Improving Learning

Systematic Review of the Literature on Professional Education Accreditation

For the Royal College of Veterinary Surgeons

Australian Council *for* Educational Research

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Neville Chiavaroli, Kate Reid, Pru Mitchell and Jenny Trevitt

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INTRODUCTION

OVERVIEW

The Australian Council for Educational Research (ACER) was formally engaged by the Royal College of Veterinary Surgeons (RCVS) to conduct a critical and systematic review of the literature on professional education accreditation models, associated methods, and the effectiveness and impact of each model. The review was motivated by the need to review and update the current RCVS standards of accreditation for veterinary degrees, by recent curricular changes (including distributed, multi-site programmes and community-based models of curriculum), and by concerns that the accreditation process may be regarded as a compliance exercise rather than an improvement process. The purpose of a systematic review of the professional accreditation literature was to provide evidence for accreditation standards and processes and to guide enhancement of the quality of veterinary education, promote programme improvement, and produce competent practitioners who provide high quality care.

OBJECTIVES AND SCOPE

This project is a critical and systematic review of the literature on accreditation for professional education programmes. The review explores the effectiveness of different accreditation methods and processes, the impact of accreditation on education programmes, and the implications for current accreditation practice.

The review addressed five 'high level' key themes:

a. an understanding of different models of accreditation of professional qualifications (including input, outcome and risk-based models);

b. the advantages and challenges of each model in terms of impact, outcomes and feasibility;

c. the impact of implementation of each model for stakeholders (broadly understood);

d. the resource implications of each of the models, including mitigating factors for the cost of site visits; and

e. an analysis of the relative effectiveness of the risk-based versus non-risk-based models.

The original project timeframe was four months (completion due in March 2020), following review and feedback by the Accreditation Review Working Group.

ACER's project proposal outlined that although the aim was to adopt a systematic review methodology, the aims, timeframe and available resources for the project indicated that the 'rapid' or 'restricted review' form of systematic reviewing was most appropriate for this project. This required placing certain restrictions on the initial search strategy (such as timeframe and focus) and the inclusion and exclusion criteria for the screening and the data abstraction phases. These compromises are discussed further under methodology below.

METHODOLOGY

GENERAL COMMENTS

Given the context for this project, we adopted a 'restricted systematic review' approach, otherwise known as a 'rapid review', as outlined in the relevant systematic review literature (e.g. Grant & Booth, 2009; Plüddemann, Aronson, Onakpoya, Heneghan, & Mahtani, 2018; Tricco et al., 2015). Such restricted reviews involve compromises in scope and methodology in order to remain systematic while conforming with the restricted practical requirements, especially in relation to screening criteria, data extraction process and quality assessment of papers. Nevertheless, the emerging evidence (e.g. Plüddemann et al., 2018; Schünemann & Moja, 2015) suggest that these modifications may not result in significantly different results (in terms of identified sources) compared to more comprehensive systematic reviews, which typically require over a year to conduct and complete. A major difference lies in the methodological processes for the control and minimisation of potential bias; where a full systematic review ensures multiple reviewers at each stage of the review process, a restricted review protocol accepts a single reviewer, with sample cross-checking by a second reviewer (Plüddemann et al., 2018). The scope of the topic also requires careful delineation and focus to ensure that relevant literature is not only identified in a broad search of relevant databases, but also so that there is sufficient time and attention for the close reading and extraction of the core literature. Finally, restricted reviews typically outline findings in the form of a narrative synthesis, as opposed to the meta-analysis of outcomes more common with full systematic reviews.

STAGES AND CONDUCT OF THE REVIEW

Our methodology was therefore based on the following four phases:

1. Scoping and planning – determining the scope and focus of the review, including guiding research question(s) and themes; development of relevant search terms and inclusion/exclusion criteria;

2. Searching the literature – performing the search of relevant electronic databases according to agreed search terms, including cross-checking with known literature, and manual searches of the grey literature;

3. Screening and data extraction – assessment of identified studies according to the review inclusion/exclusion criteria, including quality or methodological dependability; key data extracted from each included paper; and

4. Synthesis and reporting – qualitative narrative synthesis of extracted data and reporting in accordance with the overall research questions and high level themes.

These results and process are summarised as a PRISMA Flow Chart in Box 1.

Phase 1 (scoping) was completed during October and November 2019. This phase included consulting with RCVS to specify and refine the research question and themes, and the search strategy and terms for the primary database search. The framework adopted to guide the initial search was the qualitative PICO framework, namely, **P**opulation, Phenomenon of **I**nterest, and **Co**ntext (Boland, Cherry & Dickson, 2017).

The academic literature on accreditation in general is vast, and much of it is not directly relevant to the specific research question and themes outlined above. The most important distinctions made for the purposes of this review, given the focus on accreditation of professional education programmes, was to exclude literature focussed on accreditation in healthcare and clinical practice contexts, and on *individual* professional credentialing or licencing. Accreditation (or

quality assurance/QA) in higher education at the whole institution level (generally referred to in the literature as *institutional accreditation*) was also excluded for eligibility for this study, except where the focus overlapped with the programme-level context. School-focussed (i.e. pre-tertiary) accreditation literature was wholly excluded from the search strategy.

During this phase we also checked the PROSPERO website (Centre for Reviews and Dissemination, University of York) to determine whether similar accreditation reviews had been conducted recently, or were nearing completion. We found two registered reviews commenced within the last five years, one on accreditation for primary health care centres and the other on professionals' views of the impact of accreditation on quality and safety of hospital-based care, neither of which have been completed or published at this stage.

Phase 2 (search strategies and implementation) commenced in late November 2019. Further discussions with RCVS assisted in determining the most relevant and likely productive search terms (initially using thesaurus terms specific to the ERIC database). Notably, under the Population category, terms such as 'credentialing', 'licencing', 'certification' and 'qualifications' (plus variations on these terms) were confirmed as excluded terms, as they are conventionally associated with individual credentials rather than programme-level regulation and quality assurance. All professional education course contexts were included and broadly searched using a wide range of terms (such as, 'course', 'program*' and 'curricul*', with possible variations). For the phenomenon of interest, we identified all descriptors relating to accreditation approaches and models, and broadened this by including all descriptors relevant to quality assurance of courses and programmes. For context, the broad phrase 'higher education' was applied to the whole search strategy, in order to include professional education but exclude studies specific to pre-tertiary or hospital contexts.

The search parameters were initially limited to papers in English and a timeframe of post-1990; however, it was agreed with RCVS to modify the date range to post-2000, in order to be more inclusive regarding key search terms (specifically, to include the key terms 'quality assurance' and 'course/program* review). Six key educational research databases were identified and searched, using a search protocol adapted for each database, with keywords and indexing terms as specified in each database. An example of the search protocol for the ERIC database is shown in Box 2.[1] Grey literature was searched via two relevant databases (OECD Library and Hedbib/IAU), with additional searching of the grey literature conducted manually, utilising the ACER library EBSCOHost search engine, book indices and relevant agency websites. Numbers of citations found via these methods is shown in the PRISMA diagram in Box 1.

Phase 3 (Screening and Data extraction) commenced in mid-December 2019. All identified citations were initially uploaded to Endnote 9 for checking and duplicate removal, then to the Covidence Systematic Review management software (2020) for screening. The inclusion/exclusion criteria for this phase were further refined with RCVS. We retained literature that focussed on accreditation and/or quality assurance in higher education contexts for full text

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[1] The following further details of databases searching protocol has been provided by ACER librarian Jenny Trevitt; Search strategies are designed specifically for each individual database and adapted to the other databases or which thesaurus terms will vary. In ERIC, for example, an exact search term, taken from the ERIC thesaurus, is described as a descriptor and represented in search statements as DE. An exact term from a database thesaurus does not require consideration of alternative spellings as the exact term should be assigned to any document that includes the term, whatever the spelling, where the term topic is a focus of the research. In ERIC it is also possible to search on words or phrases within the descriptors assigned to a document. These search terms are identified in an ERIC search statement as SU, that is a subject descriptor. A search on 'program*' in ERIC, as a subject descriptor, will find various descriptor terms such as 'programs' and 'program evaluation'. A broader search may consist of searching keywords across the document record. The keyword search will match terms in the title, author and abstract field, as well as in the keyword list assigned by authors and in the assigned terms from a database thesaurus. While a keyword search ensures a comprehensive match for records containing the keyword or phrase, the results will be less focused or precise because the term may not be a focused research topic in the document. For example, a statement in an abstract declaring that the study evaluated curricula but *not* programs, would still be picked up in a keyword search for 'program*'.

review if it included a programme-level focus. Single institution accreditation studies were also retained to determine whether they included any evidence for the impact of different accreditation models. A single reviewer (the ACER project lead) screened references by title and abstract, with sample cross-checking by the co-researcher, using the agreed criteria shown in Box 3. Applying these criteria resulted in 1526 excluded records, leaving 320 for full text review.

Both reviewers conducted the final full-text review stage, assessing all 320 studies deemed eligible via the title and abstract screening phase. During this phase, we examined more closely (through reading the full texts) the eligibility of studies against the original criteria, and excluded those which did not actually meet the inclusion criteria. These excluded texts fell into two main categories. The first category of study considered accreditation only as an unspecified general process and did not analyse or distinguish specific accreditation models (109 studies). Many of these studies involved education contexts where accreditation was implemented, or under consideration, as an optional process, so that the main focus of the papers was *whether* to accredit (or be accredited), not *how*. Many studies also focussed on curriculum design, often in response to accreditation requirements, but did not focus on the accreditation process per se. The second category represented those papers (69) which focussed on higher education in general rather than accreditation at the programme level. This category also included papers on accreditation in healthcare contexts whose focus was unclear from screening based solely on title and abstract.

Postgraduate medical or residency-focussed accreditation proved to be a difficult category. Given that the training occurs outside the higher education context, in clinical sites, we initially thought these papers should be excluded during the full-text phase. However, as it became apparent that much of the explicit exploration of models of accreditation occurred in this context (especially in relation to the Accreditation Council for Graduate Medical Education/ACGME outcomes-based accreditation process), we re-reviewed these studies and included those that demonstrated a professional education focus with reference to a particular accreditation model. Those that were primarily focussed on the impact of accreditation on healthcare practice (such as the effect of the ACGME's duty hours requirement, on which numerous papers have been published) were excluded. Several other papers were excluded due to non-availability (either conference papers or theses).

The final criterion we applied during this phase, consistent with systematic literature review theory and the project aim of forming an evidence base for selecting between different models of accreditation, was a critical appraisal of study methodology. Drawing on several published schema for levels of evidence of empirical research (Daly et al., 2007; Joanna Briggs Institute, 2013; Noyes et al., 2019) we categorised the level of evidence relating to the research question as follows:

1. Empirical: data-based, explicit methods of collection and analysis, and conclusions based on that analysis, published in a peer-reviewed journal (following Garside's 'technical quality tool', 2006); for the purposes of this review, we categorised case studies which met the above criteria as empirical;

2. Conceptual: analytical, conceptual or review papers of accreditation, drawing on published theories or data about accreditation models in professional contexts;

3. Commentary or anecdotal: based on personal or programme-level experience with an accreditation system, without explicit outline of methodology; most case studies fell into this category;

4. Descriptive: wholly descriptive account of an accreditation system, including outlines from accreditors and/or 'tips' from programme faculty

For the purposes of this restricted systematic review, we only included papers classed as empirical or conceptual for formal data extraction, on the basis that these forms of research are generally regarded by the academic community as sufficiently robust to allow generalisation of findings or to form a basis as 'evidence' (Daly et al., 2007; Garside, 2014). They are also the most appropriate studies for addressing research questions focussed on effectiveness and impact (Petticrew & Roberts, 2003). In formulating and applying the above appraisal framework, we took into account both the complex and interpretive nature of qualitative research (Dixon-Woods et al., 2006), and a more 'typological than hierarchical' approach as recommended by many evidence-based researchers (Petticrew & Roberts, 2003). In this way, we evaluated studies on the basis of the clarity and explicitness of the conduct and reporting of data collection and analysis, rather than on prima facie expectations of levels of evidence. This enabled case studies to be considered on their merits, rather than automatically classified as anecdotal, as in typical evidence-based hierarchies. Those papers that did not meet the criteria for empirical or conceptual were classed as either commentary or descriptive.

To minimise the risk of bias, both reviewers classified the studies according to the above schema, and discussions continued until consensus was reached. If doubt remained; we erred on the side of inclusion. Papers identified as commentary and descriptive papers proved the most numerous during eligibility screening, resulting in 106 further exclusions at this stage. Although we excluded commentary and descriptive papers from the data extraction phase, we still utilised relevant papers from these categories as part of the critical synthesis of the literature on accreditation models, as background to any findings from the empirical and conceptual studies.

