

Beyond Compliance- This is your moment

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Disclosures

- None to disclose

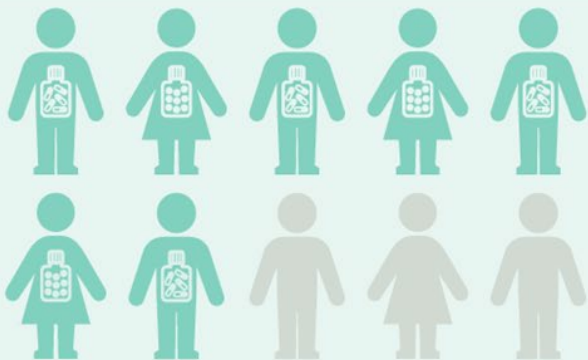
Objectives

1. Operate with best practice and evidence-based data to advocate for best patient outcomes from a well-rounded compliant Antibiotic Stewardship Program
1. Interpret and issue interdisciplinary reports to effectively communicate with providers and advocate for best patient outcomes
1. Understand antibiotic resistance patterns through analysis of antibiograms and sensitivity reports to reduce antibiotic adverse events through ensuring appropriate antibiotic usage



Beyond Compliance-
what does this
mean?

CDC and MDH Stats



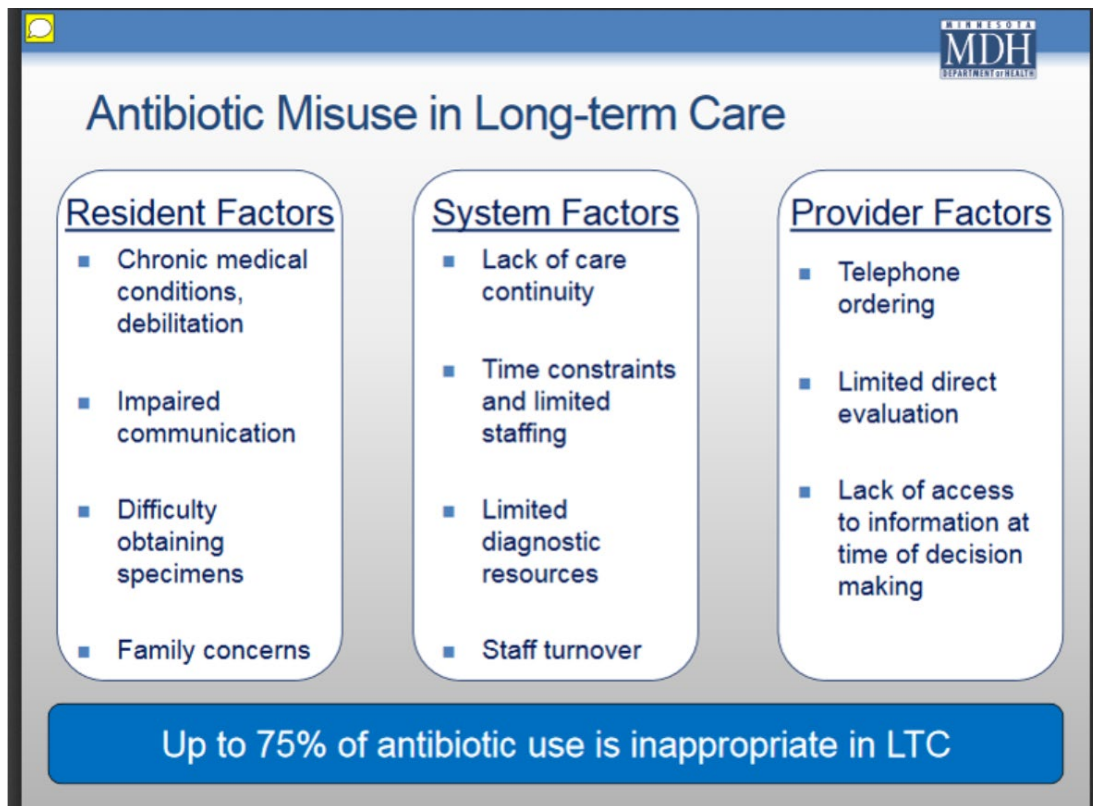
UP TO **70%**
of nursing home residents
received antibiotics during a year



