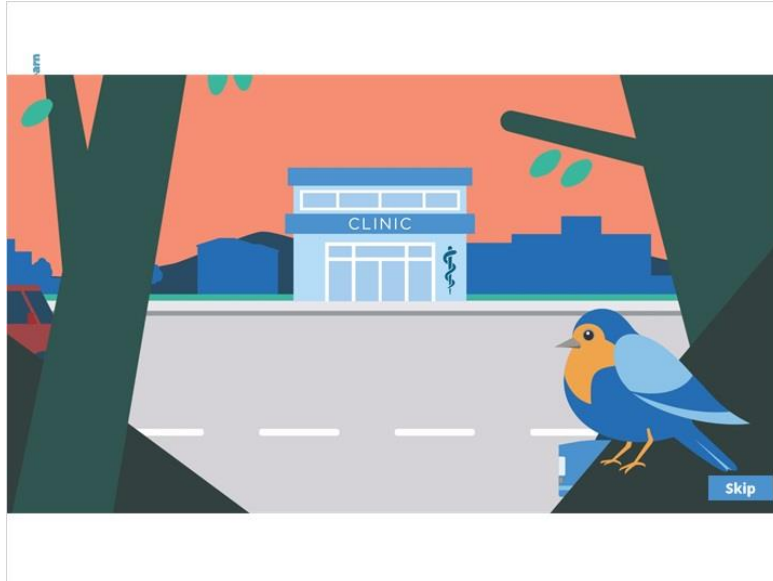


# Case 31\_Sissy Hayes

## 1.1 Intro Video



## 1.2 Module Navigation and Instructions

**Module Navigation and Instructions**

Throughout this course there are several interactive features. You may review each marker on the screen to understand how to navigate this course.

- Slide instruction
- More Information

A screenshot of the course navigation interface. On the left is a vertical menu with items: Course Welcome, Module Navigation, Conflict of Interest, Learning Objectives, Note to Learners, Patient case: Part 1, Probing Questions, and Comparison of COVID-19. The main content area shows a slide titled "COVID-19 Diagnosis" with an illustration of a doctor and a patient. Navigation arrows (back, forward, close) and a "Proceed" button are visible.

## 1.3 Learning Objectives

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### Learning Objectives

**At the end of this module participants should be able to:**

1. Identify key factors/findings in family medicine to help establish common clinical diagnoses.
2. Evaluate best evidence/guidance and practice tools to determine preferred treatment options for patients.
3. Synthesize patient preference, evidence and experience to formulate comprehensive plans for patient cases.

Approximately 15 minutes to complete each patient case.

Proceed

## 2. Sissy

### 2.1 Meet Sissy Hayes

CFPC Learn

### Sissy Hayes, 38


Sissy is a 38 year old woman patient returning to your practice after a few years away.

Her complaint on the day sheet is "she thinks she has a UTI."

Staff have already collected her urine.

Conversation Symptoms

What do you think?



## Sissy - Copy (Slide Layer)

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### Sissy Hayes, 38

A bladder infection again, I'm pretty sure! It feels like I have to go all the time!

Any fever or pain in your back?

No.

Conversation Symptoms

What do you think?

## Sissy (Slide Layer)

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### Sissy Hayes, 38

Sissy: I just got married and we moved back here.

You: Great to see you! What is happening?

Conversation Symptoms



What do you think?

## 2.2 True or False Question

(Multiple Choice, 10 points, 1 attempt permitted)

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## What are your next steps?




