

# Infection Prevention and De-escalation

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# Disclosures

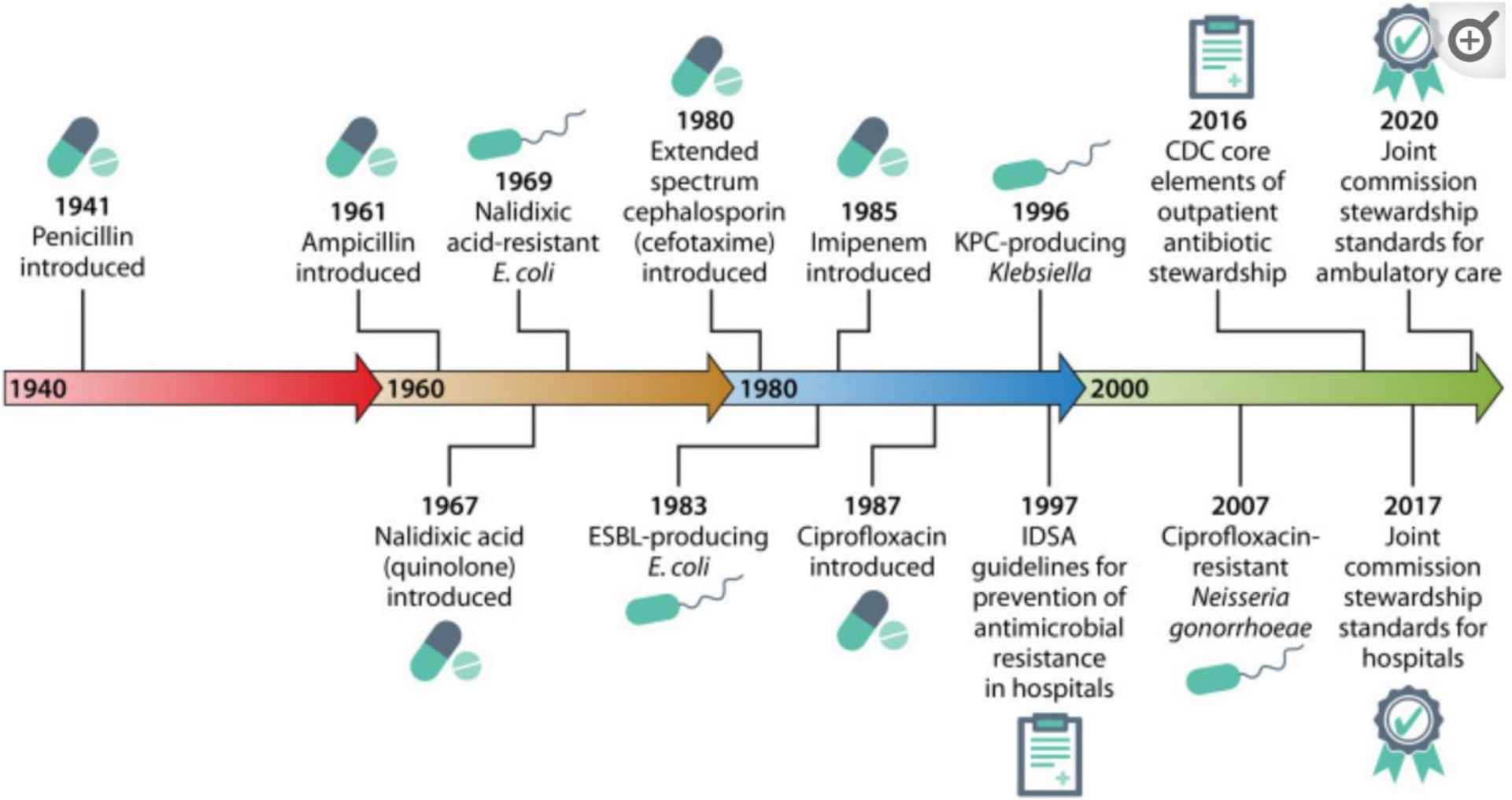
- ▶ We have no financial disclosures to declare.








