ID Quick Takes

FH LTC Rounds

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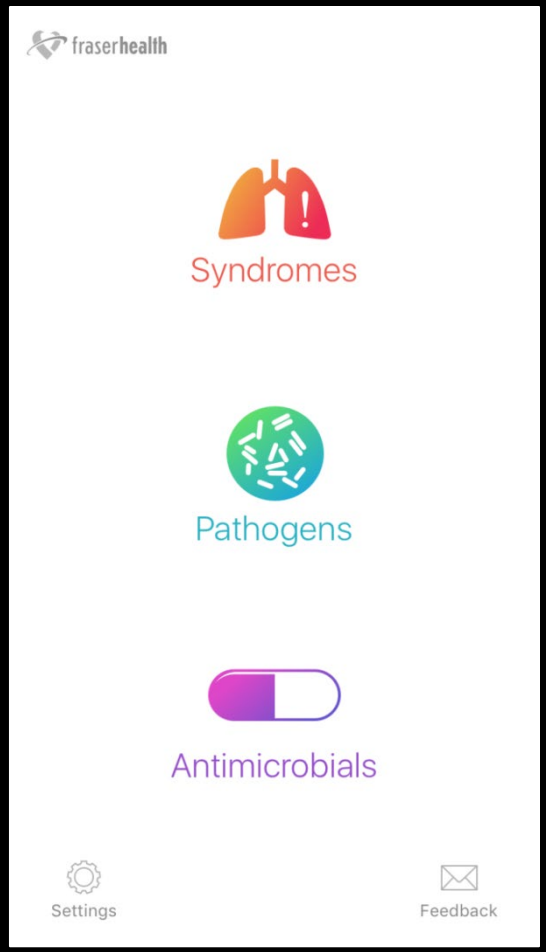
Disclosures

None to declare.

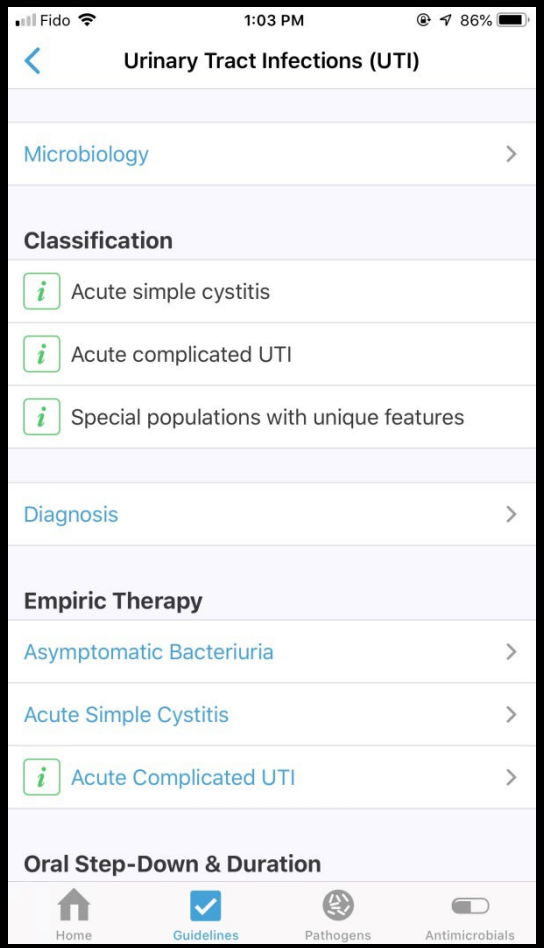
Learning Objectives

1. Be able to recognize and manage scabies in LTC.
2. Be able to diagnose and manage *C. difficile* in LTC, including interpretation of SIDP and 2-step testing.
3. Have an approach to recurrent cellulitis including the role of prophylactic antibiotics.

