

Infection Prevention Program – C. difficile Reduction Project & GA DCH CDI Collaborative



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Objectives

- To define C. difficile reduction project
- To review the regulatory environment of C. difficile
- To define the core elements of the C. difficile reduction measures
- To present UH specific data, processes and outcomes

ASP and IP

- Represent a continuum and act synergistically
- Share common goals—to keep patient safe and improve outcomes
- Specifically ASPs were shown to reduce MDR and CDI rates, especially when coupled with robust IP programs
- Caveats: Successful interventions often required changing practices, prescribing patterns and learned behaviors—it takes time and often faces resistance however they are critical to offering a long-term solution

PARTNERSHIP

**Infection
Prevention**

**Environmental
Services**

**Laboratory
services**

Administration

ASP team

**Patient Care
Services**

**Physicians /
Providers**



UH Hospital Acquired Infections (HAI) Raw Numbers

All publicly reported data!!

| | CLABSI | CAUTI | C. difficile |
|------------|--------|-------|--------------|
| 2013 | 54 | 42 | 107 |
| 2014 | 50 | 52 | 107 |
| 2015 | 30 | 30 | 98 |
| 2016 | 37 | 27 | 124 |
| 2017 | 24 | 15 | 131 |
| 2018 | 18 | 18 | 100 |
| 2019 (YTD) | 13 | 12 | 16 |

How Did We Achieve These Results?

- Teamwork



The “C. difficile” Project Team Members

- Sallie Rivera, Director Infection Prevention
- Infection Prevention Nurses – C. Faircloth, K. Henry, S. Allen
- Christa Pardue, Lab Director
- Kevin Horton, Regional Director Crothall EVS
- ASP Committee – Dr. I. Chirca, MD / A. Albrecht, Clinical Pharmacist
- Patient Care Services

PCR says C. diff is present **BUT** is it infection?

- CDI is defined by the presence of symptoms
 - (usually diarrhea) and either a stool test positive for C. difficile
 - toxins or detection of toxigenic C. difficile, or colonoscopic or
 - histopathologic findings revealing pseudomembranous colitis.

Three major initiatives:



**Early C. difficile
testing protocol**

**2-step C. difficile
Laboratory testing**

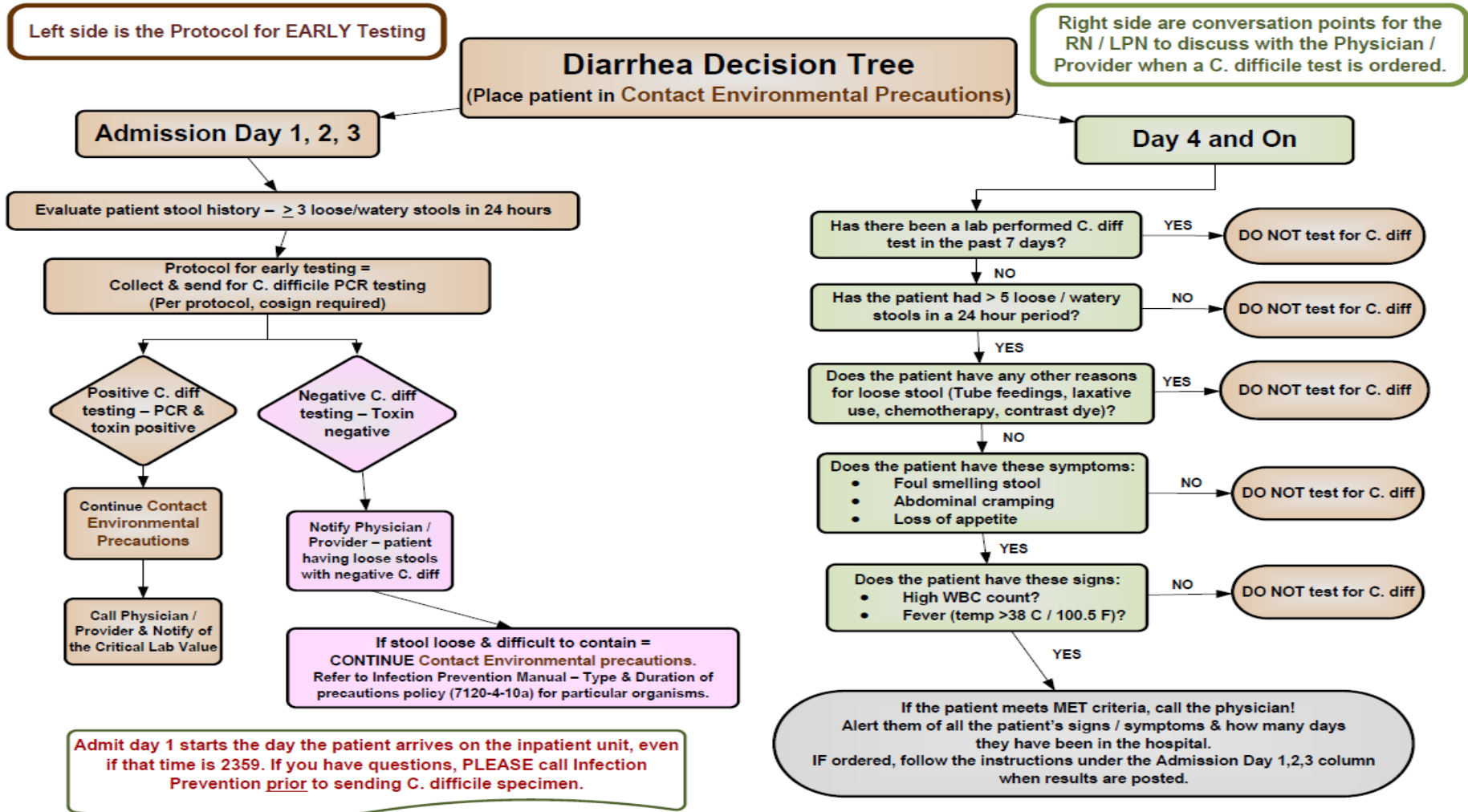
**Patient discharge
room cleaning system**

