Effective and efficient committee work: A Systematic overview of multidisciplinary literatures

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Abstract

An era of financial constraints calls for effective and efficient committee work when making collective decisions. A systematic search identified research literatures in business administration, health research and service development, and social psychology addressing decision making about highly technical issues by mixed groups of people. Existing empirical and theoretical syntheses were drawn together to identify learning about the structure, processes and environment of committees and the characteristics of effective chairing. Committee performance depends upon the individuals involved, their attributes and relationships; and the time available for a committee to explore their knowledge to make choices or solve problems. In general, groups with six to twelve members tend to perform better than those in either smaller or larger groups, especially when relying on virtual communication. Diverse groups take account of a range of opinions and enhance credibility and widespread acceptance and implementation of decisions but may be more difficult to convene and manage appropriately. However, where chairs manage conflict constructively, more varied membership leads to better performance and more reliable judgements. These small-scale interactions reflect the larger scale institutional relationships, hierarchies and cultures which act as a backdrop to committee activities. These findings suggest that effective committee performance is enhanced by: appointing members from all key stakeholder groups who between them bring the appropriate range in educational and functional background, while keeping the group size close to 6-12; appointing committee chairs for their facilitation skills and generalist background rather than specialist knowledge; allowing sufficient time to allow all relevant knowledge to be shared and evaluated through discussion, especially when judgements need to be made by committees with members who vary in status; applying formal consensus development processes; and, particularly when working virtually, considering the challenges of developing trust and cohesion, and integrating divergent perspectives.

Collective deliberation and decision-making processes involving people with differing backgrounds are central to most policy and governance decisions. Making collective decisions commonly involves convening and managing small decision-making groups such as committees or boards for the task. These include advisory bodies, groups and committees in the public, commercial and charitable sectors. Although decision-making groups vary in their terms of reference and their terminology, the generic terms 'committee' and 'board' share similar meanings: a committee being a body of people 'appointed or elected (by a

society, corporation, public meetings etc) for some special business or function'; and a board being a body of people 'officially constituted for the transaction or superintendence of some particular business, indicated by the full title as… 'Board of Directors'" (Oxford English Dictionary, 2015). Given the similarities of these definitions, in this report we use the term 'committee' as the generic term, and the terms advisory groups, bodies, panels or boards to describe specific circumstances.

Committee conventions to support decision-making include formal agendas, speaking through the chair, voting and minutes of meetings. The primacy of the expert group or committee for decision making in public life can be seen across all sectors and disciplines, from local authority planning decisions to national positions on scientific issues and the development of legislation (Levy, 2007). Applying these conventions to decision-making for policy and practice in the 21st century introduces multiple challenges. The first challenge is, given the strong policy support for evidence-informed decision making, the requirement for group members to engage with highly technical information in order for decisions to be based on high quality research. There is also a risk that, rather than critically evaluating options, groups may conform and make poor decisions through 'group think' (Turner and Pratkanis, 1998).

The second challenge arises from policy support for involving a broad range of stakeholders, including professionals, users of public services and wider society, all of whom may consider the issues from different perspectives, who bring different knowledge, expertise and beliefs to the processes and who will have varying degrees of familiarity with the technical information under consideration. The more inclusive a group is, the greater extent to which members expertise will vary: expertise may be certified by professional qualifications; it may be demonstrable through an individual's ability to frame or solve problems; or it may be accrued from daily experiences at home, work and elsewhere – or it can be aggregated from across different domains (Blackmore, 1999). Hierarchies, mutual expectations and discussions can be shaped by narrow and broad attitudes towards different types of expertise (Stewart, 2007).

Thirdly, in an era of financial constraints, committees must achieve these high quality, evidence-informed decisions as quickly as possible, with minimum wasted effort or resource: committees need to be both effective and efficient. In practice, this can mean improving efficiency by reducing time taken to reach decisions, for example, by replacing some face-to-face meetings and travel time with electronic interaction.

Finally, with an increased emphasis on transparency of decision making in public life[1], committees must be diverse, well-informed and efficient. They should also take steps to ensure that key aspects of their processes are recorded in a way that is accessible and clear and leaves their work open to public scrutiny. This may be achieved through holding meetings in public, publication of papers and minutes, or use of technologies such as electronic voting to ensure decisions are precisely recorded. For instance, a more efficient (and transparent) model has been proposed where group members make more contributions through a questionnaire and hold fewer meetings (Raine et al., 2005).

This review therefore synthesises empirical and theoretical studies about groups engaging with highly technical information and applying clear and efficient processes that take into account diversity of membership in order to make collective decisions.

Existing reviews of the effectiveness and efficiency of committees

Despite the centrality of the committee to so many and to such far-reaching decisions, the evidence on how to establish, run and govern such groups is surprisingly fragmented. This may reflect in part the range of different committee 'models' that exist, and also the wide range of settings and sectors in which they operate. Evidence about methods and processes involved in the application of the committee model to health has been comprehensively synthesised (Murphy et al., 1998) and partially updated ten years ago (Hutchings and Raine, 2006). It has also been given international attention in a series of systematic reviews (see Oxman et al., 2006a), but even the most recent of these reviews was published over a decade ago.

There is additional research about similar groups in commercial and charitable sectors. For instance, a study of the factors influencing the effectiveness of research ethics committees by Schuppli and Fraser (2007) identified aspects of committee composition, dynamics, recruitment methods, motivation for joining, workload and member turnover.

The authors stated that one of the assumptions behind the creation of research ethics committees is that decisions made by groups are superior to those made by individuals. Their results, however, pointed to some features of group decision-making – committee structure, social influences and recruitment processes – which can lead to biases or polarisation.

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[1]https://www.gov.uk/government/topics/government-efficiency-transparency-and-accountability.

There is a body of literature from the corporate and charitable sectors that focuses on the effectiveness of boards. A survey of charity boards concluded that board inputs and other characteristics are important in explaining board effectiveness, namely: 'the board has a clear understanding of its role and responsibilities; the board has the right mix of skills and experience, and members had the time to the job well; the board and management share a common vision of how to achieve their goals; and the board and management periodically review how they work together' (Cornforth, 2001, 225). Further studies examine boards in relation to structure, size, gender and ethnic diversity. However, in many cases studies of these boards defined effectiveness largely in terms of positive financial outcomes for the company (Boone et al., 2007; Coles et al., 2008; Linck et al., 2008; Upadhyay et al., 2014a,b).

Recent psychology literature offers experimental designs testing the effects of initial preferences and pressures of time, distraction and stress on group decisions (Kelly and Loving, 2004). Electronic communications, which might improve both inclusiveness and efficiency, have advanced and the feasibility of online expert panels has been tested (Khodyakov et al., 2011).

Concepts from practitioner literatures about team building, based on the principles of Tuckman's model of teams forming, norming, storming, performing and adjourning, have since transferred into academic literatures (Bonebright, 2010).

