

Immunisation stress-related responses

Immunisation stress-related response (ISRR) refers to the range of symptoms which may appear in response to the process of being vaccinated rather than due to the vaccine itself.

Contributing factors

A combination of factors can influence how an individual responds, including physiological factors (age, sex, weight), psychological factors (coping strengths and vulnerabilities), and prior knowledge or preparedness. These can be further influenced by particular social contexts (eg, trust in health care, response by others, social media).

ISRRs may occur before, during and after a vaccine is administered. They arise from anxiety about the immunisation and can include vasovagal reactions (fainting, nausea), hyperventilation and stress-related neurologic reaction, including non-epileptic seizures. Differentiating such reactions from anaphylaxis or other severe adverse events is important both for the individual and to maintain confidence in vaccination programmes. Mismanagement of individuals may lead to inappropriate use of medications and unnecessary investigations. Mass reporting of ISRR during school-based vaccination programmes has at times led to marked reductions in vaccine uptake.

It is well recognised that psychological factors, like anxiety, can affect physiologic functioning such as pulse and blood pressure. Acute responses may include:

- Dizziness and fainting (vasovagal reaction) can result from the slowing of the heart and dilatation of blood vessels leading to reduced blood flow to the brain - the fight or flight response in overdrive.
- Rapid breathing or hyperventilation leads to shortness of breath, chest pain and tingling in the fingers, light-headedness, dizziness and headache.

Prevention and management

Prevention of ISRR begins before the vaccination by trying to reduce anxiety and fear as much as possible. It is important to ensure environmental factors such as overheated, crowded waiting rooms, lack of privacy and negative social media communications are minimised. It is important for vaccinators to be

friendly, confident and relaxed, able to communicate clearly and be receptive to each individual's concerns and needs. A muscle tension exercise can help those with a history of a vasovagal reaction.

Recognition of ISRR at the vaccination site and differentiation from anaphylaxis is important. An incorrect diagnosis of anaphylaxis may lead to inappropriate management with adrenaline and may prevent a person from receiving further vaccinations. When an ISRR is identified, it is important to explain that they are not related to the vaccine itself or an error, that they are recognised responses and will resolve spontaneously. When a stress response is appropriately identified, efforts can be made the next time a patient is vaccinated to make the patient feel more comfortable and reassured to reduce the risk of recurrence.

Neurological stress-related symptoms

ISRR can lead to neurological symptom reactions that may start days after the injection. These may include weakness or paralysis, abnormal movements or postures, walking or speech difficulties and non-epileptic seizures (involuntary but not associated with the typical brain discharges that occur with epilepsy). These neurological symptoms can cause distress and significantly impact on daily activities. Dissociative neurological symptom reaction (DNSR, formerly conversion disorder) is seen most often in females and in the 15-to-24-year age group.

Neurological stress-related symptoms need to be differentiated from other neurological conditions. Management requires a multidisciplinary approach to reduce long term impact. Physiotherapy, cognitive behavioural therapy or medications may be required. It is important to establish a balance between investigation, reassurance and empathy, to create an atmosphere in which anxiety can dissipate, and fears subside. In this way, those affected can return to health with their dignity and self-respect unaffected.

See: [WHO Immunisation Stress-related responses: A synopsis](https://www.immac.org.nz/resources/WHO-Imm-Stress-Related-Responses-A-Synopsis) (tinyurl.com/IMAC-pdf-WHO-ISRR) is available from IMAC written resources at [immune.org.nz](https://www.immac.org.nz)

References

If you have access to the New Zealand Doctor newspaper, see: M Hart, A Brass, S Kininmonth (2021) Immunisation stress responses and anaphylaxis: What's the difference? 04 November 2021

Immunization stress-related response: a manual for program managers and health professionals to prevent, identify and respond to stress-related responses following immunization. Geneva: World Health Organization. 2019 (WHO/MVP/EMP/SAV/2019.08)

<https://tinyurl.com/IMAC-pdf-WHO-ISRR>

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