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## BEME GUIDE

# A critical hybrid realist-outcomes systematic review of relationships between medical education programmes and communities: BEME Guide No. 35

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## Abstract

**Background:** The relationships between medical schools and communities have long inspired and troubled medical education programmes. Successive models of community-oriented, community-based and community-engaged medical education have promised much and delivered to varying degrees. A two-armed realist systematic review was undertaken to explore and synthesize the evidence on medical school–community relationships.

**Method:** One arm used standard outcomes criteria (Kirkpatrick levels), the other a realist approach seeking out the underlying contexts, mechanisms and outcomes. 38 reviewers completed 489 realist reviews and 271 outcomes reviews; 334 articles were reviewed in the realist arm and 181 in the outcomes arm. Analyses were based on: descriptive statistics on both articles and reviews; the outcomes involved; the quality of the evidence presented; realist contexts, mechanisms, and outcomes; and an analysis of underlying discursive themes.

**Findings:** The literature on medical school–community relationships is heterogeneous and largely idiographic, with no common standards for what a community is, who represents communities, what a relationship is based on, or whose needs are or should be being addressed or considered.

**Conclusions:** Community relationships can benefit medical education, even if it is not always clear why or how. There is much opportunity to improve the quality and precision of scholarship in this area.

## Introduction

In recent decades, the concept and role of community has become a central theme in medical education policy, reflected for instance in concepts of community-based medical education (CBME) (Hart 1985), community-oriented medical education (COME) (Hamad 1991) and community-engaged medical education (CEME) (Strasser 2010). There have also been broader policy initiatives that have championed the role of communities in medical education, particularly around health equity (Frenk et al. 2010), social accountability (Boelen & Woollard 2011) and service learning (Cauley et al. 2000). However, even though the relationships between communities and medical education are central to the educational and social missions of many medical schools, they can also be complex and troubling, not least because universities and hospitals have been historically set apart from the communities within which they are situated (Frenk et al. 2010). It has been argued that, as a result of this separation, medical schools have failed to produce doctors who can meet community needs, which in turn has led to or has exacerbated existing health inequities (Frenk et al. 2010).

## Practice points

- The literature on medical school–community relationships is heterogeneous and largely idiographic.
- There are no common standards for what a community is, who represents communities, or whose needs are or should be being addressed.
- Community relationships can benefit medical education, even if it is not always clear why or how.
- There are many kinds of mechanisms involved in affording different kinds of community-related learning experiences.
- There is much opportunity to improve the quality and precision of scholarship in the area of medical school–community relationships.

We initially designed the Community Engaged Medical Education: Systematic Thematic Reviews (CEMESTR) study to review the evidence around CEME. However, given the variability in the use of terminology in different studies and by different schools, the scope of the review was expanded to

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consider the relationships between medical education and communities in general. The CEMESTR review protocol was reviewed and registered with the Best Evidence Medical Education (BEME) group (Ellaway et al. 2012) before starting the review. This paper reports on the design, execution and main findings of the CEMESTR study. Given our use of realist methods, we have used the RAMESES reporting framework (Wong et al. 2013) and the STORIES framework for reporting reviews in medical education (Gordon & Gibbs 2014) in structuring this paper. A glossary of terms used in this review is provided in Appendix 1 (published online as Supplementary Material).

## Background

There have been previous syntheses of the literature associated with communities and medical education programmes. A recent BEME study looked at 'longitudinal community and hospital placements in medical education' (Thistlethwaite et al. 2013) that used the concept of community to describe the context or location of training rather than its focus. A 2011 systematic review of community-based student projects identified inconsistencies in the use of terminology (particularly around community- and service-learning), as well as the importance of community partnerships, and the absence of substantial empirical research evidence to ground the enthusiasm of those developing these programmes (Hunt et al. 2011). Littlewood et al. (2005) considered early clinical experiences (most of which happened in community settings) and their impact on subsequent career choices. The concept of community in their review was contrasted with the hospital as a context for educational interventions; in essence anything that was not a hospital experience was considered to be a community experience. Dornan et al. (2006) identified a few occasions where beneficiaries other than students were considered but they still focused on the quality of the learning experience and the impact it had on career choices.

The review by Ladhani et al. (2012) sought to identify 'competencies for undergraduate community-based education for the health professions' and in doing so treated the community as a setting for medical education for which global competencies can and should be identified. This generic conceptualization of community was, of all of the reviews we considered, the furthest from our own. Habbick and Leeder's systematic review of COME (1996) on the other hand, was perhaps closest in focus to our own study, as it explored different concepts of community, it explored the role of building relationships with communities, and it explored political and health care system issues that both required and obstructed these relationships. For Habbick and Leeder the relationship with communities was positioned as a primary focus of medical education and medical education research rather than simply as a context within which it could take place (Habbick & Leeder 1996).

In summary, systematic reviews that have previously considered 'community' in medical education demonstrated a broad range of approaches to the concept, with a tendency to use the term to denote a particular kind of training context rather than as a focus for the review. The state of the art

seems to have become one where, having shown that CBME is no worse than traditional hospital-based forms and in some ways that it can be better (such as influencing career choice to address underserved populations), community has been relegated in medical education research to acting as a more or less generic kind of setting within which other medical education issues can be explored. Although we accept that this is a broad generalization, it is, we would argue, a recurring worldview in much of the medical education literature.

Acknowledging the polysemic nature of the term 'community' we had to decide how we would approach it in this review. Smith (2001) considered community both as an entity with which other entities (such as governments and agencies) can interact, and as an identity expressed and shared among a particular group of people. MacQueen et al. (2001) defined a community as 'a group of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings'. Although we were able to consider community in this broad level at the analysis stage, we needed a simpler definition to operationalize the searching and review stage of the study. To that end we operationally defined a community as: 'a discrete group of individuals bound together either by a) living in the same locality or b) sharing a common professional or personal interest'. We revisit the matter of definitions and concepts of community in our analyses and discussion.

## Piloting

We started the review with an iterative period of pilot testing literature searches and exploring the concepts in and around our area of interest. In doing so we expanded our range of interest to include all relational models of how medical education programmes and communities can interact. We also developed and trialled a number of potential review questions and looked at the searches they implied. The piloting period also allowed us to explore which databases and subject headings we might use, what inclusion and exclusion criteria we might apply, and what tools we would need to run the study. The pilot phase of the study ended with a search of Medline and Web of Science using the terms ('community-oriented medical education' OR 'community-based medical education'). This returned 375 papers and reports (once duplicates had been removed). These were filtered for relevance, retaining 181 (only those that addressed health professional education with a community dimension). Recurring authors were identified and we conducted a manual search to identify other relevant items by these individuals (using the same inclusion criteria as before). This resulted in a pilot bibliography of 253 items. The pilot identified a few key issues that informed the design of the study protocol and the tools we used to support the review process. First, we found that community meant many things to many different people in many different contexts, and that different terms and concepts were used with little consistency between papers. Second, there were few empirical studies but a great many descriptive studies. Third, the focus of the

studies was highly varied, ranging from individual learner experiences to national initiatives and strategies.

## Review goals and questions

Our goal was to investigate the interactions between communities and the educational programmes that took place within them. In doing so we wanted to consider community as an active factor in the relationships between schools and communities rather than as a passive setting. We also wanted to focus on specific educational programmes rather than on the broader relationships between medical schools and communities. Following from the pilot and an iterative question generating process, we formulated our study question as: ‘How do different relationships between medical education programmes and communities impact educational and health outcomes?’ We operationalized this question in the form of three high-level objectives setting out that the review would seek to:

- (1) identify published empirical and non-empirical evidence of the impact of CBME, COME and CEME and to analyse this evidence.
- (2) synthesize empirical and non-empirical analyses to identify how different relationships with host communities impact medical education, identifying key factors, dependencies and their contextual binding.
- (3) identify the strengths and limitations of the research effort to date, establish the current strengths and weaknesses of the way the construct of community is linked to and accounted for in medical education and to identify objectives for future research.

