North Carolina SPICE
Statewide Program for Infection Control & Epidemiology

# ANTIBIOTIC STEWARDSHIP IN NURSING HOMES


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**(with thanks to Phil Sloane, MD, MPH, the CDC, and AHRQ)**


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# ANTIBIOTIC STEWARDSHIP IS…

**A set of commitments and activities designed to:**
**-optimize the treatment of infections**

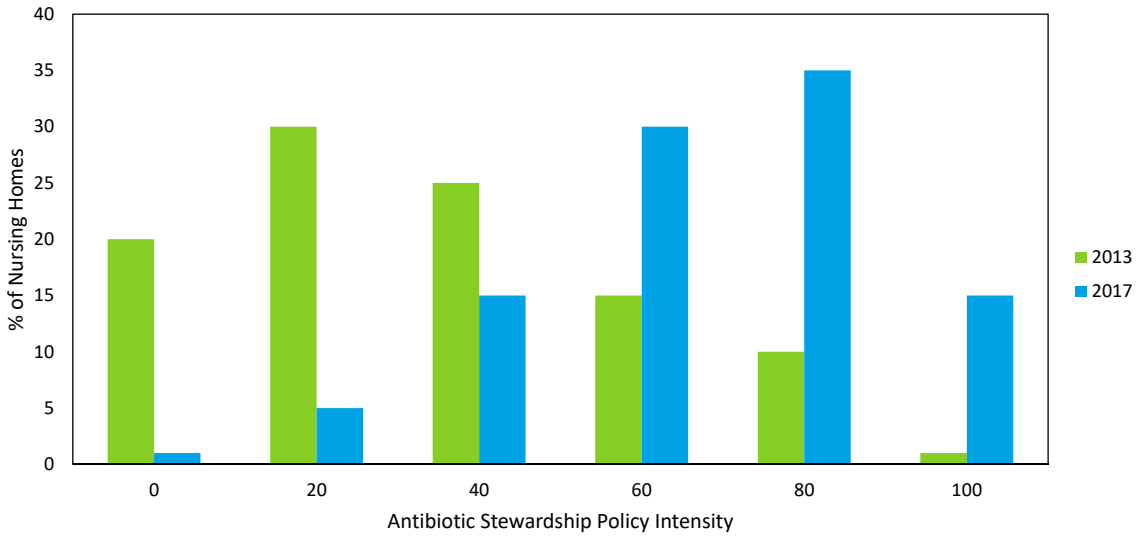
**And**

**-reduce the adverse events associated with antibiotic overuse**


# IN OPERATIONAL TERMS, ANTIBIOTIC STEWARDSHIP IS….

- **A system of informatics, data collection, personnel, policies and procedures designed to assure that patients get:**
  - **the right drug**
  - **at the right time**
  - **for the right duration**

# ANTIBIOTIC STEWARDSHIP IS ON THE RISE




Agarwal M JAMDA 2021

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# WHY ANTIBIOTIC STEWARDSHIP IS IMPORTANT FOR SOCIETY OVERALL AND SPECIFICALLY FOR NURSING HOMES

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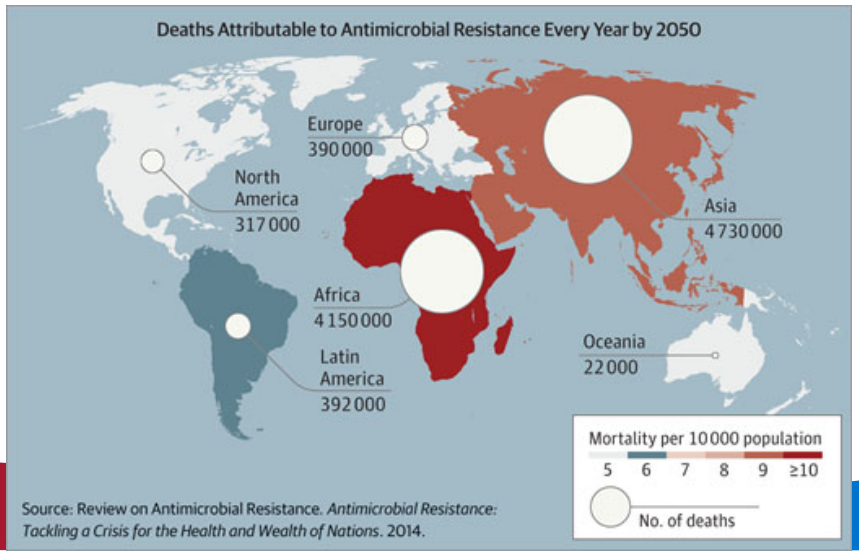
# CRISIS OF ANTIBIOTIC RESISTANCE

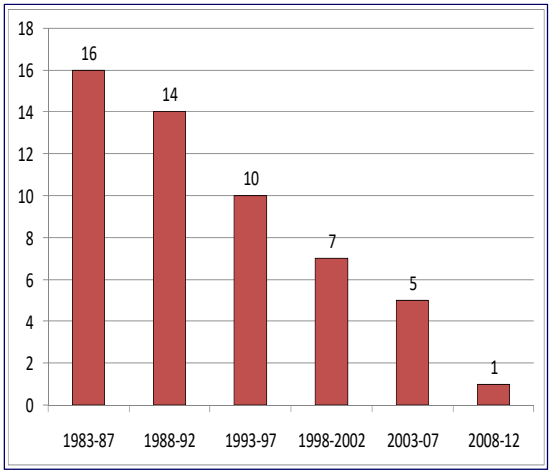
- Multi-drug resistance increasingly common
- Over 23,000 deaths annually in U.S.A. from multi-drug resistant infections
- Projected 317,000 deaths per year by 2050



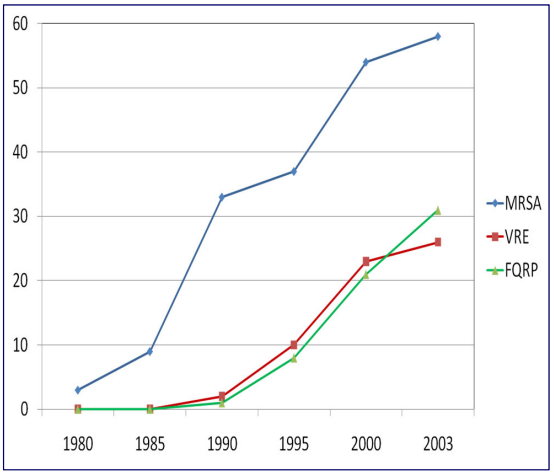

INFECTION MANAGEMENT AND ANTIBIOTIC STEWARDSHIP

# WHAT'S CAUSING THE CRISIS?

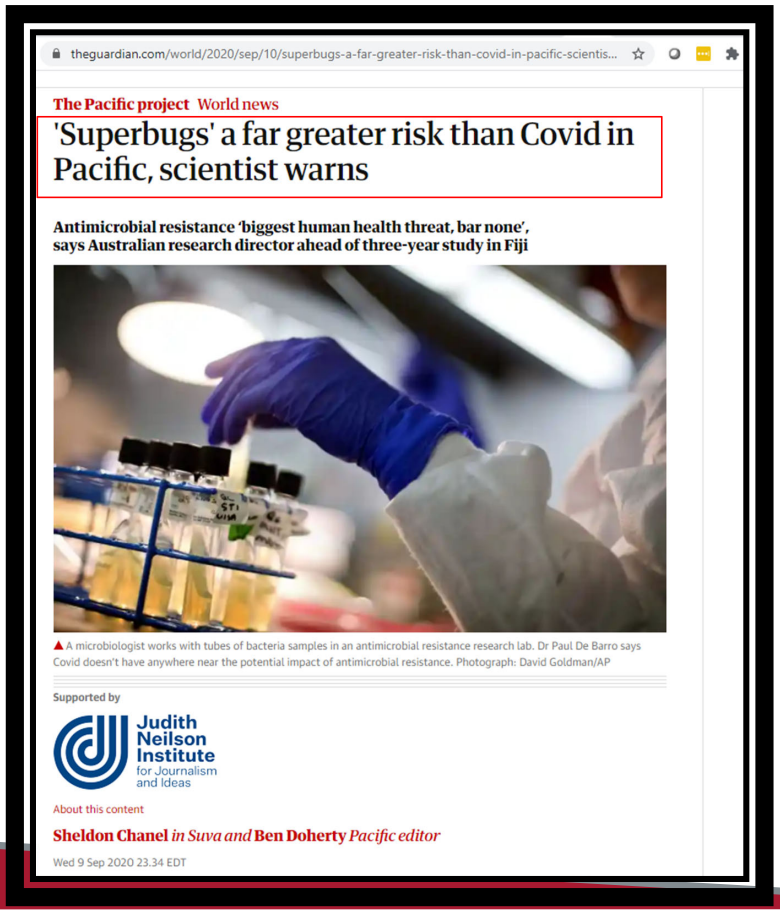
## 1. Fewer New Antibiotics Being Developed




## 2. Resistant Strains Spread Rapidly




## 3. Antibiotics Are Overused



theguardian.com/world/2020/sep/10/superbugs-a-far-greater-risk-than-covid-in-pacific-scientis...