This review

There are jokes about committees keeping minutes and losing hours, but expert committees remain the *sine qua non* for complex decision making in public life. This is because, despite risk of group biases and dynamics impacting on decision making (see for example Tversky and Kahneman, 1974; Gigone and Reid, 1993), committee structures and processes have the potential to support transparent production of good quality decisions, informed by multiple standpoints – cornerstones of policy and legislation in the 21st Century. The challenge is to achieve these outcomes with ever-increasing efficiency. Knowing how, when and where to produce those efficiencies is key and a lack of recent syntheses from across multiple disciplines prompted the current review.

Since its inception in 1999, the United Kingdom's National Institute for Health and Care Excellence (NICE) has used independent advisory groups or committees, formed of both professional (clinical, research or practitioner) and 'lay' (service user or third sector) members.

NICE develops and manages the methods and processes through which evidence across health and social care is brought to its committees for decision making, but the committees themselves are comprised of independent experts. The transparency of method and process, and the independence of its committees, form the foundation for NICEs approach to guideline development. Like many organisations who employ expert committees or advisory groups in their decision making, NICE continually review their methods and processes: This review was designed to address practical questions about the effectiveness and efficiency of committees, first in terms of what works and how, and then in terms of frameworks, models and theories to understand how decision-making groups operate.

Research questions

Most of the research questions were identified by NICE which, like the rest of the public sector, must ensure that it uses resources efficiently and effectively. To maximise the learning for international readers, a question was added about contextual influences. The overarching question was:

What does the evidence tell us about the effectiveness and efficiency of committee work?

This question included sub-questions about:

1. Committee structure and environment
   a. The optimal composition (e.g. topic generalists or specialists, past committee experience/skills, demographics – gender, ethnicity, age) and size for decision-making committees, and the advantages and disadvantages of groups of different compositions and sizes (i.e. impact on the outputs and of decision making)
   b. The impact of environmental factors on committee work (e.g. layout, environment, acoustics, lighting, heating, air conditioning, spatial capacity).

2. Chairing
   a. The most effective type of committee chair (competencies, skills e.g. topic specialists vs generalists).

3. Committee processes
   a. The impact of meeting length, number and timing on committee work
   b. Effective and cost-effective processes and structures for supporting committee decision making (for example, consensus techniques, decision support tools)

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c. How use of different media (e.g. video conferencing, email) for committee interaction impact on decision making and costs

d. Equity considerations associated with different committee structures and processes

e. The impact of training on technical and engagement issues for committee chairs, committee members and secretariat.

4. Committee context
   a. The influence of socio-economic context on how committees work and achieve their aims. This focus was added for the 2018 update.

Methods

In addition to identifying the research questions, NICE guided the work to maintain the focus on practical challenges of running committees. We also consulted three experts individually who, between them, had experience of guideline development groups, audit committees and corporate or public sector boards. Other input was invited from forums and networks debating related issues (Twitter, and two LinkedIn groups on public involvement in research). We drew on their responses when discussing the evidence available in the research literature.

Evidence was eligible for inclusion in this review if it met at least one criterion in each of the following sets:

Populations

- Committees that make decisions about highly technical matters and comprise a range of stakeholders, including people from outside of the organisation.
- Facilitation of discussions and decisions about highly technical issues by mixed groups of people.

Outcomes

- Committee effectiveness, in terms of performance, including quality of decision-making.
- Committee efficiency, in terms of performance within time or resource limits.

Types of evidence

- Frameworks, models or theories for understanding or assessing the performance of committees.

- Empirical studies such as experimental studies, evaluations of interventions, surveys, case studies, observational studies, longitudinal studies, and systematic reviews to elucidate what works.

Only studies published in 1996 or later were included, although reviews of research referred to earlier studies. This date corresponds with the date of a systematic search for consensus development studies by Murphy et al. (1998).

Studies were excluded if they only addressed:

- determinants of group structures or procedures
- performance of the host organisation (e.g. financial performance of the organisation, or implementation of guidelines) and not the performance of the committee (e.g. decision-making performance)
- members drawn entirely from outside to advise an organisation.

An iterative search was designed to capture studies from diverse literatures quickly: broad yet simple searches that cut across academic disciplines (Google Scholar and the library catalogue at the London School of Economics and Social Sciences); searching a set of electronic sources each of which targeted particular contexts or approaches to research; and searching for systematic reviews. A subsequent strategy of inspecting reference lists and searching for citations of eligible studies was chosen as a rapid way of identifying additional and similar relevant studies.

The original search was conducted in 2014. Having recognised from this search the learning available from reviews in this area, and having chosen our theoretical framework, we updated our review in 2018 by searching sources rich in systematic reviews of committees (Cochrane Effective Practice and Organisation of Care review group, Health Systems Evidence and the Campbell Collaboration); and searching for systematic reviews that cited systematic reviews included in our 2014 synthesis.

All reports were appraised for their relevance to the overall review question and where possible, matched to a specific sub-question. Their methods and findings were appraised for the type of evidence they offered. A range of evidence drawn from different types of reviews and primary studies was identified and used to address different questions. In general, when addressing each sub-question for this review we drew on literature reviews for which we could discern how

authors had identified and selected studies to meet clear or implied eligibility criteria. For evidence about models to understand or assess the performance of committees, we drew on theoretical syntheses of literatures.

The synthesis was conducted in two stages. The first stage synthesised findings for each review sub-question that had been reported by earlier systematic reviews. These findings offered evidence of what works and presented explanations for what works.

The second stage synthesised findings from research syntheses, some systematic, that offered frameworks for clarifying the meanings of 'effective' and 'efficient' when applied to committees, or models or theories to enhance understanding of decision-making groups.

Iterative searching identified 1,320 items, 142 of which were duplicates. The remaining 1,178 items were screened and 1,072 were excluded, leaving 106 relevant items (See Fig. 1).

The reasons for exclusion are provided in Figure 1. Of the 106 studies addressing the overarching question driving this review, the most common focus was the development of clinical guidelines (48 studies). There were also significant literatures investigating committees within business administration (34), and the group dynamics or facilitation practices (19) or psychology (13) of group decision making. Studies of committees (rather than experimentally convened decision-making groups) came from two different areas: guideline development and business or public sector administration.

