

<p><b>Project Lead/Key Contact</b></p> <ul style="list-style-type: none"> <li>• Joshua Hudson, MD, Assistant Professor of Medicine, Division of Gastroenterology &amp; Hepatology</li> <li>• joshua.hudson@med.unc.edu</li> <li>• 860-395-9006</li> </ul>
<p><b>Why are you interested in the Improvement Scholars Program?</b></p> <p>I am interested in the UNC Improvement Scholars Program because I have a passion for delivering timely, evidence-based, and appropriate care to the diverse patient population that our health system is privileged to serve. As a physician that primarily provides care to inpatients, I am also interested in ensuring equitable delivery of care in the hospitalized environment as while we have a lot of resources, we do not have an endless supply. I believe that participation in the UNC Improvement Scholars Program would be the best pathway for me to roll-out this multidisciplinary project across our campus to improve care delivery, drive appropriate resource utilization, and ensure we are providing North Carolinians with the strongest evidence-based care.</p>
<p><b>Problem Statement: What is the problem you are looking to solve?</b></p> <p>One of the most common reasons for ED presentation and inpatient admission is gastrointestinal bleeding. There is currently an overutilization of diagnostic testing in this patient population that increases treatment time in the ED/delays hospital admission, increases cost to the patient/our health system, and exposes the patient to unnecessary diagnostic testing. The two tests that are being overutilized without any benefit to the patient include CT angiogram GI bleed protocol (CTA-GIB) and fecal occult blood test (FOBT). These tests are each ordered multiple times per day by both emergency medicine clinicians as well as other clinicians in the inpatient environment. In most cases, these diagnostic tests are not useful in working-up, triaging, or treating gastrointestinal bleeding. The proposal is to overhaul the use of these two diagnostic tests to adhere to evidenced-based guidelines, maximize ED efficiency, and reduce unnecessary healthcare costs.</p>
<p><b>Importance Statement: Why is this project important?</b></p> <p><i>How will the improvement benefit patients?</i> This improvement will benefit patients by removing unnecessary testing, reducing exposure to unneeded radiation, reducing the cost the patient and their insurer is responsible for, and improving ED treatment time which will allow patients to be admitted or discharged in a timelier manner. Similar benefits would apply to inpatients as well.</p> <p><i>What is the potential downside of this effort for patients?</i> There is currently no upside to the status quo of over-testing so I cannot think of a downside to better adhering to evidence-based practices. It is possible that changing the algorithm could delay diagnosis in patients who are presenting with unusual clinical scenarios, but our proposal would include safeguards in the system to account for abnormal presentations of bleeding.</p> <p><i>What background information (data/analysis/literature) supports the choice of this effort?</i> The best summary is included in the guideline “The Role of Imaging in GI Bleeding: ACG and SAR Consensus Recommendations” with further literature and data summarized in the ACG’s guidelines on Upper GI Bleeding and Lower GI Bleeding (two separate guidelines).</p> <p><i>What area or organizational goals does this project align with/support?</i> This project would most align with “Hospital length of stay reduction” with secondary support to “Patient experience promotion” and “Patient harm prevention and mortality reduction.”</p> <p><i>How has this problem been addressed successfully at UNC or elsewhere?</i> I am not aware of any efforts to address this issue within the UNC Health system. Some other both academic and non-academic health centers have removed FOBTs from their inpatient and emergency medicine environments, a practice that is endorsed by national GI societies guidelines. I have also not been able to find published data on reducing unnecessary use of CTA-GIB exam, but this proposal will include a combination of education to relevant clinicians, harnessing the EMR to better guide clinicians, and updating ordering protocols in Radiology to ensure we are catching the targeted patient population.</p>
<p><b>Project Scope</b></p>

