Classification of Outpatient Antibiotic Prescriptions for Patients Who Received Renal Transplant, 2018-2021
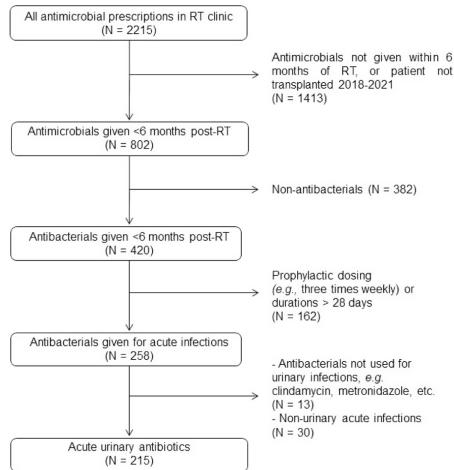

Proportion of Antibiotic Use Within 6 Months of RT, 2018-2021

Documented Presence of Urinary Symptoms in RT Patients Treated with Acute Urinary Antibiotics, 2018-2021

important stewardship targets in renal transplant (RT) patients, but they may require alternative metrics to best monitor prescribing patterns. We describe ICD-10 utilization for RT clinic encounters in which antibiotics were prescribed. We developed a metric classifying "acute urinary antibiotics" (AUA) to track antibiotic use for ASB and UTI, and we validated

Table 1. Performance of Algorithmic Labeling of Acute Urinary Antibiotics in Patients Within 6 Months of RT, 2021.

	AUA Label	No AUA Label
Documented intent to treat ASB or UTI	49 (83% positive percent agreement)	2 (false negatives)
No intent to treat ASB or UTI	10 (false positives)	69 (97% negative percent agreement)

systematic identification of AUA to enable practical implementation. **Methods:** We examined RT clinic visit and telemedicine encounters from 2018 to 2021 conducted 1 month after transplant. This project was deemed non–human-subjects research by the Stanford Panel on Human Subjects in Medical Research. **Results:** The analytic cohort included 420 antibacterial prescriptions from 408 encounters (Fig. 1). Of 238 patients, 136 (57%) were male and 112 (47%) were Hispanic or Latino. The most common primary ICD-10 code was Z94.0 (kidney transplant status) (N = 302 of 408 encounters, 75%); 26 encounters (6%) were coded for UTI (eg, N39.0, urinary tract infection, site not specified); and 214 encounters (53%) had multiple ICD-10 codes. The R82.71 code (bacteriuria) was never used. However, 215 prescriptions (51%) were classified as AUA (Fig. 2). The validation cohort included 130 prescriptions; 59 (45%) were classified as AUA and 51 (39%) had documented intent to treat ASB or UTI (positive percent agreement, 83%; negative percent agreement, 97%) (Table 1). For patients >1 month after transplant, the positive percent agreement was 95% and the negative percent agreement was 98%. Of 51 patients receiving AUA, 32 (63%) were asymptomatic despite frequently having a code for UTI (Fig. 3). **Conclusions:** ICD-10 coding may not be helpful in monitoring antibiotic prescribing in RT patients. The AUA metric offers a practical alternative to track antibiotic prescribing for urinary syndromes and reliably correlates with physician intent. Monitoring AUA prescribing rates could help identify opportunities to optimize antibiotic use in this complex outpatient setting.