This literature included 60 primary studies. Within this set, the development of clinical guidelines was more often addressed by qualitative (14) and experimental designs (6), whereas business administration (such as corporate boards or audit committees) was more often addressed by observational studies (12). The most common studies addressing group dynamics or facilitation practice had experimental designs (11).
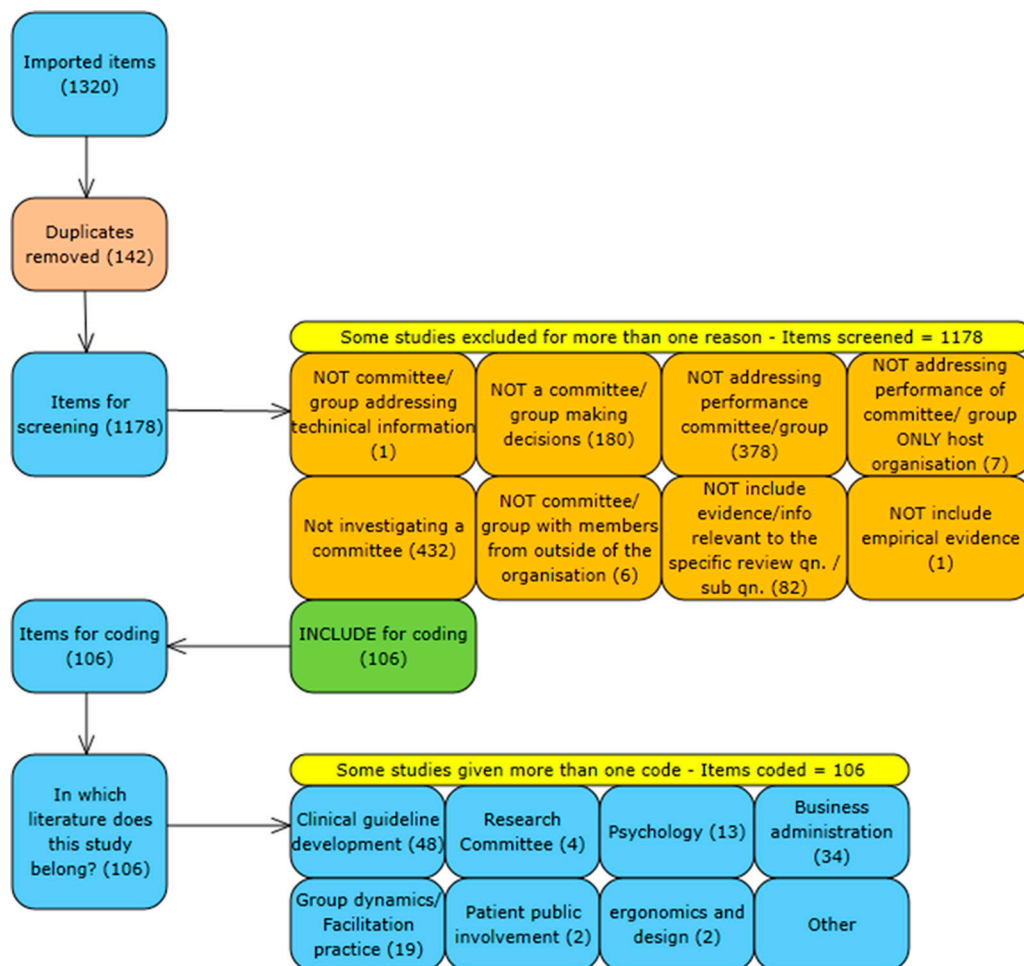

Figure 1: Flow of studies from initial search (in 2014) identifying titles to inclusion in the review.

There were also many literature reviews (47). Some reviews were conducted systematically (28): 16 systematic reviews (one of these was underway at the time of this review); and 12 systematic reviews of systematic reviews. Ten reviews developed frameworks, models or theories for understanding or assessing the performance of committees (only two of these reported systematic searches). The updating search in June 2018 identified 81 additional, potentially relevant reviews. We excluded 68 because they did not address committee performance, and two because we could not access the full reports. The remaining 11 were added to those originally identified four years earlier, giving a total of 39 systematic reviews and nine unsystematic reviews, including 13 that developed a model or framework.

With so many reviews available over the past 20 years (Fig. 2), primary studies were excluded from subsequent analyses. Only those reviews synthesising empirical evidence systematically (see Table A1 in appendix) and/or offering explanations through frameworks, models or theories (see Table A2 in appendix) were included in further analysis.

The review findings are presented in two formats. The first takes each review question above in turn and summarises the evidence of what works, followed by studies offering explanations. The second takes a more holistic approach, drawing on frameworks,

models, and theories that have been developed from synthesising studies to understand committee performance and decision-making.

Reviews synthesising empirical evidence

Composition and size of decision-making groups

There is little generalisable evidence for how the characteristics of participants and groups influence the judgements produced in formal consensus development methods (Hutchings and Raine, 2006). However, multi-specialty groups tend to be recommended over single specialty groups in order to take account of a wider range of opinion (Murphy et al., 1998; Hutchings and Raine, 2006). Similarly, larger groups offer opportunities for more diverse membership which, when managed well, lead to better performance (Murphy et al., 1998). They also offer more reliable judgements but may be more difficult to manage and encourage equal participation. Below about six participants, reliability declines quite rapidly, with improvements in reliability subject to diminishing returns with more than 10–12 participants (Murphy et al., 1998), particularly for groups working virtually (Acai
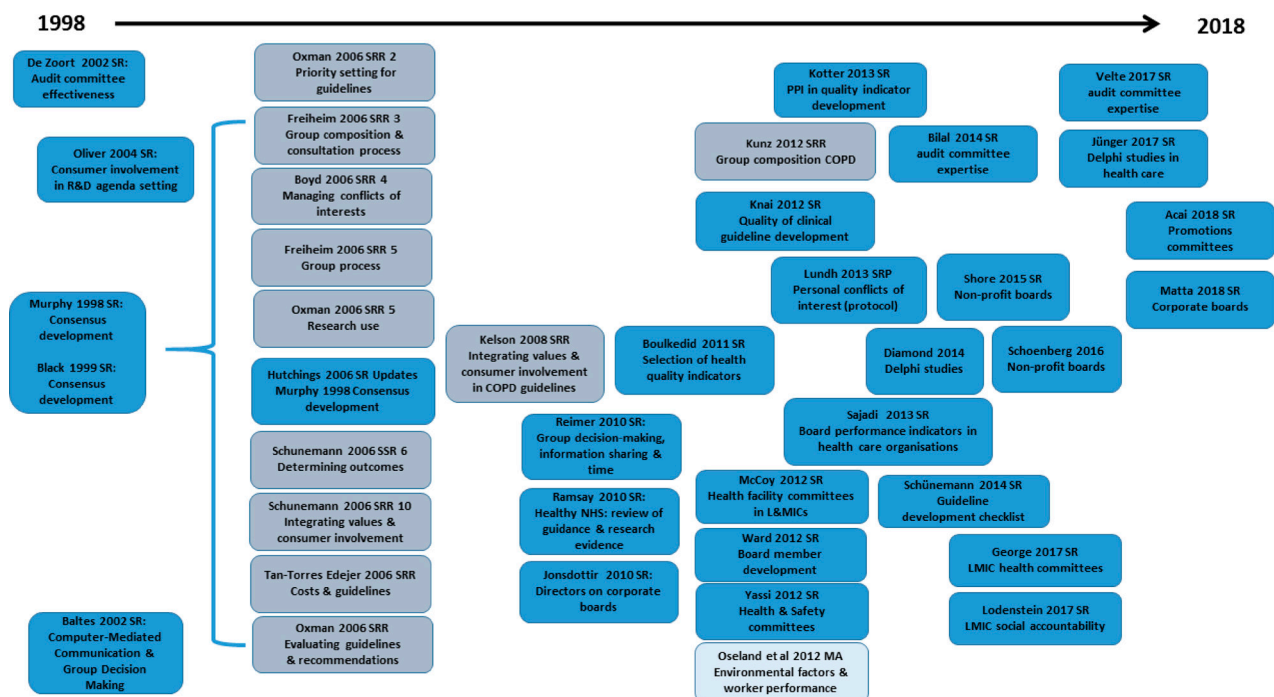