Phase 4 was undertaken from mid-January to early February 2020, and consisted of data extraction from the 32 final included studies, appraised as empirical and/or conceptual papers. We focussed on the characteristics, impact and implications of accreditation models. As shown in the PRISMA diagram in Box 1, this included 28 studies from the full-text eligibility review, and four further papers identified outside the original database and grey literature search process, during the full text and data extraction stages. The framework for data extraction was guided by the high level themes of the project, and we therefore adopted a (critical) thematic analysis (Bearman & Dawson, 2013). This data is condensed into three main categories, namely Accreditation Model, Impact and Challenges, and is included in the tables in Appendix 1 of this report. These data informed the critical discussion which follows, although structured and contextualised by findings from the overall body of literature reviewed during the full text review.

Box 1 RCVS PRISMA Flow Diagram

IDENTIFICATION

Records identified through data-base searching (n = 1797):

1. A+ Education (184)
2. Scopus (286)
3. BEI & ERC (316)
4. Medline (325)
5. PsycInfo (334)
6. ERIC (352)

Additional records identified through other sources (n = 377):

1. OECD library (70)
2. Hedbib/IAU (127)
3. Expert consultation (36)
4. Manual searching of book indices and websites (144)

SCREENING

Records imported for screening (n = 2174) → Duplicates removed (n = 277)

Records screened (title and abstract) (n = 1846) → Records not meeting inclusion criteria (n = 1526)

ELIGIBILITY

Full-text articles assessed for eligibility (N = 320) → Full-text articles excluded, with reasons (n = 292):
Commentary/Descriptive: 106
Not programme focused: 69
General, not model-based: 109
Not accessible or abstract only: 8

INCLUDED

Studies extracted for data (n = 32) ← Further references indentified during the synthesis stage (n = 4)

Box 2 Sample Search Protocol (adapted for each subsequent databases search according to relevant indexing terms)

POPULATION

DE "Professional education" AND (SU "accrediting agencies" OR accreditation OR "quality assurance")

OR

(("Veterinary Education" OR "interprofessional education") OR DE("Veterinary Medical Education" OR "Medical Education" OR "Dental education" OR "Pharmaceutical Education" OR "nursing education" OR "business education" OR "business administration education" OR "agricultural Education" OR "teacher education" OR "Legal Education Professions" OR "economics education" OR "aerospace education" OR "Health education" OR "library education" OR "engineering education" OR "environment education" OR "Allied Health Occupations Education" OR "science education" OR "Architectural Education" OR "social work" OR "psychology")) AND SU (accreditation OR "accrediting agencies") AND SU (course* OR program* OR curricul*)

OR

("Professional accreditation" OR ((DE ("Professional Recognition" OR "professional occupations") OR "professional practice") AND SU (accreditation OR "accrediting agencies")) AND SU (course* OR program* OR curricul*)

AND

PHENOMENON OF INTEREST

DE "course evaluation" OR "course review" OR "curriculum evaluation" OR "program* evaluation" OR "program* improvement" OR "program* development" OR "program* design" OR "program* effectiveness" OR "program* review" OR "quality assurance" OR "educational improvement" OR "educational quality" OR "educational change" OR "academic quality" OR "best practices" OR innovation OR "outcome based education" OR "academic standards" OR audit) OR "risk based model" OR "risk based models" OR ("accreditation model*") OR ("accreditation standard*") OR ("accreditation challenge*") OR ("accreditation process*") OR ("program* accreditation") OR (input* AND output*) OR regulation* OR regulator* OR (curricul* N2 (review OR mapping)) OR DE(standards OR courses OR programs))

AND

CONTEXT

DE "higher education"; English language; From 2000 –

INCLUSION criteria:

- accreditation policies and practices by accrediting agencies

- experiences of accreditation by professional schools (including single case studies)

- specific accreditation methods – in particular in reference to audits, outcome-based approaches, inputs/outputs, risk-based models, site visits, regulatory practise and accreditation standards

- impact of accreditation on tertiary courses/programs/curricula, either positive, negative or unintended (and including curricular innovations, online, flipped, etc)

- include use of student assessment data if specifically associated with accreditation practise

- quality assurance and associated terms (including evaluation, improvement, design, development, change, best practice, innovation, challenges, mapping, and review), in association with professional accreditation practices and/or contexts

- all professional contexts (except alternative medicine and non-tertiary)

EXCLUSION criteria:

Utilised in initial search strategy:

- pre-2000 publication, non-English language

- pre-tertiary and hospital contexts

- terms associated with and limited to individual qualifications (such as credentialing, licensing, certification, CPD)

Further exclusions for screening phase:

- primary focus on curriculum design outside of accreditation purposes/contexts

- focus on non-professional higher education accreditation

- course evaluations including student perceptions not specifically tied to accreditation practices

- commentaries and descriptions from non-Anglophone contexts (exceptions made for empirical papers)

- non-mainstream or non-tertiary pathway professions

- accreditation of exclusively online/digital programs

- book publications (relevant publications noted and screened as grey literature)

- conference presentations or proceedings and theses (relevant papers noted and reviewed as grey literature, if full text available)

THE NATURE OF THE ACCREDITATION LITERATURE

TERMINOLOGY

For the purposes of this review, we operationalised the concept of *professional education accreditation* as a form of regulation by an external authority of a tertiary programme of study in a professional field, leading to a recognised qualification or licence to practice in the profession.

The term accreditation may also be used in other contexts outside of professional education, most notably as a form of quality assurance in the tertiary and healthcare sectors. As outlined in the Methodology section, we excluded such contexts from our study, as belonging to *institutional accreditation*.

The term *quality assurance* is also commonly used in association with the term 'accreditation', but for the purposes of this study, was only included in our search if it was overseen by an external regulating authority (in the context of professional education).

We also distinguished between programme-level accreditation and practitioner-level *credentialing, licencing or certification*, and did not investigate the latter in this study.

BODY OF LITERATURE

The literature on programmatic accreditation across all professional programmes is voluminous, and there is evidence that this body of literature has been significantly increasing over the past 10 years (Tackett, Zhang, Nassery, Caufield-Noll, & van Zanten, 2019). However, from an initial identification of approximately 2000 citations from our search (including grey literature), only 320 were sufficiently relevant to the RCVS research questions to warrant full-text review. The criteria for eligibility during this full-text review were substance (or relevance to the research question) and level of evidence, in accordance with systematic review methodology. Many papers that appeared highly relevant based on title or abstract were subsequently excluded because they offered only anecdotal viewpoints about the accreditation process, or uncritical descriptions of that process. These viewpoints, while presenting interesting insights and experiences of accreditation, were not empirical, and are therefore unsuitable to inform the evidence base for accreditation. Other papers, while adopting empirical methods, applied these to the issue of accreditation as a whole, its desirability, impacts or challenges, but in an undifferentiated way that was not related to specific models or methods. Such papers appeared to originate from fields outside of the health professions, where the desirability of accreditation was either a matter of ongoing debate, or implemented on a voluntary basis. Even then, the vast majority of papers were non-empirical.

We discussed throughout the review process whether the focus of the review was too restrictive, or our appraisal of quality was too demanding. However, we soon realised that the lack of evidence emerges as a common theme itself in the body of literature. Volkwein and colleagues (Volkwein, Lattuca, Harper, & Domingo, 2007) express this dilemma well, noting that:

> *Surprisingly, despite the centrality of the process in higher education, there is little systematic research on the influence of accreditation on programs or learning. Anecdotal accounts of institutional and program responses to new accreditation standards are abundant… but there are only a handful of studies that examine the impact of accreditation across institutions or programs (p. 253).*

Even more surprisingly, the situation in 2020 appears not to have greatly changed, despite an obvious proliferation of publications. Even in the most recent studies we found, including a

systematic review of the evidence base for accreditation in undergraduate medical education internationally, similar conclusions about the paucity of empirical research in accreditation are drawn:

> *Limited evidence exists to support current UME (undergraduate medical education) accreditation practices or guide accreditation system creation or enhancement (Tackett et al., 2019, p. 1995).*

and

> *As more UME programs worldwide seek accreditation, there is increasing interest in providing evidence of the effectiveness of accreditation at influencing UME quality. The challenge is to establish this evidence (Blouin, 2020, p. 5).*

Therefore, we have drawn on broad types of literature in this report, in order to provide as complete a picture of current understanding of accreditation models as possible; namely, the empirical and conceptual literature for formal 'data extraction', and the non-empirical (including secondary sources or grey literature) to frame the evidence and identify key issues. The former is strictly the province of the systematic review, and commonly results in relatively few eligible studies depending on the strictness of the criteria. Non-empirical literature such as descriptions of accreditation practices, commentaries, discussion papers or commissioned reports, may not qualify as evidence but can provide important insights into trends in accreditation practice and the issues of interest, concern and debate for stakeholders. Overall, the accreditation literature we drew on is quite heterogeneous, both methodologically and in terms of a wide range of professional fields. In our view, this warranted a critical and thematic analysis of the main issues identified through our search and review of the academic and grey literature on accreditation models.

FINDINGS FROM THE ACCREDITATION LITERATURE

MODELS OF ACCREDITATION

Different 'models' or 'methods' of accreditation describe different approaches, or 'systems', using methods which may also be common across other evaluative processes such as quality assurance, auditing, licencing or even course assessment.

The available methods for implementing accreditation are relatively limited. Regardless of model, the literature tends to focus on the following components for accreditation (Fishbain, Danon, & Nissanholz-Gannot, 2019; Nelson, Belar, Grus & Zlotlow, 2008):

1. Standards or criteria for programmes to meet;

2. Self-evaluation by the programme (or 'self-study');

3. Site visit by external reviewers (consisting of a mix of regulator representatives and academic and/or professional peers); and

4. Additional information collected for review by the accrediting body, including programme curricular documents, stakeholder surveys and outcomes data.

These approaches and the resultant data result in an accreditation report which provides an overall evaluation of the programme by an external body. Increasingly, accreditation findings may be presented as 'formative' and improvement-focussed, but most accreditation decisions carry 'summative' weight; that is, the result of an accreditation process is formal approval (or otherwise, including conditional approval) of the programme's authority to provide the relevant professional qualification.

The way these methods are combined and implemented determines the 'system' or 'model' of accreditation, although, importantly, each model has an underlying philosophy or rationale which determines which data is necessary, and how it should be collected. While the focus of our review is at this system level, much of the empirical evidence is centred on the individual methods.

The accreditation literature distinguishes between five or six approaches, models or systems of accreditation, depending on how the various approaches are grouped:

1. Input-based and process-based

2. Outcomes-based

3. Improvement-focussed

4. Risk-based

5. Shared

6. Thematic

For each model we identified key issues from the broader literature, then summarised the available empirical evidence.

1. TRADITIONAL ACCREDITATION MODEL (INPUT AND PROCESS-BASED MODELS)

Much of the literature discusses accreditation without specific reference to the underlying model. However, in most cases, it is clear that the implied or 'default' model is one based on the inputs and/or processes that characterise a curriculum. We will consider each approach separately here to allow finer discussion, but the distinction is not always apparent in the literature.

Input-based model

A key feature of this model of accreditation is based on an evaluation of the 'inputs' of a programme: the course structures, curriculum, faculty, resources and facilities available to students. These expectations are codified in the accrediting bodies' standards for accreditation. Examples of input-focussed standards include:

- The curriculum includes the scientific foundations of medicine to equip graduates for evidence-based practice and the scholarly development of medical knowledge (Australian Medical Council, 3.2.1).

- The medical school through its curriculum addresses demands due to changing demographic and cultural contexts and the health needs of society (Health Professions Council of South Africa, in Bezuidenhout, 2007).

- The School must ensure students have access to a broad range of diagnostic and therapeutic facilities, including but not limited to: pharmacy, diagnostic imaging, anaesthesia, clinical pathology, primary care settings, intensive/critical care, surgeries and treatment facilities, ambulatory services and necropsy facilities (Royal College of Veterinary Surgeons, 3.9).

A widely-acknowledged advantage of the input-based model includes the explicit articulation of the accrediting body's expectations, the promotion of common elements in professional education across programmes, and a relatively direct process of evaluating whether those standards have been met. Nelson et al. (2008) describes the input-based model as involving:

> … accreditation standards [which are] primarily targeted to such aspects of quality as the scholarly achievements of faculty; the qualifications of students; the institution's or program's library, laboratory, or other physical facilities; and a documented curriculum related to the institution's or program's mission and goals (p. 32)

Such input-focussed standards are then assessed through a combination of the methods noted above, conventionally the self-study, site visit and the accreditation report. Programmes are judged according to how well they reflect the necessary 'ingredients' which the accreditor has determined as necessary to the quality of education for a particular profession. As one accrediting body has described it: '*The input-based approach is grounded in a philosophy that the presence of appropriate structures, processes, facilities, curriculum, staff and other resources is sufficient to assure compliance, and that compliance is the purpose of the accreditation process' (APC, 2017, p.5)*. A clear picture emerges from the literature of a pattern whereby the standards of accrediting agencies begin as input-focussed documents. This is understandable, in that delineation of curriculum content and structures is associated with greater control and influence of professional training (White, Paslawski, & Kearney, 2013).

