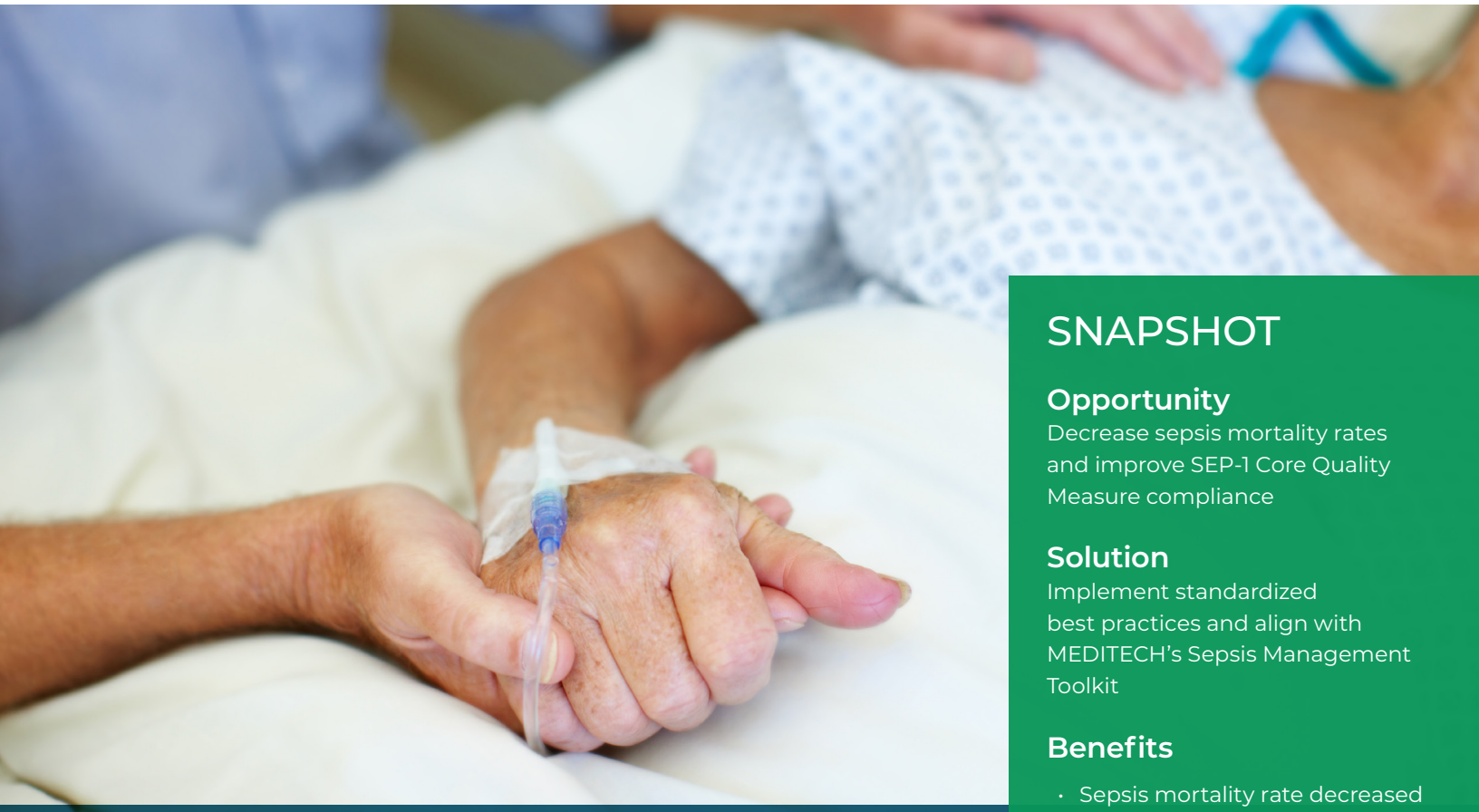
MEDITECH EXPANSE

CASE STUDY



Frederick Health Hospital Reduces Sepsis Mortality Rate by 65% With MEDITECH

Introduction

Frederick Health Hospital's leading cause of death was sepsis, with mortality rates as high as 16 percent. An analysis determined that 97 percent of sepsis patients arrived at Frederick Health Hospital via the emergency department. The hospital did not have bundles or protocols in place, nor did they have a system to recognize borderline sepsis patients. SEP-1 compliance was as low as 32 percent, whereas the national average is 51 percent.