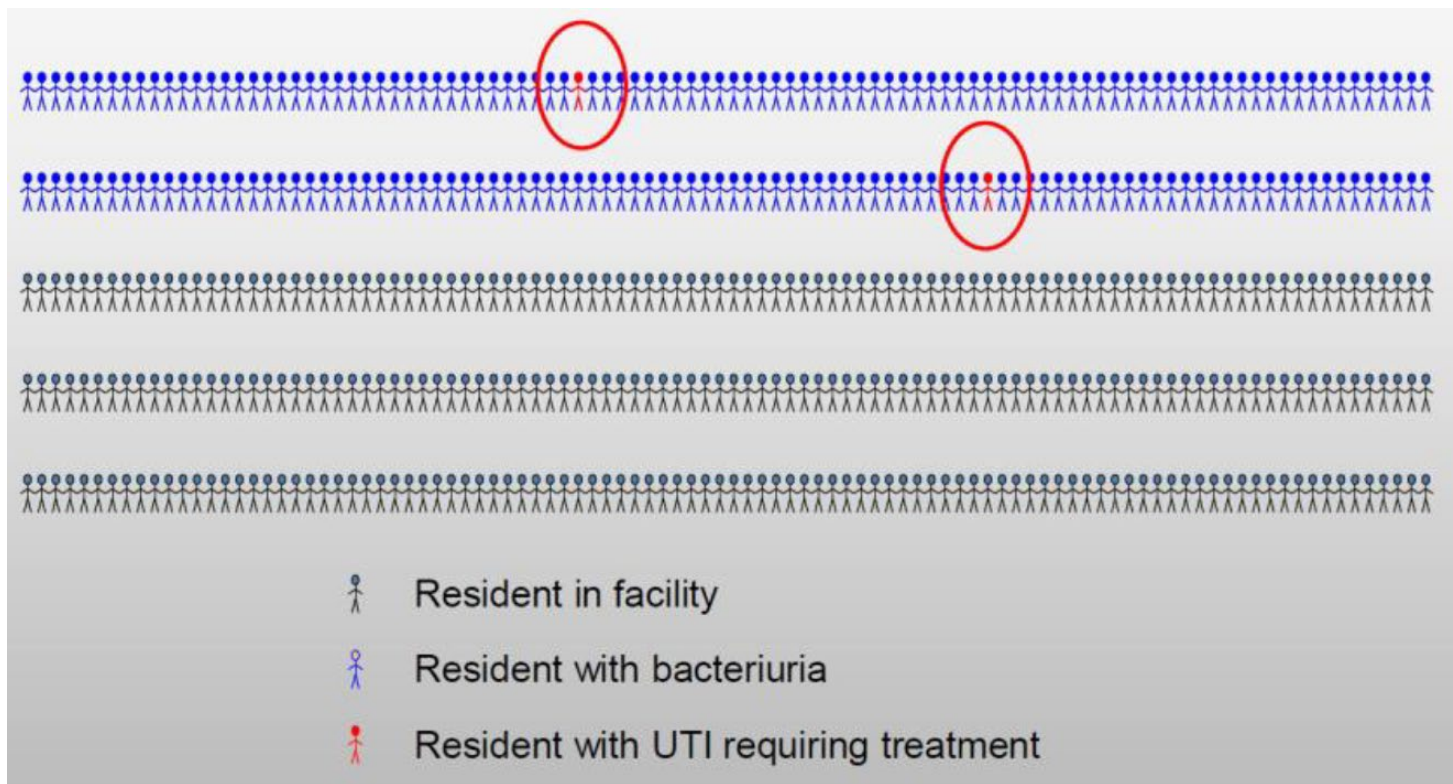
UP TO **75%**
of antibiotics are
prescribed incorrectly