Figure 2: Systematically synthesised literatures (Key: Systematic reviews (deep blue); systematic reviews of systematic reviews (grey); systematic review with limited access to literature (light blue)).

et al., 2018). Larger groups allow the membership to reflect a broader range of background, skills and opinions of the population of experts from which the participants are drawn (Murphy et al., 1998; Acai et al., 2018). This may also enhance credibility and widespread acceptance and implementation of decisions (Murphy et al., 1998; Pagliari et al., 2001; Fretheim, 2006a; McCoy et al., 2012; Yassi et al., 2013). They also allow more varied membership which leads to better performance (more perspectives and considerations of alternatives), particularly for non-routine tasks, although conflict may arise between diverse participants. The difference in performance and acceptance of including experts in a committee versus them inputting via consultation has not been explored.

Financial expertise, which positively correlates with the quality of audit committee's outputs (Bilal and Bushra, 2018; Velte, 2017), is moderated by independence and personal workload (Bilal and Bushra, 2018). Members are more likely to advocate familiar options (which may come with a financial interest, although the evidence for this is drawn largely from recommendations made outside committees) (Murphy et al., 1998; Hutchings and Raine, 2006). These initial opinions may affect the group process (Murphy et al., 1998). For instance, initial consensus may be followed by a shift to a more extreme decision. Alternatively, following an initial split view, members will either move towards one another's views or cohesive subgroups may form to polarise views. Groups with similar compositions are likely to reach similar conclusions (Murphy et al., 1998).

Environmental factors

There is a lack of evidence about the impact of environmental factors (such as room layout, décor, acoustics, lighting, heating, air conditioning, spatial capacity) on group decision-making but research suggested that groups valued good working conditions (Oseland and Burton, 2012).

Competencies of effective chairs

There is little rigorous evidence reported in systematic reviews about what specific competences make an effective chair, although corporate board leaders are seen to have a crucial role in establishing inclusive working procedures and an atmosphere of openness, dialogue and trust (Jonsdottir, 2010). Facilitators can help groups to generate more ideas through encouraging members to express diverse opinions and by delaying expressing their own opinion (Murphy et al., 1998). For groups working virtually,

leaders need to be proficient in using the technology and 'effective in helping team members monitor and manage their performance' (Acai et al., 2018).

Timing of committee work

In 'laboratory studies', where prior knowledge was manipulated, groups tended to focus their discussions more on information that all members know at the outset, although this was less so when they had to choose among a small number of decision alternatives and were pressed for time (Reimer et al., 2010).

Effective processes and structures for supporting group decision making

In general, the formal consensus methods tested, such as Delphi studies, perform better than informal techniques but the reasons for this are not clear (Murphy et al., 1998). Some aspects that are likely to be important include: ensuring that all members have a chance to voice their views; ensuring that all options are discussed; providing feedback and repeating the judgement; and ensuring that individual judgements are made confidentially. Qualitative research concludes that a good facilitator who can ensure that the procedure is conducted properly will enhance consensus development (Murphy et al., 1998). Providing guideline groups with the review literature results in decisions that are closer to the available research evidence (Raine et al., 2005). Effective group processes that need to be supported include: challenging assertions, managing constructive conflict, teamwork, common sharing of goals, active engagement and openness (Jonsdottir, 2010). Conflicts of interest should be ascertained (Boyd and Bero, 2006) and the appointment of group members should be based on objective and explicit criteria (Ramsay et al., 2010). Delphi studies vary in their design and their definitions of consensus (Diamond et al., 2014). Recommendations for conducting and reporting Delphi studies are now available (Jünger et al., 2017). A checklist for guideline development that includes size, membership, group interactions and decision-making has been developed from guidance manuals (Schünemann et al., 2014) although the nature of the underlying evidence is unclear.

Use of media for committee interaction and decision making

Although formal processes appear to be better than informal processes, there is no evidence to suggest there are any major differences in the outcomes achieved between the effectiveness of the Delphi

method (used with geographically dispersed groups) and Nominal Group Technique (for face to face meetings) (Murphy et al., 1998); rather, they may be more or less suitable for different purposes and circumstances. For example, the former may prevent undue influence by individuals, and the latter may provide better opportunities for discussion. However, virtual teams may struggle to develop mutual trust, team cohesion without subgroups emerging), and integrating divergent perspectives: they work well generating ideas through asynchronous communication but without immediate feedback afforded by face-to-face conversation find bringing ideas together more difficult (Acai et al., 2018).

Issues of equity

The commercial and public sectors may encourage diversity in boards, but there is little evidence that it improves performance (Murphy et al., 1998; Kagzi and Guha, 2018). At consensus conferences, participation is uneven and related to status and expertise, so that people have participated actively and continuously, intermittently, or little. In smaller groups, members with higher status/expertise/initial position often exert more influence over the group. If members' status is equal or similar, majority opinion influences the outcome of decisions that require judgement. Otherwise, higher status members sometimes have greater influence over judgements. For intellectual group tasks whoever finds the correct answer tends to have most influence regardless of their status.

The influence of women on corporate boards, which have traditionally been male dominated, was limited unless they made alliances with the most influential members; women tended to have more influence when they were well prepared and employed challenging questions as their main contribution (Jonsdottir, 2010).

Impact of recruitment and training

Public and voluntary sector boards place greater emphasis on initial selection and recruitment of board members than on training and development (Ward and Preece, 2012). For NGOs, a clear organisation mission statement, well specified roles for board members and clear recruiting procedures are essential for identifying, attracting and retaining effective Board members (Shore, 2015). Good practices such as coaching, succession planning, support, development and performance appraisals for members of decision-making groups are often *ad hoc* and informal despite recognition (but no evidence) of their impor-

tance for effective group functioning and individual skill building (Ward and Preece, 2012). Training and development for NGO Board members, essential for their understanding of Board responsibilities, 'spans from orientation of a new director to training to improve teamwork, to ongoing training on topics related to governance' (Shore, 2015, p. 98). Virtual groups may benefit from training to enhance communication, developing trust and managing conflict, and regular feedback about team performance (Acai et al., 2018).