- Message the staff to discard the urine and ask Sissy if she has any antibiotic allergies
- Confirm that she also has dysuria
- Review urine dipstick
- Send the urine for culture and sensitivity

Submit

### 2.3 Answer Slide

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## Review



**Answer:** Message the staff to discard the urine and ask Sissy if she has any antibiotic allergies.

- Prevalence
- Likelihood ratios
- Dysuria
- Urinalysis - I
- Urinalysis - II
- Urine Culture


Click on the answers to the left to see more information

Let's review further

## LR (Slide Layer)

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### Review



Take a moment to review positive and negative likelihood ratios (LR):

Positive LR: for making diagnosis	Negative LR: for ruling-out diagnosis
$\geq 10$ very helpful	$\leq 0.1$ very helpful
5.0-9.9 good	0.11-0.2 good
2.0-4.9 moderate help	0.21-0.5 moderate help
$< 2$ provides little help	$> 0.5$ provides little help


Let's review further

- Prevalence
- Likelihood ratios
- Dysuria
- Urinalysis - I
- Urinalysis - II
- Urine Culture

## Urine Culture (Slide Layer)

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### Review



**Answer:** Message the staff to discard the urine and ask Sissy if she has any antibiotic allergies.

Let's review further

- Prevalence
- Likelihood ratios
- Dysuria
- Urinalysis - I
- Urinalysis - II
- Urine Culture

- A study looking at both urine culture and PCR testing for *E. coli* for symptomatic women
  - Culture: 80% positive, PCR for *E. coli*: 96% positive
  - Suggests culture may be missing some cases
- Another study, in a group of symptomatic women with negative culture and untreated:
  - 31% were positive at 6 weeks
- Indication for urine culture: patients not responding to treatment or complicated UTI

## Urinalysis - Copy (Slide Layer)

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# Review

**Answer:** Message the staff to discard the urine and ask Sissy if she has any antibiotic allergies.

- Prevalence
- Likelihood ratios
- Dysuria
- Urinalysis - I
- Urinalysis - II
- Urine Culture

Overall, urinalysis has limited utility in deciding on treatment

- If baseline chance of UTI is ~60%, the most helpful test (positive for nitrites) increases the chance of UTI to ~90% (but you would likely treat with 60% chance anyway).

Let's review further

## Urinalysis (Slide Layer)

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# Review

**Answer:** Message the staff to discard the urine and ask Sissy if she has any antibiotic allergies.

- Prevalence
- Likelihood ratios
- Dysuria
- Urinalysis - I
- Urinalysis - II
- Urine Culture

Test	Positive LR	Negative LR
Leucocyte esterase	1.3	0.44
Blood	2.1	0.3
Nitrites	6.5	0.58

This suggests that only nitrites might be helpful:


- If present: helps to rule in diagnosis.
- If absent: no help (does not rule-out)

Let's review further

## Dysuria (Slide Layer)

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### Review



**Answer:** Message the staff to discard the urine and ask Sissy if she has any antibiotic allergies.

- Prevalence
- Likelihood ratios**
- Dysuria
- Urinalysis - I
- Urinalysis - II
- Urine Culture

• Requiring her to have dysuria is not necessary. The positive likelihood ratio (LR+) of clinician elicited dysuria is 1.2 and the negative LR (LR-) is 0.6;  
• i.e., generally, not helpful.

• Frequency, urgency and hematuria are similar.


• This means that the constellation of symptoms prompting the patient to call are sufficient and no specific physician elicited symptom is essential to “clinch” the diagnosis.

Let's review further

## Prevalence (Slide Layer)

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### Review



**Answer:** Message the staff to discard the urine and ask Sissy if she has any antibiotic allergies.

- Prevalence**
- Likelihood ratios
- Dysuria
- Urinalysis - I
- Urinalysis - II
- Urine Culture