SNAPSHOT

Opportunity

Decrease sepsis mortality rates and improve SEP-1 Core Quality Measure compliance

Solution

Implement standardized best practices and align with MEDITECH's Sepsis Management Toolkit

Benefits

- Sepsis mortality rate decreased from almost 16 percent down to 4.76 percent
- Observed sepsis rate decreased by more than 50 percent
- SEP-1 compliance improved by more than 150 percent
- Communication among departments improved

Profile

Frederick Health Hospital (Frederick, MD) is the hub of Frederick Health and the only acute care hospital in the county. Located 50 miles from Baltimore, this nonprofit, 233-bed facility and its outpatient services account for 285,000 visits every year. FMH has been validated as a HIMSS EMRAM Stage 7 provider.

A Multidisciplinary Approach to Improving Sepsis Awareness

Recognizing the need for a comprehensive approach to sepsis care, hospital leadership designed a multi-pronged strategy that consisted of:

1. Establishing best practices for sepsis screening, order set bundles, documentation, and chart review
2. Improving sepsis awareness by changing the organizational culture at a multidisciplinary level
3. Instituting a corporate goal of reducing sepsis mortality and surpassing the core measure at a minimum of 80 percent.

The hospital's Performance Improvement Department formed a multidisciplinary Sepsis Steering Committee to take on the eCQI project. Committee members include:

- Physician champions
- Representatives from lab, epidemiology, quality, pharmacy, and infection control
- Clinical nurse specialists
- Clinical application team
- Respiratory therapists.

Like all US hospitals, Frederick Health Hospital was challenged by the evolving, and often disparate, industry guidelines for sepsis: the Surviving Sepsis Campaign, CMS SEP-1 Core Measure, and The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). The Sepsis Steering Committee set out to establish best practices in the following areas:

- Sepsis screening
- Order set bundles
- Chart review
- Documentation.

Frederick Health Hospital joined forces with the Maryland Patient Safety Collaborative in 2014, to further develop sepsis best practices, and aligned with MEDITECH's recommendations when the Sepsis Management Toolkit was released in 2016. The hospital's Sepsis Steering Committee continues to modify their sepsis tools to align with the complex CMS SEP-1 Core Measure and avoid reimbursement penalties.

Establishing Best Practices

Sepsis Screening

The Sepsis Steering Committee began by building a sepsis screening tool into an assessment that was first deployed in the ED in 2013, where 97 percent of sepsis patients were presenting. The sepsis screening was based on chief complaint; every patient with a suspected infection was assessed in MEDITECH's Emergency Department Management solution. If an ED patient had two or more sepsis-like symptoms, the screening score would alert the nurse to notify the responsible physician to initiate the recommended sepsis protocol. The screening tool was then rolled out to the rest of the hospital.

In 2017, Frederick Health Hospital revised their embedded sepsis screening tool to include SIRS criteria, which aligns with MEDITECH's Sepsis Management Toolkit and SSC guidelines. Everyone is screened for sepsis on admission, and then twice a day throughout their inpatient stay. At any point, nurses can make the clinical judgment to override the screening alert if they feel the patient does indeed have sepsis.

Frederick Health Hospital has opted not to use the SOFA or qSOFA scoring paradigm to remain consistent with CMS requirements and to avoid confusion for practitioners.

A Bundled Approach

To align with the CMS SEP-1 Core Measure and MEDITECH's toolkit, the hospital combined the three-hour and six-hour sepsis order set bundles into one, and then created two versions — one for inpatients, the other for ED patients. Upon receiving an alert regarding an at-risk sepsis patient, the physician initiates advanced screening protocol, including placing the bundle of orders for fluid resuscitation, labs, and antibiotics — either a broad-spectrum antibiotic or an antibiotic to treat the source of infection. With embedded rules in place, MEDITECH's EHR automatically reflexes a repeat lactate order three hours after the initial lactate is resulted. This reflex order automatically triggers if the patient's initial lactate is greater than 2 mmol/L.

Physicians and nurses have access to a sepsis clinical panel — a powerful tool for quickly viewing longitudinal trends of patient data — to understand the patient's current status and determine where the patient lies on the spectrum of sepsis. Abnormal results in the general and inflammatory variables suggest systemic inflammatory response syndrome (SIRS) or early sepsis. Abnormalities in the hemodynamic, organ dysfunction, or tissue perfusion variables suggest severe sepsis or septic shock.