Reviews developing frameworks, models and theories

We found 12 reviews that developed frameworks, models or theories for understanding or assessing the performance of committees. We found these reviews were able to provide explanations that helped make sense of the discrete pieces of evidence offered by reviews of empirical evidence described above.

A systematic review of corporate board evaluations identified 35 indicators for assessing performance across seven domains, five of which addressed processes (Sajadi et al., 2013). The first process domain was the members themselves: what they brought to the role, their understanding of, commitment to and participation in that role; and their relevant external relationships. Other domains were: leadership strength and style; structure; processes (meetings, selection and appointment, education, evaluation); and board dynamics and relationships. These domains accord with many of the empirical findings presented above. However, more can be learnt from papers that synthesised evidence framed by existing theoretical explanations of Board governance (Brown, 2005; Schoenberg et al., 2016) or conceptual models of board performance (Minichilli et al., 2009), or developed models about group decision making (Forbes and Milliken, 1999; Vandewaerde et al., 2010; Brodbeck et al., 2007; Matta et al., 2016).

Forbes and Milliken (1999) integrated the literature about the effectiveness of boards of directors with the literature about group dynamics and workgroup effectiveness to develop a theoretical model of effectiveness and efficiency. This model offered two criteria for board effectiveness: the ability of the board to perform its tasks effectively; and the board's ability to continue working together. In this model, cognitive conflict and board cohesiveness are negatively related and board task performance is reduced by too little or too much cohesiveness. Thus, the greater diversity of members' occupational and educational background increases the knowledge and skills available and cognitive conflict, but

simultaneously reduces the board's cohesiveness and use of its knowledge and skills. Equally, the finding that too little cohesiveness may also negatively impact on board task performance is important, highlighting the need for boards and their chairs to find a constructive way to manage difference or conflict. A model for audit committees (Mohiuddin and Karbhari, 2010) similarly notes that larger groups can encourage unnecessary debate and delayed decisions.

A theory building review (Matta et al., 2016) related corporate boards' roles, and highly technical functions, to the mechanisms available to them: decision-making structures, formal processes, and communication approaches. Where the knowledge brought by members is insufficient, which is likely in fast moving areas such as information technology, they can co-opt or consult experts, collaborate with knowledgeable peers and improve information sharing within the organisation.

By reviewing the relevant literature, Brown (2005) investigated six dimensions of effective board performance originally identified by primary research of higher education boards with varying reputations for effectiveness (Chait et al., 1991), and then tested these with a survey of non-profit organisations. Higher performing organisations were reported having high-performing boards across all dimensions. However, it was the interpersonal dimension in particular (creating a sense of inclusiveness, setting goals for themselves, and grooming members for leadership) that provided a unique explanation of judgments of organisational performance. Schoenberg et al. similarly found that board performance was better where: Board-CEO relationships were collaborative and balanced trust with distrust; and a board has 'a sense of togetherness in achieving a long-term purpose' (2016, 12); and a positive boardroom climate allows open and informal discourse with 'a level of constructive scepticism in a psychologically safe environment' (2016, 15).

Minichilli et al. (2009) reviewed the literature about boards of directors (their tasks, characteristics and performance, and members' background diversity, commitment and critical debate), to develop a theoretical model; testing the model with a subsequent survey of CEOs of the 2000 largest industrial companies in Italy found that board members' commitment, in particular, and cognitive conflicts and critical debate were far more important for predicting board task performance than was board demographics.

The organisational and social psychology literature reviewed by Brodbeck et al. (2007) supported a model whereby discussion either focuses on prior preferences,

with more negotiation than knowledge sharing and individuals evaluating their own knowledge highly (particularly if time is short); or discussion focuses on sharing knowledge, with time and good facilitation encouraging repetition and opportunities for validation of shared knowledge, to achieve mutual learning and better decisions. Much of the literature reviewed above (which does not overlap with the literature used to develop the model) provides supporting empirical evidence.

Reviews addressing committee contexts

Reviews drawing evidence from across the world raise questions for readers about their relevance to specific contexts. Two reviews specifically addressed developing country contexts (George et al., 2015; Lodenstein et al., 2017). Lodenstein et al. (2017) noted that social accountability mechanisms, including health committees, operate within cross-cutting power asymmetries where professionals doubt the competency of lay members, and lay members may be chosen for their socio-economic or political status rather than knowledge, competence for making health decisions, or interest in improving health services rather than their personal access to services. The result is mechanisms lacking legitimacy, and the interests of particular groups being overlooked either by their absence or by their reluctance to speak, or inability to influence. George et al. (2015, 159) offer a framework to help:

> delineate and organise… contextual factors into four overlapping spheres (community, health facilities, health administration, society) with cross-cutting issues (awareness, trust, benefits, resources, legal mandates, capacity-building, the role of political parties, non-governmental organisations, markets, media, social movements and inequalities).

A third review from Australia presented a framework that emphasised the contextual factors influencing the performance of corporate boards: the type of organisation (e.g. public, commercial or voluntary sector); the relevant legislative and societal frameworks; the organisation's constitution, history and strategic use of resources (Nicholson and Kiel, 2004).

Where studies do not offer explicit contextual analyses, relevance of the evidence to particular contexts can be judged by: whether evidence has been generated in that context; and whether the phenomena of interest are found in that context. For example, Table 1 presents the reviews offering evidence from Australasia.

Table 1. Relevance of evidence to Australasia.

Focus of evidence	Studies from Australia	Studies from New Zealand
Guideline development	Fretheim et al. (2006a) Knai et al. (2012) Tan-Torres Edejer (2006)	Fretheim et al. (2006a)
Consensus development	Hutchings and Raine (2006)	Hutchings and Raine (2006)
Research agenda setting	Oliver et al. (2004)	
Health and safety committees	Yassi et al. (2013)	
Health boards	Sajadi et al. (2013)	
Research ethics committees	Schuppli and Fraser (2007)	Schuppli and Fraser (2007)
Corporate boards	Jonsdottir (2010) Schoenberg et al. (2016)	Jonsdottir (2010)
Non-profit boards	Shore (2015)	
Audit committees	Mohiuddin and Karbhari (2010) Velte (2017) Bilal and Bushra (2018)	Mohiuddin and Karbhari (2010) Velte (2017) Bilal and Bushra (2018)

Discussion

This review was commissioned to consciously draw upon a diverse literature and synthesise knowledge that could usefully inform the convening of committees in an era of financial constraint. We found empirical evidence of groups with six to twelve members tending to perform better than those either smaller or larger. Groups with diverse backgrounds and specialties take account of a range of opinions, with each member likely to advocate familiar options. Larger groups reflect a broader range of outside interests, enhance credibility and widespread acceptance and implementation of decisions, but present difficulties for encouraging equal participation. However, if conflict is managed constructively, more varied membership leads to better performance and more reliable judgements. Corporate board leaders are important for establishing inclusive working procedures and an atmosphere of openness, dialogue and trust. Chairs facilitate groups to generate more ideas through encouraging members to express diverse opinions. What is known about training is largely descriptive (Ward and Preece, 2012; Shore, 2015) and reflective (Gonski, 2015) rather than offering evidence of influencing committee performance. Little is known about the impact of committees' physical environment.