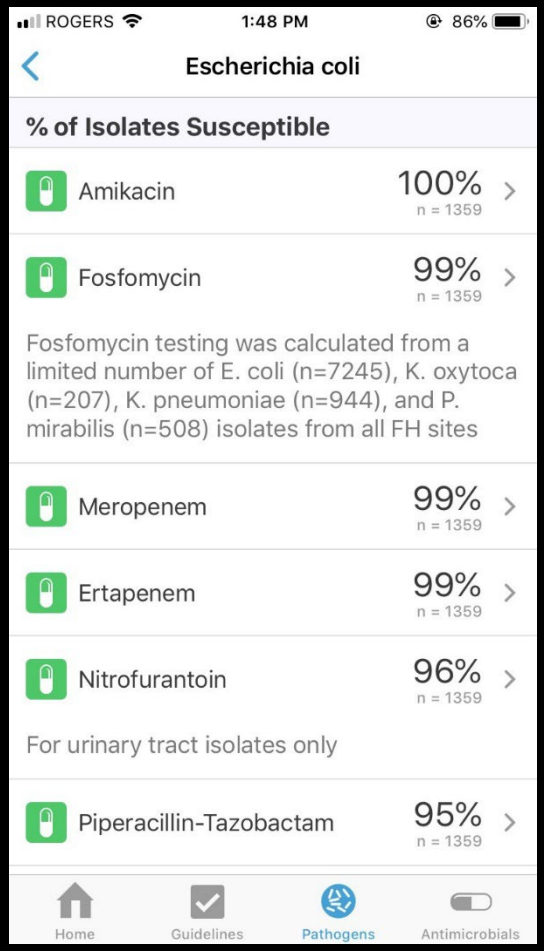
Firstline (Spectrum) App



Firstline Home Screen



UTI Syndrome



E. coli Susceptibilities

Firstline (Spectrum) App

Available for FREE

For iOS on Apple App Store 

For Android on Google Play Store 



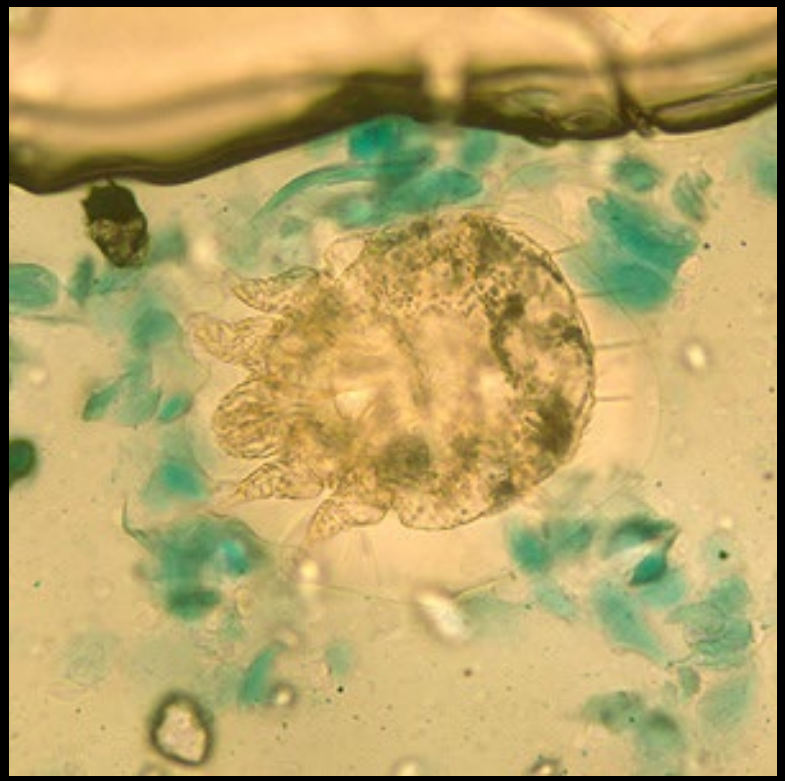
Scabies

I feel itchy just talking about it

https://www.cdc.gov/dpdx/scabies/index.html

Scabies Biology

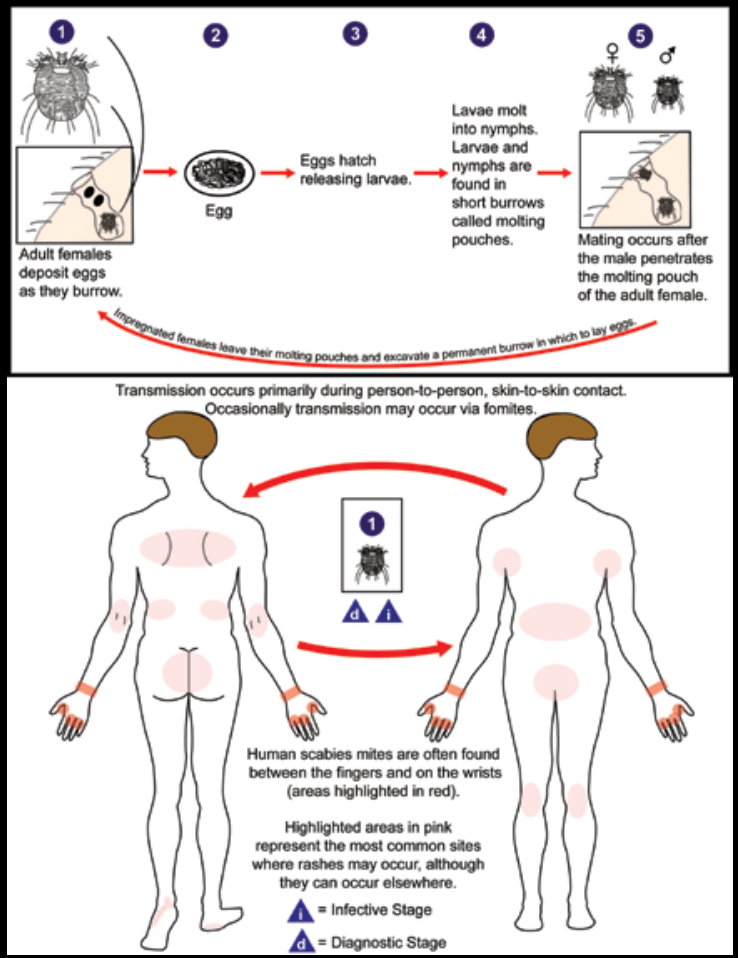
- Caused by *Sarcoptes scabiei*, human mite.
- Other scabies mites infest other mammals (cats & dogs), only cause self-limited dermatitis in humans.