The Pacific project World news

'Superbugs' a far greater risk than Covid in Pacific, scientist warns

**Antimicrobial resistance 'biggest human health threat, bar none', says Australian research director ahead of three-year study in Fiji**

▲ A microbiologist works with tubes of bacteria samples in an antimicrobial resistance research lab. Dr Paul De Barro says Covid doesn't have anywhere near the potential impact of antimicrobial resistance. Photograph: David Goldman/AP

Supported by

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About this content

**Sheldon Chanel** *in Suva and* **Ben Doherty** *Pacific editor*

Wed 9 Sep 2020 23.34 EDT

"If you thought COVID was bad, you don't want anti-microbial resistance," Dr Paul De Barro, biosecurity research director at Australia's national science agency, the CSIRO, told The Guardian.

"I don't think I'm exaggerating to say it's the biggest human health threat, bar none. COVID is not anywhere near the potential impact of AMR."

"We would go back into the dark ages of health."

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# ANTIBIOTIC STEWARDSHIP UNDER COVID-19

- Current evidence from hospitalized COVID-19 patients identified that while 72% (1450/2010) of patients received antibiotics, only 8% (62/806) demonstrated superimposed bacterial or fungal co-infections.
- WHO also reports that azithromycin is being widely used with hydroxychloroquine although it is not yet recommended outside of COVID-19 clinical trials
- WHO guidelines: For suspected or confirmed mild COVID-19, WHO recommends against the use of antibiotic therapy or prophylaxis. For suspected or confirmed moderate COVID-19, that antibiotics should not be prescribed unless there is clinical suspicion of a bacterial infection.

**Widespread use of antibiotics should be discouraged, as their use may lead to higher bacterial resistance rates, which will impact the burden of disease and deaths in the population during the COVID-19 pandemic and beyond.**

Rawson TM *Clin Infect Dis. 2020.*
https://www.who.int/publications/i/item/clinical-management-of-covid-19

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# COVID-19 IN NURSING HOMES

- Consider in older people, particularly those in LTCs to provide empiric antibiotic treatment for possible pneumonia, BUT
- Treat with narrow-spectrum (Access) antibiotics (such as amoxicillin), instead of broad-spectrum antibiotics (Watch and Reserve antibiotics)
- Stop if non-bacterial source is found.

https://www.who.int/publications/i/item/clinical-management-of-covid-19

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# THE NURSING HOME MANDATE

SEPTEMBER, 2015: CDC identified core elements of antibiotic stewardship.

CMS 2016-17 ACTION PLAN: developing and pilot test a worksheet for surveyors to "assess the new antibiotic stewardship requirement."

November 2019: All NHs much have a trained infection preventionist

**Implementation will include a key role for infection control nurses**

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**42 CFR Parts 405, 431, 447, 482, 483, 485, 488, and 489**
**Reform of Requirements for Long-Term Care Facilities**

Infection Control (§ 483.80)

We are requiring facilities to develop an Infection Prevention and Control Program (IPCP) that includes an Antibiotic Stewardship Program and designate at least one infection Preventionist (IP). That program should include antibiotic use protocols and a system to monitor antibiotic use.

Implementation Next Steps:
CMS has funded QIN-QIOs (Quality Innovation Network- Quality Improvement Organizations as part of the CDI Reporting and Reduction Project to help enroll NHs in the NHSN (National Healthcare Safety Network Long-term Care Facility Component

Agarwal M. *JAMDA*. 2019

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# EXISTING REGULATIONS PROMOTING ANTIBIOTIC STEWARDSHIP

**Federal Tag 483.80: Infection Control**

Mentions performing antibiotic review

- **F880 Infection Prevention & Control**
- **F881 Antibiotic Stewardship Program**
- **F882 Infection Preventionist Qualifications**

**Federal Tag 483.5 Pharmacy Services**

Outlines role of pharmacist in scheduled reviews of medication use in high-risk residents

- **F756: Drug Regimen Review**
- **F757: Drug Regimen is Free From Unnecessary Drugs**
- **F759: Free of Medication Error Rates of 5% or More**

https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/GuidanceforLawsAndRegulations/Downloads/List-of-Revised-FTags.pdf

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INFECTION MANAGEMENT AND ANTIBIOTIC STEWARDSHIP

# YES, THIS IS A *POLICY CHANGE*

Prescribing antibiotics **"just in case"** was accepted in the past, but now antibiotics should be given after **careful, evidence-based consideration** of risks and benefits.

**This session will provide guidance on key elements of antibiotic stewardship for your nursing home**

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## OBJECTIVES AND QUESTIONS

1. Context: Is antibiotic resistance a problem in your nursing home? Are Antibiotics overused in your nursing home? If so, how do you know?
2. Know the problem: 4 Moments of Antibiotic Decision Making in Long-Term Care
3. Do something: If you were designing a program to reduce inappropriate antibiotic use, what behaviors would you most want to change?

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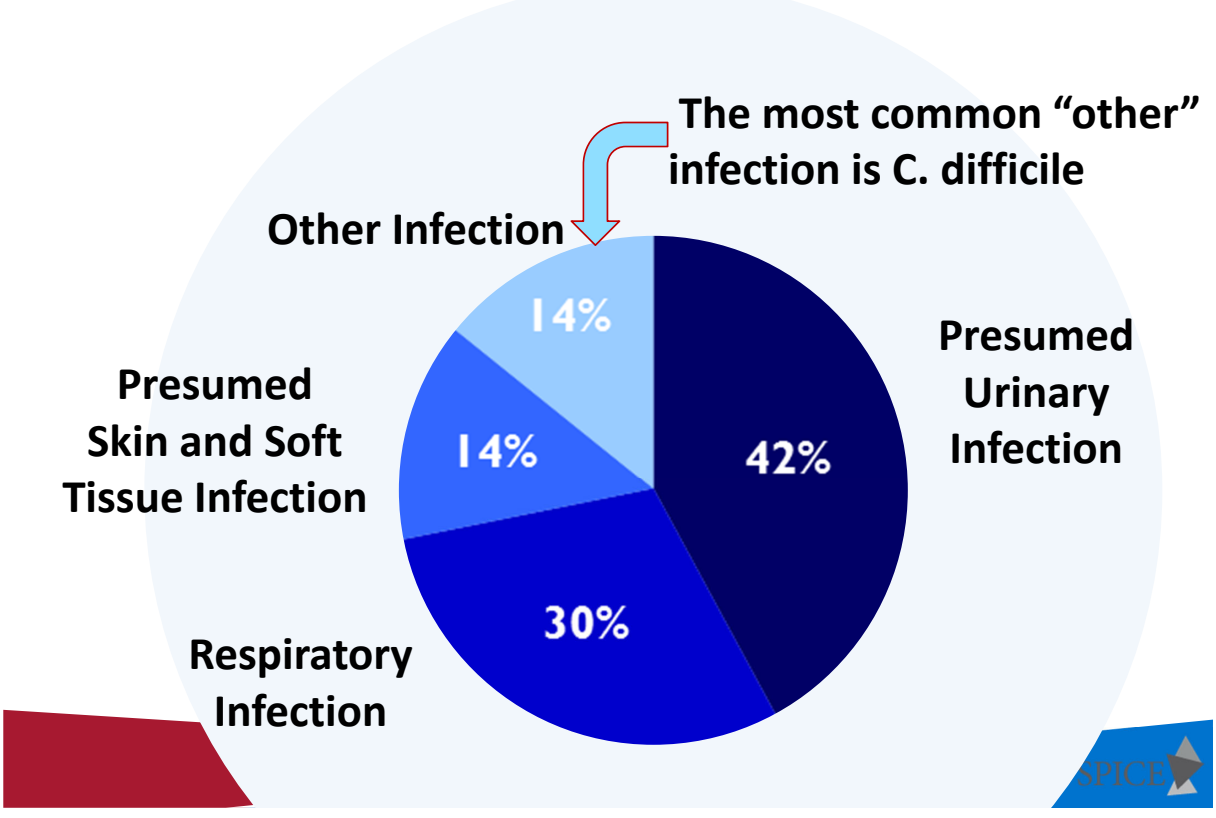
# *STEP ONE:*
# KNOW THE CONTEXT

QUESTION: Is antibiotic resistance a problem in your nursing home? Are antibiotics overused in your nursing home? If so, how do you know?



LOOK AT THE REASONS ANTIBIOTICS ARE PRESCRIBED



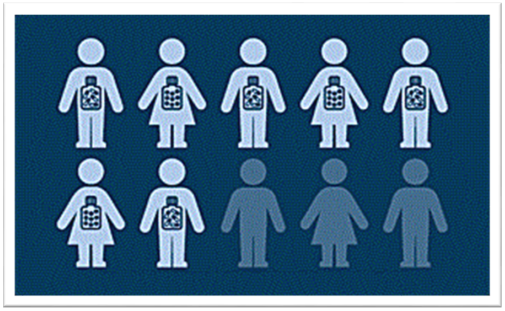
## SITUATIONS LEADING TO ANTIBIOTIC OVERUSE

1. Urinary: Urine appearance and odor and urine test results
2. Respiratory: Cough
3. Skin: Wounds, Red and swollen legs
4. Emergency departments and hospitals
5. Prophylaxis
6. Nonspecific symptoms
7. Empirical antibiotic choice and duration

Khandelwal C. Annals of Long-Term Care: Clinical Care and Aging. 2012;20(4):23-29.



## LOOK FOR COMPARISON DATA ON PRESCRIBING



- Up to 70% of nursing home residents receive at least 1 antibiotic a year

How is your home doing compared to others?