How these factors influence committee performance is explained by theoretical models. Hopthrow et al. (2011) considered Brodbeck et al.'s (2007) theories of information sharing and systematic processing applicable to the decision-making of guideline development groups, especially when organisational culture encourages critical 'norms that create an open, constructive atmosphere enabling members to feel comfortable in airing their views'. However, they wondered whether the relatively large size of a group may hinder the processes. They also noted the significance of group development and cited Wheelan and Kesselring's (2005) stages of group development: 1) group members looking to the leader for direction; 2) the group develops norms, operating procedures and goals (a stage characterised by increased conflict); 3) increased trust and freedom to disagree and a consolidation of relationships; and 4) high productivity and effectiveness. The time for a group to develop, socialise and negotiate norms was seen as relevant by a critical, but unsystematic, review of the guideline development literature, combined with practical experience (Pagliari et al., 2001). Confirmation came from a qualitative study of guideline development groups which found members valued opportunities to develop as a group, through the forming, storming, norming and performing stages described by Tuckman (Atkins et al., 2013).

All three contextual analyses (Nicholson and Kiel, 2004; George et al., 2015; Lodenstein et al., 2017) consider how the interactions between committee

members is influenced by the external experiences and the commitment they bring in terms of time or motivation. They also all refer to influences of organisational structures, legal frameworks, and wider social society, including politics and history. The relevance of the evidence to low and middle-income countries is apparent not only from the contextual analyses available, but also from the growth of formal partnerships between policymakers, stakeholders, and researchers, to enhance deliberative, evidence-informed health policymaking (El-Jardali et al., 2014). The relevance of the evidence to Australasia is evident not only from the studies conducted there, but also from the structures established to support committees with lay membership for developing health guidance (National Health and Medical Research Council, 2014), including The Best Practice Advocacy Centre New Zealand (https://bpac.org.nz/guidelines/) which adapts NICE clinical guidance for New Zealand, or for corporate boards (Australian Institute of Company Directors, undated; Financial Markets Authority, 2014). Our understanding of all these models combined is described briefly here and illustrated in Figure 3.

Committee performance depends upon the individuals involved (see top two blue boxes of Fig. 3), their attributes and relationships, specifically, members who: are aware of their tasks, roles and responsibilities; understand the wider context and culture; bring analytical and political competence,

interest and willingness; offer time and commitment; actively participate; and behave appropriately over external relationships, confidentially and conflicts of interest.

An important resource is the knowledge brought by individual members, which is unevenly distributed, or presented to them in committee papers or presentations. Educational and functional diversity has given teams greater strategic clarity. In contrast, demographic diversity has been seen as valuable in bringing different perspectives and a wider variety of alternatives for consideration (Gonski, 2015) but does not necessarily improve committee performance (Minichilli et al. 2009). Translating demographic diversity into better committee performance may only be possible when supported by holistic transformation of human resource strategies (Alcázar et al., 2013).

In addition to the knowledge and skills, the time available for a committee to explore that knowledge to make choices or solve problems is important. Time for information processing during decision-making (left hand blue boxes, Fig. 3) allows more sharing of knowledge; the more knowledge is shared during discussion, the more it is subject to evaluation by group members. When time is limited, less knowledge is shared and decisions are more the result of negotiating between prior preferences, rather than evaluation of shared knowledge. When tasks involve judgements (rather than intellectual problem solving), status within the group influences decisions.
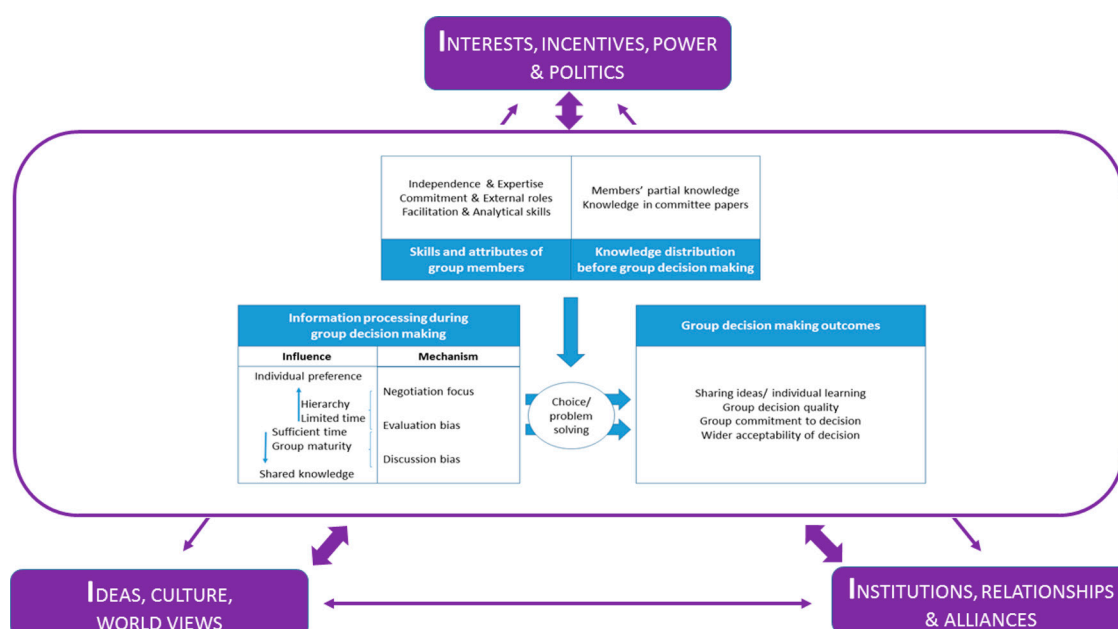

Figure 3: A model for effective and efficient committees, adapted from Brodbeck et al. (2007), and taking into account social and political influences.

With more time, greater facilitation skills to maximise sharing of knowledge, and greater mutual trust developed as committees mature and members get to know each other, more information about all options is revealed and available for evaluation. The result is more sharing of ideas and individual learning, better quality decisions, more commitment to decisions by group members and wider acceptability of decisions within the group's wider networks (right hand blue boxes of Fig. 3).

These small-scale interactions reflect the larger scale institutional relationships, hierarchies and cultures which interact as a backdrop to committee activities (outer triangle of purple boxes in Fig. 3) and stakeholder engagement with decisions more widely (Oliver et al., 2018).