https://www.cdc.gov/dpdx/scabies/index.html

Pathophysiology

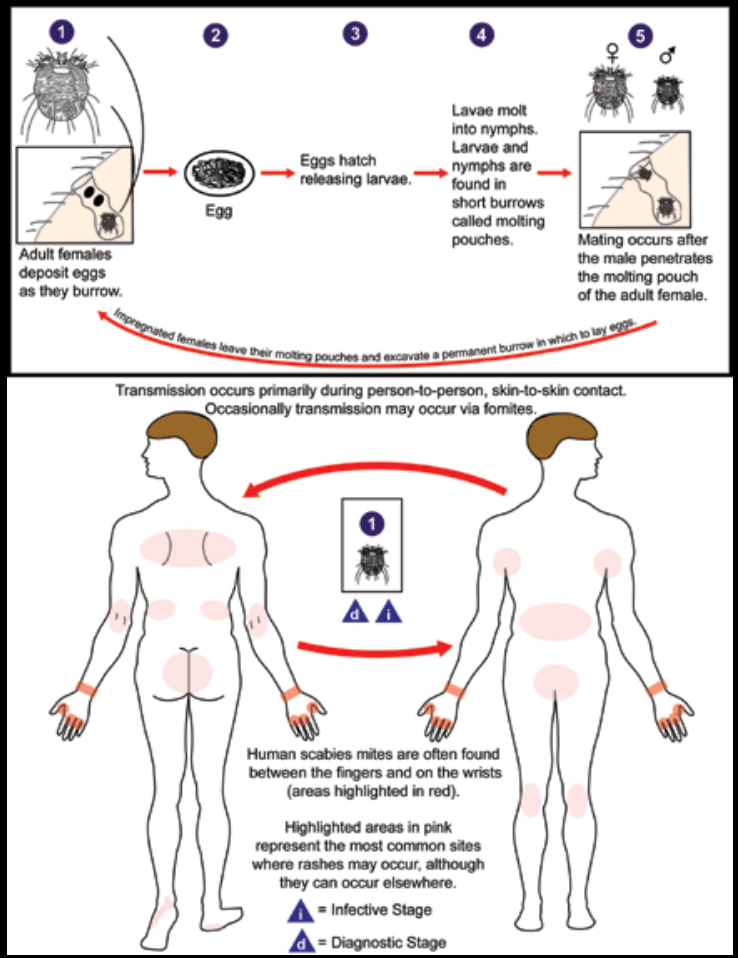
- After mating, adult females are fertile the rest of their lives (1-2 mo)
- Symptoms result from delayed hypersensitivity to mites, eggs, and feces
- Onset of symptoms may take up to 2 mo, still transmissible this whole time!



https://www.cdc.gov/dpdx/scabies/index.html

Classic Scabies

- Pruritis – often severe, worse at night
- Small erythematous papules
- Burrows (2-15 mm thin, serpiginous) ..VERY hard to see
- Typical distribution



https://www.cdc.gov/dpdx/scabies/index.html. UpToDate.

Classic Scabies







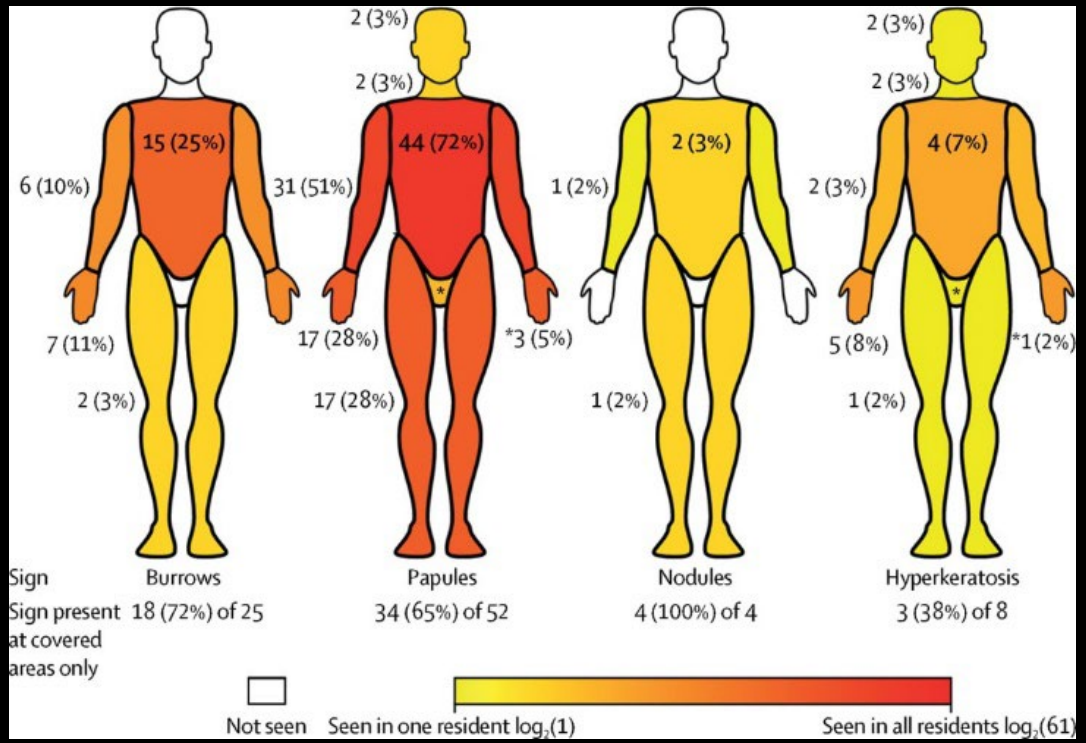
UpToDate.

Scabies in LTC

	Overall (n=230)	Scabies diagnosis at initial visit	
		No sign of scabies (n=169)	Possible, probable, or definite scabies (n=61)
Skin symptoms			
Resident complained about skin-related symptoms			
No	137 (60%)	106 (63%)	31 (51%)
Yes	38 (17%)	22 (13%)	16 (26%)
Unknown*	55 (24%)	41 (24%)	14 (23%)
Type (if present)			
Itch	29 (76%)	20 (91%)	9 (56%)
Scratching	10 (26%)	4 (18%)	6 (38%)
Rash	13 (34%)	5 (23%)	8 (50%)
Skin signs			
Staff noticed skin-related signs			
No	128 (56%)	116 (69%)	12 (20%)
Yes	82 (36%)	35 (21%)	47 (77%)
Unknown	20 (9%)	18 (11%)	2 (3%)
Type (if present)			
Itch†	41 (50%)	17 (49%)	24 (51%)
Scratching	26 (32%)	9 (26%)	17 (36%)
Rash	46 (56%)	15 (43%)	31 (66%)

*Includes 23 residents (eight with scabies) from a pilot outbreak visit at which information about skin-related symptoms was not recorded. †Although itch is not a sign, staff were asked whether they noticed residents who seemed itchy.