However, the disadvantages of an input-based approach are now also widely recognised by both accrediting bodies and programmes. These disadvantages include: inadvertently promoting a minimalist approach to education; perceived encroachment on the expertise of academics and tertiary institutions; and a risk of creating excessive uniformity in course design and stifling curricular innovation (Harvey, 2004). Ultimately, input-based models tend to give little attention to whether the course produces a competent graduate, assuming that the implementation of

appropriate course design and institutional infrastructure will necessarily succeed in this endeavour. Frank, Kurth, & Mironowicz (2012) provide one of the few occasions where this view of programme quality is explicitly stated: 'input-driven measures assume that good facilities and well-qualified personnel guarantee good service' (p. 78).

Clearly, if an accreditation system prioritises inputs and processes, then this is what the programme is likely to focus on, with ramifications for other necessary quality considerations. But some evidence suggests that it may also reflect on the quality of the wider accreditation process itself. One report on professional accreditation practices noted, as examples of poor practice, that many accrediting bodies that took a rigid approach to course inputs rather than outcomes (including the content of feeder undergraduate programs) were marked by other poor practices, such as 'poorly defined standards, short timelines for reporting, administrative complexity, changing expectations, poorly prepared teams, lack of consistency and lack of an appeals process' (Phillips KPA, 2017, p. 78).

Process-based

Often described in tandem with an input-based approach, a process-based model differs by shifting the emphasis from content and structure to a programme's processes of teaching, assessment and governance. Curriculum design is allowed more scope and autonomy, as long as the programme can demonstrate appropriate education processes, as specified in the Standards. A key element of this approach is a focus on internal QA processes, even though these are usually governed by the institutional authority. The assumption (or philosophy) is that if the proper educational and governance processes are in place, course inputs (or even outputs for that matter) can be left largely to internal programme QA.

Examples of processes that tend to be specified in the Standard and may therefore come under scrutiny include: how the curriculum is designed and implemented; assessment methods and review processes; and formal programme evaluations including soliciting student views of the course. By way of specific examples:

- Assessments of student learning are fair, valid and reliable (Health Professions Council of South Africa, in Bezuidenhout, 2007)

- The medical education provider employs a range of learning and teaching methods to meet the outcomes of the medical program. (Australian Medical Council, 4.1)

- The learning outcomes for the programme must be explicitly articulated to form a cohesive framework. (Royal College of Veterinary Surgeons, 9.2)

- Organisations must make sure there are enough staff members who are suitably qualified, so that learners have appropriate clinical supervision, working patterns and workload, for patients to receive care that is safe and of a good standard, while creating the required learning opportunities. (General Medical Council, R1.7)

An important advantage of a process-focussed approach, in addition to related advantages of the input focus, is that it enables an accrediting body to set expectations and requirements for internal quality control, while allowing (theoretically at least) a certain amount of flexibility in the way programmes design and implement their course. This allows for some diversity between programmes, while holding them to similar expectations of quality. For example, Nasca, Philibert, Brigham and Flynn (2012) note how in the US postgraduate medical education context of variability in the quality of resident education, the ACGME 'emphasized programme structure, increased the amount and quality of formal teaching, fostered a balance between service and education, promoted resident evaluation and feedback, and required financial and benefit support for trainees' (p. 1051).

Again, however, the process-based accreditation model has been largely associated with curricular inflexibility, despite the theoretical scope for content and implementation diversity within a process focus. An additional burden has been financial and resource-based (Nasca et al., 2012). Another concern is that a process-based model may lead to uncertainty about the actual practices that would be seen as legitimately reflecting appropriate process, thereby increasing the stress and summative focus of the accreditation process.

Current evidence about input and process-based approaches

Input and process-based accreditation models have been the 'default' approach to accreditation across countries, professional contexts and over time, and thus empirical evidence for their impact is not readily found under their respective names. Rather, evidence relating to their impact tends to focus on stakeholder perspectives of different components of these models, particularly the self-study, the site visit and resulting accreditation reports. For example, allied health deans and programme directors supported an inputs-based accreditation model as an effective approach to assure and improve the quality of their programs (Baker, Morrone, & Gable, 2004). However, there was a significant focus from both Deans and programme directors in preparing for the site visit, rather than orienting towards an ongoing evaluation of the education programme (Baker et al., 2004). In other respects, the perspectives of personnel involved in accreditation may differ. The Deans in Baker et al.'s (2004) study demonstrated greater concern about pragmatic issues associated with accreditation such as its cost and the duplication of effort and coordination. In contrast, programme directors were more focused on the purpose, process and effectiveness of accreditation.

The composition of site visit teams can vary substantially between accreditation systems. In postgraduate medical education, these can include paid teams of specialists, trainees or members of the public or unpaid volunteer physicians (Fishbain et al., 2019). In some cases, the site visit is perceived as highly subjective, with a lack of guidance or training for both reviewers and programme staff to enhance the consistency of judgements (Bezuidenhout, 2007). Such uncertainty can lead to significant stress during the site visit and reporting process (Davis, 2018).

Accreditation standards which focus heavily on programme inputs (such as leadership and governance, programme content and design) may lead to a de-emphasis on teaching, learning and assessment (de Paor, 2016). The pharmacy education programmes in de Paor's (2016) study were subject to the competing demands of institutional and professional quality assurance; for many programmes, this was seen as a needless and frustrating duplication of effort. This duplication of accreditation requirements was also a major finding of a recent commissioned report on professional accreditation (Phillips KPA, 2017). One recent empirical study (Bowker, 2017) shows how deliberately aligning such dual systems can considerably reduce the workload for faculty, associated costs, and improve the efficiency of the process. Facilitators for such alignment included early discussions with representatives of both institutional and professional accreditation representatives, nominating a liaison person, sharing documents openly, and tailoring the composition of the review panel to meets the needs of both groups. Other recent forums on accreditation have also explicitly acknowledged the problem of duplication of requirements as a major and avoidable burden on programmes and institutions, and documented the accrediting bodies' intention to work collaboratively to 'streamline' accreditation processes (AHMAC, 2017; TEQSA, 2019).

Considered together as a traditional approach to accreditation, input and process-focussed approaches have generally come to be seen (as represented largely through the commentary literature in academic journals) as overly restrictive, burdensome and outdated. This view is summarised well in a recent report on professional accreditation (where once more the generic 'accreditation' represents the inputs/process focussed model):

The strongest critics have argued that accreditation seeks to achieve quality through conformance and shifts control over content and delivery methods away from academics to administrators and external evaluators who focus on consistency in student experiences and the achievement of standard outcomes... There have even been questions raised about whether the traditional model of professional accreditation is sustainable in the increasingly complex and competitive higher education environment (Phillips KPA, 2017, p. 29).

Such views have led to an increased emphasis on and acceptance of outcomes-based approaches to accreditation.

2. OUTCOMES-BASED

A significantly different approach to programme evaluation and accreditation shifts focus to the specific outcomes (i.e. knowledge, skills, and competencies) expected of graduates from a professional education programme, rather than the course inputs or processes. An outcomes-based accreditation approach particularly aligns with recent shifts to outcomes-based or competency-based education approaches in medical and health professional education over the past two decades (see Frank, Snell, Ten Cate, 2010). Yet, the corresponding implementation of an outcomes-focussed accreditation system often lags behind considerably (Fishbain et al., 2019). Essentially, an outcomes-focussed approach shifts the emphasis on accreditation to what students learn and how competent they are on graduation, as an indicator of the quality of the programme; this approach is less concerned with 'standardising' the student experience (APC, 2017). Accompanying this change of emphasis is also the expectation of improvement in programme quality; as one commentator notes, the expectation is that an outcomes-based approach to accreditation offers programmes the 'opportunity to transform the accreditation process into one that encourages excellence in outcomes, thereby stimulating innovation, and that fosters collaboration across programs' (Nasca, Weiss, Bagian, & Brigham, 2014). As Volkwein et al. (2007) noted for the Engineering context,

Acknowledging the growing consensus that student learning outcomes are the ultimate test of the quality of academic programs, accreditors have also refocused their criteria, reducing the emphasis on quantitative measures of inputs and resources and requiring judgments of educational effectiveness from measurable outcomes (p. 252).

Key examples of an outcomes-based approach to accreditation can be seen in the standards developed by the ACGME (The Outcomes Project), the CanMEDS framework of the RCPS Canada, and the GMC's Good Medical Practice guide (Fishbain et al., 2019). It is also observable in the requirement that in order to be accredited by RCVS, 'a veterinary degree must ensure that students meet the RCVS Day One Competences by the time they graduate (RCVS Standards, 2017). For many accrediting bodies and other stakeholders, the ACGME 'Next Accreditation System' for postgraduate medical education with its basis on Reporting Milestones for each of the six competencies, represented an exemplary model of outcomes-based assessment (Fishbain et al., 2019; Nasca et al., 2012). The outcomes-based approach is well-represented in the veterinary education literature, with several papers appearing in the *Journal of Veterinary Medical Education* in the 2000s, outlining the nature of the approach, its major benefits, and key identifying challenges (e.g. Barzansky, 2004; Black, Turnwald, & Meldrum, 2002; Edmondson, 2004; Kochevar, 2004). Chief among the benefits were suggested: the availability of objective data to complement other more subjective elements of the programme self-evaluation; a curriculum focus on practical applicable skills on graduation; and the generation and ongoing monitoring of outcome data for programs to review their strengths and weaknesses, and document improvements. Challenges included the difficulty of measuring

certain desired outcomes, the risk that available or easily-produced measures would dominate the assessment of outcomes, and, unsurprisingly, concern over anticipated increased demands on faculty time; although the latter may have been more associated with initial training and processes of moving to new outcome-focused curricula in general (Kochevar, 2004). In theory, an outcomes-based approach should lead to reduced costs for programmes, although this conclusion seems to depend on the prior implementation of an outcomes-focussed curriculum beforehand (at least in an undergraduate context; Muhtadi, 2013).

More significantly, an outcomes-based approach generally reflects a less prescriptive approach to accreditation. It allows programme providers more flexibility and scope to develop and deliver their curriculum, with the regulatory focus shifting to the programme product, their graduate capabilities, along with broader programme level indicators such as attrition, student satisfaction and graduate employment. A good example of data relating to broader outcomes is the ACEN system, which encourages programmes to measure both graduate outcomes and programme-level outcomes such as licensure exam pass rates, programme completion rate and graduate job success (Nunn-Ellison, Ard, Beasley, & Farmer, 2018). For the LCME accreditation context, one commentator has described the use of assessments and evaluations to measure educational, clinical career and environmental programme outcomes (Blumberg, 2003). However, others question the premise of using such outcomes as indicators of the quality of a programme:

> *The linkage between medical schools' processes and the desired outcome of accreditation, a quality education for medical students, is difficult to assess when quality medical education is evaluated primarily by students' performance in national exams. Students may perform well in examinations independent of the quality of their programmes (Blouin, Tekian, Kamin, & Harris, 2018, p. 189).*

This scepticism is likely as much about the limitation of using an exit written exam as it is about the nature of the outcomes-based model. The challenge of identifying appropriate assessment tools or evaluation measures that can reliably and validly provide evidence for outcome-based standards is a common theme in the accreditation literature. Professions that employ a national exit exam (such as NAVLE in the veterinary education field) have a clear metric with which to measure and benchmark programme graduates; but such assessments are limited to assessing professional knowledge, only one competency among many expected of professional graduates. Other assessments would need to be fit-for-purpose for the assessment of clinical skills and competencies, both through direct observation and judgment and indirectly, through survey instruments which collect other perspectives of those skills (e.g. self, peer, supervisor), or practice-based indicators of competence.

The secondary literature clearly reports that an outcomes-based accreditation model presents significant challenges, including which outcomes need to be assessed; uncertainty in terms of what counts as evidence in outcomes-based assessment (e.g. direct versus indirect assessments); variability in the types of data that may be collected by programmes to address particular outcomes; and the risk (once again) of overly standardising expected outcomes and/or ways of measuring these in the interests (and push from stakeholders) of comparability (Blouin & Tekian, 2018; Nelson et al, 2008; Phillips KPA, 2017). Even the generally highly regarded ACGME Milestones approach has faced criticism, with several commentators voicing strong concerns about 'whether rating the residents on the six competencies using a nine-point Likert-type scale truly generates an accurate reflection of their performance and abilities' (Lowry, Vansaghi, Rigler, & Stites, 2013, p. 1666). Another commentator noted a 'perverse incentive' for programme directors to rate residents as competent using such evaluation scales, along with their 'substantial burden' (Witteles & Verghese, 2016). Indeed, a systematic review of this topic for the ACGME general competencies project 10 years ago found limited evidence of reliable or

valid assessment for any competency (e.g. interpersonal and communication skills, professionalism, patient care) besides 'medical knowledge' (Lurie, Mooney, & Lyness, 2009).

