

## CASE STUDY

# The Value of Less: Improving Patient Care by Reducing Unnecessary Procedures

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Meritus Health has undertaken a strategic and focused effort to reduce low-value care in its health system. Aligned with its strategic goal to reduce patient harm to zero by 2030, among other initiatives, Meritus Health set a specific annual operating plan aim to reduce unnecessary laboratory (lab) tests and imaging by 10,000 procedures in fiscal year 2022. Although the health organization completes more than 1 million lab tests per year, this first step would represent about 5.5% of the roughly 135,000 lab tests and 50,000 imaging procedures that were targeted, compared with the previous fiscal year. This effort included convening an unnecessary-utilization workgroup alongside targeted task forces that engaged multidisciplinary stakeholders longitudinally throughout the year. Additionally, Meritus leveraged an in-house Data Atlas platform to track improvement on a daily, weekly, and monthly basis. Data — including individual provider performance — were shared transparently. In the first year, the initiative exceeded its goal by achieving more than 32,000 fewer tests and images compared with the previous fiscal year, a reduction of about 17.3% for those tests targeted. This leadership effort leverages the tried-and-true quality improvement elements of transparency and feedback of actionable data to reduce a low-value service, which creates opportunity for reproducibility. Meritus intends to build upon the success of the first year of this initiative, with efforts to both sustain success in targeted reduction and expand to additional areas of care delivery.

## KEY TAKEAWAYS

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- » Engaging targeted and multidisciplinary task forces allowed stakeholders from across the health system to represent varied perspectives and champion care delivery improvement within their own teams.
- » Although this initiative had substantial senior leadership support, the involvement of the multidisciplinary task forces allowed accountability and efforts to be distributed to frontline team members directly involved in care.
- » Success was achieved through tactics that leveraged the tried-and-true quality improvement elements of transparency and feedback of actionable data.

## The Challenge

The years of the Covid-19 pandemic have been fraught with a frantic and unsettled call for more — more personal protective equipment, more vaccines, more testing options. This theme has played out across health care and in the minds of our frontline staff as they have witnessed more patients, greater complexity of illness, and unprecedented uncertainty. Yet emergence from this pandemic represents the ideal opportunity to focus systemic efforts on doing less. The value of less — reduction of wasteful testing and procedures — has been shown to improve cost and reduce harm. Overtesting and overdiagnosis have been linked to inappropriate treatment, worse outcomes, and detrimental environmental impacts.<sup>1-3</sup> Beyond these, saving time through elimination of unnecessary utilization may be a fundamental key to recovery for a beleaguered and staff-strained postpandemic health care system. Efforts for such discretion were developed more than a decade ago, as the [Choosing Wisely](#) campaign was launched to promote conversations between patients and clinicians on tests and procedures that should be questioned or discussed.<sup>4</sup> Recently, there have been calls to move beyond passive recommendations.<sup>5,6</sup> More decisive action, driven by health care systems, is needed on a national scale.

## The Goal

Meritus Health — a nonprofit, community-based health system of 3,000-plus employees and 500-plus medical staff serving a region of more than 200,000 people — established a coordinated *doing wisely* initiative that launched July 1, 2021, to aim for reduction of 10,000 unnecessary targeted tests over 12 months. We identified that 185,000 of the more than 1 million annual total actual tests performed could have fallen under review on the basis of Choosing Wisely targets. We chose to use this measure, such that our definition of unnecessary testing was vetted by an external and national source rather than that which the health care system dictated. This effort cascades as a specific strategy as part of a 10-year framework for improvement with the bold goal of reaching zero harm by 2030.<sup>7</sup> The target was chosen following review of baseline data from previous fiscal years, with a realistic percent decrease that could be achieved on the basis of estimated number of patient encounters.