***Table 2*: Description of skin signs and symptoms in residents before initial clinical visits as reported by care-home staff**



Cassell et al. Lancet Infect Dis 2018;18:894.

Crusted (Norwegian) Scabies





- Scales, crusts, fissures.
- Can be malodorous
- May have minimal or no pruritis!

Making the Diagnosis

- Dermoscopy
  - Not widely used by generalists, requires training
  - May not have good sensitivity in LTC
- Skin scrapings
  - Very specific, but sensitivity may be poor depending on sample, technique, etc.
  - Alternative technique uses tape instead of blade
- Biopsy
  - Rarely done when scabies is leading DDx

Cassell et al. Lancet Infect Dis 2018;18:894.

Making the Diagnosis

- Remains primarily clinical, especially in LTC

Panel: Scabies diagnostic criteria

Definite
Clinical features suggestive of scabies (ie, primary or secondary lesions*) plus a visible mite under dermatoscopy (positive delta wing sign) or a skin scraping or biopsy with identified mites, mite eggs, or faeces

Probable
Clinical features suggestive of scabies (ie, primary or secondary lesions*) at common sites of scabies infestation but no mite or mite products identified by dermatoscopy, skin scraping, or biopsy

Possible
Non-specific rash (which can include papules, vesicles, or pustules) at sites that are uncommon for scabies infestation; a positive family or social contact history with a definite case of scabies

Crusted
Clinical symptoms suggestive of scabies, hyperkeratotic skin crusts and skin fissuring as a result of hyperinfestation

*Primary lesions are burrows, papules, nodules, or vesicles; secondary lesions are excoriations due to scratching.

Cassell et al. Lancet Infect Dis 2018;18:894.

Management of Scabies

1. Topical permethrin (5% cream)

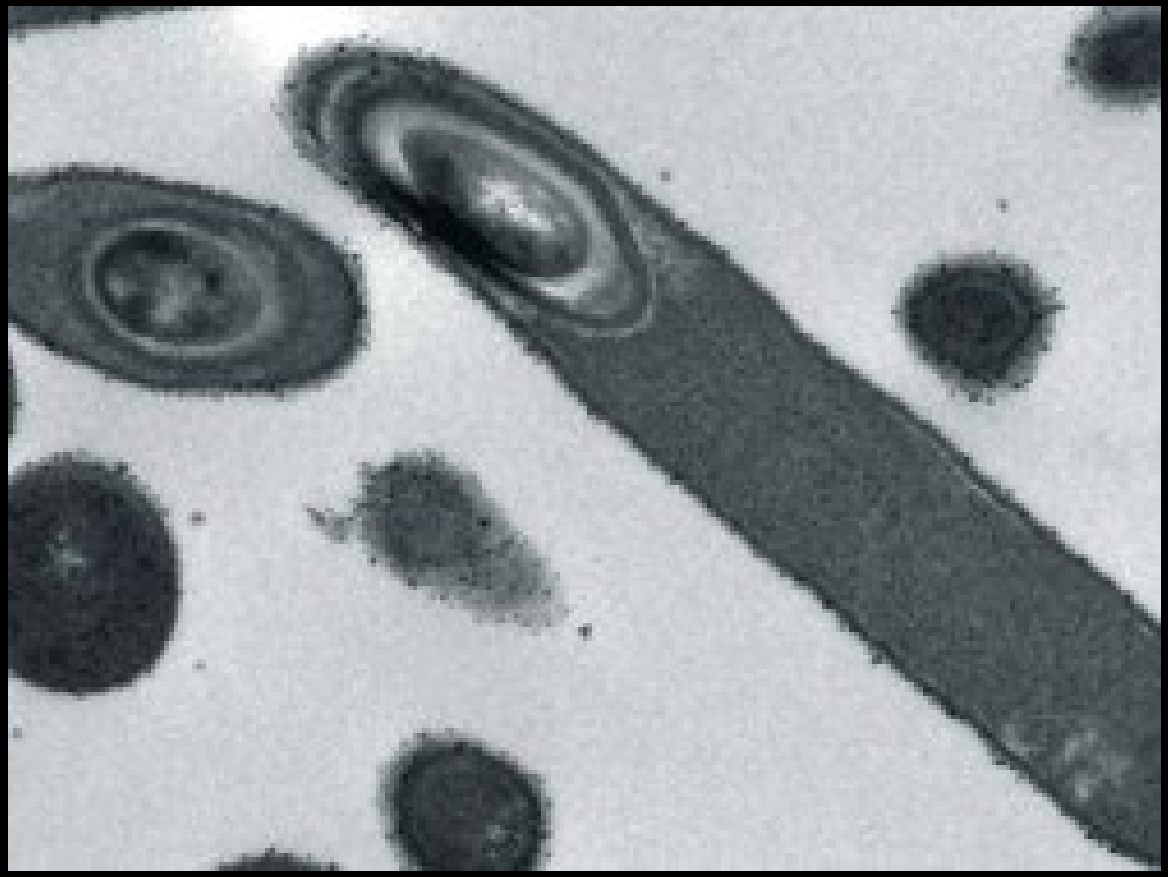
- Apply from neck to soles (usually overnight), wash off 8-14 hrs later. Second application in 1-2 weeks.

