

Probiotics Treat and Prevent Antibiotic-Associated Diarrhea

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Practice Concern

- “More than a third of patients taking antibiotics develop AAD, and in 17% of cases, AAD is fatal” (Rodgers, Kirley, & Mounsey, 2013).
- Infection with CDAD increases the rate of comorbidities by 20-65% (Sluder, 2011).
- CDAD infections cost roughly 1.3 billion dollars a year (Rodgers, Kirley, & Mounsey, 2013).
- AAD prolongs hospital stays by an average of 3.6 days with each day at a cost of roughly 3,669.10 dollars (Avadhani, & Miley, 2011).

Needs Assessment

- *Clostridium difficile*-associated diarrhea (CDAD) is the most serious form of AAD (Selinger et al., 2013).
- Interventions to prevent CDAD have been few in number (Sluder, 2011).
- AAD is a readily treatable and preventable condition that still frequently causes complications (Hempel et al., 2012).
- The addition of AAD to individuals already in a poor state of health increases mortality and places them at an increased risk of a poor outcome (Xie, Li, J., Wang, Li, Q., & Chen, 2015).

PICOT Question

How does probiotic administration compared to no probiotic administration over a six month period affect antibiotic-associated diarrhea in adults 18-65 years of age?

Literature Review

Databases: CINAHL and Cochrane Library.

Keywords:

- “Probiotic”, “diarrhea”, and “antibiotic” together yielded 46 articles.
- “Probiotic” and “antibiotic” together yielded 205 articles.
- “Probiotic” and “diarrhea” together yielded 128 articles.

Inclusion Criteria:

- Research aimed at treatment and prevention of AAD with probiotics.
- Articles from 2010 – 2018 with adults as patients.

Exclusion Criteria:

- Cochrane Library filter for Cochrane Reviews was enabled.
- Articles older than 2010, pilot studies, involving only children.

Level of Evidence:

- Ten articles: Six Level I, two Level IV, and two Level II.

Summary:

- Probiotics reduces AAD recovery time and severity of symptoms.
- Use of probiotics with antibiotics prevents and treats AAD.
- Reduction in diarrhea improves compliance with antibiotic regimen.
- Most over-the-counter probiotic preparations with multiple strains and enough colony-forming units produce the desired results.
- “Short-term use of probiotics appears to be safe and effective when used along with antibiotics in patients who are not immunocompromised or severely debilitated” (Goldenberg et al., 2013).

EBP Guidelines

Guideline Implementation Steps

- Identify probiotic supplement that satisfies adequate requirements for effectiveness.
- Establish if patient is immunocompromised or severely debilitated.
- An oral dosage of 5 billion colony-forming units or greater per day is recommended to produce the desired results (Wilkins & Sequoia, 2017).
- “Patients should start probiotics on the first day of antibiotic treatment and continue for one to two weeks following completion of antibiotic therapy” (Wilkins & Sequoia, 2017).
- Evaluate for adverse reactions and effectiveness.

Theoretical Framework

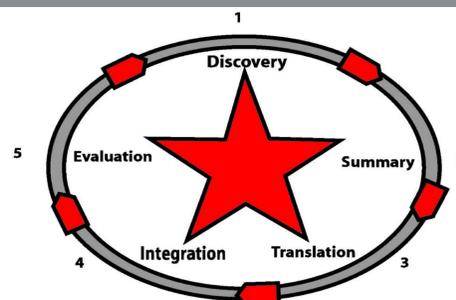


Figure. ACE Star Model of EBP: Knowledge Transformation. K. R. Stevens (2004)

Implementation

Discovery

- Data identified regarding probiotic therapy in research.

Evidence Summary

- Applicable research data identified and summarized.

Translation

- Summarized data translated into practice recommendations.

Integration

- Present practice recommendations to leadership.
- Primary care providers are in-serviced.
- Handouts provided showing the evidence as well as the guidelines for treatment.
- Allow for Q & A session in the last ten minutes to address any questions.

Evaluation

Six month chart review

- Identify 50% increase in prescribing of the providers.
- Compare number of office visits related to AAD before and after implementation.
- Continue to follow current research on probiotics for further updates.
- Adjust practice recommendations as necessary according to newly identified data.

Selected References

- Agamennone, V., Krul, C. A. M., Rijkers, G., & Kort, R. (2018). A practical guide for probiotics applied to the case of antibiotic-associated diarrhea in The Netherlands. *BMC Gastroenterology*, 18(1), N.PAG.
- Wilkins, T., & Sequoia, J. (2017). Probiotics for Gastrointestinal Conditions: A Summary of the Evidence. *American Family Physician*, 96(3), 170-178. Additional references available upon request.

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