

# Initial Implementation of an antimicrobial stewardship program in an academic dental health clinic



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# Learning Objectives

- ▶ Participants will become familiar with CDC core elements for initial implementation of an antibiotic stewardship program in an ambulatory clinic setting
- ▶ Participants will gain awareness of the positive experiences and challenges of an antibiotic stewardship implementation program piloted in a dental clinic
- ▶ Participants will be able to apply aspects of stewardship efforts to their own clinical environment.

# University of Illinois at Chicago College of Dentistry




- One of seven health science colleges at the University of Illinois at Chicago Hospital and Health System
- Educational Program includes a traditional 4 year DMD and a 2.5 Year Advanced Standing DMD Program
- Post Graduate Specialty Programs: Oral and Maxillofacial Surgery, Orthodontics, Pediatric Dentistry, Endodontics, Periodontics and Prosthodontics
- 140,000 Annual Patient Visits, for 36,000 patients in 15 student and specialty clinics

# CDC core elements of Outpatient Antibiotic Stewardship



## Initial steps for antibiotic stewardship:

- ▶ recognize opportunities to improve antibiotic prescribing practices by identifying high-priority conditions
- ▶ identifying barriers to improving antibiotic prescribing
- ▶ establishing standards for antibiotic prescribing



Recognize opportunities to improve antibiotic prescribing practices by identifying high-priority conditions

## High Priority Conditions in Dentistry

- ▶ Infection of Odontogenic Origin
- ▶ Antibiotic Prophylaxis for patients at risk for Infectious Endocarditis, history of Total Joint Replacement and/or complex medical conditions
- ▶ Surgical Antibiotic Regimen
- ▶ Periodontal and Soft Tissue Infection



# Identifying barriers to improving antibiotic prescribing

- Collaboration Required : Antimicrobial stewardship resources for UI Health
- Lack of Standardization, recognized during initial data analysis
- Lack of Communication



# Communication Enhancements

- Monday Minutes
- Presentations by Content Experts
- Signage

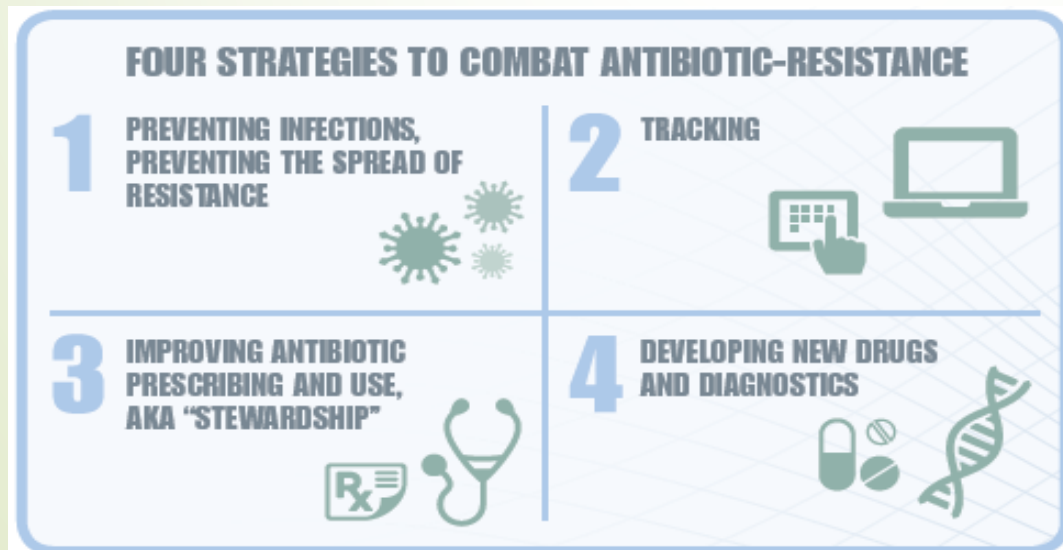
**Monday, November 13, 2017:**  
**Be Aware that Antibiotic Resistance Affects Us All**

# Monday Minutes





Antibiotic resistance can happen to your patient, your parent, your child, or yourself.  
Antibiotic resistance is a problem we all must fight together.



