



# Action: A Year in the Lives of Consultant Pharmacists Working on Antimicrobial Stewardship in Long-Term Care Facilities

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## BACKGROUND

- Published literature suggests antimicrobial prescribing practices in long-term care facilities (LTCF) are highly variable, with inappropriate prescribing ranging from 40 to 75%
- The CDC recommends consultant pharmacists support antimicrobial stewardship (AS) activities in LTCF by reviewing antimicrobial appropriateness
- The University of Nebraska Medical Center/Nebraska Medicine initiated a project to train pharmacists from a regional long-term care pharmacy (LTCPh) to support AS implementation in LTCF

## METHODS

- We partnered with a regional LTCPh that dispenses and reviews medications for over 40 LTCF, of which 32 agreed to participate
- Pharmacists were trained to evaluate appropriateness of all systemic antimicrobial therapy (AT) and provide prescriber feedback during their monthly drug regimen review
- Training provided to pharmacists included AS core elements, appropriate indications for AT in LTCF, tools available to promote appropriate use, and data to steer AS programs
- Pharmacists attended AS meetings, assisted with the implementation of AU protocols, met with infection preventionists to address barriers to implementation, reviewed all AT prescribed, sent feedback letters to prescribers upon identifying opportunities for improvement, and provided AU data for performance improvement
- Monthly meetings were held with pharmacists to answer questions and provide suggestions to overcome barriers to implementation
- An electronic database (APP) was developed to facilitate data capture and reporting
- Antimicrobial use (AU) and adverse events (AE) from the 32 LTCF were analyzed for 2018 using descriptive and inferential statistics

## DISCLOSURE

This work is supported by an investigator initiated study grant from Merck & Co. Inc.

