respiratory colonization ($P < .001$). On multivariate analysis, ICU admission ($P = .007$; 95% CI, 0.003–0.406) and neutropenia ($P = .009$; 95% CI, 0.013–0.537) were the major risk factors associated with mortality. *S. maltophilia* was the most susceptible to trimethoprim and sulfamethoxazole (TMP/SMX, 94.1%), followed by levofloxacin (85.7%). In addition, 36 patients received TMP/SMX as monotherapy, and 11 patients received it in combination with other antibiotics (fluoroquinolone, ceftazidime, or aminoglycoside). Hence, no statistically significant difference was observed in patient mortality. The overall mortality rate within 7 days of *S. maltophilia* bacteremia diagnosis was 33.8%. **Conclusions:** *S. maltophilia* bacteremia is a devastating emerging infection associated with high mortality among hospitalized children. Therefore, early diagnosis and prompt management based on local susceptibility data are crucial. Various risk factors, especially ICU admission and neutropenia, are associated with *S. maltophilia* bacteremia mortality.

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Risk Factors Associated with Acute Hepatitis C in Mongolia

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Background: Hepatitis C virus (HCV) infection is endemic in Mongolia, with reported prevalence of HCV antibody (anti-HCV) positivity of 11%–16% in the adult population. Healthcare-related risk factors associated with development of acute HCV infection have not been evaluated in this population. **Methods:** We conducted a prospective, matched case-control study to identify risk factors associated with acute HCV infection in Ulaanbaatar, Mongolia. Cases were aged 18 years with discrete onset of symptoms consistent with acute viral hepatitis as well as jaundice or elevated serum alanine aminotransferase (ALT) levels who were admitted to the National Center for Communicable Diseases during January–October, 2019. Cases were both anti-HCV and HCV RNA positive and tested negative for acute hepatitis A, B, and E. Controls were randomly selected from the Population and Household Database, a national registry of all citizens, and were matched by age and gender. Data collection covered healthcare-associated and other risk factors in the 6 months before symptom onset (cases) or interview date (controls). Adjusted measures of association comparing cases and their matched controls were obtained using a multivariate conditional logistic regression model. **Results:** We enrolled 35 case patients and 104 controls. Median age of all participants was 44 (range, 23–63) years and 19% (27 of 139) were men. All case patients reported jaundice and loss of appetite; most cases reported nausea, malaise, and abdominal pain (97%, 91%, and 83%, respectively). The median ALT level among case patients was 1,185 IU/L (range, 212–3,349). Case patients were more likely than controls to have been admitted as inpatients (matched odds ratio [mOR], 4.3; 95% CI, 1.5–11.9), to have visited an outpatient clinic (mOR, 3.6; 95% CI, 1.3–10.2), to have had phlebotomy (mOR, 3.3; 95% CI, 1.5–7.5) or endoscopy (mOR, 10.7; 95% CI, 2.2–51.2) as an outpatient procedure, and to have received an injection outside of healthcare settings (mOR, 2.2; 95% CI, 1.0–5.1). Cases were also more likely to have lived in a yurt (mOR, 2.3; 95% CI, 1.0–5.0) and to have lived with persons diagnosed with HCV infection (mOR, 3.0; 95% CI, 1.1–7.9). In a multivariate model, only outpatient endoscopy (adjusted OR, 10.8; 95% CI, 1.7–69.6) was significantly associated with case status. **Conclusions:** This is the first study to evaluate risk factors for acute HCV infection among adults in Ulaanbaatar, Mongolia. Outpatient endoscopy was associated with new HCV infections in this population; evaluation of gaps in infection control practices at settings providing these services are needed to prevent transmission of communicable diseases, including hepatitis C.

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Risk Factors Associated With Hospital-Onset MRSA Proportion—National Healthcare Safety Network, 2017–2018

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Background: *Staphylococcus aureus* is frequently implicated in healthcare-associated infections in the United States, and a substantial proportion of these infections are attributed to methicillin-resistant *Staphylococcus aureus* (MRSA). Although MRSA infections have decreased in health care settings, accurate estimates of the rate of decline call for risk-adjusted methods for calculating the resistant proportion (%R), that is, the proportion of *S. aureus* resistant to cefoxitin or oxacillin. Risk-adjusted %R also enables more accurate interhospital comparisons and can serve as a quantitative guide and evaluation metric for prevention efforts. **Methods:** To develop a risk-adjusted %R for *S. aureus*, we analyzed the antimicrobial susceptibility test (AST) results for *S. aureus* isolates reported to the CDC NHSN Antimicrobial Resistance Option during 2017–2018. Isolates were reported for cerebrospinal fluid (CSF), blood, lower respiratory tract (LRT), and urine. Isolates without cefoxitin and oxacillin test results, or from the facilities that had >10% missing test results were excluded. Test results were differentiated between those associated with community-onset and hospital-onset (HO) infections by defining the latter group as test results for isolates obtained 3 days or more after hospital admission. Logistic regression was used to evaluate the factors associated with oxacillin/cefoxitin resistance. Hospital, patient and isolate-level variables from NHSN annual survey and AR option were assessed as covariates. Variable entry into the models is based on significance level $P < .05$. **Results:** Among 9,992 hospital-onset SA isolates from 9,019 patients in 315 facilities, 5,488 (54.9%) were