# Roadmap for Today

- ▶ Urinary Tract Infections
  - ▶ Prevention
  - ▶ De-escalation
- ▶ Pneumonia
  - ▶ Prevention
  - ▶ De-escalation
- ▶ Skin and Soft Tissue
  - ▶ Prevention
  - ▶ De-escalation

# A Brief History of Bacterial Antibiotic Resistance



# The 5Ds of Antibiotic Stewardship

	Explanation	Reason	Examples (focus on urinary tract)
 <b>Diagnosis</b>	Make and document the right diagnosis	Determining which patients have UTI	Clinical decision aids Appropriate collection of cultures Urine procurement by catheterization Reflex urine cultures Computerized decision support systems Selective reporting of urine culture results Text accompanying results to provide interpretation
 <b>Drug</b>	Use the right empiric antibiotic	Rising resistance makes empiric treatment challenging	Local susceptibility reports and stratified antibiograms Selective and cascade reporting of antibiotic susceptibility Provider education Computerized decision support systems Post-prescription review by pharmacists Audit and feedback
 <b>Dose</b>	Use the right dose of antibiotic based on site of infection and renal or hepatic dysfunction	Dosage errors are common	Computerized decision support systems Electronic order sets Audit and feedback
 <b>Duration</b>	Use antibiotics for the recommended duration	Many studies show a "longer is better" mentality	Computerized decision support systems Electronic order sets Audit and feedback
 <b>De-escalation</b>	De-escalate therapy based on susceptibilities and when urine cultures are negative	Labor intensive and occurs too late with UTI to make much impact	Post-prescription review by pharmacists

# Defining De-escalation

- De-escalation is a strategy that attempts to balance the competing aims of providing initial empiric therapy that is appropriate and covers the likely pathogens, and limiting antimicrobial exposure and increased risk for emergence of resistant pathogens.
  - National Institutes of Health

# How to De-Escalate Antibiotic Therapy

- **NO Antibiotic.** Is it possible to avoid or stop antibiotics all together?
- **Shorter Time on Antibiotics.** What is the minimum effective duration of antibiotic treatment.
- **Narrowing Spectrum of Antibiotic.** Are there culture results or changes in practice standards that justify using a more narrow spectrum antibiotic

# Case Study #1

Mr. E has been coughing for since yesterday evening and has a temperature of 99.7°F. A chest x-ray is taken (see right) and the report reads *“Patchy RLL infiltrate suggestive of aspiration and likely pneumonia. Flat diaphragms and increased lung volumes consistent with COPD.”* You phone the on-call medical provider and she prescribes an antibiotic.





# Which Antibiotic Are You Most Likely to See Prescribed?

- Levaquin
- Augmentin
- Doxycycline
- Azithromycin
- Something Else

# De-escalation in Pneumonia

1. Shorter length of therapy
  - Standard of care is now a 5-day treatment course
  - This is based in part on change in philosophy from “longer is better” to “minimum necessary is best”
2. Narrowing of spectrum
  - Is a broad spectrum agent like levofloxacin [Levaquin] really necessary?
  - Does a blood culture identify organism and sensitivity?
3. Is the diagnosis *really* pneumonia?

# Prevention of Pneumonia

- Risk factor: Influenza
- Risk factor: COVID
- Risk factor: Colonization with  
Pneumococcus
- Risk factor: Aspiration
- Prevention: Immunization
- Prevention: Immunization
- Prevention: Immunization
- Prevention: Feed in sitting  
position; sleep with head  
elevated; watch for choking

# Case Study #2

Mrs. R is an 82 yo female who had a visit by her family at 5:30 pm. At that time, family noted she appeared to be “altered”. Patient has a baseline history of dementia. The nurse on call obtained a urine dipstick prior to calling the on-call doctor which showed +leukocyte esterase, negative nitrite and a few white blood cells.