Disclosures: None
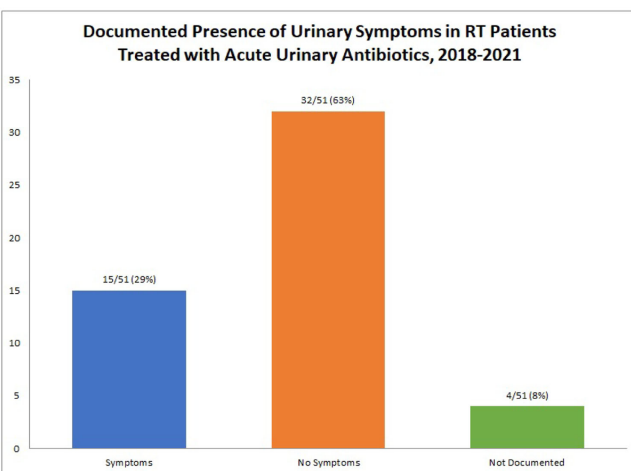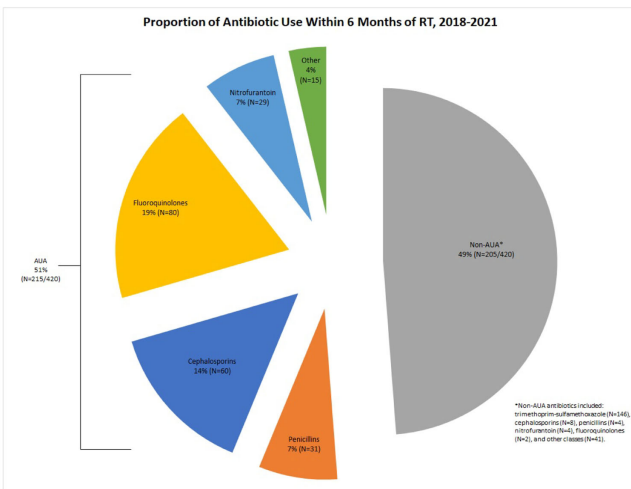
Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Long-term Care
Central-line team effort: Recognizing problematic central-line insertion sites in nursing homes
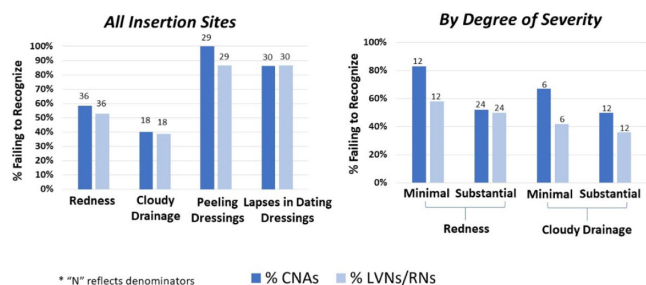
Kristine Nguyen; Raveena D. Singh; Shruti Gohil; Raheeb Saavedra; John Billimek; Steven Tam and Susan Huang

Background: Recognizing problematic central-line insertion sites is an important activity for CNAs, LVNs, and RNs in nursing homes (NHs). Although CNAs are not responsible for assessing central lines, they are often the first line of defense for noticing and relaying problems with a line because of the greater amount of time they spend with residents. We sought to assess how well CNAs, LVNs, and RNs could identify problematic insertion sites in NHs. **Methods:** We conducted a prospective observational study of central-line care in 8 NHs in Orange County, California. A convenience sample of central lines with a range of problematic elements was selected for quality improvement purposes. Research staff used standardized observation forms to evaluate presence of redness, cloudy drainage, and dressing integrity and change date. NH CNAs, LVNs, and RNs were asked to directly observe devices and to comment on problems or concerns. Participants were also asked open-ended questions about elements for a "picture-perfect line" and standard frequency of line checks and dressing changes. Failures to recognize existing problematic elements were tabulated for CNAs and LVNs or RNs separately. **Results:** In total, 50 CNAs (nursing home range, 3–6) and 50 LVNs and RNs (NH range, 4–6) directly observed lines with 131 problematic elements, including redness (N = 36), cloudy drainage (N = 30), peeling dressings (N = 29), and inappropriately dated dressing (N = 36). Failure to identify problematic elements involved redness [CNAs (50%) and LVNs or RNs (53%)], cloudy drainage [CNAs

Failure to Recognize Problems at Central Line Sites

Characteristic	Baseline N=844		Decolonization N=1411	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Presence of Any Medical Device[1,2]	2.5 (1.7-3.7)	<0.001	1.1 (0.8-1.5)	0.64
Total Dependence on Staff for Mobility Needs[3,4]	1.6 (1.1-2.2)	0.01	1.7 (1.3-2.2)	<0.001
Diabetes	1.4 (1.1-2.0)	0.02	0.9 (0.7-1.2)	0.49
Alzheimer's Disease or Related Dementia[5]	1.3 (0.9-1.8)	0.10	1.2 (0.9-1.5)	0.25
Cancer	1.3 (0.9-2.1)	0.22	1.1 (0.7-1.5)	0.71
Male Gender	1.3 (1.0-1.8)	0.07	1.6 (1.2-2.0)	<0.001
Hispanic Ethnicity	1.5 (1.0-2.2)	0.06	1.0 (0.7-1.5)	0.78

[1] Resident had at least one of the following devices: indwelling urinary catheter, ostomy, tracheostomy, ventilator
[2] Presence of a medical device was collinear with post-acute stay (length of nursing home stay <100 days) and Medicaid insurance
[3] Total dependence on staff for walking and/or locomotion (including wheelchair)
[4] Dependence on staff for mobility needs was found to be collinear with dependence on staff for hygiene needs
[5] Alzheimer's Disease or Related Dementia was collinear with age

