Evidence Summary Title:
Day care centre infection control interventions: Evidence and implications for public health

Review Quality Rating: 10 (strong)

Review on which this evidence summary is based:

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This is an evidence summary written to condense the work of the authors of this systematic review, referenced above. The intent of this summary is to provide an overview of the findings and implications of the full review. For more information on individual studies included in the review, please see the review itself.

Review content summary
This systematic review of 3 studies of moderate methodological quality aimed to determine the effectiveness of infection control interventions in day care centres. Participants studied were: day care centre staff or children attending day care centres. To be included, studies had to: be primary studies of any design; involve day care centre infection control interventions; involve interventions that fell within the scope of public health practice in Canada; and assess the effectiveness of a relevant intervention. Interventions described in this review included: educational sessions related to handwashing and general infection control, counselling, and mass media campaigns. Outcomes measured include: shifts in knowledge and behaviours by day care centre staff and/or children that would result in the reduction of infectious diseases within the day care centre population (e.g., increased hand-washing). Authors report that the most effective interventions were: educational sessions with frequent reinforcement of practices; immunization status monitoring; and, exclusion and treatment policies specific to Giardia infections. Overall, though, evaluation research on the effectiveness of day care centre inspection frequency, exclusion policies for sick children, disease surveillance, and immunization status of children attending day care centres is lacking.

Comments on this review’s methodology
This is a methodologically strong systematic review. A focused clinical question was clearly identified. Appropriate inclusion criteria were used to guide the search. A comprehensive search was employed using health, social, psychological, and educational databases; reviewing reference lists of primary studies; handsearching key relevant journals; and contacting key informants. The search was not limited by language. Primary studies were assessed for methodological quality using the following quality criteria: selection bias, study design, control of confounders, blinding of outcome assessors/study, participants, reliable and valid data collection methods, and withdrawals. The methods were described in sufficient detail so as to allow replication and two reviewers were involved in quality appraisal. Any discrepancies in appraisal results were rectified by discussion. The results of this review were transparent. Results were clearly presented in graphical form so as to allow for comparisons across studies. Heterogeneity was assessed. Appropriate analytical methods (fixed effects, random effects) were employed to enable the synthesis of study results.

Why this issue is of interest to public health
Infection prevention and control practices are important for protecting and maintaining the public’s health and well being. Children in day care centres are at increased risk of infections through various routes such as fecal-oral (campylobacter, E.Coli, salmonella, shingella, rotavirus); respiratory (e.g., influenza A & B, rhinovirus, chicken pox, MMR, RSV, tuberculosis, group A strep); direct person-to-person (e.g., group A strep, scabies, ringworm); and blood, urine, and saliva (e.g., CMV, herpes simplex, and hepatitis B and C) and conjunctivitis, compared to their non day care attending peers. This higher risk status is likely due to the group environment, children’s behaviour, children’s developing immunity, and varying levels of knowledge of infection control procedures amongst day care staff. Furthermore, child care centre staff and children’s families are also at increased risk of contracting infections. In fact, children in these centres may be infected two to three times more frequently with colds, respiratory and ear infections, and diarrhea. For instance, Rotavirus has been implicated in 6% to 24% of cases of gastroenteritis and in 20% to 40% of outbreaks in child care centres. Beyond the potential of infection acquisition, childhood illness certainly has implications for a parent and/or guardian’s ability to work or engage in his/her activities of daily living.

