers (FQHC)

-Nursing staff and providers were educated on the importance of this new screening tool and where the data would be entered within our EHR system

-Providers were additionally educated on documentation of PHQ-2/PHQ-9 and the "plan" header to address depression for patients who screened positive

-Education was done one week prior to beginning the project and again the week the project began

-Survey [Table 1] has PHQ-2 built in and was administered once to each patient who met the inclusion criteria at each visit

-If patients were suspected for depression, the provider could administer the PHQ-2 screening and subsequent PHQ-9 without asking the other items listed on the survey

-We recorded the percentage of checked boxes from October 5, 2020 through December 15, 2020

Table 1

Are you up to date on your wellness exams? Check the boxes below to help us help you!

Have you felt down, depressed, hopeless or little interest in doing things over the last 2 weeks?
Yes ☐ No ☐

Colonoscopy (50 yrs and over)	Yes ☐	No ☐	Where/when _____
Mammogram (Females)	Yes ☐	No ☐	Where/when _____
Pap Smear (Females over 21 yrs)	Yes ☐	No ☐	Where/when _____

Data Analysis

-Data from paper surveys and "depression" submenu documentation was transferred to a Microsoft Excel document

-Frequencies and percentages were calculated from paper surveys to provide aggregate data on cancer screening rates

-Data from percentages on depression documentation was compared to the same time frame in 2019 using a chi- square test of independence or a test of proportions

-Significance was determined to be at a p-value of 0.05

-Data was collected from October 5, 2020 through December 15, 2020

-Out of 2,142 patient visits, 684 patients were screened for depression [Table 2]

-Compared to the same time period during the previous year, there were a total of 2,172 visits and 582 patients screened for depression

-There was 5.1% increase in screening after intervention

Conclusion

-There was only a slight increase in documentation of screening for depression

-There was an increase in EHR documentation for depression under the "plan" tab

-The small increase in documentation of the screenings may have been impacted by a nursing shortage in our clinic during data collection

-An additional limitation was the COVID-19 pandemic and its' effect on the decrease in the overall number of patients physically and virtually seen in clinic throughout the year

-There was likely also an increase in patients diagnosed with depression due to COVID-19

Future Considerations

-Study could be performed again with more utilization of EHR methods for screening and documentation rather than using a paper survey

-Continuous involvement between providers and clinic staff may increase survey utilization despite staffing shortages

Table 2.
Time period one year prior to intervention (top row) as compared to the same time period during intervention (bottom row).

	Patient Visits	Total Screened	Screened Positive with Follow Up	% of Patients Screened	Difference
10/5/19 - 12/15/19	2172	582	41	26.8	5.1
10/5/20 - 12/15/20	2142	684	21	31.9	

Table 3.
One year period without intervention (top row) and one year period including intervention (bottom row).

	Patient Visits	Total Screened	Screened Positive with Follow Up	% of Patients Screened	Difference
10/5/19 - 10/4/20	4753	2298	197	48.3	0.8
12/16/19 - 12/15/20	4823	2371	190	49.1	

SIU MEDICINE

Improving Lipid Control in Those at Highest Risk Including Patients with Peripheral Arterial Disease

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Department of Medicine, Southern Illinois University

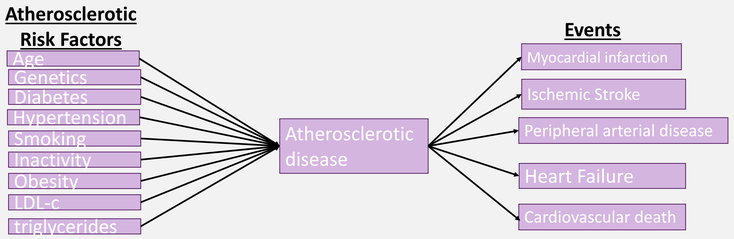
SIU MEDICINE

Abstract

Guideline-directed lipid medications reduce both morbidity and mortality. When we looked at the SIU Internal Medicine Medicare patient population with CAD, PAD, or CVA, we found only 43% were on guideline-directed intensity of cholesterol controlling medications. Of the group with CAD, PAD, and/or CVA, we know that people with PAD have a greater composite of CV death, MI, stroke, and hospitalization. So, we will focus on placing these patients on guideline intensity lipid controlling medications such as high-intensity statins, ezetimibe, PCSK9Is, and E-EPA. The guideline-intensity lipid therapy should reduce event rates of MI, CV death, and the need for invasive revascularization procedures.

Introduction

Figure 1. Risk factors of atherosclerotic disease and outcomes. We are focusing on controlling LDL-c levels



Elevated LDL-c (LDL-cholesterol) and triglycerides are associated with a higher risk for PAD (peripheral arterial disease), HF (heart failure), MI (myocardial infarction), and CVA (cerebrovascular accident). Of the cholesterol-lowering medications, statins were the first medications to show decreased mortality and adverse cardiovascular events. PCSK9Is (Proprotein convertase subtilisin/kexin type-9 inhibitors) have been shown to lower LDL-c levels and adverse cardiovascular events. Ezetimibe is a medication that has only been shown to lower LDL-c modestly.

The higher the risk of atherosclerosis (Figure 1), the greater the benefit of further reducing LDL-c. Multiple guidelines (AAC, AHA, AACE, ESC, ACE*) support the use of high-intensity statins in patients with high risk or known CVD (cardiovascular disease), CAD (coronary artery disease), CVA, and PAD. Independent of LDL-c, elevated triglycerides have shown an increase in CV (cardiovascular) events. However, lowering triglycerides alone has not been shown to decrease CV events with other medications except with E-EPA (icosapent ethyl). A large multicenter study called Improve-IT (Reduction of Cardiovascular Events with Icosapent Ethyl–Intervention Trial) studied E-EPA vs placebo in a patient population with median LDL-c levels ranging from 74-76 mg/dL and elevated triglycerides (>150 mg/dL). This patient population had a reduction in MI, revascularization, CV death, CVA, and unstable angina.

At SIU Internal Medicine clinics, we attained information on patients' ages, lipid panels, cholesterol medication, and cardiovascular-related diseases. Patients with PAD, CAD, or CVA should be on high-intensity LDL control; however, 43% of these patients at SIU Internal Medicine Clinics were on high-intensity statins (Figure 3). Patients with CAD, CVA, or PAD and controlled LDL with elevated triglycerides have a residual risk of CV events. This residual risk can be reduced with E-EPA.

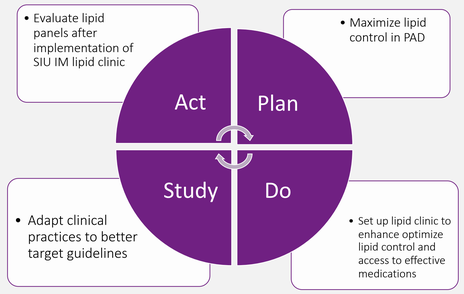
Our goal is to increase the number of high-risk SIU Internal Medicine Medicare patients on guideline-directed cholesterol control medications. Guideline-directed control of LDL-c is achieved by statins, ezetimibe, or PCSK9Is. Patients at the highest risk of atherosclerosis have the most benefit from further reducing LDL. High-risk patients include patients with known CVA, CAD, or PAD. Patients with reasonable control of LDL-c with increased triglycerides should have decreased event rates if placed on E-EPA.

*American Academy of Cardiology, American Heart Association, American Association of Clinical Endocrinology, European Society of Cardiology, American College of Endocrinology

Methods

- Identify if there was a need to have higher intensity LDL control in SIU Internal Medicine Patients
- Intervention: Implementation of lipid clinic to intensify treatment of LDL and residual risk associated with triglycerides.
- Inclusion Criteria: SIU Internal Medicine Medicare Patients, currently on lipid control medications.
- Exclusion Criteria: No full Lipid panel in Touchworks.

Figure 2. The PDSA cycle. We are in the "study" phase of the cycle.



Results

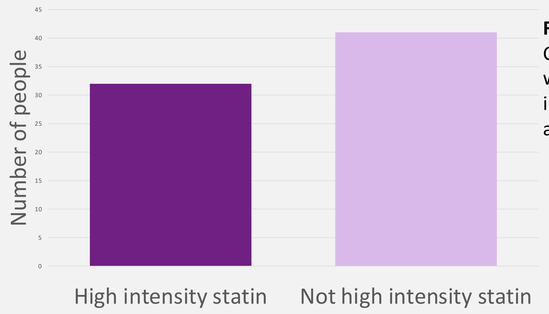


Figure 3. Of patients with CAD, CVA, and/or PAD (the patients who should be on high intensity statin), 41 are not on a high intensity statin.

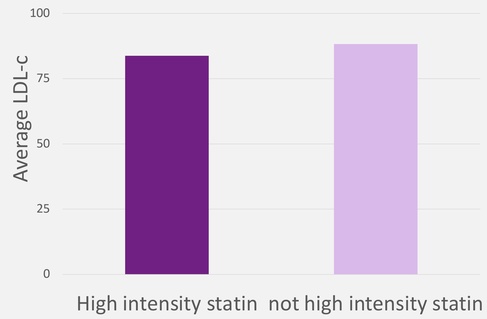


Figure 4. Of the patients on high intensity statin with CAD, CVA, and/or PAD, the average LDL-c is not at a goal of LDL-c <70mg/dL. This suggests that patients who are near LDL-c goal are not getting intensification of cholesterol therapy.

Figure 5. LDL intensity control by medication and dose in patients with peripheral arterial disease. All patients should be on high intensity LDL control or maximum tolerated statins

High intensity LDL control	Medium intensity LDL control	Low intensity LDL control
• Atorvastatin 40- 80 mg • Rosuvastatin 20- 40 mg • Simvastatin 20mg / Ezetimibe 10 mg	• Atorvastatin 10-20 mg • Rosuvastatin 5-10 mg • Lovastatin 40 mg • Pravastatin 40-80 mg • Simvastatin 20-80 mg • Lovastatin 10-20 mg • Ezetimibe 10 mg/simvastatin 10 mg	• Fluvastatin 40 mg • Lovastatin 10-20 mg • Pravastatin 10-20 mg • Simvastatin 10 mg

Discussion

The Internal Medicine Medicare patient base showed that 57% of patients could benefit from intensification of LDL lowering medications. Even among those on high-intensity medications, 56% are not at a goal of less than 70mg/dL LDL-c. These patients would benefit from additional LDL-lowering medications. Multiple guidelines support the use of both ezetimibe and PCSK9Is in those not at target LDL or have elevated risk including AHA/ACA, AACE/ACE, and ESC. The residual risk of elevated triglycerides can be addressed with pharmaceutical-grade E-EPA as shown in the Improve-IT trial.

Having patients go to a lipid clinic will likely have unintentional benefits such as improved adherence to LDL lowering medications as it will allow for additional education about the benefit of lowering LDL. The lipid clinic will be able to streamline the approval of medications by insurance companies. Since our population is small, there will be problems measuring patient-oriented outcomes like CVA, CAD, and PAD. However, we can monitor the number of patients on high-intensity LDL lowering therapy, those reaching LDL-c targets based on risk, and the percentage of patients having residual risk of elevated triglycerides addressed by E-EPA therapy. These medications will increase healthcare costs, but the costs may be offset by decreased event rates in patients. Additional clinic visits may be difficult for some patients due to transportation costs and taking the time to get to the clinic. This population of SIU Internal Medicine Medicare patients is not representative of all patient populations as they are mostly over 65 and likely have fewer financial means. The data we have for patients with CAD, PAD, and CVA is not very specific and some patients will likely not have met the inclusion criteria specifically for the PCSK9I trials and Improve-IT trial for E-EPA as they were specific about the severity of CAD, MI, and PAD which is not parsed out in the data.

In conclusion, the lipid clinic establishment will likely increase access to life-saving medications that reduce the risk of events by lowering LDL and by addressing the residual risk associated with elevated triglycerides. We aim to improve LDL-c and place more patients on the guideline-directed intensity of treatment with more patients on PCSK9Is and E-EPA. We believe these interventions will decrease events in patient-oriented outcomes.

