TEN KEY POİNTS FOR APPROPRİATE ANTİBİOTİC USE İN HOSPİTALİZED PATİENTS

1. Get appropriate microbiologic samples before antibiotic initiation and interpret results carefully Appropriate microbiologic sample(s) should be collected using proper techniques before starting antibiotic whenever possible. Once results become available, determine whether the organism represents the cause of the infection, a colonizer, or a contaminant. Antibiotics should not be used to treat contaminants or colonizers without clinical signs of infection.
2. Avoid the use of antibiotics to treat fever There are many causes for fever that do not respond to antibiotics (i.e., viral infections). Fever is not always a manifestation of infection and should not be the only determinant for initiation of antibiotic therapy. In addition to abnormal body temperature, a detailed history and physical examination and laboratory testing should be performed to identify the likely source of infection. Antibiotic should not be used unless a strong suspicion or evidence of infection has been identified.
3. When indicated, select empiric therapy based on site of infection, risk factors for multidrug resistant (MDR) bacteria, and the local microbiology and susceptibility patterns Factors such as the infection present and its severity, recent antibiotic therapy, personal history of MDR bacteria, recent procedures, incidence of MDR within the institution/specific units, and patient location when symptoms began (nosocomial vs. outpatient) should form the basis for selection of empiric therapy.
4. Prescribe antibiotics at the optimal dose, route and duration, adapted to each clinical situation and patient characteristics Antimicrobial pharmacokinetic/pharmacodynamic (PK/PD) parameters should be considered in order to maximize antibiotic exposure and bacterial killing, and improve patient outcomes. Antimicrobial PK (i.e., absorption, distribution, metabolism, and elimination) and PD (i.e., timedependent vs. concentration-dependent) properties are important factors to consider when selecting the optimal antimicrobial agent, dosing regimen, and route of administration.
5. Use combination therapy only in scenario where current evidence suggests some benefit Published data on the use of combination therapy is conflicting and may be harmful in some patients. It should be reserved for specific clinical scenario where benefit exists. Empiric combination therapy should be considered if a patient has a history of highly resistant pathogens,

or has severe illness (i.e., meningitis, septic shock, severe pneumonia, etc.). Empiric combination therapy should cover all anticipated pathogens and be de-escalated once microbiologic data become available and/or the patient shows signs of clinical improvement.

6. When possible, minimize use of antibiotics associated with a higher likelihood of promoting drug resistance or hospital-acquired infections All antimicrobials can result in serious side effects and also exert selective pressure favoring persistence/dominance of resistant organisms. The composition of bacterial populations, PK/PD, and mechanism of action all have a complex relationship on the likelihood of promoting antibiotic resistance. Agents which target DNA replication (e.g., fluoroquinolones) may be more likely to induce resistance. Similarly, agents with long half-lives may maintain sub-inhibitory concentrations in the body and promote pathogens with resistance phenotype. Some antibiotics are more commonly associated with the development of C. difficile infection (i.e., clindamycin, fluoroquinolones, broad-spectrum cephalosporins, carbapenems) and should be restricted to patients where less toxic options are not available.

7. Control the infection source by draining infection foci and removing all infected devices Undrained infection foci (e.g., abscess/phlegmon) can reduce the effectiveness of antimicrobial therapy by limiting access to the site of infection and altering antimicrobial activities. Similarly, certain pathogens can form biofilms on infected prosthetic devices, limiting antibiotic access to these pathogens. Both situations can lead to treatment failure and the development of antimicrobial resistance. In order to maximize the possibility of microbiologic and clinical cure, infection source control should be a priority.

8. Always try to de-escalate and streamline therapy based on clinical and microbiologic data When additional clinical and microbiologic data become available at 48-72 hours, the need to continue antibiotic therapy should be evaluated. If clinical signs and symptoms and microbiologic testing supports a non-infectious diagnosis, antibiotic therapy should be discontinued. If antibiotic therapy is deemed necessary, the most active agent with the least toxicity, narrowest spectrum of activity, and lowest costs should be selected for therapy completion.

9. Stop antibiotics as soon as significant bacterial infection is deemed unlikely As part of process improvement for antimicrobial prescribing practices, antibiotic therapy should be discontinued if clinical suspicion for an infectious diseases diagnosis is unlikely. Improvement while on

antibiotics should not be considered adequate justification to continue antibiotics if other data points to a non-infectious cause of illness.

10. Set up local teams with ID specialist, clinical microbiologist, pharmacist, infection preventionists or hospital epidemiologist and ensure compliance with hospital prescribing guidelines Individuals from different professional disciplines interested in improving antibiotic use within an institution should form a team and work collaboratively (i.e., an antimicrobial stewardship program) to improve prescribing. This team should draft institutional treatment guidelines to standardize antimicrobial prescribing best practices and ensure their active implementation