Barriers to Antibiotic Stewardship in LTC

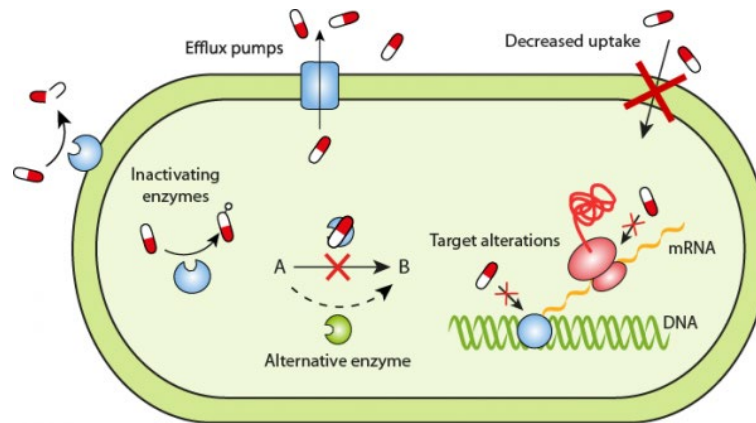


UTIs in LTC

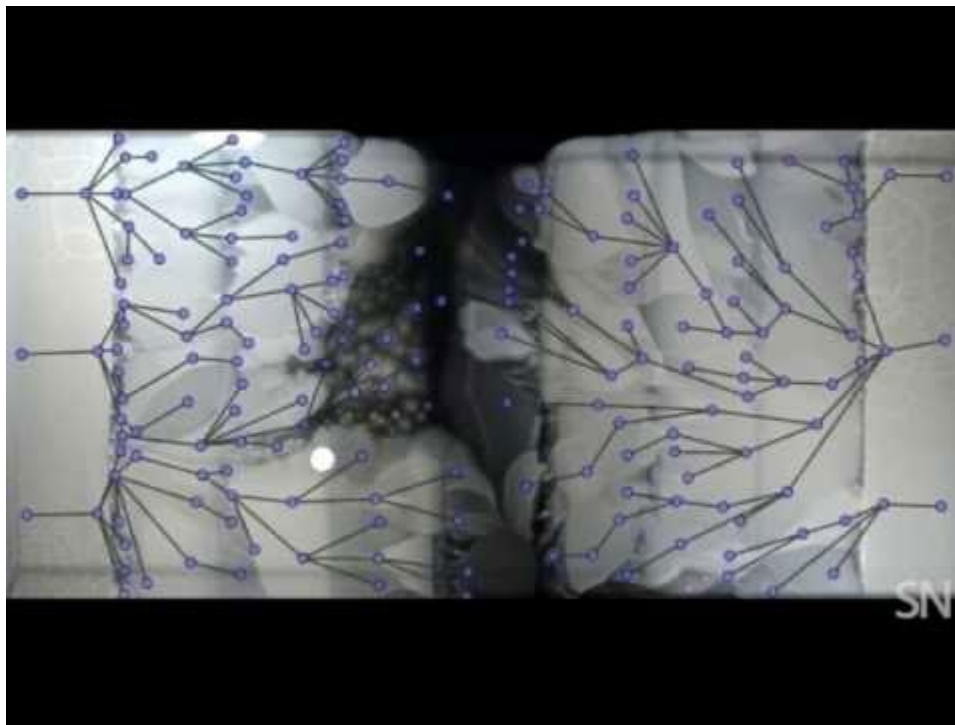


How Resistance Happens

- The use of antimicrobials, including antibiotics, has increased over time and is now leading to growing concern and the realization that we are all in a CRISIS.
- Microbes are constantly evolving, which enables them to adapt to new environments.



Visual of Antibiotic Resistance



Why is this important?

Antimicrobial overuse and misuse has led to:

- Increased RESISTANCE and “super bugs”
- Clostridium difficile (C. diff) infections, or CDI are on the rise and affecting younger and healthy patients
- Adverse drug reactions
- Drug interactions

This is all compounded by the fact that not many new, novel therapies are being developed

Clostridium difficile

The risk of developing a *C. diff* infection does increase with:

- higher doses of antibiotics
- longer courses of antibiotic treatment
- treatment with more than one antibiotic at a time
- advanced age
- recent hospitalization
- Proton Pump Inhibitors (PPI) increases risk

Antibiotic induced *C. difficile*:

- Clindamycin
- Fluoroquinolones (for example, levofloxacin, ciprofloxacin)
- Penicillins (Augmentin)
- Cephalosporins (Keflex, Rocephin)



