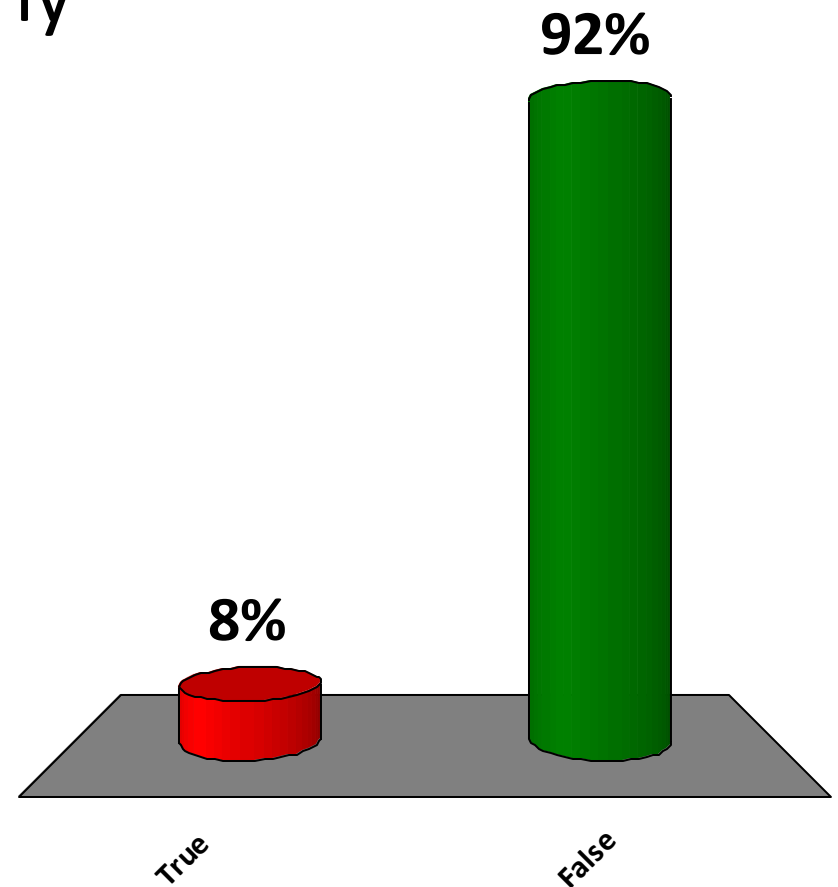


**UTIs in the elderly:
Are we only getting
half the story?**

**Dr Jyothi Rao
Consultant Microbiologist/DIPC
Barnsley Hospital**

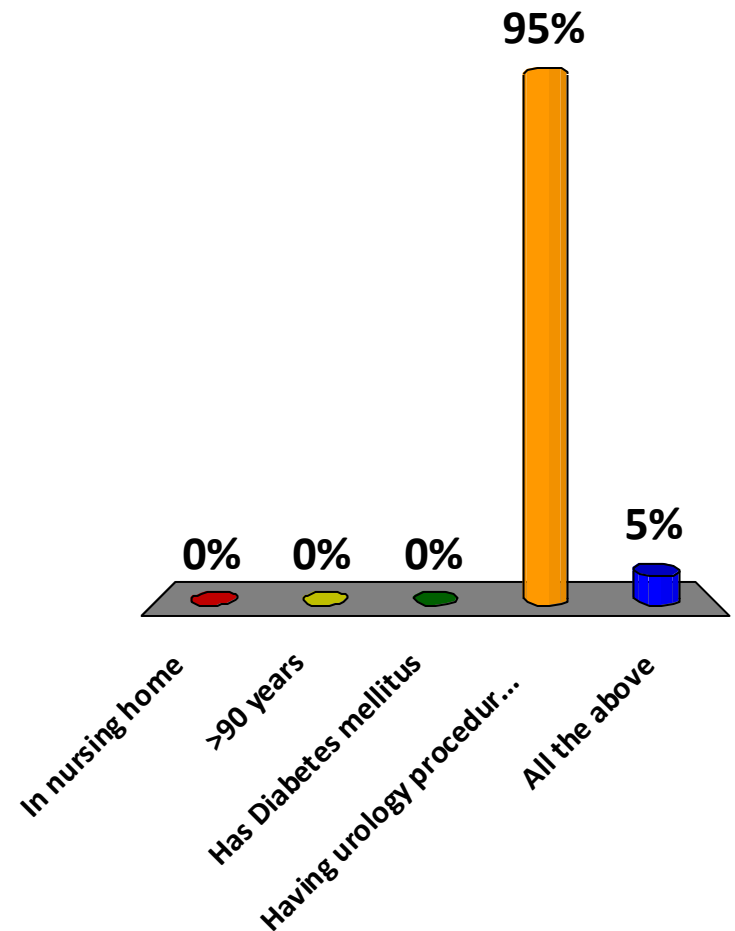
Q1: Bacteriuria ($\geq 10^5$ cfu/ml)
plus pyuria (>10 wbc)
is diagnostic of UTI in elderly

- A. True
- B. False



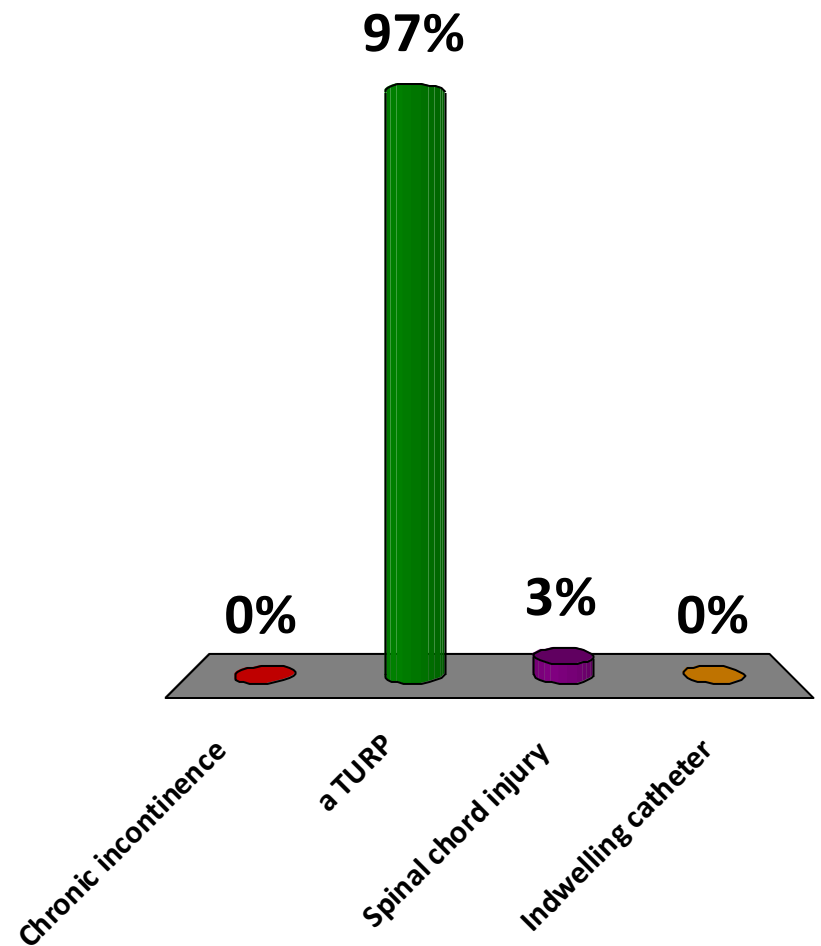
Q2: Appropriate to screen elderly for asymptomatic bacteriuria if:-