## Methods

Informed by the pilot study, we wanted to consider empirical evidence where possible alongside descriptive papers and other sources from the ‘grey’ literature to identify what worked in different contexts and how it worked, even if we could not ascertain to what extent it worked or whether it had any lasting impact on learners or other stakeholders. To that end we designed the review as a two-armed study. One arm employed standard empirical and outcomes criteria (primarily based on Kirkpatrick levels) for structuring the reviews (Kirkpatrick and Kirkpatrick 2006; Hammick et al. 2010). The other arm drew on concepts of realist synthesis to identify and elucidate explanatory patterns of contexts, mechanisms and outcomes (Pawson 2006). While all articles (once entered into the study) were reviewed in the realist arm, additional filtering was carried out in the outcomes arm to only enter those that reported on some kind of study (as opposed to pure narratives and theoretical expositions). The overall flow of the study is shown in Figure 1.

### Selection and appraisal of materials for review

The literature search involved four components. The first involved a structured search of Medline, ERIC, Web of Science and CINAHL. We found that the subject headings for these databases varied significantly between databases, which meant

that searches had to be customized for each database with different combinations of subject headings and keywords. It should be noted that the terms ‘community-oriented medical education’, ‘community-based medical education’ and ‘community-engaged medical education’ were not available as subject headings in any of the databases we used (detailed search terms for each database are provided in Appendix 2, published online as Supplementary Material). The searches were initially limited to articles published since 1970, and that were in English, French or Dutch (based on the language skills of the reviewers). However, in the end we only entered English language items into the review, as our searches did not identify items in the other languages. The second article source was the bibliography from the pilot search.

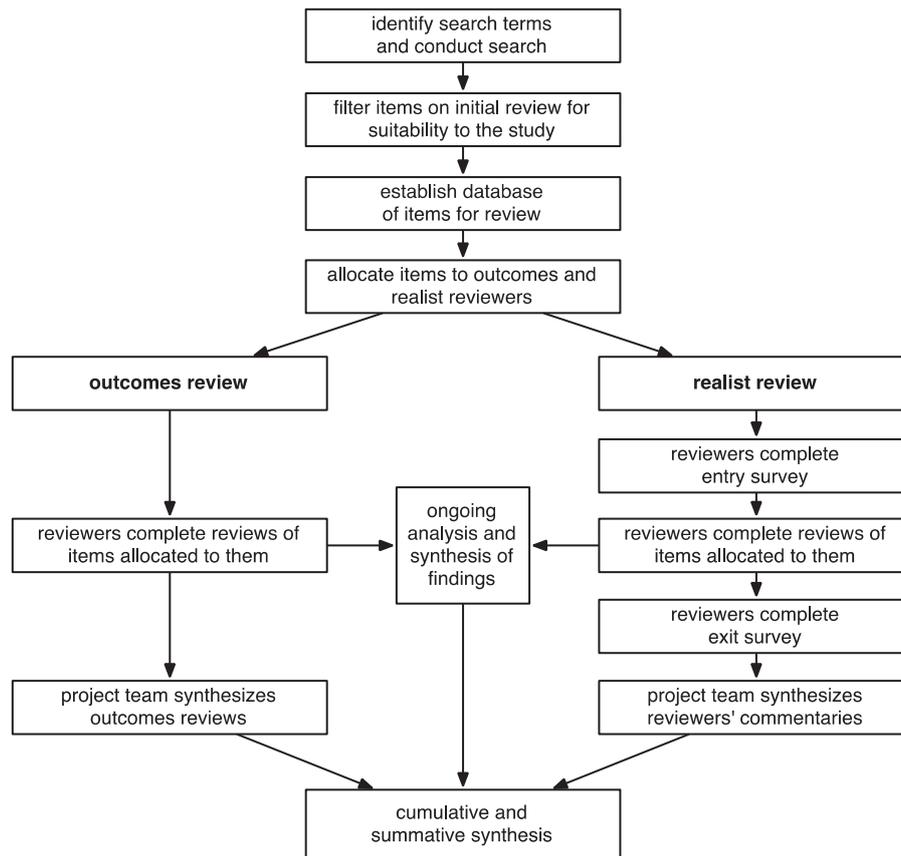
The third source was derived from hand searches (by LO) of Medical Education, Medical Teacher, Academic Medicine, and books and other non-indexed sources in our own medical school library and in the main university library. The criteria for identifying sources and adding papers and chapters for consideration using hand searches were developed iteratively by the study team, refining the criteria based on what was returned.

The fourth source came from reviewer recommendations of articles they encountered when they were conducting their reviews (there was a specific question asking for suggested sources in the outcomes review pro forma – see Appendix 3, published online as Supplementary Material).

The titles and abstracts of each candidate article (from all four sources) were screened (in parallel by RE and LO) and articles were eliminated if they did not cover all three concepts (health care, education, and community). Next, the full text of each remaining article was scanned; only those that considered the implications of health education programmes on community, education and health, and that provided some kind of evidence to support their arguments were retained. For instance, there were many studies that described the role of individual community physicians as teachers within a medical school without considering the community context. Studies that insufficiently reflected the theme ‘education’ included those reporting on surveys of community physicians’ practice and articles about community health interventions without an educational dimension. Lists of excluded articles for each screener were regularly compared and discrepancies reviewed in order to ensure consistency of the process.

### Data extraction and collection

We wanted to structure the article reviews so that they followed the same format for each item reviewed. To that end we developed a review form template for each arm of the study. We designed the outcomes arm form to guide reviewers in describing and rating the study design, the execution of the study, and the utility and nature of its findings – see Appendix 3, published online as Supplementary Material. The design of the instrument drew on the expanded model of Kirkpatrick levels and study quality developed by Steinert et al. (2006) and on the findings from our pilot study. We anticipated that participation in the realist arm might change reviewers’ opinions or perspectives, so we added a brief entrance and



**Figure 1.** High-level flow diagram of the study. Note that realist reviewers completed an entry survey before starting their reviews and an exit survey once they had completed all of their reviews.

exit survey for realist reviewers to capture these changes – see Appendix 4, published online as Supplementary Material. The realist arm review form shared the first set of metadata questions with the form for the outcomes arm but differed in asking questions about the contexts, mechanisms and outcomes described in the article under review, which in turn drew upon Pawson's model of realist enquiry (Pawson and Tilley 1997; Pawson 2006, 2013; Wong et al. 2012) – see Appendix 5, published online as Supplementary Material.

An online review tool (<http://pine.nosm.ca/cemestr>) was developed to support the study. Once they were logged in to the system, each reviewer was presented with a list of articles that had been allocated to them and they completed their reviews using online versions of the review instruments. The online tool allowed all reviews and comments as well as the activity profiles of reviewers and the overall progress of the project to be viewed and managed in one location that was accessible to all participants. The review forms combined structured response items (allowing reviewers to tag articles for factors such as the study context and the type of relationships involved) and free-text responses. Appendix 3 sets out the outcomes review form. Appendix 4 sets out the realist reviewer entrance and exit forms, and Appendix 5 sets out the realist review form.

The core study team piloted the use of the instruments and the review workflow in the online system. Changes were made to the instruments and the workflow based on the feedback from this testing. Once underway, some changes to the

workflow were made based on feedback from reviewers (such as allowing reviewers to save incomplete reviews and to view their completed reviews). The system also allowed us to monitor the reviews as they accumulated for any new issues and themes, which in turn allowed us to terminate the review (once all articles had been reviewed at least once) as apparent saturation of topics and themes was reached.

The Laurentian University Research Ethics Board (REB) approved the study protocol. Given that the outcomes arm only captured factual data it was exempted from REB approval. The realist arm collected opinions and reflections of reviewers and so fell under REB oversight. As a result of review, we added a 'consent to participate' step to the realist arm.