Our approach is supported by leadership at an organizational level that embeds efforts within the core of a focused annual operating plan supporting a long-term strategic plan. Many institutions and specialty groups have targeted process or outcomes measures to demonstrate value.<sup>8</sup> The scorecarding of hemoglobin A<sub>1c</sub> levels represents one such common example. These are often assessed at the provider or population level for improvement, with concordant education to the individual physician. At Meritus, the emphasis on the reduction of 10,000 orders is a specific and measurable effort approached as a health care team. The overall approach was to raise awareness and encourage provider-by-provider individualized review of all testing performed. (All providers were involved; employed and contracted providers are the predominant model, but independents were also included.) To support targeted improvement and visualize success, we did choose top images and laboratory (lab) tests to trend and share updates at monthly intervals.

## The Execution

At Meritus, we viewed the Choosing Wisely recommendations as a starting place for discussions on reduction and then used our organization to implement a system-level approach with defined goals that are measured and reported transparently for all to monitor the progress. This included support from system-level senior leadership, which distilled downward across multiple areas of care delivery, and was approached with an intentional and systematic manner.

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“*We identified that 185,000 of the more than 1 million annual total actual tests performed could have fallen under review based upon Choosing Wisely targets.*”

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For instance, a collaborative of critical care societies recommends the elimination of laboratory orders at regular intervals, but that instead, they should be in response to specific clinical questions.<sup>9</sup> Subsequently, one of our primary metrics for success has been reduction in such routine lab ordering. A predominant method for identifying targeted tests was from the review of the previous year baseline numbers ordered. Higher-volume testing and, in particular, testing that was ordered as routine were both seen as high-impact opportunities for improvement. Daily magnesium testing within the ICU was recognized as one such targeted test, with a high percentage of the total ordered noted to be done so in a routine fashion. We focused on these areas for low-value care reduction:

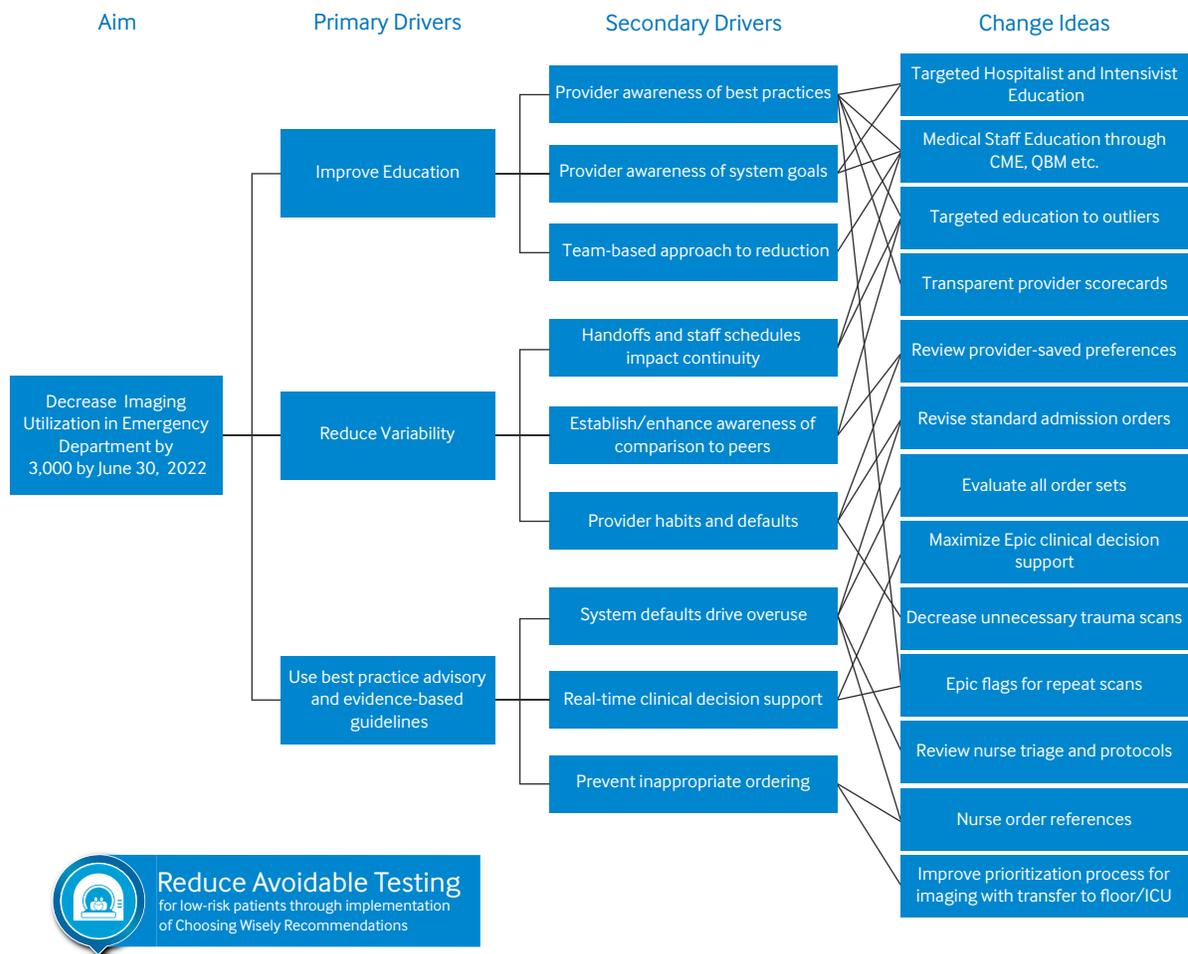
- Daily and routine lab orders in ICU and medical/surgical units
- Day of discharge lab orders
- Preoperative lab testing
- Imaging performed in the ED

