

ARTICLE

Vaccination in food allergic patients

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Important potential food allergens in vaccines include egg and gelatin. Rare cases of reactions to yeast, lactose and casein have been reported.

It is strongly recommended that when vaccines are being administered resuscitation equipment must be available to manage potential anaphylactic reactions, and that all patients receiving a vaccine are observed for a sufficient period.

Children who are allergic to egg may safely receive the measles-mumps-rubella (MMR) vaccine; it may also be given routinely in primary healthcare settings. People with egg allergy may receive influenza vaccination routinely; however, some authorities still perform prior skin-prick testing and give two-stage dosing. The purified chick embryo cell culture rabies vaccine contains egg protein, and therefore the human diploid cell and purified verocell rabies vaccines are preferred in cases of egg allergy.

Yellow fever vaccine has the greatest likelihood of containing amounts of egg protein sufficient to cause an allergic reaction in allergic individuals. This vaccine should not be routinely administered in egg allergic patients and referral to an allergy specialist is recommended, as vaccination might be possible after careful evaluation, skin-testing and graded challenge or desensitisation.

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Most people do not react to vaccination and the incidence of vaccine anaphylaxis is estimated to be <1/million for all vaccines.^[1] Most anaphylactic reactions occur in non-food allergic children.

It is strongly recommended that anyone administering vaccines has resuscitation equipment available to manage potential anaphylactic reactions, and that all patients receiving a vaccine are observed for a sufficient time interval.

Routine re-immunisation is contraindicated in individuals with a previous anaphylactic reaction to the administered vaccine. Referral to an allergy specialist is recommended to assess whether the vaccine was responsible for the allergic reaction, which component may have been responsible and to consider the risk-benefit ratio of revaccination.

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Egg allergy

There are a number of vaccines that are of potential concern in egg allergy:

- **Vaccines produced in embryonated eggs**, such as yellow fever vaccine, influenza vaccine and rabies vaccine. Yellow fever vaccine is most likely to contain significant amounts of egg protein.
- **Vaccines produced in chick fibroblast cell cultures**, such as measles and measles-mumps-rubella (MMR) vaccines, do not contain any significant egg protein.

Measles/MMR

Anaphylaxis after MMR or measles vaccination is rare. Measles and MMR vaccines contain insufficient egg protein to cause an allergic reaction, even in egg allergic individuals. Research has shown that children who are allergic to egg may safely receive the vaccine, which is routinely administered in primary healthcare settings.^[2]

Rabies

Rabies vaccine may contain egg protein. There are three types of rabies vaccine: purified chick embryo cell (PCEC) culture vaccine;

human diploid cell vaccine (HDCV); and purified verocell vaccine (PVRV). Only PCEC contains egg protein. Although the low amount of egg protein is very unlikely to cause a reaction, there are no good safety data. It is recommended to use either HDCV or PVRV in cases of egg allergic individuals.^[3]

Influenza

Influenza vaccine is produced in embryonated egg. Most influenza vaccines contain only a very small amount of egg protein, which varies among manufacturers and from year to year. Tolerance seems to be the same whether given in a two-dose graded challenge or as a single dose.^[4] Up to 4% of recipients have mild systemic reactions with either method. People with egg allergy may be vaccinated against influenza routinely;^[4-7] however, the lowest ovalbumin-containing vaccine is recommended.

Yellow fever

Yellow fever vaccine has the greatest likelihood of containing amounts of egg protein sufficient to cause an allergic reaction in allergic individuals. It should not be routinely administered in egg allergic patients and referral to an allergy specialist is recommended, as vaccination might be possible after careful evaluation, skin-testing, evaluation of the risk-benefit ratio and graded challenge or desensitisation.

Gelatin

Gelatin is added to many vaccines as a stabiliser and may be found in MMR, varicella, influenza, typhoid, yellow fever, Japanese encephalitis and shingles vaccines.

Individuals who are known to be allergic to gelatin should be evaluated by an allergist before vaccine administration. Those with a history consistent with an immediate-type allergic reaction to gelatin and serum specific immunoglobulin E, or skin tests showing sensitisation to gelatin, should undergo skin-testing with the gelatin-containing vaccine prior to administration. If the tests are positive, the vaccine should be given in graded doses.

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