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Increasing the use of Probiotics concurrently with Acute Antibiotic Treatment: A Community Perspective in Newtown, CT

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**Increasing the use of Probiotics concurrently
with acute antibiotic treatment:
A community perspective in Newtown, CT**

John Vandenberg
Rotation 1 (May-June 2019)
Project Mentor: Dr. Eurica Chang, MD

Problem Identification

- Patients at Newtown Primary Care being treated for bacterial Upper/Lower Respiratory infections with antibiotics often present with side effects of nausea, bloating, and diarrhea.
- These associated symptoms may deter patients from taking the full course of prescribed antibiotics promoting bacterial resistance, delayed recovery, and increased patient healthcare costs.
- Safely tolerating antibiotic regimens is essential for treatment along with careful consideration for patients at risk for severe gastrointestinal disturbances including pseudomembranous colitis via *Clostridium Difficile* infection.

Do antibiotics have side effects?



Anytime antibiotics are used, they can cause side effects. When antibiotics aren't needed, they won't help you, and the side effects could still hurt you. Common side effects of antibiotics can include:



Rash



Dizziness



Nausea



Yeast Infections



Diarrhea

More serious side effects include *Clostridium difficile* infection (also called *C. difficile* or *C. diff*), which causes diarrhea that can lead to severe colon damage and death. People can also have severe and life-threatening allergic reactions.

Antibiotics save lives. When a patient needs antibiotics, the benefits outweigh the risks of side effects.

To learn more about antibiotic prescribing and use, visit www.cdc.gov/antibiotic-use.



Public Health: Antibiotic Associated Diarrhea (AAD)

- In the United States, AAD can occur in up to 35% of patients resulting in significant gastrointestinal perturbation (1).
- The spectrum of AAD includes mild diarrhea, colitis, and pseudo-membranous colitis via *Clostridium Difficile* infection (CDI) (1).
- In 2013 alone there was 453,000 cases of CDI with 29,300 deaths and healthcare costs ranging from \$3427-9960 per patient (2).



Clostridium Difficile, Source: CDC.gov

Community Perspective

“ We are learning a lot about the brain-gut axis and the benefits of maintaining healthy gut flora - Newtown residents can benefit from regularly consuming probiotics to treat gastrointestinal symptoms and help prevent antibiotic associated diarrhea as many patients can encounter this during treatment.”

- **Dr. Eurica Chang, MD, Family Medicine Physician**

“Probiotics are needed in the Newtown community for good gut health for all age groups, especially when the person is started on antibiotics, but it is helpful to all patients as we do not always eat the best diets.”

- **Elaine Dronzek, RN BSN, Care Coordinator**

Intervention and Methodology

Goal: Increase tolerability and compliance of prescribed antibiotic courses and ultimately reduce the occurrence of antibiotic gastrointestinal (GI) side effects.

Intervention: To increase patient awareness of the probiotic options available in local groceries to maintain healthy gut flora and reduce occurrence of GI side effects while on antibiotic courses and for general wellbeing (3,4).

Methodology: Create an educational, easy-to-read handout for patients starting an antibiotic course on how to better maintain healthy gut microflora via probiotic supplements not limited to capsular forms including naturally fermented foods/beverages such as yogurt, kefir, kombucha, kimchi, and sauerkraut.

Probiotics 101: Keeping your gut happy

What are probiotics?

- Probiotics are good bacteria that can help maintain your gut health, especially during illness and following antibiotic treatments.

Why should I use them regularly?

- Our gut is home to trillions of health promoting bacteria. It is important to maintain the right balance of bacterial species; especially during antibiotic use.

What types of foods/beverage contain "good bacteria"?

The brands listed are popular suggestions - see what you like!

✓ Yogurts with active cultures

(Brands include Siggi's, Stony Field, Dannon Activia)

✓ Flavored Kefirs found in dairy aisle

(Brands include Lifeway, Siggi's, Redwood Hill Farm)

✓ Kombucha - Note: may contain trace amounts of alcohol

(Brands include Kevita, GT's Enlightened, Health-Ade)

✓ Kimchi

(Brands include Mother in Laws Kimchi, Mama O's, Trader Joe's, Tobagi)

✓ Natural Pickles

(Brands include Bubbies, Real Pickles)

✓ Sauerkraut

(Brands include Bubbies, Farmhouse Culture, Trader Joes)

Where are these fermented products sold?

- These items can be found in the refrigerated section (live cultures) at natural food stores, Whole Foods, ethnic groceries, and supermarkets.

