

Title	Public Health Interventions to Reduce Secondary Spread of Measles
Agency	Canadian Agency for Drugs and Technologies in Health (CADTH) Suite 600, 865 Carling Avenue, Ottawa, ON Canada K1S 5S8, Phone: 1-613-226-2553 / Fax: 1-613-226-5392
Reference	Canadian Agency for Drugs and Technologies in Health. CADTH therapeutic review. Public Health Interventions to Reduce Secondary Spread of Measles [Internet]. ...

Aim

To inform the development of a Canadian public health intervention strategy by systematically reviewing the clinical evidence on the effectiveness of public health interventions in reducing the secondary spread of measles during an outbreak. Reviewed interventions include:

- Measles vaccine to susceptible measles contacts
- Immunoglobulin to susceptible measles contacts
- Quarantine of susceptible measles contacts
- Isolation of communicable measles cases
- Other targeted measles vaccination activities during an outbreak.

Conclusions and results

Seven studies were identified that assessed the effectiveness of at least one of the five interventions. Six retrospective cohort studies and one retrospective case-control study were included that described outbreaks within Australia ($n = 1$), Canada ($n = 3$), Spain ($n = 1$), Switzerland ($n = 1$), and the UK ($n = 1$), spanning the years 1990 to 2007. All included studies were limited by a number of issues related to external and internal validity, such as location in different countries with different health systems, resources, and staff training; lack of laboratory confirmation in many cases; and delays in diagnosis and confirmation, meaning the window for prophylactic treatment was exceeded.

The strongest available evidence is related to administration of measles-containing vaccine to susceptible contacts, with four of five included studies demonstrating a potential benefit. Two of the studies showed statistically significant benefit to immunization (relative risk [RR] 0.14; 95% confidence interval [CI], 0.02 to 0.987 and odds ratio [OR] 0.23; 95% CI, 0.11 to 0.50). In two studies, the results were not statistically significant (RR 0.13; 95% CI, 0.01 to

2.15 and RR 0.72; 95% CI, 0.18 to 2.8). In the fifth study ($n = 6$), there was no benefit to vaccine administration (RR 1.0).

With respect to administration of immunoglobulin to susceptible contacts, one study was reviewed that reported comparative results of immunoglobulin administration from days 4 to 7 post-exposure. Results showed a non-significant reduced risk of contracting measles for those administered immunoglobulin (RR 0.24; 95% CI, 0.06 to 1.06).

With respect to quarantine of susceptible contacts, the one identified study reported a statistically significant reduction

in the relative risk of contracting measles versus no quarantine (RR 0.26; 95% CI, 0.06 to 0.56).

No studies were identified that reported on subsequent disease spread for isolation of measles cases.

One study report described an outbreak within Inuit communities in northern Canada and a special program launched to immunize infants aged six to 11 months in response. A statistically significant reduced risk of contracting measles was observed for the 56 infants immunized versus 23 unimmunized (RR 0.27; 95% CI, 0.11 to 0.68).

Recommendations

Not applicable.

Methods

A peer-reviewed literature search was conducted using MEDLINE, Embase, Cochrane Central via Ovid, The Cochrane Library, the University of York Centre for Reviews and Dissemination, and PubMed. Grey literature was identified by searching relevant sections of the Grey Matters checklist. No methodological filters were applied. The search was limited to English or French language documents published between January 1, 1994, and September 25, 2014. Two reviewers independently screened citations for randomized controlled trials and non-randomized studies with a no treatment control group, involving the administration of an included intervention. Included studies were restricted to those involving participants living in countries with vaccination rates, programs, and socioeconomic status similar to Canada's. Data were extracted independently by two reviewers. Study quality was assessed by one reviewer, and verified by a second reviewer. A narrative synthesis of results of included studies was conducted.

Further research/reviews required

Public health agencies are encouraged to publish the results of their measles control strategies, including comparative data for those who did and did not receive the intervention.

Written by

Canadian Agency for Drugs and Technology in Health (CADTH), Canada