Project Lead/Key Contact
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Why are you interested in the Improvement Scholars Program?
We are interested in the Improvement Scholars Program because it provides the framework and support needed to address a care gap identified in our inpatient general medical services. Internal Medicine residents have expressed concern about the lack of a standardized workflow during hospital rounds to address process of care that correlate with patient outcomes and resource utilization and have advocated for improving care processes by implementing a standardized checklist that would be reviewed daily. Other medical specialties, such as inpatient surgical and ICU teams, have successfully utilized checklists to enhance patient safety, reduce resource utilization, and shorten hospital stays. However, this practice has not yet been adopted by our inpatient general medical services. Through this program, we aim to design and implement a checklist-based solution to address these challenges, ultimately aligning with institutional goals for quality improvement.
Problem Statement: What is the problem you are looking to solve?
What is the problem? Many aspects of patient care require daily attention but are often overlooked due to the demanding nature of inpatient care. This includes essential tasks such as DVT prophylaxis, Foley catheter removal, central line removal, telemetry reduction, removing 1:1 observation when indicated, bowel prophylaxis, de-escalation of narcotic pain regimens, weaning supplemental oxygen use, antimicrobial stewardship etc. **What happens?** Several drivers can lead to critical standard processes being delayed or missed, resulting in prolonged hospital stays, increased resource utilization, and avoidable patient harm, including hospital-acquired infections and other complications. Some of these drivers include lack of a systematic approach, time compression, and inefficient electronic medical record (EMR) workflows. **When does it happen?** This issue occurs regularly during inpatient care, especially on busy services with rotating residents and attendings, where workflows are complex, active medical issues are prioritized, and cognitive load and administrative burden is high. **How often/how much?** Our preliminary data indicate opportunities for improvement and frequent lapses in compliance with care processes for hospitalized medicine patients, which can lead to measurable impacts on patient outcomes and resource utilization. We worked with the Office for Quality Excellence to obtain baseline data on patients admitted to general medicine teaching services from March 2024 through January 2025 (Baseline Data can be seen at the end of this application). Patients on average had 1.9 days with glucoses > 200 mg/dL and 0.3 days with glucoses < 70. Over 85% of patients with a foley catheter placed had the catheter in place for more than 24 hours. Patients placed on cardiac telemetry spent 60% (5.2 average days) of their hospitalizations on telemetry monitoring, and patients started on 1:1 observation spent 33% (5.5 average days) of their

hospitalization on 1:1 observation. Our hypothesis is that rounding checklists can reduce these baseline numbers and thus reduce hospital acquired infections and unnecessary resource utilization, respectively.

Our pilot study using a draft rounding checklist produced an average of 0.5 modifications to Foley catheter status daily, 2 total modifications to cardiac telemetry orders, and 1 total modification of 1:1 observation status during a 9 day PDSA cycle . This suggests that there is substantial benefit in quality of care and resource utilization to be gained by implementing our proposed rounding checklist.

To whom does it happen?
This issue primarily impacts the quality of care we provide to our hospitalized patients (e.g., Foley use and preventable infections) as well as resource utilization (excessive use of cardiac telemetry) for UNC Health.

Importance Statement: Why is this project important?

Why is this project important?
This project can improve patient safety and compliance with institutional and CMS-monitored metrics, as well as reduce length of stay (LOS) and hospital-acquired infections. By addressing gaps in care through a structured checklist, we aim to optimize patient outcomes and streamline provider workflows, contributing to the overall quality and safety of healthcare delivery. Additional elements of our proposed checklist aim to optimize resource management and reduce the days of unnecessary services such telemetry use and 1:1 observation, potentially reducing costs.

How will the improvement benefit patients?
Patients will experience better safety and outcomes through consistent adherence to evidence-based care, such as timely DVT prophylaxis, early Foley catheter removal, and reduced unnecessary oxygen or telemetry use. This will also decrease the risk of hospital-acquired infections and shorten lengths of stay.

What is the potential downside of this effort for patients?
Potential downsides include an initial increase in provider workload as the checklist system is integrated into daily workflows. However, evidence suggests that checklists reduce cognitive burden and improve efficiency over time, leading to sustained benefits for both patients and providers. In our initial PDSA cycle, 89% of participants reported the checklist took <5 minutes to complete.