Table 1.

Table. Risk factors associated with hospital-onset MRSA.

Variables	crude R%	adjusted odds ratio (95% confidence interval)	Estimate	P value
Age (years)				
<= 25	35.20%	Reference	Reference	Reference
25-52	48.00%	1.446(1.239, 1.686)	0.3686	<.0001
52-63	55.30%	1.906(1.627, 2.232)	0.6448	<.0001
63-73	58.80%	2.167(1.854, 2.533)	0.7734	<.0001
> 73	65.20%	2.737(2.351, 3.186)	1.0068	<.0001
Percentage of beds in intensive care units				
<= 16.5	60.90%	Reference	Reference	Reference
>16.5	49.60%	0.886(0.81, 0.969)	-0.1212	0.0078
Teaching status				
major teaching	52.20%	Reference	Reference	Reference
non-major teaching or non-teaching	57.80%	1.131(1.037, 1.232)	0.1227	0.0051
Antimicrobial testing site				
outsourcing	60.50%	Reference	Reference	Reference
on site	52.40%	0.905(0.825, 0.993)	-0.0998	0.0343
Specimen source				
blood and cerebrospinal fluid	51.70%	Reference	Reference	Reference
lower respiratory tract	55.00%	1.209(1.101, 1.326)	0.1894	<.0001
urine	61.20%	1.354(1.182, 1.55)	0.3027	<.0001
Gender				
male	54.00%	Reference	Reference	Reference
female	56.10%	1.087(1.001, 1.181)	0.0839	0.047
Community onset MRSA proportion (%)				
<= 38.0	43.90%	Reference	Reference	Reference
38.0-45.3	51.40%	1.269(1.141, 1.41)	0.238	<.0001
45.3-50.7	59.30%	1.724(1.519, 1.956)	0.5445	<.0001
>50.7	68.40%	2.398(2.128, 2.702)	0.8745	<.0001

MRSA. Logistic regression showed that a higher proportion of HO-MRSA was significantly associated with older age, female, particular sources of specimen (urine and LRT), and selected hospital characteristics: hospitals not serving as major teaching hospitals, hospitals with a higher proportion of MRSA among community-onset SA isolates, hospitals with lower percentage of beds in intensive care units, and hospitals outsourcing AST service (Table 1). **Conclusions:** HO-MRSA is independently associated with community burden of MRSA, older and female patient populations, and hospital teaching status and AST practices, which highlights the importance of public health engagement and regional collaborations to prevent MRSA. To provide a standardized MRSA proportion for public health surveillance, taking some of these factors into account in MRSA proportion standardization should be considered.

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Risk Factors for Carbapenemase Producing-Carbapenem Resistant Enterobacteriaceae in Those With CRE Positive Cultures

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Background: Carbapenem-resistant Enterobacteriaceae (CRE) are gram-negative bacteria resistant to at least 1 carbapenem and are associated with high mortality (50%). Carbapenemase-producing CRE (CP-CRE) are particularly serious because they are more likely to transmit carbapenem resistance genes to other gram-negative bacteria and they are resistant to all carbapenem antibiotics. Few studies have evaluated risk factors associated with CP-CRE colonization. The goal of this study was to determine the risk factors associated with CP-CRE colonization in a cohort of US veterans. **Methods:** We conducted a retrospective cohort study of patients seen at VA medical centers between 2013 and 2018 who had positive cultures for CRE from any site, defined by resistance to at least 1 of the following carbapenems: imipenem, meropenem, doripenem, or ertapenem. CP-CRE was defined via antibiotic sensitivity data that coded the culture as being 'carbapenemase producing,' being 'Hodge test positive,' or 'KPC producing.' Only the first positive culture for CRE was included. Patient demographics (year of culture, age, sex, race, major comorbidities, infectious organism, culture site, inpatient status, and CP-CRE status) and facility demographics