HIMSS IN ACTION

PARKVIEW HEALTH

Location
Northeast Indiana, United States

Transformation Type
Predictive Analytics

Maturity Model
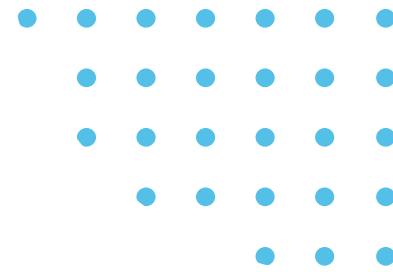Electronic Medical Record
Adoption Model (EMRAM)

HIMSS®   EMRAM STEP 7

LESS PEOPLE INFECTED, *MORE* TIME PROTECTED.

HIMSS helped Parkview cut C. *diff* rates with decision supports and new algorithms, built right into their EMR.

Let's explore the full story.

STATSHOT + OVERVIEW

In large systems like Parkview, clinical decision support saves lives and money.

You can sum up the *C. diff* experience with just one word: diarrhea. The stool-loosening infection extends hospital stays by one to three weeks and requires the patient to be treated with contact isolation. It's a drain on already-stretched clinical teams, and significantly increases the cost per patient day.
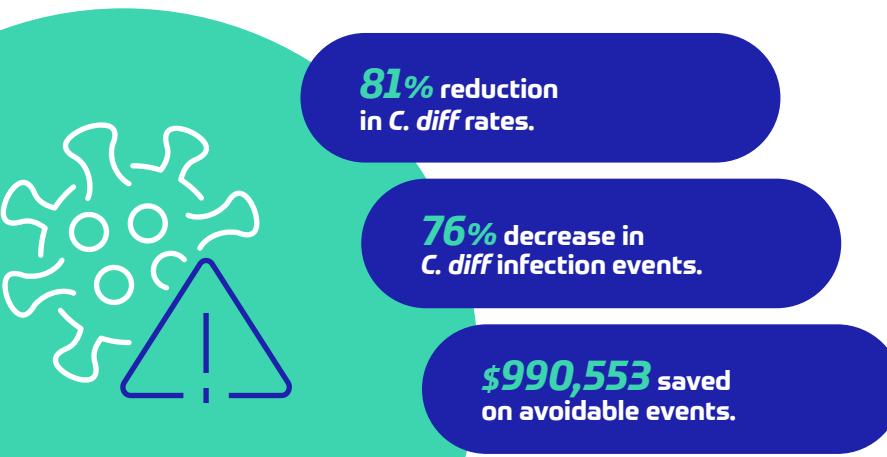
During the late 2010s, Parkview Health started seeing a rise in *C. diff* events, with a peak of 43 in one quarter of 2017. Standard infection rates (SIR) across their ten inpatient centers were high, too, and spiked up to 1.141 by 2020. In addition, 83% of the tests they ordered were broad-spectrum GI panels, which significantly increased their costs. *C. diff*

pathway tests cost far less than broad-spectrum GI panels, but providers didn't have the clinical decision support (CDS) needed to use them with confidence.

The high level of technology adoption required for EMRAM Stage 7 gave Parkview that crucial framework for cutting *C. diff* rates. A multi-disciplinary working group took a close look at their *C. diff* workflows, and spotted gaps that needed filling. The fix? A CDS nursing screen in the GI assessment and a CDS order built right into their existing EMR.

Buy-in was strong, too. Their Chief Nursing Informatics Officer (CNIO) was the group's executive sponsor, while the Chief Information Officer (CIO) supported the rollout of technology solutions. Now, they're ruling out *C. diff* in cases of unexplained diarrhea and using the right tests for the right patients.

That's the power of digital health transformation.

81% reduction in *C. diff* rates.

76% decrease in *C. diff* infection events.

$990,553 saved on avoidable events.

⚙ **THE SETUP**

Parkview has lofty EMR goals, and HIMSS helped make them reality.

The Indiana-based provider started working towards EMRAM Stage 7 validation in the late 2010s. Their aim was to cut *C. diff* infection rates, standardize clinicians' approach to diagnosis, and save money on testing. Oh, and they needed to roll out the fixes across ten centers at once. (Which isn't easy, to put it lightly.)

One dimension was workflow-related. While working towards EMRAM Stage 7, Parkview uncovered that they didn't have any clinical decision support for *C. diff* built into their EMR. Clinicians couldn't easily narrow down the likely positives, so they stuck with catch-all GI tract tests. That uncertainty comes with a big price tag. Broad-spectrum GI panels go for $463.09 a pop, compared to *C. diff* pathway tests—which cost only $11.20 each. You do the math.

