Figure 1. Table of description of patients on contact precautions for MRSA in non-intensive care units from August 2018 to March 2019 (N= 55)

Type of ward	N (%)
HIV	8 (14.6)
General Internal Medicine	5 (9.1)
Medicine subspecialty	5 (9.1)
Hospitalist	7 (12.6)
Neurology	1 (1.8)
Cardiac step-down	9 (16.4)
Organ Transplant	6 (10.9)
Orthopedic	8 (14.6)
General Surgery	1 (1.8)
Emergency Surgery	5 (9.1)
Demographics	
Age, mean y (SD)	58.4 (17.8)
Male sex	28 (51)
Patient Characteristics	
Central venous or midline catheter	22 (40)
Surgical drain	12 (21.8)
Indwelling foley urinary catheter	11 (20)
Chest tube	5 (9.1)
Artificial airway (tracheostomy)	5 (9.1)
Nasogastric tube	3 (5.5)
Gastrotomy tube	3 (5.5)
Wound	35 (63.6)
Diarrhea	6 (10.9)

Note:

SD, standard deviation; MRSA, methicillin resistant *Staphylococcus aureus*

Fig. 1.

Figure 2. Table of association between HCP type, patient bacterial bioburden and transmission of MRSA to glove or gown in patients in non-ICU units colonized with MRSA.

Characteristics	Transmission of MRSA to HCP Glove or Gown		
	Yes n (%)	No n (%)	p-value[e]
HCP type			
Direct patient care [a]	26 (6.4)	378 (93.6)	0.05
No direct patient care [b]	2 (1.8)	111 (98.2)	
MRSA bacterial bioburden			
Detected [c]	9 (9.3)	88 (90.72)	0.03
Not detected [d]	11 (3.6)	299 (96.5)	

MRSA; methicillin resistant *Staphylococcus aureus*, HCP; Healthcare personnel

[a] **Direct patient care:** An aggregated group of HCP with direct patient contact which includes nurses (n=264, 51%), physicians (n=63, 12%), patient care technicians(n=54, 10%), respiratory technicians (n=4, 0.7%), radiology technicians (n=2, 0.3%), occupational or physiotherapists (n=17, 3%).

[b] **No direct patient care:** An aggregated group of HCP with no direct patient contact which includes environmental services (n=40, 8%), food service workers (n=45, 8%), case managers (n=3, 0.5%), social worker (n=4, 0.7%), patient transporters (n=3, 0.5%), clinical nutritionists (n=2, 0.3%), phlebotomists (n=3, 0.5%).

[c] MRSA bioburden (CFU/mL or CFU/mL^2) detected at any one or more of the sampled sites. Samples were obtained from the arm, chest, and nares of 54 (98.1%) patients and from perianal sites of 41 (74.5%) patients.

[d] MRSA bioburden (CFU/mL or CFU/mL^2) not detected at any sampled sites.

[e] p-values determined by Fisher's exact test.

Fig. 2.

is needed to help guide the optimal use of contact precautions for the right patient, in the right setting, for the right type of encounter.

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Oral Presentation

Cost Savings Associated With Decolonization of Postdischarge MRSA Carriers: Results From the CLEAR Randomized Trial

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Background: Greater than 10% of hospitalized MRSA carriers experience serious MRSA infection in the year following discharge. Prevention opportunities have primarily focused on hospital stays; however postdischarge interventions have the potential to reduce morbidity, mortality and healthcare costs. The CLEAR trial found a 30% hazard reduction in postdischarge MRSA infections among patients who had inpatient MRSA cultures and were given postdischarge decolonization (5 days twice-a-month for 6 months) relative to hygiene education alone. We conducted a cost analysis of the CLEAR intervention to quantify the economic implications and understand the value of adopting this MRSA decolonization strategy. **Methods:** We constructed a decision model to estimate the one-year healthcare utilization and costs associated with postdischarge decolonization relative to hygiene education. Trial results for MRSA infection risk and downstream outcomes (including outpatient and emergency room visits, hospitalizations, related nursing home stays, and postdischarge antibiotics) were used to parameterize the model. Other medical care and prescription drug costs were based on Medicare Fee Schedules, Red Book and the literature. Patient out-of-pocket costs and time costs associated with subsequent infections were from a survey of trial participants experiencing infection (n=405). All costs were reported in 2019 US dollars. The analysis was conducted using healthcare system and societal perspectives. Sensitivity analyses were conducted on key parameters. **Results:** Among a hypothetical cohort of 1,000 hospitalized MRSA carriers, we estimated that a postdischarge decolonization intervention versus hygiene education would result in at least 36 fewer subsequent MRSA infections (130 vs 93 of 1,000, respectively) and >40 fewer MRSA-attributable healthcare events including 32 hospitalizations and 6 postdischarge nursing home visits over the course of a year. Assuming an intervention cost of $185 per individual, the program would result in an overall cost savings of $469,000 per 1,000 MRSA carriers undergoing decolonization. This translates to an overall savings of $13,200 per infection averted and $9,000 per infection averted from the healthcare system perspective. Even assuming a lower infection rate or a less effective intervention (15% reduction in infections vs 30% in the CLEAR trial), or a more expensive (up to $653 per patient)

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intervention, a decolonization program would still result in cost-savings for society, the healthcare system and patients. **Conclusions:** In addition to health benefits of preventing infections, postdischarge decolonization of MRSA carriers yields substantial savings to society and the healthcare system. Future recommendations for reducing postdischarge MRSA-related disease among MRSA carriers should consider routine decolonization at hospital discharge.