## Reviewers

The members of the study team were all from the same institution and there were not enough of us to be able to take on the review process for the numbers of papers we had identified. We therefore sought to recruit reviewers from other institutions and contexts. Reviewers were to be scholars with an interest in CEME, the ability to communicate in English, a demonstrable interest in the study question, and the ability to participate. No other selection criteria were used. Reviewers were recruited from individual team members' professional networks. By the end of the study, we had engaged 38 reviewers (including six study team members) from 28 different academic institutions. In terms of their primary role:

there were 19 reviewers in decanal or other senior academic leadership positions, 14 in professorial positions, and 5 in other educational roles. In terms of their highest qualification, there were 21 MDs, 10 PhDs, 5 with an MPH and 10 with other degrees. Candidate reviewers were given a briefing on the study and were invited to volunteer to review for the outcomes arm, realist arm or both. In the end there were 17 outcomes reviewers and 25 realist reviewers, which included 5 reviewers who participated in both arms of the study. The original plan had been to provide a training video for reviewers. However, due to practical and logistical reasons we opted instead to provide a mixture of verbal and written orientation for reviewers and to add rubrics to the review forms to reduce the variability of reviewers' interpretations of what they were being asked to do. We also sent out a number of project updates to reviewers discussing the nature of conducting reviews and describing the progress of the project as a whole.

### Allocations

Our initial aim was to have two outcomes reviews and two realist reviews per item. The first set of 40 articles was allocated to reviewers in March 2013 and they were given six weeks to complete them. The next set of 40 articles was allocated in April 2013 and so on. Reviews were quite slow to come in, with many reviewers missing the deadline or not responding at all. We tried several strategies to encourage a better response rate. In June we sent out a newsletter to update reviewers on the progress to date, at which point we saw more reviews coming in. We also asked existing reviewers to invite new reviewers, which resulted in 20 additional reviewers being assigned articles to review.

By the end of the study, 15 reviewers had completed fewer reviews than they had been allocated while 23 completed all allocated reviews. None of them undertook extra reviews, despite having the option to do so through the online tool. In order to complete all of the reviews according to the study timeline, two of the team took on a larger number of reviews (RE and LO). It should be noted that no paper was reviewed solely by these two reviewers, and all papers reviewed by them were reviewed by at least one other reviewer. These reviews were checked against those conducted by other reviewers in order to ensure that the proportion completed by these two reviewers did not skew the results. Although the style of the reviews differed, their findings did not differ significantly. The online system allowed us to monitor the reviews as they were submitted and to track emerging themes and issues. As saturation in these themes and issues (no new themes or issues) appeared to be reached we dropped the requirement for a second review in both arms of the study.

### Analyses and syntheses

We (RE and LO) undertook three dimensions of analysis, which were then checked by and discussed with other members of the study team:

- (1) We generated descriptive statistics for the tags reviewers had made from both arms of the study. This involved analyses of individual factors and correlations between factors.

- (2) We undertook an iterative analysis of the context-mechanism-outcome (CMO) triads identified by the reviewers in the realist arm of the study. This involved first mapping out the high-level contexts, interventions, and related outcomes identified in the realist reviews, followed by an in-depth review-by-review synthesis of the underlying contexts, mechanisms that influenced individual behaviours, and the related outcomes.
- (3) Finally, we undertook a thematic review of free-text reviewer comments. We started by independently using standard open-coding and memo-ing methods using Atlas.ti ([www.atlasti.com](http://www.atlasti.com)). We then compared the two sets of codes and memos and merged and simplified them (combining similar concepts and removing weaker concepts) to create a set of high-level descriptive themes.

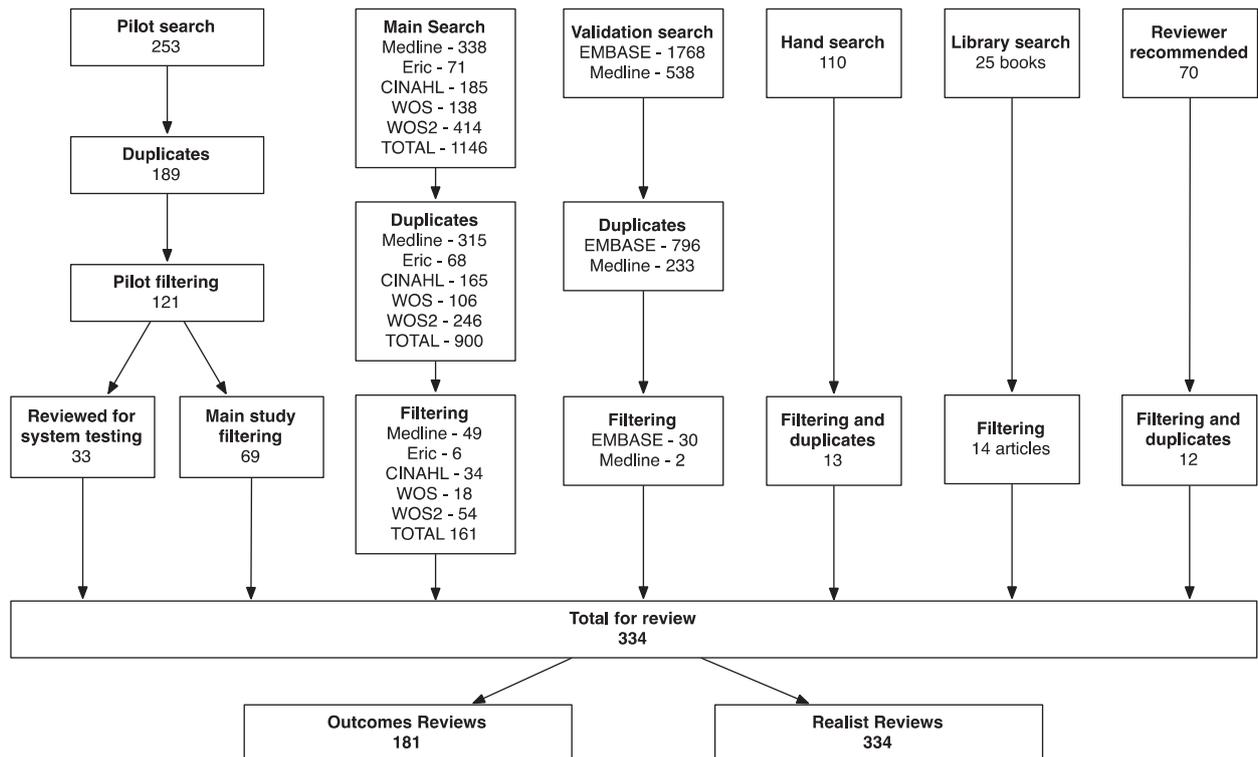
We report the outputs of our analyses under the following four headings:

- (1) Outcomes: the outcomes of different community relationships were explored in two ways. First, the Kirkpatrick outcomes reported in the outcomes arm of the study were analysed using descriptive statistics and correlated with other reviewer tags. We expanded on this by using themes from the axial coding framework that related to study outcomes.
- (2) Quality of evidence: descriptive statistics were generated for the 'study methods' factors. We then took themes from the axial coding framework that related to study methods and study quality to discuss the nature and quality of the evidence in the articles reviewed.
- (3) Realist analyses: this involved an in-depth synthesis of the underlying mechanisms in medical school–community relationships that influenced individual behaviours, along with patterns in the related contexts and outcomes.
- (4) Discourse and thematic analysis: other issues from the thematic analysis not captured in earlier topics were identified and explored, in particular looking at issues in the rhetorical representation of community and community relationships.

## Results

### Articles

The pilot search identified 253 articles. This was reduced to 121 after removing duplicates and filtering for relevance. Of these, 33 were reviewed while testing the review forms. The remaining 88 articles were re-filtered using the main study inclusion criteria, which left 69 articles. The main search identified 900 articles after duplicates were removed. This was reduced to 161 after filtering for relevance. Hand searches of books and other non-bibliographic database indexed items identified 110 articles, which, after removing duplicates and filtering for relevance added another 13 articles. Finally, once the review was under way, reviewers suggested 70 articles for review, which, after removing duplicates and filtering for relevance, added 12 articles. In order to validate the previous searches and to test for saturation, our librarians conducted two final searches in Medline and EMBASE using broader search criteria than before, which retrieved 2306 articles. After



**Figure 2.** Flow diagram illustrating the routes for including articles in the review noting the numbers entered and then retained at each stage.

abstract screening and duplicate deletion, this added 2 new articles from Medline and 30 articles from EMBASE to our bibliography. We took this as a satisfactory indication of saturation in our searching. The final bibliography contained a total of 334 articles, 181 of which were identified as having an evaluative or empirical component necessary for the outcomes review arm. This article selection process is set out in Figure 2.