Multidisciplinary task forces were established for each of the above areas of focus. Each task force devised a strategic driver diagram (Figure 1) to clarify opportunities for improvement and

FIGURE 1

## Multidisciplinary ED Imaging Reduction Task Force Driver Diagram

Each task force devised *driver diagrams* to chart the path of primary and secondary drivers of change, cascading down to various change ideas. These were reviewed and updated at each regular task force meeting. Change ideas were assigned champions to lead and report out with updates and next steps, as well as response to tests of change.



CME = continuing medical education, QBM = quarterly medical staff business meeting.

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targeted change ideas and intervention strategies. Each strategy was linked to a physician champion who would be accountable for review and progress, with both oversight and tracking of utilization by colleagues. Task force meetings, which were held in brief huddle format, occurred weekly for the first 3 months, then twice monthly for 3 months, and then once monthly through the end of the year-long project.

From the driver diagram, each *change idea* led to additional downstream interventions. For instance, targeted education to hospitalists and intensivists included regular updates on best practices, specific tests, and clinical communication. Thus, although this is listed within the diagram as one idea of change, in practice, this led to a multitude of different weekly and, at times, daily interventions. Among these included having crucial conversations with patients and shared decision-making.

## Hurdles

Traditional efforts to reduce testing in health care have relied on the individual to embrace necessary change in practice. Further, data on improvement or regression are often updated at monthly or quarterly intervals. In the framework for improvement that we have developed at Meritus, we shift that reliance from the individual to the organization, establishing the target as a system-wide utilization goal, with data updated and reviewed daily. This requires transparent and actionable data that are granular enough so that we can see day-to-day and week-to-week responses to our utilization reduction effort. Figure 2 shows a sample daily dashboard used to monitor order utilization by unit, provider, or test ordered.

Each physician has the ability to review their ordering tendencies, drilled down to the level of the individual test, day, and service location. In some cases, physicians have been surprised by the data, but are welcoming of this new information. Physicians have indicated that they were unaware of how often they ordered given tests, particularly in relation to their peers. Initially, there was some hesitancy with this level of shared detail and, in particular, with data posted in public and physician workspaces. Although this is a leadership initiative, early and consistent education was crucial to avoid the perception of a top-down mandate and instead should focus on the value and best practices associated with the effort. Further, physician champions were selected across multiple task forces to ensure peer representation, engagement, and accountability. Education was provided across a multitude of venues, including broad medical staff-level continuing medical education lunches, weekly discipline-specific team huddles, and one-on-one coaching.

