Vaccines, blood transfusions, gene therapy and other medical innovations have increased the lifespan of Americans by 30 years. But with innovation, risk often follows.

Fear of adverse events shouldn’t stifle innovation, says Paul Offit, MD, an attending physician in the Division of Infectious Diseases and director of the Vaccine Education Center at Children’s Hospital of Philadelphia.

“We should be made wise by our experiences, not nervous by them,” he said.

In an episode of “AMA Moving Medicine,” Dr. Offit detailed the take-home message of his new book, You Bet Your Life: From Blood Transfusions to Mass Vaccination, the Long and Risky History of Medical Innovation.

The book is intended to prompt a more thoughtful conversation.

“It’s about asking people to have realistic expectations when there’s a medical innovation,” Dr. Offit said.

“I don't think we numerically ever understand risk,” he added, referring to the general population. “New York State, for example, sells lottery tickets where you have roughly a 14 million-to-one chance of winning, with a simple phrase, ‘It could happen to you.’ I think that's how people see it.”

“AMA Moving Medicine” highlights innovation and the emerging issues that impact physicians and public health today. You can catch every episode by subscribing to the AMA’s YouTube channel or the audio-only podcast version, which also features educational presentations and in-depth discussions.

“You learn as you go”
Nothing is risk-free, Dr. Offit noted. Any time you get a whole-blood transfusion, for example, you’re taking a risk.

“There may be new viruses that are introduced into the population or there may be viruses that we don’t test for,” he said. In medicine, the goal is to make sure benefits outweigh risks, even if some risks are unknown, added Dr. Offit, co-inventor of the rotavirus vaccine RotaTeq.

The Food and Drug Administration’s Vaccines and Related Biological Products Advisory Committee had to weigh the risks and benefits of the Pfizer-BioNTech and Moderna vaccines in December 2020. The committee’s decisions would affect millions based on studies of 15,000–20,000 people.

“This was a novel technology, and so the question was, when was the other shoe going to drop? How bad was that problem going to be, and how rare was it going to be?” said Dr. Offit, a member of the panel.

The risk, as it turned out, was remarkably small. The mRNA vaccines are a rare cause of myocarditis. Johnson & Johnson and AstraZeneca in very rare cases causes blood clots.

“Myocarditis and blood clots are caused by the disease at a far more common rate,” Dr. Offit said. Both findings surprised the FDA advisory panel.

But that’s thing about innovation: “You learn as you go.”

Some tragedies have led to greater oversight, but realistically, it’s impossible to eliminate the risk that comes with medical innovation, Dr. Offit argued.

“That was the purpose of writing this book—to try and make that point,” he said.

**Inaction also has risks**

Dr. Offit added that, generally, people have a poor understanding of risk and have a tendency to “overrate risks from something that you do.”

“For example,” he explained, “if you give yourself or you give your child a vaccine and there is a risk associated with that, they rate that much higher than a risk, say, of not giving the vaccine, and then having the disease.
“There are no risk-free choices. There are just choices to take different risks. So, the goal is always to take a lesser risk, and I think that when people, for example, think, ‘Well, I'm just not going to get this vaccine,’ then that's they think that's a risk-free choice—but it's not,” Dr. Offit said.

“In the case of COVID, for example, you're far more likely to suffer myocarditis, far more likely to suffer blood clots for example, if you risk the disease—which is common—than if you choose the vaccine. I think we don't get that.”

Learn what to tell patients about myocarditis after COVID-19 vaccination.

Get the latest news on the COVID-19 pandemic, vaccines and variants, and more reliable information directly from experts and physician leaders with the “AMA COVID-19 Update.”

You can catch every episode by subscribing to the AMA’s YouTube channel or the audio-only podcast version.