A Physician Perspective

Marguerite A. Neill, MD
Alpert Medical School
Brown University

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For diagnostics,

It’s all about context.
The Clinical Drivers of Testing in Possibly Infectious Diarrhea

1. Prove the causative agent
2. Treatment consideration(s)
   1. Improve symptoms
   2. Shorten illness
3. Prognostic value (complications)
   1. HUS, Guillain Barre, reactive arthritis
4. Prevent irrelevant testing in the situation
5. Public health concerns
   1. Decrease shedding/excretion, transmission
   2. Is this an outbreak-related case
The Other Drivers of Testing

- “Can’t hurt, might help”
- Cheap test
- New test
- Perceived as “rapid”
- Prior approval not needed

Invariably leads to testing of lower acuity cases, outside of clinical context that got the test licensed, performance characteristics degrade, problems with false positives
Who’s Ordering the Stool Test(s)

- Pediatricians
- Family practice physicians
- Emergency medicine physicians
- Urgent care physicians
- Hospitalists
- Internists
- Nurse practitioners
- Physician assistants
Developed World Population

- Aging
- ESRD (dialysis, renal transplant)
- Transplants (Solid organ, bone marrow)
- Chronic disease
- Immunosuppression
- HIV
Population Distribution by Age and Sex, 1960

United States: 1960

Population (in millions)

Source: U.S. Census Bureau, International Data Base.
Population Distribution by Age and Sex, 2000

United States: 2000

Population (in millions)

Source: U.S. Census Bureau, International Data Base.
Population Distribution by Age and Sex, 2025

United States: 2025

Population (in millions)

Source: U.S. Census Bureau, International Data Base.
The *C difficile* Pseudomembranous Colitis You Used to Know

- Older patients (>65)
- Main risk factors: hospitalization and antibiotics (clindamycin, β-lactams)
- Metronidazole = oral vanco for efficacy; cheaper
- Not frequently fatal
- Some pts relapsed
C. difficile toxins

- Toxin A enterotoxin
- Toxin B cytotoxin
- Usually concordant
- Initially detected by tissue culture assay
- Largely replaced by EIA
Multiple hospitals, Quebec, 2003 - marked increase in *Clostridium difficile* infection

- 2004 prospective study, 12 hospitals
- 1703 pts/ 1719 episodes
- Crude 30 day mortality rate 24.8%
- Incidence 22.5/1000 admissions
- Molecular typing of 157 isolates: 82% same strain North American Pulsed Field Type 1 (NAP1) (Toxinotype III, BI 027)
Figure. Changes in the age-specific *Clostridium difficile*-associated disease incidence rate per 10,000 population in the United States, 2000–2005.
Non-culture Report Format

- Reader unfriendly
- Non-intuitive language
- Results “Detected/not detected”
  - Lower limit of detection?
- Reference range misinterpreted as the result
- “Test showed shiga toxin. That’s Shigella, right?”
The Multiplex Problem

- Multiple pathogen targets
- Panel may be chosen for overlap in clinical presentation ("look-alikes")
- Unexpected result – impact on clinical decision
- Multiple positives, same sample
STEP UP YOUR
ANTIMICROBIAL
STEWARDSHIP

DRIVE DOWN HIGH-COST, HIGH-UTILIZATION ANTIBIOTICS
AND IMPROVE PATIENT SAFETY.
Formal ID Consults: Adherence to Recommendations

- Prospective study, 2 Chicago hospitals, 3 mos
- Adherence to recs: 80% overall
  85% for crucial recs

- Predictors of adherence:
  - Legible note
  - Coherent
  - Small no. of recommendations
  - Rec deemed crucial by ID service
  - Call to primary team

- Least likely followed rec:
  - to stop antibiotic

Considerations

- Recognize the time constraints on clinicians; attendant impact on test ordering, review of results
- Aim for greater clarity of report content and format
- Need to move info for clinical decisions based on the result closer to the result
- Value of NCDT to the system, perception vs reality transparency
- Studies of epidemiology of NCDT in actual practice
- Overall context of more complex medical testing