Future interventions

- Increase the number of patients with PAS on high intensity LDL lowering pharmacotherapy
- Increase the number of patients with highest risk onto PCSK9Is
- Increase the number of patients with residual risk associated with elevated triglycerides >150 onto E-EPA
- Increase the number of patients with PAD under LDL-c of 70 mg/dL
- Decrease the median LDL-c of patients that are SIU IM Medicare patients that have indications to be below 70 mg/dL; those with PAD or CAD

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Ashish Moonat, MD; Akshra Verma, MD; Brendan Stack, MD; Beaux Cole, PharmD; Tim Carroll, MD; Radhika Deshpande, MD

Improving Resident Confidence in Neonatal Resuscitation Skills

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2. Division of Neonatology, Department of Pediatrics, SIU Medicine

SIU MEDICINE
PEDIATRICS

Introduction

- Proficiency in neonatal resuscitation is not consistent between residents. Only 25% of graduating pediatrics residents from Southern Illinois University School of Medicine (SIU-SOM) in 2020 agreed that they were proficient in neonatal resuscitation (Fig.1).
- Proficiency in neonatal resuscitation is a graduation requirement and an important responsibility for the community pediatrician. Each year, many graduating pediatric residents apply for pediatric primary care jobs that require their attendance to high risk deliveries.

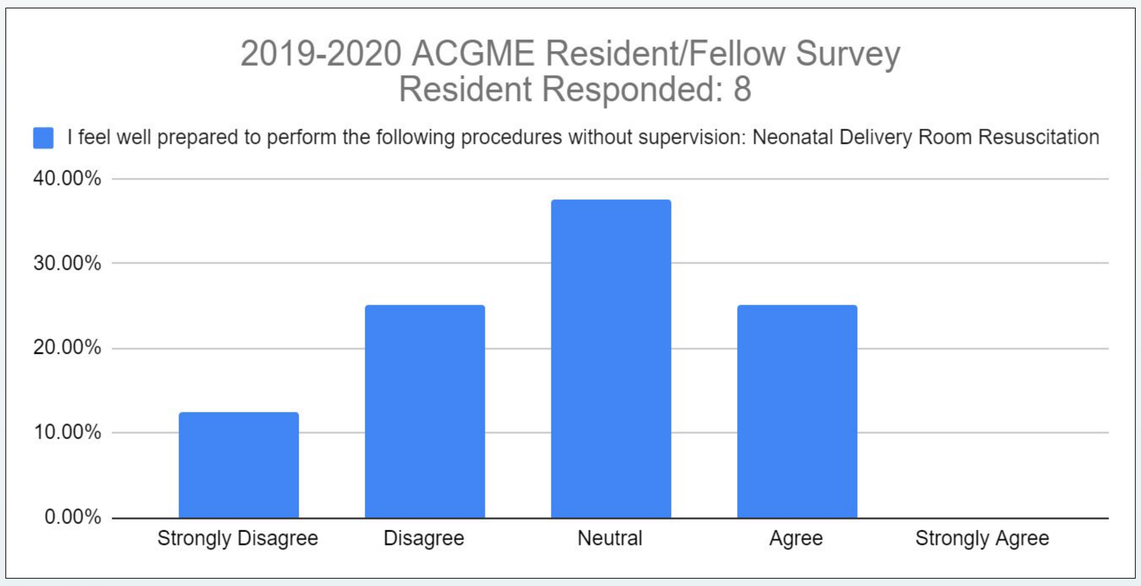
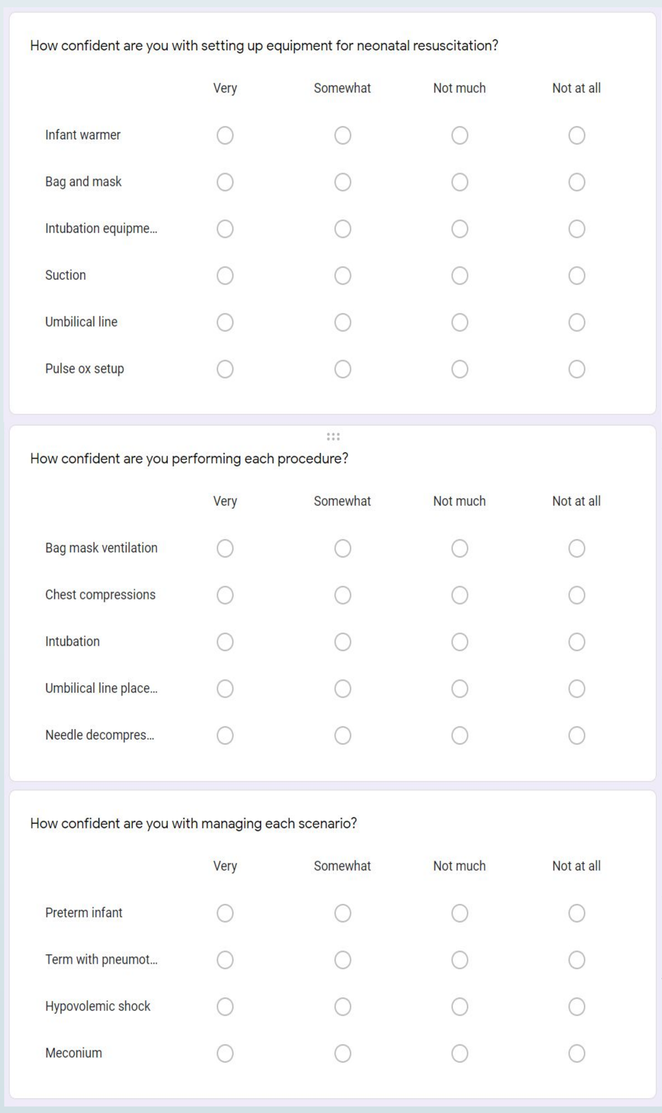


Fig.1. ACGME resident survey results in 2019-2020

Methodology

- The objective of this Quality Improvement (QI) project is to increase pediatric residents skills and confidence in Neonatal Resuscitation Program (NRP) by 50%.
- The course consists of a pre-intervention confidence survey, a graded mock code, a presentation on NRP, another graded mock code, and a post-intervention confidence survey (Fig.2).
- The project was started in January 2021.
- A meeting was held after each mock code to grade the residents performance and improve the NRP refresher course.
- After the first block, the scenarios were changed to be:
  a- meconium aspiration complicated by pneumothorax
  b- Extremely Low Birth Weight (ELBW) resuscitation complicated by hypovolemia.
- After the second block, we adjusted the grading scheme.



Complete	Test Items		Complete	
	Infant Warmer			Suction
	Turn On			Bulb suction
	Hat & Blankets +/- Porta-Warmer & Neowrap for <29 wk neonate			Suction tubing set up appropriately
	Temperature probe			Suction turned on and right pressure
	Apgar timer			Advanced resuscitation
				Medications (epi and NS)
	Neopuff / Oxygen delivery			Central line kits
	Neopuff turned on			Pleural tap kit
	Mask and tubing set up correctly			
	Appropriate oxygen flow 10L/flow			
	Correct oxygen concentration			
	Proper PIP set up			
	Proper PEEP set up			
	Pulse ox - attached and turned on			
	Intubation			
	Laryngoscope with appropriate blade size & functioning bulb			
	ETT size appropriate (optional stylet)			Total Score (1pt each)
	Co2 detector			/ 20

Prompts	Skills tested	Done ✓
You are called for HRD for a term neonate with meconium stained fluid. *Helper may turn on the warmer and take instruction from the leader, but should not set up things independently.	Asks 4 basic questions (GA, fluid, # of babies, risk factors)	
	Warmer on and set up	
	Neopuff set up properly & O2 at 21%	
	Intubation supplies (one missing = 0)	
An AGA appearing baby is delivered, stained in meconium, pale, floppy, gasping with minimal movement. The L&D nurse hands you the baby. - HR <100 - RR: Gasping *Helper may prompt the leader about heart rate & vitals and hand the leader supplies	Apgar timer on	
	Rapid evaluation (Term, tone, breathing)	
	stim / warm / drying	
	asks for heart rate	
	asks for RR	
0-1min of life: The baby is still gasping with low tone, pale/bluish - RR: Gasping - HR <100 *Helper may prompt asking for vitals - may help put on the pulse ox, suggest going up on O2	pulse ox on RUE	
	start PPV	
1-2 mins of life: You note that there is minimal chest rise, the pulse ox reads 50% with a HR<100 - minimal improvement with each intervention - HR 80-100 - Pulse ox range 50-70% *Helper may suggest MR SOPA adjustments	Adjusts mask (size & fit)	
	reposition	
	Suctioning	
	increase in O2	
	Increase pressure	
	Intubate w/correct blade/ETT/Co2 detector	
3-5mins : continues to have poor response, pale, floppy, a few gasping breaths - HR 50 - Pulse ox range 50-70%	Chest compressions	
	UVC	
	Epinephrine (ETT and/or IV)	
> 5 mins: continues to have poor response, pale, floppy, not initiating any breath - HR 50 - Pulse ox range 40 -50% - Absence of breath sounds on right	Needle decompression	
Infant improve - HR > 100 - Pulse ox range 80%	Transfer care to NICU	
		/22

Fig.2. Confidence survey and grading scheme

Results

- 6 pediatric residents completed the NRP refresher. Three were first year on newborn rotation and the other three were second or third year on Neonatal ICU rotation.
- After the intervention, the confidence scores improved by 74% for the first 3 blocks (Fig.3).
- The grading by the observers did not show any changes between the residents in those three blocks

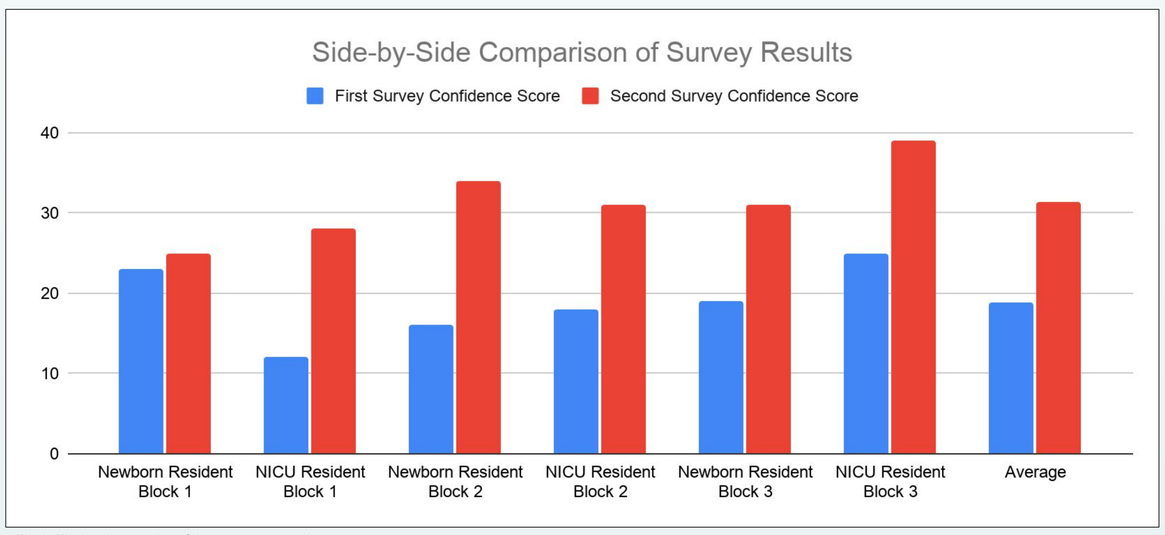


Fig.3. First and second confidence survey results

Conclusion

- Our results showed improvement in resident confidence in NRP by more than 50% for the first 3 blocks.
- We will continue with this project to include every pediatric resident rotating in the newborn nursery and Neonatal ICU.
- After a few blocks, we will start a new PDSA cycle.
- In the future, we will involve the nurses in the mock codes to improve the leadership and communication during the NRP.

Acknowledgements

- I gratefully acknowledge the support of all the hospital staff, including the physicians, residents and nurse managers.

