NEBRASKA ANTIMICROBIAL STEWARDSHIP ASSESSMENT AND PROMOTION PROGRAM NE ASAP

Educational Topics for Antimicrobial Stewardship in Long-Term Care

Topic	Concepts	Audience	Principles, Learning Outcomes, and Competencies
Antimicrobial Resistance	• Selection • Mutation	• Prescribers • Infection Preventionists • Nurses	• Extent and causes of resistance in pathogens (low antimicrobial concentration and prolonged exposure of microorganisms to antimicrobials is driving resistance) • Extent and causes of resistance in commensals • Secondary infections (e.g. *Clostridioides difficile* infection, yeast infections) • Antibiogram education on local resistance patterns and importance of surveillance
	• Infection Prevention and Control	• Prescribers • Infection Preventionists • Nurses • Environmental Services Staff • Residents/Families	• How resistant organisms spread • How organisms become resistant to antibiotics • Genes that are particularly concerning for high-level resistance
Antimicrobial Agents	• Mechanisms of action • Resistance • Toxicity • Cost	• Prescribers • Infection Preventionists • Nurses	• Broad-spectrum versus narrow-spectrum antimicrobials; preferred choice of narrow-spectrum agents • Combination therapy (synergy, limiting emergence of resistance; broaden the spectrum) • Collateral damage of antimicrobial use (toxicity, cost) • Consequences of bacterial resistance (isolation, alternative antibiotics, cost) • Lack of development of new antimicrobials
Diagnosing Infection	• Infection • Inflammation	• Prescribers • Infection Preventionists • Nurses	• Interpretation of clinical and laboratory biological markers • Fever can be a sign of inflammation, not necessarily indicative of an infection • Use and communication of Loeb minimum criteria for initiating antibiotic therapy
	• Isolation and identification of bacteria, viruses and fungi	• Prescribers • Infection Preventionists • Nurses	• Practical use of point-of-care tests • Importance of taking microbiological samples for culture before starting antimicrobial therapy
	• Antimicrobial Susceptibility	• Prescribers • Infection Preventionists • Nurses	• Interpretation of basic microbiological investigations (e.g. Gram stain, culture, polymerase chain reaction, serology) • Understanding of MIC • Interpretation of antibiotic sensitivity testing results

Treating Infection	• Indication for antimicrobials	• Prescribers • Infection Preventionists • Nurses	• Definitions of, and indications for, empirical/directed therapy versus prophylaxis • Clinical situations when an antimicrobial should not be prescribed • Colonization versus infection (e.g. asymptomatic bacteriuria) • Viral infections (e.g. acute bronchitis)
Medical record keeping	• Antibiotic choice • Duration • Timing	• Prescribers • Infection Preventionists • Nurses	• Documentation of antimicrobial indication in clinical notes • Recording (planned) duration or stop date
Prescribing antimicrobials : Initially	• Local resistance • Likely pathogens • Durations	• Prescribers • Infection Preventionists • Nurses	• Most likely causative pathogens • Choice of empirical therapy in patients with previous antimicrobial treatment • Managing penicillin allergy • Choosing dose/interval of administration (basic principles of PK/PD) • Estimating the shortest possible adequate duration
Prescribing antimicrobials : Targeted therapy	• Efficacy • De-escalation	• Prescribers • Infection Preventionists • Nurses	• Antibiotic Time Out: Reassessment of antimicrobial prescriptions after 48–72 hours • Streamlining or de-escalation once microbiological results are known • Intravenous-to-oral switching (bioavailability of antimicrobials)
Prescribing antimicrobials: Standard of care	• Importance of guidelines in clinical practice	• Prescribers • Infection Preventionists • Nurses	• Prescribing antimicrobial therapy according to national or local practice guidelines • Utilization of antibiograms to guide empiric therapy
	• Quality indicators of antimicrobial use	• Prescribers • Infection Preventionists • Nurses	• Audit and feedback to assess prescribing practice using quality indicators (e.g. guideline or facility tool compliance)
Communication Skills	• Discussion techniques	• Prescribers • Infection Preventionists • Nurses • Residents • Families	• Explaining to the resident and family the absence of an antimicrobial prescription • Education of residents and family members regarding appropriate antibiotic use • Education of residents and family members regarding potential side effects or drug-drug interactions with antibiotic use

References:

1. Pulcini C, Gyssens IC. How to educate prescribers in antimicrobial stewardship practices. Virulence 2013;4(2):192–202
2. Antimicrobial Stewardship in Australian Health Care 2018, Australian Commission on Safety and Quality in Health Care: Chapter 5

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