Better Medicine -- The Solution to Disease and Illness

Medicine is all around us and is very helpful to help sustain human life. We use it to cure diseases, injuries, and infections. Medicine has been around for thousands of years. In fact, there are records of the Egyptians using medicine as far back as the 27th century. Medicine has evolved since its early days. It has become more advanced and more effective. Unfortunately, so have the microbes that cause disease and infections. Antibiotics, which were some of the earliest effective medications, used to do a good job killing microbes and curing people of infections. Over the years, the microbes that cause disease and infection have become “smarter,” and have adapted so that antibiotics can no longer kill them. Many infections are now caused by bacteria that are hard to kill with regular antibiotics. These infections are called “drug-resistant infections.” To assure the future health of the human race, engineers, pharmaceutical companies, public health officials, and medical providers will need to use advanced biomedical engineering strategies to make better medicine.

One idea to help make better medicine to treat infections is to personalize medicine to each microbe’s weakness. For example, if a microbe has a weak cell membrane, engineers could develop a medicine that works by further destroying its cell membrane. Medications could be engineered in such a way that they were specific for just a few types of bacteria. Engineers would have to dissect microbes and find out how to best kill them. This would take a lot of trial and error. If medications could be made this way, they would have a better chance of killing the bacteria. Our community has excellent resources to help this process along. Researchers at
WVU Medicine could partner with researchers at Mylan Pharmaceuticals to try to figure out the
genetic weakness of bacteria and produce a medicine to attack it.

A second idea would be to look deeper into nature for natural products that could help
eliminate bacteria. By exploring new ecosystems, scientists could discover plants or other
resources that could naturally cure infections. Engineers could work with botanists, biologists,
and even marine biologists to find cures for infections. Once they located a specimen that can
kill unwanted microbes, they could make more of it and use it as medicine. This idea would be
possible in our community because we have easy access to natural products in our state. West
Virginia has mountains, caves, rivers, lakes, forests, and four distinct seasons. This means that
there are many types of living things in our state, and it is possible that a newly discovered
product in our varied ecosystem could lead to a new medication to help with resistant bacteria.

In conclusion, it is important for different professionals to work together to think about
new ways to solve medication resistance and find cures for difficult infections. West Virginia is a
perfect place for these problems to be solved because we have access to medical researchers,
public health providers, and pharmaceutical producers to help with the genetic engineering of
new medications. We also live in a state with a varied ecosystem that could provide many
natural substances that could help fight off infections. As people live longer, and our world gets
more crowded, we will have to fix the problem of medication resistance sooner rather than later.

http://www.engineeringchallenges.org/9129.aspx

https://www.osha.gov/etools

https://en.wikipedia.org/wiki/Ancient_Egyptian_medicine