Which response strategy wins out after anthrax attack?

Post-attack antibacterial therapy combined with vaccination for exposed individuals "seems to be the most cost-effective strategy" after a small-scale anthrax attack, according to US-based researchers.

They constructed a Markov model using data obtained from medical literature and bioterrorism experts to assess the cost effectiveness of different response strategies for a hypothetical small-scale anthrax attack perpetrated against US Postal Service distribution centres. The base-case analysis considered a postal service workforce of 350 000 individuals, and compared the following three strategies, assuming a 10% annual probability of an attack occurring over a 10-year timeframe:

- pre-attack vaccination for all distribution centre workers
- post-attack antibacterial therapy (with ciprofloxacin) followed by vaccination of exposed personnel
- post-attack antibacterial therapy with no vaccination.

According to the model, the least costly strategy would be post-attack antibacterial therapy without vaccination, making this option the reference case. Pre-attack vaccination alone would be both more costly and less effective than the other strategies, costing nearly $US2.6 million* per QALY gained versus post-attack antibacterial therapy alone. The most cost-effective strategy would thus be post-attack antibacterial therapy with vaccination for exposed individuals, and would cost $US59 558 per QALY gained versus post-attack antibacterial therapy alone.

One-way sensitivity analysis showed these findings to be consistent "over the entire range of most model parameters", note the researchers. However, post-attack antibacterial therapy alone would be optimal when the proportion of infected individuals dying from anthrax is very low (< 1.4%).

* Costs (2005 values) were calculated from a societal perspective, and included those related to inpatient and outpatient hospital visits, ciprofloxacin, and anthrax vaccine. All costs and outcomes were discounted at an annual rate of 3%.

Schmitt B, et al. Responding to a small-scale bioterrorist anthrax attack. Archives of Internal Medicine 167: 655-662, No. 7, 9 Apr 2007 801076319