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Improving Resident Participation and Leadership in Routine Newborn Deliveries

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SIU MEDICINE PEDIATRICS

Introduction

- Proficiency in neonatal resuscitation is not consistent between residents. Only 25% of graduating pediatrics residents from Southern Illinois University School of Medicine (SIU-SOM) in 2020 agreed that they were proficient in neonatal resuscitation (Fig.1).
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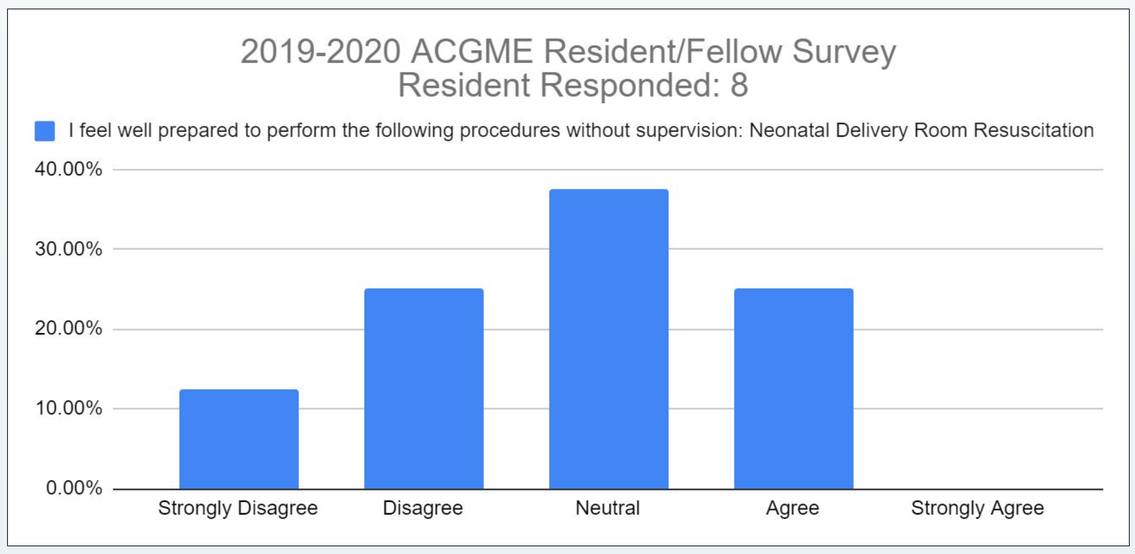

Fig.1. ACGME resident survey results in 2019-2020

Methodology

- The objective of this Quality Improvement (QI) project is to have the newborn resident lead at least 5 deliveries within the next 6 months.
- The project was started in September 2020.
- An expectations and responsibilities document was distributed to the labor and delivery nursing leadership as well as the newborn resident.
- A delivery log was also distributed to the newborn resident with the expectation for the labor and delivery nurse to sign off on it.
- Residents would also have a weekly check in throughout the rotation as well as the end for feedback to improve opportunities to attend and lead deliveries.
- After each rotation the expectations document and delivery log would be updated to better help residents participate.
- There were multiple phone calls with labor and delivery nursing, with suggestions such as the residents should call labor and delivery nurses after the nurse sign out ends at 7:50 AM and the residents can see when CS deliveries are scheduled in EPIC.
- In the third block the number of expected deliveries increased to 15 from 10 as it was easier for residents to attend scheduled CS deliveries and 10 deliveries was not enough for residents to feel comfortable leading.
- In the forth block the delivery log was updated to give residents the option of participating and leading in deliveries earlier.
- Below are the most updated versions of the expectations and responsibilities document as well as the delivery log (Fig.2).

The resident completing newborn rotation is to be proficient in the following routine newborn care by the end of the rotation:

- Initial assessment whether infant can stay with mother or needs further resuscitation

- Providing APGAR scores

- Initiating neonatal resuscitation (including stimulate, dry, suction, oxygen administration, CPAP and PPV)

Residents responsibilities:

- Residents will be assigned to observe the first 5 deliveries, then participate in newborn care/resuscitation for the next 5 deliveries. After the 10th delivery, residents are supposed to lead the resuscitation - Residents to attend at least 15 deliveries.

- Residents to regularly check EPIC for scheduled C-sections.

- Residents to call labor and delivery ASCOM (51491, 51420 backup) each morning at beginning of shift (around 7:50 AM) to discuss the following:

1. imminent deliveries (which take precedence over newborn rounds and/or other educational activities)

2. The resident's schedule for the day

3. The role of the resident in the delivery room (observe, participate, or lead)

Examples:

Resident calls delivery ASCOM (51491, 51420 backup) at 7:30 AM:

"Today I am available between "8:00 AM and Noon. And then between 3:00 PM and 8:00 PM. Are there any C-sections scheduled for this morning or deliveries that are about to happen? I have attended 3 deliveries so far and my role today is to observe please."

"Today I am available between 8:00 AM and 4:00 PM. Are there any C-sections scheduled for this morning or deliveries that are about to happen? I have attended 6 deliveries so far and my role today is to participate please."

Nurses responsibilities:

- The labor and delivery nurses should call the resident ASCOM (51838) approximately 20-30 minutes prior to a delivery or C-section during the time that the resident stated that they are available.

- L&D nurses don't have to call the residents when they are not available according to the residents' schedule.

- Nurses to sign off delivery log card at each delivery

Neonatal Resuscitation Log Sheet

Name:
PGY:

	Date	VD/CS	Observer	Assistant	Lead	Supervisor
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Fig.2. Expectations and Responsibilities Document on left, Delivery Log on right

Results

- There have been 6 residents who completed newborn since the beginning of this project with results charted below (Fig.3).
- For the last 3 of 6 blocks the newborn resident was able to lead at least 5 deliveries, meeting the objective as stated in the aim statement.

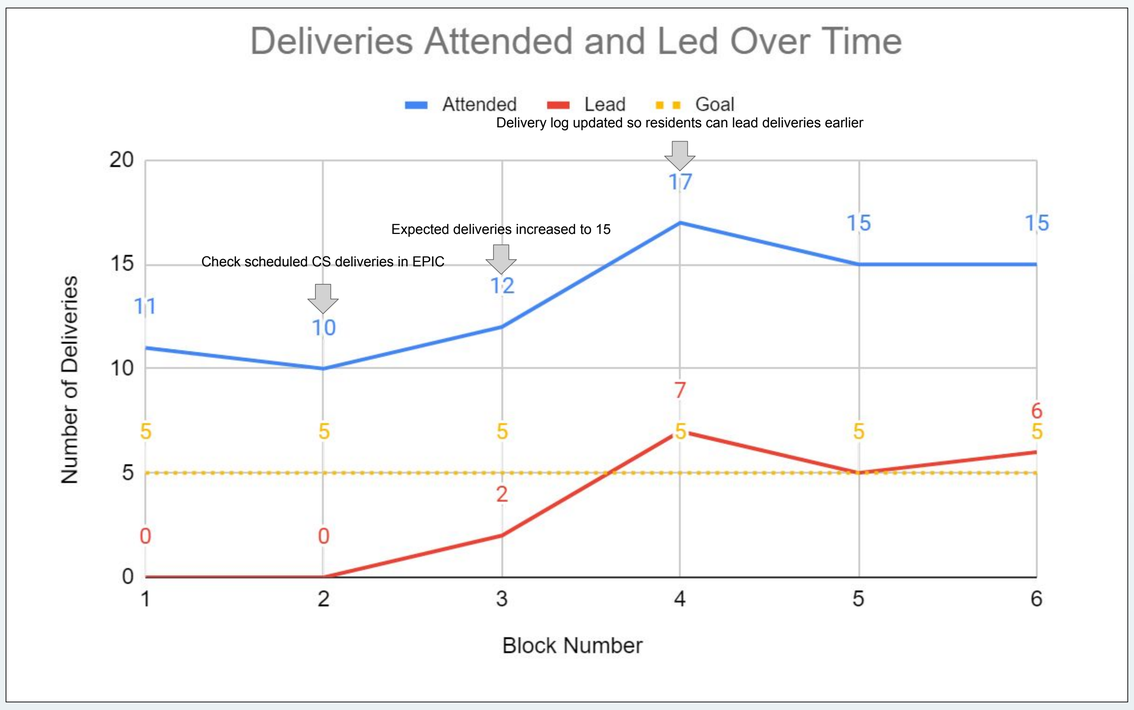

Fig.3. Deliveries attended and led by each resident on newborn rotation

Conclusion

- We have successfully increased resident participation and leadership in routine newborn deliveries.
- We hope that this in turn leads to increased resident confidence in neonatal resuscitation.
- The residents are more comfortable with the initial steps of neonatal resuscitation including: drying, stimulating, suctioning, and initial assessment. The last 3 residents have had opportunities to give oxygen therapy, positive pressure ventilation, and continuous positive airway pressure. The last resident was able to lead in a higher risk delivery where the NICU attending was supervising.
- We are assuming that the initial steps have been addressed. Next steps would be to focus on advanced neonatal resuscitation such as CPR, intubation, needle decompression, umbilical line placement and medication administration. A second QI project was started that focused on these skills on mannequins. This project will be shown in separate poster.
- Future projects will focus on practicing these skills on real patients in low risk environments. Examples are intubation for surfactant administration in term newborns and UVC placement in stable newborns in the NICU.

Acknowledgements

- I gratefully acknowledge the support of all the hospital staff, including the physicians, residents and nurse managers.

Improving Sodium Restriction Education and Documentation in Hypertensive Patients

Michael DiGiovanni MD, Johnny Tenegra MD, Mark Scott MD
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Introduction

Hypertension is a significant problem in the outpatient setting that if controlled can prevent cardiovascular disease, such as heart disease and cerebrovascular accidents. Nearly half of the adults in the US (45%) have hypertension, and only 1 in 4 have their hypertension under control. In 2017, hypertension was the primary or contributing cause of death with approximately 1,300 deaths each day. In addition to its impact on mortality, it cost the US approximately $131 billion each year. Thus, hypertension is an important measure to monitor for patients at our Federally Qualified Health Center (FQHC). My aim is to improve education of sodium restriction for providers to better counsel their patients with hypertension diagnosis and secondarily achieve the quality control measure of having >70% of patients in clinic with diagnosis of hypertension with systolic blood pressure <140mmHg and diastolic blood pressure <90mmHg over a 6 month time period.

Methods

The QI methodology used was a PDSA cycle. My intervention was to educate residents and advanced practice providers (APPs) on how to document teaching of patients who have a diagnosis of hypertension about sodium restriction. Providers were to provide a hand out on what to look for on a food nutrition label along with a list of high sodium foods. Patients were also educated on how to discuss a diet limited to 1500 mg of sodium. Intervention started October 23rd 2020 and ended March 23rd 2021.

Measures included calculating the percentage of times a patient with an assessment of hypertension had lifestyle education documented through marking the box “monitor food labels/sodium content” through our electronic medical record system (EMR) . I also obtained the data of what percentage of adult patients (18yo and older) with the ICD diagnosis of hypertension that are classified as controlled <140/90mmHg over a 3 month time period pre-intervention. Residents were educated during a dedicated educational didactic session showing providers what to discuss in terms of sodium restriction with a guideline of less than 1500mg a day and no added table salt to foods. They were provided a handout with a food label and education on a reduced sodium diet. Post-intervention data was collected as close to 6 months as possible.

Results

Pre-intervention (6 months of data):
Percentage of adult patients with hypertension being assessed where the monitor food label/sodium content box was clicked: **7.3%** (107/1465)
Percentage of adult patients with hypertension being assessed that are classified as controlled, <140/90mmHg: **48.67%** (713/1465)
Post-intervention (4 months of data):
Percentage of adult patients with hypertension being assessed where the monitor food label/sodium content box was liked: **14.29%** (167/1168) with a p value of <0.00001
Percentage of adult patients with hypertension being assessed that are classified as controlled, <140/90mmHg: **50.08%** (585/1168)

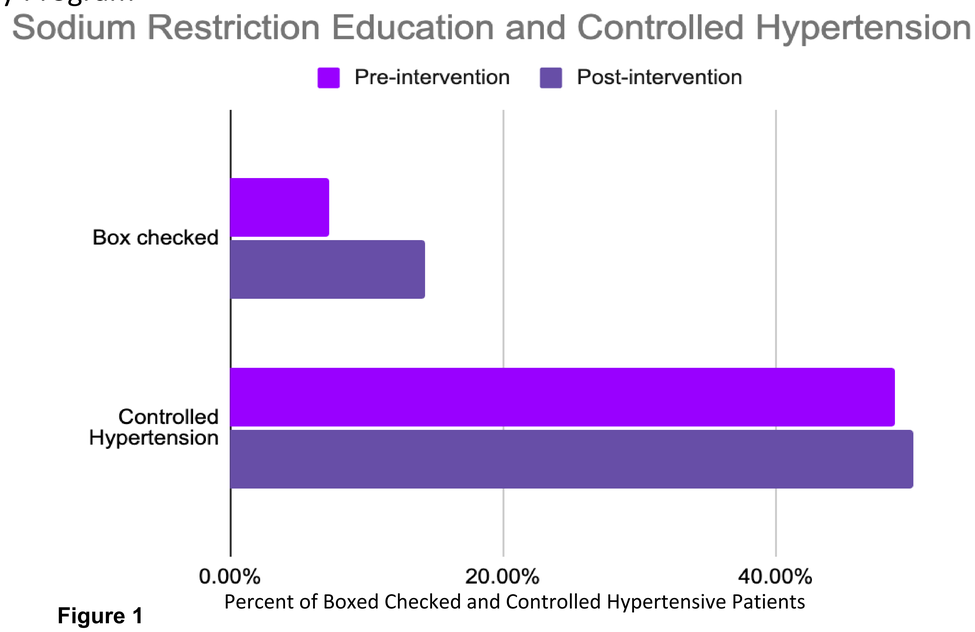

Figure 1

Discussion

My results have shown an increase in marked boxes which potentially means more education has been provided on sodium restriction for patients with hypertension. These results have also increased the percentage of our controlled hypertensive patients by approximately 1.41%. There was an increase of 6.99% in marked boxes checked for sodium restriction education which is likely a contributing factor to improvement in an increase in controlled hypertensive patients for our clinic.. Educating providers on appropriate documentation may reinforce the importance of discussing sodium restriction with hypertensive patients showing providers its importance and improve education that providers reading this study can give to their patients.