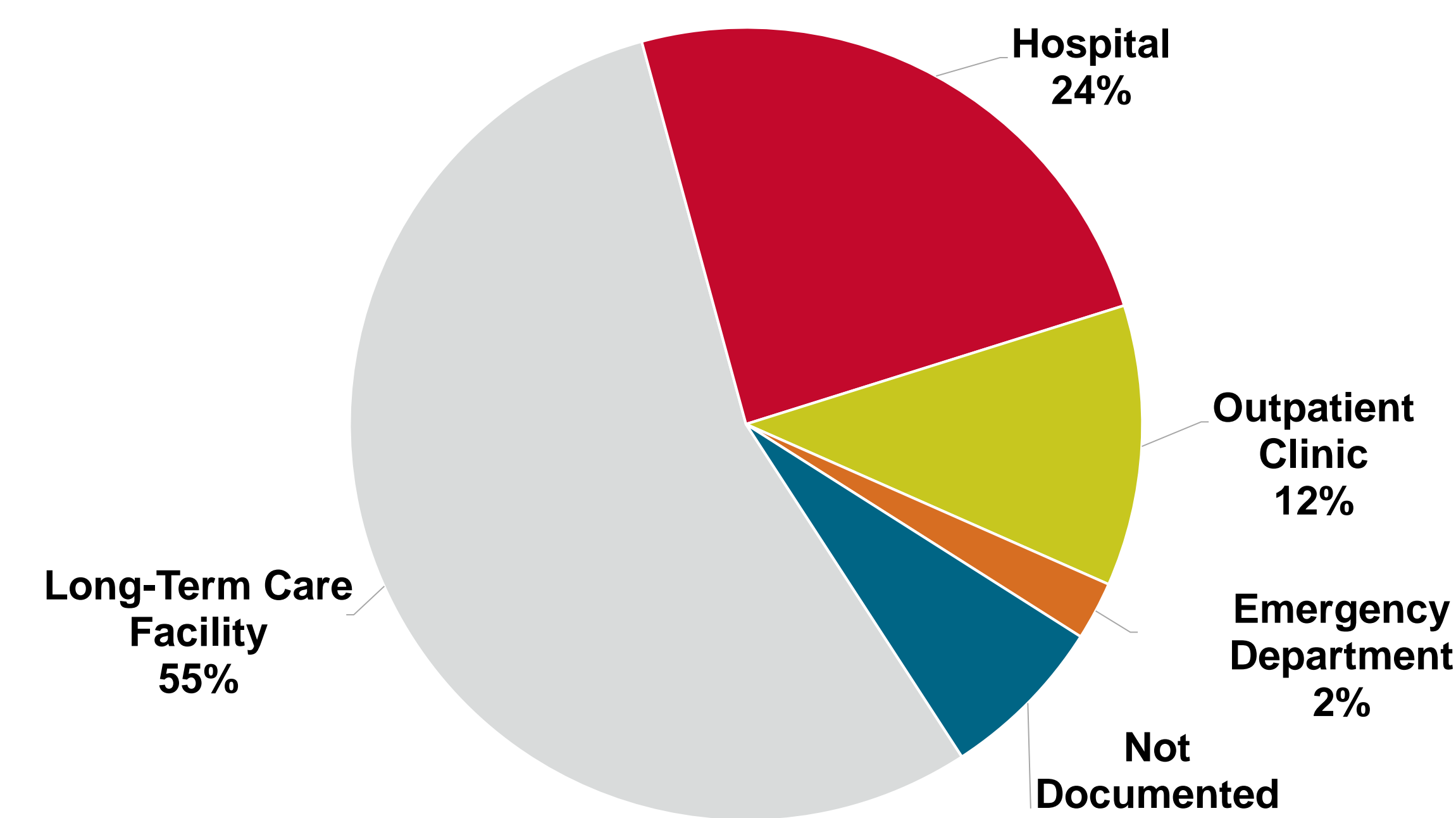
## REFERENCES