- A. In nursing home
- B. >90 years
- C. Has Diabetes mellitus
- D. Having urology procedure +/- mucosal bleeding
- E. All the above



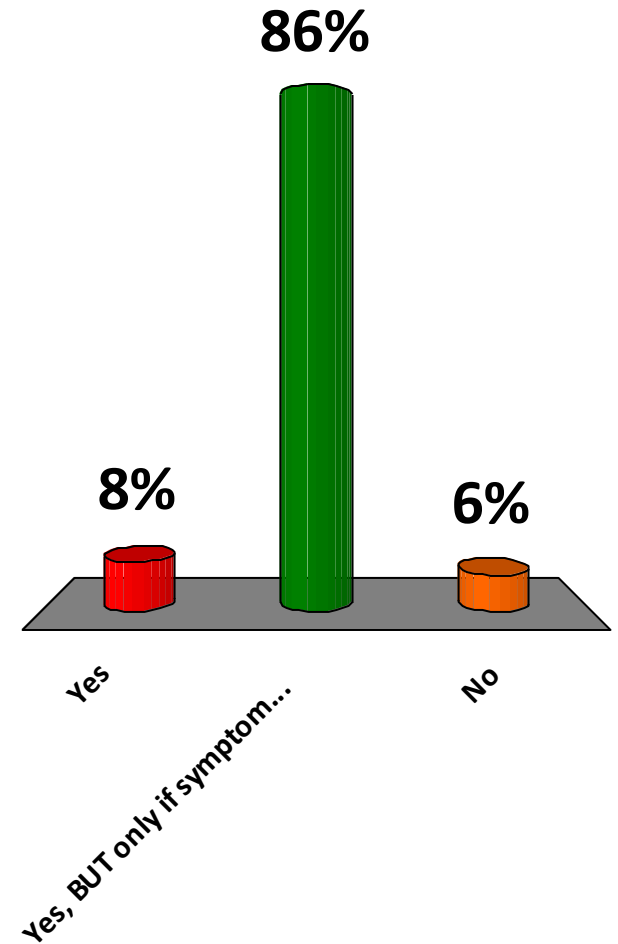
Q3: Appropriate to treat Asymptomatic bacteriuria if patient has :-

- A. Chronic incontinence
- B. a TURP
- C. Spinal chord injury
- D. Indwelling catheter



Q4: Antibiotic should be prescribed to a patient with a +ve Urine Culture

- A. Yes
- B. Yes, BUT only if symptoms present
- C. No



Case 1

74 y Lives with her husband

Admitted 1st Dec 2013 5 days fever & confusion

Urine dip positive ?UTI

Next 48h : Persistent spiking, reduced consciousness

Urine culture positive (E.coli)

3rd Dec: More drowsy. Signs of organ failure. ITU.

4th Dec: Diagnosed viral encephalitis and started antivirals 4 days after admission

Discharged into nursing home



Case 2

- **75y**
- **Left THR 2006 for OA**
- **Doing well until last 6 months**
- **5 x dislocations**

- **Plan for definitive surgery**
- **Recent positive urine cultures**
- **No urinary symptoms but given 2 courses of antibiotics (trim, coamoxiclav) in community**

- **C.difficile toxin positive**
- **Surgery cancelled**



Objectives

- Define whether to screen for or treat **asymptomatic bacteriuria** in an elderly population
- Review **complications** of antibiotic use
- Define symptomatic **urinary tract infections**
- Review **challenges** of diagnosis in the elderly

What is Asymptomatic Bacteriuria?

What is Asymptomatic Bacteriuria?

- Laboratory diagnosis
- Positive urine culture
 - Colony count significant ($\geq 10^5$ cfu/mL)
- Absence of symptoms

Pyuria

- Pyuria (> 10 WBC / high-power field) is evidence of inflammation in the genitourinary tract
- Pyuria is commonly found with ASB
 - Elderly institutionalized residents 90% (Infect Dis Clin North Am 1997;11:647-62)
 - Short-term (< 30 days) catheters 30-75% (Arch IM 2000;160:673-82)
 - Long-term catheters 50-100% (Am J Infect Control 1985;13:154-60)

Prevalence of ASB

POPULATION
Prevalence %

- Healthy premenopausal women 1-5
- Postmenopausal women 2.8-8.6
(50 to 70 years of age)

- **Older community-dwelling patients**
 - Women (older than 70 years) 10.8-16
 - Men 3.6-19
- **Older long-term care residents**
 - Women 25-50
 - Men 15-40

- **Patients with an indwelling catheter**
 - Short-term 9-23
 - Long-term 100

CID2005;40:643-

Indication for Treatment of ASB

- Pregnant women
 - Increased risk for adverse outcomes
- Urologic interventions
 - TURP
 - Any urologic procedure with potential mucosal bleeding