(40%) and LVNs or RNs (39%)], peeling dressings [CNAs (100%) and LVNs or RNs (87%)], and inappropriately dated dressing [CNAs (71%) and LVNs or RNs (68%)]. For both CNAs and LVNs and RNs, recognition of redness and cloudy drainage improved with severity. Failure to recognize minimal erythema [CNAs (83%) and LVNs or RNs (58%)] was higher than substantial erythema [CNAs (54%) and LVNs or RNs (50%)]. Similarly, failure to recognize minimal cloudy drainage [(CNAs (67%) and LVNs or RNs (50%)] was higher than substantial cloudy drainage [CNAs (42%) and LVNs or RNs (36%)]. Overall, identification of problematic elements did not vary by whether the staff member was assigned to care for that resident. Descriptions of "picture-perfect lines" were uniformly poor, with respondents not knowing what elements to mention. **Conclusions:** Failure to recognize redness, cloudy drainage, peeling dressings, and lapses in dressing change dates was common for CNAs and LVNs and RNs in nursing homes. This lack of recognition could prevent proper response to early and late signs of localized infection at central-line sites. Dedicated training regarding key elements of a "picture-perfect line" is needed, including changing the threshold for concern for both small and large amounts of redness and pus.

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Does universal nasal/skin decolonization in nursing homes affect risk factors for MRSA carriage?
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Background: A regional decolonization intervention (SHIELD-OC) involving universal chlorhexidine for routine bathing and 5 days of twice-daily nasal iodophor every other week in nursing homes (NHs) recently demonstrated marked reductions in multidrug-resistant organisms, all-cause hospitalizations, and infection-related hospitalizations in Orange County, California. Specific to methicillin-resistant *Staphylococcus aureus* (MRSA), NH prevalence (nares, skin, or perirectal) decreased from 43% to 29%. **Methods:** We conducted a retrospective cohort study evaluating the impact of decolonization on factors associated with MRSA carriage. The cohort included residents from 18 SHIELD-OC NHs who were sampled for MRSA using nares, axilla, groin, and perirectal cultures. A point-prevalence survey was conducted in 2016–2017 (before decolonization, 50 randomly sampled residents per NH) and in 2018–2019 (decolonization, all residents sampled). Resident characteristics were obtained from their most proximal admission, quarterly, and/or discharge assessment using data mandated for NH reporting (CMS minimum data set), and included demographics, medical devices, comorbidities (including Alzheimer's disease and related dementias or ADRD), and mobility and hygiene needs. We used generalized-linear mixed models stratified by decolonization and clustered by NH to identify differences in factors associated with MRSA carriage. **Results:** Of the 2,351 NH residents, 2,255 (96%) had characteristics available in the CMS data set. Of the 2,255

residents included, 774 (34%) were MRSA carriers. Before decolonization, medical devices (OR, 2.5), limited mobility (OR, 1.6), and diabetes (OR, 1.4) were significantly associated with MRSA carriage in an adjusted model (Table). During decolonization, these effects were mitigated (medical device OR, 2.5–1.1; diabetes OR, 1.4–0.9) and were no longer significantly associated with MRSA carriage. Male sex appeared to have more of an effect in the decolonization phase (OR, 1.3–1.6), but limited mobility remained stable (OR, 1.6–1.7). Several variables were collinear. Presence of a medical device was collinear with postacute stays (<100 days) and Medicaid insurance. Limited mobility was associated with limited ability for hygienic self-care. ADRD was collinear with age. Final adjusted models accounted for medical devices, limited mobility, diabetes, ADRD, cancer, sex, and ethnicity. **Conclusions:** In a large interventional cohort of 18 NHs, factors associated with MRSA carriage changed after adoption of universal decolonization. Specifically, the increased risk of MRSA associated with medical devices and diabetes were substantially mitigated by decolonization, suggesting that these risks are modifiable. These long-term care findings are consistent with clinical trials showing reductions in MRSA carriage after implementing chlorhexidine bathing in ICUs and in non-ICU patients with devices. The ability of decolonization to attenuate the risk of MRSA carriage among diabetics or other potential high-risk groups deserves further study.

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Not as simple as it seems: Extensive facility and training gaps in nursing home bathing
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Background: Existing training for resident bathing in nursing homes (NHs) is brief and limited, likely because bathing is assumed to be intuitive. However, residents have complex skin issues, devices, dressings, and limited ability for self-care. We sought to assess bathing quality and to identify barriers to proper bathing techniques. **Methods:** We conducted a prospective observational study of bathing in 8 NHs in Orange County, California, involving a convenience sample of observed bed baths and showers conducted for quality improvement. NH staff were told that observation was occurring, and no feedback was given during or after bathing. Survey elements included cleansing of 6 specific body sites and adherence to bathing procedures (11 for bed baths and 17 for showers). Surveys also included queries to staff to further assess knowledge and perceived barriers. Observed lapses were documented, along with observer-determined reasons for noncompliance (ie, training issue, time pressure, facility issue (insufficient water temperature), resident refusal/behavior). Frequency of noncompliance with each element was tabulated for bed-baths and