The original testing algorithms for the *C. diff* pathway left another gap, too. The two-stage testing model Parkview used on samples was 79.5% sensitive to *C. diff*, and had a 92.5% specificity. Two-stage testing is standard practice: the high-PPV test spots suspected positives, and the high-NPV follow-up clears the true negatives. (Double-checks are important!)

However, the low sensitivity meant true negatives weren't getting classed accurately. And testing for true positives second meant *C. diff* infections patients had before admission were not noted as hospital-acquired. Misclassification isn't benign, either. Insurance providers won't reimburse treatments for hospital-acquired infections, and the Center for Medicare & Medicaid Services (CMS) actually penalizes hospitals for them.

*EMRAM's framework helped Parkview laser in on their C. diff protocols and spot all the waste.*

SOLUTIONS

EMRAM guided Parkview as they rolled out C. diff workflows within Epic.

Parkview needed predictive analytics in their clinical workflows to improve *C. diff* outcomes and reach EMRAM Stage 7. Their Chief Nursing Informatics Officer knew this meant fine-tuning their EMR so it could guide accurate, personalized treatment. (She was right.)

A triple fix was in order. First, Parkview developed a screen with CDS to identify patients with *C. diff* within 3 days. Next, they built a CDS order to help clinicians choose the right *C. diff* tests—and decide if testing was necessary. Last, they capped their efforts by building a brand-new testing algorithm. (All within Epic, of course.)

The *C. diff* workflow guides clinicians through patients' digestive history, question-by-question. "Has the patient had 3 or more loose stools in the last 24 hours?" leads into "Has the patient received laxatives in the last 24 hours?", and so on. In line with EMRAM's Stage 7 criteria, Epic itself will suggest lab testing only if the *C. diff* criteria fit. And instead of suggesting expensive GI panels, Epic generally guides providers towards the far-cheaper *C. diff* pathway tests.
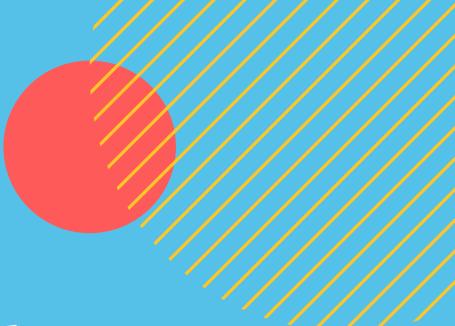
Accuracy's up, too. When the CDS screen does recommend testing, that patient's samples get run through a brand-new Revogene testing algorithm. This model's all that and then some—it has 95.3% sensitivity and 94.7% specificity for *C. diff*. The 15.8% lift in sensitivity they saw at EMRAM Stage 7 is the big win here. Higher test sensitivity means fewer true negatives feeding into the algorithm, fewer missed cases, and lower standard infection rates.

Parkview started getting better diagnoses and patient outcomes using effective, low-cost tests.

"You can't build the future without knowing the present."

MICHELLE CHARLES | CNIO | Parkview Health

CHANGE MANAGEMENT

Our framework was a North Star for Parkview's team, all through their transformation.

Parkview was pursuing EMRAM Stage 7 validation three years out, led by the Vice President of the Electronic Medical Record. The push started mid-2019, with a C. *diff* task force sponsored by the CNIO. Parkview's working groups locked in the key clinical and operational outcomes the whole team needed to work towards: reductions in C. *diff* events, standard infection rates, and treatment costs.

With the broad goals locked, a CDI reduction task force took the lead. They set up the Revogene testing algorithm, integrated the C. *diff* screening process into nursing flowsheets, and created a CDS order for C. *diff* tests. All that was inside their Epic EMR, naturally. ('Cause EMRAM's about using the technology you've got to its full potential.)

Later, Parkview's task force reversed the new C. *diff* pathway algorithm, based on data-backed guidelines that suggest starting with high-sensitivity testing. They also ran C. *diff* targeted training for every clinical team—which was directly motivated by their EMRAM Stage 7 Validation.

When we're onsite, we assess whether clinical staff understand their digital health workflows. Knowing HIMSS strategists were coming was *exactly* what they needed to get buy-in for training from the clinical teams..

Our model helped Parkview stay focused on the end goal: better patient outcomes and less waste.

THE TRANSFORMATION

CREATING TARGETS AND TASKFORCES → **BUILDING NEW EMR WORKFLOWS** → **TRAINING THE WHOLE CLINICAL TEAM** → **GETTING VALIDATED BY HIMSS**

RESULTS

System-wide projects have massive impacts.

The numbers don't lie: Parkview Health's team knocked it out of the park in their fight against *C. diff*. Working towards improving patient outcomes and achieving EMRAM Stage 7, Parkview saw an 81% decrease in *C. diff* events and a 76% decrease in standard infection rates. The numbers speak just as loud: they peaked at 43 *C. diff* events in one quarter of 2017, and saw just 7 in their best 2022 quarter.