I have learned that implementing a change practice wide is a difficult task but with time and education it can help provide better care for patients. Having patients buy into nutritional changes and how simple things like sodium restriction can improve blood pressure can improve patient-doctor relationships as well as reduce time spent with medication management as they will on average have better blood pressures. Personally, I will spend more time upfront with patients educating simple lifestyle changes before prescribing additional antihypertensive medication.

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ASSESSMENT OF ESTIMATED AND QUANTIFIED BLOOD LOSS AFTER CESAREAN DELIVERY: PDSA Cycle II

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SIU MEDICINE OBSTETRICS & GYNECOLOGY

Introduction

Background:

Maternal hemorrhage is one of the major causes of maternal morbidity and mortality both in the United States and worldwide and is increasing in incidence. Estimated blood loss (EBL), which is determined by provider clinical judgement, has been found to have high inter-observer and intra-observer variability and can underestimate blood loss at the time of delivery. Underestimating blood loss can result in significant poor outcomes for the mother, especially in situations with postpartum hemorrhage. In an effort to improve maternal outcomes, the Illinois Department of Public Health began requiring the use of quantified blood loss (QBL) using gravimetric measurements to be able to objectively measure blood loss.

To comply with the state guidelines and determine the accuracy of our QBL collection methods, a quality improvement study was performed at HSHS St. John's Hospital (SJH) from July 1, 2018 to Feb 28, 2019 comparing the accuracy of EBL vs. QBL during cesarean deliveries (C/S). At the time of our initial assessment, QBL was more accurate than EBL in only 39.1% of C/S.

For a second cycle of the Plan-Do-Study-Act method, we implemented the following changes:

- Education was provided to nursing and OR staff and a "C-section Data Sheet" was created to improve the process of calculating QBL.
- As variations between surgical and nursing staff's techniques in wringing out wet lap pads could introduce error into the QBL calculation, each surgical technician practiced wringing out wet lap pads and these were subsequently weighed to be included in a more accurate calculation of QBL that takes into account and adjusts for individual variations.

Objectives:

- To evaluate whether our interventions of implementing a "C-section Data Sheet" and individualizing surgical staff 'wet lap weights' improved the accuracy of QBL compared to EBL using the patient's change in hemoglobin as reference.

Methods

Study design:

- The Plan-Do-Study-Act cycle was utilized to revise our current QBL collection process.
- We conducted a retrospective chart review of all C/S performed at HSHS SJH from February 1, 2020 – November 30, 2020.
- Accuracy of QBL in comparison to EBL, was validated by comparing the levels of hemoglobin/hematocrit measured in blood samples taken on the day of the procedure vs. postoperative day #1, as these values are collected per standard of care.

Variables collected:

- EBL and QBL from C/S
- Hemoglobin/Hematocrit values at admission and on postoperative day #1
- Whether the "C-section Data Sheet" was utilized
- Gravidity/Parity
- Whether the C/S was scheduled or unscheduled
- Whether the C/S was a repeat or primary C/S
- Time of delivery (7am to 7pm vs. after 7pm to prior to 7am)
- Rupture of membranes prior to cesarean section

Inclusion Criteria:	Exclusion Criteria:
• Women who underwent a C/S at HSHS SJH from 2/1/2020 to 11/30/2020 • Women who underwent a C/S and had both QBL and EBL documented	• Women who required transfusion of blood products prior to collection of postoperative day #1 hemoglobin/hematocrit

Methods (cont.)

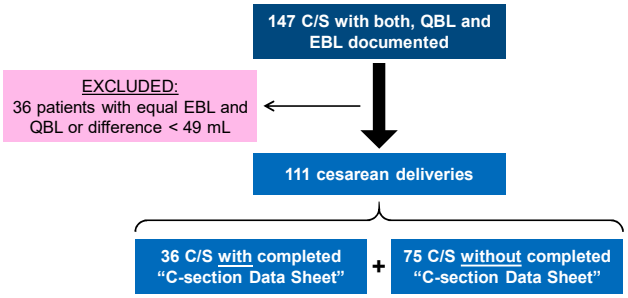
Estimation of accuracy of EBL vs QBL:

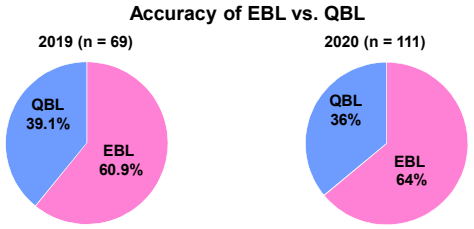
- 1 unit of packed red blood cells is 500mL and is expected to raise hemoglobin levels by 1g/dL. Based on this, we estimate that a drop of 1g/dL in hemoglobin levels correlates with 500mL of blood loss at the time of C/S.
- EBL and QBL values were divided by 500 to then calculate the expected drop in hemoglobin based on the patient's blood loss. This was compared to the difference between the patient's postoperative day #1 hemoglobin and their preoperative hemoglobin. Whichever blood loss estimate (EBL or QBL) was closer to the blood loss calculated via hemoglobin drop was deemed more accurate.

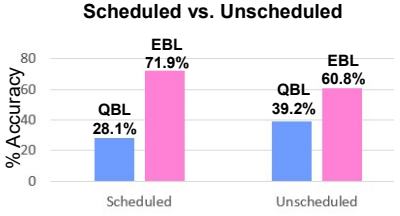
Statistical analysis:

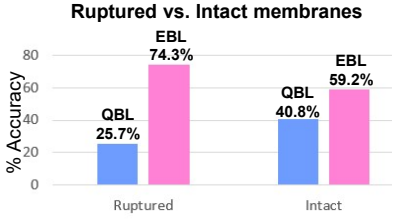
Descriptive Statistics were computed for all study variables. Continuous variables are described with measures of central tendency (mean, median) and dispersion (range, standard deviation). Categorical variables are summarized as frequencies and percentages. Comparisons between categorical variables were performed using the Chi-Square test. P-values < 0.05 are considered statistically significant.

Results









Results (cont.)

Number of scrub/OR techs participating	20
Range of lap weights	437g - 652g (mean = 586.6g)

Discussion/Conclusions

- Overall, our data suggests that despite interventions taken in the PDSA cycles, the EBL documented by the provider remains more accurate than the QBL.
- Although not statistically significant, we observed that QBL trended towards having a lower accuracy in patients with rupture of membranes prior to their C/S, suggesting that contamination with amniotic fluid grossly disrupts our measurement of blood loss, which may contribute to inaccuracy of QBL, while clinical judgement (used to estimate EBL) is able to take the volume of amniotic fluid into account.
- The "C-section Data Sheet" does have a field for estimated amniotic fluid but this field was not consistently used when the sheet was utilized.
- The "C-section Data Sheet" was only used in 36 C/S; however, QBL was still less accurate than EBL in the cases where the "C-section Data Sheet" was utilized with QBL only being more accurate in 27.8% of the cases.
- One limitation of these data is the small sample size of C/S in which the data sheet was employed. Also, as proposed in last PDSA cycle, the weight of the quilted hip pad following fundal massage at the end of delivery is consistently contaminated by betadine vaginal preparation.
- Another consideration is that correlating blood loss by using preoperative or postoperative hemoglobin does not account for hemoconcentration that may exist upon admission.

Proposed Changes to Current Practice

- Accounting for amniotic fluid more accurately by collecting this fluid prior to delivery of the baby (distinguishing amniotic fluid from blood is easier at this point of the procedure).
- Standardizing procedures among the scrub technicians to reduce the variability between 'wet lap weights' and implementing regularly scheduled 're-education' sessions.

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Lipid Management Medication in Medicare Age Patients with COPD in an Academic Internal Medicine Practice

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SIU MEDICINE INTERNAL MEDICINE

Introduction

In the United States, 92 million adults have total cholesterol levels >200 and 69 million adults have LDL levels > 130, per the American Heart Association. This represents 38.2% and 28.9% of the population respectively[6]. Dyslipidemia has been linked to diseases including diabetes, cancer, and cardiovascular disease; recent studies have shown dysregulation in lipid metabolism contributes to various lung diseases, including chronic obstructive pulmonary disease (COPD)[1]. COPD is the 4th leading cause of death worldwide, and 384 million people are affected by the disease, per the Global Initiative for Chronic Obstructive Lung Disease[3]. Due to the high prevalence of dyslipidemia and COPD, these conditions are a growing public health concern and a present a pressing need to better understand their interactions[4].

Vascepa, is a new FDA approved medication that lowers triglyceride (TG) levels and has been shown to benefit lung function in COPD patients[5]. Specifically, Vascepa helps regulate neutrophil migration, cytokine production, and macrophage clearance; these effects decrease oxidative stress, reduce emphysema and airspace enlargement, and reduce the inflammatory state of COPD[1,5].

PCSK9 inhibitors, alirocumab and evolocumab, are FDA approved medications that work to reduce LDL levels. The role of LDL and COPD is less established than the role of TG and COPD however, research has shown that patients with severe COPD have higher levels of cholesterol in their blood compared to controls[1]. Additionally, other lipid-lower agents such as statins have been shown to reduce FEV_1 decline, decrease intubations, and mortality in patients with COPD[4].

Further research will need to be conducted to understand the precise mechanisms by which dyslipidemia and pulmonary physiology interact before the full benefits from lipid-lowering agents can be concluded[4]. Reducing exacerbations of COPD would lead to a significant reduction in cost of care, a decrease in the rate of mortality, and improve patients' disease burden.

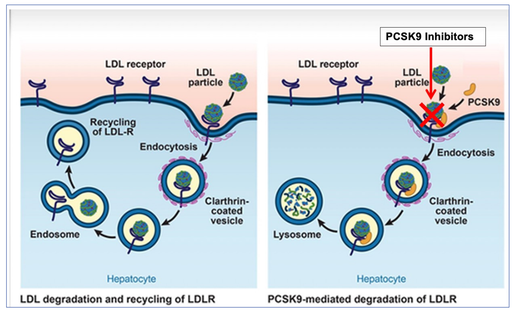

Figure 1. Mechanism of PCSK9 inhibition. PCSK9 is a serine protease that cleaves LDL receptors inside hepatocytes. With inhibition, there is increase recycling on LDL receptors and therefore increase uptake from circulation (Adapted from Lambert 2012, Journal of Lipid Research, 2515–2524).

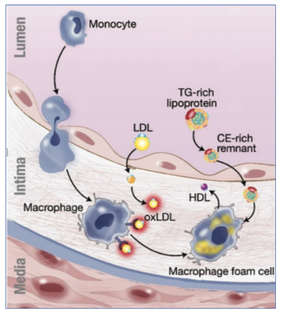

Figure 2. Lipid-laden macrophages and reverse cholesterol transportation. Both mechanisms help maintain lipid homeostasis in lung parenchyma (Budoff 2018, EVAPORATE study, Clinical Cardiology, 13-19).

Purpose

- Evaluate the magnitude of the triglyceride/LDL/lipid problems in patients at SIU SOM General Internal Medicine Clinic (SIU SOM GIM).
- Explore the relationship between chronic lung disease and lipid control in Medicare age patients seen in the SIU GIM clinic for chronic lung disease from 2016-2018.
- Moving forward, we will investigate the benefit of providing our patients who qualify with medications to improve cholesterol control.

Methods and Materials

- This was a 2-year retrospective chart review and analysis of clinical data obtained from SIU School of Medicines' EHR. An IRB approval was obtained for this database query.
- Data was collected on Medicare patient demographics as well as applicable laboratory tests. This information included:
  - Demographics: age, sex, race, weight, height
  - Presence of Disease: COPD, coronary artery disease, cerebrovascular disease, peripheral artery disease
  - Dependent variables: most recent cholesterol profile, most recent lipid medications used, number of visits with primary care, pulmonary, cardiology, number of emergency room visits number of hospitalizations and the total hospitalization days.
- The review was conducted from 9/1/2016 - 8/31/2018 and identified 1360 unique patients.