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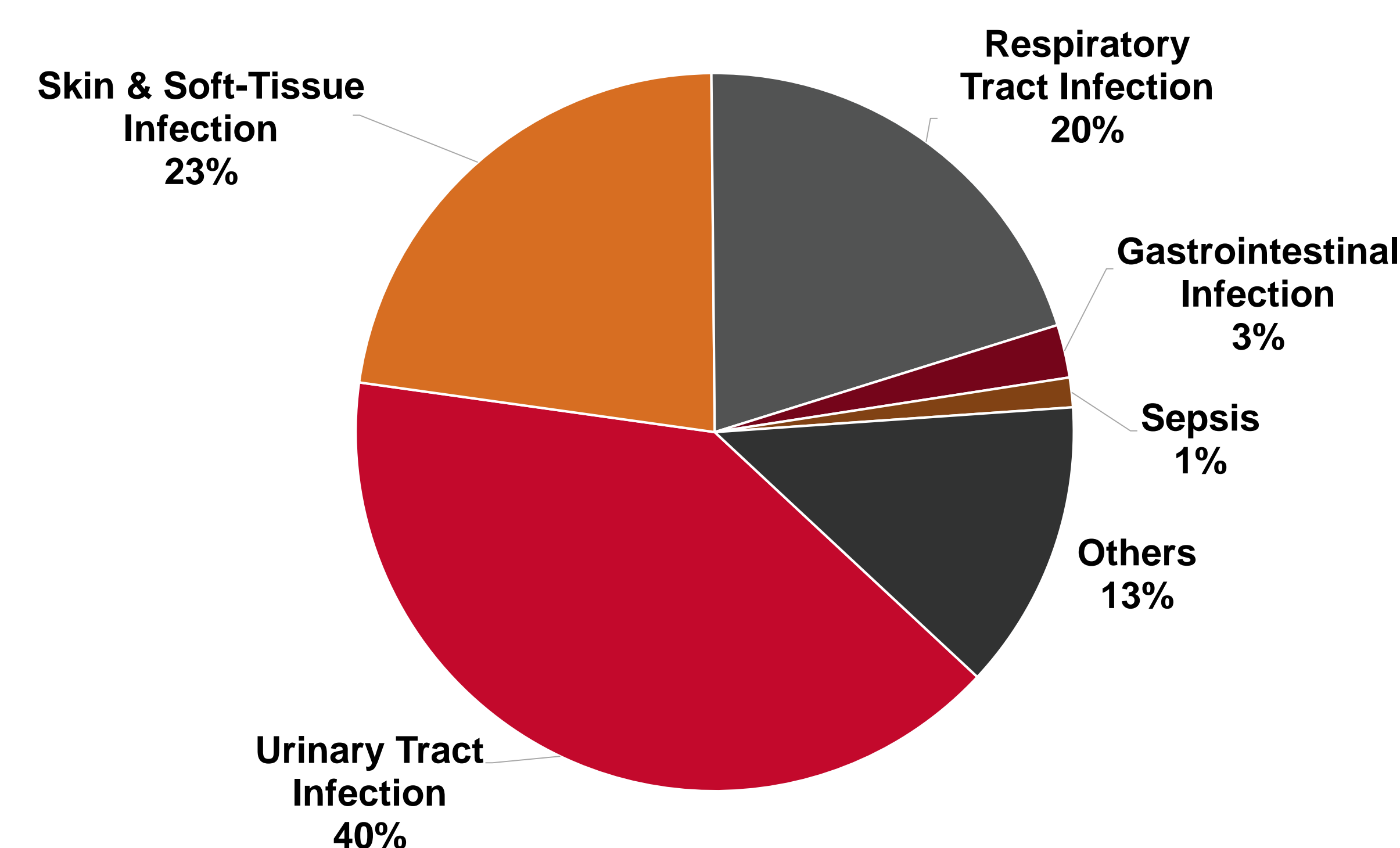
## RESULTS