We can't forget about the savings, either. Insurers started paying for community-acquired *C. diff*, and in just two years, Parkview saved a whopping $990,553 from avoidable events. $648,670 of that total came from the CDS Parkview built right into Epic. Those pricey GI tract tests made up 83% of tests ordered in 2019, but by 2021, Parkview had cut that down to just 24%. The right tests are often the cheap ones, and now, the EMR tells clinicians exactly when to run each type.

It's not just about the tech, though. The EMRAM Stage 7 validation gave Parkview the *oomph* they needed to maintain buy-in, deliver organization-wide training, and make the changes stick.

Their pace was impressive, too. Most of Parkview's EMR fixes were rolled out in just eighteen months, spanning late 2019 to mid-2021. When you've got a framework like EMRAM to guide you, digital health transformation happens fast.

At Parkview, C. diff is back under control—and they're making full use of their EMR.

"**EMRAM helps you use your EMR in a way that benefits your end users and improves patient outcomes.**"

MICHELLE CHARLES | CNIO | Parkview Health
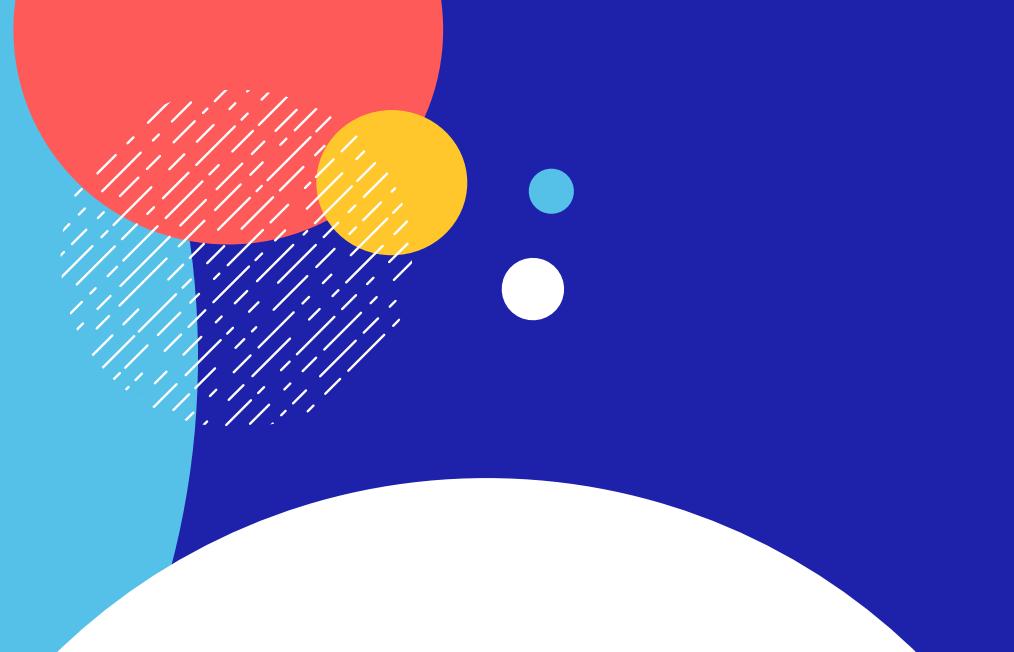
👥 ABOUT EMRAM / ABOUT HIMSS

EMRAM is our flagship maturity model.

This maturity model drives medical technology adoption, boosts patient engagement and supports the clinical use of EMR tools. With our framework backing you up, you'll strengthen your clinical care and health outcomes across every patient population.
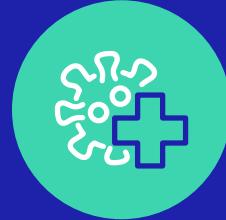
All our experts are ready when you are.

EMRAM   *Capabilities*

- ✅ **Digital health transformation**
- ✅ **Simplifying clincial workflows**
- ✅ **Predictive analytics and person-enabled care**
- ✅ **Earning clinician buy-in**
- ✅ **Boosting patient engagement**

EMRAM RESULTS

You're in good company, friends.
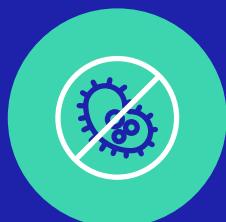
Here's how EMRAM helped other systems transform:

$752,000 reduction in costs treating bacterial (MRSA) infections for AdventHealth.

15% increase in discharges for stroke patients at Mount Sinai St Luke's.

$3 million in savings on antimicrobial therapy for Stanford Children's Hospital.

Make your digital health transformation happen.

Reach out to speak to our team anytime at dht@himss.org. (We're here!)

Produced by

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