Table 1. Demographics of Medicare Patients at SIU GIM in 2 Year Interval

	All Patients	Patients with COPD
Participants (n)	1360	270
Age (average)	74.15	73.8
Gender		
Male	573	110
Female	784	159
Other	3	1
Race		
White	1195	233
Black/African American	132	28
Other	33	9

Table 2. Office Visits for Medicare Patients at SIU GIM in 2 Year Interval

	All Patients	Patients with COPD
GIM Visits	**1360**	**270**
Avg. # of visits for participants that have visits	2.4	2.8
Cardiology Visits	**159** (12%)	**45** (17%)
Avg. # of visits for participants that have visits	2.8	2.6
Pulmonary Visits	**128** (9%)	**72** (27%)
Avg. # of visits for participants that have visits	2.5	2.8

Results

The database query identified 1360 unique patients older than age 65 seen by an SIU General Internal Medicine primary care physician in interval from 9/1/2016 – 8/31/2018. The 270 patients with a diagnosis of COPD are the study subset population.

- COPD Lipid management details in Table 3, Highlights below
  - 36% of patients with COPD have inadequately mitigated triglycerides
  - 75% of patients with COPD have inadequately mitigated LDL
- Of the patients that visited the ER, there were more patients that had COPD than any other concurrent disease (see Table 4)
- 36% of COPD patients have dyslipidemia characterized by triglycerides > 150
- 75% of COPD patients have dyslipidemia characterized by LDL > 130
- 42% of COPD patients have some vascular disease (CAD, PVD, CVD)
- 62% of COPD patients with vascular disease have an LDL >70
- 39% of COPD patients with vascular disease have a triglycerides > 150

Table 3. Data Summary of patients with COPD

# of patients with Chronic Lung Disease	270 (20% of total)
Average Age	73.8
Concurrent disease	
Coronary Artery Disease	87 (32%)
Cerebrovascular Disease	17 (6%)
Peripheral Vascular Disease	26 (10%)
LDL available in chart	215
LDL > 130	162 (75%)
LDL > 100	205 (95%)
LDL > 70	214 (100%)
Statin Medication	
Statin prescribed	111 (41%)
No statin	159 (59%)
Triglyceride available in chart	222
Triglycerides >150	79 (36%)

Table 4. ER Data Summary of total 1360 patients

# of ER visits in 2 years of study data	149/1360 (11%)
Demographics of 149 participants	
Age	Average: 75.5 Males: 65 Females: 84
Concurrent disease	
Chronic Lung Disease	57/149 (38%)
Coronary Artery Disease	50/149 (34%)
Cerebrovascular Disease	14/149 (9%)
Peripheral Vascular Disease	13/149 (9%)
Specialty Consults	
Cardiology consults/visits	41/129 (28%)
Pulmonary Consults/Visits	24/149 (16%)

Discussion/Conclusion

There are 270 Medicare age patients at SIU SOM GIM with COPD. Many of these patients have inadequately mitigated lipids and are candidates for further treatment. The 42% dual risk patients with both COPD and vascular disease are at especially high risk for adverse events. These patients potentially disproportionately utilize ER visits, hospital admissions, and referrals to pulmonology medicine. Remediation of their lipid disorder with medication (icosapent ethyl and/or PCSK9 inhibitors) has the potential to reduce the adverse events in these patients. However, a major barrier to the use of Icosopent ethyl and PCSK9i in this population has been the cost of the medication.

A formal procedure and treatment strategy to identify and treat these patients has the potential to significantly reduce adverse events and associated cost of care for these patients and society. SIU SOM GIM has just implemented a lipid clinic to help patients with cost of these expensive medications.

Strengths/Limitations

Strengths

- Patients in the data base receive care from an academic medical center; A Center of Excellence
- Relatively uniform insurance (Medicare age)
- Data forms the baseline for a QI project

Weaknesses/Limitations

- The EHR data abstraction is incomplete and requires individual chart review for completeness

Lipid Clinic information

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Improving Colon Cancer Screening Through Provider Reminder about Patient Education

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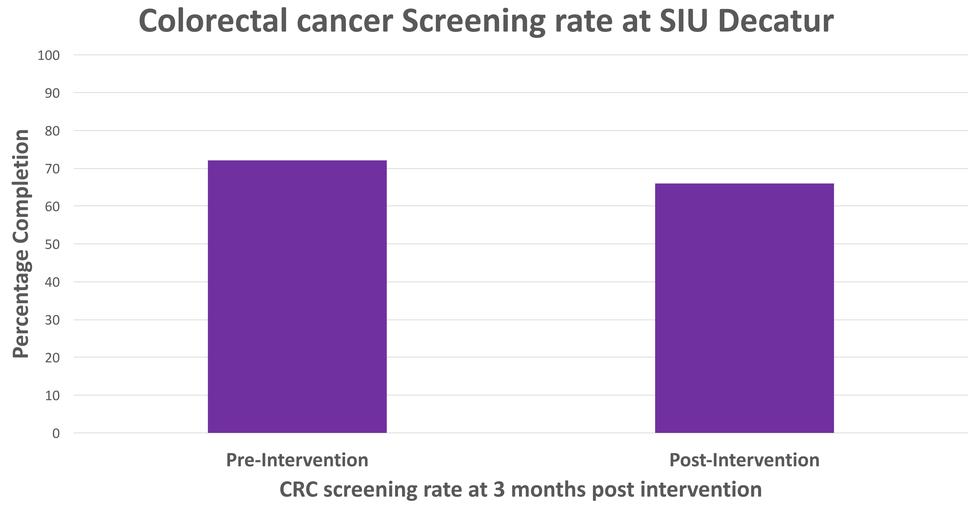
SIU Decatur Family & Community Medicine Residency Program

Introduction

Colorectal cancer(CRC) is the third most common type of cancer that is diagnosed in the United States. Screening for colon cancer using direct or indirect screening tools allows for detection and destruction of precancerous lesions, and in some cases, early colon cancer can also be identified and treated, therefore preventing systemic spread. The current United States Preventive Services Task Force (USPSTF) recommendations suggest screening both men and women between ages 50 to 75. In a 2018 randomized controlled trial (RCT) by Hoffmann et al. it was demonstrated that provider education on screening and different modalities lead to statistically significant increase in colon cancer screening[1]. Currently at our Federally Qualified Health Center (FQHC) in Decatur, our colorectal cancer screening rate is well below the National Colorectal Cancer Roundtable national target of 80% set in 2018 with only 72% of our patients receiving screening. The aims of this QI project was to increase CRC screening rate (currently 72%) by 10% through provider education about proper screening recommendations and documentation within a period of 3 months, and to improve documentation of screening discussions through use of the preventive care section of the EHR.



Methods

Residents at SIU Decatur were educated during our regularly scheduled didactic sessions which is part of our regular residency training and within the normal scope of education. Education was provided about CRC screening and all different modalities that are available. They were also be reminded to document CRC education provided under preventative care and select if the patient has chosen an option that was provided to them on the same visit. This is already the standard of care for our practice; however, it is not being utilized well.

This intervention was performed during the first week of March 2020. The pre intervention screening rate was obtained via request to the SIU School of Medicine. This number was obtained by an automated process which reviewed the EMR to see what percentage of individuals who qualify for CRC screening were screened with an acceptable modality. A request for post intervention screening rate was made after a 3 month period, at the end of May 2020. The pre and post intervention numbers were compared to see if there was a change which could be attributed to the intervention.

Results

At the 3-month interval, ending May 2020, there was a decline from 72% screening rate to 66%. This resulted from a significant decline in clinic visits and deferring of preventative health care screening due to the COVID-19 Pandemic. It was also hypothesized that there was a contribution from more individuals that fell into the screening category simply due to passage of time.

Discussion

We used an educational approach to refresh different screening modalities with our residents at SIU Decatur. It was our hope that a greater degree of our patient population would be screened for CRC as a result of this intervention. In light of the COVID 19 pandemic, falling clinic visits and more individuals becoming due for screenings an increase in screening rate was not observed.

Colorectal cancer is not only the 3rd most common type of cancer but also a leading cause of cancer death in the United States. A wide range of screening modalities are available to allow for detection of precancerous lesions and early malignancy. The importance of early detection and treatment allows for not only longevity but also an improved quality of life.

Regardless of the results, provider education led to a greater degree of understanding about colorectal cancer screening and different modalities used to screen. I believe that under normal circumstances you would see a positive trend in screening rates with provider education. In addition to education we can attempt other interventions such as automatic order generation, dedicated preventative health appointments or dedicated screening day to see if this leads to an improvement in screening rate.

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Improving the Documentation of Educating and Counseling on Healthy Forms of Weight Loss through Exercise and Diet

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Introduction

Obesity continues to be a significant health concern throughout the United States and the prevalence continues to increase, highlighting the importance of surveillance and counselling (1). As a result, many people are more likely to develop conditions such as diabetes, hypertension, cardiovascular disease, and stroke. From 2015-2016, the prevalence of obesity has continued to increase; for men, the prevalence was 37.9% and for women, the prevalence was 41.1% (2). Implementing action plans to help patients lose weight is one of the ways physicians can have a crucial impact on this epidemic, now and in the future. The purpose of this project is to show the provider documentation of educating and counseling our adult patients with a BMI ≥25 on forms of weight loss, exercise, and diet. Our FQHC clinic is currently at an average of 45% in our documentation compared to the national average of 60%. Our goal is to implement several changes in the Decatur Federally Qualified Health Center (FQHC) concurrently to improve our rate of educating our obese patients on weight loss. By appropriately documenting our education/counseling of patients, we can improve our average on adult weight screening and follow-up. Ultimately, observing actual weight loss over time in these patients will ensure that we are making a significant change that will better improve our patients' health and life.

Methods

A review of medical charts on patients who are 18 years old and older with a BMI ≥25 at a Federally Qualified Health Center (FQHC) was done to determine which patients had a lifestyle prevention documented in their medical chart. This could include either dietary modifications or activity changes. The pre-intervention data was collected over the course of 6 months, from June-December 2019. The intervention methods used included conducting mini-workshops showing providers how to appropriately document the education, providing handouts to patients, and including BMI measurements in the patient's problem list. The pre-intervention data was collected by dividing the total number of adult patients who are 18 years old and older with a BMI ≥25 who have a documented lifestyle intervention over the total number of adult patients who are 18 years old and older with a BMI ≥25. After the intervention, the same calculation was conducted to determine if there was an improvement in the documentation rate. The post-intervention data was collected over the course of 6 months, June - December 2020. Patients who were excluded from the study included patients who were pregnant, patients with cognitive or developmental disabilities and psychological conditions, and patients on hospice.

Results

Pre-intervention data showed there was a total of 3045 adult patients with BMI ≥25 in the medical records. Within this sample, there were 1399 adult patients with a BMI ≥25 who had a documented lifestyle prevention in their medical chart. This showed a documentation rate of 45.94% of patients had the appropriate lifestyle prevention documentation in their medical chart. After the interventions were implemented, there was a total of 1461 adult patients with a BMI ≥25 who had a documented lifestyle prevention in their medical chart compared to a total of 3095 patients. The documentation rate of the post-intervention data was 47.20%. Comparing the pre-intervention data with the post-intervention data indicated there was a 1.2% increase in the documentation rate. (Figure1)

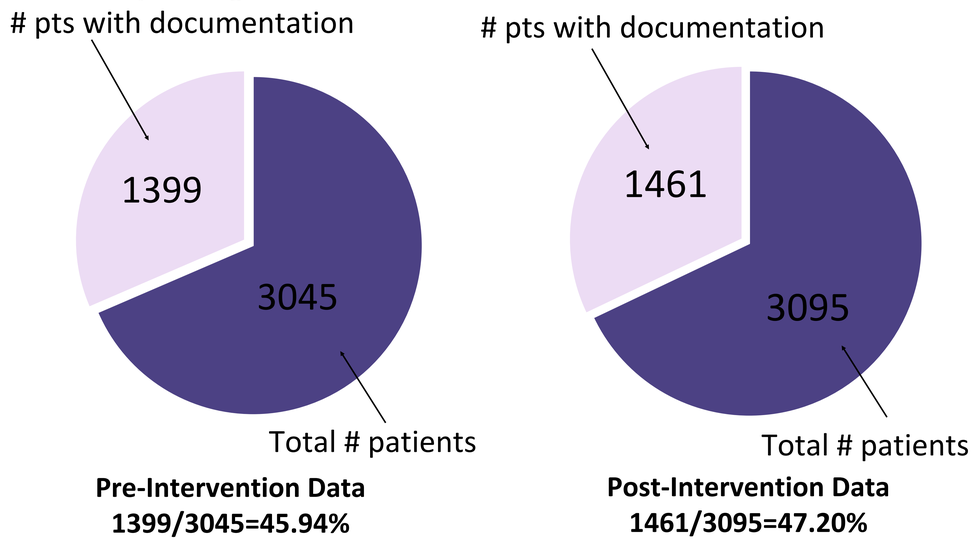

Figure 1

Discussion

Obesity continues to be a growing problem in our population. Data from the Behavioral Risk Factor Surveillance System and National Health and Nutrition Examination Survey indicates that by 2030, close to 50% of adults in the United States will be considered obese; and, close to 25% will be considered severely obese (3). With this study, providers were made more aware of the significance in documenting if they have had the appropriate counselling needed to educate their patients on healthier methods of weight loss. Many providers were having these discussions; however, it was found that many did not know how to document their counselling in a way that would meet Uniform Data System measures for an FQHC.