The major driver of antibiotic resistance is use (and overuse) of antibiotics in healthcare and animals/agriculture.  
**Therefore, these precious resources should only be used to treat infections when needed.**



### FOUR STRATEGIES TO COMBAT ANTIBIOTIC-RESISTANCE

- 1 PREVENTING INFECTIONS, PREVENTING THE SPREAD OF RESISTANCE**  

- 2 TRACKING**  

- 3 IMPROVING ANTIBIOTIC PRESCRIBING AND USE, AKA "STEWARDSHIP"**  

- 4 DEVELOPING NEW DRUGS AND DIAGNOSTICS**  






The Monday Minute

# Monday Minutes



## Checklist for Antibiotic Prescribing in Dentistry

### Prescribing

- Ensure evidence-based antibiotic references are readily available during patient visits.
- Avoid prescribing based on non-evidence-based historical practices, patient demand, convenience, or pressure from colleagues.
- Make and document the diagnosis, treatment steps, and rationale for antibiotic use (if prescribed) in the patient chart.
- Prescribe only when clinical signs and symptoms of a bacterial infection suggest systemic immune response, such as fever or malaise along with local oral swelling.
- Revise empiric antibiotic regimens on the basis of patient progress and, if needed, culture results.
- Use the most targeted (narrow-spectrum) antibiotic for the shortest duration possible (2-3 days after the clinical signs and symptoms subside) for otherwise healthy patients.
- Discuss antibiotic use and prescribing protocols with referring specialists.

<http://tinyurl.com/dentalabxlist>



The Monday Minute



## Antibiotic Prophylaxis 2017 Update Prophylaxis Recommendations

These recommendations are taken from 2017 American Heart Association and American College of Cardiology focused update of the 2014 AHA/ADA Guideline for Management of Patients with Valvular Disease and cited by the ADA.

Prophylaxis against infective endocarditis is reasonable before dental procedures that involve manipulation of gingival tissue, manipulation of the periapical region of teeth, or perforation of the oral mucosa in patients with the following:

1. Prosthetic cardiac valves, including transcatheter-implanted prostheses and homografts.
2. Prosthetic material used for cardiac valve repair, such as annuloplasty rings and chords.
3. Previous IE.
4. Unrepaired cyanotic congenital heart disease or repaired congenital heart disease, with residual shunts or valvular regurgitation at the site of or adjacent to the site of a prosthetic patch or prosthetic device.
5. Cardiac transplant with valve regurgitation due to a structurally abnormal valve.



**BE  
ANTIBIOTICS  
AWARE**  
SMART USE, BEST CARE

# Monday Minutes

## Patients with Joint Replacement

The following recommendation is taken from the ADA Chairside Guide (© ADA 2015)

- In general, for patients with prosthetic joint implants, prophylactic antibiotics are not recommended prior to dental procedures to prevent prosthetic joint infection.
- In cases where antibiotics are deemed necessary, it is most appropriate that the orthopedic surgeon recommend the appropriate antibiotic regimen and when reasonable write the prescription

## Additional Considerations

The practitioner and patient should consider possible clinical circumstances that may suggest the presence of a significant medical risk in providing dental care without antibiotic prophylaxis as well as the known risks of frequent or widespread antibiotic use. As part of the evidence-based approach to care, this clinical recommendation should be integrated with the practitioner's professional judgment in consultation with the patient's physician, and the patient's needs and preferences.



# Monday Minutes

## The Monday Minute



Excerpt from "The Use and Abuse of Antibiotics"

*"The Proper Clinical Use of Antibacterial Drugs for acute apical abscesses with systemic symptoms:*

*Understanding the enemy is an important factor in winning any battle. The rational choice and use of antimicrobial agents begins with the knowledge of the microorganisms most likely responsible for common dental infections of pulpal origin. The bacterial flora found in endodontic infections is indigenous, mixed (Gram-positive and Gram-negative) and predominately anaerobic. Several species have been implicated with acute apical abscesses. These species include darkpigmented bacteria (Prevotella and Porphyromonas), eubacteria, fusobacteria and Actinomyces.*



# Monday Minutes

## The Monday Minute



This is the last Monday Minute in the series focusing on Antibiotic stewardship.