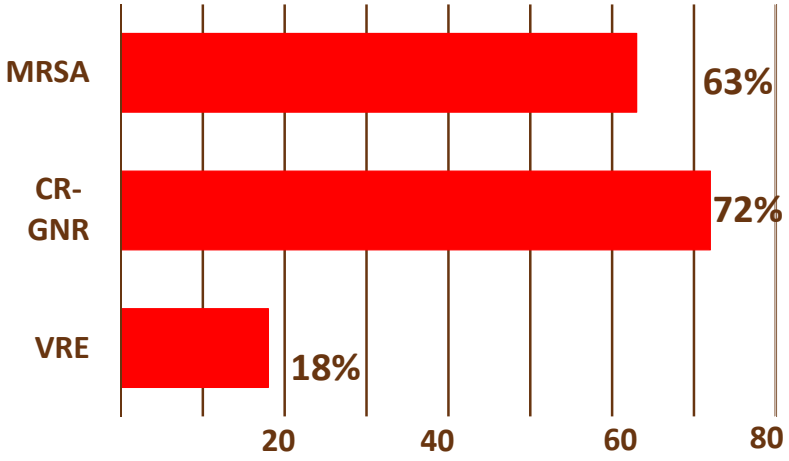
- Up to 75% of antibiotics are prescribed inappropriately

How is your home doing compared to others?

https://www.cdc.gov/longtermcare/pdfs/Infographic-Antibiotic-Stewardship-Nursing-Homes.pdf

# LOOK FOR DATA ON RESISTANT BACTERIA

**Results of skin, airway, skin and wound cultures in 82 residents of a Michigan nursing home**




J Clin Micro 50(5); 1698-1703, 2012.

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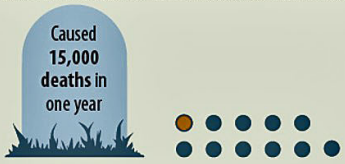
# Look for rates of Clostridium Difficile: an Indicator of Antibiotic Overuse

## IMPACT

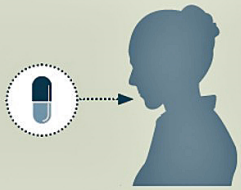

Caused close to half a million illnesses in one year.

Comes back at least once in about 1 in 5 patients who get *C. difficile*.




1 in 11 people 65 and older died within a month of *C. difficile* infection diagnosis.

## RISK



People on antibiotics are 7-10 times more likely to get *C. difficile* while on the drugs and during the month after.

Being in healthcare settings, especially hospitals or nursing homes.

More than 80% of *C. difficile* deaths occurred in people 65 and older.

## OBJECTIVES AND QUESTIONS

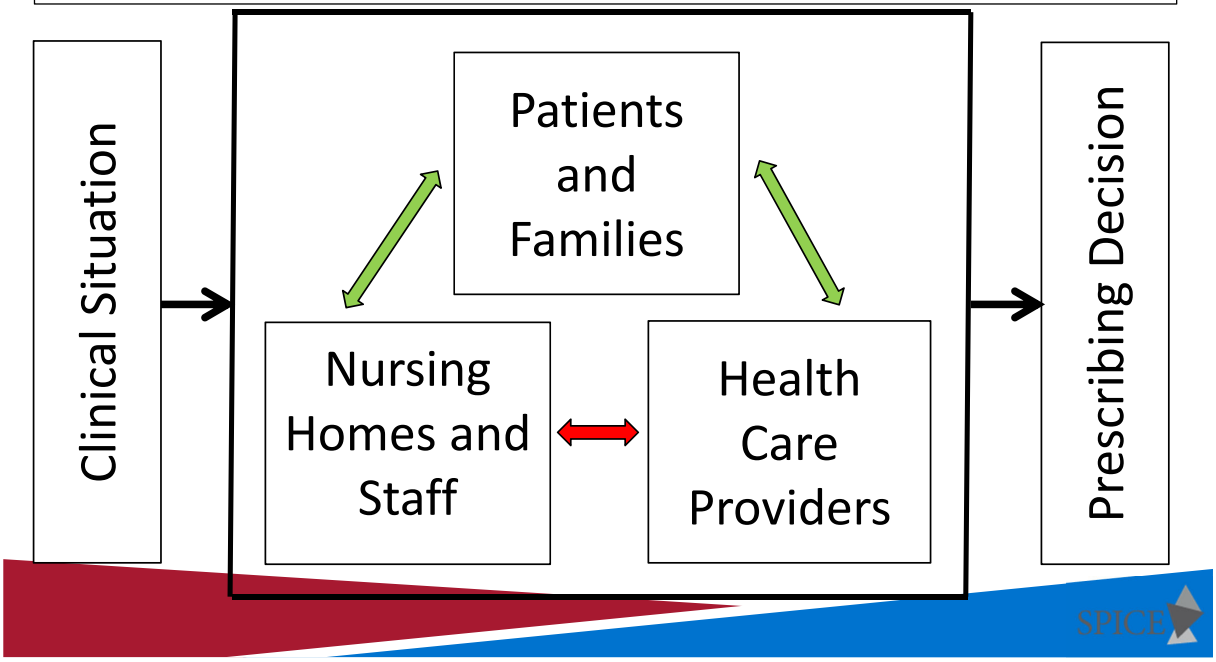
1. Context: Is antibiotic resistance a problem in your nursing home? If so, how do you know?
2. **Know the problem: Are Antibiotics overused in your nursing home? If so, why and how does this happen?**
3. Do something: If you were designing a program to reduce inappropriate antibiotic use, what behaviors would you most want to change?


# *STEP TWO:*
# KNOW THE PROBLEM

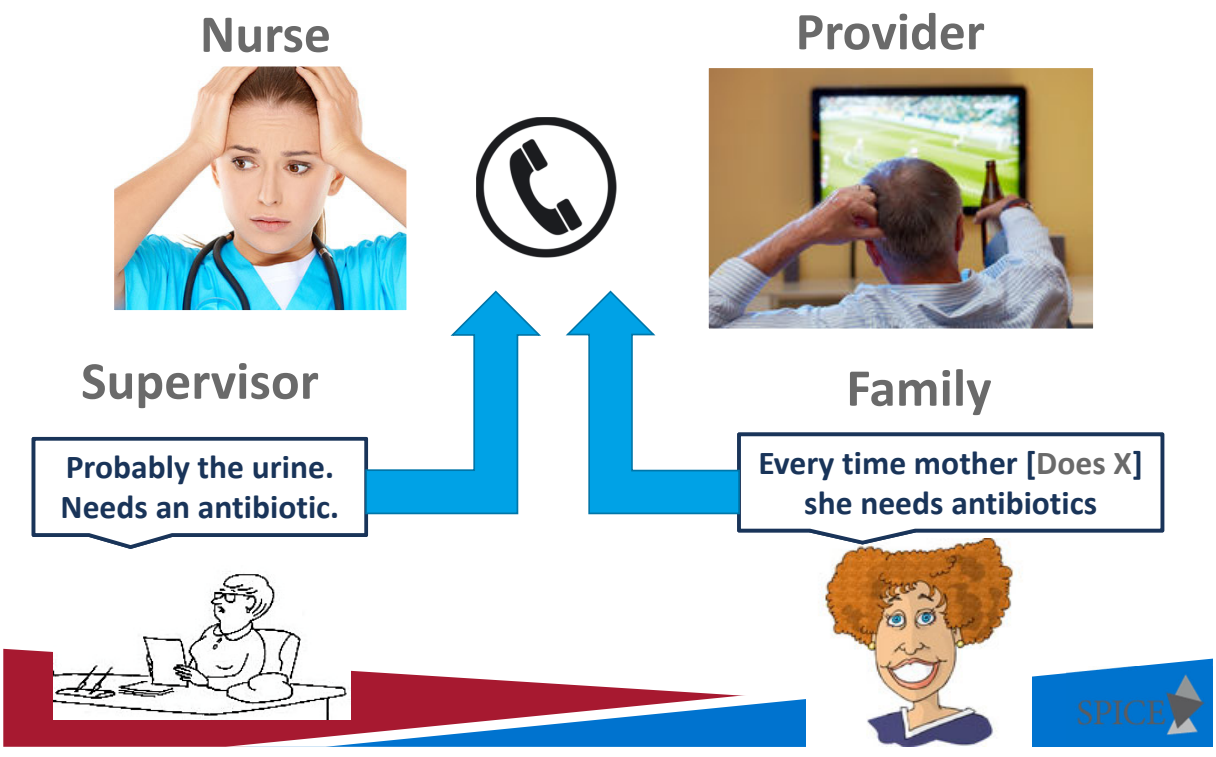
**Question: Do you know the 4 moments of antibiotic decision making in long-term care?**

# HOW ARE ANTIBIOTIC PRESCRIBING DECISIONS MADE?

## Factors Influencing Antibiotic Prescribing Decisions




## THE WEB OF DECISION-MAKING



# WHERE TO START

- Meet with your antibiotic stewardship team to identify problems as opportunities for improvement
- Identify a problem to work on

All of you recall the case of a recent resident who was transferred to the hospital for an INR of >7 after receiving a fluoroquinolone for 8 days without monitoring.

https://www.ahrq.gov/antibiotic-use/long-term-care/improve/program.html

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# REVIEWING THE EVENTS

| Clinical Event | Evaluation by R.N. or M.D. | Decision To Prescribe Antibiotic | Outcome |
|---|---|---|---|
| Resident noted by her family member to have dark urine, with a foul odor. | The nurse sends a urine sample and has the covering provider sign the order for the urine culture. | Urine culture: >100,000 cfu/mL Gram-negative rods.<br><br>The nurse notifies the on-call clinician, who orders ciprofloxacin. | On day 8 of ciprofloxacin, her INR is >7 and she is sent to the ED. |

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# IDENTIFYING THE PROBLEMS—1

**Clinical Event**

Son notes resident has dark urine, with a foul odor. Her son states the last time she had a dark urine she had a UTI. He wants her to be tested.