Nurse Driven Early C. difficile testing protocol

- Conceptualized at ASP committee meetings to reduce HO CDI through NHSN LabID Tap data
- Initiated in one unit then rolled out housewide – July 24, 2018
- Several levels of education provided for nursing staff
- Approvals through MEC, Epic Orders committee, Nursing Clinical Practice / PCPS committee

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- Nurse Driven Protocol – implemented 7/24/18



2-step C. difficile laboratory testing implementation

- Conceptualized at ASP committee & IPC meetings to comply with evidence based practice
- Initiated October 9, 2018
- Several levels of education provided for nursing & physician staff
- Approvals through MEC, Epic Orders committee, Nursing Clinical Practice / PCPS committee

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- Two (2) – step C. difficile testing – implemented 10/9/18

C. difficile Test Method — It is Changing!

C. difficile testing will be changing to a 2-step test method to comply with new testing guidelines from Infectious Disease recommendations.

What is the new test method?

The testing is now 2-step testing. The test will begin with the same PCR test that has been used by UH lab. *IF the PCR is positive*, the test will automatically (reflex) to the **second test, the Toxin test**.

How do I interpret the results?

- ⇒ If the PCR is positive, BUT the Toxin is negative = Interpretation: **negative test**
- ⇒ If the PCR is positive, AND the Toxin is positive = Interpretation: **positive test**

What does this mean for me?

- ◇ **Negative test** = NO treatment necessary, patient is likely colonized.
 - ◇ *IF diarrhea continues, consider referral to ID*— Look for alternative cause of diarrhea
 - ◇ Place patient in Contact Environmental (CE) precautions when stool specimen collected
 - ◇ *Follow attached algorithm* to stop CE precautions
- ◇ **Positive test** REQUIRES CE precautions — *Call Infection Prevention when diarrhea has resolved* to discuss stopping precautions

2-Step C. difficile testing – Interpretation of Results

Patient meets definition for stool testing = ≥ 3 loose/watery stools in 24 hours

| | Toxin negative | Toxin positive |
|--------------|--|--|
| PCR negative | <p>Interpretation: Negative Patient does not have C. difficile. Stop Contact Environmental Precautions</p> | <p>Toxin NOT performed if patient has negative PCR</p> |
| PCR positive | <p>Interpretation: Negative Patient suspected colonization NO treatment recommended (Look for other sources for diarrhea) Continue Contact Precautions until:</p> <ul style="list-style-type: none"> • 48 hours post test • Patient has no liquid stool • Patient is continent of stool <p>Confirm with Infection Prevention to stop precautions</p> | <p>Interpretation: Positive Patient has active C. difficile infection Contact Environmental Precautions REQUIRED Consult with Infection Prevention to stop precautions</p> |