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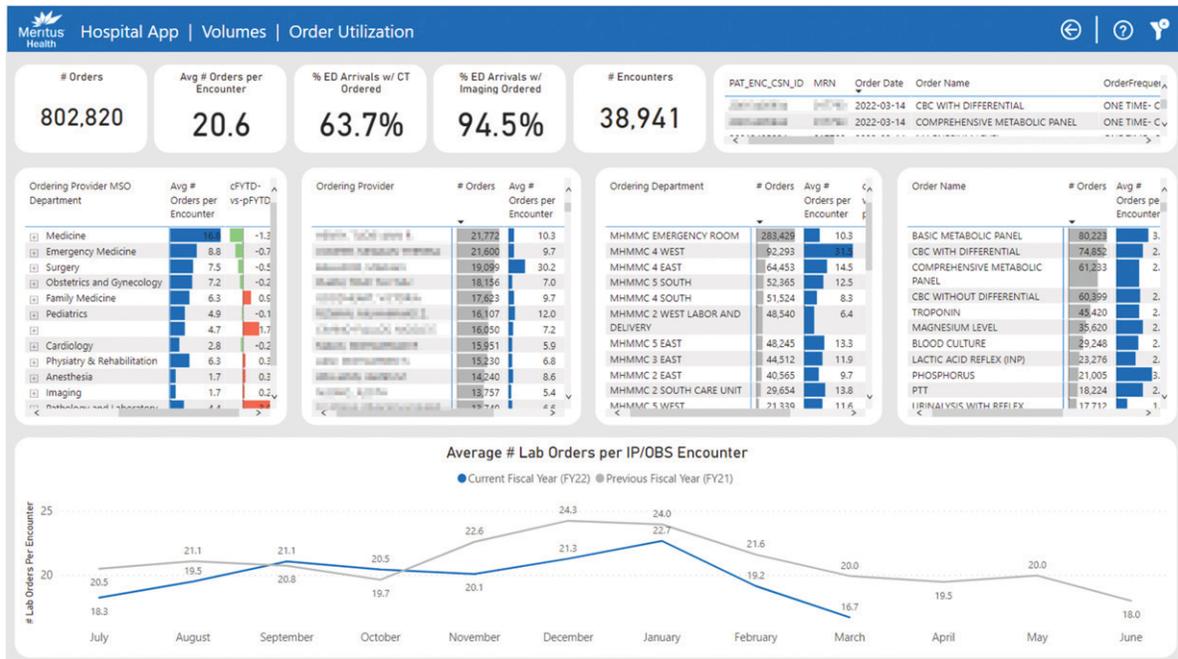
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Most physicians involved in this initiative were employed or contracted by the health system; however, there was no overarching mandate for participation or broad financial compensation. Rather, messaging was focused on providing high-quality patient care and best practice medicine and in improving professional care delivery. At times, there was resistance from both patient demand as well as provider interest in autonomy. Patient choice was respected, but best clinical practice was always emphasized. Very few providers showed no interest or resistance, and those

FIGURE 2

## Sample Data Atlas Laboratory (Lab) Order Utilization Scorecard

This dashboard shows that, through 9 months of fiscal year 2022, total lab orders system-wide stood at 802,820, with an average per encounter of 20.6. Providers' average orders per encounter were shared transparently across peers, with some variation observed between care area and patient acuity. Although all providers were shared this information, those with higher and lower orders per encounter received targeted review. The graph in the bottom panel shows the daily comparison of orders per encounter by fiscal year. At this point, we had reduced total lab orders by 22,346, and, by the end of the fiscal year, we had reduced the total by 30,017.



Avg = average, CBC = complete blood count, cFYTD = current fiscal year to date, CT = computed tomography, INP = inpatient, IP/OBS = admission to inpatient or observation, MHMMC = Meritus Health Medical Center, MRN = medical record number, MSO = medical staff office, pFYTD = previous fiscal year to date, PTT = partial thromboplastin time.