# Which Antibiotic Are You Most Likely to See Prescribed?

- Macrobid
- Ciprofloxacin
- Bactrim
- Keflex

# De-escalation in Urinary Tract Infection

1. Shorter length of therapy
  - Standard of care depends on the antibiotic choice, but is now typically 3 or 5 days.
  - Again, “minimum necessary is best”
2. Narrowing of spectrum
  - Utilize the culture results.
  - Consider awaiting treatment until these culture results return to ensure the appropriate antibiotic is being utilized.
3. Is this truly a UTI?

# Prevention of UTI or Overtreatment

- Risk factor: Colonization
- Risk factor: Yeast
- Risk factor: Vaginal atrophy
- Risk factor: Indwelling Catheter
- Risk factor: Poor hygiene
- Prevention: Documentation
- Prevention: Await cultures
- Treatment: Vaginal estrogen, Vaseline
- Prevention: Remove catheter
- Prevention: Peri care and staff hand hygiene

## Case Study # 3

Mr. G bumped his wheelchair into no-one-knows-what about a week ago. Today the nurse notes this appearance and phones the medical provider on call.

“How far from the wound does the redness extend”, asks the provider.

“About a centimeter and a half.” respond the nurse.

“He needs an antibiotic,” responds the provider.





# Which Antibiotic Are You Most Likely to See Prescribed?

- Levofloxacin (Levaquin)
- Amoxicillin Clavulanate (Augmentin)
- Doxycycline
- Cephalexin (Keflex)
- TMP-SMX (Septra or Bactrim)
- Something Else

# De-escalation in Skin and Soft Tissue Infections

1. Are antibiotics really necessary?
  - “Cellulitis” is over-diagnosed, especially in swollen legs
  - Small abscesses (<6 cm) often can be treated with drainage alone
2. Shorter length of therapy
  - Standard of care is now a 5-7 day treatment course
  - This is based in part on change in philosophy from “longer is better” to “minimum necessary is best”
3. Narrowing of spectrum
  - Is a broad spectrum agent like levofloxacin [Levaquin] really necessary?
  - Surgical wounds: Get a GOOD culture

# Prevention of Skin and Soft Tissue Infections

## Diagnosis

- Cellulitis
- Surgical wound infection
- Abscess

## Prevention

- Leg compression
- Careful cleansing
- Lotion
- Meticulous wound care, especially in persons with stitches
- Chlorhexidine soap
- Standard precautions (apply to all)

# Case Follow-Up



## *C. DIFF* INFECTION — AM I AT RISK?

Talk with your healthcare professional about your risk for developing *C. diff* infection before starting an antibiotic.

### What is *C. diff* infection?

*C. diff* is a germ (bacterium) that causes diarrhea and colitis (an inflammation of the colon).  
*C. diff* infection can be life-threatening.

### Who is at risk for *C. diff* infection?



*C. diff* can affect anyone. You are 7 to 10 times more likely to get *C. diff* infection while taking antibiotics and during the month after. That's because antibiotics that fight bacterial infections by killing bad germs can also get rid of the good germs that protect the body against harmful infections, like *C. diff* infections.

### Other risk factors include:



Previous infection with *C. diff* or known exposure to the germs



Older age



Recent stay at a hospital or nursing home



A weakened immune system (examples: people with HIV/AIDS, cancer, or who take immune suppressing drugs)

### Symptoms of *C. diff* infection can include:



Diarrhea



Fever



Stomach tenderness or pain



Loss of appetite



Nausea

*Clostridioides difficile* (*C. diff*) is estimated to cause almost half a million infections in the United States each year.



[www.cdc.gov/cdiff](http://www.cdc.gov/cdiff)  
[www.cdc.gov/antibiotic-use](http://www.cdc.gov/antibiotic-use)

# Preventing Clostridium Difficile

- Isolate and initiate contact precautions for suspected or confirmed CDI.
- Confirm CDI in patients.
- Perform environmental cleaning to prevent CDI.
- Develop infrastructure to support CDI prevention.
- Engage the facility antibiotic stewardship program.

# Questions and Discussion