Also, physician buy-in was instrumental to the success of a nurse-driven protocol related to sepsis care. The intervention permitted nurses to provide one liter of bolus to patients upon suspicion of sepsis, before contacting the physician; nurses must immediately notify the physician after initiating the bundle. The new protocol was approved by the hospital's Medical Executive Committee, based on the pilot's positive outcomes. Adopting the new methodology that getting rid of excess fluid is safer than catching up on fluid administration represented a culture shift for the organization.

Lesson Learned

After all surgical patients were scoring positive for sepsis, FMH used skip-rule logic to mitigate the issue of false positives: If a patient had surgery yesterday or today, the system skips the remaining questions.

FMH also uses skip-rule logic for patients who are already being treated for sepsis. For these patients, the assessment is also skipped.

Documentation

A pain point for Frederick Health Hospital was the lack of a consistent documentation component. To address this need, the hospital used time-stamped, order-based physician documentation templates, including the tissue perfusion assessment components that were most frequently missed: capillary refill, skin color and pulse checks. With the less stringent 2019 CMS SEP-1 guidelines for physician attestation, the hospital focused on keeping the process as streamlined as possible to avoid confusion and improve physician compliance. This efficiency contributed to further adoption and adherence to protocols.

⚠ Code Sepsis

Frederick Health Hospital defines Code Sepsis as a patient with lactic acid greater than 4 mmol/L. (Patients with a lactate greater than 2 mmol/L are automatically retested.)

For patients with severe sepsis or septic shock:

- ED physician calls Code Sepsis in the ED
- Hospitalist calls Code Sepsis on the floors.

An interdisciplinary rapid response team including dedicated ED and ICU pharmacists initiates the sepsis bundle, including:

- Fluid resuscitation
- Antibiotic administration
- Vasopressor administration
- Lab tests.

Nurses use a Code Sepsis checklist to ensure that every intervention in the SEP-1 bundle is implemented.

Improving Sepsis Awareness and Accountability

Along with their best practices initiative, Frederick Health Hospital set out to improve sepsis awareness among staff and patients. The organization's first step was to build patient education into nursing workflows, informing patients of the additional tests and interventions, and why they were important. Next, they disseminated publications on sepsis prevention and increased their outreach to the community. As numbers improved, they used their new platform to present nationally on their successes and shared their strategies with peers.

To promote a culture of accountability among staff, hospital leadership modified clinical workflows to include concurrent daily reviews of all patients who screened positive for possible sepsis. The Performance Improvement coordinators provide feedback to try to prevent quality measure fallouts.

These cases are reviewed during governance meetings, which include physician champions from the intensivist and hospitalist groups.

SEP-1 outliers are evaluated to ensure that the appropriate treatments and antibiotics were chosen, including the order sets.

In addition, clinicians receive a monthly report on SEP-1 outliers to create an atmosphere of transparency and drive changes to their workflow.

Frederick Health Hospital's Sepsis Steering Committee continues to meet with IT on a monthly basis. These meetings focus on improving processes, encouraging better documentation, and identifying new ways they can leverage MEDITECH's EHR to combat sepsis.

The organization also instituted a reporting structure to track patients in real time. The report records the following information for sepsis patients:

- Length of stay
- Was the patient readmitted and why?
- Was the patient sent to a discharge facility?
- Did the patient receive home health care?

Results Surpass the Core Measure

In 2018, Frederick Health Hospital's CEO set a corporate goal to achieve 80 percent compliance with the CMS sepsis core measure. His commitment to the goal motivated other groups to make it a part of their departmental goals, which further contributed to buy-in. Physician adoption of the goal was based primarily on the nurse-driven bolus protocol pilot study, which yielded such positive patient outcomes.

A strong, collaborative, and multidisciplinary approach enabled the hospital to decrease sepsis rates and improve core measure compliance, while changing the organization's culture.

The hospital's SEP-1 core measure **compliance rates rose** from 32 percent to **80 percent**, but have reached as high as 91 percent. (The national average is 51 percent.)

The observed rates of sepsis have been **cut in half.** Previous rates reached as high as 15 to 16 percent; they are now 7 percent or under, and have dropped as low as 1.25 percent.

The sepsis mortality rate **decreased 65 percent** from almost 16 percent down to 4.76 percent.