Source: The authors

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who were slower to adopt were approached by peer leaders. There was no punitive response to outliers.

One additional hurdle was in defining what was truly considered to be unnecessary, given that individual patient circumstances and clinical decision-making are crucial for each test ordered. It would be challenging, therefore, to prospectively assume any future testing that would be unnecessary. Rather, this requires some sense of scale and internal and external data to establish baselines for appropriate care utilization. Unnecessary care, broadly, is care done that does not improve outcomes, alter intervention, or impact medical decision-making. Thus, the definition of unnecessary care changes from patient to patient and test to test. Therefore, we chose to focus on

national recommendations for testing that should be considered as potentially unnecessary. We then allowed clinicians to make decisions about when those recommendations were appropriate and reinforced and reviewed these decisions with data. Thus, through peer comparison and review of previous-year measures, we were able to monitor changes and provide real-time feedback. Likewise, individual providers were able to use hierarchical condition category coding for acuity, readmissions percentages, and mortality data as a proxy for outcomes.

## The Team

Alongside transparency in data has been the development of multidisciplinary utilization reduction task forces. These task forces include leadership from physicians, nurses, pharmacy, laboratory, radiology, and IT. As such, the resulting utilization goals are influenced from across the spectrum of patient care delivery: from adjustment of nursing triage protocols to electronic medical record preferences and order sets. These task forces reviewed each intervention through the lens of a Choosing Wisely recommendation, but in such a way as to involve multidisciplinary care team stakeholders to be certain that our execution aligns with system-wide best practices and organizational strategic goals in achieving zero harm.

## Metrics

Through the development of an in-house platform, our Meritus Data Atlas, we are able to extract information from the electronic medical record system (Epic) and report utilization at a multitude of levels. This allows the ability for peer comparison on metrics such as the number of lab orders per provider or per encounter, or volume-relative reduction of orders, month over month or year over year, all risk adjusted.

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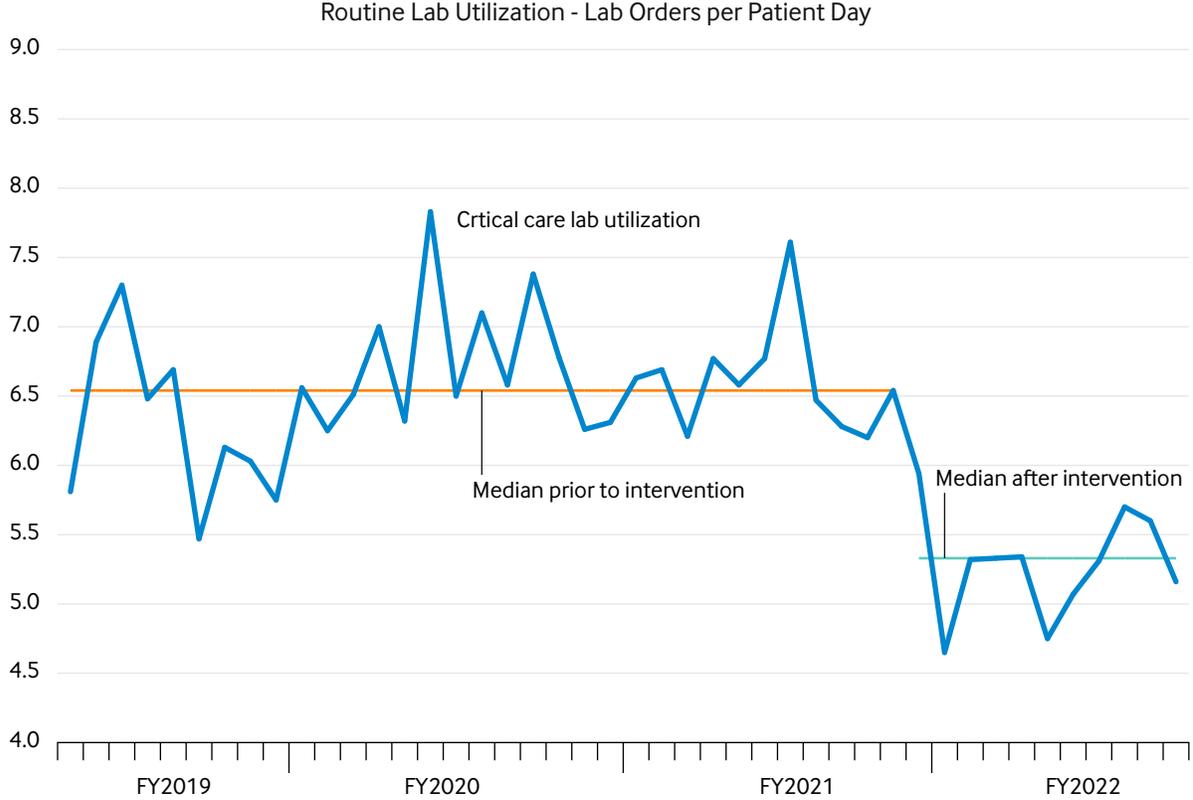
Considering the impact on critical care, Figure 3 shows reduction of laboratory orders for patients in intensive care at Meritus, trended from July 2020 through May 2022. We have witnessed a reduction of 21% of routine lab testing in critical care alone.

