Figure 1. Multivariable Logistic Regression Analysis of Characteristics Associated with Mortality of Patients with CRAB Isolated from Sterile Sites, 2012-2017. Odds Ratio and 95% Confidence Limit

Fig. 1.

Figure 2. Multivariable Logistic Regression Analysis of Characteristics Associated with Mortality of Patients with CRAB Isolated from Urine, 2012-2017. Odds Ratio and 95% Confidence Limit
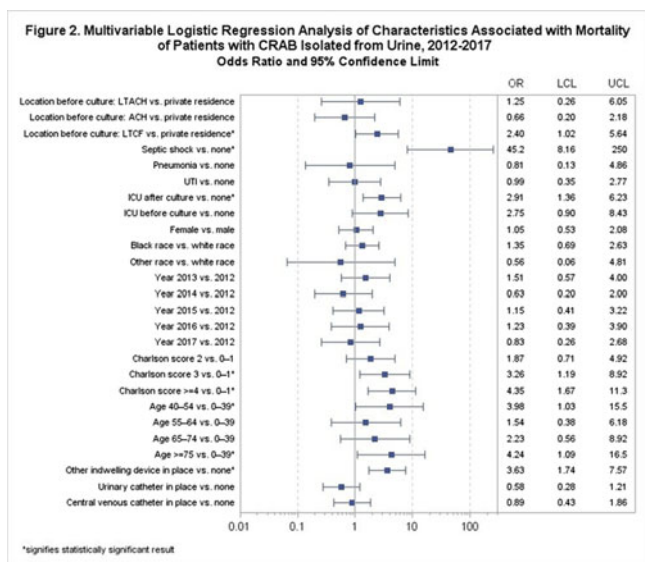
Fig. 2.

fraction of mortality occurred after discharge, especially among patients with urine cases. Although there were some differences in characteristics associated with mortality in patients with CRAB isolated from sterile sites versus urine, LTCF exposure and severe illness were associated with mortality in both patient groups. CRAB was associated with major mortality in these patients with evidence of healthcare experience and complex illness. More work is needed to determine whether prevention of CRAB infections would improve outcomes.

Presentation Type:
Top Rated Posters
Characteristics Associated With Invasive *Staphylococcus aureus* Infection Rates in Nursing Homes, Emerging Infections Program

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Background: Most invasive methicillin-resistant *Staphylococcus aureus* (iMRSA) infections have onset in the community but are associated with healthcare exposures. More than 25% of cases with healthcare exposure occur in nursing homes (NHs) where facility-specific iMRSA rates vary widely. We assessed associations between nursing home characteristics and iMRSA incidence rates to help target prevention efforts in NHs. **Methods:** We used active, laboratory- and population-based surveillance data collected through the Emerging Infections Program during 2011–2015 from 25 counties in 7 states. NH-onset cases were defined as isolation of MRSA from a normally sterile site in a surveillance area resident who was in a NH within 3 days before the index culture. We calculated MRSA incidence (cases per NH resident day) using Centers for Medicare & Medicaid Services (CMS) skilled nursing facility cost reports and described variation in iMRSA incidence by NH. We used Poisson regression with backward selection, assessing variables for collinearity, to estimate adjusted rate ratios (aRRs) for NH characteristics (obtained from the CMS minimum dataset) associated with iMRSA rates. **Results:** Of 590 surveillance area NHs included in analysis, 89 (15%) had no NH-onset iMRSA infections. Rates ranged from 0 to 23.4 infections per 100,000 resident days. Increased rate of NH-onset iMRSA infection occurred with increased percentage of residents in short stay ≤30 days (aRR, 1.09), exhibiting wounds or infection (surgical wound [aRR, 1.08]; vascular ulcer/foot infection [aRR, 1.09]; multidrug-resistant organism infection [aRR, 1.13]; receipt of antibiotics [aRR, 1.06]), using medical devices or invasive support (ostomy [aRR, 1.07]; dialysis [aRR, 1.07]; ventilator support [aRR, 1.17]), carrying neurologic diagnoses (cerebral palsy [aRR, 1.14]; brain injury [aRR, 1.1]), and demonstrating debility (requiring considerable assistance with bed mobility [aRR, 1.05]) (Table). iMRSA rates decreased with increased percentage of residents receiving influenza vaccination (aRR, 0.96) and with the presence of any patients in isolation for any active infection (aRR, 0.83). **Conclusions:** iMRSA incidence varies greatly across nursing homes, with many NH patient and facility characteristics associated with NH-onset iMRSA rate differences. Some associations (short stay, wounds and infection, medical device use and invasive support) suggest that targeted interventions utilizing known strategies to decrease transmission may help to reduce infection rates, while others (neurologic diagnoses, influenza vaccination, presence of patients in isolation) require further exploration to determine their role. These findings can help identify NHs in other areas more likely to have higher rates of NH-onset iMRSA who could benefit from interventions to reduce infection rates.

