

Immunisation: protecting the community

How effective is herd immunity in protecting children (<16) from communicable diseases?

Immunisation programs within our communities help to reduce and prevent numerous communicable disease outbreaks. This is done through the delivery of individual vaccinations, which provide population-wide protection.

What is Herd Immunity?

High immunisation rates are known as 'the herd immunity threshold', which is the proportion of individuals within a population that are required to be immunised to prevent the transmission of communicable disease.

The concept and theory around 'herd immunity' states that because communicable diseases pass from one individual to another, that by immunising the majority of a population, the chain of infection and the prevalence of the disease(s) will be reduced, and individuals will be protected because the immunisation rate is higher than the disease specific threshold.

Evidence

A study from America, compared historical communicable disease prevalence statistics, with 2006 statistics, and found that on average there was shown to be a 92% reduction creditable to the introduction of vaccines into the healthcare system.

New Zealand's current immunisation schedule is achieving an average 93% vaccination rate amongst children. A vaccination rate of 90% is relatively sufficient in providing herd immunity, which means this current statistic is considered successful.



Vaccination Fear

Parents receive all sorts of information surrounding vaccination, and may choose not to immunise their children based upon this information. This decision can leave their children, family and community vulnerable to deadly communicable disease(s).

For parents who are worried about vaccination safety one of their primary concerns comes from a falsified link between vaccination and autism. This alleged link, and the original study, has been widely discredited and since withdrawn from the scientific community.

Consequences of the anti-vaccine movement have led to recent epidemics, which highlight how under-vaccination of a population can negatively affect herd immunity.



Recommendations

- Within a population without herd immunity, additional vaccinations should be recommended in order to establish herd immunity and prevent communicable disease outbreaks amongst the community.
- Health care professionals should support the early enrolment of infants into general practice, and support the parents with on-going meetings with primary health care services and well child services.
- Providing age appropriate and timely information to parents regarding immunisations, could assist in fewer missed opportunities and help to reduce parental concerns.

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References

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- Foster, M. (2010). *Paediatricians feel pressure of antivaccine movement*. *Infectious Diseases in Children*, 23.
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- Plans, P. (2013). *New preventive strategy to eliminate measles, mumps and rubella from Europe based on the serological assessment of herd immunity levels in the population*. *Springer*, 32, 961-966.
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PECOT category	Information relating to question	Explanation
Population	Children <16	<16 is when children receive most immunisations. Children are also very vulnerable to communicable disease due to underdeveloped immune systems.
Exposure (intervention)	Herd immunity – increased immunisation in our communities.	How the increased number of children being immunised against communicable diseases help protect the entire population.
Comparison/control	Communities or times where and when herd immunity wasn't effective due to low immunisation uptake, compared to communities where herd immunity exists.	To see how prevalent communicable diseases become in populations where they are not protected through immunisation programs, compared to those who are protected. Would there be different morbidity and mortality rates?
Outcome	Is the population protected by herd immunity due to childhood immunisations?	Are both unimmunised and immunised children protected from communicable diseases within their communities?
Time	Childhood	Research is relevant to childhood immunisations effecting population outcome.

Immunisation programs within our communities help to reduce and prevent numerous communicable disease outbreaks. This is done through the delivery of individual vaccinations, which in turn provide population-wide protection (Ministry of Health, 2015).

Currently within New Zealand the Ministry of Health has set a target that 95% of all infants aged eight months will received their complete set of primary immunisations on time (Ministry of Health, 2015). This target allows for population-wide benefits to arise due to high immunisation rates. The Ministry of Health (2015) has stated that although immunisation rates have been increasing since 2009 from 80% to 93% in 2012. Low immunisation rates stem from lack of education around immunisations, missed opportunities, and personal and philosophical beliefs of parents (Stevenson, 2009). Currently within New Zealand the vaccination programme is working efficiently, so I felt that there was no need to make a submission to change this programme. But due to the hesitancy and lack of education within the population, I chose to present the information from the literature review in the form of a poster. This format allows the public to be educated around how effective immunisations are at protecting their family and community.

References

- Ministry of Health. (2015). *Health targets: increased immunisation*. Retrieved from www.health.govt.nz/new-zealand-health-system/health-targets/about-health-targets/health-targets-increased-immunisation
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