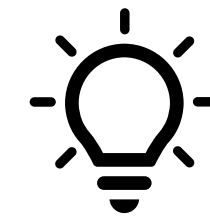
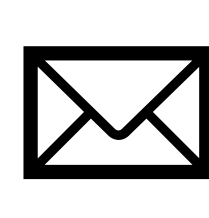
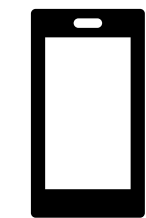


A Pre-Post Interventional Study on the Impact of Asynchronous Microlearning of Antimicrobial Stewardship Principles among Nursing Staff at a Large Academic Medical Center

BACKGROUND¹

- A multidisciplinary approach to antimicrobial stewardship (AS) is necessary for success
- Nurses perform several daily functions integral for AS activities
- However, nurses are underrepresented in research and underutilized in implementation of AS interventions
- Lack of education and training is consistently cited as a barrier to full nurse participation in AS activities
- The objective of this study was to determine the effect of asynchronous microlearning on nursing staff knowledge, attitudes, and practices (KAP) regarding AS principles

STUDY DESIGN



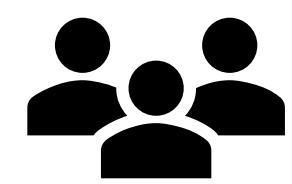
One case-based, multiple-choice question per day

Delivered via text message or email

Instant feedback with explanation

- Topics such as:
 - Defining antimicrobial resistance & understanding nursing AS roles
 - Differentiating urinary tract infections from asymptomatic bacteriuria
 - Identifying sepsis and importance of early antibiotic administration
 - Ensuring appropriate indications prior to obtaining cultures
 - Identifying intravenous (IV) to oral (PO) conversions
 - Identifying opportunities for antibiotic de-escalation
 - Taking accurate allergy histories
 - Recognizing common antibiotic adverse events (AE)
- KAP survey pre- and post-course
- Survey results compared via Wilcoxon signed-rank test

RESULTS



46 Participants

86% reported they administer antibiotics to >50% of their patients with 50% of respondents reporting >75% of their patients receive antibiotics