2. Oral ivermectin (3 mg tablets)

- Anti-helminthic drug used **off-label** for scabies
- Highly effective, easy to administer, well tolerated
- Dose: 200 mcg/kg once, followed by repeat dose in 1-2 weeks. See monograph for weight table.
- Avoid in pregnancy, breast-feeding, children <15kg

Crusted scabies has a more complicated combination regimen

UpToDate. Ivermectin Drug Monograph. https://www.cdc.gov/parasites/scabies/health_professionals/meds.html



***C. difficile* infection**

Asymptomatic Carriage

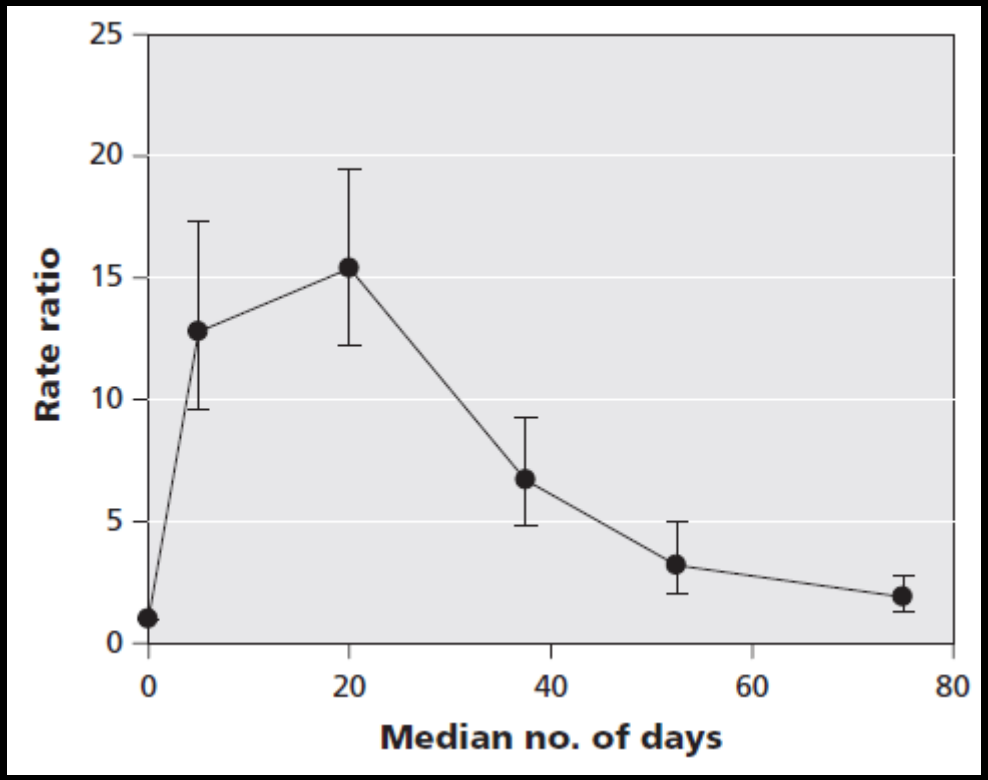
- 7% of healthy young outpatients colonized with toxigenic *C. difficile*
- 10-15% of patients admitted to hospital carry toxigenic *C. difficile*
- *C. difficile* identified in meats and vegetables, household pets, environmental soil.

Galdys AL et al. J Clin Microbiol. 2014;52:2406
Zacharioudakis IM et al. Am J Gastroenterol. 2015;110:381
Al Saif N et al. J Med Microbiol. 1996;45:133

Symptomatic *C. difficile* Infection

- Diarrhea
  - ≥3 watery, unformed stools / day
  - Rarely bloody
- Abdominal pain and cramps
- Tenesmus
- Fever
- ↑WBC ..even leukemoid reaction WBC>50
- ↑Creatinine

CDI Hospitalization after Abx



Dial S et al. CMAJ. 2008;179:767

Stool Testing

Stool Infectious Diarrhea Panel

Detects the following infectious diarrhea pathogens:

BACTERIA: *C. difficile* toxin B, *Aeromonas*, *Campylobacter*, *E. coli* O157, *Salmonella*, *Shigella*/Enteroinvasive *E. coli*, Shiga toxin-producing *E. coli*, *Vibrio* and *Yersinia enterocolitica*

VIRUSES: Adenovirus, Astrovirus, Norovirus, Rotavirus, Sapovirus

PARASITES: *Blastocystis hominis*, *Cryptosporidium*, *Cyclospora cayetanensis*, *Dientamoeba fragilis*, *Entamoeba histolytica* and *Giardia lamblia*.

Stool C. difficile

Step #1: PCR test for *C. difficile* (same as previously)

If (-) -> Reported NEGATIVE

If (+) -> Step #2 EIA

Step #2: EIA (enzyme immunoassay) test for *C. difficile* toxin B.