**In Scope:**

*What is the specific patient population your project will impact?* Adult patients (≥18yo) who are either 1) presenting to the UNCMC/HBR Emergency Departments with a principal concern of gastrointestinal bleeding or 2) are admitted to UNCMC and develop gastrointestinal bleeding during their hospitalization  
*How many patients are in the population?* It was difficult to fully quantify this number in a retrospective manner when pulling an initial set of data, as using ICD-10 codes or DRGs is an imperfect science. Based on the data we have and our collective experiences across multiple specialties/settings, we anticipate this population includes 4-8 patients per day. The raw number from the ICD-10 code data indicated 292 patients per month, but this is likely an over-estimate, and we would estimate the number is closer to the 150-200 patients per month between the inpatient and two ED environments.  
*In what setting(s) would this problem be addressed? (e.g., hospital unit, outpatient practice setting, non-clinical setting, etc.)?* This initiative would be addressed in the UNC Emergency Department with additional work being performed on the hospital units/with primary teams who are caring for patients on the floors and ICUs.

**Out of Scope:**

- Pediatric patients (<18yo) presenting with gastrointestinal bleeding
- Adult patients presenting with gastrointestinal bleeding who are unstable

**Measures: (Process, Balancing, Structure)**

*Please describe the anticipated outcome measure(s), 2-3 process measures, and one balancing measure. Please do not include more than 5 measures total.*

Measure Name	Measure Type	Measure Calculation	Measure Exclusion	Data Source	Baseline	Goal	Collection Frequency
CTA-GIB	Outcome	Total unindicated CTA-GIBs divided by the total CTA-GIBs done for gastrointestinal bleeding encounters	Pediatric pts CTA-GIBs done for non-GIB purposes	Epic	85%	<20%	Monthly
DREs	Process	Total number of ED provider notes and/or admission H&Ps that accurately document the findings of a digital rectal exam in patients with gastrointestinal bleeding	N/A	Epic	<20%	>80%	Monthly
FOBTs	Process	Total number of ED provider notes and/or admission H&Ps that mention the findings on a FOBT in patients with gastrointestinal bleeding or unexplained anemia	N/A	Epic	~100%	0%	Monthly
Clinic Utilization	Balancing	Utilization percentage of the available rapid follow-up clinic slots for Gastroenterology at UNC and what the outcome of slot usage is (ie. is the project leading to unintended readmissions/return visits to the ED)	Patients sent for direct access endoscopy after referral	Epic	N/A	2-3 slots per week; no clinic to ED	Monthly

**Root Cause Analysis**

*What do you think are the underlying causes of the problem?* The underlying causes of the problem are likely multifactorial, but our team agrees that there are two major ones. The first is lack of knowledge/education on

<p>the appropriate care of patients with gastrointestinal bleeding leading to an incorrect diagnostic approach. The second cause is lack of an accessible ambulatory follow-up pathway, which leads to overutilization of diagnostic testing and lowers the threshold for hospital admission.</p> <p><i>Why do you think the problem is happening?</i> As above, unfamiliarity with appropriate diagnostic testing for gastrointestinal bleeding related to an education gap is likely why the problem is happening. Clinicians may also feel the need to order extra diagnostic testing because they have no means to help the patient secure rapid follow-up in the UNC system with a gastroenterologist.</p>
<p><b>Ideas for Improvement</b></p>
<p><i>What ideas do you have for changes that will result in improvement?</i> We have several ideas that we think can support this initiative and drive improvement in the care that we deliver.</p> <ul style="list-style-type: none"> <li>• Remove FOBTs from the hospital supply chain – these tests provide no useful information in the ED or inpatient setting, they only represent unnecessary cost to the health system. The results also at time lead to unnecessary hospital admissions for problem(s) that should be worked-up outpatient.</li> <li>• Design a pathway for Emergency Medicine clinicians to help guide an appropriate work-up for gastrointestinal bleeding in the ED. We are discussing if an Agile pathway may be the most appropriate intervention versus a specific ED template for GI bleeding</li> <li>• Regular (annual vs bi-annual) education to faculty, trainees, and other providers in the Department of Emergency Medicine and Department of Medicine on appropriate work-up and triage of patients with gastrointestinal bleeding</li> <li>• Refine the CTA-GIB order in Epic and include radial buttons for indication selection and a BPA to the ordering clinician if they select a non-indicated indication for the study (such as melena, hematemesis, or coffee ground emesis)</li> <li>• Create a specific referral order for our GI practice for our EM/IM colleagues to refer low-risk gastrointestinal bleeding patients to for rapid follow-up which will be triaged by an attending gastroenterologist to either a clinic visit, or direct open-access endoscopy based on patient factors</li> </ul>
<p><b>Risks and Opportunities</b></p>
<p><i>What factors do you anticipate will foster improvement?</i> The key factor that will foster improvement is our planned multidisciplinary approach and having ‘champions’ in the major areas where this care is delivered. By designing interventions based on direct input from the people who work in those areas daily, we can design effective interventions that will fit into the workflow in those areas of the hospital. We don’t want to disrupt workflows but rather refine the work our teammates are already doing. As our initiative will also reduce treatment time and avoid extra testing, we think this will foster uptake because it will help our clinicians (particularly in the ED) expedite care.</p> <p><i>What are the major challenges you anticipate?</i> There will likely be two major challenges that we anticipate. The first is dissemination of knowledge/information to a large base of clinicians that is being delivered to change practice (changing practice is hard – we recognize that). We strive to mitigate this with development of a pathway and/or use of Smart-tools in Epic to have a simple workflow for clinicians. The second will be to ensure our planned rapid access ambulatory pathway remains accessible and is not over-burdened with referrals. We plan to mitigate this with defined criteria for ambulatory follow-up rather than admission.</p>
<p><b>Stakeholders and Project Team Members</b></p>