- A total of 5327 courses of AT with a median duration of therapy of 7 days (IQR 5-10) were prescribed amongst these 23 LTCF in 2018
- Diagnostic testing was associated with only 37% of AT courses
- Of the 2926 AT initiated in LTCF, 36% were based on nurse evaluation (NE) while 33% began after prescriber evaluation (PE)
- Overall, 2158 (41%) of AT was determined to be inappropriate, resulting in >800 feedback letters sent to prescribers
- AT appropriateness varied by care setting in which it was initiated  
Hospital: 87%                      Emergency department: 56%  
LTCF: 49%                         Outpatient clinic: 46%
- For LTCF-initiated AT courses, appropriateness was higher when AT was started based on PE compared to NE (59% vs. 42%,  $p<0.05$ )
- AE were associated with 3% of AT; *Clostridioides difficile* infections (0.7%) and allergic reactions (0.4%) were the most common
- Folate antagonists (5%) and fluoroquinolones (3%) were most commonly implicated in AE encountered

## Locations of Antimicrobial Therapy Initiation



## Indications for Antimicrobial Therapy

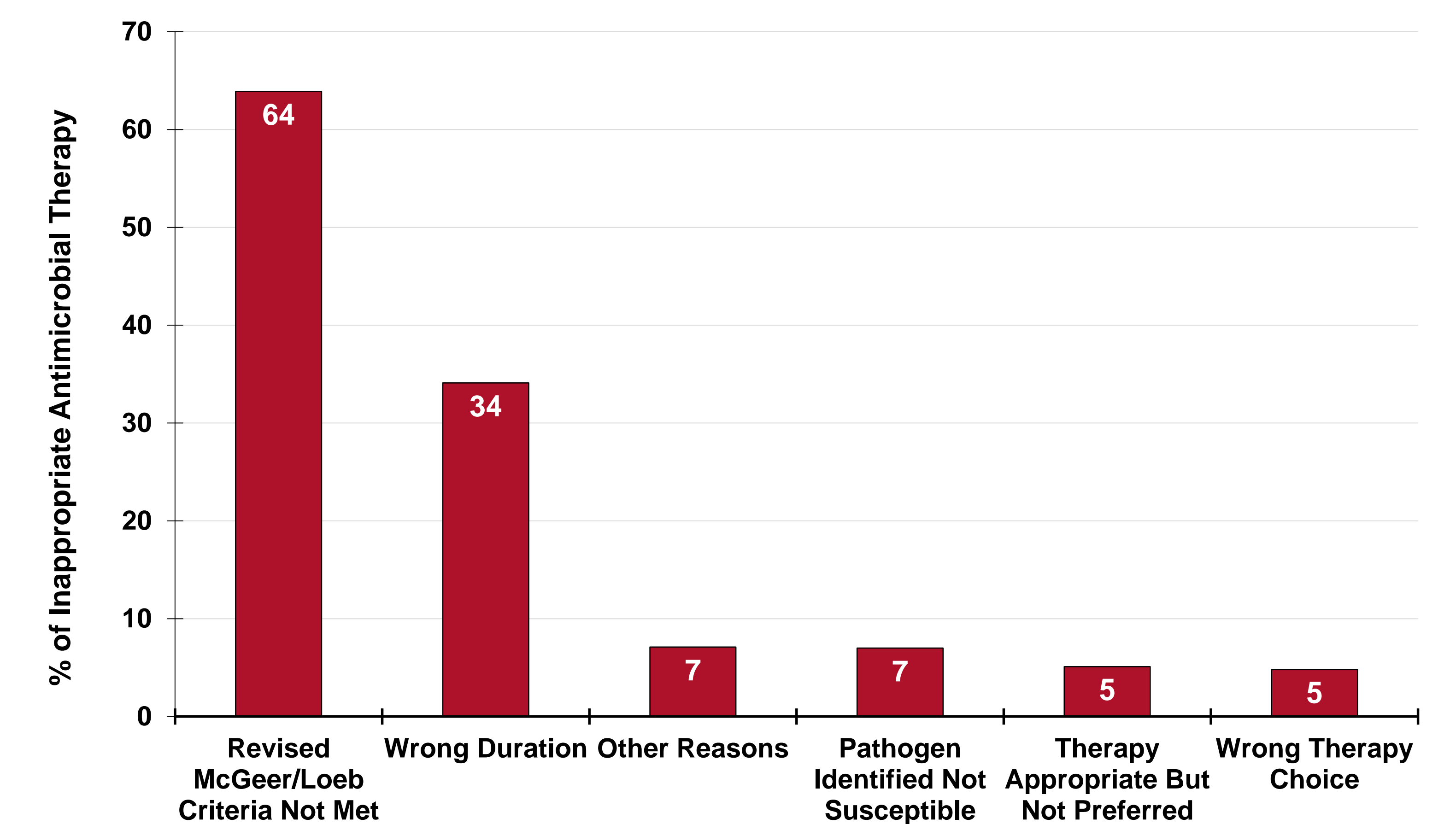


## Antimicrobial Classes Prescribed

| Antimicrobial Class                         | Number Prescribed (% Total) |
|---|-----------------------------|
| Cephalosporins, All                         | 1295 (24.3)                 |
| First-Generation                            | 742 (13.9)                  |
| Second-Generation                           | 96 (1.8)                    |
| Third-Generation                            | 431 (8.1)                   |
| Fourth-Generation                           | 26 (0.5)                    |
| Fluoroquinolones                            | 1151 (21.6)                 |
| Others                                      | 680 (12.8)                  |
| Folate Antagonists*                         | 507 (9.5)                   |
| Urinary Anti-Infectives†                    | 446 (8.4)                   |
| Tetracyclines                               | 371 (7.0)                   |
| β-Lactam/β-Lactamase Inhibitor Combinations | 330 (6.2)                   |
| Macrolides                                  | 214 (4.0)                   |
| Penicillins                                 | 172 (3.2)                   |
| Azole Antifungals                           | 161 (3.0)                   |

\* Folate antagonists include trimethoprim and trimethoprim-sulfamethoxazole  
† Urinary anti-infectives include nitrofurantoin and fosfomycin

## Common Reasons for Inappropriateness



## CONCLUSIONS

- This review demonstrates many antimicrobial use improvement opportunities exist in LTCF and consultant pharmacists can play an important role in identifying them if trained in antimicrobial stewardship principles
- Consultant pharmacist should review all antimicrobial use for appropriateness and provide data to inform antimicrobial stewardship efforts in LTCF