PROBLEM:

No discussion with the family or attempt to educate.

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# IDENTIFYING THE PROBLEMS—2

**Clinical Event**

Son notes resident has dark urine, with a foul odor. Her son states the last time she had a dark urine she had a UTI. He wants her to be tested.

PROBLEM:

No discussion with the family or attempt to educate.

**Evaluation by R.N. or M.D.**

The nurse sends the urine sample and then asks the on-call covering clinician to sign the order.

PROBLEM:

No diagnostic criteria used to evaluate the resident.

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# IDENTIFYING THE PROBLEMS—3

| Clinical Event | Evaluation by R.N. or M.D. | Decision To Prescribe Antibiotic |
|---|---|---|
| Son notes resident has dark urine, with a foul odor. Her son states the last time she had a dark urine she had a UTI. He wants her to be tested. | The nurse sends the urine sample and then asks the on-call covering clinician to sign the order. | Urine culture grows > 100,000 cfu/mL Gram-negative rods. The nurse notifies the on-call provider, who orders ciprofloxacin. |
| PROBLEM: No discussion with the family or attempt to educate. | PROBLEM: No diagnostic criteria used to evaluate the resident. | PROBLEM(S): No evaluation of resident. No review of guidelines to determine if therapy is indicated. |

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# IDENTIFYING THE PROBLEMS—4

| Clinical Event | Evaluation by R.N. or M.D. | Decision To Prescribe Antibiotic | Outcome |
|---|---|---|---|
| Son notes resident has dark urine, with a foul odor. Her son states the last time she had a dark urine she had a UTI. He wants her to be tested. | The nurse sends the urine sample and then asks the on-call covering clinician to sign the order. | Urine culture grows > 100,000 cfu/mL Gram-negative rods. The nurse notifies the on-call provider, who orders ciprofloxacin. | On day 8 of ciprofloxacin, INR is >7 |
| PROBLEM: No discussion with the family or attempt to educate. | PROBLEM: No diagnostic criteria used to evaluate the resident. | PROBLEM(S): No evaluation of resident. No review of guidelines to determine if therapy is indicated. | PROBLEM(S): No stop date on antibiotic. No monitoring for drug-drug interactions. No follow-up to narrow therapy. No follow-up on the resident to note her response to antibiotics. No notification of the daytime clinician of new prescription. |

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# IDENTIFYING THE PROBLEMS—5

| Clinical Event | Evaluation by R.N. or M.D. | Decision To Prescribe Antibiotic | Outcome |
|---|---|---|---|
| Son notes resident has dark urine, with a foul odor. Her son states the last time she had a dark urine she had a UTI. He wants her to be tested. | The nurse sends the urine sample and then asks the on-call covering clinician to sign the order. | Urine culture grows > 100,000 cfu/mL Gram-negative rods. The nurse notifies the on-call provider, who orders ciprofloxacin. | On day 8 of ciprofloxacin, INR is >7 |
| PROBLEM: No discussion with the family or attempt to educate. | PROBLEM: No diagnostic criteria used to evaluate the resident. | PROBLEM(S): No evaluation of resident. No review of guidelines to determine if therapy is indicated. | PROBLEM(S): No stop date on antibiotic. No monitoring for drug-drug interactions. No followup to narrow therapy. No followup on the resident to note her response to antibiotics. No notification of the daytime clinician of new prescription. |
| PRE-PRESCRIPTIVE | | | POST-PRESCRIPTIVE |

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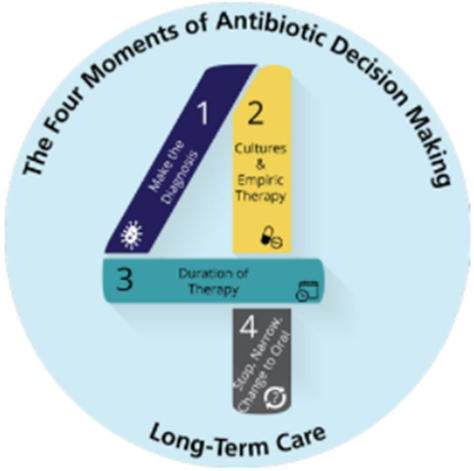
# JUMPING TO CONCLUSIONS

- In nursing homes --- One of the biggest causes of unnecessary antibiotic use
- In medical decision-making – the most common reason for medical errors

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# MOMENT 1: MAKE THE DIAGNOSIS

- Does the resident have symptoms suggestive of an infection?
  - Systemic signs or symptoms: fever, tachycardia, hypotension
  - Localizing signs or symptoms: productive cough, dysuria, purulence, spreading redness


# ACTIVE INTERVENTIONS FOR NON-SPECIFIC SYMPTOMS

- ✓ Assess hydration status (and encourage fluids)
- ✓ Review current medications
- ✓ Look for signs of a respiratory or GI virus
- ✓ Think about sleep problems
- ✓ Ask about pain / discomfort
- ✓ Ask about constipation
- ✓ Look for sources of stress, anxiety or depression
- ✓ Monitor symptoms and vital signs (especially temperature)
- ✓ Use nursing interventions where appropriate

**Should we get a urine culture "just in case"**

# MOMENT 2: CULTURES & EMPIRIC THERAPY

- What type of infection is it?
- Have we collected appropriate cultures before starting antibiotics?
- What empiric antibiotics should be initiate?


# LOOK AT TYPES OF ANTIBIOTICS

**- Data from 75 prescriptions and 1,580 positive cultures in 31 NHs -**

| **Antibiotic Prescribed Empirically** (% of the time) | **Percent Resistant** (% of isolates) | | |
|---|---|---|---|
| | **Escherichia Coli** (44%) | **Proteus** (13%) | **Klebsiella pneumoniae** (13%) |
| Ciprofloxacin (26%) | 57% | 69% | 11% |
| TMP-SMX (16%) | 42% | 45% | 14% |
| Nitrofurantoin (12%) | 4% | 98% | 23% |
| Ceftriaxone (11%) | 17% | 7% | 11% |
| Levofloxacin (7%) | 58% | 63% | 8% |

# MOMENT 3: LENGTH OF THERAPY

- What duration of antibiotic therapy is needed for the resident's diagnosis?
- Most bacterial infections need 7 days or less of antibiotics!


# RECOMMENDED DURATION OF ANTIBIOTIC THERAPY (NON-HOSPITALIZED PATIENTS)

| Type of infection | Sanford Guide, 2015 | ID Society | David Weber | Actual NH Practice |
|---|---|---|---|---|
| **Simple UTI (cystitis)** | 3 days [1] | 3 days[1] | 3 days | |
| **COPD exacerbation** | 3-10 days [2] | -- | 3-5 days | |
| **Pneumonia without sepsis** | Until afebrile for 3d | ≥5 days [4] | ≥5 days | |
| **Cellulitis (lower extremity)** | 10 days [3] | 5 days | 5-7 days | |

1 TMP-SMX – 3 days; Nitrofurantoin – 5-days; 2 Varies with drug, No therapy required in most cases; 3 Not diabetic; 4 Minimum 5 days (should be afebrile 48-72 hours);' non-ambulatory treat as HCAP; assess using score for severity

# RECOMMENDED DURATION OF ANTIBIOTIC THERAPY (NON-HOSPITALIZED PATIENTS)

| Type of infection | Sanford Guide, 2015 | ID Society | David Weber | Actual NH Practice |
|---|---|---|---|---|
| **Simple UTI (cystitis)** | 3 days [1] | 3 days[1] | 3 days | 7.5 days |
| **COPD exacerbation** | 3-10 days [2] | -- | 3-5 days | 7.8 days |
| **Pneumonia without sepsis** | Until afebrile for 3d | ≥5 days [4] | ≥5 days | |
| **Cellulitis (lower extremity)** | 10 days [3] | 5 days | 5-7 days | 9.6 days |

1 TMP-SMX – 3 days; Nitrofurantoin – 5-days; 2 Varies with drug, No therapy required in most cases; 3 Not diabetic; 4 Minimum 5 days (should be afebrile 48-72 hours);' non-ambulatory treat as HCAP; assess using score for severity



# MOMENT 4: STOP, NARROW, OR CHANGE TO ORAL

- Active Surveillance is KEY:
- It's been 2-3 days since antibiotics were started
- Re-evaluate the resident and review the results
  - Can we stop antibiotics?
  - Can we narrow therapy?
  - Can we change from IV to oral therapy?