**Updated information from the 2017 AAE Guidance on the Use of Systemic Antibiotics in Endodontics** (thank you, Dr. Johnson!) ([file:///Users/owner/Downloads/aae\\_systemic-antibiotics\\_2017.pdf](file:///Users/owner/Downloads/aae_systemic-antibiotics_2017.pdf))

Antibiotics should only be used as adjuvant therapies in cases with evidence of systemic involvement (fever, malaise, cellulitis and/or lymphadenopathies) following adequate endodontic disinfection and abscess drainage if swelling is present. In addition, patients who are immunocompromised or have predisposing conditions such as previous endocarditis should be medicated as a prophylactic measure.

Penicillin VK and amoxicillin, both beta-lactam antibiotics, are the first line of antibiotics chosen as adjunct therapeutic agents in endodontics in the United States of America and Europe

### **Amoxicillin demonstrates greater efficacy and therapeutic value because:**

1. It has broader spectrum and is more effective than penicillin VK against certain gram-negative anaerobes due to better microbial penetration;
2. It is more readily absorbed from the gastrointestinal (GI) tract than penicillin VK, which is poorly absorbed and its accumulation in the GI tract is associated with depletion of commensal flora and digestive disturbances;
3. Its absorption is not impaired by food reaching peak plasma levels within 2 hours of ingestion;
4. Only approximately 20% of absorbed amoxicillin is protein-bound in the plasma, being more readily available;



# Antibiotic Stewardship Presentations

## Dr. Alan Gross

University of Illinois at Chicago Clinical Assistant Professor and Clinical Pharmacist for the Antimicrobial Stewardship Program, and Chair of the Antimicrobial Stewardship Committee for the Society of Infectious Diseases Pharmacists.

- ▶ Faculty, student and staff participation
- ▶ Recorded and maintained on Faculty Development Site

# SIGNAGE

## Clinical



### Infection Control

**UIC DENTISTRY**

**MAINTAINING THE STANDARD OF CARE WITH REGARD TO INFECTION CONTROL**

**OBJECTIVE**  
To assure compliance with the standards set forth by the College of Dentistry Infection Control Committee.

**POLICY**  
It is the College of Dentistry's policy to ensure that all dental procedures are performed in a safe and clean environment. The College of Dentistry is committed to providing a safe and clean environment for all patients and staff.

**PROcedures**  
The Infection Control Committee is responsible for the development and implementation of infection control policies and procedures. The committee is composed of representatives from all dental departments and the College of Dentistry.

- 1. All staff and students must adhere to the infection control policies and procedures.
- 2. All staff and students must receive appropriate training in infection control.
- 3. All staff and students must use appropriate personal protective equipment (PPE).
- 4. All staff and students must follow the proper procedures for the disposal of sharps and biohazardous waste.
- 5. All staff and students must follow the proper procedures for the cleaning and disinfection of clinical areas.
- 6. All staff and students must follow the proper procedures for the sterilization of instruments.
- 7. All staff and students must follow the proper procedures for the handling of linens.
- 8. All staff and students must follow the proper procedures for the handling of laundry.
- 9. All staff and students must follow the proper procedures for the handling of waste.
- 10. All staff and students must follow the proper procedures for the handling of sharps.

**MANAGEMENT OF SUSPECTED TO SUSPECTED BONE INFECTION**

1. **Diagnosis**  
The diagnosis of bone infection is often difficult. It is important to consider the possibility of bone infection in patients with persistent pain, swelling, and tenderness in a specific area of the bone.
2. **History**  
A detailed history is essential for the diagnosis of bone infection. The patient's medical history, including any recent dental procedures, should be reviewed.
3. **Physical Examination**  
A thorough physical examination is necessary to identify any signs of bone infection, such as swelling, tenderness, and redness.
4. **Imaging**  
Imaging studies, such as X-rays and CT scans, can be helpful in the diagnosis of bone infection.
5. **Biopsy**  
A biopsy of the affected bone may be necessary to confirm the diagnosis of bone infection.
6. **Treatment**  
The treatment of bone infection typically involves a combination of antibiotics and surgery.
7. **Follow-up**  
Close follow-up is essential to ensure that the infection is completely resolved and to monitor for any complications.