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- Infection Prevention measures:
 - Hand Hygiene (HH)
 - Key concepts
 - Transmission-based Precautions
 - Contact Environmental
 - Partnership with EVS
 - Daily room cleaning – high-touch areas
 - Discharge room cleaning / Ultrasonic fogging with Peracetic acid disinfection

Ultrasonic fogging with Peracetic acid discharge room cleaning

- Conceptualized May 2018
- Implemented Fall 2018 for contact / contact environmental precaution rooms at time of discharge
- Approved by Senior Administration, EOC committee, IPC, Finance committee

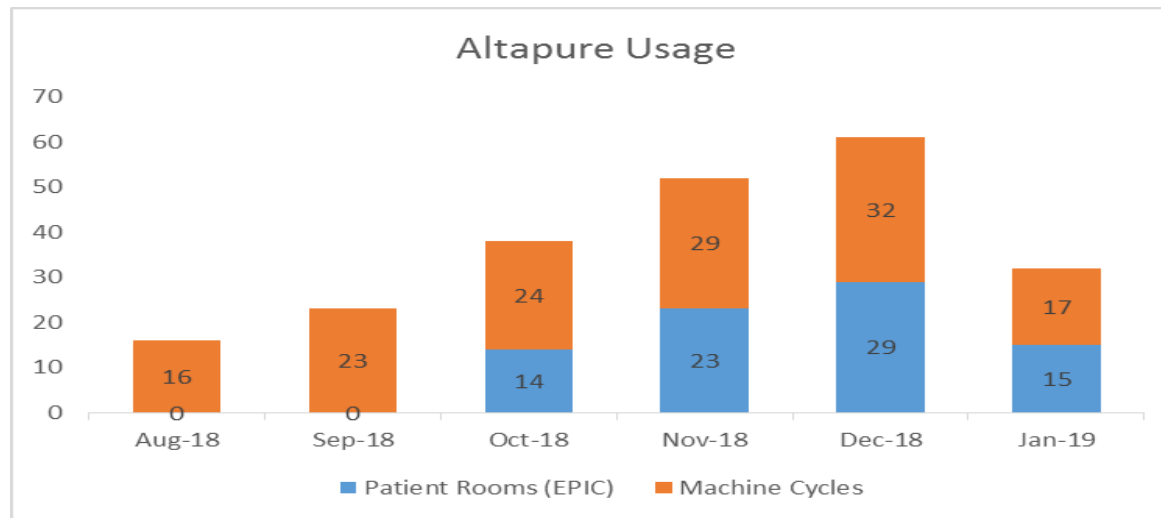
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- Ultrasonic fogging with Peracetic acid
 - Room “fogging” technology
 - Very “dry” / fast moving
 - Disinfects with peroxyacetic acid
 - Within the vinegar family – odor mild – smells “clean”
 - Does not damage equipment; able to place unused equipment inside room during Altapure cycle
 - Complete kill / no growth for spores, viruses or vegetative bacteria
 - Implemented August 2018



