Removing Unnecessary Contact Isolation Precautions: Inpatient Admission Re-Screening Protocol for MRSA Colonization

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BACKGROUND

- Methicillin-resistant Staphylococcus aureus (MRSA) is a bacterium that can be transmitted via skin-to-skin contact and may cause severe infections.
- Some hospitals have policies to place MRSA-colonized patients on contact isolation precautions. An estimated 15%-30% of colonized patients clear within 90 days.
- At Boston Medical Center (BMC), there was a complex algorithm to remove MRSA contact isolation precautions which was rarely attempted. An opportunity existed to reduce the need for private rooms, improve staff and patient satisfaction by reducing need for protective gear, minimize “isolation precaution fatigue”, and save an estimated $6.4 million/yr by removing unnecessary MRSA precautions.

- We wanted to design an automated screening algorithm to remove unnecessary MRSA precautions.

AIM

Screen 100% of eligible MRSA positive adults for removal of unnecessary contact isolation precautions by December 31, 2019

METHODS

We used the Institute for Healthcare Improvement’s Model for Improvement. Championed by a second-year internal medicine resident and a group of public health students, a diverse group of physicians, midlevel providers, infection control staff, quality staff, and informational support staff came together to understand why clearing MRSA precautions in adult inpatients was not occurring. Using QI tools such as the fishbone diagram, we identified contributing reasons. We used the Plan, Do, Study, Act (PDSA) model to guide us to an effective strategy that could achieve the stated aim.

Outline of project strategy for change:

- Created fishbone diagram to identify why MRSA re-screening was not occurring
- Tosh Gembalka walks through current processes with housestaff, midlevel providers, and nursing to see where breakdowns in processes for MRSA precaution rescreening were occurring
- Conducted multiple PDSA cycles starting with one inpatient unit and then expanding slowly to additional units
- Created a pictorial algorithm to better understand the complex rescreening process
- Simplified processes such as eliminating the requirement of a groin culture
- Gained hospital approvals to devote IT resources to build the logic for automatic ordering
- Created a weekly report of patients with MRSA precautions and those cleared

Data collection was manual at first; then an automated weekly report of the number eligible for testing and the number who had MRSA precautions removed was developed.

RESULTS

PDSA #1

- Pilot patients eligible for re-screening
- First set of PCR/cultures sent
- Second set of PCR/cultures sent

PDSA #3

- MRSA Re-screening Results

PDSA #4

- Number of MRSA Precaution Admissions and Cleared

- Percentage MRSA Precautions Discontinued

- Variance of MRSA Precautions Discontinued by Week

SOLUTIONS

At BMC in 2017, there were about 15,000 patients flagged on the Epic® banner requiring MRSA precautions. Baseline data showed approximately 15 new patients admitted per week requiring MRSA precautions, with an average weekly census of about 40.

PDSA #1: A pilot was done on an Internal Medicine inpatient teaching service where for two weeks, patient charts were manually reviewed for eligibility for MRSA re-screening as defined by hospital policy. Two-step re-screening orders were placed manually if the patient was eligible. Not a single patient underwent the full re-screening protocol. Reasons included: second set of required cultures (MRSA Nasal PCR, MRSA Grom culture, Open Wound culture if present) were assumed to be duplicate and not done, nursing staff were unsure of appropriate swabs to use for groin cultures, patients were discharged before the second set of cultures could be obtained.

PDSA #2: From this information an algorithm was designed to guide ordering and testing and was piloted. Nursing, IT, and other stakeholders were educated. An manual order set containing the two-step process was built in Epic®.

PDSA #3: Conducted multiple PDSA cycles starting with one inpatient unit and then expanding slowly to additional units. A pictorial algorithm to better understand the complex rescreening process was created. Simplified processes such as eliminating the requirement of a groin culture were implemented. Gained hospital approvals to devote IT resources to build the logic for automatic ordering of screening tests.

PDSA #4: Created a weekly report of patients with MRSA precautions and those cleared.

CONCLUSIONS

Lessons learned:

- The Electronic Health Record (EHR) logic can automate screening eligible patients on MRSA precautions.
- Housestaff and midlevel providers on QI teams can effectively advocate for solutions which minimize impact on workflow.
- Connection to hospital goals is imperative for project approval.
- Post-implementation testing and measurement should be part of any IT project build.
- Optimisation plan and resources must be anticipated for a complex QI project involving the EHR.

Summary of findings:

- 100% of eligible MRSA positive inpatients can be screened using automated logic in Epic® but must account for timing of placement of inpatient admission orders.

NEXT STEPS

- Optimize computer logic to fire at correct time of admission order signing to capture all eligible patients.
- Create regular reports which include patients eligible for screening and order set deployment to better track the two-step screening process.
- Automate discontinuation of MRSA precautions on Epic® banner when patients have 2 negative MRSA screening tests >48hrs apart.

- Initiate screening in the Emergency Department for patients not admitted and prior to administration of antibiotics as patients become ineligible for screening once on active antibiotics.
- Initiate screening method for outpatients.

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2) Last MRSA Positive Culture or PCR > than 90 days prior to admission and no active antibiotic order.