Step the spread of germs that make you sick

## Cover your Cough

Cover your mouth and nose with your elbow or a tissue when you cough or sneeze.

Clean your hands frequently.

## Clean your Hands

**RESOURCES ON THE INTRANET**  
[https://www.uic.edu/.../infection-control](#)

**CLINIC MANUAL**

**INFECTION CONTROL INFORMATION**

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9. All staff and students must follow the proper procedures for the handling of waste.
10. All staff and students must follow the proper procedures for the handling of sharps.

**Checklist for Antibiotic Prescribing in Dentistry**

**Prescribing**

1. Indications for antibiotic use in dentistry are limited to the treatment of acute bacterial infections.
2. Antibiotic use should be based on a clear diagnosis of bacterial infection.
3. The antibiotic should be chosen based on the site of infection and the patient's medical history.
4. The antibiotic should be prescribed for the shortest duration possible.
5. The patient should be educated on the proper use of the antibiotic.
6. The patient should be monitored for any adverse effects.

**Prescription**

1. The antibiotic should be prescribed in a form that is easy to take.
2. The antibiotic should be prescribed in a form that is suitable for the patient's age and medical history.
3. The antibiotic should be prescribed in a form that is suitable for the patient's financial situation.
4. The antibiotic should be prescribed in a form that is suitable for the patient's lifestyle.
5. The antibiotic should be prescribed in a form that is suitable for the patient's preferences.

## POISON Helpline

1-800-222-1234

ILLINOIS POISON CENTER

In Illinois, there are more people hospitalized for poisonings than for any other cause.

Medical experts available to help 24 hours a day, 7 days a week. 365 days a year.

Think you might have been exposed to something that could irritate, burn, sting, choke, or cause other harm? Don't guess... Be Sure, Call Us!

**DON'T Guess... Be Sure, Call Us!**

Free, Confidential

### Checklist for Antibiotic Prescribing in Dentistry



#### Pretreatment

- Correctly diagnose every dental infection.
- Consider therapeutic management interventions, which may be sufficient to control or contain the dental infection.
- Always consider the medical status, allergies, adverse effects, and drug-drug interactions of antibiotics before prescribing.
- Reserve antibiotics only for patients at highest risk for dental infections (i.e., those who have failed to respond to non-antibiotic management or who are immunocompromised, have prosthetic joints, or are taking biologics, or are taking anti-coagulant therapy).
- Assess patient medical history and conditions, drug use, allergies, and other factors that may affect antibiotic selection.

#### Prescribing

- Ensure antibiotic used and dose conform to readily available during patient visit. Avoid prescribing based on convenience for patient or provider. Avoid oral antibiotics, intramuscular, or parenteral antibiotics.
- Make and document the diagnosis, treatment steps, and rationale for antibiotic use if prescribed in the patient chart.
- Prescribe only when clinical signs and symptoms of bacterial infection suggest serious disease response, such as fever or malaise along with local oral swelling.
- Select an agent with the narrowest spectrum of activity consistent with clinical signs and symptoms.
- Use the most targeted (narrow spectrum) antibiotic for the clinical disease possible 2-5 days after the clinical signs and symptoms resolved by otherwise healthy patients.
- Discuss antibiotic use and prescribing practices with referring specialists.

#### Patient Education

- Educate patients on safe antibiotic use (i.e., do not take antibiotics for viral illness, do not take antibiotics for pain relief).

#### Staff Education

- Ensure staff members understand how to protect the privacy of patient information in antibiotic prescribing.



### Seven Ways Dentists can Act Against Antibiotic Resistance



Dental providers are uniquely positioned to play a role in preventing the spread of antibiotic resistance. Here are seven simple "how-tos" for safe, appropriate antibiotic prescribing and use when treating dental infections.

