Multidrug-Resistant Organisms: An Innovative Approach to Preventing Healthcare Transmission

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INTRODUCTION

Project Description
Incidence and prevalence of antibiotic-resistant organisms such as Klebsiella pneumoniae Carbapenemase (KPC), Clostridium difficile (C. diff) and Methicillin-Resistant Staphylococcus aureus (MRSA) are on the rise in healthcare environments. Infection Prevention (IP) at a community Magnet hospital recognized a new point of risk for our KPC positive patient was admitted and identified during surveillance in early 2011. Upon investigation, it was determined that additional precautionary measures would need to be developed to prevent transmission of this highly resistant organism. A Multi-Drug Resistant Organisms (MDRO) Prevention Team was formed to address patient care issues related to these organisms.

The efforts of the multidisciplinary MDRO Prevention Team were focused on improving surveillance and preventing transmission. The team created a “C. diff bundle.” The bundle includes placement of a small rolling cart for soiled linen with attached bleach-based disinfectant wipes in each contact stringent isolation room. The team implemented a new isolation category for highly resistant organisms. These patients are placed on “Strict Contact Isolation”. The major differences in Contact versus Strict Contact include using dedicated single use equipment, minimizing patient transfers, and following specific cleaning requirements. Infection prevention and the MDRO Prevention Team collaborated to educate administration, clinical staff, medical staff and Environmental Services (EVS) staff about highly resistant microorganisms and transmission prevention.

Project Aims
The multidisciplinary MDRO team set a goal of decreasing healthcare-associated MRSA and C. diff transmission by 25% and maintaining zero healthcare-associated KPC transmission.

Project Evaluation
The multidisciplinary MDRO team developed a list of process changes based on education and feedback gathered from each stage of the project. Lessons learned are utilized as educational opportunities and communicated to staff.

PROJECT IMPLEMENTATION

CHANGES IMPLEMENTED FOR ALL MDRO

Deep Dive Process
Interdisciplinary team meets when a healthcare-associated infection is identified
Team investigates all aspects of patient care for contributing factors
Team develops a list of process improvement opportunities and/or interventions
Lessons learned are utilized as educational opportunities and communicated to staff

Strict Contact Isolation
Used for positive or suspected KPC patients
Ventilated patients from nursing homes are screened for KPC (rectally) and placed on strict contact isolation, until screening is normal
KPC positive patients readmitted within 12 months are placed on strict contact isolation and are not re-screened
Interventions include
• Patient dedicated single-use equipment
• Minimal patient transfer
• Daily cleaning of surfaces
• Discharge cleaning completed twice by different EVS staff

KPC-SPECIFIC CHANGES IMPLEMENTED

Strict Contact Isolation
Used for positive or suspected KPC patients
Ventilated patients from nursing homes are screened for KPC (rectally) and placed on strict contact isolation, until screening is normal
KPC positive patients readmitted within 12 months are placed on strict contact isolation and are not re-screened
Interventions include
• Patient dedicated single-use equipment
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• Discharge cleaning completed twice by different EVS staff

C. diff-SPECIFIC CHANGES IMPLEMENTED

Real-Time Alerts
Automatic real-time alerts delivered via email to Infection Preventionists and Infectious Disease Physicians
Allows for immediate intervention for highly resistant organisms

KPC ENVIRONMENTAL CHANGES IMPLEMENTED

C. diff Cart
• Placed in room of patients on Contact Enteric Isolation
• Rolling cart with linen bag to facilitate containment of soiled linen
• Bleach-based disinfectant wipes attached in pocket on back of cart for convenient cleaning
• Upon discharge, EVS cleans patient room and cart with bleach-based product

KPC ENVIRONMENTAL CHANGES IMPLEMENTED

Contact Enteric Isolation
• Used for patients who are C. diff positive or present with symptoms of C. diff
• C. diff positive patients remain on isolation for entire hospital stay
• Interventions include
• Place C. diff cart in room
• Patient dedicated single-use equipment
• Preferred patient placement in rooms with air throwers and additional sink for convenient soap and water hand hygiene

MEASURES

• Healthcare-associated (HA) and community-acquired (CA) infections
• Number of HA & CA MRSA Infections
• Number of HA & CA C. diff infections
• Infection rate – HA & CA Infections/1,000 patient days
• Discharge room cleaning evaluated by GlowSperm™ and ultraviolet light
• 6 locations in each room assessed and evaluated by EVS Director
• With staff education, compliance increased from 60% in June 2011 to 78% or greater for months to date in 2012

RESULTS

• Incentives of HA MRSA dropped to zero in 3rd Quarter 2011 and has been maintained
• Rate of healthcare-associated C. diff was diminished during project implementation while the community-associated C. diff rate increased

INFORMATION SOURCES

Catawba Valley Medical Center, 810 Fairgrove Church Road SE, Hickory NC 28602

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Keys to Success
• Interdisciplinary involvement in developing, educating and implementing practice changes
• Multi-level stakeholder buy-in and involvement from project initiation
• Frontline staff input to promote compliance with newly developed processes that directly impact their practice

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