## OBJECTIVES AND QUESTIONS

1. Context: Is antibiotic resistance a problem in your nursing home? If so, how do you know?
2. Know the problem: Do you know the 4 moments of antibiotic decision making in long-term care?
3. **Do something: If you were designing a program to reduce inappropriate antibiotic use, what behaviors would you <u>most</u> want to change?**


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## ***<u>STEP THREE:</u>***

## DEVELOPING AN ANTIBIOTIC STEWARDSHIP PROGRAM IN YOUR NURSING HOME

**QUESTION: If you were designing a program to reduce inappropriate antibiotic use, what behaviors would you <u>most</u> want to change?**

# ANTIBIOTIC STEWARDSHIP WORKS ….SOMETIMES

Kruger SZ. Infect Control Hosp Epidemiol. 2020 Jun 22;1-7.

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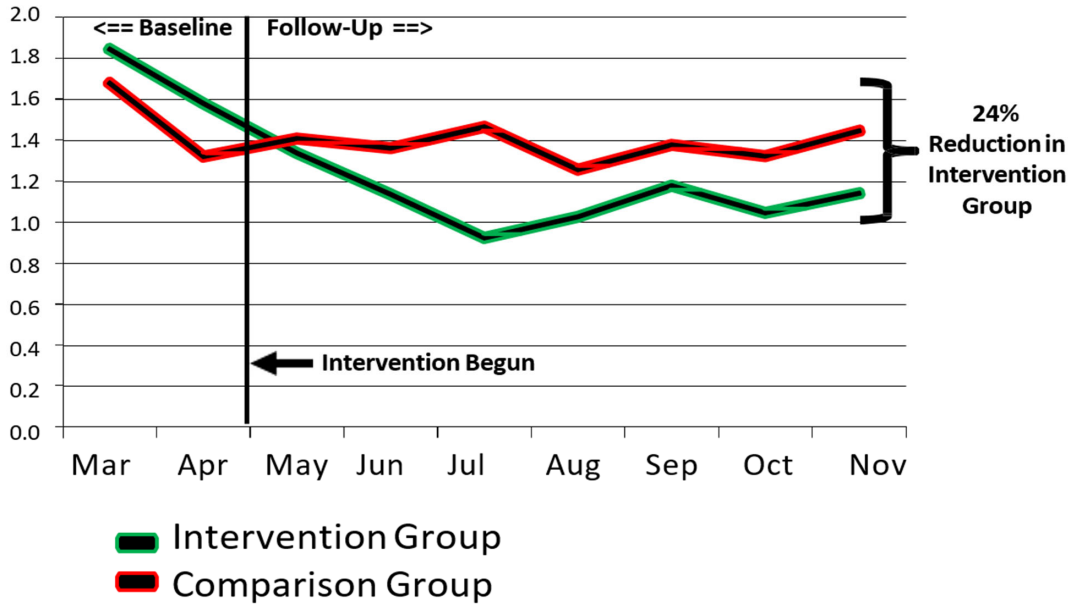
## Education and QI Works: Results from Randomized Trial

### - Antibiotic Prescriptions Per 100 Resident-Days

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# THE CDC'S SEVEN KEY ELEMENTS OF ANTIBIOTIC STEWARDSHIP

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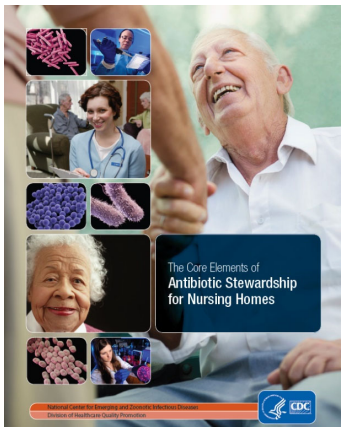
# CDC's Core Elements of Antibiotic Stewardship in Nursing Homes





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# #1. LEADERSHIP COMMITMENT

- Identify an antibiotic stewardship leadership team, including an infection preventionist (a.k.a. infection control nurse or infection specialist) and provide time
- Communicate expectations to medical and nursing staff
- Create a culture of antibiotic stewardship
- Agree to incorporate antibiotic stewardship into facility Quality Assurance and Performance Improvement goals, monitoring, and reporting

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# THE CHALLENGE OF LEADERSHIP TURNOVER

**One-year turnover rate in NC Nursing Homes:**

- Administrator
- Director of Nursing
- Infection Control Nurse

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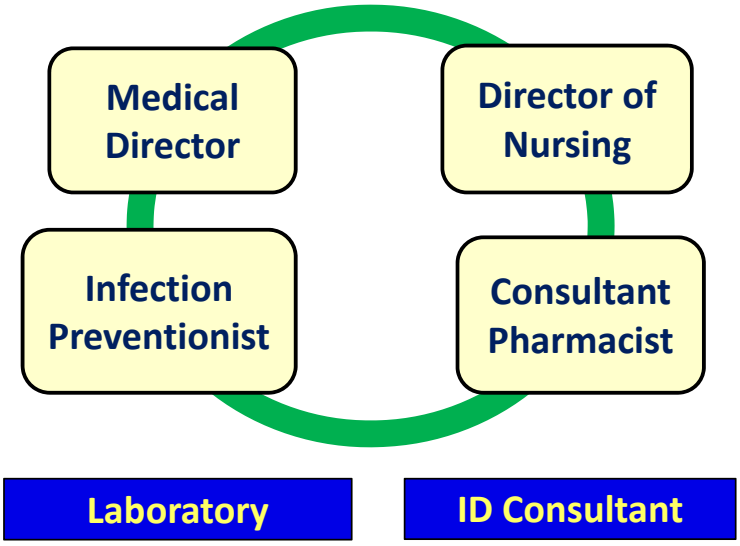
# #2. ACCOUNTABILITY

**CREATE AN ANTIBIOTIC STEWARDSHIP TEAM AND MAKE THEM ACCOUNTABLE**






# # 3. DRUG EXPERTISE

THE CONSULTANT PHARMACIST CAN BE YOUR FRIEND

- Pharmacists are increasingly aware of antibiotic stewardship issues
- Work with consultant pharmacist with infectious disease or antibiotic stewardship training
- Also ally yourself with programs and experts in hospitals or medical centers

## #4 ESTABLISHING POLICIES AND PROCEDURES

- Some say to do this first
- However, reviewing data and setting facility priorities may be better to do first
- Best policies and procedures are endorsed by facility staff and updated regularly
- AMDA has published 2-page template


## #4. THEN **TAKE** ACTION!!

- Create policies to improve antibiotic prescribing and use
  - Require prescribers to document a dose, duration, and indication for all antibiotic prescriptions
  - Develop algorithms for assessing, testing and treating infected residents
- Implement practices to improve antibiotic use
  - Standardize assessment and communication tool for potentially infected residents
  - Standardize process for communication of antibiotic use information during transfers
  - Develop antibiograms
  - Take an antibiotic “time out”

# *PRE*-PRESCRIPTIVE INTERVENTIONS

## Examples

- Checklist of signs and symptoms for nurses to use before calling a provider about a resident with a change in status
- Prescribing guidelines distributed to staff and clinicians
- Pocket cards distributed to staff indicating minimum criteria for starting antibiotics
- Electronic medical record "stops" to notify providers if a resident does not meet criteria for antibiotic therapy or needs monitoring
- Dose recommendations for residents with decreased kidney function
- Requirement that all antibiotic orders have an indication, dose, and duration


# *POST*-PRESCRIPTIVE INTERVENTIONS

## Examples:

- Electronic alert or pharmacy institutes antibiotic "time out" at 48 or 72 hours
  - Require the prescriber to reassess antibiotic prescriptions and verify the need to continue them
- Provider reviews culture results and diagnostic tests to make sure antibiotics are necessary and effective
- Formal review of appropriateness of antibiotic prescriptions by infectious disease–trained consultants 24 to 72 hours after the initial prescription
  - Consultants can be pharmacists or physicians

# *CARE PROCESSES* INTERVENTIONS

- Guidelines for urine testing, including what to do when cultures come back
- Pharmacist involvement in evaluating antibiotic starts and/or antibiotic duration
- Excel spreadsheet to chart antibiotic use – and regularly publicizing statistics

**- CRITICAL ROLE OF LEADERSHIP CANNOT BE OVEREMPHASIZED -**


**HTTP://WWW.JAMDA.COM/ARTICLE/S1525-8610(17)30430-9/FULLTEXT**

JAMDA 18 (2017) 913–920

ELSEVIER

JAMDA

journal homepage: www.jamda.com

Special Article

## Template for an Antibiotic Stewardship Policy for Post-Acute and Long-Term Care Settings

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## APPROACHES THAT ARE MORE DIFFICULT TO IMPLEMENT

- Communication guidelines for nursing staff around suspected infections – SBAR; protocols(e.g, asking for photos of skin problems)
- Antibiotic initiation protocols
- Infection Control Nurse leadership role ("infection preventionist")
- Antibiograms

**- CRITICAL ROLE OF LEADERSHIP CANNOT BE OVEREMPHASIZED -**


## *SEPSIS DETECTION* INTERVENTIONS

1. If status change → document vital signs at least 2x / day
2. Apply two screens to vital signs:
   - 100-100-100
   - Temperature ≥99.0°F
3. If either screen is positive:
   - urgent in-person or virtual visit with medical provider
   - rapid diagnostic testing – e.g., WBC, blood culture, serum lactate and possibly serum calcitonin; others per symptoms
   - begin scheduled vital sign recordings every four hours

# INTERVENTIONS TO REDUCE C DIFF POST HOSPITALIZATION

1. Use the 4 Moments
2. Probiotics
   - Cochrane review (2013): "moderate quality evidence suggests that probiotics are both safe and effective for preventing Clostridium difficile-associated diarrhea"
   - Current evidence is mixed for infection control
3. Infection Control- use appropriate hygiene to prevent spread

Goldenberg, et al. Cochrane Database Syst Rev. 2013 May 31;5:CD006095.