Many factors affected the way our data could be improved. With the COVID-19 pandemic, fewer patients were able to be seen in office due to the restrictions of the pandemic. This led to our inability to obtain current BMI readings which would indicate who would benefit from the specific lifestyle modifications. Furthermore, follow-up appointments were conducted via telehealth phone and video visits, which reduced our ability to obtain accurate BMI measurements. With these visits, providers were unable to provide handouts or other resources to these patients.

Evaluating the factors that prevented appropriate documentation rate can allow us to develop better ways to provide education/counselling to our patients. Reviewing medical charts to find the patients who have a recent BMI ≥25 and/or have chronic medical conditions that are associated with obesity would be a way to still provide the appropriate education/counselling even though we are not able to see our patients in the office. Using online tools, such as Follow My Health, to provide further education, resources/handouts, etc is another way to still provide our patient population with the resources needed to assist them in making healthier diet choices and losing weight in a healthy manner.

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Lipid control and Risk of stroke in a Medicare population

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SIU MEDICINE
INTERNAL MEDICINE

Introduction

There are few disease complications more personally and financially devastating, than stroke. The cost to individuals as well as the burden on our health system is immense. There is a significant short term and long term health care cost, in addition to the loss of productivity, and burden on the patient and their families. Decreasing this outcome is a goal that should unite patients, providers, and insurers equally.

There is a complex relationship between cholesterol levels and stroke risk.

In most literature, there is a direct relationship between cholesterol levels and ischemic stroke, the association is typically strongest for atherosclerotic subtypes (1). In many observational studies, there is an association between elevated total and LDL cholesterol and an increased risk of ischemic stroke (1). However, there is also an observed inverse relationship between total cholesterol levels and hemorrhagic stroke (2). Lipid reducing medications including statins, ezetimibe and PCSK9 inhibitors have been shown to reduce the incident of ischemic stroke (2).

The Treat Stroke to Target trial investigated targeting LDL levels of 70, and the relationship with ischemic stroke or TIA showed a risk reduction for patients (3).

One of the significant findings from the REDUCE – IT trial in 2018 was the reduction in fatal and non fatal stroke in patients started on newer Omega 3 fatty acid Eicosapentaenoic acid in addition to statin medication (3). Hemorrhagic stroke is a significantly more rare event compared with ischemic stroke, possible concerns for hemorrhagic events should not detract from the benefit of improved cholesterol profiles and reduction of these serious vascular disease outcomes.

The question of what the optimum cholesterol target in this population should be remains a subject of ongoing debate. With the increased availability of more potent lipid reducing medications, there is a need to investigate and better clarify the relationship between dyslipidemia, lipid reducing agents, and stroke.

Table 1. Demographics

Total patients	1360
Age (average)	74.15
Gender	
Male	573
Female	784
Other	3
Race	
White	1195
Black/African American	132
Other	33
BMI	
Underweight	
Normal Weight	
Overweight	
Obese	
Morbid Obese	

Table 2. Participants with Disease

# pts. w/ CAD	278
# pts. w/ CVD	88
# pts. w/ PVD	82
# pts. w/ chronic lung disease	270

Table 3. Office Visits

GIM Visits	1360
Avg. # of visits for participants that have visits	2.43
Cardiology Visits	159
Avg. # of visits for participants that have visits	2.76
Pulmonary Visits	128
Avg. # of visits for participants that have visits	2.48

Table 4. Participants and Lipid Lowering Medications

Statins	464
PCSK9i	5
Vascepa	0
Others	119

Methods and Materials

This study is a retrospective chart review and analysis of the clinical data obtained from SIU SOM EHR. Data was collected on patient demographics as well as applicable lab tests and clinical exam results. All data was collected and then de identified. An IRB approval was obtained for our query. Patient lists were from the TouchWorks system and include all unique patients older than age 65 seen by a SIU General Internal Medicine primary care physician at least once in interval from 9/1/2016 – 8/31/2018. Our criteria for inclusion included patients with prior diagnoses of coronary artery disease, peripheral vascular disease, cerebrovascular disease, and pulmonary disease. Demographics collected included age, sex, race, weight, and height. Dependent variables include cholesterol profile, lipid medications used, # of visits with primary care, pulmonary or cardiology specialists, # of ER visits, # of hospitalizations, and total # of hospital days.

88 pts with a history of cerebrovascular disease were our subset population.

This QI project was conducted to evaluate if the Medicare age population with prior diagnosis of cerebrovascular disease at SIU GIM clinic is receiving optimal care in terms of lipid control as recommended for high risk pts with a history of cerebrovascular disease.

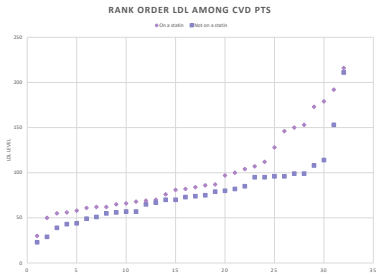
Aims

This QI project was conducted to evaluate if the Medicare age population with prior diagnosis of cerebrovascular disease at the SIU GIM clinic is receiving optimal care in terms of lipid control as recommended for high risk patients with a history of cerebrovascular disease

Results

There is less than optimum cholesterol control among our cerebrovascular Medicare age patients at SIU GIM clinic.

- 30% of CVD pts have dyslipidemia characterized by TGs>150
- 13% of CVD pts have dyslipidemia with LDL levels >130
- 44% of CVD pts have coexisting vascular disease (CAD, PVD)
- 56% of CVD pts have an LDL>70
- Only 40 pts out of 88 were presently on a statin
- The mean average of GIM office visits in our subset population was 2.4
- The median average of hospitalizations in our subset population was 3.1



Conclusions

There are 88 Medicare age patients at SIU SOM GIM with cerebrovascular disease that could potentially benefit from improved cholesterol management. There is no current consensus LDL target for stroke patients, however, new emerging research points to decreased risk for cardiovascular events with tighter cholesterol control. Our research indicates there are opportunities for improvement with more frequent clinic visits and more patients started on statin medications.

Discussion

There are 88 Medicare age pts at SIU GIM with cerebrovascular disease. 56% of these pts have LDL >70, 30% have TGS>150, only 40 of our subset are presently on statin medication. Current guidelines through the American Stroke Association indicate patients with LDL >100 should be on a statin medication. New research indicates we can reduce the risk of recurrent events with LDL targets below 70. Patients with inadequately controlled lipids are at risk for increased hospitalizations and ER visits. In addition to improved compliance with current recommendations among this high risk group, we also believe select cases may benefit from newer medications targeting cholesterol control.

A major barrier to the use of icosopent ethyl and pcsk9 inhibitors in this population is the cost of the medication. A formal procedure and treatment strategy to identify and treat qualifying pts has potential to significantly reduce adverse events and associated cost of of care. SIU GIM has recently implemented a lipid clinic to help patients with cost for these medications.

Future Directions

Moving forward, we plan to recruit qualifying patients onto Vascepa and PCSK9 inhibitors for better cholesterol control, and reduction of risk of further cerebrovascular events. We will quantify this decrease by looking at ER visits, and hospital admissions.

Our Lipid clinic will be assessing adherence and response to LDL lowering medications and lifestyle changes with repeat lipid measurements 4 to 12 weeks after initiating a statin or dose adjustment, repeated 3 to 12 months as needed.

Strengths and Weaknesses

Strengths:

· Patients in our cohort receive excellent standard of care from an Academic Medical Center

· Patients in our cohort shared a relatively similar insurance platform (Medicare)

· Large Dataset for an understudied association

Weaknesses:

· Our EMR system is imperfect, we have missing/incomplete information for some patients.

· Due to a smaller number of CVD patients in our clinic, it will likely take more time before any statistically significant findings are achieved

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Effects of Implementing a Temporary Pacemaker Training Module

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Introduction

- Temporary pacemakers can be critical to patient care in the postoperative period
- If used incorrectly they pose a risk of significant morbidity & mortality such as hypotension and death [1,2]
- Previous studies have shown that health care workers often lack the appropriate knowledge regarding implantable cardiac devices [3,4]
- Currently, there is no formal education or assessment of health care workers that are involved in caring for these patients

Study Aim

Will educating house staff on temporary pacemakers increase their knowledge and comfort levels in handling temporary pacemakers?

Methods

- 30 registered nurses + 9 certified registered nurse practitioners identified as eligible to participate
- Likert scale questionnaire developed to determine existing comfort levels in understanding & using temporary pacemakers
- Current knowledge regarding common pacemaker themes including pacing, sensing, capturing, and identification of EKG strips by a 14 question multiple choice quiz
- Formal education provided by the device representatives to the house staff
- Readministration of both quiz and questionnaire following the formal education
- Results from pre- and post-education compared to each other

Results

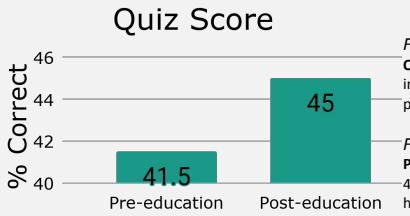

Figure 1 - Top Left
Quiz Score: Shows average quiz scores pre and post intervention. Small increase in percent correct; p=0.181

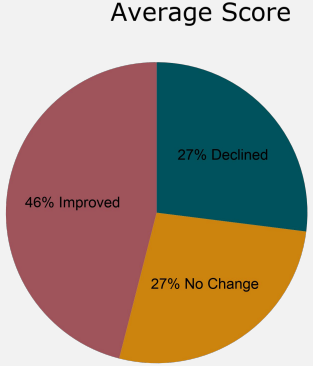

Figure 2 - Bottom Left
Percent Change in quiz scores pre and post education. 46% of participants improved their quiz score, 27% had no change, and 27% had worsening scores

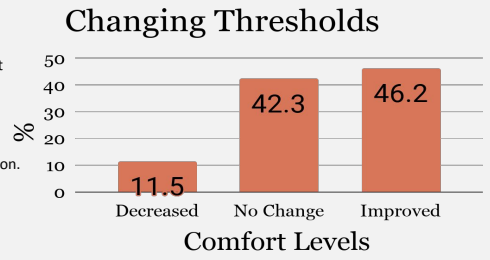

Figure 3 - Top Right
Changing threshold: Shows the majority of participants improved (46.2%) or had no change (42.3) in their comfort level when asked to independently change the threshold on temporary pacemakers. 11.5% of participants felt less comfortable in changing thresholds after the education was provided; p=0.0083

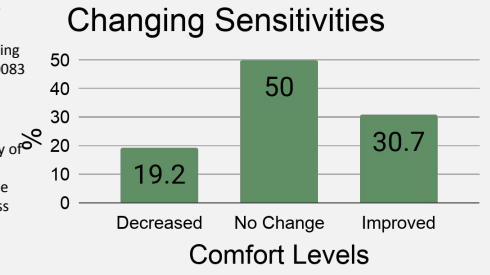

Figure 4 - Bottom Right
Changing sensitivities: Shows that the vast majority of the participants has no change (50%) or felt more comfortable (30.7%) to change the sensitivity on the temporary pacemaker. 19.2% of participants felt less comfortable; p=0.1396

Discussion

- Positive trend demonstrated in both subjective and objective measures of house staff's knowledge and comfort levels after undergoing a dedicated learning session on temporary pacemakers
- Decline in subjective comfort levels could portray either a realization of inconsistencies with previous training or show the need for more educational training sessions
- Next steps of this study will include a readministration of both quiz and questionnaire six months post education to determine retention of knowledge and comfort level

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Household Food Insecurity in the SIU Obstetric Population and Proposed Strategies of Mitigation

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Background

- Food insecurity is defined as "whenever the availability of nutritionally adequate and safe food, or the ability to acquire acceptable foods in socially acceptable ways, is limited or uncertain".
- The project originated out of a desire to better understand and address the potential food needs amongst our prenatal population.
- Current literature indicates that poor periconceptional dietary intake can lead to adverse pregnancy outcomes including increased risk of postpartum hemorrhage, hypertensive disease, small for gestational age infants and NICU admissions[1,2].
- The COVID-19 pandemic has led to an economic downturn with an expected subsequent increase in food insecurity rates globally[3,4].