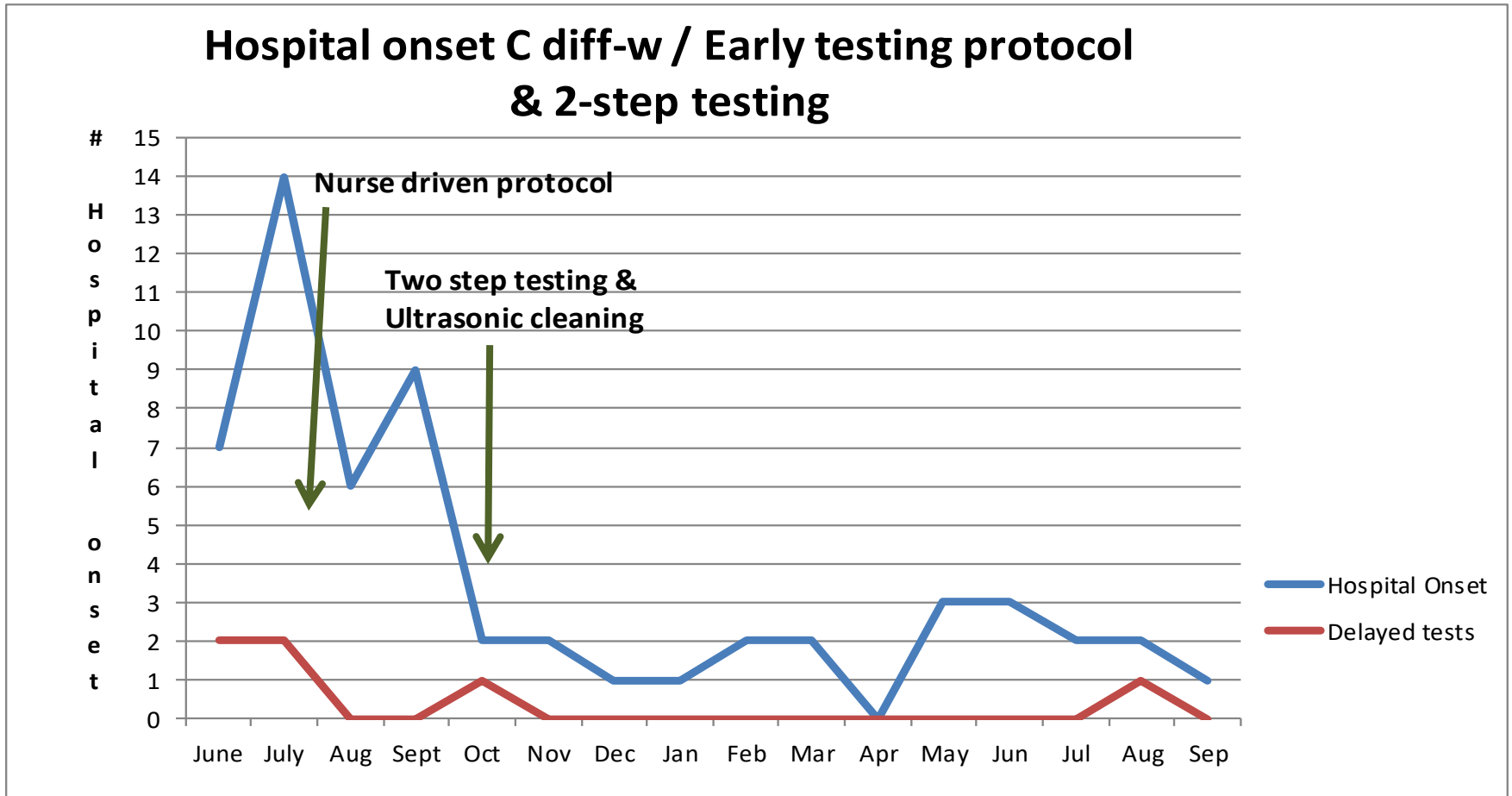
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- Ultrasonic fogging usage:
 - Implemented August 2018
 - Epic Rover Multi-stage Cleaning – October 2018
 - Used for Contact Environmental precautions
 - Plan to increase scope to other precautions



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Outcomes:



C. Diff (2015 Re-baseline)

| Year | 2019 | 2019 | 2019 | 2018 | 2018 | 2018 | 2018 | 2018 |
|-------------------|-------|-------|-------|-----------------|-------|------|------|------------|
| | Q3 | Q2 | Q1 | Q4* (2 step) | Q3 | Q2 | Q1 | Cumulative |
| SIR | 0.307 | 0.386 | 0.306 | 0.306 | 1.15 | 1.01 | 1.15 | 0.976 |
| Predicted | 16.27 | 15.55 | 16.34 | 16.34 | 25.23 | 29.7 | 31.2 | 102.46 |
| Hosp. onset | 5 | 6 | 5 | 5 | 29 | 30 | 36 | 100 |
| CAD (HHS SIR 0.7) | -6.39 | -4.89 | -6.44 | -6.44 | 11.3 | 9.21 | 14.2 | 28.3 |

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- Financial Impact
 - Estimated cost of CDI per episode is \$11,285*
- Decrease from 29 HO C. difficile cases 2018Q3 to 5 HO C. difficile cases 2018Q4:
 - ***Estimated \$270,840 cost savings***
 - Paid for the Ultrasonic fogging cleaning units in full

*E. Zimlichman, D. Henderson, et.al. Health Care-Associated Infections: A Meta-analysis of Costs and Financial Impact on the US Health Care System. *JAMA Internal Medicine* 2013; 173(22): 2039-2046

The “C. difficile” Project

- GA DCH CDI Collaborative
 - Initiated 2019Q1 – Joanna Wagner served as the chair
 - Had several meetings hosted by participants facilities
 - This project was shared at the April 2019 meeting, including the data
 - The Facility Assessment tool was reviewed, including leading / lagging practices.
 - Lagging practices provided guidance for future activities to continue improvement.