This handout was compiled with help from:

NYC Nutrition Education Network
http://www.nycnen.org/uploads/6/1/7/0/61709327/pre__probiotic_food_handout.pdf
NIH Probiotics in Depth
<https://nccih.nih.gov/health/probiotics/introduction.htm>
UW Department of Family Medicine
https://www.fammed.wisc.edu/files/webfm-uploads/documents/outreach/im/handout_probiotics_patient.pdf

Are probiotics safe for everyone?

- Yes, for most adults and children probiotics are safe to consume. Patients with diabetes, cancer, and other conditions that suppress the immune system should first consult a Health Care Professional.

Are there capsular probiotic forms?

- Yes, consult your local pharmacist regarding which manufacturers they recommend.

Could I make my own probiotic rich foods?

- Certainly, there are a multitude of books and online resources on how to ferment vegetables, fruit, and dairy.

Make your own Kimchi adapted from CulturesforHealth.com

Ingredients:

- 2 large heads of Napa cabbage, sliced thin
- 2 large bundles of green onions, sliced thin
- 1 head of garlic, minced
- 1-2 Tbsp. grated fresh ginger
- 1-2 Tbsp. Korean red pepper flakes* or ¼ lb fresh red chilies minced (more if you like spicy)
- 3-4 Tbsp Sea Salt

Directions:

1. With clean hands or food grade gloves, combine all ingredients in a large bowl, massage salt into vegetables, let it sit for 5-10 minutes
2. Continue massaging vegetables to produce a natural brine.
3. Add vegetables to a clean mason jar, be sure vegetables are completely submerged in brine.
4. Cover with mason jar lid, air lock lid, or coffee filter with rubber band.
5. Let jar sit at room temperature (60-70°F) until desired cabbage texture (this is variable 1-3 days).
6. Once done, place in refrigerator covered, enjoy with rice, eggs, lean meats, and soups.

* Korean red pepper flakes can be found in local Asian American grocery stores.

Response to Handout

“Its easy to read and well organized - I like that you added a recipe for patients to try, this will provide patients with a variety of options when figuring out which type of probiotic they would like to try”

- **Dr. Eurica Chang, MD, Family Medicine Physician**

“Clear, concise and gives good information”

- **Elaine Dronzek, RN BSN, Care Coordinator**

Proposed Efficacy Evaluation & Limitations

- ▶ When the handout has been distributed for 1 year at Newtown Primary Care to patients receiving antibiotic regimens, compare outcomes to patients from previous year (before handout) using chi-squared analysis.
- ▶ Outcomes of diarrheal illness, urgent care visits, repeat office visits, and days missed work/school can be tallied via patient phone follow-up call 2 weeks following completion of antibiotic regimen.
- ▶ Limitations: Other external factors may influence a patient's recovery even with probiotics including but not limited to age, diet, degree of physical activity, comorbidities, immunosuppression, and concomitant medications.

Recommendations for future interventions

- ▶ Implement a free probiotic taste test in the Primary Care waiting room during winter months (higher frequency of respiratory infections) to introduce patients to different types of natural ways to keep their gut healthy.
- ▶ Short patient survey to assess general knowledge of probiotics to determine impact of handout.
- ▶ Provide resources for patients to produce their own fermented foods including vegetable medleys, kimchi, and sauerkraut all with items easily purchased from the local grocery.



Image Source: How to make easy kimchi at home

<https://www.thekitchn.com/how-to-make-easy-kimchi-at-home-189390>

References

1. Mcfarland LV. Antibiotic-associated diarrhea: epidemiology, trends and treatment. *Future Microbiol.* 2008;3(5):563-78.
2. Mcfarland LV, Ozen M, Dinleyici EC, Goh S. Comparison of pediatric and adult antibiotic-associated diarrhea and *Clostridium difficile* infections. *World J Gastroenterol.* 2016;22(11):3078-104.
3. Hempel S, Newberry SJ, Maher AR, et al. Probiotics for the prevention and treatment of antibiotic-associated diarrhea: a systematic review and meta-analysis. *JAMA.* 2012;307(18):1959-69.
4. Takahashi, Jonathan & Adam Rindfleisch, J. (2018). Prescribing Probiotics. 10.1016/B978-0-323-35868-2.00105-5.

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Consented: Yes

Name: Dr. Eurica Chang, MD

Consented: Yes

Name: Elaine Dronzek, RN BSN