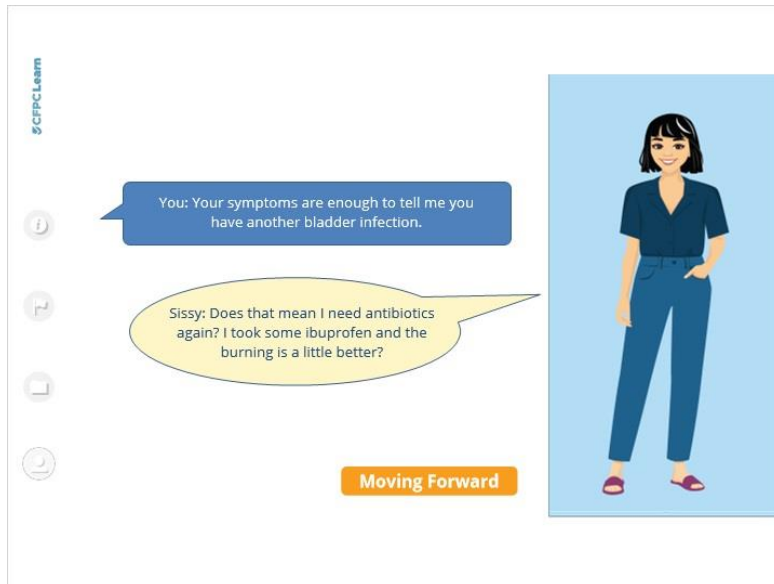
• The chances Sissy has a culture-confirmed uncomplicated UTI is 49-79%. This is the prevalence of UTI in primary care settings for women presenting with symptoms of UTI.

• Prevalence in this case is the “pre-test probability.”

• With a likelihood of >50% of having the disease, and a low risk with treatment, many clinicians would opt to treat without additional testing.

Let's review further

## 2.4 Meet Sissy Hayes



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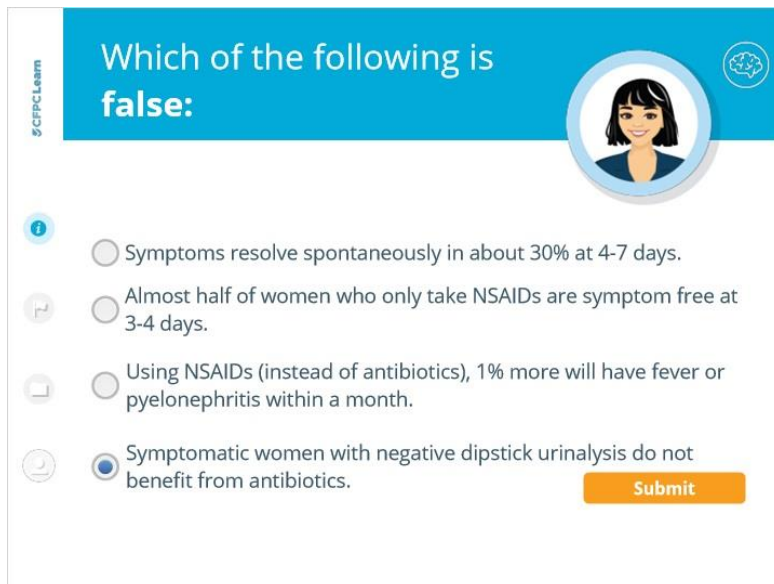
You: Your symptoms are enough to tell me you have another bladder infection.

Sissy: Does that mean I need antibiotics again? I took some ibuprofen and the burning is a little better?

Moving Forward

## 2.5 True or False Question

(Multiple Choice, 10 points, 1 attempt permitted)



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Which of the following is false:

Symptoms resolve spontaneously in about 30% at 4-7 days.

Almost half of women who only take NSAIDs are symptom free at 3-4 days.

Using NSAIDs (instead of antibiotics), 1% more will have fever or pyelonephritis within a month.

Symptomatic women with negative dipstick urinalysis do not benefit from antibiotics.


Submit



## 2.6 Answer Slide

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# Review



**Answer:** The following statement is false: symptomatic women with negative dipstick urinalysis do not benefit from antibiotics.

**RCT**

**Systematic Review**


Click on the answers to the left to see more information

Let's review further

## Systematic Review (Slide Layer)

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# Review



**Answer:** The following statement is false: symptomatic women with negative dipstick urinalysis do not benefit from antibiotics.