If (-) -> Reported INDETERMINATE

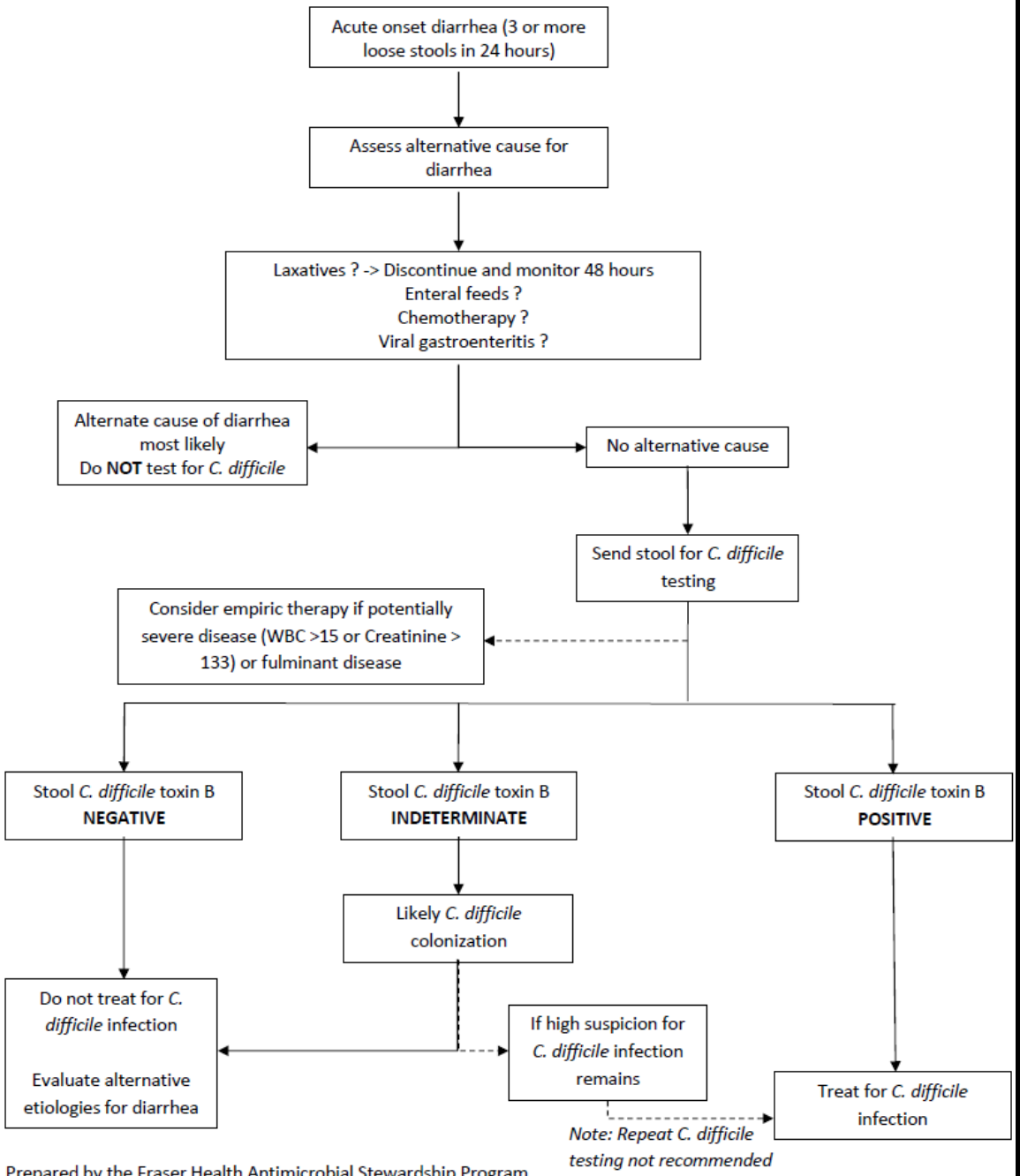
If (+) -> Reported POSITIVE

Note: **HELMINTHS** need O&P microscopy e.g., *Ascaris*, *Strongyloides*, *Schistosoma*, *Taenia*

Two *C. difficile* Tests

- PCR molecular assay for *C. difficile* toxin B gene
  - highly sensitive for presence of toxigenic *C. difficile*
- EIA immunoassay for *C. difficile* toxin A/B protein
  - improves specificity for active toxin production

DECISION SUPPORT ALGORITHM



C. difficile Treatment

Classification		Duration (days)
***C. difficile* colonization**	No therapy needed	-
INSTITUTE **CONTACT PRECAUTIONS PLUS** FOR ANY SUSPECTED OR CONFIRMED CDI CASE		
Initial Episode CDI *Not meeting criteria for fulminant CDI*	**vancomycin** 125 mg PO/NG QID Alternate treatment option for non-severe CDI only (e.g., WBC less than 15 and creatinine less than 133): **metroNIDAZOLE** 500 mg PO/NG TID	**10**
Fulminant CDI *Any of:* • *Ileus* • *Toxic megacolon* • *Perforation* • *Hypotension* • *Shock*	Consider Infectious Diseases, General Surgery, and ICU consultation. **vancomycin** 500 mg PO/NG QID AND **metroNIDAZOLE** 500 mg IV q8h If ileus present, consider ADDING: **vancomycin** 500 mg in 100 mL normal saline q6h as retention enema	**10** *Patients with delayed response may require up to 14 days*
Recurrent CDI	Consider Infectious Diseases consultation. If initial CDI episode treated with metroNIDAZOLE: **vancomycin** 125 mg PO/NG QID for 10 days Otherwise: Complete **vancomycin** 125 mg PO/NG QID for 10-14 days, then **vancomycin taper and pulse regimen** (e.g., **vancomycin** 125 mg BID for 7 days, then daily for 7 days, then every 2 days for 8 days, then every 3 days for 15 days)	

Vancomycin Special Authority

Special Authority criteria	Approval period
For the treatment of symptomatic clostridium difficile infection (CDI), when: 1. The patient is allergic, resistant or intolerant to metronidazole. **OR** 2. The patient has failed to respond to 4 to 6 days of oral metronidazole at doses of 500 mg three times per day. **OR** 3. The patient has symptoms of moderate to severe disease or is experiencing a second disease recurrence[i] **OR** 4. The patient was initiated on vancomycin as an inpatient (e.g., in a hospital setting, nursing home, or long-term care facility) and requires continuation of vancomycin to complete their full course of therapy.	Initial: up to 14 days Second or further recurrence: up to 14 days

Fidaxomicin

- Non-inferior to vancomycin for clinical cure
- Superior to vancomycin due to lower recurrence rates
- VERY expensive $$$

Louie TJ et al. NEJM. 2011;364:422-431. Cornely OA et al. CID. 2012;55:S154-161. Crook DW et al. CID. 2012;55:S93-103

