How newest class of drugs could save billions of dollars

March 31 2015, by Ellen Jean Hirst, Chicago Tribune

Clad in white lab coats, blue gloves and safety goggles, scientists are buzzing around a lab at Hospira in this suburb north of Chicago.

One lifts a clear vial to eye level as he uses a syringe to fill it with a clear solution. A colleague across the room nudges aside a small group of onlookers who are blocking her access to a cold storage unit. "Pardon me," she says, before grabbing a chilled glass bottle from the unit. Another man loads a tray into a machine that will test the makeup of a vial's delicate contents.

Their focus has big implications for an emerging class of drug treatments known as biosimilars, as well as for patients and insurers. Biosimilars are essentially generic versions of what's known as biologics, or drugs made from living cells that treat complex diseases such as cancer and autoimmune disorders. Because they are copycats, biosimilars are expected to cost 20 to 30 percent less than the biologic drugs they're meant to replace.

Federal regulators this month approved the first biosimilar for the U.S. That drug, Zarxio by Sandoz, helps prevent infections during chemotherapy, and is considered an alternative to Amgen's Neupogen. A leading pharmacy benefits manager said biosimilars for Neupogen alone are expected to save $5.7 billion in drug costs through 2024.

Hospira is at the forefront of the biosimilars march, with a dozen drugs in its pipeline. Other drugmakers are developing dozens more. As of

November, 45 biosimilars had entered clinical trials, compared with 22 in January 2013, according to Bernstein Research.

While most drugs are synthesized from chemicals, biologics and biosimilars are usually made from proteins grown in living cells, making them sensitive to light and heat but better able to target the root of the problem within the body. They also must be injected and can't be taken in pill form.

"Biologics have the ability to prolong life, they've made a huge difference in modern therapies, it's an unbelievable asset," said Sumant Ramachandra, Hospira's chief scientific officer. "But when exclusivity periods expire, the monopoly position that a biologic drug has is (now) going to be subject to competition ... that helps drive down the price."

Makers of biologics are quick to point out, however, that there are differences.

"Creating a biosimilar is like creating a copy of a tree," said Jaap Venema, a global scientific expert on biologics at AbbVie, which makes the top-selling Humira, a biologic. "If you picture a tree with branches and leaves, creating a copy of the tree would mean making sure each and every leaf has the same size, same position and same color. You can imagine the complexities that come with that."

Researching and manufacturing a biosimilar costs more than $100 million and eight to 10 years to develop, the Federal Trade Commission estimates, while a typical generic drug costs less than $5 million to develop over three to five years. Because of the higher upfront and upkeep costs, the price of biosimilars won't drop as much as the price of traditional generics, which typically plunge 60 to 95 percent from the brand-name drug price in their first year.

Even so, the market for biosimilars is expected to grow to $20 billion by 2020, according to Leerink Swann analysts.

Many newer biotech drugs cost more than $100,000 per year, Hospira said, and together they account for nearly 30 percent of all U.S. drug spending. The Affordable Care Act, passed in 2010, paved the way for biosimilars to gain approval in the U.S. as a way to bolster competition and lower prices.

For a long time, the FDA had no way to evaluate whether biosimilars could be an alternative to a pricey biologic after its patent ran out. The process used to approve chemically based drugs wouldn't have sufficed, because biologic drugs are made from living cells.

But other countries got a jump on the U.S.

Hospira already has a presence in Europe and Australia, which first approved biosimilars in 2006 and 2010 respectively. Baxter, based in nearby Deerfield, said its soon-to-be spun off biopharmaceutical unit Baxalta will focus on developing biosimilars for cancer, autoimmune and blood disorders.

AbbVie, based in North Chicago, will be on the flip side; its wildly popular biologic Humira will encounter biosimilar competition in the next few years. Humira, which treats rheumatoid arthritis, accounted for about 60 percent of AbbVie's revenue last year.

At least five companies are working on biosimilars for Humira, the world's top-selling drug in 2014 with more than $12.5 billion in global sales, according to Bernstein Research. Other biologic blockbuster drugs expected to face U.S. competition include anti-inflammatory drugs Remicade and Enbrel, and cancer drugs Herceptin and Avastin.

Rena Conti, a health economist with the University of Chicago, said few pharmaceutical companies have the infrastructure to make biosimilars, which will keep the prices of biosimilars from dramatically plummeting.

"Even if ... we have clear sailing from the FDA with the regulatory process, it doesn't mean every drug manufacturer will actually be able to enter this market," Conti said. "And that's because you need very specific technology and know-how in order to ensure both safety and efficacy."

Some companies that have the capabilities to make biosimilars don't plan to.

AbbVie, for one, said it has no plans to venture into developing biosimilars. Its Humira is approved to treat 11 diseases worldwide, including eight in the U.S., that range from various types of arthritis to Crohn's disease. The company said its patents govern specific methods of use for Humira, as well as manufacturing and formulation patents.

Conti said biosimilars pose a threat to branded biologic drugs because they will become an equally viable option to prescribe to a cancer patient, for example. For chronic diseases such as rheumatoid arthritis, though, she could see the branded version having a life after a biosimilar is introduced.

"Rheumatoid arthritis is a great example in the sense that once patients start to get treated, they're on the drugs for life," Conti said.

Some patients, she said, might want to stay on the branded drug, for continuity's sake. AbbVie said patients should be able to choose which drug they prefer.

"Patients who take biologics often have had very chronic and serious

diseases and may struggle for many years even to receive an accurate diagnosis," said Emily Alexander, a regulatory expert on biologics at AbbVie. "Once they find a biologic that works for them that fits into their life, they will do anything to stay on it. The choice should remain with the patient and (his or her) physician."

Hospira's Ramachandra said even biologic drugs can vary from batch to batch, because they're made from living cells. He argues that biosimilars should work exactly the same in patients.

"They're both biologic drugs," Ramachandra said of biosimilars and biologics. "There's really no difference in terms of the effects that we expect in patients ... but because they're created in living systems, inherently, living systems have some level of variability."

Cheaper biosimilar options will mean more patients can afford the drugs, he said.

Legally, pharmacies will not be able to automatically switch patients from a brand-name biologic to a biosimilar, as is allowed with generic versions of traditional drugs. They could, however, switch at the request of a doctor or insurer.

David Rubin, the chief of gastroenterology, hepatology and nutrition at University of Chicago Medicine, doesn't foresee physicians rushing to switch patients to a biosimilar.

"There's too much inertia to take somebody who's stable, who's been approved by insurance for a biologic," Rubin said. "When you do a biologic that's this expensive, you have to get preapproval. I have a nurse who spends half of her time getting approval for these therapies. If I have a stable patient who's doing well, it's hard to imagine that I'll make an elective switch."

He hopes the patient, too, will have a say in the matter.

"If we had a biosimilar enter the equation, the decision isn't mine," Rubin said. "I might say, I think the biosimilar will be equally good, but (I hope) it's up to the patient."