Objectives

1. Assess the degree of food insecurity affecting SIU School of Medicine obstetrical patients.
2. Understand the effect of the COVID-19 pandemic on food insecurity.
3. Propose and implement ways to mitigate food insecurity amongst our patients.

Methods

This study was approved by the Springfield Committee for Research Involving Human Subjects as a Non-Research Determination under protocol #20-594.

- We are following a Plan-Do-Study-Act (PDSA) model and are currently in the "Plan" (needs assessment) phase.
- The voluntary, slightly modified USDA 10-item questionnaire quantifying adult food insecurity, was distributed to all SIU obstetrical patients at their initial prenatal visit in resident clinics.
- Surveys were collected from 10/22/2019 to 2/24/2021 and were stratified into groups (pre- vs. post-) in relation to the start of the COVID-19 pandemic (03/11/20, according to the World Health Organization) and then classified according to food insecurity status within each timeframe.
- Based on the survey scores, patients within each timeframe were classified into the following categories: high food security (score=0), marginal food security (1-2), low food security (3-5), and very low food security (6-10).

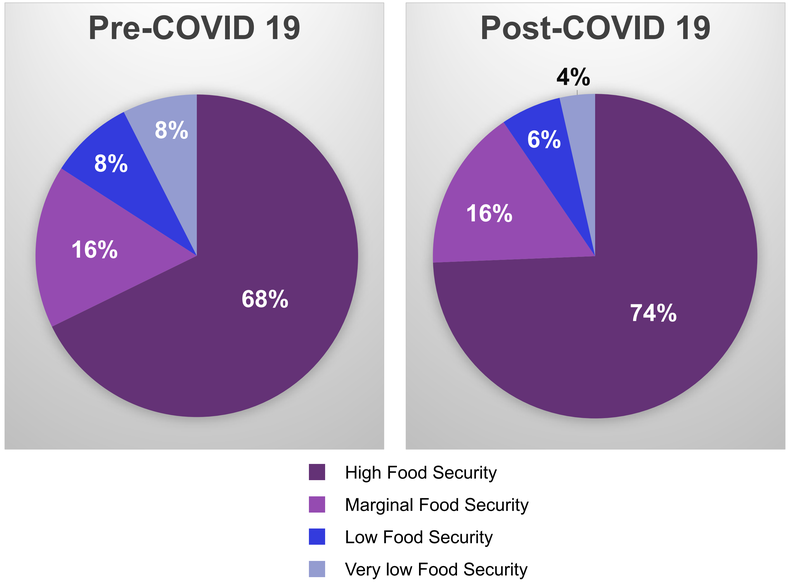
Statistical analysis: Descriptive analyses were utilized evaluate food insecurity trends pre-COVID and post-COVID periods. Continuous variables are described with measures of central tendency (mean, median) and dispersion (range, standard deviation), and compared using the Student's t-test or an ANOVA with follow-up post hoc tests (or nonparametric equivalents). Categorical variables are summarized as frequencies and percentages, and compared with the Chi-Square test.

Results

Patient population characteristics

Variable Collected	Results
Number of subjects	413
Age (mean ± SD)	25.72 ± 5.4years
House hold size (median; range)	3 (1-11)
Questionnaire score (mean ± SD)	1.22 ± 0.18*

*Patients scoring 1-2 are classified as having marginal food security



Utilization of available resources

Question	Answer	N (Pre-COVID 19)	N (Post-COVID 19)
Are you receiving any of the following benefits? (select all that apply)**	No, None	21	55
	WIC	69	57
	SNAP/EBT (food stamps)	148	122
	Food Banks	4	4
	Other	11	6

**Results were collected from 413 completed questionnaires.

- 95.4% of our patients are aware of available resources to obtain adequate food and 81.6% of our patients are actively utilizing one or more of these resources (WIC, SNAP, Food banks, etc.).

Summary

- Our obstetrical patient population (12.8% food insecure) is more vulnerable than the national average (10.5% households, reported in 2019), which confirms the need for an intervention.
- Most of our patients (95.4%) are aware of the existing local resources to obtain adequate food.
- Although not statistically significant, we observed a trend towards a decrease in food insecurity in our patient population after the start of the COVID-19 pandemic (15.9% vs. 9.5%, pre- vs. post-pandemic respectively, p=0.054).
- Resource use also decreased during the post-COVID period relative to the pre-COVID period which could be suggestive of closure/shutdown of resource centers as well patients abiding by social distancing and avoidance of public locations to limit exposure. Moreover, most these patients are likely to have received the COVID-19 relief economic impact payment, which may explain why their food insecurity has not increased despite the decline in use of resources.

Proposed Interventions

- The high prevalence of food insecurity in our patient population confirms the need for an intervention to address the problem.
- Initiate identification system in the EHR: adding ICD (International Classification of Disease) code Z59.4 "Food Insecurity" to patient charts (Touchworks) to alert providers across different specialties about food security status of patients, allowing them to personalize treatments and provide resources accordingly.
- Utilize the data to propose a plan to implement a position for a perinatal social worker and/or patient care navigator in SIU Obstetric outpatient clinic.

Future directions

- Follow this cohort of patients for pregnancy and postpartum outcomes to assess correlation between food insecurity and adverse pregnancy outcomes.

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Comparison of Lipid Profiles of Patients on Various Lipid-Lowering Regimens

Authors: Braidy Megeff, BS*; Erica Forbes, BS*; Radhika Deshpande, MD; Tim Carroll, MD; Mark Graves, MD

Southern Illinois University School of Medicine

Abstract

A significant number of patients in the SIU SOM General Internal Medicine practice are not effectively controlled on their current lipid-lowering regimens. This investigation is a two-year retrospective review of patient data within the SIU GIM system. We examined the most recent lipid profiles and lipid lowering regimens of our sample population, which includes 1360 patients over the age of 65 with SIU General Internal Medicine visits between 09/01/2016 and 08/31/2018. Lipid control, specifically LDL values and triglyceridemia, is currently inadequate within patients with vascular disease at SIU. Through assessment of lipid control and identification of barriers to optimal management, such as treatment costs, we hope to provide compelling evidence to support implementation of a Lipid Clinic at SIU.

Introduction

A vast number of patients suffer from vascular disease. Adverse vascular events in these patients may lead to poor medical outcomes and increase the cost of health care. Identification of risk factors for the development and progression of adverse vascular events and proposal of intervention strategies may help mitigate health care expenses and improve medical outcomes for these patients. One such risk factor is an uncontrolled lipid profile, including elevated triglyceride levels. The purpose of this study is to assess the lipid profiles and triglyceride levels of patients at SIU SOM and offer potential strategies for improving outcomes in these patients.

We know that high-risk patients should be on a statin and have an LDL < 70mg/dL. However, patients that are intolerant to statins or in need of targeted triglyceride reduction may benefit from agents such as PCSK-9 inhibitors or icosapent ethyl (Vascepa). These medications are expensive and therefore less accessible to those who may need them for optimized lipid control. The investigators in this study hypothesize that there is a significant number of patients in the SIU SOM General Internal Medicine practice that are not effectively controlled on their current lipid-lowering regimens. Ultimately, we hope to implement a Lipid Clinic at SIU SOM to optimize control of our patients' lipid profiles with statins, PCSK-9 inhibitors, and/or Vascepa in a cost-effective manner. This, in turn, may decrease the number of adverse vascular events, improve outcomes, and lessen medical expenses for these patients.

Purpose

The purpose of this study is to determine the number of patients within the SIU SOM General Internal Medicine Clinic that are not effectively controlled on their current lipid-lowering regimens, whether that is statin, statin with vascepa, or statin with a PCSK-9 inhibitor.

Methods

- Two-year retrospective review of patient data within the SIU GIM system
- Sample includes 1360 patients over the age of 65 seen by primary care physicians from SIU General Internal Medicine within the timeframe 09/01/2016 - 08/31/2018
- Dependent variables examined include most recent lipid profile and lipid medication(s) used within the period of analysis
- Patients deidentified prior to analysis with a research ID number assigned by the research department in conjunction with the PI
- Patient MRN not retained in the dataset
- Significance accepted for alpha values ≤ 0.05

Table 1. Demographics of Patients with Vascular Disease at SIU GIM in 2 Year Interval

	All Patients	Patients on Statins	Patients on PSCK-9i's
Participants (n)	1360	414 (30.4%)	5
Age (average)	74.15	72.6	67.6
Gender			
Male	573	174	1
Female	784	240	4
Other	3	0	0
Race			
White	1195	344	5
Black/African American	132	146	0
Other	33	13	0

Table 2. Lipid Profiles of Patients on Lipid Lowering Regimens

# of patients with Statin or Statin + PSCK-9i	419 (30.1% of total)
Average Age	72.6
LDL available in chart	405
LDL < 70	121 (29.9%)
LDL 70 - 99	133 (32.8%)
LDL > 100	151 (37.3%)
HDL available in chart	419
HDL < 40	121 (28.9%)
HDL 40 - 60	220 (52.5%)
HDL < 60	78 (18.6%)
Triglycerides available in chart	409
Triglycerides > 149	145 (35.4%)

Results

- Of the 1360 patients with CAD, CVD, PVD, or CLD, almost 66% are not on any lipid-lowering regimen (Fig 2.)
- There are currently 35.4% of the patients on a lipid lowering medication regimen that have hypertriglyceridemia (Table 2)
- 33% of our patients are being treated with a statin, including low, moderate, and high dose statins (Fig.1)
- There are only 4 patients that are on a PSCK-9i and statin, with one patient only on a PCSK-9i
- There are currently no patients on a statin and Vascepa, likely due to increased cost

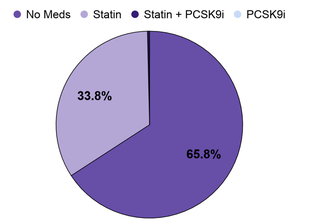

Figure 1. Percentage of patients in the GIM clinic, wth CAD, CVD, PVD, or CLD who are on lipid-lowering medications.

Lipid Clinic Information

Please contact Dr Beaux Cole, PharmD, RPh, FAARFM for further information about the lipid clinic. Email: bcole24@siumed.edu. Phone: 217-545-8000

Results Cont.

- Of the 1050 patients with LDL values, only 30% of the patients have a LDL < 70 mg/dL (Fig. 2)
- 69% of the total patients and 70% of the patients on lipid-lower medications have LDL values > 70 mg/dL (Table 2 and Fig. 2)
- Definitive results from a Lipid Clinic are not available, but we predict that there will be more patients on a statin, PCSK-9i, and Vascepa
- We predict that the lipid profiles of these patients will be optimized with more patients with an LDL < 70mg/dL

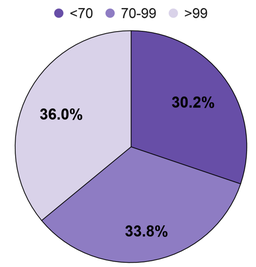

Figure 2. Percentage of LDL values of patients in the GIM clinic with CAD, CVD, PVD, or CLD.

Discussion

Many patients within the SIU GIM practice with CAD, CVD, PVD, and CLD do not have optimized lipid profiles, as only 36% have LDL <70mg/dL (Fig. 2). Almost two-thirds of these patients are not on a medication regimen and the other one-third are only on statins (Fig. 1). Our goal is to incorporate a lipid clinic into the GIM practice that works to optimize medication regimens, including PCSK9 inhibitors and Vascepa, at a lower cost. This may improve outcomes, decrease adverse events, and alleviate healthcare expenses for our patients.

We hope to utilize a pharmacist, internal medicine residents, and attending physicians with a multi-departmental approach. Though the data is limited on patient adherence to lipid medication regimens and diet, we believe having a clinic specifically devoted to controlling lipid profiles will help with patient education and improve lipid management. Once the clinic is implemented, further research into positive outcomes and additional interventions can take place.