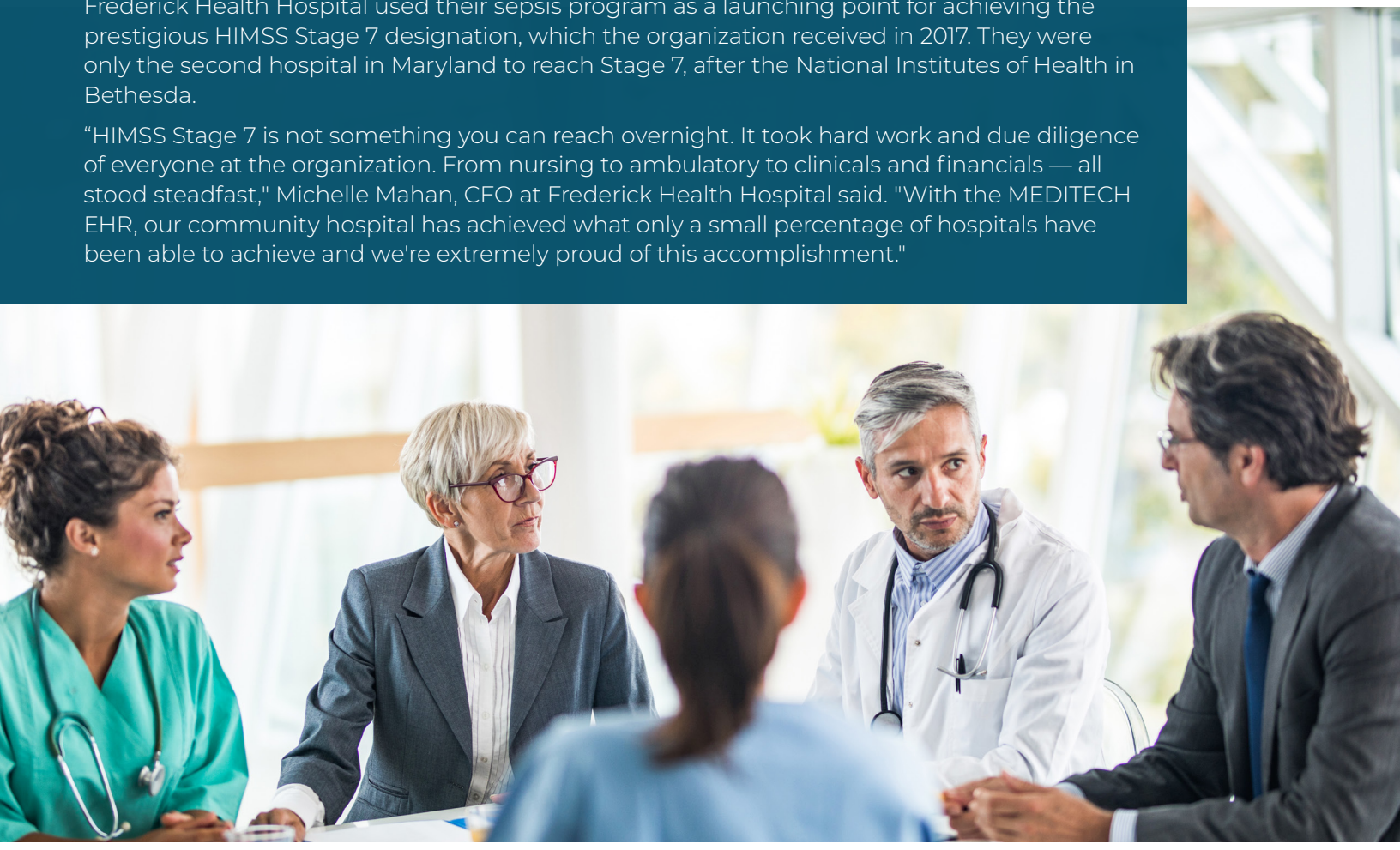
An **added benefit** of this success was increased awareness and accountability.

The hospital was transformed from a below-

Achieving HIMSS Stage 7

Frederick Health Hospital used their sepsis program as a launching point for achieving the prestigious HIMSS Stage 7 designation, which the organization received in 2017. They were only the second hospital in Maryland to reach Stage 7, after the National Institutes of Health in Bethesda.

"HIMSS Stage 7 is not something you can reach overnight. It took hard work and due diligence of everyone at the organization. From nursing to ambulatory to clinicals and financials — all stood steadfast," Michelle Mahan, CFO at Frederick Health Hospital said. "With the MEDITECH EHR, our community hospital has achieved what only a small percentage of hospitals have been able to achieve and we're extremely proud of this accomplishment."



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