Treatment for ASB Not Indicated

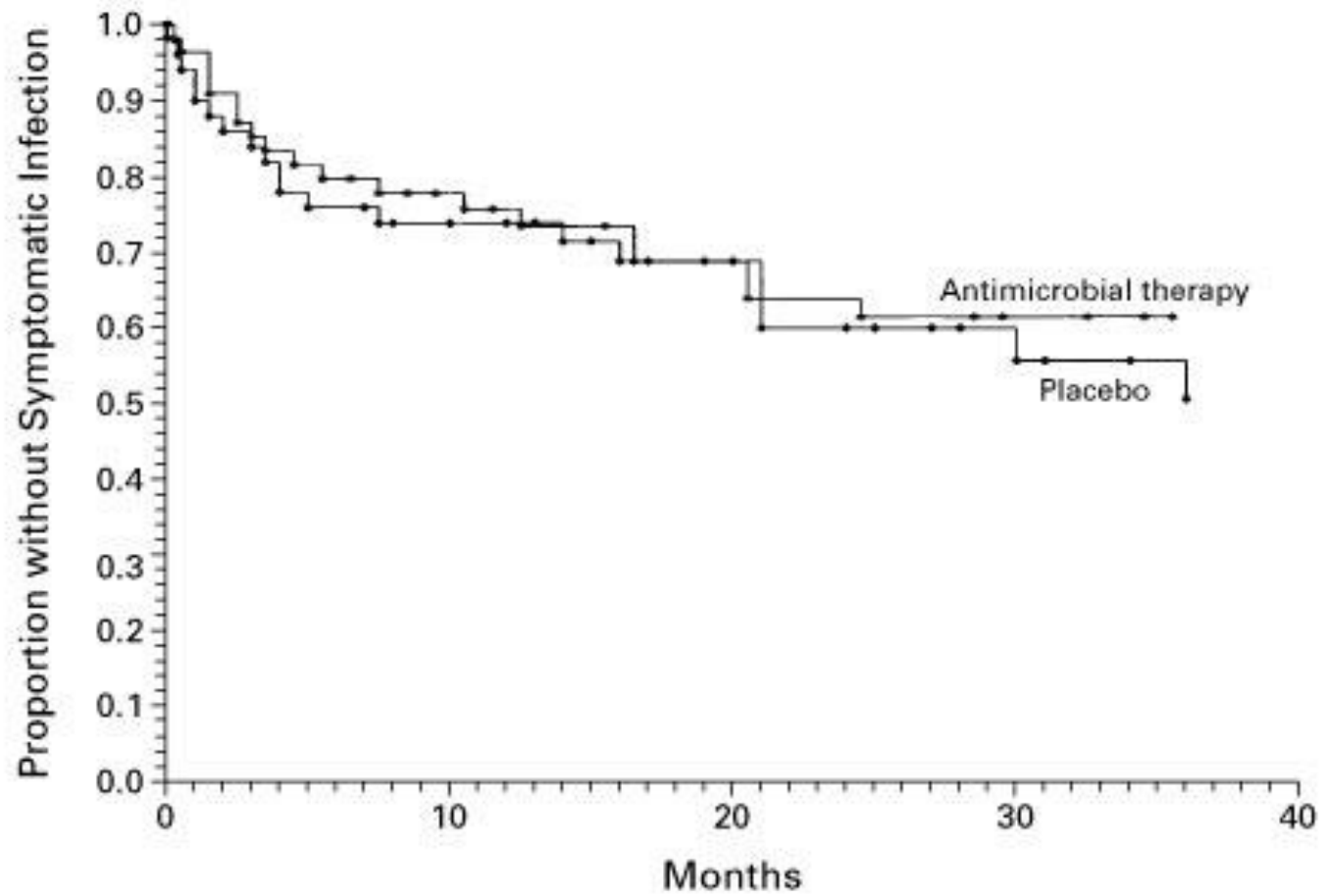
- Premenopausal, non-pregnant women
- Diabetic women
- ***Older persons living in the community***
- ***Elderly living in long term care facilities***
- Persons with spinal cord injury
- Catheterized patients

CID2005;40:643-654

No Benefit Treating ASB in the Elderly

- Large long-term studies of ASB in pre and postmenopausal women
 - NO ADVERSE OUTCOMES in women not treated
- Randomized studies (treatment vs. no treatment) in elderly LTC residents
 - NO BENEFIT to treatment
 - No decreased rate of symptoms
 - No improved survival

CID2005;40:643-654



IDSA Recommendations

- Routine screening for and treatment of ASB in older individuals in the community is not recommended.
- Screening for and treatment of ASB in elderly residents in LTCFs is not recommended.

CID2005;40:643-654

When to Treat
Urinary Tract Infections
Long Term Care

Any
Problems
Just
Treating
Anyway?



Antibiotic misuse adversely impacts patients - resistance

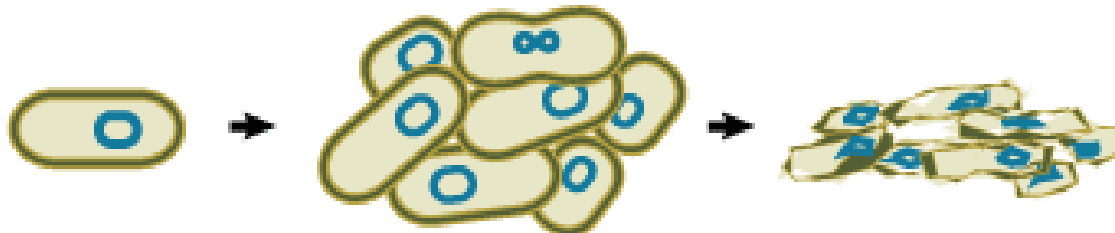
- **Getting an antibiotic increases a patient's chance of becoming colonized or infected with a resistant organism.**

Exposure to bacteria occurs.

Infection occurs and the bacteria spread.

Drug treatment is used.

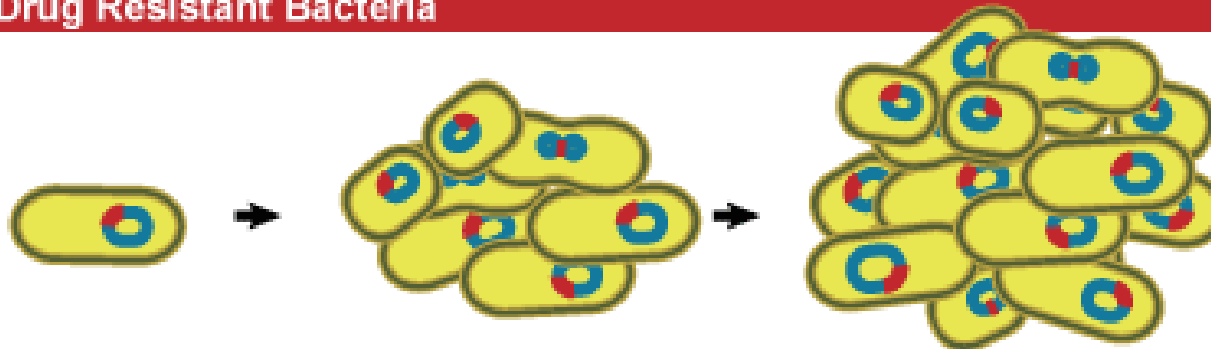
Non-resistant Bacteria



The bacteria multiply.