Table. Nursing home characteristics associated with invasive MRSA rates, Emerging Infections Program, 2011–2015

Proportion of residents with characteristic	Referent Level for rate ratio	Adjusted Rate Ratio	95% Confidence Interval
Ventilator dependence[1]	Any vs. none	1.17	1.01–1.35
Cerebral palsy[2]	Any vs. none	1.14	1.05–1.25
Multi-drug resistant organism infection[2]	Any vs. none	1.13	1.04–1.24
Viral hepatitis[2]	Any vs. none	1.12	1.01–1.23
Brain injury[2]	Any vs. none	1.1	1.01–1.21
Stay less than 30 days	10% increase	1.09	1.04–1.14
Any vascular ulcer, foot infection/lesion[3]	Quartile increase	1.09	1.05–1.14
Surgical wound[3]	Quartile increase	1.08	1.03–1.13
Ostomy[3]	Quartile increase	1.07	1.03–1.11
Dialysis[1]	Tertile increase	1.07	1.01–1.14
Multiple sclerosis[2]	Tertile increase	1.06	1.02–1.10
Receipt of antibiotics[1]	Quartile increase	1.06	1.01–1.11
African American race	10% increase	1.05	1.02–1.08
Excessive assistance required or total dependence for bed mobility	10% increase	1.05	1.01–1.08
Excessive assistance required or total dependence for walking in the corridor	10% increase	0.97	0.95–0.99
White race	10% increase	0.96	0.93–0.98
Influenza vaccination[2]	10% increase	0.96	0.94–0.99
Age > 65	10% increase	0.95	0.91–0.99
Urinary tract infection[2]	Quartile increase	0.95	0.91–0.99
Non-Alzheimer's dementia[2]	10% increase	0.95	0.92–0.98
New admission[4]	10% increase	0.92	0.88–0.95
Wound infection[2]	Any vs. none	0.9	0.83–0.98
Isolation[1]	Any vs. none	0.83	0.74–0.93

[1] Ocurred in the last 7 days
[2] Active diagnosis in the last 7 days
[3] Present at the time of assessment
[4] Versus reentry

Fig. 1.

Presentation Type:
Top Rated Posters
Enhancing Influenza Vaccination of Hospital Workers from 30% to 80% Through Application of Behavior Change Theories
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Background: Historically, influenza vaccination coverage among Norwegian healthcare workers has been low. In 2014–2015 and 2015–2016 the national averages were 9% and 12%, respectively, Although the Fig.s for Oslo University Hospital were higher (30% in 2015–2016), we were still far from the goal of 75% set by the WHO. The same year, <10% of employees at Vestre Viken Hospital Trust were vaccinated. Before the 2016–2017 influenza season, we therefore launched a campaign using methods based on behavior change theories and social marketing to enhance vaccination coverage. **Methods:** In May–June 2016 a questionnaire was sent by e-mail to all employees at Oslo University Hospital (n = ~25,000) and Vestre Viken Hospital Trust (n = 9,000). The questionnaire was structured according to the theory of planned behavior, asking questions related to attitude, subjective norms, and perceived control. The respondents were asked to grade each answer from 1 to 5, and we could then calculate a score for each question based on the proportion (%) of respondents across the 5 grades. Thus a score between 0 and 500 was possible. We then selected the questions with the highest and lowest scores for intervention, and applied stages of change principles and social marketing for implementation. In May–June 2017, the same questionnaire was sent to all employees and the procedure was repeated before the 2017–2018 influenza season. Finally, for the third time, the procedure was repeated before the 2019–2020 season. This time some additional questions were added, about which sources the employees were using for information on influenza vaccination. **Results:** In 2017–2018 vaccination coverage increased from 30% to 54%. The year after we reached 73%, and at the time of abstract submission (November 12, 2019) we have passed 80% for the 2019–2020 season, still with more vaccines to be given. Among Norwegian healthcare workers, attitudes and perceived control seemed to have a stronger impact on behavior (vaccination) than subjective norms. **Conclusions:** We were able to significantly increase voluntary influenza vaccination, reaching the WHO goal of at least 75%, by the application of behavior change theories and social marketing.