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Review

A systematic review of strategies for reducing missed opportunities for vaccination

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ABSTRACT

Background: Missed opportunities for vaccination (MOVs) occur when persons eligible for vaccination visit a health facility and do not get the vaccines they need. We conducted a systematic review to assess effects of interventions for reducing MOVs.

Methods: We searched PubMed, Scopus, and the Cochrane Central Register of Controlled Trials in April 2017. Three authors independently screened search outputs, reviewed potentially eligible papers, assessed risk of bias, and extracted data; resolving disagreements by consensus. We expressed study results as risk ratios (RR) with 95% confidence intervals (CI) and assessed the certainty of the evidence using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) tool.

Results: Six studies (five trials and one cohort study) met our inclusion criteria, all conducted in the United States of America. All six studies had various limitations and were classified as having a high risk of bias. We found moderate certainty evidence that the following interventions probably improve vaccination coverage: patient education (RR 1.92, 95% CI 1.38–2.68), patient tracking using community health workers (RR 1.18, 95% CI 1.11–1.25), and patient tracking and provider prompts (RR 1.24, 95% CI 1.18–1.31). In addition, we found low certainty evidence that concurrent interventions targeting health-facility (education, prompts, and audit and feedback) and family settings (phone calls) may increase vaccination coverage (RR 1.25, 95% CI 1.08–1.46).

Conclusions: The currently available evidence suggests that patient education, patient tracking, outreach sessions, and provider prompts reduce missed opportunities for vaccination and improve vaccination coverage. Rigorous studies are required to confirm these findings and increase the certainty of the current evidence base. WHO is currently coordinating efforts to generate such evidence, especially from low-income and middle-income countries, and it is likely that the data will be available in the next few years.

Contents

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1. Introduction

Immunization is a proven tool for controlling life-threatening infectious diseases, and is estimated to prevent more than three million deaths annually [1,2]. Immunization has the potential to do more, if missed opportunities for vaccination (MOVs) are eliminated and global vaccination coverage improves [3,4]. An MOV occurs when a person who is eligible for vaccination, and has no contraindication to vaccination, visits a healthcare service and does not receive all the needed vaccine doses [5]. MOVs may occur during visits for preventive or curative services [5]. Eliminating MOVs in both settings will increase the overall immunization coverage [6]. Surveys conducted in multiple settings show that, on average, one-third of children who visit health facilities in low and middle-income countries miss opportunities to receive the vaccine doses that they need [3,5,7]. Such missed opportunities make a substantial contribution to the 19.5 million children who fail to receive the basic set of routine vaccines scheduled for their first year of life [2]. Thus, the objective of this systematic review is to assess the effects of interventions for reducing MOVs, on vaccination coverage.

2. Materials and methods

2.1. Registration of the review

This systematic review was registered in the International prospective register of systematic reviews (PROSPERO), with registration number CRD42017068816 [8].

2.2. Criteria for considering studies in this review

2.2.1. Types of studies

We included randomized trials (with randomization at either individual or cluster levels) and cohort studies.

2.2.2. Types of participants

Eligible studies had to include one or more of the following types of participants:

- individuals eligible for vaccinations;
- caregivers of individuals eligible for vaccinations; and
- healthcare workers responsible for rendering immunization services.

2.2.3. Types of interventions and comparisons

Eligible interventions were those that led healthcare providers to check immunization histories of people attending curative or preventive services, in order to identify people eligible for vaccination and give them the required vaccine doses. Such interventions could target recipients of care (e.g. educating patients to prompt providers to check their vaccination cards), providers of care (e.g. training, supervision, reminders, audit and feedback, incentives), or the healthcare system (e.g. changing practices at healthcare clinics, systematic screening of immunization histories of individuals admitted to hospital, bringing vaccination services closer to consultation rooms). These interventions had to be compared to no intervention, standard practices in the study settings, alternative interventions, or the same interventions implemented at a different intensity.

2.2.4. Types of outcome measures

Our outcomes were the rate of MOVs and vaccination coverage, as defined by the authors of included studies. MOVs are a surrogate for vaccination coverage, since a decrease in MOVs translates to an increase in vaccination coverage. This explains why in this review we have mostly reported vaccination coverage and not both outcomes.

2.3. Data sources

In April 2017, we searched PubMed, Scopus, and the Cochrane Central Register of Controlled Trials (CENTRAL) with no language or date restrictions. As shown in Appendix 1, we used combinations of the following terms in the search strategy, adapted to each database: immunization, vaccination, uptake, coverage, adhering, adherence, and missed opportunities. In addition, we searched reference lists of included studies and related systematic reviews. Two authors developed the search strategy, with input from the other authors. One author conducted electronic searches and three authors searched reference lists of relevant publications.

2.4. Study selection

Three review authors independently screened the titles and abstracts of records identified in the search output, for potentially eligible studies. We obtained the full text publication for any study that was considered potentially eligible by one or more of the three authors. The three authors independently assessed the full text of each potentially eligible study and classified it as either included or excluded. We have provided reasons for excluding potentially eligible studies from the review. Disagreements among the three authors, during the screening of search outputs and study selection, were resolved through discussion and consensus. The

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