The bacteria die. The person is healthy again.

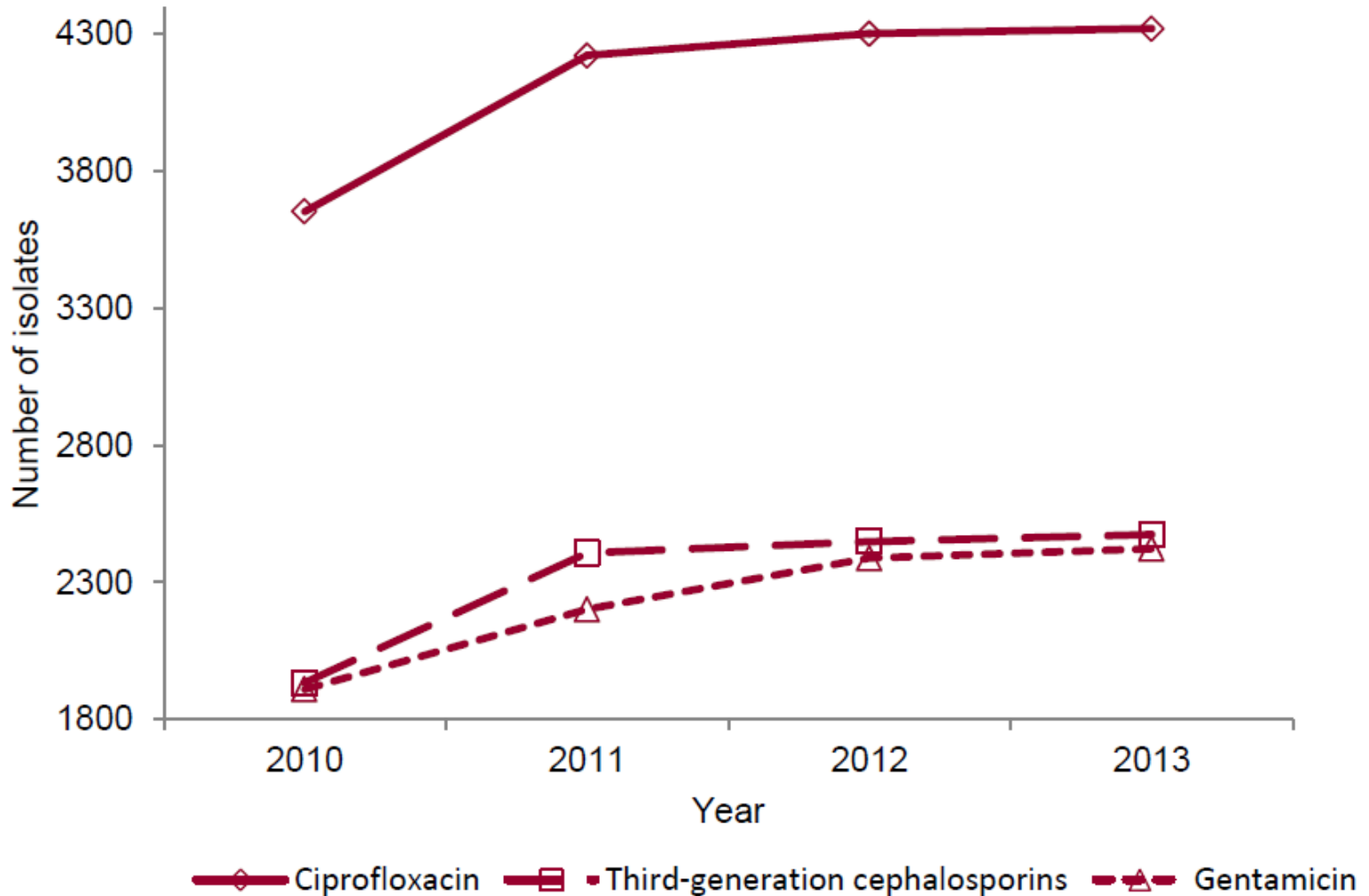
Drug Resistant Bacteria



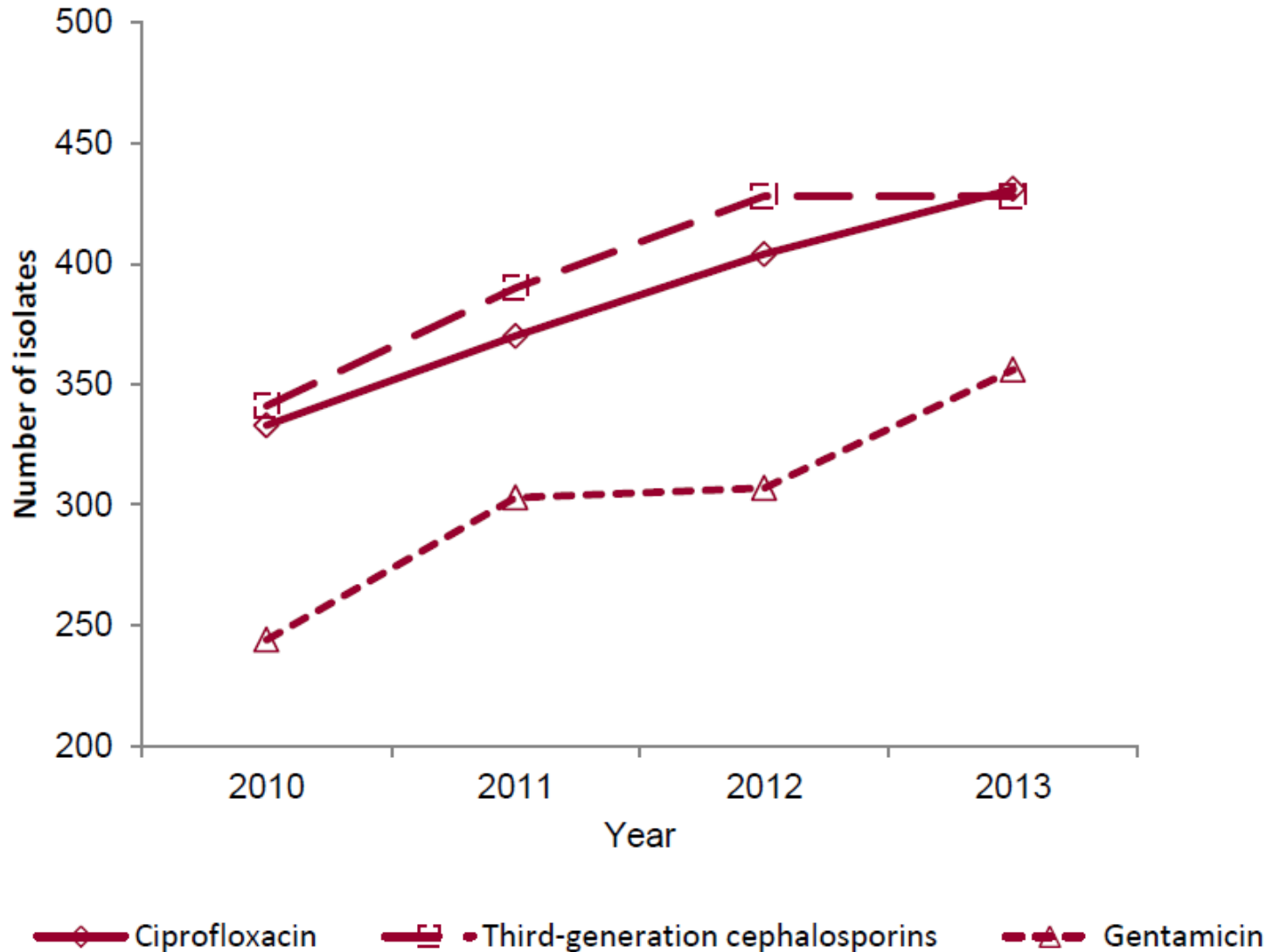
The bacteria multiply.