Nevertheless, this issue of the assessment of competencies remains an area of strong interest and focus across the professions (e.g. Blumberg, 2003; Nunn-Ellison et al, 2018; Yamayee & Albright, 2008). The dilemma of the outcomes-based approach seems well summed up by one commentator representing an accrediting body: 'While there is agreement that outcomes must be measured, the measures themselves are up for debate' (Knopf, 2015, p. 36).

Current evidence about outcomes-based approaches

The greatest body of evidence in the accreditation literature has an outcomes-based focus (or a focus on programme outcomes in the context of other accreditation models). Two studies assessed whether a single outcome (performance on the United States Medical Licensing Examination [USMLE]) varied for graduates of accredited and unaccredited medical programmes (van Zanten & Boulet, 2013; van Zanten, McKinley, Durante Montiel, & Pijano, 2012). International medical graduates in the US had higher first attempt pass rates for the USMLE clinical examination if they had attended an accredited medical school (van Zanten & Boulet, 2013). Medical graduates from Mexico and the Philippines also recorded higher first attempt pass rates if they had trained at an accredited medical school (van Zanten et al., 2012). These data suggest a positive effect of accreditation on outcomes more generally; however, they are limited by the lack of information about the profile of trainees from these medical programmes or whether accredited programmes had a greater emphasis on training candidates to perform well on the USMLE.

Four studies focused on the process of implementing an outcomes-based accreditation system (two in postgraduate medical education, one for an engineering programme, and one in teacher education). Feist, Campbell, LaBare and Gilbert (2017) explored the impact on residency programme coordinators in Child Neurology of the implementation of an outcomes-based accreditation process. A number of challenging factors were identified as part of the implementation including a lack of faculty knowledge about the changes and difficulties in gaining their involvement to meet the requirements of the new accreditation system. Programme coordinators reported having other roles in addition to coordinating accreditation requirements. They also often reported being uncomfortable with their role and not understanding the requirements of the self-study or site visit. Other factors that challenged the implementation of the outcomes-based accreditation included high turnover, unpaid overtime, inconsistent job titles, limited career paths, inadequate training, and non-academic supervision. In contrast, a successful implementation of the new accreditation system was supported by coordinators with more experience in Graduate Medical Education and supervision by an academic or educational supervisor within the Graduate Medical Education context.

Swing's (2007) case study reported on the implementation of the Outcome Project by the Accreditation Council for Graduate Medical Education (ACGME). The focus of training shifted towards programmes gathering evidence to describe the degree to which graduates met specific competencies. The study suggested that there were substantial changes implemented in programmes to focus on teaching and assessment graduate competencies. Some programmes reported an increase in interprofessional engagement and more engagement from residents in quality improvement projects. At the same time, as noted above, programmes were challenged by the need to develop measures that appropriately assess outcomes, and, as has been noted previously (see for instance Davis & Ringsted, 2006) the accreditation system was slower to develop an outcomes-based approach than the programme itself. Outcomes-based accreditation is challenged significantly by the need to develop data collection and monitoring systems to assess graduate outcomes in a competency-based education system (Swing, 2007).

Meanwhile, Volkwein et al. (2007) found no difference in the outcomes of engineering graduates from programmes that adopted outcomes-based accreditation early, on time, or after a delay. The authors suggested that by delaying the implementation of the outcomes-based accreditation process, that underperforming programmes may have had sufficient time to implement curricular change to meet the new accreditation requirements. There were generally positive responses to the new accreditation system. Graduates of programmes undertaking outcomes-based accreditation experienced more opportunities for collaboration, active learning and feedback, and more interactions with their teachers. Students who graduated from an outcomes-based programme reported higher self-reported skills than those who graduated prior to the implementation of outcomes-based accreditation (Volkwein et al., 2007). Programme chairs and faculty members also reported many changes in their programmes in response to new outcomes-based accreditation criteria. These included a greater focus on group work designed to promote skills and knowledge, greater engagement in further developing expertise in teaching and assessment, and a focus on implementing assessments to measure programme outcomes and inform continuous quality improvement. Bell and Youngs (2011) also determined that teacher education programmes made many changes in response to outcomes-based accreditation requirements. These changes included reviewing their conceptual framework, and developing and implementing new assessment methods and data collection systems to focus on student progress and outcomes. Some programmes were very challenged by these requirements, describing these activities as time-consuming and needing significant discussion and facilitation. The response to the new accreditation was also highly contextual: larger institutions could better absorb the financial burden of accreditation and had many staff that were not involved in accreditation activities, whereas in smaller institutions all staff generally took on the additional accreditation workload.

Other studies included in this review are more peripherally focused on outcomes-based accreditation. For instance, Eiff et al. (2014) suggested that programmes that are in the process of major curriculum change may experience greater difficulties in the accreditation process during a redesign. However, the authors found that residency programmes in Family Medicine undertaking a training innovation were not more likely to receive accreditation citations or to experience a shorter accreditation cycle length from an outcomes-based accreditation process. Chandran, Fleit and Shroyer (2013) found that a successful site visit at one US medical school as part of an outcomes-based accreditation was supported by choosing an experienced team with leadership experience, allowing enough time to plan for the visit, communicating clearly about the visit to stakeholders, establishing deadlines for deliverables, and undertaking practice for the visit. Planning for a successful site visit was also resource-intensive, requiring staff time, infrastructure and project management. Often problems were identified during the planning process and could be immediately addressed, thus reducing difficulties during the accreditation process.

3. Improvement-focussed (CQI or 'Quality Enhancement')

An improvement-focussed approach (commonly referred to as 'continuous quality improvement', or CQI, in the North American context, and 'enhancement' in the British) explicitly declares that improving the quality of the educational programme (striving for excellence) is the ultimate purpose of accreditation, rather than compliance with standards (a minimalist approach). Accordingly, all accreditation components are designed, implemented and reported from the perspective of improving the programme, rather than 'policing' it. At first sight, this improvement-focussed approach simply re-balances the dual purpose of accreditation which most commentators recognise, namely accountability vs improvement (Harvey, 2004; Nelson et al., 2008). It could therefore be argued that CQI does not really represent a different model of accreditation, but just a different emphasis, which sits 'above' the actual methods (Carroll, Thomas & DeWolff, 2006).

In contrast, two key proponents of this model argue that the CQI approach actually represents the ultimate purpose of accreditation:

> *The real power of accreditation could lie in its ability to foster a culture of quality improvement, where all components of learners' educational experiences, beyond just curricular content and including services provided to them, are assessed (Blouin & Tekian, 2018, p. 377).*

The appeal of this approach for many commentators is that such a model may not actually require substantial change in terms of accreditation processes, but rather the way the processes are communicated, supported, and for some, judged (Stratton, 2019). For example, Nelson et al. (2008) argue that the self-study component in this model could be seen as 'continuous' and 'widely engaging', rather than the episodic ('every 7 to 10 years') and limited model used for Psychology (at the time). They suggest that a reflective and ongoing self-evaluation component should become a 'natural extension' of the education, and presumably accreditation, process.

Others however see the shift of focus as implying more substantial changes. The most significant change is the necessary cultural shift, which distinguishes the approach from internal approaches to curriculum monitoring or institutional QA:

> *Although often used interchangeably, key differences exist between quality assurance (QA) and CQI: The former is a focused, management-driven method to reactively identify problems and gauge performance relative to an established benchmark… CQI, in contrast, is a proactive methodology which, while using sophisticated statistical methods and technological platforms, entails (ideally) a corresponding culture change. Ongoing improvement, rather than attainment of a static benchmark, is the guiding impetus of CQI (Stratton, 2019, p. 759).*

The implications of this cultural change can be seen as an expectation for programmes to be 'in constant conformity with accreditation standards', rather than 'resorting to cyclic episodes of observance' (Wilson, 2007), or regarding accreditation as an 'exam to be passed' (Alrebish, Jolly, & Molloy, 2017). This notion of a necessary cultural shift is fundamental to successful implementation of a CQI model of accreditation, as discussed below in relation to the evidence base.

Current evidence about a CQI approach

Research evidence for the efficacy of a CQI approach to accreditation is, at this stage, limited. Much of the research in this area had been conducted in a single context (Canadian undergraduate medical education programmes) by Blouin and colleagues, who have argued that the degree to which medical programs adopt a CQI approach might be used as an index of the effectiveness of accreditation and also as a measure of the quality of graduates (Blouin, 2020; Blouin & Tekian, 2018). Ongoing self-evaluation as part of CQI means that information related to the accreditation standards is gathered regularly and may inform accreditation requirements without leading to duplication (Barzansky et al., 2015). Yet, ongoing quality improvement activities can sometimes be regarded by programme staff as burdensome and a distraction from (rather than a contributor to) quality teaching (Blouin & Tekian, 2018). Moreover, ongoing quality improvement activities required for accreditation are not always recognised as quality improvement and may not always be undertaken (Blouin, 2019). There are important contextual features of organisations that may promote a culture focused on CQI. Barzansky et al. (2015) identify the importance of institutional leadership in supporting a CQI approach, but noted that this support is variable across organisations. These authors also note that a CQI approach is effective in medical schools that undertake regular review of their compliance with accreditation standards and act on these findings without waiting for a scheduled accreditation (Barzansky et

al., 2015). Blouin and Tekian (2018) also argue for the importance of leadership support and an organisational structure that supports CQI, sufficient resourcing for CQI activities, and engaging programme staff to use data to improve their programs. Yet most medical schools in Blouin, Tekian and Harris' (2019) study did not 'naturally' exhibit organisational characteristics that were necessary to support a CQI approach.

We did not encounter explicit discussions about a CQI approach to accreditation in the veterinary education literature, although the promotion of a programme improvement focus as part of other accreditation approaches was frequently mentioned and endorsed (e.g. Barzansky, 2004; Craven, 2009; Kochevar, 2004).

4. RISK-BASED MODELS

Like the CQI model, the main point of distinction for risk-based approaches to accreditation is not the component methods, but rather the way they are applied. With a longer history of use in institutional accreditation, a risk-based approach draws on the concepts of regulatory risk and proportionality, distributing regulator attention and resources to programmes most in need of such activities. As described by one regulator: '*Areas of concern identified through scanning activities are analysed and evaluated against a range of 'likelihood' and 'impact' measures to produce a list of systemic risks prioritised for [intervention]*' (ASQA, Regulatory Risk Framework, 2016, p. 5). This approach avoids a mandatory accreditation cycle; instead, it utilises lower-burden approaches such as regular but brief reports and longer accreditation cycles, only escalating to more demanding and explicit QA when or if the programme, or areas within it, appear to be at risk of not meeting the standards. 'Scanning activities' usually translate into other QA data available through other means (i.e. not supplied by the programme), or smaller and more regular reports from the programme, in the context of a longer accreditation cycle and site visit.

