Infection Preventionist Involvement Enhances Electronic Health Record Prompts for Appropriate C. difficile Testing

Donna Stokes RN BSN CIC[1], Ann Reisinger RN BSN CIC[2], Kathleen McMullen MPH CIC FAPIC, FSHEA[3]

1 – Mercy Joplin, Joplin, MO; 2 – Mercy Lincoln, Troy, MO; 3 – Mercy Ministry Quality and Safety

Abstract:

Introduction:
Clostridioides difficile infection (CDI) is one of the most common organisms to cause healthcare acquired infections (HAI) in the United States. Diagnostic stewardship is needed to accurately identify CDI within the healthcare setting. Different processes to ensure emphasis on clinical appropriateness for CDI testing were compared.

Methods:
A healthcare system including 45 hospitals in midwestern United States developed and implemented a process for early recognition of community-onset CDI utilizing electronic health record Best Practice Advisories (BPA). Initial and annual review of BPAs improved their ability to educate providers and empower nurses to place an order for testing per protocol within the first three days of admission. Infection Preventionists (IPs) supplement the work of the BPAs in a variety of manners. The effect of engagement of IPs, nurses, and lab in various processes were compared using Chi square analysis (EpiInfo, CDC, Atlanta GA) of hospital-onset CDI from October 2021-September 2023 as measured by Standardized Infection Ratio (SIR).

Results:
Hospitals where the lab sought approval from IP for CDI tests ordered within the first 3 days of admission reported 45% lower SIR (0.22 versus 0.45, p=0.03); those that sought approval for CDI test ordered 4 or more days after admission reported 55% lower SIR (0.23 versus 0.51, p<0.01). Hospitals where the IPs rated moderate or high engagement from nursing to follow the BPAs had 23% lower SIR (0.36 versus 0.47, p=0.01). Those where IPs discontinued inappropriate protocol orders from nursing 4 or more days after admission had 21% lower SIR (0.35 versus 0.44, p=0.02).

Conclusion:
BPAs, while able to impact CDI ordering practices, are not universally followed. Hospitals where IP actively engages with lab and ordering providers, or nursing has higher engagement with the BPAs, had lower SIRs, likely related to limiting inappropriate testing.

Methodology

- Mercy healthcare system includes 45 hospitals in MO, OK, AR and KS.
- EPIC BPAs are used for early recognition of community-onset CDI. Initial and annual review of BPAs improved their ability to educate providers and empower nurses to place an order for testing per protocol within the first three days of admission.
- Infection Preventionists (IPs) supplement the work of the BPAs in different ways by hospital
  - A survey was developed to understand the differences
- Hospital-onset CDI SIRs from Oct 2021-Sep 2023 were compared based on survey response (EpiInfo, CDC, Atlanta GA)

Facility
Facility type: Critical Access/Acute
IP contact
Lab calls IP when stool received for c diff testing:
1) Day 1-3
2) Day 4 and beyond
IP reviews following notification from lab:
1) 24/7
2) only during working hrs. M-F
3) has designated someone to review when not during working hours-nights/weekends/holidays.
4) since the c diff orders are not STAT, lab holds evening/night specimens for review by IP the following day
Nursing is engaged in following BPA's 1&2
IP discontinues c diff orders placed per protocol on Day 4 of admission and notifies/nurse or Provider to place order if patient meets criteria for testing
IP notifies Provider when patient doesn't meet criteria for testing
IP notifies patient's nurse when they don't meet criteria for testing
IP notifies patient's nurse to place order per protocol Day 1-3 if patient is high risk and has had an unformed stool
LAB discontinues GI pathogen order after Day 3 of admission

Results

- 45% lower SIR (0.22 versus 0.45, p=0.03) when hospital labs sought approval from IP for CDI tests ordered within the first 3 days of admission
- 55% lower SIR (0.23 versus 0.51, p<0.01) when labs sought approval for CDI test ordered 4 or more days after admission
- 23% lower SIR (0.36 versus 0.47, p=0.01) when IPs rated moderate or high engagement from nursing to follow the BPAs
- 21% lower SIR (0.35 versus 0.44, p=0.02) when IPs discontinued inappropriate protocol orders from nursing 4 or more days after admission