**RCT**

**Systematic Review**


- Systematic review of non-pregnant women comparing antibiotics and placebo.
  - On placebo, 31% were without symptoms at 4-7 days and 36% at 6 weeks.
- Another systematic review of comparing NSAIDs to antibiotics. Proportion who were symptom-free at 3 days: 46% (NSAIDs) versus 67% (antibiotics)
  - But, pyelonephritis or fever occurred in 1.2% NSAIDs versus 0.2% antibiotics.

Let's review further

## RCT (Slide Layer)

SCFPCLearn

# Review



**Answer:** The following statement is false: symptomatic women with negative dipstick urinalysis do not benefit from antibiotics.

A randomized controlled trial of 59 non-pregnant women with uncomplicated UTI symptoms and negative dipstick urinalysis compared antibiotics to placebo. There were fewer cases of dysuria after day 3 in antibiotic group (24%) versus placebo (74%).

**RCT**  
**Systematic Review**

Let's review further

## 2.7 Meet Sissy Hayes

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# What is the best approach to uncomplicated UTIs:



A randomized controlled trial of 309 non-pregnant women presenting to primary care with uncomplicated UTI compared five treatment options:

- immediate antibiotics
- antibiotics if dipstick positive
- antibiotics if  $\geq 2$  symptoms
- delayed antibiotics for persistent symptoms
- antibiotics if culture positive

Findings: All approaches provided similar symptom control. **Immediate antibiotics were as good as testing (dipstick or culture) or symptom scores.**

**Sissy**

What do you think?

## Sissy (Slide Layer)


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### What is the best approach to uncomplicated UTIs:

Sissy: Well, I think I will go for the antibiotics! This is really uncomfortable.

Sissy

What do you think?



## 2.8 Multiple choice question


(Multiple Response, 10 points, 1 attempt permitted)

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### For uncomplicated urinary tract infections, **three days** is an appropriate time frame for which of the following antibiotics?

Select all that apply.

- Nitrofurantoin
- Amoxicillin
- Trimethoprim-sulfamethoxazole (cotrimoxazole)
- Ciprofloxacin
- Fosfomycin



## 2.9 Answer Slide

**Review**

**Answer:** Three days is an appropriate duration for amoxicillin, cotrimoxazole and ciprofloxacin.

- Antibiotic selection
- Nitrofurantoin
- Antibiotic duration

Click on the answers to the left to see more information

Let's review further

## Duration (Slide Layer)

**Review**

**Answer:** Three days is an appropriate duration for amoxicillin, cotrimoxazole and ciprofloxacin.

- Antibiotic selection
- Nitrofurantoin
- Antibiotic duration

Antibiotic Duration: One versus three days


- Fluoroquinolones (like ciprofloxacin, norfloxacin, ofloxacin) and co-trimoxazole were less effective with single dose versus 3 days
- Fosfomycin 3g is single day treatment

Let's review further

## Nitrofurantoin (Slide Layer)

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# Review



**Answer:** Three days is an appropriate duration for amoxicillin, cotrimoxazole and ciprofloxacin.

- Antibiotic selection
- Nitrofurantoin
- Antibiotic duration

**Nitrofurantoin:**


- There is no clear evidence that three days is long enough.
- Remains consistently most effective on provincial antibiograms.
- Rash: nitrofurantoin 0.2% versus TMP-SMX 2.6% versus beta-lactams 6%
- Not indicated for pyelonephritis, eGFR<30ml/min

Let's review further

## Antibiotic selection (Slide Layer)

SCFCLearn

# Review



**Answer:** Three days is an appropriate duration for amoxicillin, cotrimoxazole and ciprofloxacin.

- Antibiotic selection
- Nitrofurantoin
- Antibiotic duration

**Antibiotic selection:**

- No antibiotic has proven superiority in resolving symptomatic uncomplicated UTI. Bacteriologic cure is higher with fluorquinolones (89% vs 78%) but of questionable clinical significance.

Let's review further

## 2.10 Answer Slide

Antibiograms are available at provincial and regional levels.