The bacteria continue to spread. The person remains sick.

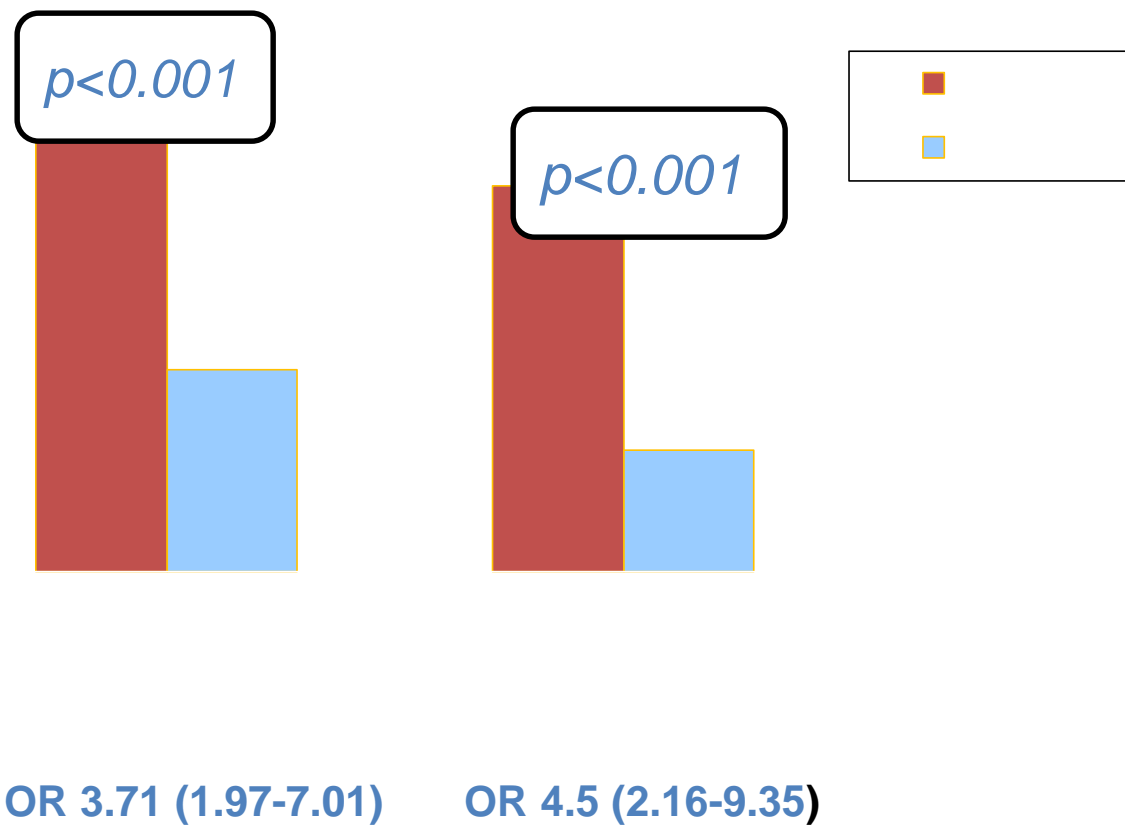
Counts of *E. coli* isolates non-susceptible to ciprofloxacin, third-generation cephalosporins and gentamicin, based on voluntary reporting to LabBase2



Counts of *K. pneumoniae* isolates non-susceptible to ciprofloxacin, third-generation cephalosporins and gentamicin, based on voluntary reporting to LabBase2

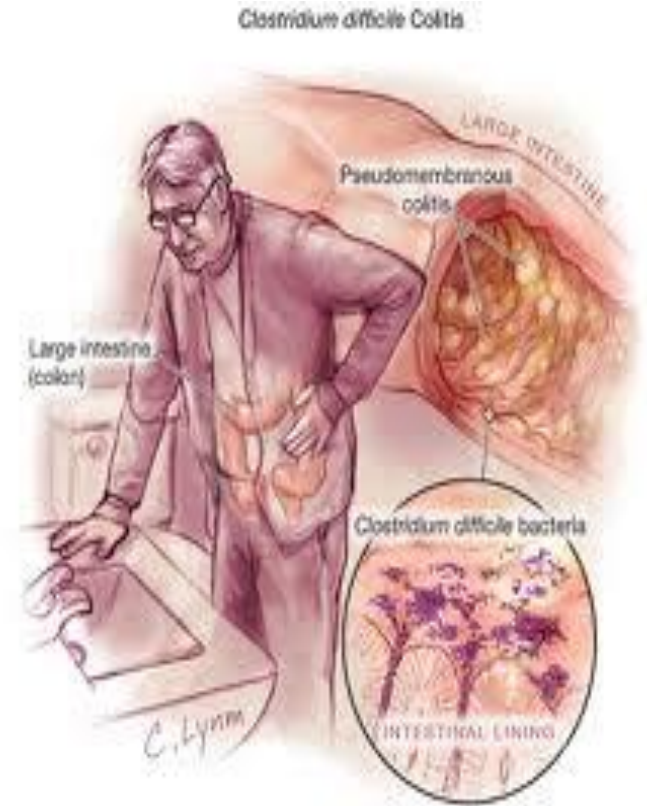


Mortality associated with carbapenem resistant (CR) vs susceptible (CS) *Klebsiella pneumoniae* (KP)



