What Is the Most Cost-Effective Way To Protect People in the Event of an Anthrax Terror Attack?

What is the problem and what is known about it so far?
Anthrax is an infectious disease caused by bacteria that can survive for years as spores. It is usually found in animals, such as cattle, sheep, and goats. Although human cases are uncommon in the United States, people can get anthrax by inhaling spores from infected animals or animal products. Anthrax leads to breathing problems, serious illness, and often death. In 2001, anthrax spores were deliberately spread through the U.S. mail. The release of a large amount of anthrax spores into the air could harm many people, so terrorists could use anthrax in an attack. It is uncertain what would be the best way to protect people in such an attack. Antibiotics can help reduce serious anthrax illness, but they must be given early because the disease worsens rapidly. A vaccine for anthrax is available, but public health officials are reluctant to vaccinate the general population because of the vaccine’s side effects and costs.

Why did the researchers do this particular study?
To determine the best way to protect people in the event of an anthrax terror attack, balancing issues of effectiveness, safety, and cost.

Who was studied?
The researchers did not study actual patients. Instead, they developed a computer simulation of an anthrax terrorist attack.

How was the study done?
The researchers used information from published studies and experts to estimate the number of people who might be exposed to anthrax if terrorists released anthrax into the air in a large U.S. city. They also estimated the number of people who would become sick or die from such an attack. Finally, they estimated the potential costs and benefits of several different strategies to protect people in the area of the attack. Officials could vaccinate people before an attack, with or without administering antibiotics after the attack. Officials could wait for an attack to occur and then vaccinate people after the attack, give people antibiotics, or both. Or officials could not vaccinate and not give antibiotics.

What did the researchers find?
Waiting for an attack and then giving people in the affected area both vaccination and antibiotics was the strategy that best balanced benefits, side effects, and costs.

What are the limitations of the study?
The researchers had a limited amount of anthrax research on which to base their computer model, so the conclusions about the best strategy might change as we learn more about anthrax. They also used decisions that officials would make for large groups of people, not decisions that individuals would make about their own treatment. The findings apply to large-scale urban attacks in which anthrax is released into the air; they do not apply to other forms of attack, such as that which occurred in the U.S. postal system in 2001.

What are the implications of the study?
The likelihood of a wide-scale attack is probably small; however, if an attack did occur, the best strategy would be to give persons potentially affected both antibiotics and a vaccine.