Name	Role
Dr. Laura Murphy, Emergency Medicine	<i>Sponsor, ED Team Lead</i>
Dr. Aaron Fried, Hospital Medicine	<i>Sponsor, Medicine Team Lead</i>
Dr. Breanna Blaschke, PGY1, Emergency Med	<i>ED Team Champion</i>
Dr. Gus Hendrick, PGY2, Internal Medicine	<i>Medicine Team Champion</i>
<b>Impact on the Quintuple Aim</b>	
<ul style="list-style-type: none"> <li>• <i>Enhanced patient experience – patients will have an appropriate limited work-up for GI bleeding, shorter treatment time in the ED, and more expeditious subspecialty care when needed</i></li> <li>• <i>Enhanced clinician and staff experience – with patient throughput enhanced, ED clinicians should have an improved workflow and ability to more easily manage the ED census</i></li> <li>• <i>Health equity – by reducing unnecessary use of CTAs, our scanners will be more readily available for patients that need urgent/emergent imaging</i></li> <li>• <i>Reduced costs – removal of FOBTs will reduce costs and reduction in unnecessary CTAs will also reduce healthcare costs for both patients and the system</i></li> </ul>	
<b>Sustainment Plan</b>	
<p><i>What ideas do you have for sustaining the improvement?</i> Feedback to stakeholders and key team members will be an important piece of sustaining the improvement work (as well as driving the improvement work from the start). In addition, we envision ongoing annual education to ensure clinicians are aware of the best practices and to adjust the project’s focus if clinical guidelines/recommendations shift in a way that would alter the improvement project’s goals.</p> <p><i>How do you see the work you start with IHQI’s support continuing?</i> Just going through this process of putting together this application for IHQI has helped me to meet new people in other departments/divisions at UNC and I think those personal connections will be key to continuing this work after the period of support from IHQI concludes. I think we tend to get the best results when working in an interdisciplinary team so continuing in that fashion will easily allow the work to continue.</p>	
<b>Carolina Quality Tools</b>	
<p><i>How will Carolina Quality tools (Just Culture, SAFE reporting, TeamSTEPPS, huddles, and visual management boards) be used to support the work? Although use of these tools is not required, applications including them will be strengthened.</i> Tier I safety huddles could be used in strategic areas of the hospital environment to help disseminate information about this project to teammates that work in those areas (such as the Emergency Department or Medicine ICU) that treat a significant number of patients in our target population. TeamSTEPPS could be used to help provide feedback on project goals as the project is being rolled out across various environments in the hospital.</p>	
<b>References</b>	
N/A	