Strengths and limitations

A key strength of this study was the iterative nature of its searching that revealed relevant bodies of literature addressing different contexts applying research conventions from different academic disciplines. The scope and diversity of the literature mean that we cannot claim to have identified all relevant studies. This limitation is counteracted by our reliance on systematic reviews and theoretical syntheses drawing on extensive literatures. Evidence of 'what works' was drawn from systematic reviews of empirical studies of guideline development, business administration committees and social psychology. Their findings were confirmed and explained by theoretical syntheses drawing on different sets of studies.

Despite all this evidence and theoretical development, our understanding is limited because research has largely focused on the internal workings of committees, and less on the socio-political history and context of their host organisations which will influence how the committee works as much or more than the individual members.

Reviewing multidisciplinary literatures

This systematic review found that evaluations of health boards have emphasised the individuals involved, their attributes and relationships, specifically, members who: are aware of their tasks, roles and responsibilities; understand the wider context and culture; bring analytical and political competence, interest and willingness; offer time and commitment; actively participate; and behave appropriately over external relationships, confidentiality and conflicts of interest (Sajadi et al., 2013). This is very different from how guideline development groups have been

evaluated using the AGREE II instrument which emphasises the knowledge explicitly underpinning decisions, criteria for its selection, how it is found, its strengths and limitations, and consideration of the ultimate implications of acting on this knowledge (Brouwers et al., 2010). Although AGREE II notes the composition of the group, it asks little about group interactions.

Drawing on multiple literatures allowed us to synthesise research addressing different aspects of committee work and, simultaneously, draw on the methodological traditions dominating the literatures of different disciplines: qualitative research addressing clinical guidelines; experimental designs for clinical guidelines and social psychology; and observational studies from business administration. Synthesising such a broad literature would not have been possible without drawing on existing reviews and tolerating the different methodological expectations for reviews in different disciplines. Relevant reviews of empirical research were included where we could discern how authors had identified and selected studies, from clear or implied eligibility criteria and search strategies. An additional criterion regarding appraisal of included studies (such as risk of bias) would have excluded learning from: Baltes et al. (2002) about computer-mediated communication and group decision making; Boulkedid et al. (2011) about the Delphi Method for Selecting Healthcare Quality Indicators; Jonsdottir (2010) about gender and corporate boards; Knai et al. (2012) about clinical guideline development for the management of chronic disease in Europe; Lundh et al. (2013) about personal conflicts of interest and recommendations on medical interventions; Ramsay et al. (2010) on NHS Health Boards; Reimer et al. (2010) on discussion and decisions in small groups; Ward and Preece (2012) on housing sector boards; and Yassi et al. (2013) on health and safety committees.

More fundamentally, reviews without a systematic search strategy were included if they developed a framework, model or theory. Without these explanations from the business administration literature, the following issues would have been lost: the implications of committee size (Mohiuddin and Karbhari, 2010; Minichilli et al., 2009; Brown, 2005), committee composition (DeZoort et al., 2002; Minichilli et al., 2009; Forbes and Milliken, 1999; Brown, 2005), structures and processes (DeZoort et al., 2002; Forbes and Milliken, 1999; Brown, 2005), committee chairs (Vandewaerde et al., 2010), timing (Brown, 2005), decision-making in fast moving areas such as information technology (Matta et al., 2016), and contextual influences of corporate boards (Nicholson and Kiel, 2004). The most useful model for explaining the

empirical evidence, from social and organisational psychology, would also have been excluded (Brodbeck et al., 2007). Only with this literature was the review able to report on the findings as a cohesive synthesis of evidence.

Conclusions

The findings of this review have the following practical implications for the organisation and management of committees.

Implications for Committees

1. Having members representing the full range of stakeholders could bring the full range of relevant knowledge to discussions, although increasing the size of a committee above 12 members has diminishing returns, particularly for groups working virtually.
2. Given that members' views tend to favour their own specialist areas, and that good decisions arise from constructive conflict, effective chairs are more likely to be generalists with good facilitation skills to help members share their knowledge; manage hierarchy and conflict constructively; and develop an atmosphere of inclusiveness, openness and trust. Particular effort should be made to reveal knowledge initially held by individual, rather than all, members especially if their status is not high.
3. Time is required to allow knowledge brought to the meeting to be shared and evaluated before decisions are made.
4. Formal consensus methods are recommended, with guideline groups given the relevant technical literature to inform their decisions.
5. Distance working reduces the influence of individuals, but also opportunities for discussion. Unfamiliar technology discourages participation, lowers quality of contributions and members' satisfaction. Members more easily disengage when feedback is delayed through asynchronous communication such as email or discussion boards. Working virtually may enhance committee performance by allowing more diverse membership. However, it may present challenges to developing trust and cohesion (with sub-groups emerging,) and integrating divergent perspectives.
6. Demographic diversity is valued for bringing different perspectives and a wider variety of alternatives for consideration. Educational and functional diversity has given teams greater strategic clarity. More time and effort may be required

to explore issues requiring judgements where committee members vary in status.

Implications for substantive research

The review also identified important gaps in the evidence on committee effectiveness and efficiency that would benefit from new primary studies in communication science, ergonomics, social psychology and education.

First, primary studies have not addressed the impact of environmental factors (e.g. layout, décor, acoustics, lighting, heating, air conditioning, spatial capacity) on committee performance.

Second, while development activities are considered important for effective group functioning, they are often poorly evaluated in current studies. Future monitoring or evaluation specifically of decision-making processes should consider the quality of group decisions in terms of: the degree of consensus within the group; the attitude of the group towards the processes and the decisions; and the implications of decisions in terms of organisational performance (governance, effective and efficient service, public confidence). More evidence is required about the training of committee members.

Within many types of organisations, committees are likely to remain the *sine qua non* for complex decision making. However, the results of our review suggest there is still much to be learnt about how to maximise their efficiency and effectiveness.

Implications for systematic review methods

Finally, this review also provides lessons for reviewing research on substantive issues that transcend academic disciplines. An early challenge is ensuring access to a broad scope of research. While open access publishing is increasing, it is not yet sufficient to support reviews without institutional access to all relevant journals and libraries. Instead, access to reports is provided by the institutional affiliations of multidisciplinary teams. Accessing the reports' content is also easier with such teams, between them, being familiar with a broader range of languages and traditions. As methodological approaches and standards vary, each discipline offers different empirical and theoretical contributions. Applying only review methods developed in one discipline risks precluding the learning that is available from others. In this case, applying methodological criteria developed in health services research would have excluded empirical studies and scholarship from business administration, including

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the theoretical development that provided a coherent framework to understand the contributions of disparate empirical studies. Thus, the appropriate methods for a systematic scholarship are determined by what can justifiably be learnt from the relevant literature.