What background information supports this effort?
Evidence from literature demonstrates that checklists are a safe and effective tool for improving compliance with care standards and reducing complications. Other specialties, such as surgical and ICU teams, have successfully implemented checklists, leading to reductions in adverse events, resource use, and length of stay [1,2]. There is scant literature describing a checklist

application to a non-ICU medical ward team. We believe the principles of a checklist methodology can be applied in our modified checklist solution to address care gaps both anecdotally and in the literature. For example, our residents have shared examples of unnecessary 1:1 observation status orders leading to delays in skilled nursing facility discharges, or lapses in attention to bowel regimens leading to severe constipation with associated medical complications, delays in discharge, or escalations in care. Similarly, the literature is replete with examples of healthcare overutilization and efforts to improve care and reduce waste. One study found that providers were unaware of telemetry use when present in 26.4% of assessments [3]. Another study in JAMA found that 30% of inpatient antibiotic days were deemed unnecessary, with the most common reason being treatment longer that recommended duration [4]. These examples illustrate areas where our proposed intervention could have an impact.

What area or organizational goals does this project align with/support?
This project aligns with key organizational and CMS-monitored goals, including:

- Enhancing patient safety.
- Reducing hospital-acquired infections.
- Meeting institutional and CMS performance metrics for quality care delivery.
- Resource reduction
- Length of stay initiative

How has this problem been addressed successfully at UNC or elsewhere?
Checklists have been widely adopted in other settings, such as surgical and ICU services, with significant improvements in patient outcomes and resource utilization. Recently, the Medical ICU at UNC has integrated an "ICU Rounding Checklist" into Epic that has helped standardize the informal but widely observed practice of checklists that MICU teams had been using. Our goal is to bring these proven strategies to the general medical inpatient service, adapting them to our specific workflows and needs.

Project Scope

In Scope:
- *The specific population includes residents on the inpatient ward hospitalist general internal medicine teaching services at Chapel Hill (Med U, Med L).*
    - *The specific population can be expanded to include all internal medicine teaching services at UNC*
- *The teaching services carry up to 18 patients daily for a total of up to 36 patients per day in the initial patient scope.*
- *The clinical setting for this project is the inpatient hospital medicine ward (floor or intermediate status)*

Out of Scope: ICU patients, ED patients, patients for which medicine is not the primary service, Hillsborough hospital patients

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.

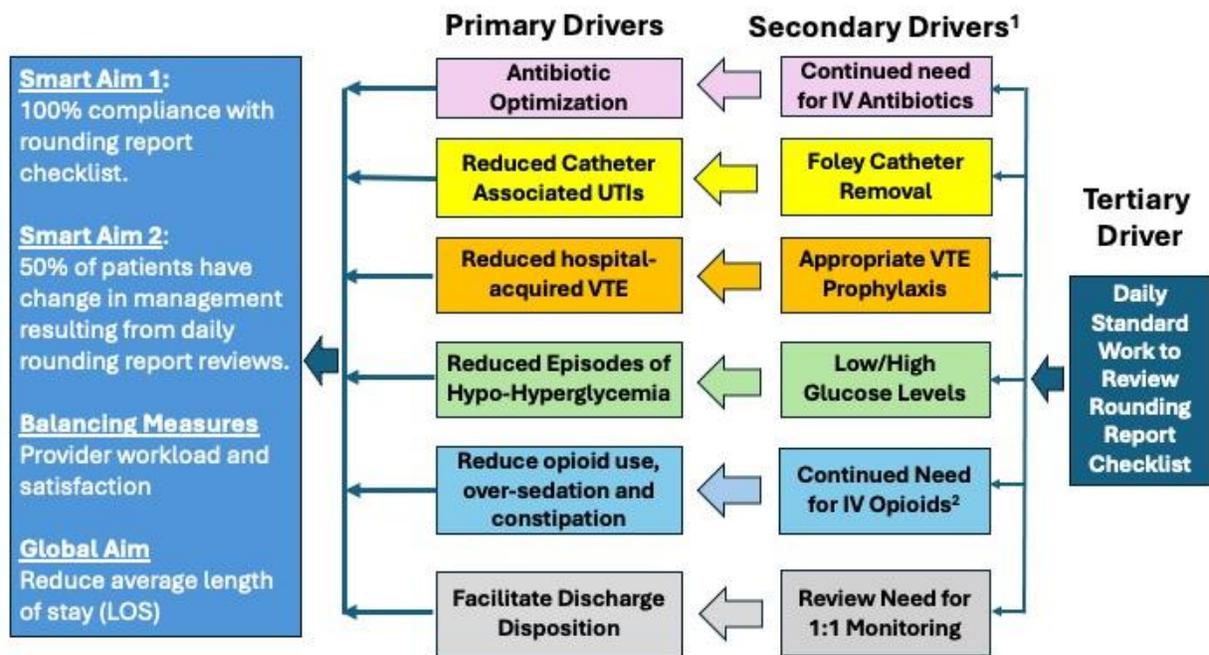| Measure Name	Measure Type	Measure Calculation	Measure Exclusion	Data Source	Baseline	Goal	Collection Frequency
% Patients with Change in Management Based on Rounding Report	Outcome	Epic Flowsheet	None	Epic	N/A	50%	Weekly
Rounding Report Checklist Compliance	Process	Epic Flowsheet	None	Epic	N/A	100%	Weekly
Timely Foley Catheter Removal	Process	% Foley catheters in place for > 24 hours	Patients without Foleys	OQE	86%$^{\Psi}$	50% reduction	Monthly
VTE Prophylaxis Assessment	Process	Hospital days without VTE prophylaxis	Low VTE risk patients	OQE	3.6 days$^{\Psi}$	50% reduction	Monthly
Provider Satisfaction	Balancing	Provider Survey	None	REDCap Survey	N/A	100% satisfied	Monthly