Arguably the highest profile accrediting body which has adopted a risk-based approach is the GMC, who describe this approach in the following manner:

> *The GMC accepts and endorses the principle of risk-based regulation. [Other quality assurance activities]… provided a wealth of data and a useful, recent picture of the state of undergraduate medical education and foundation training. The GMC is using the outcomes of these programmes to set a baseline for risk assessment. Risk assessment against such a baseline allows us to direct regulatory resources where they can have the most impact (GMC, 2010, p. 12)*

Many benefits are proposed for a risk-based approach to accreditation, with efficiency being a major one, for both accreditors and programmes. Proponents claim that this approach allows accreditors to channel resources into programmes that may be underperforming, identifying and ideally supporting them in a timelier manner than fixed-cycle accreditation (Colin Wright Associates, 2012; Griffin et al., 2018). The approach also aligns with a general shift towards minimising the 'regulatory burden', both financially and substantively (Lloyd-Bostock & Hutter, 2008). In other regulatory environments this approach is often referred to as 'right touch' regulation, as in the following example:

> *Right touch regulation is based on a proper evaluation of risk, is proportionate and outcome focussed; it creates a framework in which professionalism can flourish and organisations can be excellent (Professional Standards Authority, 2018).*

Although the risk-based approach is relatively new within the accreditation research literature (with very few empirically-based studies at this point), elements of the approach can be seen in the practise of other accrediting bodies, without being specifically identified as a risk-based

approach. For example, in the ACGME context a similar approach is described in the outline of the outcomes-based NAS model:

> *The NAS moves the ACGME from an episodic "biopsy" model (in which compliance is assessed every 4 to 5 years for most programs) to annual data collection. Each review committee will perform an annual evaluation of trends in key performance measurements and will extend the period between scheduled accreditation visits to 10 years… Programs that demonstrate high-quality outcomes will be freed to innovate by relaxing detailed process standards that specify elements of residents' formal learning experiences (e.g., hours of lectures and bedside teaching), leaving them free to innovate in these areas while continuing to offer guidance to new programs and those that do not achieve good educational outcomes (Nasca et al., 2012, p. 1052).*

In the Australian medical context, elements of a risk-based model are represented by a 'major change' clause:

> *The possible outcomes of a major change assessment are different from those following a re-accreditation of an established medical school. In the latter case, the maximum outcome is 10 years' accreditation, administered as an initial six year period with the potential for a four-year extension following the submission of a satisfactory comprehensive report in year five. In the case of a major change assessment, accreditation of the new or revised course may be granted for a period up to two years after the full course has been implemented, subject to any conditions being addressed within a specific period of time (Field, 2011, p. 2).*

The risk-based model of accreditation is currently more commonly seen in higher education and healthcare contexts than in professional accreditation, although there are clear signs that programme-level accreditors are interested in the potential of this approach. For example, a recent forum in Australia between the national Tertiary Education Quality and Standards Agency and a number of professional accreditation bodies actively explored this approach as a major theme (along with reducing duplication in accreditation) (TEQSA, 2018). Nevertheless, commentators have identified a number of important limitations and disadvantages with a risk-based approach, which are not easily mitigated. The main ones include: the reliance on and challenge of obtaining 'good data'; the challenge of accurately weighing or gauging risk, without oversimplification; and the often hidden element of risk assessments being value-laden, as captured by the term 'acceptable risk' (Lloyd-Bostock & Hutter, 2008). Other commentators also argue that it can be difficult for some programmes not to feel targeted by this approach, relative to other programmes. They may regard a full accreditation visit as 'punitive', with all the negative consequences which such a connotation would produce, such as undermining an improvement focus or more collaborative approaches to QA (Griffin et al., 2018). On the other hand, it could be argued that professional education settings (as opposed to healthcare) are likely to constitute a lower public risk (or at least a less proximal one), and that these issues around the nature of risk may be less problematic.

The availability and collection of dependable data is paramount for the risk-based approach. As one accrediting body has argued:

> *'Effective accreditation processes rely on collection of accurate data and information to bring objectivity and rigour to processes… A key trend in accreditation in Australia and internationally is the strengthening of collection and analysis of data on which accreditation related-decisions are based. This entails reviewing of accreditation data collections as accreditation standards are reviewed, negotiating access to relevant data held in other systems…, and advocating for or commissioning new data collections. (Australian Medical Council, in AHMAC, 2017, p.60).*

In some contexts, risk-based accreditation is supported by a 'shared evidence' approach to data collection, that is, relevant data about a programme is obtained from other stakeholder organisations, and/or collaborative site visits, in order to improve the available information for a risk assessment. As articulated by the GMC (2010), the purpose of shared evidence is primarily to identify areas of risk that need further investigation, 'triangulate' or verify the evidence provided by programmes, and identify trends or patterns which may lead to more targeted checks. While one of the purported benefits of shared evidence is to minimise the assessment burden on programmes, some have noted problems with this approach, in particular the possible use of 'stale' data or using data collected for a different purpose (Lloyd-Bostock & Hutter, 2008).

In sum, a risk-based approach offers the potential to allocate accreditation costs and resources to programmes (or parts of programmes) that require greater monitoring, as well as to 'streamline the reporting requirements associated with the annual monitoring and periodic comprehensive reviews' (AHMAC, 2017, p.62). What seems to define this particular model is not a unique methodological approach, but a variable combination of common methods guided by, or implemented within, a particular (risk-focussed) philosophy.

Current evidence about risk-based models

We found one review (Edwards, 2012) of the evidence for a risk-based approach to quality assurance (in the higher education context), based on analysis of available case studies and secondary sources (i.e. non-empirical literature), which concluded that, despite great enthusiasm for the approach, empirical evidence proving the benefits of risk management was 'quite scarce'. Further, the author noted that there was at best only 'scant' evidence for a relationship between a risk-based approach and enhancement of quality in education.

We found two empirical papers and one commentary that provide evidence for risk-based approaches to accreditation. These papers focused on specific elements of the accreditation approach common to other accreditation models, but which were used in a risk-based framework as part of the requirements for different programme providers. Crampton, Mehdizadeh, Page, Knight and Griffin (2019) explored stakeholder perceptions of the GMC Quality Assurance Framework as part of a realist evaluation, and identified both intended and unintended consequences of the framework. The framework improved the transparency of reporting quality improvement outcomes, encouraged a partnership approach and an exchange of feedback between programmes and accrediting bodies, and improved role clarity in conducting interventions proportionate to risk. Stakeholders identified the GMC Standards as an effective means to promote programme change, although there was occasional confusion resulting from unclear or inapplicable standards. There was also a perception through risk-based visits that the accreditor prioritised QA above programme enhancement. The process of institutional self-assessment for accreditation purposes was seen as encouraging reflection and change to processes; however, the written assessment was also seen by some as too formal, onerous to prepare and unlikely to encourage open disclosure. The authors proposed a conceptual model for understanding how the GMC accreditation process may lead to positive or negative outcomes dependent on characteristics of the context. Positive outcomes were suggested to be more likely in contexts that adhered to the framework and exhibited openness, trust, effective communication (internally and with the regulator) and where a QA approach was prioritised. In contrast, negative outcomes were more likely when there was institutional or faculty resistance to external accreditation and where communication and stakeholder relationships were poor, where there were unclear boundaries and responsibilities, and where there was a lack of feedback on QA.

Risk-based approaches to accreditation also appear to significantly reduce the burden of reporting for accreditation purposes. For instance, in the US postgraduate medicine context, Philibert et al. (2013) describe the implementation of a new system for reporting annually on

scholarly activity for residents implemented in the context of a risk-based accreditation system. Reporting was streamlined and simplified and the overall burden of data collection was reduced. Moreover, the system allowed for timelier follow-up for programs that were experiencing difficulties, whereas high-performing programs had less oversight and more time between accreditation visits. In a separate pilot version of the risk-based approach (Sweet et al., 2014), many participants in the Education Innovations Project (a 10-year pilot of a risk-based approach to accreditation of postgraduate medical programs in the Unites States) perceived the annual reporting required as part of the project as challenging; however, this perception was largely confined to the initial years of the pilot. Overall, programme directors in the pilot believed that there were significant benefits to the new model, especially the requirement to collaborate and share ideas with other programme directors for the purposes of accreditation, and the encouragement to foster culture change within their programs. There were, however, increases in costs reported through participating in the pilot, which included additional staff time and/or the need to hire new staff, including a dedicated coordinator and QI specialists, additional travel expenses (especially in relation to the collaboration component), and information technology support expenses.

We did not find any papers which reported on the use of an explicit risk-based approach to accreditation in the veterinary education context, although, as we discuss below under 'Hybrid approaches', elements of a risk-based approach may well be embedded in the implementation of other approaches to accreditation.

5. THEMATIC QA

Another emerging approach to accreditation, closely associated with a risk-based approach, is termed 'thematic QA'. This involves a targeted review of a particular area of professional education across programmes. The resultant process has been described as 'bespoke and proportionate to the themes or risks identified' (Griffin et al., 2018, p. 58).

This approach is used by the GMC (in conjunction with risk-based QA) to consider specific aspects of medical education across undergraduate and postgraduate education, resulting in wide-ranging judgements on the quality of delivery of that aspect. The results, and examples of best practice, are then shared with programmes with a view to quality improvement across the sector. Themes are often determined by issues raised by stakeholders or identified through data collected through accreditation of particular programmes, including the outcomes of visit reports, surveys, and targeted analysis of programme reports (GMC 2010; Colin Wright Associates, 2012). The concept of 'conditional accreditation' may also align with thematic QA, since certain areas (themes) may be identified for further reporting even though the programme as a whole is accredited, pending further evaluation.

A thematic approach is also identifiable from the abovementioned review of Australian Health Professional Accreditation systems (AHMAC, 2017). One submission to the review notes:

> *Monitoring outcomes and notifications data could be used to identify specific risks requiring more specific engagement with the provider and other key stakeholders. For example, clusters of notifications that relate to specific programs of study or providers could inform specific monitoring or themes in notifications that identify aspects of practice [which] could be highlighted to education providers (p.60).*

Here, the identified risks are used to identify areas which may need particular monitoring by the accreditation bodies across the professional education sector.

A key advantage of thematic QA would appear to be the opportunity to identify issues that may not be identified through sequential and individual programme reviews, especially when these are conducted by different site teams. It is reported that themed inspections are viewed

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favourably by education providers as they are not perceived as 'singling out' particular programmes, but are rather sector-wide and improvement focussed (Colin Wright Associates, 2012). It has also been suggested as a useful way of keeping 'high performing' programmes engaged in the accreditation process in a proportionate QA environment, in which they may be subjected to less direct observation.

Current evidence for thematic QA

We found no empirical literature that explicitly discussed the use of thematic approaches for professional accreditation. However, we did identify several papers which appeared to consider the potential of this approach without explicitly naming it as such, by exploring the potential impact of accreditation on particular curricular elements, such as clinical supervision (Hutchins, 2016; Romig, O'Sullivan Maillet, Chute, & McLaughlin, 2013), interprofessionalism (National Academies of Sciences, Engineering and Medicine, 2016), evidence-based practice (McEvoy, Crilly, Young, Farrelly, & Lewis, 2016), and indigenous education/cultural safety (in the Australian/New Zealand context; Field, 2011). The most common theme we found was social accountability and the accreditation process, with several commentators arguing for explicit direction in accreditation standards to programmes on the necessity to include this topic in the curriculum (Abdalla, 2014; Australian Pharmacy Council, 2018; Boelen & Woollard, 2009; Cooper, Parkes, & Blewitt, 2014; Lindgren, Karle, Stefan, & Hans, 2011). However, the studies we found stopped at this point – effectively an inputs-based approach to accreditation – without attempting explicitly to address the issues through a thematic QA approach.

6. HYBRID APPROACHES

Although we have considered each accreditation model separately, it is important to remember that the models actually overlap, and that many implementations of accreditation contain elements, or rationales, characteristic of different models. The risk-based approach, in particular, draws on methods of collecting data common to other approaches, as outlined in the following description:

> *[R]isk-based visiting was reported to position the regulator as quality assurer rather than an organisation supporting quality enhancement and this could have further negative impact upon relationships. Enhancement-led approaches prompting organisational autonomy may negate the need for more labour-intensive activities. Therefore, collectively considering a hybrid model of cyclical plus risk-based visiting may help to build provider relationships and drive improvement while also ensuring minimum standards (Griffin et al., 2018, p. 43).*

The practical consequence of this can be seen in the way that a programme's risk is evaluated. For example, the Australian Tertiary Education Quality and Standards Agency (TEQSA) utilises a risk-based approach to institutional accreditation, and determines such risk by focussing on four key areas: regulatory history and standing; student load, experience and outcomes; academic staff profile; and financial viability and sustainability (TEQSA, 2019), demonstrating a clear mix of input and outcomes approaches within an overall risk-based system. Similarly, as one commentator on the ACGME Next Accreditation System notes: 'the accreditation system after the Next Accreditation System is likely to continue to require compliance with certain structural and resource-based standards' (Nasca et al., 2014, p. 29).

Similarly, although we have identified from the literature the view that CQI constitutes an identifiable model of accreditation, it is clear that it can co-exist with any of the other models of accreditation, in terms of the articulation of its standards, or the frequency or focus of its site visits. This nuanced and hybrid approach to accreditation suggests a contextualised and responsive process, and can be seen in the practice of various accrediting bodies. For example, the AMC declares that:

an outcome-based approach to health professional education compared to a process/content orientation is not an 'either or' proposition: a complete separation of process/structure and outcome in education program design would be artificial and may not provide for in-depth integrated programme development nor be readily measurable by accreditors in their quality assurance processes (Phillips KPA, 2017, p. 62).

These examples are an important reminder of how the shift from an input-approach to more recent outcomes, QI and risk-based approaches is not strictly 'evolutionary', as described or implied by many commentators. Rather, it is often more circumstantial, and triggered as much by pedagogical developments and contextual changes as by the evidence base. As one stakeholder writes of their institution's move to a risk-based quality assurance process:

(We) pursued this course of action for pragmatic reasons, based on sound quality principles, with a staged approach, informed by regular meetings with stakeholders, and genuine attempts to respond to their feedback through an ongoing series of improvements (Towers, Alderman, Nielsen, & McLean, 2010, p. 122).