GA CDI Collaborative Data

Facility A

Clostridium difficile Infection (CDI) Facility Assessment Tool—Feedback Report

| | | | | | | |
|--------------------|--|--|--|--|---|--|
| Date Range: | 5.00 | 16.34 | -6.44 | 0.31 | 0.80 | 0.71 |
| Q4 '18 | Number of healthcare facility-onset CDIs | Number of predicted healthcare facility-onset CDIs | Facility Cumulative Attributable Difference (CAD), or the number of infections the facility would have needed to prevent to achieve an HAI reduction | Healthcare facility-onset CDI Standardized Infection Ratio (SIR) | 2017 National healthcare facility-onset CDI SIR | 2017 State healthcare facility-onset CDI SIR |
| | | | goal SIR of 0.7 | SIR >1.0 indicates more infections than predicted | | |

| Assessment Overview | |
|---------------------|-------------------------|
| # Collected: | 19 |
| # Analyzed: | 19 |
| Overall Mean Score: | 90.2 out of 126, or 72% |

Note: If this report represents fewer than 30 assessments, results may not be fully representative of the awareness and perceptions of infection prevention practices among healthcare personnel. Scoring and results are for the purpose of internal quality improvement and should not be used as a method to benchmark against other units or facilities.

| Leading* |
|---|
| Training and competency assessments on hand hygiene, use of PPE, and environmental cleaning/disinfection |
| Patient/family education about risk of CDI with antibiotics, hand hygiene, and use of gowns/gloves |
| C. difficile tests ordered within 24hrs, prompt stool collection, and positive results immediately received by personnel providing direct care |
| CDI patients remain on contact precautions at least 48hrs after diarrhea ends, housed separately, & use of dedicated equipment and contact precaution signs |

| Lagging† |
|---|
| Staff person with dedicated time to coordinate CDI prevention activities; Nurse and physician champions for CDI prevention activities |
| Feedback of facility-wide and unit-level CDI data and antibiotic use data to personnel; Use of CDI data to direct prevention activities |
| Families/Visitors adherence to use of gowns/gloves and hand hygiene |
| Awareness of antibiotic stewardship practices and environmental cleaning practices |

Top Opportunities for Improvement: *

| I. General Infrastructure 73% | II. Antibiotic Stewardship 47% | III. Early Detection, Appropriate Testing 69% | IV. Contact Precautions 77% | V. Environmental Cleaning 72% |
|--|---|--|---|--|
| Staff person with dedicated time to coordinate CDI prevention activities | Awareness of antibiotic stewardship, including: | Providers avoid ordering C. difficile tests for inappropriate indications: Diarrhea with a known cause | Adherence to use of gowns/gloves: Families/Visitors | EPA product effective against C. difficile for daily disinfection in CDI rooms |
| Nurse and physician champions for CDI prevention activities | Monitor use and reduce unnecessary use of Fluoroquinolones | Providers avoid ordering C. difficile tests for inappropriate indications: Testing for CDI cure | Adherence to hand hygiene policies: Families/Visitors | Manufacturer's instructions followed for use of disinfectants |
| Routine audits of selection of PPE components | Monitor use and reduce unnecessary use of 3rd/4th Gen. Cephalosporins | | CDI patients remain on Contact Precautions for the entire duration of hospitalization (48% for sum of Never/Rarely/Sometimes/Unk) | |
| Routine audits and feedback of performance on environmental cleaning/disinfection | Monitor use and reduce unnecessary use of Clindamycin | | | |
| Feedback of facility-wide and unit-level CDI data and antibiotic use data to personnel | | | | |

* Items displayed are based on questions with a frequency of >75% Yes or >75% for the sum of Often + Always

† Items displayed are based on questions with a frequency of >33% Unknown, >50% No, or >50% for the sum of Never + Rarely + Sometimes + Unknown

‡ Items displayed are based on questions within each domain with a frequency of >33% Unknown, >50% No, or >50% for the sum of Never + Rarely + Sometimes + Unknown

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- Questions????



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