OQE: Office of Quality Excellence
$^{\Psi}$ baseline data provided by OQE

Root Cause Analysis

- Our RCA led to the identification of several key factors contributing to the care gaps noted above, while working on the inpatient rounding services. The most critical include:
    - **Lack of time** – inpatient providers have many clinical care and administrative responsibilities that are further challenged by time compression and task switching. This can lead to issues of "lower priority" being looked over when focusing on other medical problems.
    - **Lack of a systematic approach to care** – Approaches to inpatient team-based care are highly individualized and reliant on the individual rather than the system to ensure consistency of outcomes.

- o **Frequent transitions** – Inpatient services have frequent turnover of providers at both the attending and trainee level. Frequent turnover leads to frequent handoffs which can result in errors or communication breakdown.
- o **Suboptimal alignment of Epic tools:** Helpful and existing tools and information lack widespread awareness and uptake amongst providers. Furthermore, Epic lacks a centralized tool customized to the workflow of the UNC inpatient ward teams.
- o **Lack of awareness:** Some providers, especially more junior trainees or during times of transition (see above) may be unaware of common causes of waste or deficiencies in daily patient care:

Ideas for Improvement

Smart Aim 1:
100% compliance with rounding report checklist.

Smart Aim 2:
50% of patients have change in management resulting from daily rounding report reviews.

Balancing Measures
Provider workload and satisfaction

Global Aim
Reduce average length of stay (LOS)

[1] Rounding Report Checklist, [2] paired with bowel regimen assessment

The above drive offers a representative sample of many but not all of the drivers we aim to address with our inpatient checklist.

We also collected baseline data for several of the gaps we are aiming to close (see data table at the end of this application).

Risks and Opportunities

- We believe that providing a centralized and customized Epic tool to support physicians in their task dispersion will be a great opportunity to facilitate uptake. Improvement will largely be dependent on breadth and consistency of uptake for the tool.
- We anticipate the greatest risk to adoption is resistance to change as well as the pressure of time compression. We believe that with proper education, planning, and implementation, we can illustrate that utilization of checklists can both improve patient care as well as ultimately improve efficiency for the end user and team.

Stakeholders and Project Team Members

- *Key stakeholders include physicians (attendings and residents), pharmacists, clinical leaders, quality leaders, and ISD.*
- *The key project leaders are below:*

Name	Role
Carlton Moore	*Sponsor, Data Lead*
Aaron Fried	*Team Lead*
Escher Howard Williams	*Subject Matter Expert (Physician Lead)*
Danielle Aldrich	*Subject Matter Expert (Physician Lead)*
Gus Hendrick	*Subject Matter Expert (Resident Lead)*
Katie Lane	*Subject Matter Expert (Physician Lead)*
Rachel Wietfeld	*Subject Matter Expert (Resident Lead)*
Sam Sugimoto	*Subject Matter Expert (Resident Lead)*
Ryan Merchant	*Subject Matter Expert (Pharmacist Lead)*
Jennifer Barrow	*Subject Matter Expert (Pharmacist Lead)*

Impact on the Quintuple Aim

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1. Improved Health

This initiative directly supports improved patient health through the consistent application of evidence-based interventions. The checklist targets critical elements such as timely Foley catheter removal to reduce catheter-associated urinary tract infections (CAUTI), proactive bowel regimen management to avoid opioid-related complications, and appropriate antimicrobial stewardship. By embedding these considerations into daily rounding practices, the project aims to improve clinical effectiveness and reduce preventable harm, thereby enhancing overall health outcomes for hospitalized patients.