More than half of the articles we reviewed were published in the last 10 years – Figure 3 (in the Supplementary Material) gives a breakdown by year of publication.

## Reviews

Our 38 reviewers completed 760 reviews (489 realist and 271 outcomes) of the 334 articles between March 2013 and January 2014. 181 articles were reviewed in the outcomes arm, of which 89 (49%) were reviewed more than once. 334 articles were reviewed in the realist arm, of which 155 (46%) were reviewed more than once. Combining realist and outcomes reviews; 1 article was reviewed 7 times, 1 article was reviewed 6 times, 2 were reviewed 5 times, 45 were reviewed 4 times, 80 were reviewed 3 times, 143 were reviewed twice, and 62 articles were reviewed once.

The inter-reviewer-variability of the outcomes reviews was checked in a number of ways. We first looked at the community relationship classifications. 27 papers were randomly selected and the type of community interaction, based on our study definitions (see Appendix 1), declared in each paper was compared to those identified by our reviewers. We found full agreement in 48% of the reviews, 22% were in partial agreement (for instance, the reviewer selected community-oriented, when the article described both community-

oriented and community-based education), and 30% disagreed. We interpreted this as reflecting the multitude of terms used and different understandings that reviewers brought to the table rather than the result of a less than stringent review process, although we acknowledge that this may also have been a factor. We also checked the agreement between reviewers in the outcomes arm by comparing the tags for the 89 articles that had 2 or more outcomes reviews. A count of rating items that differed between the two reviews was made. Scores ranged between 1 and 18 (out of a possible score of 28) with a mean score of 8.4. The largest difference was found in the Kirkpatrick ratings with a mean score of 3.97 out of 12. This was in part due to some reviewers selecting only the highest applicable Kirkpatrick rating while others selected all that applied. The next largest difference was in the community type, which referred to whether the article focused on rural, remote, urban or suburban communities, with a mean difference score of 1.05 out of 3. Given that the constructs we were using were by necessity somewhat ambiguous and that we had not excluded papers that did not comply with a particular conceptual framework we took this as an acceptable level of reliability.

## Factors

Of the 271 outcomes reviews, 204 (75%) rated the article as relevant to the CEMESTR study, 240 (89%) rated the article as addressing a clearly defined issue, and 245 (90%) rated the article as having clearly stated aims. The remaining factor data in this section pertain to all 334 articles.

In terms of the geographical scope of the articles; 33 (9.9%) were tagged as international or non-region-specific,

145 (43.4%) discussed examples or issues from the USA, 36 (10.8%) from the UK, 28 (8.4%) from Australia, 27 (8.1%) from Canada, 24 (7.2%) from Africa, 21 (6.3%) from Asia, 10 (3.0%) from Europe (other than the UK), 6 (1.8%) from the Middle East and 4 (1.2%) from South or Central America.

In terms of discipline, there were 273 (81.74%) articles addressing topics in medical education, 63 (18.86%) in interprofessional education (IPE), 15 (4.49%) in other health education (not medicine, nursing or IPE), 11 (3.29%) addressing ‘other’ non-health topics, and 7 (2.10%) addressing nursing education. 6 (1.80%) of the articles were not tagged at all for professional domain, and 38 (11.38%) were tagged with more than one domain classification.

In terms of community type, 40 articles were tagged as pertaining to remote communities, 116 to rural communities, 48 to suburban, 115 to urban, 52 articles had a national focus, and 52 articles had an international focus. Articles could be tagged with more than one community type; the mean number of community type tags per article was 1.6.

In terms of community relationship, 78.1% of the articles were tagged as being community-based, 53.9% as community-oriented, and 36.5% as being community-engaged. Given that an article could be tagged with more than one type of community relationship, we looked at the various combinations; community-based alone and community-based with community-oriented were the most common (25.4% and 25.1%, respectively) while community-oriented with community-engaged was the least common (2.4%).

In terms of the methods used, the most common was case study and the least common was randomized controlled trial. Articles could be tagged with more than one method; the median number of method tags per article review was 2 (mean = 2.8). A breakdown of the frequency of methods employed in the articles reviewed is given in Figure 4 in the Supplementary Material.

We anticipated that different countries or regions would have different approaches to community relationships. To explore this we combined remote and rural tags to create a single rural category and combined suburban and urban to create an urban category and mapped their prevalence to the article’s region – see Figure 5 in the Supplementary Material. This demonstrated a distinct variation in focus between predominantly rural (Africa, Asia and Australia), an even mix (the Americas), and an almost entirely urban focus (the UK and the rest of Europe).

We also examined the correlation between the type of community relationship and the region of the article. We plotted the relative proportions of community-oriented, community-based and community-engaged models for each region. Although the proportions varied, there was no particular pattern to these variations. We also plotted the proportions of remote/rural, suburban/urban and national/international articles against date of publication and the relative proportions of community-oriented, -based and -engaged against date of publication; although there were differences neither analysis showed any notable pattern or trend.

## Analysis

We undertook five dimensions of analysis of our findings: outcomes, quality of evidence, realist synthesis, a discourse/thematic analysis of free-text reviewer comments and a conceptual review of the nature of medical school–community relationships.

### Outcomes

The outcomes reported in different articles were evaluated in terms of Kirkpatrick outcomes in the outcomes arm and in free-text comments in the realist arm. We first analyzed the Kirkpatrick outcomes tags. A reviewer could tag an article with from 0 to 12 outcomes tags – see Appendix 3. For the 271 outcomes reviews 219 were tagged as considering one or more Kirkpatrick outcomes and there were 741 tags applied in total. The K1 Education tag was used the most (121 instances) and the K4B Education tag was used the least (26 instances). On aggregating the sub-level and the educational and care variations on outcomes, 54% ( $n=146$ ) had been tagged with Kirkpatrick level 1 outcomes, 52% ( $n=142$ ) with Kirkpatrick level 2 outcomes, 21% ( $n=58$ ) with Kirkpatrick level 3 outcomes, and 35% ( $n=94$ ) with Kirkpatrick level 4 outcomes. Taking the highest outcome level, 13% ( $n=35$ ) articles were rated at K1, 24% ( $n=66$ ) reached K2, 9% ( $n=25$ ) reached K3, and 34% ( $n=93$ ) reached the K4 level. We next correlated these highest Kirkpatrick outcome levels with community relationship type tags. Studies into community-engaged activities were mostly focused on K4 level outcomes (broad systems change) – these results are shown in Figure 6 in the Supplementary Material.

For each article, the level of outcomes noted by the reviewers was tracked in order to understand what was being investigated and what was not. Reviewers did not identify any outcomes for 25% of the articles despite most of them having some kind of evaluative component, typically because they were largely descriptive or opinion pieces. 56% of articles where outcomes were noted focused on learner outcomes. Of the articles where reviewers had noted outcomes, 60% reported positive outcomes, 14% reported negative outcomes, and 50% reported outcomes that the reviewers suggested were presumed or not based on evidence. There were few negative outcomes reported (14%), and when they were reported they were mostly related to time constraints for learners, difficulty maintaining and sustaining medical programmes in the community, and maintaining the status quo within communities rather than challenging or changing it.

We next mapped outcomes to community relationships. The most common outcome-relationship mappings are shown in Table 1. Studies into community-based and community-oriented educational interventions tended to focus on learner outcomes, whereas studies into non-clinical community-based interventions tended to focus on social and cultural learning outcomes. Studies into clinical community-based interventions (students with preceptors) tended to be more critical about the learner experience than non-clinical community-based interventions (such as students undertaking project work). Studies into community-engaged educational interventions tended to focus more on community benefits, with relatively little

**Table 1.** Most common outcomes for educational interventions (mechanisms) by relationship to community.

	Community-based (clinical) (n = 109)	Community-based (non-clinical) (n = 104)	Community-engaged only (n = 126)	Community-oriented only (n = 23)
Enhanced learner knowledge	37%	28%	23%	48%
Changed learner career choices	15%	13%	5%	17%
Changed learner attitudes and social/cultural learning	10%	19%	6%	8%
Enhanced learner satisfaction	7%	8%	2%	17%
Positive community benefits	9%	12%	22%	13%
Various mixed negative outcomes (increased hidden curriculum, reinforced hierarchies, maintained undesirable status quo)	11%	1%	6%	13%

**Table 2.** Outcomes of the studies reviewed, i.e. what was being described, measured or otherwise investigated.

	Number of articles (% of all articles)	Number of articles with outcomes		Outcome presumed (but not empirically demonstrated)
		Outcome positive	Outcome negative	
Individual outcomes				
Learner	187 (56%)	107	9	78
Patient	42 (13%)	26	3	14
Programme outcomes				
Educational	65 (20%)	22	14	29
Community/agency	42 (13%)	20	3	19
General outcomes				
Medical education	39 (12%)	12	3	24
Communities	63 (19%)	28	9	26
Total	252 (75%)	150	34	127

consideration of learner knowledge and satisfaction. Clearly the nature of community–medical education relationships changed the focus of inquiry into such programmes, and to an extent the programmes themselves.