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Disclosures: Dr. Huang reports conducting clinical studies in which participating nursing homes and hospitals received donated products from Stryker (Sage Products), Mölnlycke, 3M, Clorox, Xttrium Laboratories, and Medline. Ms. Singh reports conducting clinical studies in which participating nursing homes and hospitals received donated products from Stryker (Sage Products), 3M, Clorox, Xttrium Laboratories, and Medline. Dr. Rashid, conducting clinical studies in which participating nursing homes and hospitals received donated products from Stryker(Sage Products), Clorox, and Medline. Dr. McKinnell reports receiving grant support to his institution from Melinta Therapeutics, and fees for serving as a research investigator from Lightship, conducting clinical studies in which participating nursing homes and hospitals received donated products from Stryker (Sage Products), 3M, Clorox, Xttrium Laboratories and Medline, and serving as cofounder of Expert Stewardship. Dr. Miller reports receiving grant support from Gilead Sciences, Merck, Abbott, Cepheid, Genentech, Atox Bio, and Paratek Pharmaceuticals, grant support and fees for serving on an advisory board from Achaogen and grant support, consulting fees, and fees for serving on an advisory board from Tetraphase and conducting clinical studies in which participating nursing homes and hospitals received donated products from Stryker (Sage Products), 3M, Clorox, Xttrium Laboratories, and Medline.

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Oral Presentation

Data Mining to Guide a Program to Prevent Infection Related Readmissions From Skilled Nursing Facilities

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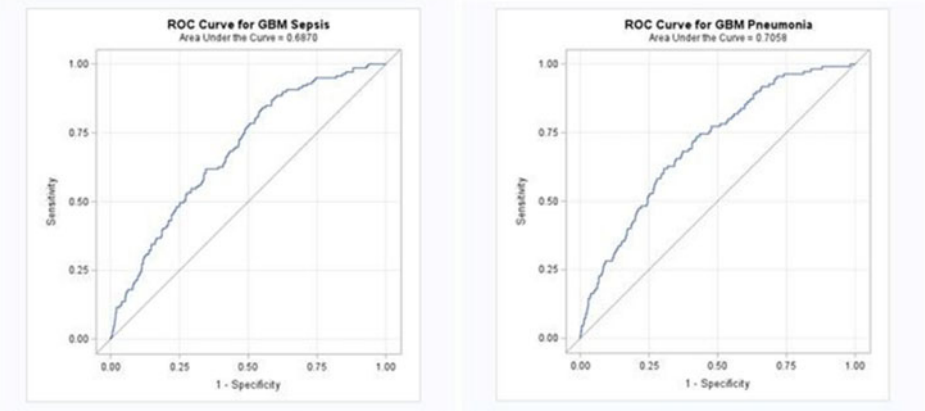
Background: Readmissions to hospitals are common, costly and often preventable, notably readmissions due to infections. A 30-day readmission analysis following hospital discharges, found much of the variation in Medicare spending between hospitals was related to readmissions and skilled nursing facility (SNF) care. Although some readmissions of patients with advanced disease are not preventable, efforts to decrease readmission are most effectively directed towards those patients with intermediate levels of a specific risk. A prediction model to identify patients at highest (or intermediate) risk of infection readmission will help healthcare administrators and providers to allocate appropriate resources. Hospitals should use electronic health record (EHR) data with modern data mining techniques to create more curated, sophisticated models as part of a comprehensive transitional care program. We propose using the risk estimates of a validated prediction model to notify stakeholders and develop readmission rate reports by SNF or discharging physician. **Methods:** We applied machine learning (ML) methods to predict the risk of 30-day readmission due to sepsis and pneumonia of patients discharged to SNF. We used our EHR data during 2012–2017 to train and data from 2018 to validate. We applied ML algorithms to data including logistic regression, random forest, gradient boosting trees, and support vector machine. Data from EDW and EPIC clarity tables were extracted and managed using SAS Base 9.4



ROC Association Statistics

ROC Model	Mann-Whitney Area	Standard Error	95% Wald Confidence Limits		Somers' D	Gamma	Tau-a
GBM Sepsis	0.6870	0.0211	0.6457	0.7282	0.3739	0.3739	0.0257

ROC Association Statistics

ROC Model	Mann-Whitney Area	Standard Error	95% Wald Confidence Limits		Somers' D	Gamma	Tau-a
GBM Pneumonia	0.7058	0.0234	0.6599	0.7516	0.4115	0.4115	0.0225

Figure 1. Area Under Receiver Operater Charcateristic curve for gradient boosting model predicting readmission after discharge to SNF due to sepsis and pneumonia

Fig. 1.

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