And Another Reason Not To Treat

Clostridium Difficile Infection



Background: Epidemiology

Risk Factors

- Antimicrobial exposure
- Acquisition of *C. difficile*
- Advanced age
- Underlying illness
- Immunosuppression
- Tube feeds
- Gastric acid suppression

Main modifiable risk factors

FDA Drug Safety Communication: Clostridium difficile infection can be associated with stomach acid drugs known as proton pump inhibitors (PPIs) February 2012

Antibiotics and risk of C.diff

Need to minimise all antibiotic use - polypharmacy and duration

High risk

cephalosporins
clindamycin

Medium risk

ampicillin/amoxycillin
co-trimoxazole
macrolides
tetracyclines
fluoroquinolones

Low risk

aminoglycosides
metronidazole
anti-pseudomonal
penicillins +
beta-lactamase
inhibitor

**Evidence to support the restriction
of these as control measure for CDI**

CDI may still occur

C.Diff and PPI

- There is increasing evidence that there is a relationship between C.Diff and the use of PPI
(Some studies quote doubling the risk
- Almost 50-60% patients in studies evaluating *C. difficile* were reported to take PPIs for an unclear indication
- Decreasing unnecessary PPI use may help reduce CDI, alongside reducing health care costs and other PPI adverse effects

Challenges

- Comorbid illnesses may result in symptoms similar to UTIs.
- Cognitive impairment may make reporting of symptoms difficult.
- Older individuals can have atypical presentations for infections.
- There is a lack of evidence based guidelines for symptomatic UTIs.

Criteria for Surveillance, Diagnosis and Treatment

Clinical Practice Guidelines

- Infectious Disease Society of America (IDSA) Clinical Practice Guidelines Fever and Infection Long-Term Care Facilities 2008 CID 2009;48:149-171
- IDSA Clinical Practice Guidelines Catheter-Associated Urinary Tract Infections Adults 2009 CID 2010;50:625-663
- IDSA Guidelines Asymptomatic Bacteriuria CID 2005;40:643-654

- SIGN guideline
- NICE guideline
- Public Health guideline

- (See UTI pathway in handouts)

ASSESS SYMPTOMS

Severe or ≥ 3 typical UTI symptoms

dysuria; urgency; frequency; polyuria; suprapubic tenderness; haematuria

AND

No vaginal discharge or irritation [if present need to explore other diagnoses e.g. STI, vulvovaginitis (due to candida)]

No dipstick/culture needed

Empirical antibiotic

Immediate/48hr delayed script (start antibiotic if no improvement after 48hr)

Mild or ≤ 2 symptoms of UTI (*)

Do dipstick test if cloudy urine (to guide treatment)

Nitrite

Note: If urine is not cloudy (& mild or ≤ 2 symptoms)

Do NOT treat (91% -ve culture)

Positive nitrite and positive blood /leucocyte

Probable UTI [92% PPV]

Treat with first line PCT antibiotics

Immediate or 48 hr delayed script (start antibiotic if no improvement after 48hr)

Nitrite, leucocytes and blood all negative 76% NPV

UTI unlikely

Consider other diagnosis i.e. urethral syndrome

Reassure and give advice on management of symptoms

Negative nitrite
Positive leucocyte

UTI / other diagnosis equally likely

Treat if severe symptoms or consider 48 hr delayed antibiotic prescription and send urine for culture

Investigate other potential causes in women who remain symptomatic after a single course of treatment

Negative nitrite & leucocyte

Positive blood or protein

UTI unlikely

Consider other diagnosis

Reassure patient and treat symptoms

ASSESS SYMPTOMS

Are there any symptoms suggestive of **non-urinary infection**? e.g. GI/Resp/Skin and soft tissue

Explore alternative diagnoses and manage following local antibiotic policy

UTI

Urine catheter insitu:-

Does patient / resident have one or more of following symptoms? Rigors, Flank tenderness, new onset confusion (ensure catheter not blocked)

No urine catheter:-

Does patient/resident have ≥ 2 of following symptoms? urgency, frequency, urine incontinence, rigors, flank or suprapubic pain, frank haematuria, new onset of worsening confusion

If none of the above symptoms

UTI unlikely but continue to monitor symptoms

If above symptoms present, UTI likely

DO NOT use dipstick test in diagnosis of UTI in **older people** with or without urine catheter. **Obtain a sample** for urine culture.

Treat with first line CCG antibiotics:

Immediate or 48 hr delayed script (start antibiotic if no improvement after 48hr).

Consider changing catheter if placed **> 7days** before/when starting antibiotic treatment. Seek advice from microbiology (if previous **ESBL resistance** in urine and choice of antibiotic is limited)

Pregnant women in 1st antenatal visit

Send urine for culture

Do not use dipstick test to screen for bacterial UTI at 1st or subsequent visits

Culture
positive

No

Women who do not have bacteriuria in the 1st trimester do not require a 2nd sample

Yes

Confirm the presence of bacteriuria in 1st urine with a 2nd urine culture

Treat asymptomatic bacteriuria in pregnancy with antibiotic

A urine culture should be done 7 days after completion of antibiotic to check for clearance

Repeat urine culture at each antenatal visit until delivery

Symptomatic UTI in pregnant women

Send urine for culture. Treat (local antibiotic policy).

