

**Public Comment: Presidential Advisory Council on Combating Antibiotic-Resistant Bacteria. January 31, 2019.**

We need to have a paradigm shift regarding the prevention of infections from multi-drug resistant organisms. One which is designed around the preservation and promotion of an optimal protective microbiome.

Antibiotic stewardship, although very important, might not succeed as the sole intervention. If optimal antibiotic stewardship is achieved, we will still need to use antibiotics. Even with a 50% reduction, there will still be billions of bacteria exposed to antibiotics and resistance will develop, but hopefully at a slower rate.

The importance of the microbiome, along with antibiotic stewardship, is demonstrated by an up to 32% reduction in observed C. Difficile infections with proper prescription practices. This reduction is primarily due to the avoidance of the destruction of the gastrointestinal tract's protective bacteria, which helps to prevent the acquisition and growth of C. Difficile, along with the development of resistance. The most effective treatment for severe C. Difficile Infections is not antibiotics but microbiome reconstruction with fecal transplantation.

Identification of carriers is also of importance. Currently, the World Health Organization recommends preoperative testing for Staph Aureus of all patients undergoing major surgeries. And if the country has adequate resources, which the United States certainly has, to test all surgical patients. In the United States, there is not even a system-wide standard to preoperatively identify MRSA carriers, which would then allow for decolonization.

I envision in the future, hand hygiene will evolve and take on a different form. Instead of destroying the hand's microbiome with antiseptics 100's of times a day, risking exposure of the facilities microbiome to MDRO forming agents, one may take a more selective approach, performing microbiome destruction when exposed to dangerous pathogens and in other cases performing cleansing which includes beneficial and protective bacteria.

I cannot over stress the importance that our healthcare system prepare for the testing of a patient's microbiome. In the future, I believe this will be part of a standard physical exam. Knowledge of the biome's characteristics will have an impact on many diseases, just not the prevention of infections. We need to build this capability, but until then, we can at least identify the carriers of dangerous pathogens in an attempt to eliminate their carrier state and modify their microbiome.



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