The example of social accreditation discussed above under thematic QA offers another example of how different models can co-exist in accreditation. An accrediting body may become aware that social accountability may be under-emphasised in a programme, conduct a (sector-wide) thematic analysis, identify good practice to share with all programmes, and consider embedding the social accountability requirement explicitly (and proactively) in its standards, as either course inputs or outcomes to demonstrate, or a combination of both.

In terms of empirical evidence, several of the studies included and extracted for this review incorporate a hybrid approach to accreditation, rather than a 'pure' single model approach. For instance, the residency programs in Philibert et al.'s (2013) study reported against scholarly outcomes on an annual basis in the context of a risk-based accreditation system. Meanwhile, Crampton et al. (2019) reported on the implementation of a risk-based accreditation system that required regular reporting against specific programme outcomes. Information gathered to demonstrate compliance with accreditation standards commonly incorporates a mix of inputs, processes and outcomes (van Zanten & Boulet, 2013). As we have seen, CQI accreditation approaches also require programmes to regularly gather information that may be oriented towards measuring the outcomes of the programme (Barzansky et al., 2015). Finally, one more example of such hybrid approaches comes from a recent report for the higher education sector (CHEA, 2018). This report identified ten emerging or potential approaches to QA, yet each one relies heavily on outcomes, both graduate and programme-based, as the prime basis for judgements about course quality. Such heterogeneity and overlap in accreditation practice adds to the challenge of extracting definitive evidence for a particular approach from the relatively small number of empirical studies in the accreditation literature.

SUMMARY AND CONCLUSIONS

Our review of the literature of professional accreditation models has highlighted a clear shift in the focus of the literature from input- and process-based models (pre- and early 2000s), through outcomes-based models (dominating much of the literature of the 2000s and early 2010s), to more recent literature focussing on CQI and risk-based models (with emerging models such as 'hybrid' and 'thematic QA' reflected in recent grey literature). This narrative applies especially to the accreditation literature of the medical and health professions. The view that these approaches reflect an 'evolutionary' development i.e. as successive approaches or stages of accreditations in response to changes in education practice and/or programme evaluation theory, is not only implied by the pattern of references we identified, but also explicitly reported by several commentators, particularly Fishbain et al. (2019).

This is essentially a 'paradigm shift' (Kuhn, 1962) view of accreditation practice; a model is proposed, accepted and adopted; issues arise which raise questions about the efficacy or validity of the model; alternative models are considered and gradually replace the previous model; and the process continues. This interpretation helps make sense of the changes we have noted in the accreditation literature. However, it may be misleading if it is taken to mean that previous models, and their associated methods, are no longer applicable or valid. As we have seen, especially in relation to CQI, risk-based accreditation, thematic QA and hybrid models, subsequent approaches still rely on the methods of previous approaches to convey expectations (standards), to promote programme responsibility and autonomy (self-study), to collect and/or verify data (site visits), or to determine the ultimate quality of a programme (through student outcomes). It is the configuration, purpose and underlying philosophy that ultimately distinguishes one model from another. For this reason, we believe the different accreditation models are best viewed as changes of emphasis dependent on context, professional requirements, or specific issues in professional practice, rather than as clearly distinguishable models or definitive advances in practice.

Nevertheless, it is clear from our review that the studies we identified as empirical, and thus providing the strongest evidence base for accreditation practices, tend to be clustered within the last five or so years, published in high-ranking (usually medical education) professional journals, and are focussed on outcomes, CQI and/or risk-based approaches to accreditation. We refer specifically to the extracted papers by: Alrebish et al. (2017), Barzansky et al. (2015), Bell and Youngs (2011), Blouin as sole author (2019, 2020) and lead author (Blouin & Tekian, 2018; Blouin et al., 2018; Blouin et al., 2019), Crampton et al. (2019), Fishbain et al. (2019); Philibert et al. (2013); Sweet et al. (2014); Tackett et al. (2019); and Volkwein et al. (2007). Clearly the number of empirical studies of accreditation models is relatively small, as noted by several commentators and researchers.

One commentator (Edwards, 2012) has further identified an inevitable lag between implementation and research in her review of evidence for a risk-based approach, noting that: 'it seems inconceivable that the literature is still to catch up more than fifteen years later' (p. 305). Our review of the accreditation literature also found minimal empirical evidence for accreditation models or practice. Accreditation has been a topic of great interest in academic journals, but the nature of the literature continues to be largely non-empirical, comprising commentaries, descriptions and/or anecdotal reports of programme experiences, despite the many appeals for further research on the topic. Certainly the wider accreditation literature does appear to need to 'catch up', as the bulk of the literature is focussed on the traditional inputs/process model and outcomes-based approaches, which places it to some extent at odds with more recent accreditation practices, especially as reflected in the medical and health professional education field.

There are other challenges when drawing on the accreditation literature to guide practical choices around accreditation models. Much of the literature about the impact of models of accreditation is often contradictory. Apparently similar accreditation approaches can result in very different experiences of the process. Another challenge is the heterogeneity of the evidence base. The literature we reviewed reported accreditation models which presumably differed not only in their implementation, but also across programme, institution, profession, accreditation regime, country or continent. An important factor we identified was accreditation that took place in the context of voluntary accreditation (e.g. Volkwein et al., 2007). Such contextual differences pose significant difficulties for drawing strong conclusions about apparent benefits or the impact of accreditation across different settings.

These findings suggest that a focus on *principles* of accreditation practice may provide more appropriate benchmarking and guidance to accrediting bodies than seeking evidence of the 'best model' in the empirical literature. Importantly, such an approach provides scope for some of the hybrid approaches identified in the literature, which guide and influence the selection and arrangement of accreditation activities and methods. An example can be seen in the GMC's Principles of Better Regulation, which identifies Proportionality, Accountability, Consistency, Transparency and Targeting as the five underlying principles of its risk-based accreditation model. Similar principles underlie the increasing popularity of the "right-touch" approach to accreditation, which is normally associated with a risk-based approach, but can be used to cover methods and principles generally associated with other non risk-based models. An example of the latter is the high level accreditation principles of the Australian Health Professions Accreditation Councils' Forum (as reported by Phillips KPA, 2017, p. 49), which contain elements of risk, CQI and outcomes-based approaches:

- We will use a "right-touch" approach to accreditation.

- We will develop accreditation standards that give priority to outcomes and results, and encourage improvement and innovation in education programs.

- Where possible, we will build common approaches to accreditation standards and processes, while maintaining our own profession-specific requirements.

- We consult our education providers on accreditation processes and procedures.

A principles-driven approach may supplement the practical and theoretical limitations of the empirical evidence base through critical analysis, reflective practice and transparency as important supports for the validity of accreditation processes. Importantly, this approach allows accrediting bodies to choose from a number of available models, or combination of models, to best suit the particular professional context, and/or help justify different approaches that might be warranted for different programmes. Several recent reports and forums on programmatic accreditation appear to document a growing sense of collaboration, flexibility and transparency among the major stakeholders (e.g. AHMAC, 2017; Colin Wright Associates, 2012; Griffin et al, 2018; Phillips KPA, 2017; TEQSA, 2018).

Overall, we find that the current evidence surrounding accreditation models offers small but significant support for an accreditation model that remains focussed on outcomes, incorporates a strong orientation towards programme improvement as part of the accreditation requirements, and adopts a principle of risk-based accreditation in recognition of the quality of established programmes, and the potential lower resource demands on programmes. However, it must be noted that this conclusion is essentially based on the Anglophone literature, predominantly in medical and health professions contexts, which dominated papers we classified as empirical.

In relation to the main themes required to be addressed as part of the study, we draw the following conclusions from the review of the accreditation literature:

1. We identified several broad models in the accreditation literature, generally recognised as representing different but relevant approaches to professional accreditation: input and process-based; outcomes-based; continuous quality improvement; risk-based, theme-based, and hybrid approaches.

2. Each model utilises similar methods, namely explicit standards, self-study, site visits, and data collected by other means. To a large extent, differences between models resulted from a different focus or emphasis in the design and/or implementation of the component methods. For example, a risk-based approach still uses the site visit, but in a non-cyclical or fixed pattern.

3. Each model is recognised in the literature as having certain advantages and disadvantages, whose impact appears to be strongly contextual and implementation-dependent. However, there is a clear shift towards greater endorsement of outcomes-based and risk-based approaches in more recent literature.

4. There is a tendency in the literature to see an evolutionary process of development of these accreditation models i.e. as successive approaches or stages of accreditations in response to changes in education practice and/or programme evaluation theory. This is explicitly suggested by several commentators, particularly in the field of medical education accreditation. However, actual accreditation practice and models are more complex and overlapping than this view suggests.

5. The empirical evidence base for accreditation practice across all professional education programmes is very limited; the literature is dominated by commentaries, uncritical descriptions of accreditation process, and anecdotal accounts about a programme's experience with accreditation. The small empirical base, despite frequent calls for further research, seems related to the fact that the implementation of accreditation is highly context-dependent, which in turn lends itself more readily to descriptions and commentaries.

6. Reports of the impact of a particular accreditation model on a programme are often contradictory, which may be due to variations in implementation. The details to distinguish differing features of implementation are rarely provided in the empirical literature, contrasting with much of the non-empirical literature, which is strongly focused on detail, but not empirical analysis.

7. The dominance of the field of medical education in the empirical literature may be due to the greater resources generally available for medical education compared to other professional education areas, supported by formal departments of medical education and related academic activities. It may also reflect the longer history of regulation and registration in medicine, and the high demand for global mobility of graduates.

8. Much of the literature from other professions (e.g. business, teaching, engineering) focuses on accreditation as a homogeneous concept without differentiating between models. This is partly because early implementation of accreditation within a professional sector tends to be input or process-based almost by default, and partly because the prominent concern is the decision about being accredited in an environment where accreditation is optional. Hence, this literature focuses on the benefits of accreditation in general and as a whole, rather than on different models.

9. Recent literature increasingly endorses risk-based models of accreditation, particularly in association with a QI focus and institutional contexts, although the grey literature also documents a recent growing interest in the approach from professional accreditation bodies. Reception to risk-based models is generally positive from programme stakeholders, citing reduced burden of reporting and analysis. However, there is some contradictory evidence, and a realist evaluation of one application of this model noted that either positive or negative outcomes were possible under the model, depending on the implementation and context.

10. A related development alongside the adoption of CQI and risk-based models has been the release of explicit principles of accreditation, which not only justify the approach adopted, but also allow a certain flexibility of the actual implementation and methods of the accreditation process, consistent with those principles.

11. Taken as a whole, the literature reflects a situation in which accreditation models overlap and draw on common methods of data collection, although with an increasing emphasis on outcomes, quality improvement, and risk-based approaches or proportionate requirements. Nevertheless, even other recently emerging models of accreditation/QA in the institutional context (see CHEA, 2018) still rely heavily on outcomes as the prime basis for judgements about course quality, once again highlighting the hybrid nature of current accreditation practices.

APPENDIX 1: DATA EXTRACTED FROM INCLUDED STUDIES

Table 1 Main characteristics of each empirical study

	Population		Context			
Author (year)	**Perspective**	**Country**	**Professional context**	**Accreditation model**	**Research method**	**Aim**
Alrebish et al. (2017)	Multiple stakeholders (students, program staff, deans, vice deans)	Saudi Arabia	Undergraduate medical programs	Not specified (appears input-based)	Document analysis of self-study and site visit reports, stakeholder interviews and focus groups	To assess the impact of accreditation visits using document analysis, stakeholder perspectives and examination results as indicators of school performance.
Baker et al. (2004)	Allied health deans and program directors	United States	Undergraduate allied health	Input-based	Quantitative survey	To assess participant perspectives on accreditation related to purpose, effectiveness, process, and critique and reform.
Barzansky et al. (2015)	Accreditation processes (from improvement-focus perspective)	International	Undergraduate medical programs	Continuous Quality Improvement	Case studies	To identify factors that influence the implementation of a CQI process and approach to accreditation.
Bell & Youngs (2011)	University faculty and administrators	United States	Teacher preparation programs	Outcomes-based	Document analysis of accreditation reports and policy documents, stakeholder interviews	To investigate responses to accreditation policy in one US state through interviews with participants and document analysis.
Bezuidenhout (2007)	Experts in medical education involved in accreditation processes	South Africa	Undergraduate medical program	Input-based	Stakeholder interviews and focus groups	Investigation of the perceived value of a measurement tool to guide accreditation panel judgements of medical education programmes
Blouin (2020) (Canadian medical schools)	Program leaders and teachers	Canada	Undergraduate medical programs	Continuous Quality Improvement	Questionnaire	Sought to identify markers for accreditation effectiveness through interviews with program staff from undergraduate medical programs.