- 1 MAKE** an accurate diagnosis.
- 2 CHOOSE** the right drug for the right dose and duration.
- 3 USE** a narrow-spectrum antibiotic for simple infections and preserve broad-spectrum drugs for more complex infections.
- 4 AVOID** prescribing antibiotics for viral infections.
- 5 REVISE** treatment regimens based on patient response and test results.
- 6 KNOW** the side effects and drug interactions of an antibiotic before prescribing.
- 7 TEACH** your patients about appropriate antibiotic use and emphasize the importance of taking antibiotics exactly as directed.



# SIGNAGE



# SIGNAGE





# Establishing standards for antibiotic prescribing

- ▶ developing an evidence-based institutional guideline,
- ▶ gaining consensus among providers,
- ▶ preparing education,
- ▶ measuring rates of antibiotic prescribing before and after implementation of the guideline/education.

**First step- developing clinical practice decision tool**

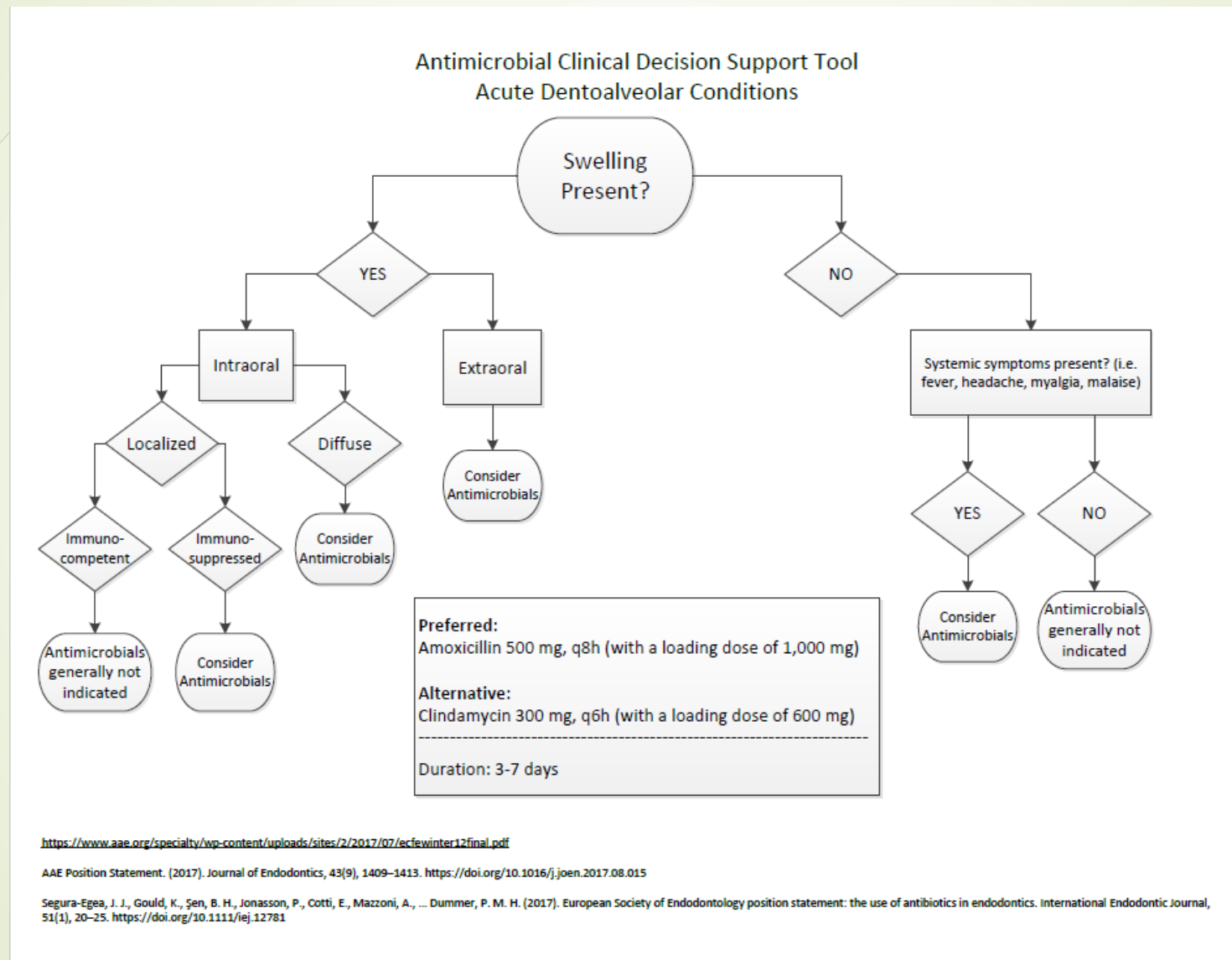


# Establishing standards for antibiotic prescribing

## Collaborative Efforts in the development of the Clinical Practice Tool

- University Health and Hospital Systems Content Experts
  - ❖ **Dr. Katie Suda**, UIC Associate Professor Pharmacy, Researcher, and on the CDC panel targeting the reduction of inappropriate antibiotic use in outpatient settings