John Hopkins Study

- 1 in 5 patients (20%) experience an adverse side effect with antibiotic use
- Risk increases 3% for every additional 10 days of antibiotic use

Many drug interactions exist with antibiotics:

- Tetracycline class and calcium/magnesium/iron containing products
 - Result in lower concentrations of the antibiotic being absorbed can lead to subtherapeutic levels = increase potential for resistance and the medication not working
- Zyxos and SSRI (antidepressants)
 - Increased risk for “Serotonin syndrome”
- Clarithromycin
 - Inhibits liver enzymes which can cause increased concentrations of other drugs

Antibiotic Adverse Reactions:

- C-diff
- Confusion (Cipro)
- Diarrhea
- Allergic reactions
- Achilles tendon rupture (quinolones)



Misconceptions of actual infection

$\geq 10^5$ CFU bacteria present in urine is JUST A NUMBER

- Once thought to be a reason to treat -No longer supported
- $\geq 10^5$ CFU alone does NOT indicate infection
- HOWEVER, $\geq 10^5$ CFU does NOT disprove infection

Confusion alone \neq UTI

Pyuria \neq UTI (presence if white blood cells in the urine)

- > 90% of persons with bacteriuria with also have pyuria, so this is not generally helpful
- Pyuria is expected as it indicates host response to a stimulus such as bacteria

Malodorous Urine \neq UTI

- Abnormal odor may be caused by many factors including dehydration, diet, and bacteriuria
- Urine odor to identify bacteriuria results in error in 1/3 of cases
- Even if urine odor is caused by bacteriuria, this does NOT indicate the presence of an infection that requires treatment UNLESS other symptoms are present

Fever in presence of bacteriuria \neq UTI

- Most residents (90%) with fever and no urinary symptoms have another explanation for fever
- Most residents with bacteriuria do not have a clinical UTI needing antimicrobial treatment
- The positive predictive value of a positive urine culture for a UTI is approximately 12%

Alternate explanations of non-specific symptoms

- Dehydration
 - offer fluids if not fluid-restricted
- Medication side effects
 - anticholinergics (TCAs), sympathomimetic medications (oral decongestants)
- Viral illness
- Sleep problems/disturbances
- Pain
- Emotional anxiety or depression



Tools to help guide treatment

Sensitivity reports

- Shows the bacteria sensitivity to certain antibiotics
- Can help with selection of the medication
 - Hence the importance of waiting to treat UTIs until sensitivities can be reviewed

Antibiogram

- Summary report of antibiotic susceptibility patterns from organisms isolated in cultures.
- Help inform empiric antibiotic selection (i.e., before culture results are available) and monitor for new or worsening antibiotic resistance.

Sensitivity Reports

Source:

>100,000 CFU/mL *Escherichia coli* (!)

Verified On:

8/10/2017 0600

Susceptibility

Escherichia coli ¹¹		
	MIC	
Amoxicillin/clauvulanate	4 ug/mL	S
Ampicillin	4 ug/mL	S
Cefazolin	<=4 ug/mL	S
Ceftriaxone	<=1 ug/mL	S
Ciprofloxacin	<=0.25 ug/mL	S
Gentamicin	<=1 ug/mL	S
Nitrofurantoin	<=16 ug/mL	S ¹
Tobramycin	<=1 ug/mL	S
Trimethoprim/Sulfamethoxazole	<=20 ug/mL	S

¹ Do not use for pyelonephritis.

11 - *Escherichia coli*:

Cefazolin predicts susceptibility to oral agents cephalexin, cefdinir, cefpodoxime and cefuroxime when used for therapy of uncomplicated UTIs.

Ceftriaxone: 3rd generation cephalosporin (cefotaxime) may demonstrate a similar antimicrobial activity.