2. Enhanced Patient Experience

Patients and families may experience improved coordination of care, with fewer avoidable complications and delays in discharge. Standardized attention to transitions such as IV-to-PO medication conversion, sitter discontinuation (which expedites skilled nursing facility placement), and Foley catheter removal signals a comprehensive and efficient approach to care. These efforts contribute to a more streamlined and holistic hospital experience by promoting efficiency and patient-centered decision-making.

3. Enhanced Clinician and Staff Experience

The checklist provides structured cognitive support for busy inpatient providers, reducing reliance on memory and improving consistency in care delivery. While initial implementation may require brief adaptation, early pilot data suggest a minimal time burden (<5 minutes per day). In the long term, this

intervention has the potential to reduce provider burnout, increase workflow efficiency, and free up time for teaching/learning, and patient-centered care—particularly for rotating residents managing high patient volumes.

4. Health Equity

A standardized checklist reduces variability in clinical decision-making that can arise from differences in provider experience, implicit bias, or inconsistent communication. This ensures all patients receive the same high-quality, evidence-based care, regardless of their team or provider. In a large academic center with frequent staff turnover, this approach fosters greater equity by promoting consistency across patient populations and clinical teams.

5. Reduced Costs

By minimizing the use of unnecessary services (e.g., prolonged telemetry, inappropriate 1:1 observation, extended Foley catheter use), this intervention addresses significant drivers of avoidable healthcare spending. Additionally, improved antimicrobial stewardship and timely transitions in care may reduce downstream complications and length of stay. The checklist supports alignment with CMS performance metrics and institutional goals related to value-based care and cost efficiency, offering a sustainable path to improved outcomes at lower cost.

Sustainment Plan

Sustainability Plan: What ideas do you have for sustaining the improvement?
We are committed to ensuring the long-term sustainability of this intervention beyond the initial pilot phase. Key strategies include:

EHR Integration: Embedding the checklist into Epic will facilitate consistent use by reducing reliance on memory or external tools and integrating seamlessly into existing rounding workflows. This mirrors successful implementation models from the MICU at UNC.

Data-Driven Feedback: We will collaborate with the Office for Quality Excellence to routinely monitor checklist utilization and relevant process measures (e.g., Foley catheter days, telemetry utilization). Regular performance dashboards and targeted feedback to clinical teams will support continuous improvement and accountability.

Clinical Champions: We will engage resident, APP and faculty champions on teaching teams to serve as role models, encourage adoption, and troubleshoot implementation challenges in real time. This grassroots leadership is key to cultural change.

Educational Integration: We plan to incorporate checklist training into onboarding curricula for residents and faculty working on general medicine inpatient services. This will ensure continuity despite frequent team turnover.

Iterative Refinement: The checklist will be evaluated and refined based on user feedback and outcome data. This iterative approach will help maintain relevance and utility over time, supporting both sustained engagement and outcome improvement.

Sustainability Beyond IHQI: How do you see the work you start with IHQI's support continuing?
Beyond the grant period, we envision scaling this intervention across general medicine teaching services, with potential expansion to hospitalist teams and other inpatient units. Our long-term goal is to establish a standardized, EHR-integrated rounding checklist as a core component of UNC Health's inpatient quality infrastructure—contributing to institutional goals around safety, efficiency, and equitable care delivery. Ultimately, this project will serve as a model for how structured rounding practices can be leveraged to improve patient outcomes, streamline care delivery, and promote high-value care across the health system.

Carolina Quality Tools

This project aims to streamline physician workflow to avoid gaps in patient care, aligning with our commitment to becoming a high reliability organization.

By embedding the principles of **Just Culture**, we promote shared accountability and a non-punitive environment that encourages learning from errors and improving systems rather than assigning blame. This can be used in our team PDSA cycles as well as feedback from providers and care partners participating in our project or on rounds.