In analyzing the reviews we became increasingly aware of a lack of consideration of the outcomes (benefits or disadvantages) to communities from partnering with a medical school. We therefore decided to add a fourth community relationship type to our analysis framework; ‘community-serving medical education’ (CSME) to indicate where medical education programmes had provided (or had sought to provide) a direct and immediate benefit to their community partners. We next considered the primary focus of the article and whether the relationship had a generally positive or negative outcome. The categories for this analysis were developed inductively from looking at the reviews and they coalesced into three levels (individual, programme, system) and the two sides of the relationship between schools and communities – the results of this analysis are given in Table 2.

### Quality of evidence

Outcomes reviewers responded to *pro forma* questions on study design, implementation and analysis, as well as a catchall

question on ‘other concerns’. Realist reviewers captured similar issues in the single question: ‘are there any limitations, biases or other confounding issues?’ These responses were aggregated and then thematically coded and analyzed.

The most common concern we identified was the general lack of focus on outcomes (addressed in the previous section). A similar concern was raised for studies that had ‘missed’ certain aspects, such as interviewing community members but not students (or vice versa), and omitting risks to community, and the costs of the initiatives they were studying. There were also methodological issues raised with respect to many of the articles, including small sample sizes, low response rates, lack of clarity around the methods used, and non-random sampling strategies. In part, this reflected the large proportion of case study and descriptive studies in the review, but it also indicated the limited extent of empirical (as opposed to descriptive) work into the relationships between medical schools and communities. Despite this trend, there were some empirical studies that reviewers praised for their rigour, inclusiveness, and the alignment between their methods and research questions.

Author bias was another significant concern, as the instigators and organizers of the activity under consideration

were often also its evaluators or appraisers. We also found some examples of perceived confirmation bias where studies were designed *post hoc* to confirm the investigators' expectations. There were also problems associated with a lack of a critical stance with regard to the motives and behaviours observed, such as the impact of assessment on student motivation to undertake community-related activities. Other concerns included how communities were conceptualized, and a lack of consistency in terminology surrounding relationships between communities and medical education programs. These issues are discussed in more detail in the thematic analysis section.

Figure 4 (in the Supplementary Material) illustrates the spread of methods employed in the articles reviewed. If one were to use standard quality of evidence measures (GRADE Working Group 2004; Daly et al. 2007) then the quality of the evidence base considered in this review was low to very low. However, as Regehr (2010) observed, the pursuit of generalization in medical education research has 'failed to represent the beauty and richness of variation and context. And we have missed the opportunity to evolve methods by which we can represent this complexity'. Seen in this light, although the material reviewed was unable to yield concrete and consistent findings as to what works in community–medical education relationships in general, the idiographic focus of most of the articles reviewed did capture much of the contextual complexity and richness of these experiences.

The last significant issue arising from the thematic analysis was that the studies rarely engaged theory at any level other than the implicit theory that communities are positive things and medical schools should pursue meaningful relationships with them. Even the broad policy papers extolling or reflecting on the likely benefits of more (quantity) community experiences and more profound (quality) community experiences were notably underdeveloped in their use of a theoretical underpinning. There were some exceptions, such as the Worley model (2002). We interpreted the atheoretical nature of the material reviewed less as a failure to engage with existing theory and more as a reflection of a lack of relevant discourse in the literature around community–medical education relationships at a theoretical level. This in turn reflected a widespread idiographic frame of reference for scholarly inquiry into community–medical school relationships, something that presented a fundamental challenge to conducting syntheses of such literature.

### *Realist synthesis*

The realist arm of the review was primarily focused on identifying different mechanisms employed in community–medical education relationships, the contexts in which they were employed, and the outcomes they led to. This was informed by the review methodology proposed by Pawson (2006) although it was altered to fit within the two-armed review and multiple analysis approach we adopted. Only one of the papers we reviewed employed an explicitly realist approach (Thistlethwaite et al., 2013). However, there was an underlying theme through the majority that community learning experiences (of many different kinds) would have

generally positive effects on learners. This reflects a similar finding by Thistlethwaite et al (2013) in a similar BEME review on longitudinal integrated clerkships (LICs).

Given the breadth and heterogeneity of the materials reviewed, we elected to first describe the high-level patterns of contexts, interventions, and outcomes identified in the pursuit of medical school–community relationships. We then identified, and synthesized the underlying mechanisms that affected individual behaviours and their associated contexts and outcomes.

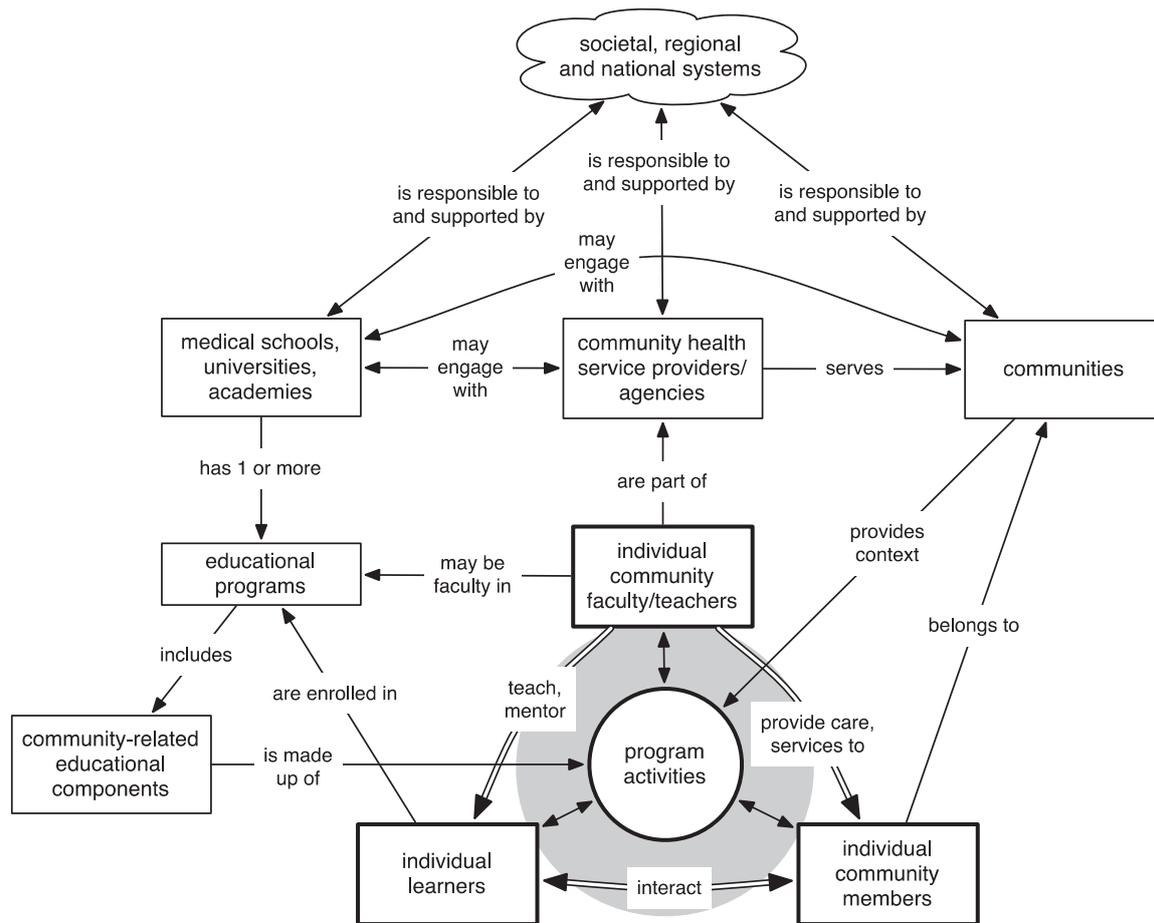
Most articles involved just the one medical school context (although some articles focused on broader regional or national initiatives which were implemented across multiple schools) but tended to consider more than one community context. Articles usually involved more than one intervention (such as students' presence in a community plus the more specific activities they undertook), and, as previously discussed, a variety of outcomes. This analysis identified 7 types of high-level context, 14 types of intervention and 25 types of outcomes. These are illustrated, along with the connections we identified between them, in Figure 7 (in the Supplementary Material), demonstrating the complexity and interdependency of school–community relationships and the plurality (actual and potential) of how these relationships were realized.