S - Sensitive

Antibiograms

Organisms	Isolates	Amoxicillin	Ampicillin	Azithromycin	Cefazolin	Cefepime	Cephalexin	Ciprofloxacin	Doxycycline	Levofloxacin	Piperacillin-tazobactam	Telavancin	Tetracycline	Tigecycline	Vancomycin
Acinetobacter genospecies 3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acinetobacter schindleri	2	100%	-	-	-	-	-	-	-	-	-	-	0%	-	0%
Enterobacteriaceae	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Escherichia coli	7	75.0%	0%	0%	-	-	0%	33.3%	-	-	-	0%	0%	-	66.7%
Escherichia coli, (Enterohemorrhagic)serotype O157:H7	3	0%	-	-	-	-	-	-	0%	-	-	-	-	-	-
Moraxella catarrhalis	2	100%	-	-	100%	-	-	-	-	100%	-	-	100%	-	-
Pseudomonas aeruginosa	2	-	-	-	-	100%	-	-	-	-	0%	-	-	0%	-

Antibiotic Joke Break



It was on a short-cut through the hospital kitchens that Albert was first approached by a member of the Antibiotic Resistance.

CDC Core Elements



1. Leadership commitment

2. Accountability

3. Drug expertise

4. Action



5. Tracking

6. Reporting

7. Education

Leadership

Adequate personnel, financial, and information technology resources must be made available, and Leadership support for a Team approach by:

- Physicians/Providers
- Pharmacists
- Nurses (All levels)
- Administrators
- Caregivers



Accountability

A single leader is responsible for program outcomes

- Infection Prevention and Control Officer (IPCO)

Antibiotic Stewardship
takes **accountability**.

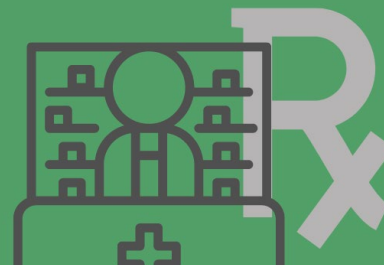


Drug Expertise

Pharmacist(s) is responsible for assisting with the implementation of antibiotic stewardship goals and initiatives

- Review antibiotic orders in **real time** to provide dosing adjustments
- Provide recommendations on trends and antibiotic usage/selection
 - Dose (renal, age, dx)
 - Duration (dx)
 - Abx selection (resistance patterns & dx)
 - Allergies

Antibiotic Stewardship
takes **drug expertise**.



Action

- Take action through policy and practice change to improve antibiotic use
- Should be done in a stepwise fashion so staff become familiar with and not overwhelmed by new changes
- Prioritize interventions based on the needs of your facility
 - Infection Prevention and Control Risk Assessment - [IPC-RiskAssessment.xlsx](#) (live.com)
 - CDC Infection Prevention and Control Assessment Tool for Long-term Care Facilities [CDC IC Assessment Tool LTCF v1_3](#)
- Share outcomes from successful interventions



Tracking and Monitoring

- Track why and how antibiotics are prescribed
- Review resident medical records for new antibiotic starts to determine whether the clinical assessment, prescription documentation and antibiotic selection were appropriate
 - Antimicrobial timeout
- Monitoring process measure can assess whether antibiotic prescribing policies are being followed
 - Standardize this process
- Track the amount of antibiotic used in your facility to review patterns of use and determine the impact of interventions



Reporting

- Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and leadership
- Report ideas for QAPI/ASP initiatives:
 - “In house” initiated antibiotic starts
 - Days of therapy
 - Location of medication/infections
 - Antibiotic selection
 - Can help to identify opportunities for therapeutic interventions that result in reduced Med-A cost.
 - Adverse events
 - Facility Specific antibiogram



Education

- Education regarding optimal antimicrobial prescribing and local resistance patterns must be provided regularly to all staff
- Tailored education must be provided to patients and families
- Build in provider education
- Bring your initiatives to the ER/ local hospital

Educational resources:

- <https://www.conversationsforhealth.com/antibiotics/>
- <https://www.cdc.gov/antibiotic-use/community/materials-references/print-materials/everyone/index.html>



“

Utilizing antimicrobial stewardship as one of the infection prevention patient safety care bundle strategies to prevent the development of MDROs and C. difficile helps healthcare organizations effectively use limited healthcare resources and improve patient outcomes.

- APIC, 2012



A consultant pharmacists perspective

Break the infection control process down into small, easily completed tasks or “phases”:

1. Early detection (watch and wait) documentation
2. SBAR communication to providers
3. Sensitivity report review/documentation
4. Antimicrobial time out (if appropriate)
5. Document outcome of infection/antimicrobial
6. Infection mapping

Noteworthy tips:

- Get off paper
- Create responsibilities for each team member
- Data driven decision making stemmed from best practices
- Data driven discussion
- ICPO | IPC Champion
- Real time pharmacist review



Let's put
this into
action!