  - ❖ **Dr. Alan Gross**, UIC Assistant Professor and UI Health Antibiotic Stewardship Director
- College of Dentistry Content Experts
  - ❖ **Dr. Danny Hanna**, Clinical Associate Professor and Dentist Director of the Urgent Care Program at the College
  - ❖ **Dr. William Flick**, Clinical Professor and Oral and Maxillofacial Surgeon
  - ❖ **Dr. James Bahcall**, Clinical Associate Professor and Endodontist

# Evidence Based Clinical Decision Support Tool



# Progress Thus Far

	Sept '17	Sept. '17	Sept. 17	May '18	May '18	May '18
Instructor	Urgent Care Visits	# of Antimicrobials prescribed during Urgent Care Visits	Average	Urgent Care Visits	# of Antimicrobials prescribed during Urgent Care Visits	Average
593	27		0.00%	52	2	3.85%
597	33	1	3.03%	23		0.00%
598	14	1	7.14%	42	2	4.76%
599	6	1	16.67%	22	1	4.55%
605	6	2	33.33%	19		0.00%
606	27	3	11.11%	16		0.00%
19280	20	6	30.00%	No visits		
20500	20	2	10.00%	3		0.00%
21140	13	4	30.77%	17	1	5.88%
23280	30	2	6.67%	44		0.00%
26800	5		0.00%	No visits		
27760	33	1	3.03%	36		0.00%
28800	4		0.00%	8		0.00%
30940	11		0.00%	7		0.00%
30941	9	1	11.11%	18	1	5.56%
30942	7		0.00%	22		0.00%
30980	9		0.00%	10		0.00%
31021	9		0.00%	13	1	7.69%
<b>Total</b>	283	24		352	8	
<b>Average for all Providers</b>			<b>8.48%</b>			<b>2.27%</b>