Fidaxomicin Special Authority

Special Authority criteria	Approval period
For the treatment of confirmed severe Clostridium difficile infection (CDI)[i]: 1. As determined and when prescribed by an infectious disease specialist or gastroenterologist **AND** A. If there is a documented allergy (immune-mediated reaction) or severe intolerance to oral vancomycin resulting in discontinuation of vancomycin **OR** B. After an unsuccessful but adequate trial of oral vancomycin[ii] AND when retreatment with vancomycin is not an option AND when the patient is at high risk of hospitalization due to severe life-threatening complications. Notes: i. Severe infection is defined as having any of the following symptoms: ○ white blood cell count > 15,000 mm^3 and fever ○ acute kidney injury with rising serum creatinine ≥ 1.5 times premorbid level or ≥ 175 micromole/litre ○ pseudomembranous colitis, hypotension, shock, or megacolon. ii. An adequate trial of oral vancomycin is considered to be at least 10 days of therapy with a dose of at least 125 mg four times a day.	Up to 10 days for a single treatment course

fraserhealth

Regional Pre-Printed Orders for

CLOSTRIDIUM DIFFICILE INFECTION (CDI) - ADULT

Form ID: DRDO105039B Rev: May 2018 Page: 1 of 1

DRUG & FOOD ALLERGIES

▪ **Mandatory** ☐ **Optional: Prescriber check (✓) to initiate, cross out and initial any orders not indicated.**

Refer to back page for further guidance.

MONITORING:
- Document stool frequency and consistency on stool chart daily
- ☐ Vital signs Q____H
- ☐ CBC with differential, electrolytes, BUN, Cr daily x_____ days

OTHER TREATMENTS:
- ☐ Saline lock OR Start IV solution_____ rate _____mL/h

MRP to review and consider discontinuation of the following medications unless clearly indicated:

- ☐ Discontinue antibiotics:_____
- ☐ Discontinue promotility/anti-peristaltic agents: metoclopramide, domperidone, loperamide
- ☐ Discontinue proton pump inhibitors: esomeprazole, omeprazole, pantoprazole
- ☐ Discontinue laxatives: bisaCODYL, docusate, fruit laxative, lactulose, polyethylene glycol, sennosides

- ☐ Discontinue other:_____

INITIAL EPISODE CDI: (not meeting criteria for fulminant CDI below)
- ☐ **vancomycin** 125 mg PO/NG QID x 10 days

FULMINANT CDI: (Any of Ileus, Toxic Megacolon, Perforation, Hypotension or Shock)
MRP to consult General Surgery, Infectious Diseases, and Critical Care as appropriate

- ☐ **vancomycin** 500 mg PO/NG QID AND **metroNIDAZOLE** 500 mg IV Q8H x 10 days

If ileus present, MRP to consider ADDING:
- ☐ **vancomycin** 500 mg in 100 mL normal saline Q6H as retention enema x 5 days (MRP reassess daily)

RECURRENT CDI:
MRP to consider Infectious Diseases consultation

If initial CDI episode was treated with metronidazole - give standard vancomycin regimen:
- ☐ **vancomycin** 125 mg PO/NG QID x 10 days

If second or subsequent recurrence or previously treated with standard vancomycin regimen (10 to 14 days) - give standard vancomycin regimen, followed by taper and pulse:
- ☐ **vancomycin** 125 mg PO/NG QID x 10 days, then taper and pulse with
  vancomycin 125 mg PO/NG BID x 7 days, then
  vancomycin 125 mg PO/NG daily x 7 days, then
  vancomycin 125 mg PO/NG every 2 days x 8 days (4 doses), then
  vancomycin 125 mg PO/NG every 3 days x 15 days (5 doses), then stop

Date (dd/mm/yyyy)	Time	Prescriber Signature	Printed Name and College ID#

Asymptomatic *C. difficile* colonization: Stool testing positive for toxigenic *C. difficile* ***without*** symptoms of C. *difficile* infection. This does not require any treatment - up to 10% of the population asymptomatically carries toxigenic *C. difficile.*

Suspected CDI Case: Acute onset of diarrhea (3 or more loose stools in 24 hours) above patient's baseline and not attributed to another cause.
- Send stool for *C. difficile* testing
- Consider starting empiric treatment if potentially severe disease (WBC greater than 15 or creatinine greater than 133) or fulminant disease

Confirmed CDI Case: Acute onset of diarrhea (3 or more loose stools in 24 hours) above patient's baseline and not attributed to another cause.
***AND* any one of:**
- Stool testing positive for toxigenic *C. difficile*
- Pseudomembraneous colitis on endoscopy or histopathology

Treatment Recommendations:

Classification		Duration (days)
Asymptomatic *C. difficile* colonization	No therapy needed	–
INSTITUTE **CONTACT PRECAUTIONS PLUS** FOR ANY SUSPECTED OR CONFIRMED CDI CASE		
Initial Episode CDI *Not meeting criteria for fulminant CDI*	**vancomycin** 125 mg PO/NG QID Alternate treatment option for non-severe CDI only (e.g., WBC less than 15 and creatinine less than 133): **metroNIDAZOLE** 500 mg PO/NG TID	**10**
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Probiotics (i.e. *Lactobacillus)* or **cholestyramine** are NOT recommended as adjunctive treatment for or prevention of recurrent CDI as evidence regarding their efficacy is unclear.

Infectious Diseases consultation should be considered for patients who have other infections requiring concomitant antibiotics in setting of *C. difficile* infection.

Non-Resolving CDI

- Metronidazole resistance?
  - *C. difficile* can be resistant to metronidazole
  - If on metronidazole, switch to oral vancomycin
- Add adjunctive metronidazole?
  - No evidence, little scientific rationale → don't waste your time
- Exacerbating factors?
  - Minimize or discontinue other antibiotics if possible
  - Review need for PPI
- Right diagnosis?
  - Laxative (re)use?
  - Malignancy, IBD, IBS, post-infectious diarrhea

Baines SD et al. JAC. 2008;62:1046-1052
Loo VG et al. https://ammi.ca/?ID=122&Language=ENG



Recurrent Cellulitis

Is This Recurrent Cellulitis?