The second stage focused on identifying, juxtaposing and synthesizing the contexts, mechanisms and outcomes that were acting at the individual participant level within these medical school–community relationships. One of the team (RE) analyzed the realist reviews (and on occasion, for clarification purposes, the original articles) to identify and catalogue the realist contexts (situation and intervention), mechanisms (active contributors to changing participant behaviours) and outcomes (results of mechanisms acting in contexts) for each paper. Memos of emerging issues and concerns were made throughout this process. This analysis continued until no additional context, mechanism, or outcome elements were identified. This saturation point was validated by analyzing 30 more reviews after the last new issue was identified (in the order the reviews had been submitted) plus a random sample of 20 reviews from those that had not been analyzed. This caught two additional concepts, indicating a reasonable level of saturation.

In total, 312 realist reviews were analyzed in detail (243 unique articles). The resulting context, mechanism and outcome factors were reviewed and discussed among the study team to derive the following interpretations.

*Context.* Our analysis identified multiple contextual levels and components at play in medical school–community relationships. To illustrate this, we tracked the level at which contexts, mechanisms and outcomes were described. Of the 312 realist reviews; 35 (11.2%) identified contexts, mechanisms, and/or outcomes at the system or societal level, 73 (23.4%) at the school or community level, 186 (59.6%) at the programme or agency level, and 181 (58.0%) at the individual participant level.

We were able to illustrate the complex nature of the contexts for and created by medical school–community relationships by iteratively developing a network diagram of



**Figure 3.** Generic network model of relationships between key components and players within medical school–community relationships. The primary area for realizing mechanisms that impacted individual choices and behaviours was in and around programme activities, and the interactions between learners, teachers and community members that were triggered by or enabled by these activities. However, not all articles considered programme activities, describing instead other aspects of the network.

the key components and their relationships described in the reviews – this is set out in Figure 3. A key finding from this analysis was the importance of educational programme activities as the nexus that brought learners together with community teachers and community members. Even where articles focused at other levels or aspects of the network, programme activities were still implied as the primary focus of the community relationship.

From this we can propose that community relationships enable programs, activities and experiences to be provided to medical learners that involve other non program related individuals and agencies in the program design, execution, and evaluation. This in turn frames our consideration of the underlying mechanisms that impacted the behaviours of those involved.

*Mechanism.* Different mechanisms related to different roles within and around programme activities (learners, teachers, educational programme leaders and patient/community members).

We identified a number of learner mechanisms within this contextual frame:

(1) Community experiences can immerse learners in all things community and community health-related, which

helped to attune learners' attitudes, beliefs and values to community needs. We noted that these experiences seemed to have less of an impact on learners' clinical skills and knowledge than on their attitudes and beliefs. In general, the longer the experience and the earlier the experience in the programme of study, the greater the impact on the learner. The extent to which learner benefits were realized was limited by the degree to which learners were inconvenienced by community experiences and the quality of the relationships with those they encountered in the community (Dent et al. 2004; Strauss et al. 2010).

(2) Community experiences can provide learners in medical education programmes with access to experiences that are otherwise unavailable to them, namely community physicians, the everyday lives of patients and of whole communities, and extended training time with preceptors and patients. Community experiences can also provide opportunities for learners to work with, be taught by, or learn from, or be mentored by community members. Many studies compared community and hospital experiences, generally (but not always) finding that community experiences and opportunities were as good as or better than those in teaching hospitals (Northrip et al. 2012). However,

for some students, community was seen as less desirable or important as a training context than the teaching hospital.

- (3) Community experiences can provide learners with a wide range of opportunities to link formal (and somewhat abstract) learning (such as the social determinants of health) to real-life experiences, thereby accelerating their professional development.
- (4) Community experiences can provide learners with opportunities to develop a sense of moral agency and responsibility by providing services to others and seeing the immediate and practical benefits of doing so. This in turn could influence future career choices, and help to develop learners' cultural competence and empathy (Goodall 2012). Learners were sometimes inhibited by the limited ways in which they were able to help or serve others as a medical student.
- (5) Community experiences often involved small numbers of learners, either selected or volunteering from a larger class. As a result, only the more motivated students tended to receive community experiences, and those that did were likely to receive superior training opportunities as they were not competing for attention, access or resources with other students. Community experience seemed to suit only certain learners (Porter 1991), such as those from non-traditional backgrounds (Strauss et al. 2010).
- (6) Generally the more robust the community relationship the more robust the programmes were that ran within them, and the more significant the learners' experiences, both in terms of educational efficacy and longer term influence on behaviour (Magzoub & Schmidt 1998). The involvement of community members and agencies (generally) tended to lend particular richness, thickness, authenticity, and significance to learner experiences (Lewis 2000).

We identified three individual teacher mechanisms:

- (1) Many teachers believed (or hoped or anticipated) that community-based education would better prepare their students for practice in underserved communities and increase the likelihood of choosing careers with a community focus (Heestand Skinner et al. 2008).
- (2) Despite initial misgivings, many community teachers came to appreciate that a student presence did not detract from their interactions with their patients but could improve them by requiring them to be more specific and deliberate in the care they provided.
- (3) A less common factor (and more often in studies from the USA) involved community relationships that were developed out of an individual's (or a small group of individuals') extracurricular activist interests.

We also identified mechanisms we associated with educational programme leaders:

- (1) Programme leaders often had a need (or wish) to ensure or improve learner satisfaction. Selecting students with a particular interest or disposition towards community was a way of ensuring greater satisfaction for those that undertook community activities and avoiding the dissatisfaction of those not interested in community activities.
- (2) Programme leaders often believed (informed both by evidence and practical experience) that community experiences were richer and broader than hospital-

based ones and therefore allowed curriculum objectives to be met more fully or at least as well as in traditional hospital-based contexts.

- (3) Programme leaders sometimes developed community programmes in response to institutional goals, regulatory policies, and initiatives (such as physician workforce planning around practice location, choice of specialty, etc.).
- (4) Programme leaders were also influenced by beliefs or evidence that showed that community experiences could be more expensive and complicated, that they could expose students and others to greater risk, and that they were not for all learners.

We also identified a recurring leadership mechanism that could act at several different levels; the belief that community-focused schools and programmes have different drivers, aspirations, and cultures to those that do not have a community focus (Jinadu et al. 2002). This was reflected in the institutional focus on social accountability or social responsibility where schools participated actively in shaping the environment in which (many if not most of) their future graduates were expected to work.

Finally, we identified two recurring individual patient/community member mechanisms:

- Community members (most often as patients) came to perceive that medical students in community health settings could be a catalyst for quality improvement, in particular improving physicians' perceived performance or successfully completing service projects that made an active contribution to community health (Omotara et al. 2004).
- Community members also valued relationships with medical schools in terms of an enhanced sense of community authority and self-worth, which in turn increased their commitment to investing in the relationship both individually and collectively (Lovato et al. 2009).