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Appendix

Table A1. Characteristics of reviews synthesising empirical evidence systematically.

First author (year)	Substantive literature	Included designs	Search strategy	Type of synthesis	Findings for questions
Reviews about or to inform clinical guideline development					
Murphy et al. (1998) Black et al. (1999)	Guideline development Group dynamics/ facilitation Psychology	Any	Systematic	Thematic summaries	All except training
Baltes et al. (2002)	Group dynamics/ facilitation Psychology	Comparison groups	Systematic meta-analysis	Statistical	Communication media Timing
Hutchings and Raine (2006)	Guideline development	Controlled studies	Systematic	Thematic summaries	Committee composition Communication media Structures/processes
Oxman et al. (2006a) #2	Guideline development	Systematic reviews	Systematic	Thematic summaries	Communication medium Structures/ processes
Fretheim et al. (2006a) #3	Guideline development	Systematic reviews	Systematic	Thematic summaries	Committee size Committee composition Committee chair Structures/processes Equity
Boyd and Bero (2006) #4	Guideline development	Systematic reviews	Systematic	Thematic summaries	Structures/processes
Fretheim et al. (2006b) #5	Guideline development	Systematic reviews	Systematic	Thematic summaries	Committee chair Communication medium Structures/processes Physical environment
Schünemann et al. (2006b) #6	Guideline development	Systematic reviews	Systematic	Thematic summaries	Committee composition Structures/processes
Oxman et al. (2006b) #7	Guideline development	Systematic reviews	Systematic	Thematic summaries	Structures/processes
Schünemann et al. (2006a) #10	Guideline development	Systematic reviews	Systematic	Thematic summaries	Committee composition Communication medium Structures/processes
Tan-Torres Edejer (2006) #11	Guideline development	Systematic reviews	Systematic	Thematic summaries	Committee composition Structures/processes
Oxman et al. (2006c) #16	Guideline development	Systematic reviews	Systematic	Thematic summaries	Structures/processes

Boulkedid et al. (2011)	Guideline development	Evaluation	Systematic	Descriptive statistics	Committee size Committee composition Communication media Structures/processes
Kelson et al. (2012)	Guideline development	Systematic reviews	Systematic	Thematic summaries	Committee composition Equity
Knai et al. (2012)	Guideline development	Appraisal of clinical guidelines	Systematic	Thematic summaries	Committee composition Communication media
Kunz et al. (2012)	Guideline development	Systematic reviews	Systematic	Thematic summaries	Committee size Committee composition Committee chair Communication medium Structures/processes Equity
Schünemann et al. (2014)	Guideline development	Guidelines for guideline development	Systematic	Thematic summaries	Committee size Committee composition Structures/processes
Jünger et al. (2017)	Guideline development	Qualitative and quantitative	Systematic	Thematic summaries	Structures/processes
Oliver et al. (2004)	Patient and public involvement	Any	Systematic	Framework synthesis	Communication media Timing Structures/processes Equity
Other health sector reviews					
Lundh et al. (2013)	Drug, device or medical imaging products	Any	Systematic	Statistical meta-analysis	Structures/ processes (authors' recommendations)
Kötter et al. (2013)	Research committee (patient and public involvement)	Any	Systematic	Thematic summaries	Committee composition Communication media
George et al. (2015)	Health committees in LMICs	Empirical studies	Systematic	Developing a framework	Committee context
Acai et al. (2018)	Promotions committees in undergraduate and postgraduate medicine.	Empirical studies	Systematic	Thematic summaries	Communication medium
Reviews about business administration					
Jonsdottir (2010)	Business management	Any	Systematic	Thematic summaries	Committee composition Committee chair Structure/processes Equity

Ramsay et al. (2010)	Business management (health boards)	Any	Systematic	Thematic summaries	Committee size Committee composition Committee chair Structures/ processesEquity
Yassi et al. (2013)	Business management (workplace safety)	Empirical data	Systematic	Realist review	Committee size Committee composition Timing Structures/processes Training
McCoy et al. (2012)	Business management	Any	Systematic	Framework development	Committee composition Equity
Oseland and Burton (2012)	Ergonomics and design	Experimental design	Limited systematic search	Statistical meta-analysis	Physical environment
Ward and Preece (2012)	Business management (housing)	Any	Systematic	Thematic summaries	Training
Sajadi et al. (2013)	Business management (health boards)	Any	Systematic	Thematic summaries Developing a framework	Committee composition Committee chair Structures/ processes
Shore (2015)	Non-governmental Organisation Boards	Studies of U.S. non-profit organizations	Systematic	Meta-ethnography	Committee composition Structures/processes
Schoenberg et al. (2016)	Non-profit Boards	Empirical studies	Systematic	Developing a framework	Structures/processes
Velte (2017)	Business administration	Empirical studies	Systematic	Thematic summaries	Committee composition
Bilal and Bushra (2018)	Business administration	Studies that report t-statistics, p-values, z-scores, and chi-square statistics.	Systematic	Statistical meta-analysis	Committee composition
Reviews of social psychology					
Reimer et al. (2010)	Psychology	Comparison groups	Systematic	Statistical meta-analysis	Timing Structures/processes
Diamond et al. (2014)	Social psychology	Delphi studies	Systematic	Thematic summaries	Structures and processes

Table A2. Characteristics of reviews presenting frameworks, models or theories.

First author (year)	Substantive literature	Included designs	Search strategy	Type of synthesis	Findings for questions
Forbes and Milliken (1999)	Business management Group dynamics	Unspecified	Unspecified	Developing a model	Committee composition Structures/processes
DeZoort et al. (2002)	Business management	Unspecified	Unspecified	Developing a model	Committee composition Structures/processes
Nicholson and Kiel (2004)	Corporate Boards	Unspecified	Unspecified	Developing a model	Committee context
Brown (2005)	Business management	Unspecified	Unspecified	Developing a model	Committee size Committee composition Timing Structures/processes
Brodbeck et al. (2007)	Social and organisational psychology	Unspecified	Unspecified	Developing a model	Structures/processes
Minichilli et al. (2009)	Business management	Unspecified	Unspecified	Developing a model	Committee size Committee composition
Mohiuddin and Karbhari (2010)	Business management	Unspecified	Unspecified	Developing a model	Committee size
Vandewaerde et al. (2010)	Business management	Unspecified	Unspecified	Developing a model	Committee chair
Sajadi et al. (2013)	Business management (health boards)	Unspecified	Systematic	Thematic summaries Developing a framework	Committee composition Committee chair Structures/processes
Matta et al. (2016)	Corporate Boards	Unspecified	Unspecified	Developing a framework	Committee composition
Schoenberg et al. (2016)	Non-profit Boards	Empirical studies	Systematic	Developing a framework	Structures/processes
Lodenstein et al. (2017)	Social accountability	Unspecified	Systematic	Realist review	Committee context