	Population		Context			
Author (year)	Perspective	Country	Professional context	Accreditation model	Research method	Aim
Blouin (2019) (vision meets culture)	Program leaders and teaching faculty	Canada	Undergraduate medical programs	Continuous Quality Improvement	Questionnaire	A survey research study exploring respondents' views on quality improvement practices at their medical schools.
Blouin & Tekian (2018) (From Outcomes to CQI)	Accreditation models	Canada	Undergraduate medical programs	Continuous Quality Improvement	Conceptual	Argues for a model of accreditation which emphasises continuous quality improvement (CQI) culture. As such, indices of CQI orientation at accreditation could act as a marker of the quality of graduates.
Blouin et al. (2018) (impact of accreditation)	Program faculty	Canada	Undergraduate medical programs	Program processes influenced by accreditation	Interviews and focus group discussions	Explored the impact of accreditation through participants' perceptions of the impact on organisational processes.
Blouin et al. (2019) (promoting quality culture)	Program faculty	Canada	Undergraduate medical programs	Continuous Quality Improvement	Questionnaire (organisational culture instrument)	Investigated whether the culture of Canadian medical schools supported the implementation of CQI systems.
Bowker (2017)	Multiple stakeholders (program coordinators, external reviewers, committee members)	Canada	Occupation Therapy and Social Work	Not specified (appears input-based)	Case Study	Reports on two case studies of efforts by educational programs in Canada to align institutional quality assurance processes with the requirements of external accreditation.
Chandran et al. (2013)	Program staff	United States	Undergraduate medical program	Outcomes-based	Case Study	Describes a process of planning for, undertaking and following up after an accreditation visit at one undergraduate US medical program.
Crampton et al. (2019)	Multiple stakeholders familiar with the GMC Quality Assurance Framework	UK	Medical Education – undergraduate and postgraduate	Outcomes- and risk-based	Interviews / Realist evaluation	Conducted interviews with stakeholders in medical school accreditation about the GMC Quality Assurance Framework, to identify which components of the framework work, for whom, under what conditions and how.

	Population		Context			
Author (year)	Perspective	Country	Professional context	Accreditation model	Research method	Aim
Davis (2018)	Accreditation process	United States	Nursing education	Input and outcomes-based	Conceptual	Argues that programmatic accreditation is a stressful process and employs Neumann's Systems Model to propose primary, secondary and tertiary interventions to buffer against the stress of accreditation.
Davis & Ringsted (2006)	Accreditation model	North America	Medical education	Outcomes-based	Review	Reviews the evidence for the links between accreditation and accreditation standards and program outcomes, including graduate performance and program quality in the context of medical education increasingly adopting outcomes-based educational approaches.
de Paor (2016)	Accreditation reports	Ireland	Undergraduate Pharmacy programs	Input-based	Case Study	Investigates whether external accreditation can complement institutional quality assurance activities through an analysis of professional accreditation reports for pharmacy programs to identify the priorities of the regulator for the quality assurance standard.
Eiff et al. (2014)	Accreditation decisions	United States	Residency training programs in Family Medicine	Outcomes-based	Document analysis (accreditation decisions)	To determine whether the length of accreditation cycles or the number of citations changed for programs undertaking an innovation in the training of family physicians.
Feist et al. (2017)	Program coordinators	United States	Child Neurology residency programs	Outcomes-based	Survey	Explored the impact of implementation of the accreditation system on program coordinators and sought to identify success factors in implementation.

	Population		Context			
Author (year)	Perspective	Country	Professional context	Accreditation model	Research method	Aim
Fishbain et al. (2019)	Accreditation systems	International (Canada, Germany, Israel, UK, United States)	Postgraduate medical education	Multiple (input, process and outcomes)	Case studies/Review	Cross-country comparison of accreditation systems of five countries, based on three information sources: literature review, accreditation documentation from accreditors (online), and direct approach for information from ABs
Fox Garrity & Finney (2007)	Accreditation standards	United States	Physician assistant and business management programs	Input/Process vs Outcomes-based	Document analysis (standards)	Explored whether the accreditation standards for specialised accreditation of a licensed profession (physician assistant) were more outcomes based than for a non-licensed profession (business management)
Frank et al. (2012)	Accreditation systems	UK, Poland and Germany	Urban, regional and spatial planning	Multiple (input, process and outcomes)	Conceptual and Case Study	Describes institutional and programmatic accreditation requirements in three countries for urban, regional and spatial planning programs.
Lurie et al. (2009)	Assessment modalities in the context of ACGME competencies	United States	Postgraduate medical programs	Outcomes-based	Systematic review	To evaluate published evidence that the ACGME's six general competencies can each be measured in a valid and reliable way
Ostwald, Williams & Fuller (2009)	Academics	Australia, New Zealand and Papua New Guinea	Architecture	Input and process-based	Survey/Interviews/Focus groups	Mixed methods study focused on gathering the perspectives of architecture academics on program accreditation and its impact on the curriculum.
Philibert et al. (2013)	Scholarly activity under different accreditation models	United States	Postgraduate medical programs	Hybrid (outcomes and risk-based)	Document analysis	Describes the process of moving towards annual reporting of scholarly activity for residents in a new accreditation system, rather than only reporting in preparation for accreditation site visits.

	Population		Context			
Author (year)	Perspective	Country	Professional context	Accreditation model	Research method	Aim
Sellars & Clouder (2011)	Clinical educators	UK	Physiotherapy	Not specified	Focus groups/Questionnaires at two intervals	Describes the perspectives of clinical educators of the impact of preparing for an accreditation process, which could be undertaken through a teaching program or through a portfolio experience.
Sweet et al. (2014)	Program directors	United States	Postgraduate medical programs	Risk-based	Telephone interviews	Described the experiences of program directors who were participating in a 10-year pilot project to test a risk-based approach to accreditation of internal medicine training programs.
Swing (2007)	Accreditation model	United States	Postgraduate medical programs	Outcomes based	Conceptual	Analyses impact of implementation of the Outcome Project by the ACGME, which focuses on programs demonstrating graduate competencies and gathering outcomes data to report on the achievement of these competencies.
Tackett et al. (2019)	Accreditation literature	International	Undergraduate medical programs	Not specified or limited	Systematic review	To investigate and summarise the state of evidence for UME accreditation practices.
van Zanten & Boulet (2013)	Accredited programmes outcomes	United States	Undergraduate and postgraduate medical programs	Unspecified (but investigated in relation to outcomes)	Quantitative analysis	Quantitative, comparative study of USMLE clinical skills pass rates for IMGs in the United States by medical school accreditation status
van Zanten et al. (2012)	Accredited programmes outcome	Mexico and the Philippines	Undergraduate and postgraduate medical programs	Unspecified (but investigated in relation to outcomes)	Systematic review	Quantitative, comparative study of USMLE pass rates and medical school accreditation status

Population			Context			
Author (year)	Perspective	Country	Professional context	Accreditation model	Research method	Aim
Volkwein et al. (2007)	Multiple stakeholders (students, graduates, faculty members and program chairs).	United States	Engineering programs	Outcomes-based	Quantitative analysis	Comparative study of pilot/early, on-time and deferred adoption of accreditation criteria using survey research methodology
White et al. (2013)	Multiple stakeholders (senior leadership, course directors, administrators)	Canada	Undergraduate medical programs	Input/Process-based	Interviews	Describes the process of implementing a major, rapid change in a medical curriculum in response to an adverse accreditation report.

Table 2 Data relating to impact on programmes and stakeholders

Author (year)	Focus of study	THEME: impact on programmes and stakeholders
Alrebish et al. (2017)	Self-evaluation /Site visit / Report	Many faculty approached the self-study with a 'passing the exam' approach, rather than view it as part of ongoing quality improvement. Generic accreditation standards were felt to be considerably less relevant and useful than programme-specific standards. The ongoing improvement element of accreditation appeared to be downplayed by school leadership during training for the site visit.
Baker et al. (2004)	Self-evaluation / Site visit	Both allied health deans and program directors agreed that accreditation provided a system for assuring quality and a process for improving the quality of their programs. All supported the process of peer evaluation as a strength of specialised evaluation. However, Deans expressed greater concern on items related to the costs of accreditation, duplication of effort and coordination, whereas program directors were more concerned about the purpose, process and effectiveness of accreditation.
Barzansky et al. (2015)	Continuous Quality Improvement culture	Comprehensive information related to the accreditation standards can be gathered regularly and can inform both a formal accreditation response and continuous improvement of individual programs. As a result, there is no duplication of effort required to meet accreditation requirements.
Bell & Youngs (2011)	Outcomes-based processes	Many teachers responded to accreditation requirements by revising and re-aligning their programmes, including greater emphasis on assessment approaches and implementation of data collection systems, in order to better measure candidates' progress. Some programs created new assessments, while others adapted those that already existed to meet accreditation requirements. Some teachers described less meaningful or symbolic responses to accreditation, where accreditation requirements were complied with without substantial change to the program itself. Authors note the potentially highly contextual nature of these teachers' response to accreditation policy and practice.
Bezuidenhout (2007)	Site visit (guidelines for panel)	Participants reported that the current process of the site visit was perceived to be highly subjective and inconsistent, due to the absence of any guiding criteria and training. This led to an element of fear and uncertainty when conducting the site visit or producing the report. The proposed guide was perceived to offer greater objectivity and structure and was expected to help ensure consistency and defensibility of panel judgements about the quality of a programme.
Blouin (2019) (vision meets culture)	Continuous Quality Improvement culture	Accreditation standards explicitly embed the requirement for Quality Improvement practices to monitor and improve medical programs in Canada. However, program staff do not always recognise such externally mandated processes as Quality Improvement activities. Quality Improvement activities independent of accreditation are largely not undertaken or are not recognised as Quality Improvement. Quality Improvement approaches were not well disseminated and were not identified as Quality Improvement activities. The greatest recognition of the implementation of Quality Improvement were in those medical programs that had organisational cultures that supported quality initiatives.
Blouin (2020) (Canadian medical schools)	Factors determining effectiveness of accreditation	Eight areas were identified as potential factors in determining the effectiveness of accreditation. Three are identified as directly affected by accreditation: These included program processes, program quality, and a culture of continuous quality improvement; five other areas are indirectly affected by accreditation (via better quality of medical education): research outcomes, stakeholder expectations, student and graduate performance, stakeholder satisfaction, and levels of engagement of students and faculty.

Author (year)	Focus of study	THEME: impact on programmes and stakeholders
Blouin & Tekian (2018) (outcomes to CQI)	Benefits of CQI over outcomes-based	There is a lack of evidence of the impact of accreditation on student outcomes, educational quality or patient outcomes, and the evidence in support of student outcomes can often be problematic (e.g. rigour of measures). Program staff may also regard quality assurance processes as burdensome and time consuming and a distraction from teaching and learning.
Blouin et al. (2018) (Impact of accreditation)	Impacts on a programme	Nine areas of potential impact on program processes resulting from accreditation were identified: governance, data collection and analysis, monitoring systems, documentation, creation and revision of policies and procedures, continuous quality assurance and improvement, faculty members' engagement, academic accountability and curriculum reforms. The impact on processes related to governance and data collection and analysis were most frequently mentioned by respondents. The authors argue that the presence and emphasis of systems for a programme's own evaluation and improvement, on an iterative basis, in anticipation of and in response to accreditation, contributes to maintaining and enhancing the quality of medical education.
Blouin et al. (2019) (promoting quality culture)	Continuous Quality Improvement culture	Most medical schools in the study did not naturally exhibit a culture more likely to be associated with supporting continuous quality improvement activities that are supported by accreditation; however, other strategies such as structure and management processes could compensate for an organizational culture not typically oriented toward CQI.
Bowker (2017)	Aligning QA processes	Program coordinators felt that aligning institutional quality assurance with accreditation requirements reduced their workload (e.g. in producing a single self-study document and conducting a single site visit) and reduced the associated costs. Review teams understood their respective roles and were content to receive the same self-study report. Members of the Graduate Program Evaluation Committee believed that the process worked well but believed that aligned reviews may be appropriate for some programs but not for others (e.g. for programs with conditional approvals).
Chandran et al. (2013)	Site visit	Strategies for a successful accreditation visit included establishing a strong internal accreditation leadership team, proactively setting deadlines for all phases of the accreditation process, assessing and communicating vulnerabilities and action plans, building multidisciplinary working groups (including non-overlapping areas of expertise), leveraging information technology, educating key stakeholders through meetings, retreats, and conducting a mock site visit. The urgency associated with an impending high-stakes LCME site visit can facilitate positive, local, educational program quality improvement.
Crampton et al. (2019)	Self-evaluation and site visit (in risk-based model)	The study found intended and unintended consequences of the GMC Quality Assurance framework. Positive features of the QAF included: transparent reporting in relation to QI; dialogic feedback; a partnership approach between programmes and regulators; and role clarity in conducting interventions proportionate to risk. The GMC standards were found to provide an important lever to push for desired program change. Unintended consequences included confusion over roles and boundaries, unclear (or inapplicable) standards causing confusion, and the perception of risk-based visiting as positioning the regulator as promoting QA rather than enhancement (particularly in the postgraduate context).
Davis (2018)	Self-evaluation and site visit	Reports experience that accreditation self-study and site visit are often stressful experiences for the nursing program administrators, faculty, and students involved in these processes. Proposes the Neuman Systems Model to develop protective buffers for the stressors associated with programmatic accreditation.

