Meningococcal meningitis prevention programs for college students: a review of the literature
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CRD summary
This review aimed to identify and critique meningococcal meningitis prevention programmes targeted at college students. The author concluded that there was little published information about the effects of such programmes on vaccination rates in college students. Although this review had a number of weaknesses, the conclusion that there is a paucity of research on this topic seems a reasonable one.

Authors' objectives
To identify and critique meningococcal meningitis prevention programmes targeted specifically at college students.

Searching
PubMed, MEDLINE, CINAHL and the Cochrane Database of Systematic Reviews were searched from 1989 to autumn 2004. The Journal of the American College of Health was handsearched for articles too recently published to be indexed on the databases. The references of relevant papers were also checked until it was judged that saturation had been reached for the discovery of any further studies.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials, case-control studies, surveys, descriptive studies and case reports were eligible for inclusion.

Specific interventions included in the review
Studies relating to prevention programmes for meningococcal meningitis were eligible for inclusion. The one included study using a structured intervention sent students educational materials prior to their arrival on campus. This consisted of a cover letter recommending vaccination; a health history form that included a second recommendation for vaccination, why it was being recommended and how to receive vaccination; and an information leaflet describing the risk of meningococcal disease and the availability of an effective vaccine.

Participants included in the review
Studies of college student populations were eligible for inclusion. Three of the included studies were conducted in U.S. institutions and one was based in the UK.

Outcomes assessed in the review
Inclusion criteria for the outcomes were not specified. The main outcome of interest in the included studies was uptake of vaccination.

How were decisions on the relevance of primary studies made?
The author did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The quality of the studies was not assessed. Each study was assigned an evidence grade based on the study design used.

Data extraction
Data were extracted onto a chart. The author did not state how many reviewers performed the data extraction.
Methods of synthesis
How were the studies combined?
The studies were described individually and then the three U.S.-based studies were discussed in a narrative synthesis. The fourth study was UK based. The focus of the review was interventions that might be applicable in a U.S. setting.

How were differences between studies investigated?
Differences between the studies were discussed.

Results of the review
Four studies were included: one non-randomised controlled study and three descriptive studies, one of which was a retrospective nested case-control study.

The non-randomised controlled trial examined the effect of receiving educational vaccine information before arrival on campus (n=3,080), compared with no information (n=1,441), on meningococcal vaccine uptake amongst first-year students. Pre-arrival immunisation rates were 13% for the baseline group (in 2003), 46% for the 2004 intervention cohort and 60% for the 2005 intervention cohort. The total number of students immunised before or after arrival on campus was 40% in the control group, 50% in the first cohort receiving the intervention and 60% in the second cohort. The other two U.S. studies examined factors relating to student uptake of vaccination. A case-control study (n=1,992) found that the strongest predictor of non-vaccination was a perception of poor access to the vaccination centre. A descriptive study (n=34,024) identified a number of factors related to vaccination uptake: being female, living on campus, age 19 years or younger, being white, and majoring in a science topic.

The UK study was a descriptive study of how college nurses managed a campaign to increase meningitis C vaccination uptake. The campaign was thought to be most successful in colleges where there was a close working relationship between community health nurses services and college nurses.

Authors' conclusions
There was little published information about the effects of meningococcal meningitis prevention programmes on vaccination rates in college students.

CRD commentary
The review addressed a clear research question. The inclusion criteria for study design were very broad and led to the inclusion of studies that investigated predictors of vaccination uptake but did not actually evaluate an intervention. Relevant databases were searched but specific attempts to locate unpublished evidence were not made. Methodological quality was not assessed and there was limited discussion of the weakness of the study designs included, though the lack of well-designed trials was appropriately highlighted. Appropriate methods to reduce error and bias in the study selection and data extraction processes were not reported. Detailed descriptions of the included studies were provided. Although this review had methodological shortcomings, the conclusion that there is a paucity of research on this topic seems a reasonable one.

Implications of the review for practice and research
Practice: The author stated that programmes to increase student vaccination should be theoretically and evidence driven, and should include educational components shown to be effective in this population.

Research: The author stated that controlled studies are required to identify the most effective interventions to increase vaccination uptake: relevant interventions could focus on groups, individuals, pre and post matriculation students and their parents. Studies to identify those at increased risk for meningococcal meningitis are also needed.

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