- Not everything red is cellulitis!
- Not all wounds are infected!

- Important DDx
  - Stasis dermatitis – can have acute exacerbations
  - Lymphedema
  - DVT

Differentiating Cellulitis

Cellulitis	Stasis Dermatitis
• History of trauma or disrupted skin barrier • **Unilateral** redness, warmth, swelling, tenderness • Ascending lymphangitis, inguinal LAN • Systemic symptoms: fevers, chills, malaise, leukocytosis	• **Bilateral** > unilateral • Underlying chronic venous stasis (background edema, hyperpigmentation) • Itchiness, skin thickening and lichenification

Prevention

- Assess and address risk factors
  - Eczema
  - Dermatophytes (onychomycosis, tinea pedis)
  - Edema management
  - Arterial insufficiency
  - Obesity (mixed venous/lymphatic stasis)

Compression Therapy

- Single-center RCT, chronic edema and recurrent cellulitis (≥2 in past 2 yrs).

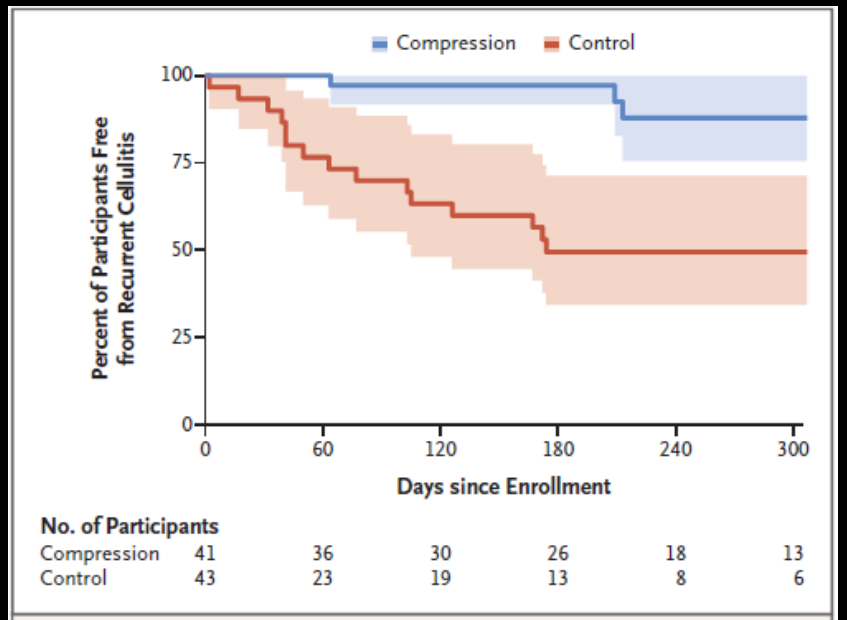


Figure 2. Freedom from Recurrence of Cellulitis over Time.
Shown are the Kaplan–Meier estimates of the freedom from recurrence of cellulitis in the compression group and the control group. The shaded areas indicate 95% confidence intervals. The median follow-up was 186 days.

Webb E. et al. NEJM. 2020. doi: 10.1056/NEJMoa1917197

Antibiotic Prophylaxis

Antibiotic prophylaxis compared to no treatment/placebo for the prevention of recurrent erysipelas and cellulitis - on prophylaxis

Patient or population: People with recurrent erysipelas or cellulitis
Intervention: Antibiotic prophylaxis
Comparison: No treatment/ Placebo

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	no treatment/placebo	Antibiotic prophylaxis				
Recurrence of cellulitis	Study population		RR 0.31 (0.13 to 0.72)	513 (5 RCTs)	⊕⊕⊕◯ MODERATE [1]	Number needed to treat for 1 additional beneficial outcome (NNTB) is 6
	316 per 1000	98 per 1000 (41 to 227)				
Incidence rate of cellulitis	Study population		RR 0.44 (0.22 to 0.89)	473 (4 RCTs)	⊕⊕⊕◯ MODERATE [1]	-
	43 fewer episodes of cellulitis per 1000 person-months in treatment group (from 8 fewer to 60 fewer)					
Time to next episode of cellulitis	Not estimable		HR 0.51 (0.34 to 0.78)	437 (3 RCTs)	⊕⊕⊕◯ MODERATE [1]	-
Hospitalisation	Study population		RR 0.77 (0.37 to 1.57)	429 (3 RCTs)	⊕⊕◯◯ LOW [2]	-
	74 per 1000	57 per 1000 (27 to 116)				
Any adverse reactions	Study population		RR 0.87 (0.58 to 1.30)	469 (4 RCTs)	⊕⊕◯◯ LOW [3]	-
	287 per 1000	250 per 1000 (166 to 373)				
Quality of life	-					

Dalal A et al. Cochrane 2017. doi:10.1002/14651858.CD009758.pub2

Antibiotic Prophylaxis

- *Not a routine tool* but selective
- Consider if 2 or more episodes of cellulitis in the past 12 months (particularly if hospital admission)
- Only useful for streptococcal cellulitis…NOT for *S. aureus* in chronic wounds
- Penicillin V 300 mg PO BID
- Review every 6 months, many patients will stop after free of cellulitis for 1-2 years

https://www.nice.org.uk/guidance/ng141

Take Home Points

1. Consider scabies for rashes involving fingers, wrists, and other body folds/creases

2. Need to differentiate *C. difficile* infection vs colonization, “Indeterminate” result suggestive of colonization

3. Assess recurrent cellulitis mimics and address risk factors before considering antibiotic prophylaxis

Thank You

Questions?

Comments?