

BAD BUGS, NO DRUGS

by Colleen Kenney Fleischer



Here's a scary story:

A few years back, farmers in central China came down with a strange sickness that included vomiting, diarrhea and high fevers. Their organs rapidly failed. About a third of those farmers died.

The illness spread to six other regions of China, proving fatal in 12 percent of cases.

Researchers eventually discovered that the sickness — which they named Severe Fever — was a previously unknown virus that was transmitted by ticks.

Here's another scary story:

In 2008, about 170,000 people in the United States died from new, emerging and neglected infectious diseases such as H1N1 influenza virus, SARS and H5N1 avian influenza virus. (Emerging infections include newly identified strains of the AIDS virus, malaria, tuberculosis and MRSA, which is a

drug-resistant staph infection.) Yet the Food and Drug Administration approved no new antibacterial drugs in 2008 and since 1998 has approved only 12 new antibacterial drugs.

"Bad bugs. No drugs."

That's how Courtney Fletcher, Pharm.D., dean of UNMC's College of Pharmacy, describes this major health problem.

"People need to care about this," he said. "Sure, a disease like malaria is not a major problem in the United States. But the borders that separate us as a society aren't far anymore. We all travel. Someone from Nebraska could visit a part of the world where there's malaria, or a person infected with malaria could come here. Microorganisms cross borders pretty easily.

"Also, we need to care because we're part of a larger family. The numbers are staggering — one child dies every 30 to 45 seconds from malaria."

Though a bad bug can be highly lethal, typical therapy takes just seven to 14 days. Since major pharmaceutical companies direct resources on chronic illnesses and "lifestyle" drugs, researchers in academic medical centers have a bigger role in formulating drugs to fight those "bad bugs," Dr. Fletcher said.

Here's a story that gives hope:

Dr. Fletcher and his fellow researchers at UNMC are on the front lines of this global battle. They work to discover new drugs and new drug delivery systems to fight the bad bugs.

And their successes in drug discovery have made a difference.

Jonathan Vennerstrom, Ph.D., a chemist and professor of pharmaceutical science, has helped lead the discovery of two drugs to treat malaria. Both are now in clinical trials. His latest formulation, a single-dose cure for malaria, shows promising results in

human trials. It could be one of the biggest breakthroughs in the fight against malaria in 80 years.

Most anti-malarial drugs must be taken three times a day. A single dose would be more convenient and affordable and would help ensure patients get the right amount of medicine.

“Think about this newest anti-malarial drug Jonathan developed – if it really is a one-dose cure, it’s not going to be a big money-maker for a pharmaceutical company. Yet the potential for it is huge and the need for it is staggering,” Dr. Fletcher said.

The discovery is so significant philanthropist Bill Gates mentioned it in a speech to the United Nations in 2008.

Other pharmacy professors such as Matt Kelso, Ph.D., look for ways to treat traumatic brain injury, and Tanya Bronich, Ph.D., focuses on drug delivery to brain tumors.

“We aren’t just going after neglected infectious diseases, but other human health problems where there are significant unmet needs,” Dr. Fletcher said.

Pharmacy researchers also have developed leads for tuberculosis, food-borne infections and antidotes for toxins. Dr. Fletcher himself is a major force in HIV research. He focuses on how HIV/AIDS drugs work in people. About a decade ago, the efforts of Dr. Fletcher and his team led the FDA to approve two important HIV drugs for children about the same time they were approved for use in adults.

For the third year in a row, the College of Pharmacy ranks in the top 10 nationally among 110 pharmacy schools in terms of research dollars per faculty member.

“The message is that the College of Pharmacy and the faculty are actively involved in drug discovery and drug development to improve human health,” Dr. Fletcher said.

And they’re educating students who help solve the drug problems – about 60 percent

of Nebraska’s pharmacists were trained at UNMC.

But the school has hit a ceiling, literally. Its current home on campus, which was built in the mid-1970s, is inadequate for the type of research underway today.

This comes at a time when the college has the ability to do more work, the dean said, and when there’s clearly no shortage of medical need out there for new drugs to solve new problems.

Recently, the dean gave a tour of the building to Bob Batt, co-chair of the college’s campaign committee that’s raising money to build a new facility for the college. On the second floor of the current building, Batt had to step over the legs of students sitting in the hallway. Their classroom overflowed.

Dr. Fletcher said: “I chuckled a bit and remarked to him pretty quickly, ‘Bob, this isn’t staged just for you. This is the day-to-day reality.’”

Here’s a story that just kills Dr. Fletcher:

Last fall, a young researcher Dr. Fletcher wanted to hire came to visit UNMC. He was a chemist working on ways to treat new infectious diseases. He would have come with money from major grants and fresh ideas. But there simply wasn’t any space to put him.

The college lost him.

“That’s not acceptable,” Dr. Fletcher said. “If we’re going to lose a faculty member, let’s lose them because someone offered more money, not because we couldn’t meet their needs for research space.”

Batt, executive vice president of Omaha’s Nebraska Furniture Mart, is passionate about getting the word out. He knows people would be passionate about the college, too, if they knew the exciting research happening inside its walls.

That’s why one of UNMC’s top priorities for the Campaign for Nebraska is to raise money to build a new College of Pharmacy building, for which an anonymous donor has provided the lead gift.



Campus leaders hope to break ground later this year, but more money needs to be raised before construction can begin.

The new building would include a Center for Drug Discovery, making UNMC the only academic medical center in the country to have a drug discovery program focused on infectious diseases.

The new building would take the College of Pharmacy into the future.

“The school’s got a good story to tell,” Dr. Fletcher said. “We’re something Nebraska should be proud of.”

The College of Pharmacy building project is one of UNMC’s top priorities for the Campaign for Nebraska: Unlimited Possibilities. If you would like to support this initiative, contact the NU Foundation’s Patty Sherman at 402-502-4114 or psherman@nufoundation.org. 