A urine culture should be done 7 days after completion of treatment to test for clearance

Collecting Urine Samples

- Mid-stream or clean catch specimen for cooperative and functionally capable individuals. However, often necessary
 - For males to use freshly applied, clean condom (external) catheter and monitor bag frequently
 - For females to perform an in-and-out catheterization
- Residents with long-term indwelling catheters
 - Change catheter prior to collection (sterile technique/equip.)
- Resident with short-term catheterization (< 30 days)
 - Obtain by sampling through the catheter port using aseptic technique
 - If port not present may puncture the catheter tubing with a needle and syringe
 - If catheter in place > 2 weeks at onset of infection, replace

Role of Urine Analysis and Dipstick Testing in the Evaluation of Urinary Tract Infection in Nursing Home Residents

- **Negative urine analysis for WBCs and negative dipsticks tests for leukocyte esterase and nitrites do not support UTI BUT cannot completely rule it out**
 - **Leukocyte esterase (LE)**
 - **Enzyme found in white blood cells (WBCs)**
 - **Nitrites**
 - **Certain bacteria reduce urinary nitrates to nitrites**
 - **Pyuria**
 - **> 10 WBC / high-power field**

Squamous cells

Increased number suggests contamination

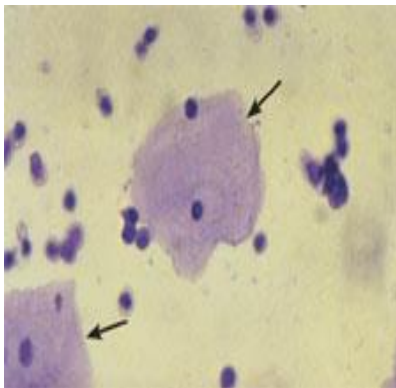


TABLE 2. Comparison of Dipstick Test Results for Leukocyte Esterase and Nitrite With Laboratory Evidence of Urinary Tract Infection (UTI) in 101 Nursing Home Residents

Dipstick test results for leukocyte esterase and nitrite	Laboratory evidence of UTI		
	Positive	Negative	Total
Positive for either	40	49	89
Negative for both	0	12	12
Total	40	61	101

NOTE. When the presence of leukocyte esterase and nitrite were assessed together, sensitivity was 100%, specificity was 20%, positive predictive value was 45%, and negative predictive value was 100%. UTI was defined as >100,000 colony forming units/mL on urine culture and >10 white blood cells/mm³ on urinalysis. The dipstick test for leukocyte esterase was defined as positive if the result in the medical record was trace, +, or ++.

Urine Culture

- A urine culture should always be obtained when evaluating SYMPTOMATIC infections.
- Urine cultures will assist in appropriate antibiotic selection.
- A negative urine culture obtained prior to initiation of antibiotics excludes routine bacterial urinary infection

Key Points

- Urinary tract infection is over diagnosed over treated in older people
- Diagnosis of UTI in older people requires careful clinical evaluation
- Routine screening for and treatment of ASB is not recommended
 - In older individuals in the community
 - In elderly residents in LTCFs

Key Points

- Get Smart About Antibiotics
 - Antibiotic resistance is one of the world's most pressing public threats.
 - *Clostridium difficile* infections are on the rise and are associated with increased mortality especially among the elderly
- PPI use increases the risk of C.difficile infection.

Case 3

- 76 year old with lot of co-morbidities

(Hypertension, Osteoporosis, Irritable Bowel Syndrome , Chronic Obstructive Airway Disease)

- 28/8/2015 referred by GP with complaint of generalised abdominal pain but more so at the lower region.
- Every month comes with same complaints
- no obvious source of infection, no urinary symptoms, no diarrhea, CXR unremarkable, u/a with 1 wbc

Leukocyte	3+
Nitrites	Negative
Protein	2+
pH	7.0
Blood content	2
Specific gravity	1.025
Ketones	Negative
Glucose	Negative

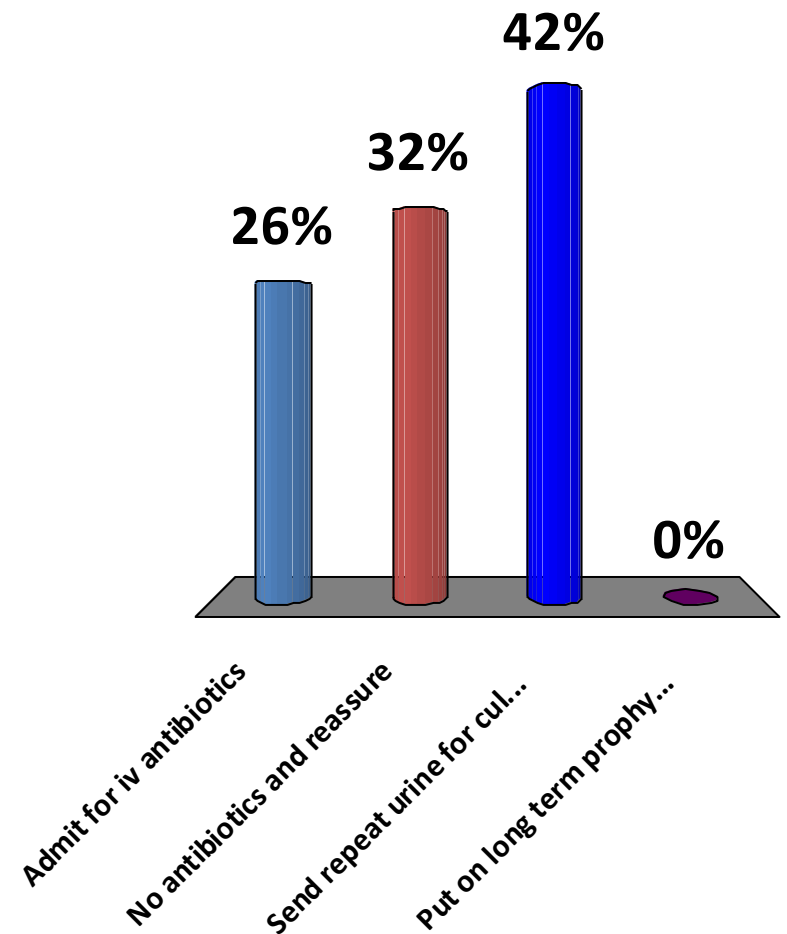
- Early Warning Score=0
- C-reactive protein 8
- White Cell Count $8.3 \times 10^9/L$
(3.7 - 10.0

1) >10⁵ cfu/ml Pseudomonas aeruginosa
(as previously isolated)

