The difference between COVID-19 'third doses' and 'boosters'

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As hospitalizations surge nationwide due to unvaccinated patients with COVID-19, vaccines are a crucial tool to prevent severe disease and overwhelmed hospital systems. More than 378 million doses of COVID-19 vaccine have already been administered in the U.S., and many fully vaccinated individuals are now asking questions about how to further boost their immunity.

The terms "third dose" and "booster" are often casually interchanged, but there are important differences between the two. For more clarity, Jodie Guest, professor and vice chair of the department of epidemiology at Emory's Rollins School of Public Health, spoke with Carlos del Rio, distinguished professor of medicine at Emory School of Medicine and professor of global health and epidemiology at Rollins School of Public Health.

This conversation is part of an online video series hosted by Guest, who also leads the Emory COVID-19 Outbreak Response Team, answering questions related to the COVID-19 pandemic. Watch the full conversation between Guest and del Rio here.

Q: What is the difference between a third dose and a booster?

A: A third dose in an mRNA vaccination series is approved only for people with severely weakened immune systems who never received full protection from the first two doses of vaccine. Third doses for these individuals were approved under Emergency Use Authorization (EUA) by the FDA on Aug. 12.

A booster shot is an additional dose that can be administered after full immune protection has waned over time. Unlike third doses, data on booster shots have not yet been reviewed by the FDA or CDC. The FDA plans to begin reviewing these data on Sept. 17.

Q: Who needs a third dose of mRNA vaccine?

A: The FDA and CDC Advisory Committee on Immunization Practices (ACIP) have identified a very limited group of people who should receive a third dose of mRNA vaccine. Third doses are recommended for people with severely weakened immune systems, such as patients who are organ transplant recipients, who are receiving chemotherapy or who are taking immunosuppressive drugs. Individuals in these categories are now eligible to receive a third dose of mRNA vaccine.

Q: Why do people in immunocompromised categories need a third dose?

A: Individuals in these categories require a third dose because they do not produce adequate immune responses after the first two doses. "Somebody like me who is not immunosuppressed will have a 100% response after two doses," del Rio says. "But somebody who is severely immunosuppressed, like a transplant recipient, may have only a 60% response after two doses. Giving the third dose is a way to get them to where they should have been if they were not

immunosuppressed."

Data have shown that about 55% of those who receive a third dose achieve the level of immune response as a person who is not immunocompromised would achieve with two doses. "Therefore, it is recommended that immunosuppressed patients continue to behave as if they had not been vaccinated, because you don't know if they have been fully protected or not," del Rio says.

These individuals should continue to practice healthy habits such as wearing masks in public indoor spaces, carefully washing hands and safely distancing.

Q: How soon is the third dose available after the first two doses?

A: The FDA recommends immunocompromised individuals wait at least 28 days after the second dose is administered before receiving the third dose in an mRNA vaccination series.

Q: Is any mRNA vaccine acceptable for the third dose, regardless of the first two?

A: The FDA has only authorized third doses from the same manufacturer as the first two doses, such as three shots of Pfizer or three shots of Moderna. This is because studies on third doses from different manufacturers have not yet been conducted. "That doesn't mean you cannot use a different vaccine, but the problem is that we simply don't have any data to make that recommendation," del Rio says.

Q: Do people in the immunosuppressed category who received the Johnson & Johnson vaccine need an additional dose?

A: Unlike Pfizer and Moderna, the Johnson & Johnson vaccine is not an mRNA vaccine. Because the Johnson & Johnson vaccine became available in the U.S. after the mRNA vaccines did, del Rio says it is unlikely that many immunosuppressed patients received it. "The great majority of people that got Johnson & Johnson are healthy adults," he says.

However, researchers continue to study immune response to the Johnson & Johnson vaccine, and del Rio says that some studies do suggest that a second dose could provide additional immunity.

Q: Why might we need a booster shot for mRNA vaccines?

A: A booster shot can be administered when immunity from an initial vaccination series has waned. For example, many young adults receive booster shots for measles because immunity from the initial vaccination in early childhood diminishes over time.

Del Rio says that laboratory data for mRNA COVID-19 vaccines does suggest progressive decline in antibody protection over time, but that it is also important to remember that these vaccines are effective at what they were designed to do: prevent severe disease.

"There is waning immunity against preventing infection, but not against preventing severe disease," he says.

Q: When will booster shots for mRNA vaccines become available?

A: The FDA has not approved booster shots for mRNA vaccines but will begin reviewing data for boosters on Sept. 17. According to Guest, there is high demand for booster shots in Georgia communities.

"I was at a large vaccination event on Sunday and received many requests for the booster," she says. "It's clear there is a desire to get this booster, but there is not really clear messaging about who can get it or not."

While the FDA and CDC have not yet reviewed the data on boosters, del Rio emphasizes that booster shots will not help end the pandemic. Like the influenza vaccine, vaccines for COVID-19 prevent severe illness, not disease transmission.

"I tell people that the booster I need is for those who are unvaccinated to start getting vaccinated," he says. Administering boosters to those who are

already vaccinated "is equivalent to throwing a life vest to people in the water who already have a life vest," while unvaccinated individuals have no life vests and "are actually drowning."

Q: Are we ever ever going to get rid of COVID-19?

A: In the U.S., there are now over 1,000 deaths every day due to COVID-19. "Endemic level is what we should expect to live with going forward; currently, we are nowhere near that," Guest says.

"We want to bring severe disease and death down to acceptable levels," del Rio says. "Bringing deaths down to less than 100 a day would be an acceptable level of mortality, equivalent to the numbers of deaths we have with the flu. If we get down there, we will reach a level of endemicity that I think would be OK to live with because the hospitals wouldn't be overwhelmed, and we wouldn't have a crisis situation."

"At this point in time, we all have a role to play to protect each other, particularly protecting our younger children who do not have access to vaccines yet," Guest emphasizes. "Please continue to stay safe, find your way to a vaccine if you have not been vaccinated yet, wear your mask when you're indoors or in crowds, and stay distanced from each other if you're in an unvaccinated population."

Provided by Emory University