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SIU MEDICINE

Implementation of Geriatric Screening in Selection Criteria for Kidney Transplant Recipients

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SIU MEDICINE

Abstract

❖Renal transplantation is the treatment of choice for patients with advanced end stage renal disease[1].

❖We compared 1 and 3 year patient and graft survival prior and subsequent to the implementation of a multi-point geriatric screening assessment and comorbidity risk stratification.

❖We predicted better operative outcomes in the post-implementation cohort.

❖All outcomes in the post-implementation (post) cohort were numerically better than that of the pre-implementation (pre_ cohort. 3 year graft survival in the post cohort achieved statistical significance compared to the pre cohort.

❖We concluded that revised eligibility and evaluation applied to transplant candidates assisted in achieving superior results.

Background

In 2016, the Memorial Medical Center (MMC) Transplant Program implemented the following patient selection protocol for all candidates age ≥ 65:

Depression: Geriatric Depression Screening (GDS)[2]

❖Severe depression (score 21-30)→need preoperative mental health treatment

Co-morbidities: Charlson Comorbidity Scoring System[3]

❖Moderate (score 5-6) → need preoperative geriatric evaluation

❖Severe (score ≥ 7) → not an operative candidate

Frailty: Fried Scale[4]

❖Self reported unintentional weight loss, self reported exhaustion, slowness (seconds to walk 4 meters), Activity Questionnaire, and weakness tested by grip strength[4]

❖Intermediate frailty (score 1-2) →need preoperative geriatric evaluation

❖Severe (score 3) → not an operative candidate

Activity:

The Modified Minnesota Leisure Time Activity Questionnaire[5]

❖Metabolic activity: 1 met = 1 kcal/kg/hour

❖Weekly expenditure <128 kcal for men or <90 kcal for women → not an operative candidate

Cognition: The Montreal Cognitive Assessment[6]

❖Scores ≥ 26 of 30 → normal

❖If <26 →needs further evaluation

Methods

We conducted an IRB-approved retrospective chart review of all patients who underwent renal transplant at MMC from 2013 to 2019 excluding the year 2016 during which the eligibility and evaluation protocols were changed. Revised eligibility criteria for participants age ≥65 were implemented to evaluate if the participant required preoperative medical optimization or was excluded from renal transplant candidacy. Baseline demographic parameters and graft and survival data were collected through March 5, 2021 and analyzed using chi-square analysis. P value <0.05 was prospectively determined to indicate statistical significance.

Results

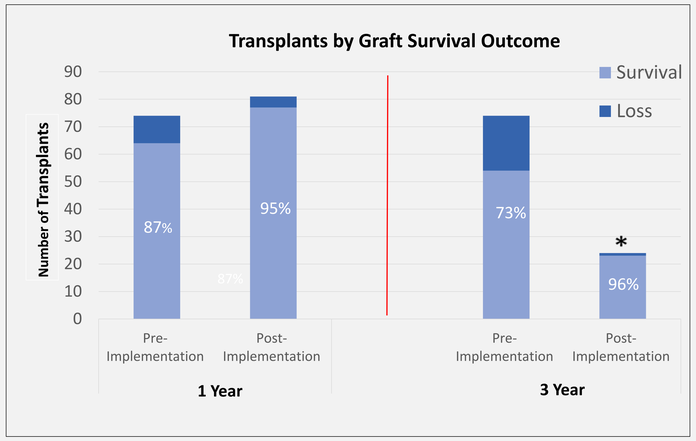

Figure 1. One and 3 year renal graft survival for pre and post cohorts
One and three year renal graft survival for the pre and post-implementation of geriatric screening and comorbidity risk stratification for renal transplantation candidates, * indicates (p <0.05) and all other values without an * (p >0.05) .

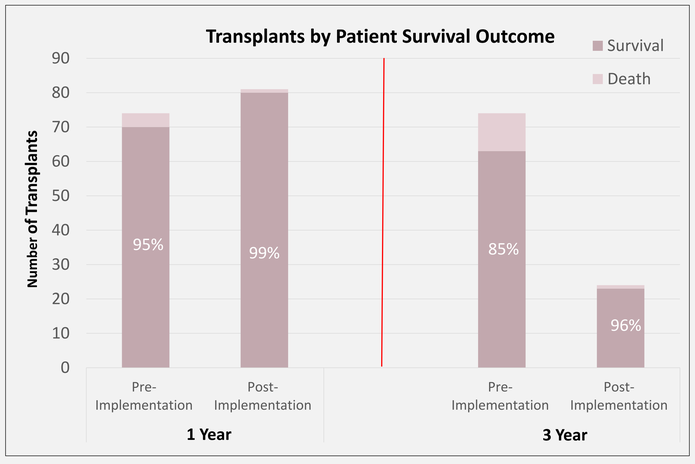

Figure 2. One and 3 year patient survival for pre and post cohorts
One and three year patient survival for pre and post-implementation of geriatric screening and comorbidity risk stratification for renal transplantation candidates, * indicates (p <0.05) and all other values without an * (p >0.05) .

Results

Patients were divided into pre and post cohorts with 74 and 81 participants, respectively. Three year graft and patient survival data was available for 24 of the 81 participants in the post-implementation cohort. 23 of 24 (96%) of the post cohort achieved 3 year graft survival compared to 54 of 74 (73%) of the pre cohort, which was statistically significant (p = <0.05) (Fig 1). Other comparisons of 1 year patient and graft survival and 3 year patient survival were numerically better in the post cohort but did not achieve statistical significance (Fig 1 and 2).

Discussion

Despite more stringent eligibility and evaluation criteria, more transplants were performed in the post-implementation cohort than in the pre-implementation cohort. In comparing primary outcomes before and after implementation of geriatric patient selection criteria, we identified statistically significant improved outcomes of the post cohort in the three year graft survival. The other primary outcomes demonstrated numerically better percentage but did not achieve statistical significance. This finding is likely secondary to an underpowered study with a small sample size. Nonetheless, we conclude that the revised eligibility and evaluation applied to transplant candidates assisted in achieving superior results.

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Memorial TRANSPLANT SERVICES

A Multidisciplinary Intervention to Improve Adherence to a Burn Resuscitation Protocol

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Michael Neumeister, MD; Tim Daugherty, MD

Background & Context

Large burn fluid resuscitation is a complex and dynamic multidisciplinary process with opportunities to cause harm both with over- and under-resuscitation. In our Memorial Burn Center, the Trauma Team, Plastic Surgery Team, and nursing teams are closely involved in the first 24 hours of large burn resuscitation. These teams consist of residents and nurses with varying amounts of experience with burn care. In 2016, residents created a protocol to streamline large burn resuscitation with the goal of providing standardized, evidence-based care algorithm that would be used to resuscitate large burn patients. One year later, the protocol was not consistently being used and burn resuscitations were still not standardized.

The Problem

1. Lack of Adherence to the Protocol that was Developed to Combat the Complexity of Large Burn Resuscitation by Standardizing Evidence-Based Care.
2. Inability to Assess the Efficacy of the Protocol Created.

Available Knowledge

Discussions with residents, attendings, and nurses involved in burn resuscitations yielded the following assumptions regarding why the protocol had not been followed:

1. Unintentional deviations from the protocol due to a lack of understanding.
2. Accurate measures for resuscitation are difficult to glean from the EHR.
3. Residents have monthly rotations, and experience with burn patients varies significantly among residents and nurses.
4. The responsibility of all decisions within burn resuscitation was put on one service rather than shared among all members of the multidisciplinary burn care team.

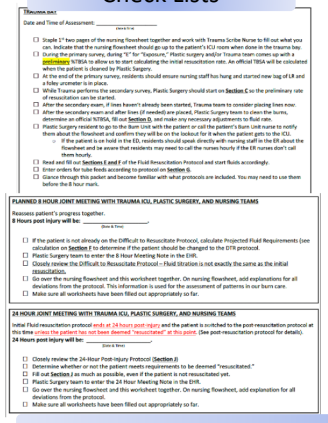
Specific Aims

To increase the adherence of the burn resuscitation protocol by all members of the multidisciplinary burn team by:

1. Empowering and expecting all members to the burn care team to play an active role in burn resuscitation
2. Creating burn resuscitation tools that are easily understood and accessible for everyone

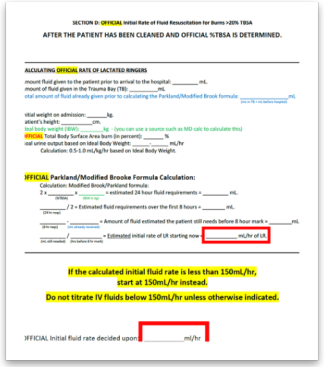
The Intervention

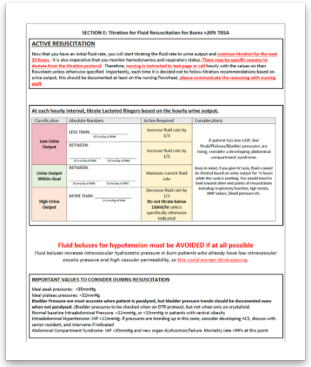
Check Lists

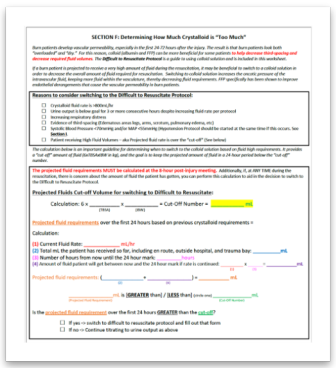


- The Checklist (left) is attached to the worksheets and details the resident and nursing responsibilities in the resuscitation process.
- Both the Plastic Surgery and Trauma Residents fill out their own worksheet packets and compare to reduce the chance for calculation errors or accidental deviations from the protocol.
- Mandatory bedside meetings with EHR documentation to occur at 8 hours and 24 hours post injury to ensure Trauma, Plastic Surgery, and nursing understand and agree with the plan.
- A hard copy of a nursing flowsheet remains in the patient's room for easy access to hourly documentation of measures required for the Burn Protocol, including hourly vitals, urine outputs, fluid rate, and total fluids given.
- Worksheets are kept for review by the Trauma Quality Improvement team.

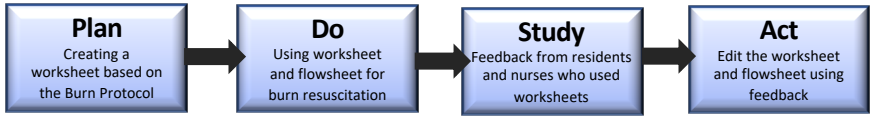
First 3 Pages of Worksheets







Assessment & Improvement of Intervention



From January 2020 to present, residents and nurses have provided feedback on the various versions of the worksheets. This feedback was used to continuously improve and streamline the use of the worksheets and flowsheets during burn resuscitations. The intervention was officially implemented in late October 2020. Since then, we have had only two burns over 20% TBSA; we do not have enough data for a formal quantitative analysis yet.

Results

Positive Feedback:

- Residents and nurses appreciate the addition of educational information within the worksheets
- Improved confidence in taking care of large burn patients.
- Improved empowerment between all teams involved in burn patient resuscitation since worksheets started
- Improved communication among these services.
- Between Jan 2020 and Oct 2020, both residents and nurses alike report ease of use following the protocol accurately using the worksheet in the context of a busy call shift

Reported difficulties

- Residents occasionally not filling out the worksheet completely
- Skimming the worksheet (too wordy)
- Not completely reading through the checklists or marking complete.

The Trauma Quality Improvement Team has used feedback to develop specific metrics with which we will study the efficacy of the Burn Protocol itself.

The Next Steps

- Continue individual debriefings after each large burn resuscitation to improve the worksheet and flowsheet.
- Perform yearly quantitative and qualitative analyses using morbidity and mortality metrics that were defined during this process to measure not only adherence but also to evaluate the efficacy of the protocol itself.
- Continue to adjust the protocol based on new published evidence.
- Currently working toward configuring the nursing flowsheet into the EHR.

Conclusion

- The feedback we have received on these interventions in the last year, both before and after the official worksheet with implemented, suggests that the intervention is **a promising tool** to provide evidence-based care.
- Educating residents and teams on evidence-based Protocols alone is not enough to improve patient care and create systemic change; **change in policy and tools that make it difficult to deviate from protocol** can be more effective in creating systemic change.
- This project has highlighted the importance of **involving all members of a multidisciplinary team in creating meaningful and effective change** in a system of care to make it relevant and useable within the context of the existing system.

Limitations

- Small number of burn patients since official implementation.
- Anecdotal reports of progress as opposed to formal qualitative or quantitative analysis.