The Flu Vaccine in Cancer Patients: Insights From Other Immune-Suppressed Populations

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Influenza immunization can have four possible outcomes: (1) the vaccine is well tolerated and protects against subsequent infection; (2) the vaccine is not well tolerated—ie, it is associated with an excess risk of morbidity or mortality—but it protects against subsequent infection; (3) the vaccine is well tolerated but confers no protection; and (4) the vaccine is associated with morbidity and/or mortality and confers no protection. The CDC has evaluated the likelihood of each of these scenarios and recommends vaccination of cancer patients. Boehmer and colleagues have reviewed the efficacy data for influenza vaccination in cancer patients and have arrived at a more differentiated view.

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Clearly, seasonal influenza infection causes significant morbidity and mortality in the general population. Cancer patients are not exempt from virus exposure and are therefore at risk for influenza-associated disease. Because chemotherapy is immune-suppressive, cancer patients experience more severe symptoms on viral infection. (Most cancers—with the exception of hematologic malignancies—are not immune-suppressive.) However, there is no excess risk resulting from the vaccine itself.

Is vaccination of cancer patients worth the money? Boehmer and colleagues concentrated on studies of vaccination during chemotherapy. However, prophylactic vaccination prior to chemotherapy can be expected to be as efficacious as in the general population. It is also important to note that the studies the authors reviewed evaluated vaccine efficacy on the basis of neutralizing antibody titers, not clinical outcome. Furthermore, the studies were small (n< 100) compared with the size of typical vaccine trials. This limits the interpretation of their findings.

Overall, cancer patients who were receiving therapy exhibited lower seroconversion rates than controls. This result makes sense intuitively, particularly if the therapy regimen included B cell–depleting agents such as rituximab (Rituxan).

Vaccination studies in other immune-compromised populations provide further insights and highlight the limitation of relying on serum antibody titers alone.[1,2] The recommendations for transplant recipients favor vaccination—but 6 months after transplant, ie, when immune reconstitution is well underway. People living with HIV/AIDS are at increased risk of influenza-associated illness and show lower antibody responses to the vaccine. Nonetheless, vaccination of this population has been effective at protecting against clinical symptoms.

Lastly, there is the question of whether to use a live attenuated influenza vaccine or the fixed trivalent influenza vaccine. This question is complicated. The live attenuated vaccine is more potent (ie, more effective at fewer doses) but could be expected to carry a higher risk of side effects in immune-compromised persons. Again, we can learn from large studies in the setting of HIV/AIDS.[2] The live attenuated vaccine was safe for HIV+ children, but it did lose some of its superior efficacy in the setting of immune suppression such as would be encountered in cancer patients receiving therapy.

In sum, more harm is done by not vaccinating than by providing the vaccine as far in advance of chemotherapy as possible and as regularly as possible. At present the data are too sparse to discern any particulars as to vaccine formulation, dosing, or cancer type.
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