*Outcome.* We identified several high-level patterns of outcomes from this CMO analysis:

- (1) In terms of outcomes for learners, community experiences were usually compared (explicitly or implicitly) to alternative training contexts, usually teaching hospitals and academic health science centres. Community experiences were described as being better able to help students to develop compassion, empathy, and a critical awareness of socially grounded health issues, as well as 'craft medicine' skills. They were also likely to influence learners' future career choices.
- (2) In the context of broader medical education programmes (of which community experiences were a part) findings tended to focus on two kinds of evaluation; no worse than alternatives (learners meet programme expectations, do as well as those in other non-community streams), and better than alternatives (learners exceed programme expectations or learners perform differently from those training in other contexts).
- (3) Community programmes and relationships were often linked to improved equity and alignment with community

needs through providing health care and related services to communities and individuals, through influencing learners' choice of nature and location of practice, and through providing other benefits such as improving health literacy and sense of community agency, particularly with extended longitudinal engagement (Faris et al. 2013).

- (4) A recurring systems-level outcome pattern involved the shift in power relationships (actual and perceived) between medical schools and communities, generally involving some transfer of power and authority to communities (individuals, agencies, etc.) (Lazarus et al. 1998).

Although we were able to identify a number of mechanisms that influenced individual behaviour, this was a review of a literature that spanned a large and ill-defined set of interactions between two general kinds of social systems; medical schools and communities. These relationships could be actively pursued or (more commonly) they could emerge from more specific interactions between parts of these two social systems. There was no one policy, intervention, or programme that was common to all of the papers we reviewed; medical school–community relationships worked at many levels, in many different ways, and for many different ends. This review (or at least the realist component thereof) provided an overview of the contexts, mechanisms and outcomes realized within this field of engagement rather than a full realist synthesis of a particular kind of programme or programme intervention envisaged by Pawson (2006).

### *Issues in the rhetorical representation of community relationships*

This analysis was a way of addressing our objective to explore 'the current strengths and weaknesses of the way the construct of community is linked to and accounted for in medical education'. Evidence in general is presented as argument, as rhetoric, and it can be analyzed as such. We did not undertake a formal structured discourse analysis of the papers themselves (this was out of scope for this review); our focus was on identifying common discursive themes, describing how community–medical school relationships were presented or articulated, from the thematic analysis of the reviewers' comments.

The most common issue the reviewers identified was the plural and unsystematic use of the term 'community'. We identified four broad ways in which the term was used or applied, three aspects of which echo the realist triadic CMO framework, the fourth ideological or aspirational:

- As a concept 'community' was perhaps most commonly used as an ideal (aspirational, ideological), something to be achieved or restored, or something in whose presence good things will inevitably happen (Pill & Tapper-Jones 1993; Howe et al. 2002). However, some articles framed communities as victims (such as where they were underserved) (Peek 2007) or as locus of conflict (particularly in urban settings) (Davidson 2002).
- Community was almost exclusively defined by geography rather than by shared interests or causes. For instance, some articles used 'community' to mean any clinical

settings outside of a hospital (Wallace et al. 2001), while others used it to denote contexts where family doctors and general practitioners were to be found, where patients were or where society was (Pill & Tapper-Jones 1993).

- Community as a term was sometimes used to denote a mechanism, essentially a way of engaging whole groups and populations as a single unit (Chipman 1987). Community was also used to denote a partner, a permission granter, or a provider and enabler of educational experiences and opportunities (Goodall 2012).
- Community was also used as a way of framing outcomes. Communities were represented as entities that had intrinsic or explicit needs, entities that were or should be served, or as the recipients or beneficiaries of services rendered (directly or indirectly) (Magill et al. 2001).

The concept of community was used in a fluid and generally uncritical way, and there was often more than one signifier attached to the concept of community in the articles reviewed. Other than the general principle of 'community' there were no common factors in the relationships described; this was an intrinsically polysemic space, both in terms of its conceptualization and realization.

The second issue we identified was concerned with who was involved, particularly on the community side, but also on the school side, in effecting the relationship. Community agents could be clinical (chiefs of staff, community general practitioners or other health leads), civic (community leaders, administrators), agencies (both within communities and serving communities from outside), or individual citizens (patients, community members, even community-based students). From the medical school side, relationships were initiated or enacted at levels ranging from the school as a whole, down through specific programmes and courses, to individual or groups of faculty members, and in some cases students (particularly where there was an activist flavour to the relationship). Although relationships tended to be symmetrical between entities of similar size and abstraction (organizations with organizations, individuals with individuals), there was no common model for these relationships nor was there a shared basis for the relationships other than one of convenience (for one or both parties), or following an ethical imperative derived more or less explicitly from medical education's social contract.

The third discursive theme we identified focused on the nature of learner participation. We perceived a continuum of learner involvement ranging from simple awareness of community issues (such as community-flavoured problem-based learning), through single or episodic community encounters (such as half-day GP placements), through to longitudinal placements (both elective and mandatory). We also identified a continuum of learner agency ranging from passive (fulfilling course obligations but no more), through volunteer (undertaking additional or extracurricular activity such as staffing-free clinics), to activist (seeking to affect wider social or political change through community activities).

A fourth discursive issue involved the intersection of different academic discourses. Although the majority of papers we reviewed were principally about community and

community relationships, there was a significant crossover (that we had not anticipated at the design stage) with service learning; we reviewed 69 service learning articles in total (21%), almost all of which (63) were from the USA. It would seem that the discourses on community relationships and service learning have taken place largely in parallel with little crossover between them, not least because of the primarily US focus of the latter. A crossover that we had anticipated was with the literature on longitudinal integrated clerkships (LICs). However, this proved less substantial than we had thought with only 7 articles specifically addressing the topic plus another 14 addressing more general concepts of longitudinality. It became clear from this that LIC discourses tended to be more about what learners did than where they did it or with whom it was done. Other intersecting discourses included the social contract between medical education and society, health equity, social justice, international development, and social accountability. In these cases medical school–community relationships were pursued because of pre-existing commitments to or interests in one or more of these broader discourses. For these papers the relationship was primarily a mechanism while the contexts and outcomes were primarily defined by the parent discourse.

The fifth and final discursive theme we identified was the lack of a theoretical stance or position in the articles in the review, something that we had also noted in the context of the quality of the evidence we reviewed. Although there were some notable exceptions (Shipengrover & James 1999; Worley 2002; Florence et al. 2007; Daly et al. 2013), for the most part, the stance taken was either ideological (this is how things should be) or it was pragmatic (this is how things are), but rarely theoretical (this is why things are the way they are). We also noted a general lack of reflexivity; although much of the evidence presented was case study- and narrative-based, authors tended not to account for the influence of their power and perspectives on their choice of subjects, methods or analyses.

## Discussion

This review was successful in identifying and analyzing evidence on medical school–community relationships, exploring the different kinds of relationships described in the literature, exploring the strengths and limitations of the research effort to date, and exploring the way the construct of community is linked to and accounted for in medical education. There was no shortage of material intersecting with the concept of community relationships. However, this material originated in and was framed by different discourses, it was largely idiographic, it had a limited theoretical basis, and it was significantly ideological and at times aspirational rather than critical and reflexive. There were notable exceptions to this, further reflecting the heterogeneity of the material we reviewed. We do not therefore consider this to be a single body of literature, but rather a confluence of multiple literatures based on a variety of discursive and regional perspectives on medical school–community relationships.

Our four dimensions of analysis identified the many varied characteristics of this confluence:

- The outcomes analysis found that the literature tended to consider system-level benefits as much as, if not more than, individual learner or community member benefits. Although service has been linked to the concept of CEME, engagement and service emerged as distinct factors from our analyses, leading us to add a fourth relationship classification to the existing three (based, oriented, and engaged) in the form of ‘community-serving medical education’ or CSME.
- The evidence analysis flagged the idiographic and rhetorical nature of the material in this confluence of articles about and around community relationships as well as its tendency to have a limited focus on outcomes and a limited theoretical grounding, both in terms of grounding the studies and interpreting them.
- The realist analysis identified a complex set of interacting components that can shape and flavour the kinds of relationships developed between medical education programmes and communities and the different outcomes of those relationships at individual and other systems levels. We synthesized the ways in which individual behaviours can be influenced by participating in activities within the context of these relationships. We also provided a network diagram of the key components in medical school–community relationships.
- The discursive analysis illustrated the polysemic and fluid use of the term ‘community’, the variation in what it was in communities that was of interest, and the tendency for authors to take ideological and normative stances towards communities and community relationships. This reinforces the rhetorical nature of the material we reviewed, with all three of Perelman’s forms of evidence being wound together in much of what we reviewed; forensic (what happened), deliberative (what will happen) and epideictic (what should happen) (Perelman and Olbrechts-Tyteca 1969). There was also a sense of community as an intrinsic other, reflecting the concepts of community advanced by McKnight and Block (2012).

