

'Nosodes' are no substitute for vaccines

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A growing antivaccine movement in Canada and elsewhere is hearing more about an unproven homeopathic therapy, 'nosodes', as an alternative to routine vaccines. The present statement defines nosodes and describes limitations for their use in children. There is scant evidence in the medical literature for either the efficacy or safety of nosodes, which have not been well studied for the prevention of any infectious disease in humans. Recommendations to change the labelling on these products to reflect such limitations are made.

Key Words: *Nosodes; Homeopathy; Public health*

Three evolutions in public health – public hygiene, antibiotics and vaccination – have dramatically changed a world in which, until comparatively recently, infectious diseases were the most common cause of death during childhood.(1) Vaccination has been singularly effective in preventing diseases for which there is no effective therapy.(2) However, despite the proven effectiveness and safety of vaccines, a vocal antivaccine movement has also grown in recent years, leading many parents to seek alternatives to vaccination.

'Nosodes' (from the Greek *nosos*, disease) are biological preparations used in homeopathic medicine to prevent disease. The concept of nosodes as therapy was advanced by Dr Samuel Hahnemann (1755–1843), the father of homeopathy.(3) Nosodes are a specific category of homeopathic treatment derived from an element of a disease or from diseased tissue, defined as "a homeopathically prepared remedy made from an infectious disease product either directly from the bacteria or virus, or less directly from a tissue purported to contain it".(3) The preparation of a nosode involves a succession of serial dilutions of biological material, usually by factors of 100, which is then administered to prevent or treat a health disorder. Nosodes have been widely used in veterinary homeopathic medicine and are now being used therapeutically in humans.

The conceptual model for how a nosode prevents an infectious disease is very different from the current medical models for how immunity develops and how the human immune system responds to infectious challenges. There is little research in the scientific literature to support the effectiveness of nosodes. A study performed in 1997 using a murine model exposed to a potentially lethal dose of *Francisella tularensis* demonstrated a reduced time to death in the group treated with a nosode and a modest decrease in mortality compared with controls.(4) A large-scale opportunistic

Les « nosodes » ne remplacent pas les vaccins

Un mouvement croissant d'opposition à la vaccination au Canada et ailleurs parle de plus en plus d'un traitement homéopathique non démontré, les « nosodes », pour remplacer les vaccins systématiques. Le présent document de principes contient la définition de ce que sont les nosodes et décrit les limites de leur utilisation chez les enfants. Les publications scientifiques offrent peu de données probantes sur l'efficacité ou l'innocuité des nosodes, qui n'ont pas fait l'objet d'études approfondies sur leur capacité à prévenir les maladies infectieuses chez les humains. La Société canadienne de pédiatrie recommande donc de modifier l'étiquetage de ces produits pour en refléter les limites.

cohort study using a nosodal preparation in the context of a potential *Leptospirosis* epidemic in Cuba appeared to be associated with reduced infection rates, although there were multiple confounders and the study has yet to be replicated.(5-7) Animal studies assessing the potential efficacy of nosodes in the context of *Plasmodium berghei* infection also appear to demonstrate longer survival time in a murine model.(8,9) A Cochrane review of an avian nosode preparation for influenza concluded that there is low-quality evidence to support its efficacy.(10)

By contrast, the evidence that all of the vaccines routinely administered to Canadian children are both safe and efficacious is overwhelming. Vaccines prevent almost all cases of measles, mumps, rubella, diphtheria, tetanus, polio and hepatitis B. In Canada every year, routine vaccines also prevent a large number of cases of varicella (chickenpox), pertussis (whooping cough), meningitis and invasive bacterial infections. Nosodes have not been studied for the prevention of any of these infections.(11)

Nosodes are approved for human use in Canada under Health Canada's Natural Health Products Regulations. At the time of writing, there were 179 distinct products approved for sale, including 82 with labels stating that they can be used to prevent common and important infections. However, as stated previously, there is no scientific or medical evidence that nosodes are effective in preventing infectious disease.

It is important that Canadian parents are provided with the best available evidence to make informed decisions about their children's health. Current regulations stipulate that labelling on nosodes must include the following statement: "This product is not intended to be an alternative to vaccination". The Canadian Paediatric Society (CPS) does not believe this proviso fully captures the fact that nosodes are clearly not a safe or efficacious alternative to vaccination. The CPS recommends that labelling

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on nosode products should be changed to read: "This product has not been proven to prevent infection. Health Canada advises that your child receive all routine vaccinations even if they take this product". In addition to labelling changes, the CPS recommends that Health Canada undertake a public education campaign to encourage vaccine uptake and provide Canadians with best evidence regarding the proven benefits of vaccination and the risks associated with vaccine avoidance.

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