

Antibiotic Stewardship in Dentistry

- **General antibiotic prescribing**
 - **U.S. outpatient antibiotic prescribing**
 - **Health care providers prescribed an ~263 MM courses of antibiotics (2011)**
 - **Most frequently prescribed**
 - **Estimated 30%-50% of prescribed antibiotics are not optimally prescribed or unnecessary**

- **Antibiotic prescribing in dentistry**
 - **Dentists prescribe ~10% of antibiotic courses in community ~est. 25MM courses (2013)**
 - **Most frequently prescribed**
 - **Clinical rationale**
 - **Periodontitis**
 - **Acute infections**
 - **Prophylaxis**

- **Unintended consequences of antibiotic prescribing**
 - **Antibiotic resistance global health threat**
 - **Est. 2MM infections due to antibiotic resistant bacteria annually**
 - **23,000 deaths**
 - **Adverse drug events**
 - **ED visits**
 - **C. difficile infections (CDI)**
 - **Antibiotic allergy**
 - **Microbiome disruption**

- **Antibiotic stewardship in dentistry**
 - **Responsible prescribing to prevent antibiotic resistance is not a new issue**
 - **ADA Guidelines (2004)**
 - **ADA participation in 2015 White House Forum on Antibiotic Stewardship**
 - **Suggestions to support stewardship**
 - **ADA has adopted evidence-based approach to guideline development**
 - **Prophylaxis indications have decreased**

- **Status of antibiotic prophylaxis for prosthetic joint replacement patients – Where are we?**
 - **Total joint arthroplasty**
 - **Projected annual rates (est. 2030)**
 - Hip ↑ 174% → 572,000
 - Knee ↑ 673% → 3.48 MM
 - **7MM Americans living with hip or knee replacements**
 - **Total joint arthroplasty revision**
 - **Projected annual revision rates**
 - Hip ↑ 137% → 97,000
 - Knee ↑ 601% → 260,000
 - **Etiology**
 - Mechanical
 - Infection
 - **Prosthetic joint infection (PJI) rates**
 - **Est. 0.3% to 8+%**
 - **Early → late infections**
 - **Substantial morbidity**
 - **PJI prevention**
- **Evolution of antibiotic prophylaxis guidance**
 - **1997 Advisory Statement “Antibiotic Prophylaxis (AP) for Dental Patients with Total Joint Replacement (TJR)”**
 - **ADA and AAOS**
 - **Major issues**
 - Bacteremia and PJI risk
 - Identifying patients at higher PJI risk
 - Procedures with higher bacteremia risk
 - AP strategies
 - Analogy with IE invalid
 - **Patients potentially at increased PJI risk**
 - TJR within last 2 years
 - Increased medical risk
 - **Guidelines supplement clinical judgement**
 - **Lack of supporting scientific evidence**
 - **Legal commentary when physician recommendation ≠ dentist judgement**

- **2003 Advisory Statement**
 - **1997 Advisory Statement update**
 - **Minor modifications/emphasis**
 - **Classification of patients at risk**
 - **Bacteremic dental procedures**
 - **AP recommendations**
 - **All patients first two years post-surgery**
 - **High risk patients/high risk procedures beyond two years**
- **2009 AAOS Information Statement “Antibiotic Prophylaxis for Bacteremia in Patients with Joint Replacements”**
 - **Educational tool developed independently by AAOS**
 - **Recommended life-time prophylaxis**
 - **Substantial criticism from dentistry**
- **2012 AAOS/ADA Clinical Practice Guideline “Prevention of Orthopaedic Implant Infection in Patients Undergoing Dental Procedures”**
 - **Collaborative effort**
 - **Formal evidence-based guidelines**
 - **Limited recommendations with graded rationale**
 - **Educational tool for clinicians**
 - **Clinician uncertainty**
 - **No clear advice on AP need**
 - **No population distinctions**
 - **Antibiotic selection and dosing lacking**
 - **ADA recognition practitioners needed improved clinical guidance**
- **2015 ADA Evidence-based Clinical Practice Guideline for Dental Practitioners**
 - **ADA convened expert panel**
 - **Evidence review**
 - **Updated literature review**
 - **Case-control studies**
 - **No AAOS endorsement**
 - **Recommendations**
 - **In general, AP not recommended prior to dental procedures to prevent PJI**
 - **Consider clinical circumstances**
 - **Integrate recommendations with professional judgement, patient needs and preferences**
 - **Not intended to be standard of care**

- **2016 AAOS/ADA Appropriate Use Criteria (AUC)**
 - **Web-based application/decision support tool**
 - **Identify indications for at-risk patients**
 - **Antibiotic prophylaxis recommendations**
 - **Practical clinical scenarios**
- **Conclusion**
 - **Antibiotic prophylaxis issue is unresolved**
 - **Clinician experience, judgement and patient preferences likely to remain important for foreseeable future**
 - **AP guidelines will continue to evolve**
 - **Supplemented by Appropriate Use Criteria and Cost-effectiveness studies**