Let's review further

## 2.11 Answer Slide

	Amikacin	Amoxicillin-Clavulanic acid	Ampicillin / Amoxicillin	Cefazolin	Cefepime	Ceftriaxone	Ceftazidime	Ceftriaxone	Ciprofloxacin	Ertapenem	Levofloxacin	Meropenem	Moxifloxacin	Nitrofurantoin (urine)
<i>Acinetobacter sp.</i>	93					79	20	91			100	91		
<i>Citrobacter sp.</i>	100	37	0	4	100			74	94	99	91	99		93
<i>Enterobacter sp.</i>	100	0	0	0	98			66	94	92	95	96		42
<i>Escherichia coli - ALL</i>	99	82	54	83	94	81	84	86	78	100	76	100		97
<i>Escherichia coli - ESBL</i>	93	37	0	0	2		2	1	19	100		100		93
<i>Escherichia coli - non ESBL</i>	100	90	61	94	100	90	98	99	84	100		100		97
<i>Haemophilus influenzae</i>				72										
<i>Klebsiella sp.</i>	99	91	0	87	99	97	93	93	94	99	95	99		48
<i>Morganella morganii</i>	99	2	0	0					82	100	82	100		1
<i>Pseudomonas aeruginosa</i>	98	1	0	0	88	1	88	1	85	1	86	88		0
<i>Serratia sp.</i>	100	0	0											
<i>Stenotrophomonas maltophilia</i>														

With E.coli being the most common pathogen for UTIs and a local antibiogram indicating excellent sensitivity (97%), nitrofurantoin is a good first line option.



Reference: Public Health Ontario, 2021.

Let's review further

## 2.12 Let's Make a Plan


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### Let's Make a Plan



Using what you have learned write a plan for Sissy. It can include any/all of the following: lifestyle intervention(s), prescription intervention(s), lab(s)/test(s) required, follow up appointment time frame, and referral required.

Fill in your plan for the patient here





See how your plan compares

## 2.13 Plan Answers

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### Sissy Hayes



These are some potential points for the patient. How does your plan compare?

Prescriptions

Future infections

Urine Dipstick

Virtual appointments

What's in a name?

Click on the buttons to see suggested answers

## Name (Slide Layer)

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### Sissy Hayes

These are some potential points for the patient. How does your plan compare?

- Prescriptions
- Future infections
- Urine Dipstick
- Virtual appointments

What's in a name?

**What is the meaning of the name Sissy?**

Sissy has 'cystitis' and her last name Hayes is taken from Kenyon J. Hayes who was awarded the first patent for the synthesis of nitrofurantoin in 1952.

## Virtual (Slide Layer)

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### Sissy Hayes

These are some potential points for the patient. How does your plan compare?

- Prescriptions
- Future infections
- Urine Dipstick
- Virtual appointments

What's in a name?

**Virtual appointments:**  
Indicate to reception that uncomplicated UTIs can be managed virtually.



## Urine dipstick (Slide Layer)

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**Sissy Hayes**

These are some potential points for the patient. How does your plan compare?

- Prescriptions
- Future infections
- Urine Dipstick**
- Virtual appointments

What's in a name?

**Urine dipsticks:**  
Discuss with staff that urine dipsticks are not necessary for uncomplicated UTIs.

## Future UTIs (Slide Layer)

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**Sissy Hayes**

These are some potential points for the patient. How does your plan compare?



- Prescriptions
- Future infections
- Urine Dipstick
- Virtual appointments

What's in a name?

**Next Appointment**  
Indicate that the next time Sissy has similar symptoms (and assuming this current UTI resolves without any issues), she only needs to make a phone appointment.

## Prescriptions (Slide Layer)

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### Sissy Hayes

These are some potential points for the patient. How does your plan compare?

- Prescriptions
- Future infections
- Urine Dipstick
- Virtual appointments



What's in a name?

**Prescriptions**

- Identify any antibiotic allergies
- Prescribe nitrofurantoin 100 mg bid x 5 days
- If symptoms persist or return within the month, will need urine culture

## 2.14 References

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### References

Thanks for visiting the clinic!

References are available [here](#).

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