**DATE:** October 7, 2013

**TO:** Hospital Administrators: C. O’Holo, R. Jindai, B. Kunzer

**FROM:** Farhat Safdar

**SUBJECT: New *C. difficile* treatment method**

A new and different method of treating *Clostridium difficile* infections has been developed. Fecal matter from healthy people is transplanted into the colons of people infected with *C. difficile*. The transplant works because stool from healthy people, when mixed with warm water and delivered via a tube into patients' colons, helps re-establish the normal balance of microbes in the intestine. *C. difficile* infections generally occur when a person’s normal microbiome becomes disrupted, from either antibiotic treatment or a condition that leaves patients with a compromised immune system. With the transplant, the large influx of healthy microbes can out-compete the *C. difficile* for resources, essentially causing the *C. difficile* to die off due to a lack of resources. Results are promising; 80-90% of patients treated with a fecal transplant experience a complete cure.

*C. difficile* infections are linked to 14,000 deaths in the U.S. yearly, according to the Centers for Disease Control and Prevention. People at highest risk for the infection are older adults and those who take antibiotics. It's believed that antibiotics may disrupt the normal balance of microbe species in the intestine, giving *C. difficile* bacteria a chance to thrive.

**Adapted excerpt from**:

Rowan, K. (2012). “Poop Transplants” may combat bacterial infections. *Live Science*. Retrieved from <http://www.livescience.com/36701-poop-transplants-bacterial-cdiff-infections.html>

**DATE:** October 7, 2013

**TO:** Interns

**FROM:** C. O’Holo

**SUBJECT: RE: New *C. difficile* treatment method**

The hospital administrators are trying to decide whether antibiotics or fecal transplant is the better method of treatment for our patients. In order to help with this decision, please create a visual that will explain the differences and similarities of the two treatment methods for *C. difficile* infections.

Include a graph or model that represents the microbiome during and after each treatment method.

Use the questions below to guide your comparison of the *C. difficile* treatments.

1. What is the role of mutualistic or commensal microbes in each treatment?
2. Does the treatment rely on the gut ecosystem’s natural resistance to change or resiliency or neither?
3. How do the models of each treatment differ?
4. Does the treatment increase, decrease or not affect the diversity of microbes in the ecosystem?
5. Both treatments incorporate a disturbance of the ecosystem. Are the results the same? Do all disturbances have undesirable results?
6. Are there other considerations besides patient outcomes that we should take into account when deciding which treatment to use? What about cost, patient preference, effect on the environment, time involved etc?