# Future Efforts

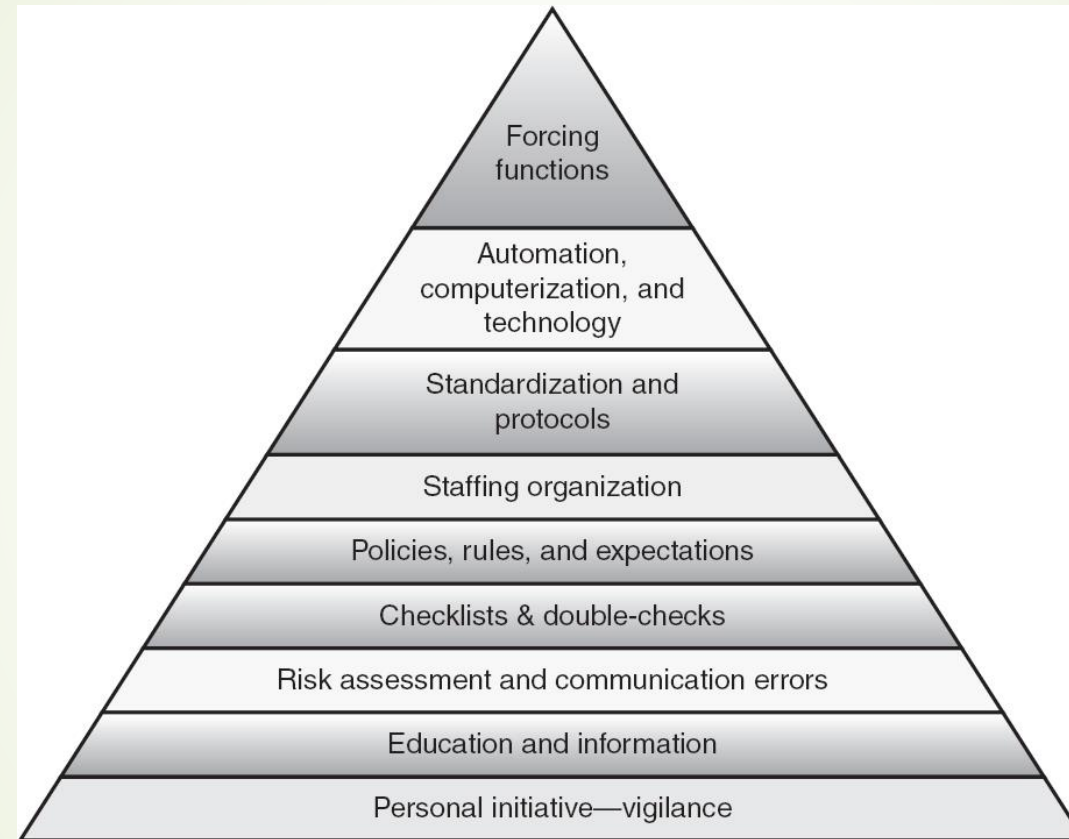
- Disseminate the Evidence Based Clinical Decision

Support Tool

- Ongoing Data Collection and Analysis

- Curricular Enhancements

# Automation within the Electronic Health Record



Error Prevention and Risk Management  
*Suzanne B. Evans and Derek Brown*



# Future Focus

- Focus on other high priority conditions
  - ❖ Antibiotic Prophylaxis for patients at risk for Infectious Endocarditis, history of Total Joint Replacement and/or complex medical conditions
  - ❖ Surgical Antibiotic Regimen
  - ❖ Periodontal and Soft Tissue Infection





תודה  
Dankie Gracias  
Спасибо شكراً  
Merci Takk  
Köszönjük Terima kasih  
Grazie Dziękujemy Děkojame  
Ďakujeme Vielen Dank Paldies  
Kiitos Tänname teid 谢谢  
**Thank You** Tak  
感謝您 Obrigado Teşekkür Ederiz  
Σας ευχαριστούμε 감사합니다  
Bedankt Дěkujeme vám  
ありがとうございます  
Tack



# References

- ▶ *AAE Quick Reference Guide on Antibiotic Prophylaxis 2017 Update*
- ▶ Centers for Disease Control and Prevention: <https://www.cdc.gov/antibiotic-use/community/programs-measurement/measuring-antibioticprescribing.html>
- ▶ Checklist for Antibiotic Prescribing in Dentistry at <http://tinyurl.com/dentalabxlist>
- ▶ Evans, S., Derek Brown. Error prevention and risk management. Accessed [www.demosmedical.com/media/samplechapters/.../9781620700747\\_Chapter1.html](http://www.demosmedical.com/media/samplechapters/.../9781620700747_Chapter1.html)
- ▶ Guidance on the Use of Systemic Antibiotics in Endodontics, [Users/owner/Downloads/aae\\_systemic-antibiotics\\_2017.pdf](http://www.aae.org/specialty/wp-content/uploads/sites/2/2017/07/ecfewinter12final.pdf)
- ▶ The Use and Abuse of Antibiotics, <https://www.aae.org/specialty/wp-content/uploads/sites/2/2017/07/ecfewinter12final.pdf>