Scenario 1

Amber (CNA) is helping Ms. Jones get up and get ready for the day. Amber notices that Ms. Jones is slightly confused this morning which is not typical. She also notices that Ms. Jones is complaining of a burning sensation when she used the bathroom.

What should Amber do?

- Start the documentation process of Ms. Jones s/s

When?

- Now!

Depends on your community process

How?

-?

SBAR communication to provider

Now that we have the initial s/s documented and clinical staff are aware of the situation with Ms. Jones a clinical assessment can be completed.

- Important that this is in **real time**
- SBAR format allows all of the appropriate clinical information is relayed to the provider to make an educated decision
 - **Situation**
 - **Background**
 - **Assessment**
 - **Recommendation**

Scenario 1

Samantha (RN), creates fills out a potential UTI SBAR. On the SBAR, she documents Ms. Jones vitals, her background information/diagnoses, the signs and symptoms that Ms. Jones is experiencing. She also indicates if these signs and symptoms meet infection criteria.

- Why is it important to document the signs and symptoms Ms. Jones is experiencing?
- It does two things:
 - Automatically captures criteria that Samantha can document to show surveyors
 - Conveys to the provider if treatment is needed at this point in time

Scenario 1

The provider now prescribed a medication (Cipro 500mg twice daily X 10 days) and ordered UA/UC. Labs came back a couple days later indicating that there is E-coli that was thought to be causing symptoms. Bacteria is sensitive to Cipro.

- Why is an antimicrobial time out still important in this case?
- The point of an antimicrobial time out is to potentially de-escalate therapy. Since the duration of the medication is 10 days, perhaps we can reduce that to 7 or 5 depending on the patient symptoms.

Scenario 1

Samantha contacted the provider at the 72 hour mark (after starting the antibiotic) and communicated that symptoms greatly improved. The provider reduced the duration to 5 days total and recommended to update if needed.

- After the antibiotic is completed, why is it important to track the outcome of the medication?
- This allows us to track if the medication was successful or failed. Important for reporting purposes and to track infections going forward for Ms. Jones. If she gets another UTI we can determine that she might be colonized and look for other rationales for the s/s present.

Scenario 1

Mapping of the infections is something that Samantha does on a real time basis as infections pop up in her community. Below is the map that is generated for her using her electronic software system. What might we be able to deduct from looking at this map? What questions might she want to investigate?