Figure 1. Participant Primary Unit

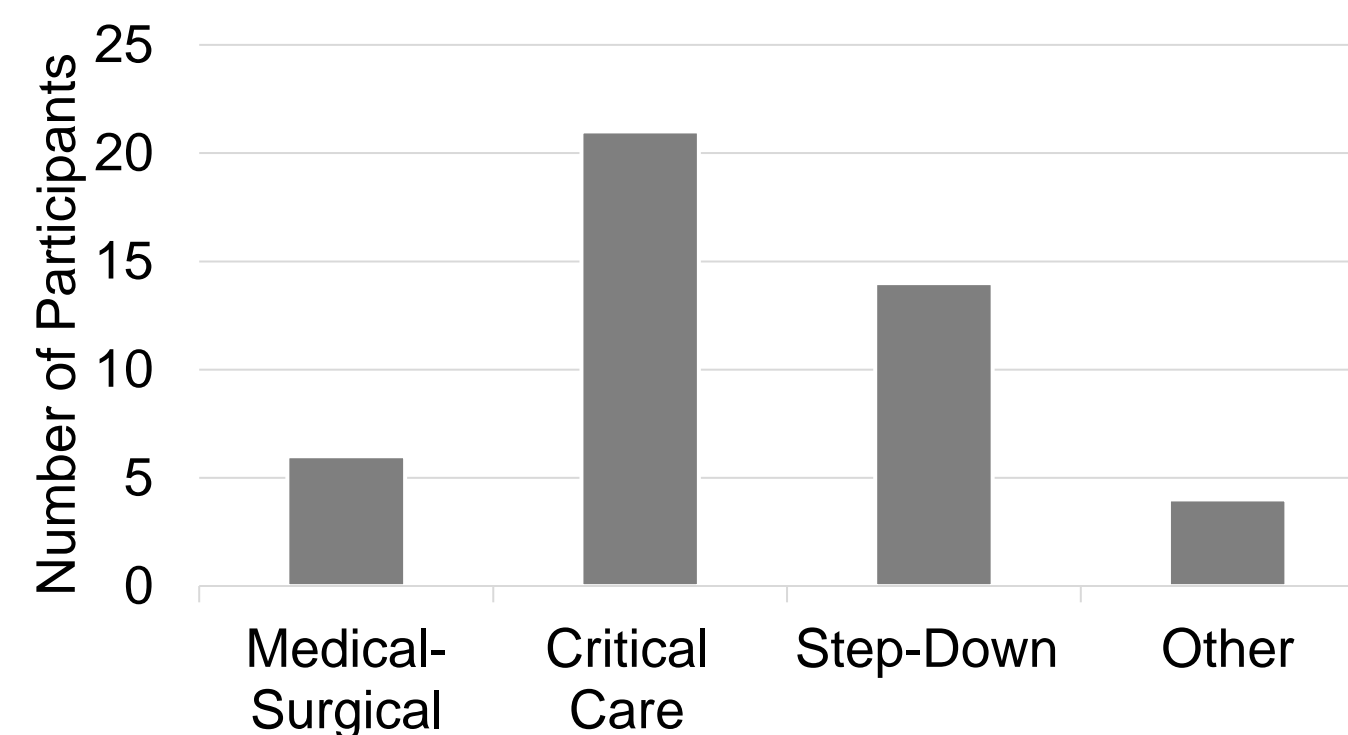


Figure 2. Years of Nursing Experience

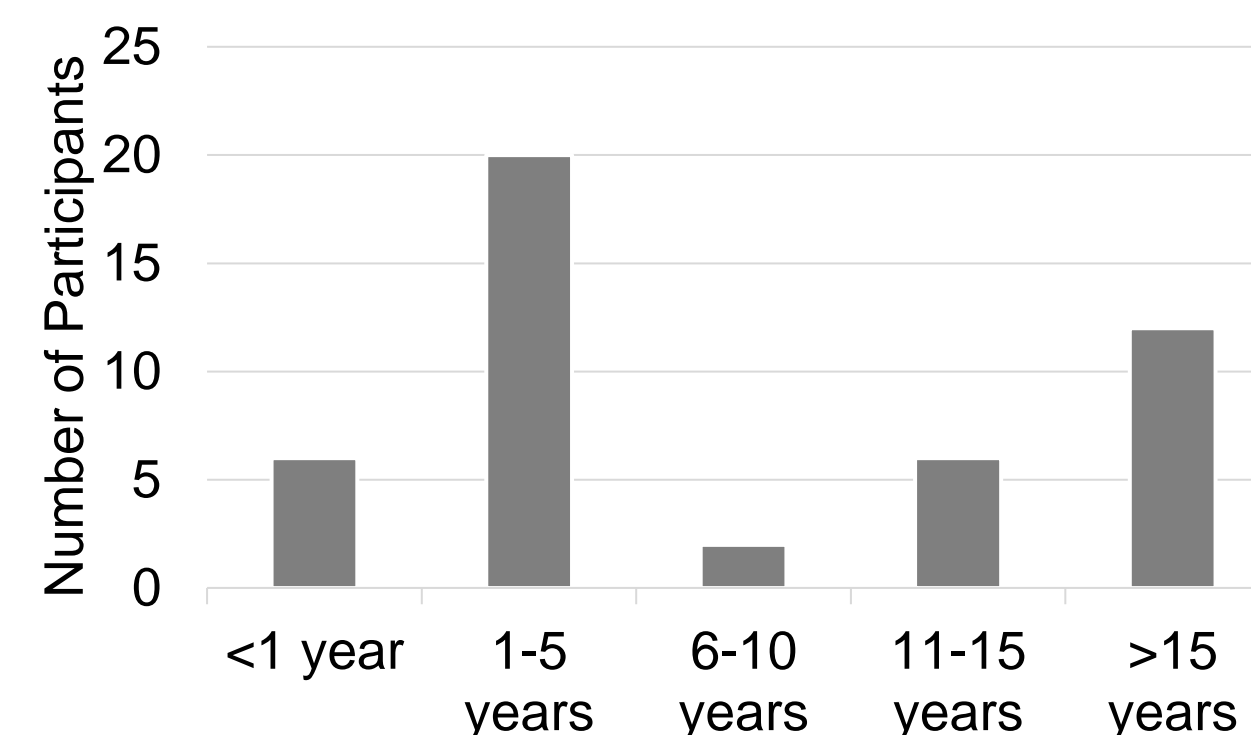


Table 1. KAP Survey Mean Scores Pre- and Post-Course

Item	Pre	Post	P-Value
I am familiar with the term antibiotic stewardship	3.02	4.32	<0.001
I am familiar with the term antibiotic resistance	4.41	4.58	0.180
Antibiotic use can lead to resistance	4.28	4.54	0.001
Antibiotic use can lead to adverse effects	4.19	4.50	0.002
I understand the relationship between antibiotics and <i>C. difficile</i>	4.04	4.34	0.025
I have little control over what antibiotics my patients receive.	3.56	2.52	<0.001
I can usually tell if my patient's change in clinical status is due to a possible infection	3.97	4.02	0.523
I serve as an antibiotic steward for my patients	3.08	4.08	<0.001
Other nurses on my unit function as antibiotic stewards	3.13	3.82	<0.001
Nurses should be involved in antibiotic stewardship	3.89	4.30	<0.001
I am familiar with the 4 moments of antibiotic decision making	1.97	3.95	<0.001

1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree

RESULTS (continued)

I am confident in my ability to:	Pre	Post	P-Value
Recognize difference between colonization and infection	3.13	3.76	<0.001
Identify unnecessary urine cultures and inappropriate treatment of UTIs	3.15	4.08	<0.001
Ensure cultures are obtained appropriately	4.30	4.60	0.003
Help inform decisions to start antibiotics promptly when signs of sepsis are identified	3.71	4.32	<0.001
Evaluate continued antibiotic use once additional data is available	3.39	4.06	<0.001
Review microbiology results to guide optimal selection of antibiotics	2.67	3.67	<0.001
Identify opportunities for IV to PO de-escalation	3.00	4.06	<0.001
Assess for potential adverse events associated with antibiotics	3.82	4.37	<0.001
Obtain and record accurate drug allergy histories	3.87	4.30	0.002

CONCLUSIONS

- Education on the role of nurses in AS provided in an asynchronous, brief educational format via a mobile platform resulted in statistically significant improvement in 90% (18/20) of topics
- After course completion, participants felt more confident in their ability to participate in key AS activities
- Nurses are integral members of a multidisciplinary AS team and should be empowered to help reduce unnecessary antibiotic use in their patients
- This study forms the basis for expanded AS educational efforts for all healthcare professionals

REFERENCES

1. Redefining the antibiotic stewardship team: recommendations from the American Nurses Association/Centers for Disease Control and Prevention Workgroup on the role of registered nurses in hospital antibiotic stewardship practices. *JAC Antimicrob Resist.* 2019;1(2):dlz037.