To support transparency and continuous learning, we will actively utilize **SAFE reporting** to capture patient safety concerns as they arise, such as CAUTI or DVT/PE events. Encouraging staff to report events without fear supports early identification and resolution of safety issues. We will also ask for SAFE reporting to alert us to events in scope as well in our trial period to ensure we're comprehensively evaluating our patient population.

Our proposal is structured around daily **Tier 1 huddles**, functioning as multidisciplinary safety huddles where the care team can review the check list in the afternoon and make adjustments as necessary to patient care.

To ensure sustained visibility and engagement, we will implement **Visual Management Boards and Printouts**. These boards /printouts will be updated daily to display key metrics including checklist compliance and track changes made.

Finally, we will embed **TeamSTEPPS** communication and teamwork principles throughout the project to enhance collaboration, situational awareness, and mutual support among team members. These tools will help standardize language, clarify roles, and promote a culture of safety and respect.

Together, these strategies create a comprehensive, team-based approach to improving care quality, safety, and reliability.

References
Sponsor Letters • David Hemsey • Jay Lamba (DI score) • Carlton Moore (VTE prophylaxis and data) • Aaron Fried (sustainability) • Milder Kwan (PCN allergy de-labeling) • Lindsay Daniels (Antimicrobial stewardship)   1. Haynes, A. B., Weiser, T. G., Berry, W. R., Lipsitz, S. R., Breizat, A. H. S., Dellinger, E. P., ... & Gawande, A. A. (2009). A surgical safety checklist to reduce morbidity and mortality in a global population. *New England journal of medicine*, *360*(5), 491-499. 2. Erikson EJ, Edelman DA, Brewster FM, et al. The use of checklists in the intensive care unit: a scoping review. *Crit Care*. 2023;27(1):468. Published 2023 Nov 30. doi:10.1186/s13054-023-04758-2 3. Sharma P, Tesson A, Wachter A, Thomas S, Bae JG. Physician awareness of patient cardiac telemetry monitoring. J Hosp Adm. 2016;5(3):76-80. doi:10.5430/jha.v5n3p76 4. Hecker, M. T., Aron, D. C., Patel, N. P., Lehmann, M. K., & Donskey, C. J. (2003). Unnecessary use of antimicrobials in hospitalized patients: current patterns of misuse with an emphasis on the antianaerobic spectrum of activity. *Archives of internal medicine*, *163*(8), 972-978.

Baseline Data for the Rounding Checklist Project

Our team has collected baseline data on the patient population that will be involved in the project. We collaborated with UNC Health's Office of Quality Excellence (OQE) to retrieve baseline data using the following query criteria:

- All hospitalized patients discharged from general medicine services (MDU, MDL, and MDW) between July 2024 and January 2025.
- For patient hospitalizations, we obtained baseline data on outcome and process measures pertinent to our proposed Rounding Checklist project.

Table 1 presents patient demographics, while Table 2 showcases outcome and process measure values for the medicine services between July 2024 and January 2025.

Table 1. Patient Demographics (N= 1,033)

Characteristic	Value
Median age, years (range)	62 (19 – 102)
Male, %	48.6
Race, %	
• White	57.8

• Black	25.8
• Other	16.4
Median length of stay, days	5 (1 -145)
Medicine Service, %	
• MDL	35.1
• MDU	34.6
• MDW	30.3

Table 2. Baseline Data on Outcome and Process Measures (N=1,033)

Measure	Result
Days glucose > 200, average	1.9
Days glucose < 70, average	0.3
Days without DVT prophylaxis, average	3.6
IV opioid days, average (n=456) [Δ]	3.9
Bowel regimen days, average	1.7
Patients with PT/OT consults, %	57.7
Supplemental O_2 days, average (n=533)[α]	5.1
IV antibiotic days, average (n=371)[β]	3.8
Days between last IV antibiotic administration and discharge date (371) [β]	6.3
Foley catheter > 24 hours, % (n=176)[Φ]	85.8
Telemetry days, average (n=469) [Θ]	5.2
1:1 Observation days, average (n=72)[K]	5.5

[Φ] includes only patients that had foley catheters placed, [Δ] includes only patients with IV opioid medications on MAR, [α] includes only patients on supplemental O_2, [β] includes only patients on IV antibiotics, [K] includes only patients on 1:1 observation (sitters)

[Θ] includes only patient on telemetry