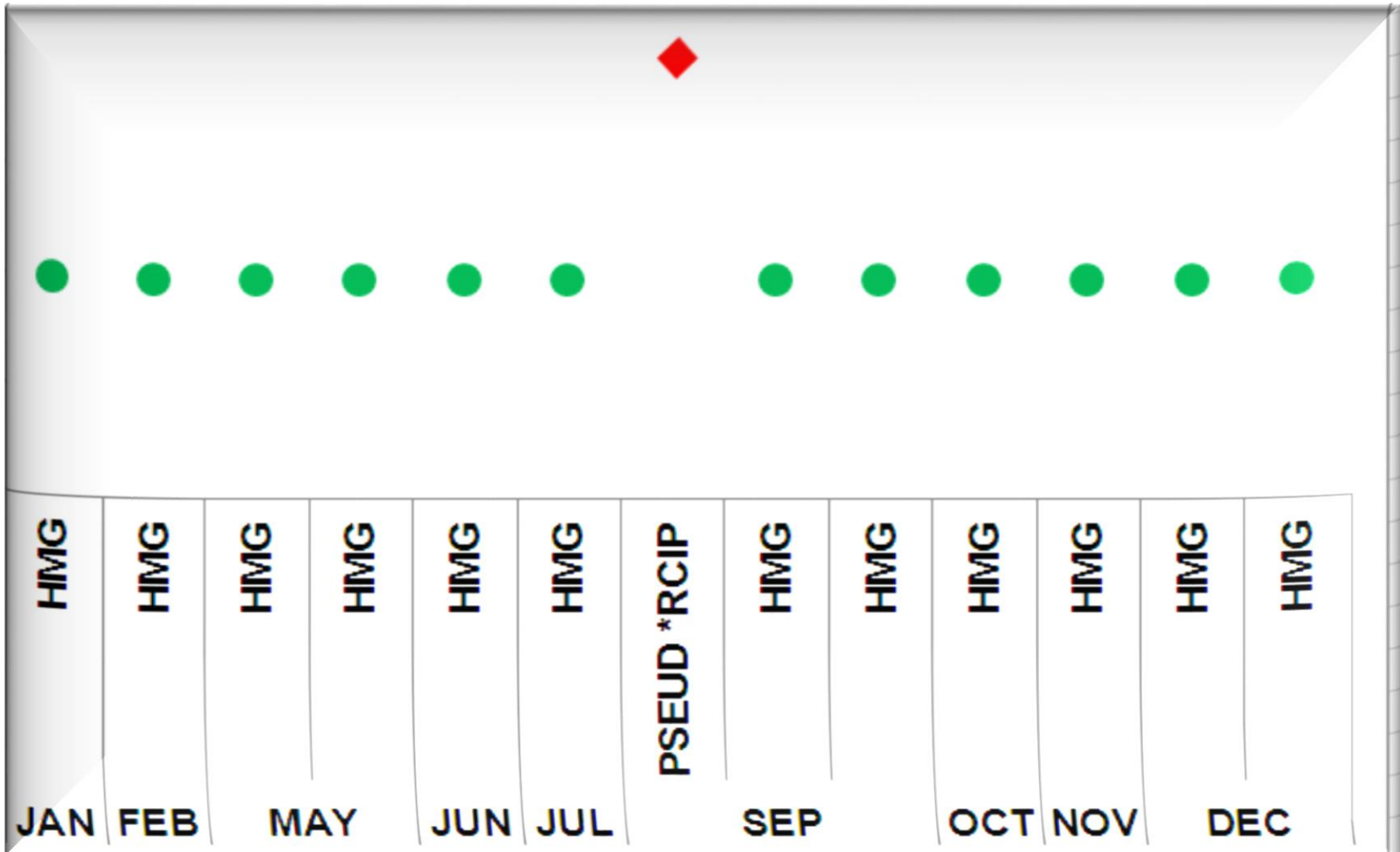
	1)
Amikacin	(S)
Co-amoxiclav	R
Amoxy/Ampicillin	R
Ceftazidime	(I)
Cephalexin	R
Ciprofloxacin	R
Gentamicin	(S)
Meropenem	R
Nitrofurantoin	R
Trimethoprim	R
Tobramycin	(S)
Ticarcillin/clav aci	(R)
Piperacillin	(R)
Aztreonam	(R)
Imipenem	(R)
Colistin	(S)
Piperacillin/tazob	(S)

What would you do next?

- A. Admit for iv antibiotics
- B. No antibiotics and reassure
- C. Send repeat urine for culture
- D. Put on long term prophylactic antibiotic



Urine sent from GP

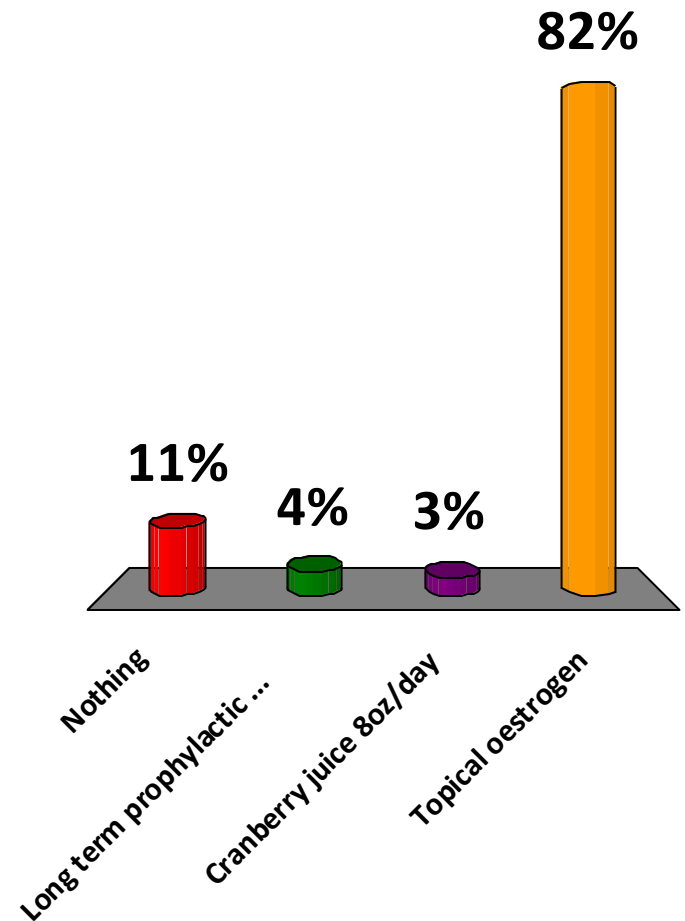


Case 4

- 70 year old woman with 4 *E.coli* UTI's in the past 6 months, urologist notes a mild cystocele and atrophic vaginal mucosa on exam
- What do you recommended?
 - a. Nothing
 - b. Long term prophylactic antibiotic
 - c. Cranberry juice 8 oz daily
 - d. Topical estrogen

70 yr old , 4 E.Coli UTI, cystocele, atrophic vagina. Recommendation?

- A. Nothing
- B. Long term prophylactic Antibiotic
- C. Cranberry juice 8oz/day
- D. Topical oestrogen



Over-diagnosis ... Misdiagnosis?



Failing to recognise the ill patient

Wasting resources

Causing harm



Role of the Pharmacists in UTIs

Thomas Bissett

Barnsley LPC





Thank you !