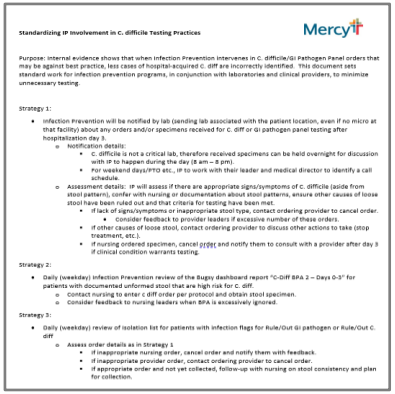
CDI Testing Tenants

- Diarrhea alone is not an indication of C diff infection, one other symptom needed
- No testing for proof of cure
- If there is another reason for diarrhea, do not test for C diff
  - If on temporary treatment that may cause loose stool (such as laxatives) stop for 48 hours and monitor for improvement or worsening
- There is no need to test for C diff prior to starting treatment with Imodium

Next Steps

Standardizing IP involvement to minimize unnecessary testing

- Expected lab and IP communications
- Monitoring of BPAs with feedback to leaders
- Review C diff tests ordered but not completed



Standardizing IP involvement in C. difficile Testing Practices

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Purpose: Internal evidence shows that when Infection Prevention intervenes in C. difficile/GI Pathogen Panel orders that may be against best practice, less cases of hospital-acquired C. diff are incorrectly identified. This document sets standard work for infection prevention programs, in conjunction with laboratories and clinical providers, to minimize unnecessary testing.

Strategy 1:

- Infection Prevention will be notified by lab (sending lab associated with the patient location, even if no micro at that facility) about any orders and/or specimens received for C. diff or GI pathogen panel testing after hospitalization day 3.
  - Notification details:
    - C. difficile is not a critical lab, therefore received specimens can be held overnight for discussion with IP to happen during the day (8 am – 8 pm).
    - For weekend days/PTO etc., IP to work with their leader and medical director to identify a call schedule.
  - Assessment details: IP will assess if there are appropriate signs/symptoms of C. difficile (aside from stool pattern), confer with nursing or documentation about stool patterns, ensure other causes of loose stool have been ruled out and that criteria for testing have been met.
    - If lack of signs/symptoms or inappropriate stool type, contact ordering provider to cancel order.
      - Consider feedback to provider leaders if excessive number of these orders.
    - If other causes of loose stool, contact ordering provider to discuss other actions to take (stop treatment, etc.).
    - If nursing ordered specimen, cancel order and notify them to consult with a provider after day 3 if clinical condition warrants testing.

Strategy 2:

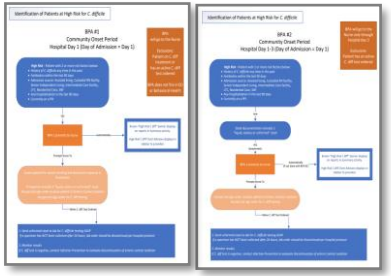
- Daily (weekday) Infection Prevention review of the Buggy dashboard report "C-Diff BPA 2 – Days 0-3" for patients with documented unformed stool that are high risk for C. diff.
  - Contact nursing to enter c diff order per protocol and obtain stool specimen.
  - Consider feedback to nursing leaders when BPA is excessively ignored.

Strategy 3:

- Daily (weekday) review of isolation list for patients with infection flags for Rule/Out GI pathogen or Rule/Out C. diff
  - Assess order details as in Strategy 1
    - If inappropriate nursing order, cancel order and notify them with feedback.
    - If inappropriate provider order, contact ordering provider to cancel order.
    - If appropriate order and not yet collected, follow-up with nursing on stool consistency and plan for collection.

Future Direction

- Can AI help streamline the work that would be needed from the lab and IP?
- Need a system-wide cancelation protocol, so that IPs can take that action



Conclusion

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