

# Identifying Opportunities and Priorities for Antimicrobial Stewardship in a Tertiary ICU: A Qualitative Study

John Groumoutis, B.Sc.(Pharm); Jessica Beach, B.Sc.(Pharm), ACPR, PharmD;  
Sean Gorman, B.Sc.(Pharm), ACPR, PharmD; Piera Calissi, B.Sc.(Pharm), PharmD, FCSHP

## Background and Rationale

### Background

- Antimicrobial stewardship (AMS): coordinated interventions that seek to optimize antimicrobial use
- 50-70% of ICU patients exposed to antimicrobials during stay
- Mortality rate double in infected vs non-infected ICU patients

### Rationale

- ICUs are a high priority area for AMS given the high consumption of antimicrobials and critically ill patients
- It is unclear what perceived opportunities there are for AMS interventions in ICU, and what interventions ICU staff would prefer

## Objectives

- To determine perceived areas for improvement of antimicrobial use in ICU
- To determine barriers to optimal antimicrobial use in ICU
- To identify possible novel and/or evidence-based antimicrobial stewardship interventions for implementation in the ICU

## Methods

### Study design

- Prospective qualitative descriptive study

### Setting and Sampling

- Royal Inland Hospital (RIH), Kamloops BC
- Purposeful sample

### Study population

- Physicians, nurses, respiratory therapists at RIH

### Data collection

- 20-30 minute, 1:1 semi-structured interviews

### Data analysis

- Audio recordings transcribed verbatim
- Inductive semantic coding and theming completed using NVivo 12

### Measures to improve methodological rigour

- Independent parallel coding and member checking

## Results

### Table 1. Participant demographics

Experience in ICU (years)	Physicians (n=2)	Nurses (n=7)	Total (%)
0-4.9		2	2 (22%)
5-9.9	1	2	3 (33%)
>10	1	2	3 (33%)
Unknown		1	1 (11%)

\*No participants had formal training in infectious disease beyond medical residencies or standard nursing education

### Table 2. Opportunities

Themes	Quote
Communication of antimicrobial treatment plan	"I guess like, in our report tool – like, what antibiotics are on so people can make that mental connection." (RN)
De-escalation of antimicrobials	"So the length is one thing, and then switching from IV to PO, or stepping down to a narrower antibiotic from a broader spectrum antibiotic..." (MD)
Infectious diseases input	"In other words, like learning or having a second opinion from infectious diseases is helpful." (MD)
ICU nurse assessment	"I would prioritize the nurses touching on it in the morning during rounds... Assess how that's going, how long they been on it, how effective it is..." (RN)
AMS program presence	"I wouldn't say that they really have any – like, their presence is not felt in our ICU whatsoever." (MD)

### Table 3. Barriers

Themes	Quote
Infectious disease and antimicrobial knowledge	"Our schooling in particular was pretty lacking in the microbiology aspect. Not a lot of infectious disease." (RN)
Lack of AMS awareness	"Not sure if I know exactly what antimicrobial stewardship is." (RN)
AMS not a nursing role	"I guess we have a very small, like fundamental education on it but ultimately it'll come down to the pharmacists and physicians." (RN)
Competing priorities	"...but other days are quite busy, so I think another checklist is kind of another piece of paperwork that people would just not always be the most responsive to." (RN)
Critical care environment	"...there's actually not a lot of good data on how long somebody should be treated for a pneumonia, for example." (MD)

## Table 4. Suggested Interventions

Themes	Quote
EMR modifications	"So, it would be nice if when a culture comes up that local resistance patterns are acceptable – accessible, with a click." (MD)
Checklists	"...they could sort of go through those questions like "Do we have microbiology? Are we on the right drug? Do we still need to be on therapy?" (MD)
Algorithms	"I think the algorithms work, and pathways... If it's simple and easy to follow, then it will get used." (RN)
Infectious disease and antimicrobial education	"I wouldn't mind an inservice actually on the differences... kind of a basic knowledge of Gram-negative versus Gram-positives and learning about different sensitivities" (RN)
Audit and feedback	"...there would be audit and feedback or some guidance from somebody who is - like that is their specific role." (MD)
Nurse reassessment and prompting	"...we're with the patient for twelve hours a day and we could totally touch on – on whatever antimicrobial they're on in the morning during rounds and the pharmacist is there and the doc is there to reassess how long they've been on it." (RN)

## Discussion

### Strengths

- Nursing perspectives likely well represented
- Methodological rigour improved through parallel independent coding of transcripts, coding transcripts twice, and integrating member checking into interviews

### Limitations

- Physician perspectives may have been underrepresented
- No participation in study by respiratory therapists
- Did not meet target of minimum 10 interviews

## Conclusions

- Identified **opportunities** for improvement involve healthcare professionals both as practitioners and resources for stewardship
- Identified **barriers** to optimal usage include knowledge gaps, competing priorities, the critical care setting, and the nurse's perceived role in AMS
- Suggested **interventions** for implementation include education, integration of clinical tools, and ICU nurses prompting antimicrobial reviews

## Future initiatives

- Determine which interventions identified in this qualitative study are preferred by RIH ICU staff
- Implement preferred interventions and assess impact on antimicrobial use