As we noted, ours is not the first systematic review to consider the concept of community in medical education. There were commonalities with some previous reviews that identified that while communities can provide an effective medical education context, there is a high degree of heterogeneity in the nature of possible and actual relationships, a general lack of focus on community benefits (Hunt et al. 2011), and many logistical and political challenges (Habbick & Leeder 1996). However, this study differs in a number of ways from earlier studies, particularly where communities were considered as abstractions (Doran et al. 2006; Ladhani et al. 2012), or community experiences were bound up with active learning and problem-based learning as elements of a unified approach to medical school reform (Richards & Fülöp 1987).

Our findings and interpretations arguably have more in common with the growing critical focus on communities and community–organizational relationships outside of medical education, particularly the problems with defining ‘community’, the plurality of stakeholder perspectives, the political

implications of who it is that represents a community, and how agencies (such as governments, and medical schools) construct and retain authority in their relationships with communities (Jewkes & Murcott 1998; MacQueen et al. 2001; Kelly & Caputo 2011). A comparison with this discourse highlights the secondary nature of medical education compared to the primary benefit of providing health care services, and the complex interplay of the two in shaping medical school–community relationships. It is also notable that risk management, authority, and accountability issues in these relationships were rarely considered in the articles we reviewed.

### Strengths, cautions and limitations

As with any systematic review our findings are dependent on what has previously been published and our inclusion/exclusion criteria (Torgerson 2003). Moreover, taking a more inclusive stance on selection for a review (as we did) leads to a greater level of heterogeneity, which tends to direct a review towards a higher-level consideration of the topic in hand (Petticrew & Roberts 2006), as we have done. A different approach with a more specific question and tighter inclusion criteria, for instance selecting for a single type of relationship, would likely have gone in different directions to those in this review. Our selection of a two-armed approach and the emerging focus on evidence as rhetoric also directed our findings – other study designs may well have led to different outcomes.

It is also likely that there were artefacts arising from our search strategy, not least because of the variant and ambiguous way that ‘community’ is represented in different bibliographic database subject headings and keywords. We also acknowledge that the hand searches and reviewer recommendations were less systematic and more craft-like than the database literature searches. This is one area we intend exploring further following this study.

Our use of a *pro forma* structured review directed our reviewers to a standard reporting model, which, although it helped with the analysis and streamlined the review process, may also have limited the breadth or direction of different reviews and reviewers. We also acknowledge that the selection of our analyses and their execution could have gone in different directions, which would also have changed our findings.

Our decision to include a relatively large number of reviewers working remotely had the potential to weaken the consistency of the review process. However, our use of review form rubrics, multiple reviews, and the work of the core reviewers arguably mitigated this problem. Moreover, on reading the reviews there were none that could not be analysed using the guided review questions, and it can be argued that the large reviewer pool ensured a breadth of perspective that a smaller, more homogeneous team could not bring to bear. This approach also aligned with our focus on inclusiveness and diversity rather than precision.

Although we drew on realist methods, we should be clear that this was not a formal realist programme review, such as

that proposed by Pawson (2006). Our approach differed in the following ways:

- Although we did map out an outline programme theory before starting the review (based on the three forms of COME, CBME and CEME), it was not at the level of individual participants and the generative mechanisms that change their behaviour. Furthermore, we did not develop the question iteratively throughout the study nor did we prioritize particular theories for investigation. Our focus was on describing a broad field of engagement between medical schools and communities and appraising the strengths and weaknesses of the extant research effort regarding this field, a core component of a critical review.
- Given the two-armed approach to this study, we did not approach the search in an explicitly realist frame based on looking for studies to confirm or confound our initial programme theory. Rather we sought to include as broad a set of sources as possible to add to the richness of the review rather than to manage its precision.
- We did not appraise the literature entered into the realist arm either for methodological rigour or for relevance to a specific realist programme theory. Our inclusive approach followed the principles of a scoping review where relevance to the broad study question was our primary focus.
- Our multi-step approach to extracting data (reviewers provided comments and interpretations on realist aspects of each paper, the study team iteratively synthesized reviewers’ comments and built programme theory) parallels formal realist methods at the same time as cross-referencing other dimensions of the study.

This was an eclectic and holistic review that drew on aspects of mainstream systematic review, scoping review and critical review, as well as realist review to synthesize a large and heterogeneous body of literature. We were able to generate more focused questions and identify ways forward for future studies including but not limited to realist studies in the area of community relationships in medical education.

Finally (and despite the size of this report) the demands of reporting this study in a journal format limit the detail we can include to substantiate and nuance the findings of what was clearly a large and complex study. Although there are many actual as well as potential limitations to this study, its structure and execution was systematic, comprehensive and productive. We argue that our findings are not weakened by these factors, but are situated within the wider discourses on which we report.

### Changes in the review process

There were only two significant changes between the planned review process and the way it was executed. First, we had intended to make a training video for reviewers, but we did not in the end do this due to logistical and timing issues. We instead used written orientation materials and guides for our reviewers. We do not believe this had a significant impact on the conduct of the reviews. The second change was the addition of a more explicit focus on the discourses identified in the articles reviewed. This followed from our reviewers’

observations and it was, we argue, an appropriate response in making the analyses more inclusive of the data the reviewers generated.

### Future directions

There are many directions that may be taken from this study. One is to develop ways to ensure greater clarity in understanding and expressing what communities are, who represents them, and the dimensions of the relationships that health professional education programmes and schools have with them. To that end, we are developing ways of profiling community relationships to provide greater precision while accommodating their diversity. Another direction is to develop more critical and more theoretically robust approaches to researching community relationships, particularly since so many of them are intrinsically tied to sociopolitical issues such as health inequality and the social contract between medical education and society. There also needs to be more clarity in what outcomes are of importance in these relationships and how they are represented (including but not limited to measuring and describing them). Our proposal that the dimension of service (CSME) is added to the existing models of content (COME), location (CBME) and engagement (CEME) is just one way in which this may be advanced.

### Conclusions

We have identified the heterogeneity of relationships between medical education programmes and communities, the polysemic use of the concept of community, and the acritical and atheoretical basis of much of the literature on medical school–community relationships. We have also made a number of recommendations regarding the ways in which scholarship can be advanced in this area. Despite the shortcomings of this literature there was much enthusiasm, creativity, and hope expressed through it. Many things seemed to work, even if it was not always clear why or how. We have suggested ways in which we can improve the quality and precision of scholarship in this area. However, that is not necessarily the biggest challenge. We would echo Hays' observation that there is no intrinsic requirement for community relationships in contemporary medical education; it depends on the mission, culture and identity of particular schools and programmes (Hays 2007). Perceptions of community and the value of community are likely to continue to be contested, and it is in the heat of this debate that the moral foundations of medical education in the twenty first century will be forged. This is the imperative that should drive us forward.

### Notes on contributors

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LAUREL O'GORMAN, MA, is a researcher with the Centre for Rural and Northern Health Research (CRaNHR) at Laurentian University. She acted as the study research associate supporting Dr. Ellaway, allocating papers, communicating with reviewers, conducting realist reviews and much of the initial analysis, and making a significant contribution to the analysis and write up.

ROGER STRASSER, MBBS, MCLSc, is Professor of Rural Health and Dean of the Northern Ontario School of Medicine. He contributed to the design, execution, analysis and reporting on this study, in particular its conceptual framing and engagement with the wider educational community.

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CATHERINE CERVIN, MD, is the Associate Dean, Postgraduate Education at the Northern Ontario School of Medicine. She contributed to the design, execution, analysis and reporting on this study.

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