From our original target of decreasing by 10,000 unnecessary tests, we were able to reduce by more than 30,000 tests by the end of fiscal year 2022. These were tracked month over month on our visible True North dashboard, updated and shared in public areas and clinical environments across the health system. We estimate that this has impacted more than 5,000 patients in the community of 200,000 we serve. As a part of the state of Maryland’s [global budget revenue system](#), it is difficult to identify specific cost savings; however, the actual costs would be low, considering lab supplies were the only true cost avoidance. Figure 4 provides monthly detail on the lab and image reductions.

FIGURE 3

### Run Chart of Routine Critical Care Laboratory (Lab) Utilization

This depicts routing lab orders per patient day done in critical care from October 2018 to May 2022, which encompasses parts of 4 fiscal years (FY). In particular, given the disruption of the Covid-19 pandemic, this run chart was produced to review and ensure that our efforts and interventions truly reflected change and improvement. Note a dramatic and sustained drop in daily testing following the initiative starting in July 2021, the start of FY2022.



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### Where to Start

The challenges associated with the nation’s inefficient and expensive health care system are well documented.<sup>10</sup> And although there have been successes — such as the 100,000 Lives Campaign from the Institute for Healthcare Improvement and the 50% patient harm reduction from the Center for Medicare and Medicaid Innovation through the past Hospital Engagement Networks<sup>11,12</sup> — every care delivery organization can and should set a numerical, measurable goal to reduce unnecessary utilization.

FIGURE 4

## Monthly Reductions of Laboratory (Lab) and Imaging Use

This depicts the top 10 targeted labs, as well as three specific computed tomography (CT) scans for reduction at Meritus Medical Center, a 327-bed teaching hospital; the procedures include those for the ED, medical and surgical floors, and critical care unit. A predominant method for identifying targeted tests was from the review of the previous year baseline numbers ordered. Higher-volume testing and, in particular, testing that was ordered as routine were both seen as high-impact opportunities for improvement. Numbers in parentheses indicate a reduction in testing from the previous year for that month. These numbers were calculated and adjusted on the basis of encounter volume. Key: green tint indicates a reduction in labs or testing for that month compared with the prior fiscal year (FY), adjusted for volume. Pink tint indicates an increase in labs or testing for that month compared with the prior FY, adjusted for volume.