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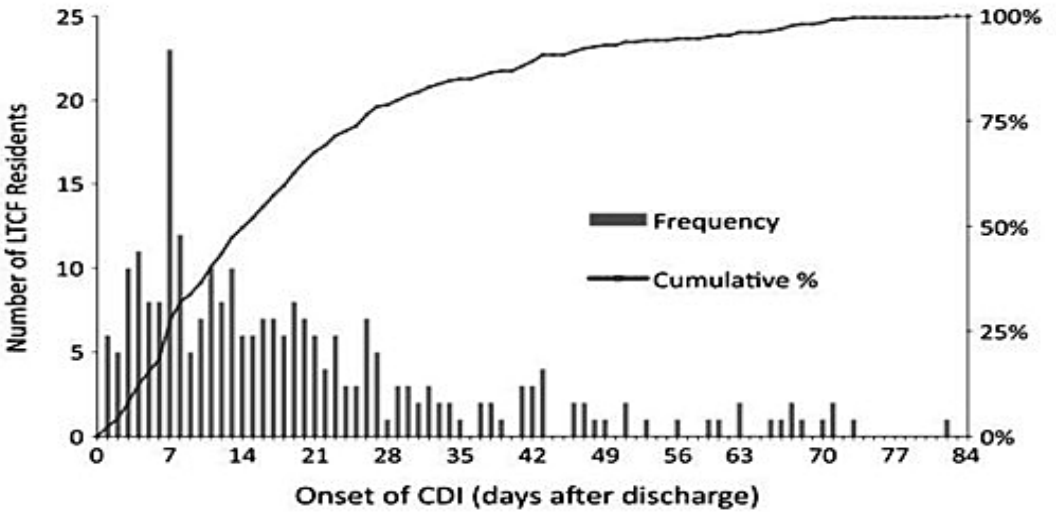
# EMERGENCY DEPARTMENT AND HOSPITAL CASES

## Over Half of C Diff Infections in NHs Occur within a Month Post-Hospital Discharge




Pawar et al, ICDHE 2012; 33:1107-12

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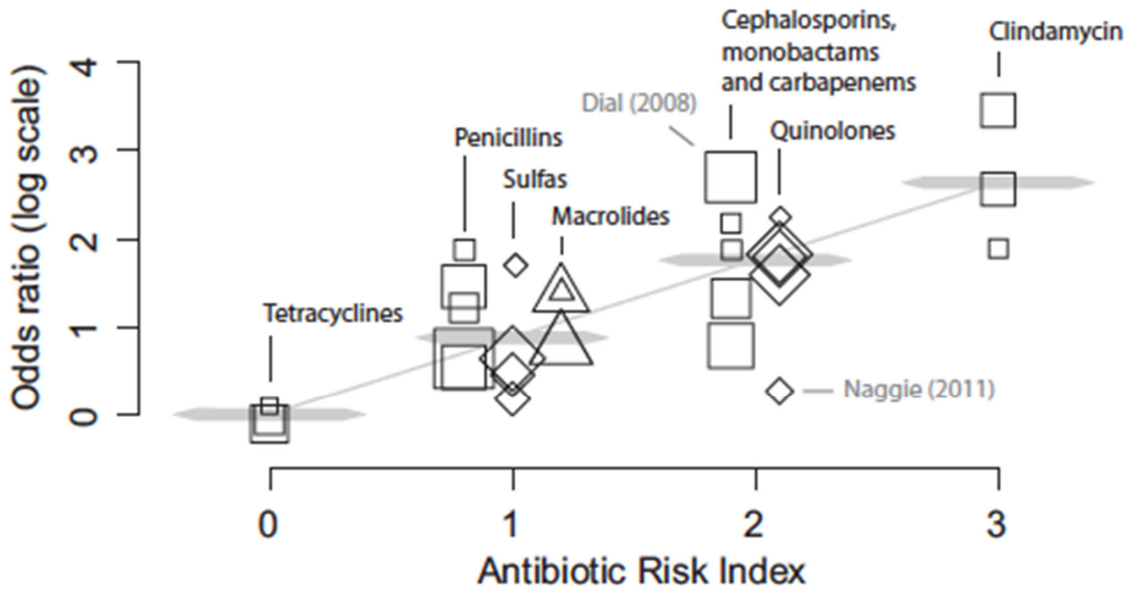
# WHICH ANTIBIOTICS POSE THE HIGHEST RISK OF *CLOSTRIDIUM DIFFICILE?*




Wenisch et al. *Antimicrob Ag Chemother* 2014; 58(9): 5079-83

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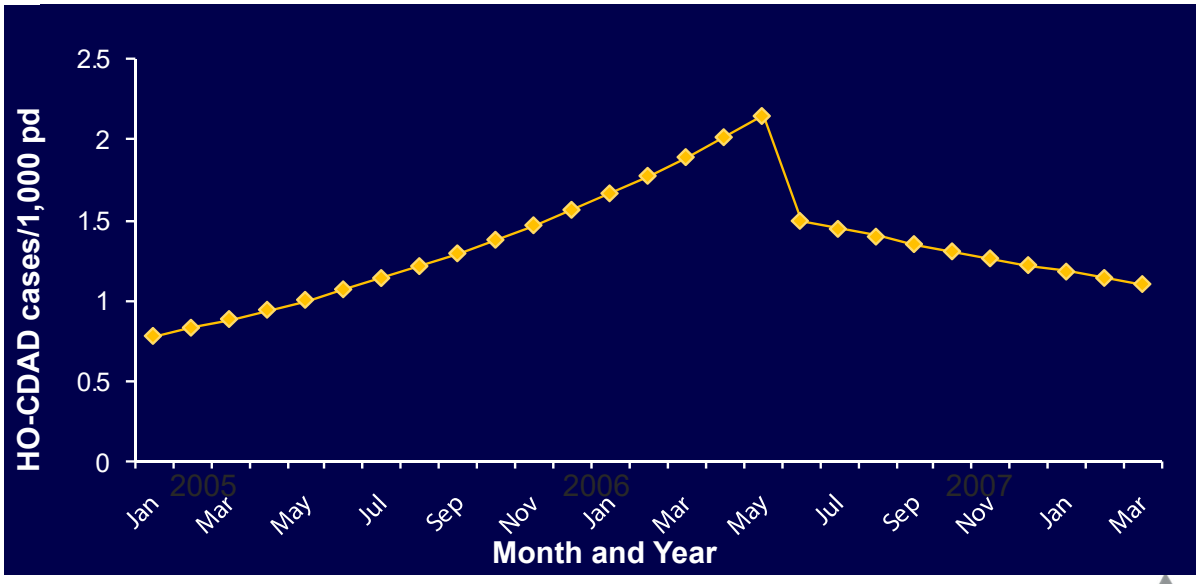
# INFECTION CONTROL IS IMPORTANT!!!

## -Preventing C Diff Infection and Spread-

# REDUCING ANTIBIOTIC OVERUSE WORKS: IMPACT OF FLUOROQUINOLONE RESTRICTION ON RATES OF *C. DIFFICILE* INFECTION IN A COMMUNITY HOSPITAL




*Infect Control Hosp Epidemiol*. 2009 Mar;30(3):264-72.

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# # 5. TRACK PROCESSES

- Clinical assessment documentation with change of condition
- Prescribing documentation
  - Antibiotic type
  - Frequency
  - Duration
- Adherence to facility-specific treatment recommendations
  - Staff process
  - Prescriber process

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# #5. TRACK OUTCOMES

Antibiotic Prescribing

- Point prevalence surveys of antibiotic use
- New antibiotic starts/1,000 resident-days
- Antibiotic days of therapy/1,000 resident-days

Adverse Events

- Rates of *C. difficile* infections
- Rates of antibiotic-resistant organisms
- Rates of adverse drug events due to antibiotics
- Hospitalizations and Emergency Department visits for infections

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# AN ABUNDANCE OF FREE HELP!

- http://www.rochesterpatientsafety.com/index.cfm?Page=For%20Nursing%20Homes
- https://www.health.state.mn.us/diseases/antibioticresistance/hcp/asp/ltc/index.html
- https://www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/SNF_ASP_Toolkit.aspx
- https://asap.nebraskamed.com/long-term-care/tools-templates-long-term-care/
- https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html

Many tools (156!) available for free on the internet, mostly about education, patient assessment and outcome measurement.