Map on the next slide

ROOM KEY	
P	- 16
S	- 16
D	- 46
TOTAL - 78	

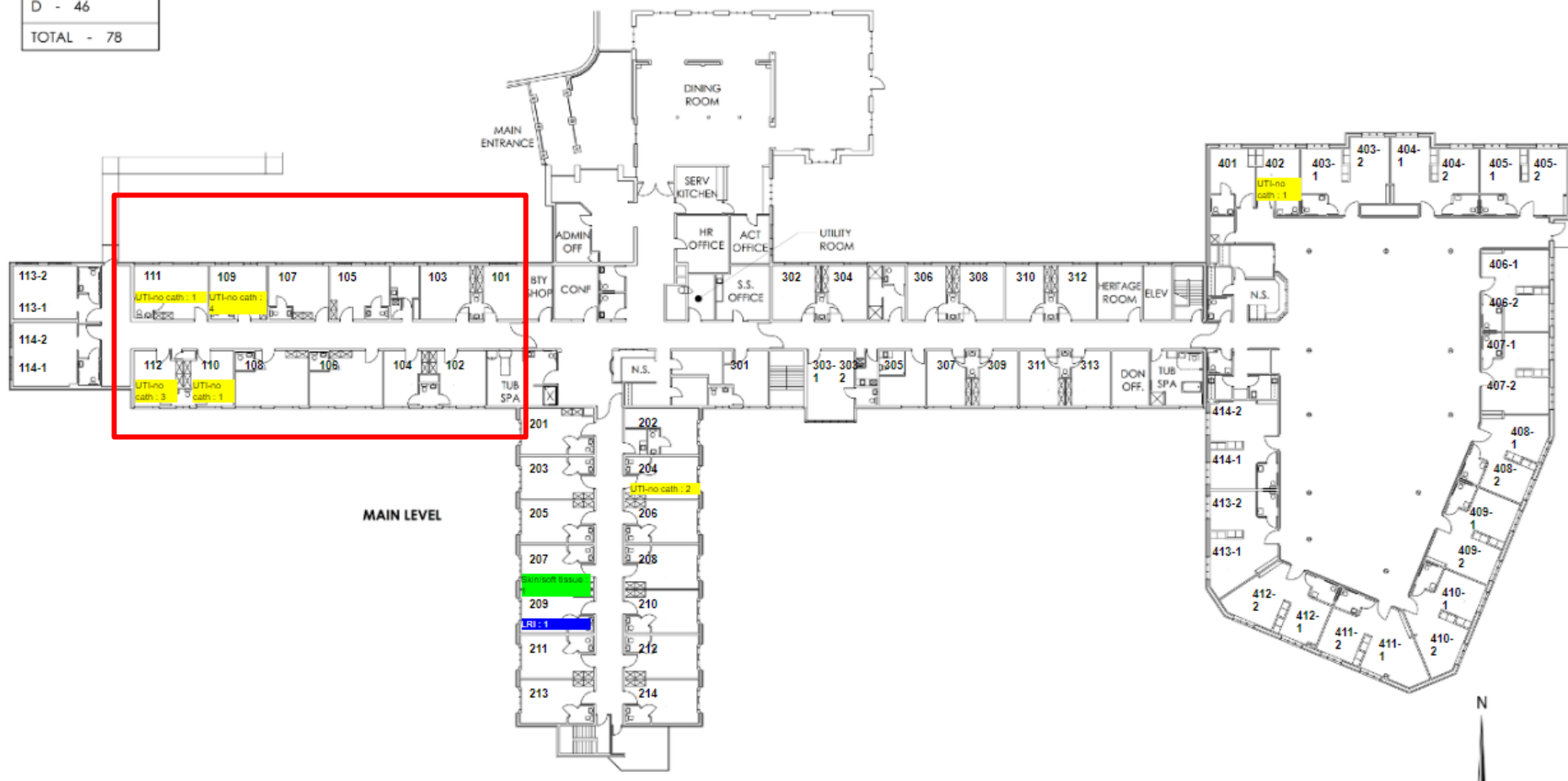
P	-	16
S	-	16
D	-	46

TOTAL - 78

Toggle UTI-no cath	Toggle LRI
Toggle Skin/soft tissue	Toggle COVID-19

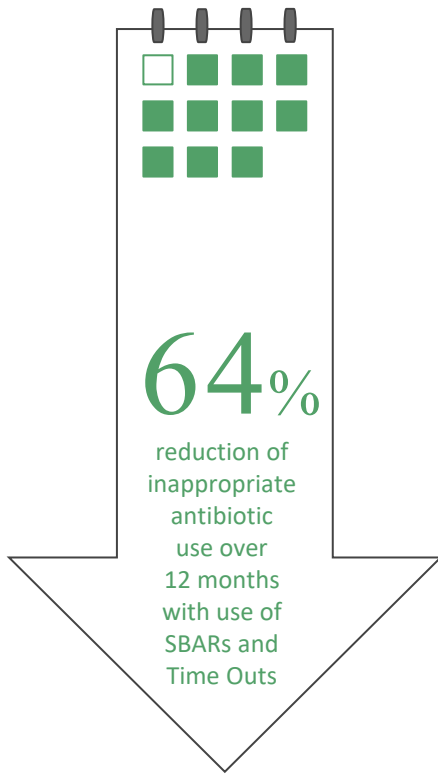
Toggle LRI

Toggle|COVID-19



Key Takeaways

- Antibiotic resistance is a dangerous situation we are facing
- Break the infection control process down in small steps
 - Complete the phases that are appropriate in the scenario and document at each step
- Spread workload out
 - Devise responsibilities for each phase
- Use an electronic form of tracking if able
 - Easier to create reports and analyze trends for education, quality improvements and successful Antibiotic Stewardship Program



Thank you!

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