In 2002-2003, about 54% of Canadian children aged six months to five years were in some form of non-parental child care; representing a 16% increase from 1994-1995. Moreover, the rise in rates occurred for children from almost all backgrounds,
Evidence and implications

Evidence points are in order of the strength of evidence

<table>
<thead>
<tr>
<th>What’s the evidence?</th>
<th>Implications for practice and policy:</th>
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| 1. Educational Session (1 moderate RCT)  
1.1. Day cares in which staff received an infection control program consisting of a slide/tape presentation and two hand washing reinforcement sessions presented at 3 week intervals, as compared with controls  
1.1.1. were more likely post test to display infection control behaviours (p>0.0001)  
1.1.2. were more likely to have increased infection control knowledge (p=0.001)  | 1. Educational Session  
1.1. In order to increase knowledge and behaviour regarding handwashing practices, public health programs that involve infection control and prevention in day care settings should involve education sessions of sufficient dose, in particular,  
1.1.1. Frequency (i.e., three sessions in three weeks)  
1.1.2. Duration – short term changes in knowledge were noted and may require longer term intervention in order to achieve long term change. Longer term follow-up periods are required in future research and program evaluations  
1.1.3. Intensity  
1.2. Rigorous program evaluations and high quality research with sufficient follow-up periods needs to be conducted to determine the optimal dose of educational interventions |
| 2. Policy (1 moderate RCT)  
2.1. Day care centres with either of the following infection control policies:  
2.1.1. standard intervention of exclusion and treatment of asymptomatic infected children  
2.1.2. exclusion and treatment of infected persons only,  
2.1.3. exclusion and treatment of symptomatic infection and treatment of asymptomatic infection experienced no higher or lower prevalence of infection (Giardia lambia) when compared with each other | 2. Policy  
2.1. Programs that aim to reduce the spread of Giardia lambia infections need not involve intensive policies on excluding or treating all asymptomatic infected children as this strategy is no more effective in infection control than other less intensive policies  
2.2. Given the lack of high quality evidence related to the relative effectiveness of various types of policies, rigorous program evaluation and high quality studies should be conducted related to the effectiveness of  
2.2.1. policies to reduce the spread of Giardia lambia infections  
2.2.2. policies to reduce the spread of other infections |
| 3. Public Health Nurse Follow-up  
3.1. Immunization rates for children whose parents received public health nurse follow-up did not differ with intensity of follow-up  
3.2. Immunization rates increased following public health nursing follow-up (p<0.001) for all immunizations | 3. Public Health Nurse Follow-up  
3.1. Programs that aim to improve infection control in day care centres should involve follow up by public health nurses. This follow-up does not require greater intensity. Higher intensity follow-up is more resource intensive and will not result in higher immunization rates.  
3.2. Rigorous program evaluations and high quality research needs to be conducted to determine the optimal level of follow-up intensity. |
| 4. Methodological Issues with the Primary Studies in the Review  
4.1. The majority (10/13) of evaluated studies were assessed to be weak and were therefore not include in the review. No strong studies were found in the review’s search.  
4.2. Inconsistent outcome measurements post-treatment  
4.3. Lack of cost-effectiveness data  
4.4. Failure to ensure sample representativeness | 4. Implications for Future Research  
4.1. Rigorous program evaluation and high quality studies should be conducted |
| 5. Cost Benefit or Cost-effectiveness Information  
5.1. No cost related information was included in the review | 5. Cost Benefit or Cost-effectiveness Information  
5.1. Future research should assess cost benefit or cost-effectiveness of the interventions |
General Implications

- A variety of infection control interventions (education, public health nursing, policies) were addressed in this systematic review.
- All three intervention types studied have the potential for positive impacts on infection control in day care centres.
- Rigorous program evaluation and high quality studies should be conducted

Legend: CI – Confidence Interval; OR – Odds Ratio; RR – Relative Risk
**For definitions see the healthevidence.org glossary http://www.healthevidence.org/glossary.aspx**

References used to outline issue


Other quality reviews on this topic


Related links

- Canadian Child Care Federation: [http://www.cccf-fcsge.ca](http://www.cccf-fcsge.ca)
- Centers for Disease Control and Prevention: [http://www.cdc.gov/](http://www.cdc.gov/)
- Community and Hospital Infection Control Association – Canada: [http://www.chica.org/](http://www.chica.org/)

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