Belan M. J Antimicrob Chemother. 2020 Jun

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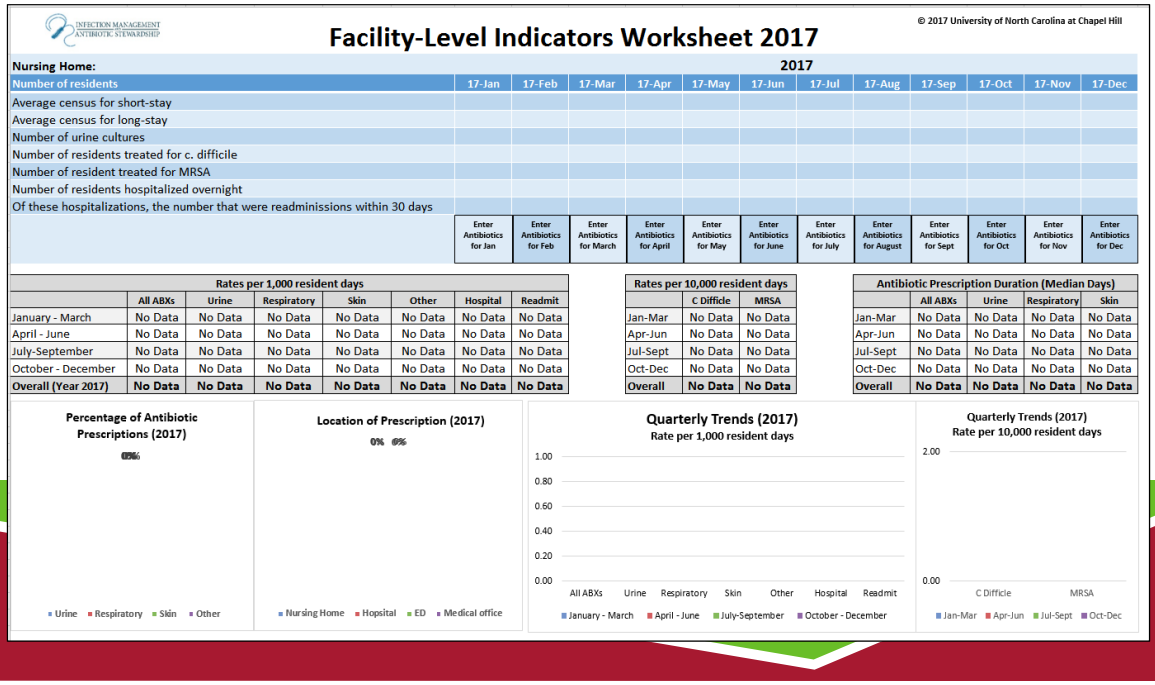
# INFECTION TRACKING EXCEL SPREADSHEETS



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# ANTIBIOTIC PRESCRIBING PORTION OF INFECTION TRACKING SPREADSHEETS

**Monthly systemic antibiotic list - January 2017**

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| Start Date | Name of Antibiotic | Duration (Days) | Resident Name | Room # | Reason Antibiotic was Prescribed | If other, please state specific diagnosis | Where prescribed | Prescriber's Last Name |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

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# INFECTION TRACKING EXCEL SPREADSHEETS

**Nursing Home:** **2017**

| Number of residents | 17-Jan | 17-Feb | 17-Mar | 17-Apr | 17-May | 17-Jun | 17-Jul |
|---|---|---|---|---|---|---|---|
| Average census for short-stay | 0 | 0 | 0 | | | | |
| Average census for long-stay | 76 | 77 | 70 | | | | |
| Number of urine cultures | 5 | 0 | 6 | | | | |
| Number of residents treated for c. difficile | 0 | 1 | 0 | | | | |
| Number of resident treated for MRSA | 1 | 0 | 0 | | | | |
| Number of residents hospitalized overnight | 5 | 0 | 6 | | | | |
| Of these hospitalizations, the number that were readminissions within 30 days | 1 | 0 | 0 | | | | |
| | Enter Antibiotics for Jan | Enter Antibiotics for Feb | Enter Antibiotics for March | Enter Antibiotics for April | Enter Antibiotics for May | Enter Antibiotics for June | Enter Antibiotics for July |

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# INFECTION TRACKING EXCEL SPREADSHEETS

**Monthly systemic antibiotic list - March 2017**

| Start Date | Name of Antibiotic | Duration (Days) | Resident Name | Room # | Reason Antibiotic was Prescribed | If other, please state specific diagnosis | Where prescribed | Prescriber's Last Name |
|---|---|---|---|---|---|---|---|---|
| 3/6/2017 | ciprofloxacin | 7 | | | Urinary | | Nursing Home | Smith |
| 3/6/2017 | levofloxacin | 7 | | | Respiratory | | Nursing Home | Smith |
| 3/6/2017 | Rocephin | 7 | | | Respiratory | | Nursing Home | Smith |
| 3/8/2017 | Rocephin | 7 | | | Other | Elevated WBCs | Nursing Home | Smith |
| 3/10/2017 | tetracycline | 5 | | | Urinary | | Nursing Home | Jones |
| 3/16/2017 | doxycycline | 7 | | | Respiratory | | Nursing Home | Smith |
| 3/17/2017 | doxycycline | 7 | | | Respiratory | | Nursing Home | Smith |
| 3/20/2017 | levofloxacin | 4 | | | Respiratory | | Nursing Home | Jones |
| 3/21/2017 | fosfomycin | 6 | | | Urinary | | Hospital | |
| 3/21/2017 | ceftazidime | | | | Urinary | | Nursing Home | Jones |
| 3/22/2017 | doxycycline | 7 | | | Respiratory | | Nursing Home | Smith |
| 3/22/2017 | aztreonam | 7 | | | Skin | | Nursing Home | Johnson |
| 3/23/2017 | clindamycin | 3 | | | Respiratory | | Hospital | |
| 3/24/2017 | cefdinir | 7 | | | Respiratory | | Hospital | |
| 3/24/2017 | doxycycline | 7 | | | Respiratory | | Nursing Home | Smith |
| 3/24/2017 | levofloxacin | 5 | | | Respiratory | | Nursing Home | Jones |
| 3/27/2017 | cefdinir | 6 | | | Urinary | | Emergency Dept | |
| 3/28/2017 | Rocephin | 7 | | | Urinary | | Nursing Home | Smith |
| 3/31/2017 | ciprofloxacin | 7 | | | Urinary | | Nursing Home | Smith |
| 3/31/2017 | Rocephin | 4 | | | Urinary | | Hospital | |
| | | | | | | | | |

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INFECTION MANAGEMENT ANTIBIOTIC STEWARDSHIP



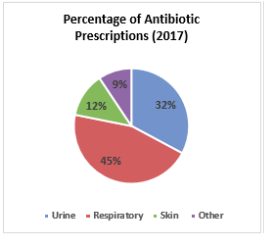
## Facility-Level Indicators Worksheet 2017

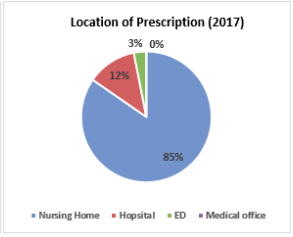
| Nursing Home: | 2017 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of residents | 17-Jan | 17-Feb | 17-Mar | 17-Apr | 17-May | 17-Jun | 17-Jul | 17-Aug | 17-Sep | 17-Oct | 17-Nov | 17-Dec |
| Average census for short-stay | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| Average census for long-stay | 76 | 77 | 70 | 70 | 76 | | | | | | | |
| Number of urine cultures | 5 | 0 | 6 | 3 | 4 | | | | | | | |
| Number of residents treated for c. difficile | 0 | 0 | 0 | 0 | 1 | | | | | | | |
| Number of residents treated for MRSA | 1 | 0 | 0 | 0 | 0 | | | | | | | |
| Number of residents hospitalized overnight | 5 | 0 | 6 | 1 | 3 | | | | | | | |
| Of these hospitalizations, the number that were readminissions within 30 days | 1 | 0 | 0 | 1 | 3 | | | | | | | |
| | Enter Antibiotics for Jan | Enter Antibiotics for Feb | Enter Antibiotics for March | Enter Antibiotics for April | Enter Antibiotics for May | Enter Antibiotics for June | Enter Antibiotics for July | Enter Antibiotics for August | Enter Antibiotics for Sept | Enter Antibiotics for Oct | Enter Antibiotics for Nov | Enter Antibiotics for Dec |

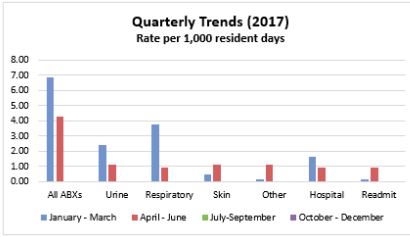
| Rates per 1,000 resident days | All ABXs | Urine | Respiratory | Skin | Other | Hospital | Readmit |
|---|---|---|---|---|---|---|---|
| January - March | 6.88 | 2.39 | 3.74 | 0.45 | 0.15 | 1.65 | 0.15 |
| April - June | 4.26 | 1.12 | 0.90 | 1.12 | 1.12 | 0.90 | 0.90 |
| July-September | No Data | No Data | No Data | No Data | No Data | No Data | No Data |
| October - December | No Data | No Data | No Data | No Data | No Data | No Data | No Data |
| **Overall (Year 2017)** | **5.84** | **1.89** | **2.60** | **0.72** | **0.54** | **1.35** | **0.45** |

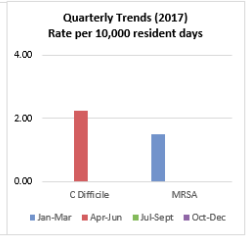
| Rates per 10,000 resident days | C Difficile | MRSA |
|---|---|---|
| Jan-Mar | 0.00 | 1.50 |
| Apr-Jun | 2.24 | 0.00 |
| Jul-Sept | No Data | No Data |
| Oct-Dec | No Data | No Data |
| **Overall** | **0.90** | **0.90** |

| Antibiotic Prescription Duration (Median Days) | All ABXs | Urine | Respiratory | Skin |
|---|---|---|---|---|
| Jan-Mar | 7 | 7 | 7 | 10 |
| Apr-Jun | 7 | 7 | 7 | 7 |
| Jul-Sept | No Data | No Data | No Data | No Data |
| Oct-Dec | No Data | No Data | No Data | No Data |
| **Overall** | **7** | **7** | **7** | **7** |