FY22 Monthly Total Reduction														
	FY21 Total	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	FY22 Reduction
<b>Total Labs</b>	134,832	(952)	(2,592)	(1,386)	(2,141)	(2,180)	(4,064)	(4,238)	(2,643)	(2,150)	(1,907)	(3,300)	(2,464)	(30,017)
<b>Total Images</b>	50,137	(319)	(303)	(377)	(124)	(467)	(218)	352	(248)	85	(89)	(435)	(273)	(2,416)
<b>Top 10 Lab Reduction</b>		(660)	(1,785)	(896)	(1,402)	(1,266)	(2,062)	(2,109)	(1,813)	(202)	(1,734)	(1,987)	(1,195)	(17,111)
MAGNESIUM LEVEL	(38)	(324)	(244)	(397)	(326)	(439)	(418)	(269)	(37)	(266)	(329)	(150)	(3,237)	
PHOSPHORUS	(138)	(265)	(207)	(332)	(227)	(324)	(241)	(249)	(110)	(204)	(271)	(130)	(2,698)	
CBC WITH DIFFERENTIAL	(26)	(339)	(73)	(252)	(164)	(64)	(241)	(236)	(33)	(212)	(281)	(382)	(2,303)	
COMPREHENSIVE METABOLIC PANEL	(146)	(160)	104	15	(121)	(8)	111	(276)	(281)	(453)	(501)	(399)	(2,115)	
TROPONIN	(139)	(181)	(185)	(176)	(171)	(246)	(279)	(197)	(31)	(149)	(197)	(104)	(2,055)	
BASIC METABOLIC PANEL	124	(225)	(198)	(202)	8	(467)	(638)	(223)	325	(66)	(29)	156	(1,435)	
CBC WITHOUT DIFFERENTIAL	(113)	(98)	16	(1)	(94)	(332)	(225)	(169)	(21)	(175)	(133)	35	(1,310)	
BLOOD GAS ARTERIAL	(101)	(69)	(45)	19	(72)	(62)	(61)	(98)	(39)	(102)	(131)	(54)	(815)	
PROCALCITONIN	(66)	(42)	(52)	(33)	(51)	(33)	(43)	(42)	(51)	(72)	(82)	(74)	(641)	
PROTIME-INR	(17)	(82)	(12)	(43)	(48)	(87)	(74)	(54)	76	(35)	(33)	(93)	(502)	
<b>CT Reduction</b>		(138)	(234)	(294)	(254)	(237)	(176)	(174)	31	16	(145)	(165)	(172)	(1,942)
CT Abdomen	(61)	(94)	(67)	(121)	(27)	(98)	(164)	(34)	(53)	(25)	(53)	(40)	(837)	
CT Head	(85)	(60)	(79)	(94)	(55)	(44)	(43)	29	39	(57)	(35)	(7)	(491)	
CTA Chest	(30)	(8)	15	15	2	(44)	(29)	(39)	(37)	(76)	(47)	(66)	(344)	

CBC = complete blood count, CTA = computed tomography angiography, PROTIME/INR = prothrombin time/international normalized ratio.

Source: The authors

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Individually, we all have the capability, and nationally, we have the need. Although our effort is part of a larger, 10-year framework for improvement, the components of the utilization reduction effort can be developed independently. We recommend that top leadership not only support such an organizational initiative, but also engage and empower stakeholders from across the health system to represent varied perspectives and shape care delivery improvement within their own teams and task forces. Physician champions can ensure peer representation, engagement, and accountability. The data must be tracked and transparent. Goal setting is the ultimate improvement lever. Without a specific numeric goal, such as 10,000, success will be murky and varied.

It is important to recognize that such an effort must be ongoing and iterative. At Meritus, we have now expanded into the second year. Greater emphasis has been placed on ambulatory testing, and additional areas of the hospital are now included. Reduction of unnecessary testing is, inevitably, an ongoing process that requires focus and sustainability. On the one hand, standards for care delivery and best practices are frequently updated and require continual review. On the other, turnover among physicians and various team members will occur with some frequency, and, thus, education and reeducation are necessary components. This first year of the initiative described in this article is only the start of a long-term emphasis on improving patient care by providing more value through less.

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