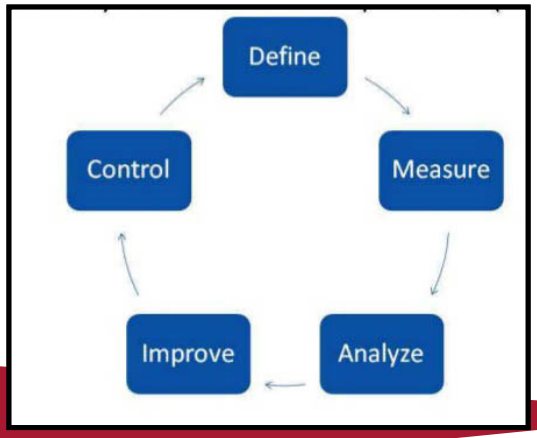



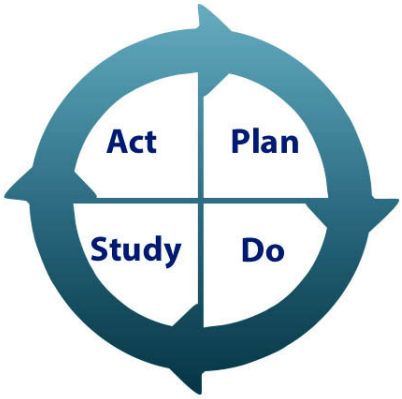



# #6. REPORT OUTCOMES!

- Time should be set aside to report on the data you've tracked
- Let providers know how they're doing




# #7. EDUCATION

- Clinical providers (MD, DO, NP, PA, PharmD)
- Nursing staff (RNs, LPNs, CNAs)
- Residents and families

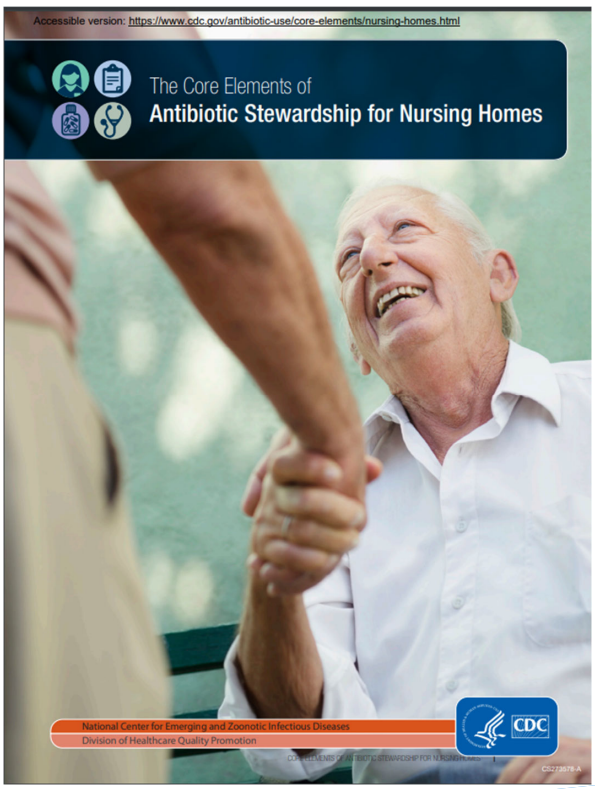
# *EDUCATIONAL* INTERVENTIONS

- Patient Education
  - Consumer Reports: https://www.choosingwisely.org/wp-content/uploads/2017/06/3AntibioticsTri-Fold_DownloadGenericFINAL.pdf
  - CDC: https://www.cdc.gov/antibiotic-use/pdfs/VirusOrBacteria-NH-P.pdf
- Provider Education
  - Stanford CME Course - To Prescribe or Not to Prescribe? Antibiotics and Outpatient Infections
  - Pharmacist Antibiotic Resistance Continuing Education
  - Antibiotic Stewardship Basics for Multi-Disciplinary Health Care Professionals
  - CDC Training on Antibiotic Stewardship: https://www.cdc.gov/antibiotic-use/core-elements/nursing-homes/implementation.html

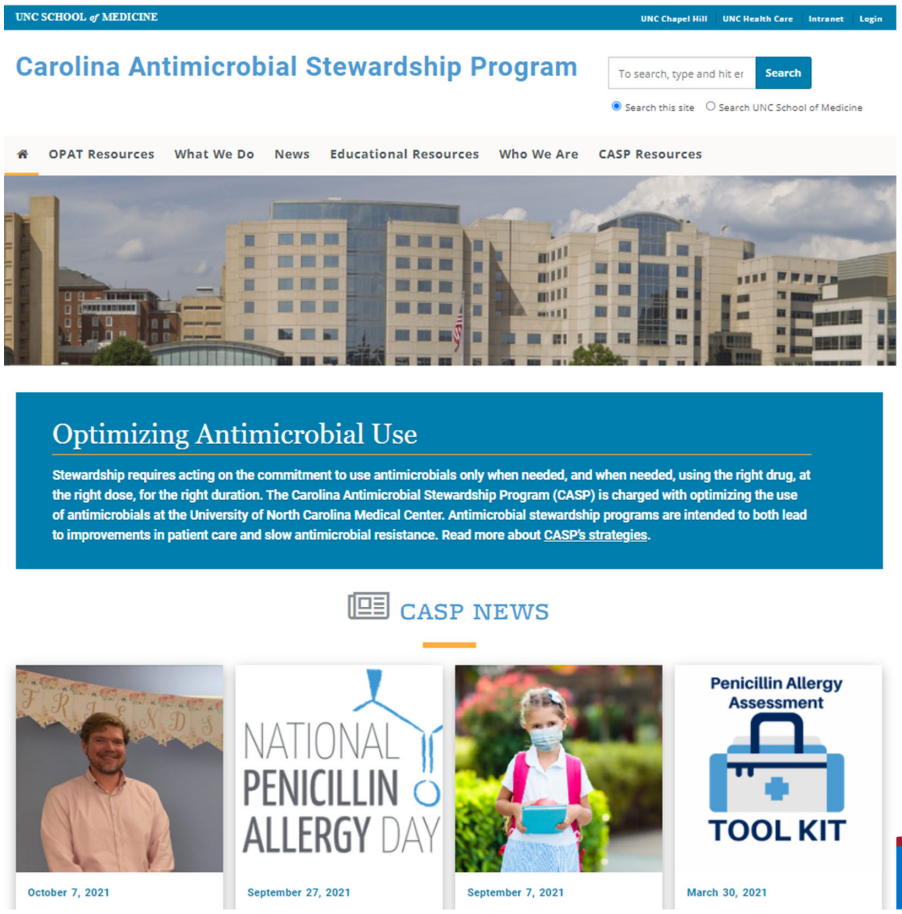


# IMPLEMENTATION MANUAL

- A step-by-step guide explaining how to incorporate our materials into a program that will improve outcomes

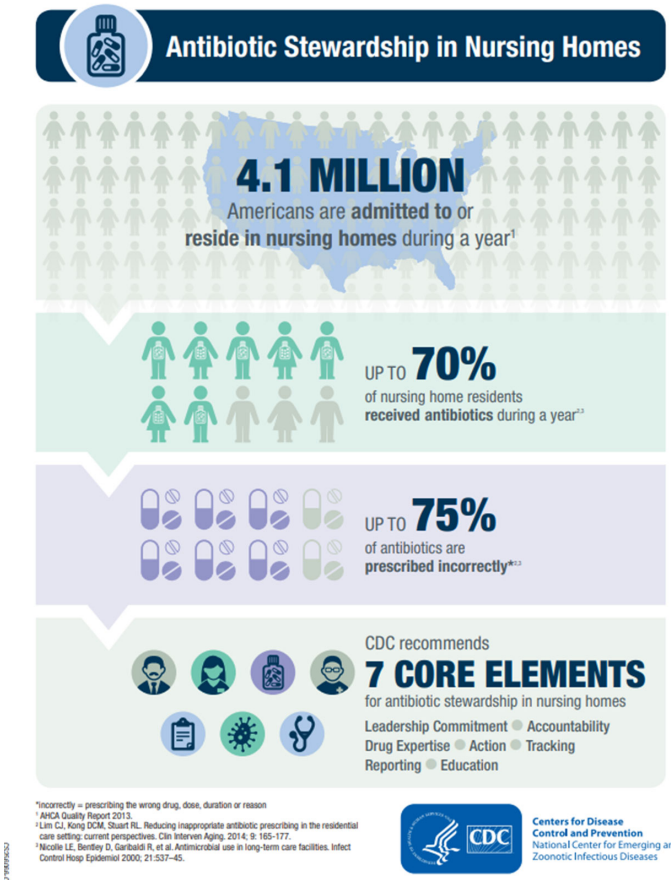



https://www.cdc.gov/antibiotic-use/core-elements/pdfs/core-elements-antibiotic-stewardship-H.pdf




**UNC has local resources too!**

https://www.med.unc.edu/casp/

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**CAN YOU TAKE THE LEAD IN YOUR FACILITY?**