Author (year)	Focus of study	THEME: impact on programmes and stakeholders
Davis & Ringsted (2006)	Curriculum impact of outcomes-based approach	Argues that as medical education programs move towards more outcomes-based educational models that traditional accreditation, with a focus on more quantitative judgements of educational processes rather than outcomes, may also need to shift in order to more clearly reflect the contribution of programs to producing quality practitioners.
de Paor (2016)	Accreditation recommendations (input-based)	The accreditation reports identified a range of commendations and recommendations related to quality assurance, with the majority focused on program leadership and management, and program content and design, with least emphasis on teaching, learning and assessment. There was also an emphasis in the accreditation reports on recognising the work of staff members and their professional responsibility to the discipline. There was evidence that the accreditors recognised the need to balance the demands of accountability with fostering the role of staff as pharmacy professionals. The results also showed that the work of the assessment panels was geared primarily towards the programme inputs and overarching issues related to governance and leadership.
Eiff et al. (2014)	Impact of curriculum changes on accreditation outcomes	The findings suggest that innovation and redesign of a residency training program did not negatively affect the results (in terms of average cycle length or the average number of citations) of an outcomes-based accreditation process.
Feist et al. (2017)	Impact of accreditation on program directors	Residency program coordinators in Child Neurology reported working overtime and having other responsibilities in addition to those related to accreditation requirements. Program coordinators also reported having a lack of understanding about the self-study and the site visit and were not comfortable with their role.
Fishbain et al. (2019)	Site visits, self-study, shift from input focus to outcomes	There were similarities in general principles of the different implementations of accreditation. Site visits were used in all accreditation systems reviewed; however, there were variations evident in aspects such as the frequency of visits, the composition of site visit teams and how a site visit was triggered. Self-evaluation was used by three of the five countries as part of the accreditation process, while all countries relied on a range of data sources to inform the accreditation process. The study also established a progressive change in accreditation processes from more input-based models to an outcome-based model. Such changes were preceded by changes in the education system for residents to competency-based training programs, although the concomitant changes in the accreditation system took longer to occur. Multiple sources for real-time data collection can serve as a means for a risk-based approach and for lengthening the accreditation cycle.
Fox Garrity & Finney (2007)	Accreditation standards	Accreditation standards for both business management and physician assistant programs placed the most emphasis on inputs (curriculum, faculty and educational planning) and less emphasis on students and outcomes. Accreditation standards for physician assistants places great weight on program administration and governance, whereas there is minimal emphasis of this standard for any accreditors of business management.
Frank et al. (2012)	National accreditation systems	Programme accreditation differs significantly across countries, which may impede mobility for graduates internationally. Substantial differences in approaches to quality assurance and accreditation between countries may include the stakeholders who manage quality assurance and accreditation, the stakeholders who set subject-specific learning outcomes and the implications of evaluation results. These differences reflect a combination of different national philosophies toward higher education in society, the different status of planning as a profession and how access to the profession is regulated. Closer alignment of curricula with professional standards seems to increase practice-relevance of programmes.

Author (year)	Focus of study	THEME: impact on programmes and stakeholders
Lurie et al. 2009	Assessment approaches for outcomes	The peer-reviewed literature shows limited evidence in support of the capacity of medical programs to validly assess the ACGME six general competencies, except for 'medical knowledge'.
Ostwald, Williams & Fuller (2009)	Input-based standards and processes	Architecture academics strongly agreed that preparing for an accreditation visit resulted in an increased workload, and disagreed that the accreditation process encouraged diversity in architecture schools. Overall, negative perspectives about accreditation were common, particularly in relation to high cost, the time commitment and impact on teaching. Some regarded accreditation as having little meaning in the context of the university (which was already quality assured), so added little value for the program in terms of identifying their strengths and weaknesses. Accreditation documentation was often regarded as confusing and unhelpful and the usefulness of the accreditation process highly dependent on the personnel appointed to conduct the accreditation visit. Accreditation was also regarded as an impediment to diversity, with all architecture schools expected to teach and assess against the same broad set of competencies. This process was regarded as ignoring variation between schools or allowing them to develop unique approaches. Accreditation was often regarded as a pragmatic necessity by some academics, while others valued the opportunity for an external review and encouraged those in the program to consider how they might respond to accreditation feedback positively.
Philibert et al. (2013)	Programme reporting requirements (risk-based model)	Describes a positive impact on residency programs through reducing the burden of data collection for reporting scholarly outputs for accreditation purposes. Scholarly activities were more clearly defined, and data entry was simplified. Annual review allowed for timely follow-up for programs considered problematic, while the time between accreditation visits was significantly lengthened for high-performing programs.
Sellars & Clouder (2011)	Clinical educators' perceptions of accreditation process	Clinical educators preparing for an accreditation process often found the process challenging and were concerned that they were not correctly responding to accreditation requirements in their self-evaluations. Participants generally regarded the accreditation process as positive, as changing their teaching practices, and providing legitimacy to their role. Many educators felt that accreditation had resulted in significantly improved practice and therefore better-quality outcomes for their students.
Sweet et al. (2014)	Benefit of collaboration for accreditation process	Program directors described significant benefits to participating in the pilot of the ACGME Education Innovations Project (a risk-based approach to accreditation) which included the opportunities for collaboration and sharing ideas with other program directors (required by the project) and the opportunities provided by the project to foster culture change. Many innovations shared during collaboration were incorporated by other programs. Most participants reported benefits in improved teaching and opportunities for faculty to undertake professional learning, while many reported an increase in scholarly activity. All participants regarded the pilot as a success and agreed they would participate again.
Swing (2007)	Programme responses to the shift to outcomes-based accreditation	The ACGME Outcome Project aimed to create changes in residency programs to focus education on the competency domains, enhance assessment of resident performance and increase utilization of educational outcomes for improving residents' education. Increased emphasis on educational outcome measures in accreditation was another important goal. A considerable amount of development, dissemination and educational activity was required to support project implementation. Observed effects included changes to accreditation information collection and enhancements of the educational environments and curriculum of residency education programs, though not a significant increase in the use of outcome data to that point.

Author (year)	Focus of study	THEME: impact on programmes and stakeholders
Tackett et al. (2019)	Evidence base for accreditation in UME internationally (models unspecified)	The evidence base for accreditation practices internationally is limited. The majority of published papers are described as 'non-scholarship'; only 36 papers (from 1379 identified citations) were classified as scholarship; only 13 reported empirical data collection to address a specific research question. Methods used by papers classified as scholarship (in order of frequency) included: document analysis, surveys, secondary data analysis, and interviews or focus groups. All studies were retrospective in design. Multiple papers addressed standards and self-studies, with the evidence suggesting that the content of UME standards is appropriate for most contexts, that self-studies are a beneficial aspect of accreditation.
van Zanten & Boulet (2013)	Comparative outcomes of accredited medical programmes	Higher first attempt pass rates for the USMLE clinical skills examination were generally recorded by IMGs who attended an accredited medical school. Experts also agreed unanimously on the importance of 14 standards that might be considered as core concepts for all accreditation systems.
van Zanten et al. (2012)	Comparative outcomes of accredited medical programmes	Higher first attempt pass rates for the USMLE were generally recorded by registrants who attended an accredited medical school. Registrants from the Philippines who attended accredited medical schools had greater success in achieving Educational Commission for Foreign Medical Graduates (ECFMG) certification.
Volkwein et al. (2007)	Impact of an outcomes-based accreditation model on program quality	Study provides evidence of accreditation as an important influence in programme quality. Program chairs and faculty members reported increased emphasis on skills and knowledge embodied in the new engineering program accreditation criteria (based on an outcomes-based model), and an increased focus on teaching methods designed to enhance these skills (e.g. group work). Program chairs also reported faculty support to institute assessment methods to measure program outcomes and use this for continuous improvement. Faculty also reported high levels of engagement in learning more about teaching and assessment. Graduates who had undertaken an engineering program under the new accreditation criteria reported that they engaged in more collaborative and active learning, had greater interactions with instructors and opportunities for feedback, and had higher self-reported skills than those who graduated prior to the implementation of this accreditation model. The authors acknowledge that other external and internal influences may also have
White et al. (2013)	Curriculum change in response to an adverse accreditation report (input-based)	An adverse accreditation report can prompt the rapid and successful implementation of a new curriculum (based on 'Discovery Learning') to address accreditation concerns.

Table 3 Data relating to accreditation model challenges, facilitators/barriers, and feasibility

Author (year)	Focus of study	Challenges, Facilitators/Barriers, Feasibility
Alrebish et al. (2017)	Self-evaluation /Site visit / Report	Many faculty perceive the accreditation process as a 'threat' and as an 'exam' to be passed (similar to students' approach to the curriculum and assessment). A more sustainable and effective accreditation approach requires a balance between the summative evaluation element and the ongoing formative element of accreditation. This requires actively fostering a culture of continuous quality improvement. Stakeholders identified the importance of leadership, dedicated positions in T&L quality and a cultural shift towards ongoing improvement as being significant in supporting the long-term impact of accreditation.
Baker et al. (2004)	Self-evaluation / Site visit	Both Deans and PDs tended to focus on preparation for the site visit rather than ongoing evaluation of educational activities. Deans were also more focussed on costs, coordination and critique of accreditation processes. Accrediting bodies were perceived to need to involve stakeholders more in developing/revising standards, and to better communicate the benefits of accreditation.
Barzansky et al. (2015)	Continuous Quality Improvement culture	The collection and interpretation of data on a regular basis is labour-intensive and requires appropriate instruments. Many standards require qualitative data which is more difficult to obtain. Institutional leadership, especially the support of Deans, is necessary for a CQI approach but is variable. Annual reports can facilitate data collection but expectations regarding content and format are not always clear. A core set of standards included in a CQI process across all medical schools in a country, would facilitate accreditation processes. A CQI approach is supported in schools which engage in interim review of compliance with accreditation standards, and act on the results, without waiting for the stimulus of an upcoming accreditation site visit. Accrediting bodies recommended to be resourced to provide necessary support for facilitating a culture of continuous quality improvement in medical schools (e.g. creating common evaluation tools, annual report formats, and provision of training), as well as supporting necessary review work by accrediting staff.
Bell & Youngs (2011)	Outcomes-based processes	Programs were challenged by the need to review their conceptual framework and institute new methods of assessment in response to accreditation requirements. These activities were often regarded as time-consuming and required substantial ongoing discussion and sometimes facilitation. Institutions with access to more financial resources tended to be less burdened by the requirements of accreditation (consistent with previous research). Larger institutions also tended to have personnel that were not involved in accreditation activities, whereas the workload at smaller institutions tended to be shared by most personnel. Framing the accreditation process as consistent with internal accountability and professional responsibility may prove particularly effective for some institutions or programmes (especially those with limited engagement with accreditation).
Bezuidenhout (2007)	Site visit (guidelines for panel)	The current process of the site visit was perceived to be highly subjective and inconsistent, due to the absence of any guiding criteria and training. The guide was seen as an important support along with training. There were some questions regarding whether the guide was too detailed and/or too generic.
Blouin (2019) vision	Continuous Quality Improvement culture	The CQI activities that should be undertaken independent of accreditation are not always undertaken or are not always recognised as quality activities. Organisational culture in individual institutions can affect receptivity towards and implementation of, CQI initiatives.

Author (year)	Focus of study	Challenges, Facilitators/Barriers, Feasibility
Blouin (2020)	Factors determining effectiveness of accreditation	Decreasing costs of accreditation from continuous monitoring of UME programs and continuous awareness of accreditation standards by faculty members would likely result from a culture of CQI.
Blouin & Tekian (2018)	Benefits of CQI over outcomes-based	Implementation of CQI is facilitated by organisational structures that support these processes, requires leadership support, appropriate resourcing and the engagement of program staff to use data to undertake incremental program improvements. Accreditation processes that promote CQI do so in the belief that a continuous focus on program improvement will lead to improved educational quality, the standards of graduates and patient care. Thus, the extent to which programs adopt a CQI approach might be seen as one index of the effectiveness of accreditation.
Blouin et al. (2018) Impact	Impacts on a programme	Implementation of accreditation can influence institutional processes towards improving quality in ways that may not have been undertaken without an accreditation system. Ongoing evaluation would help lower the cost of accreditation as timely identification of issues and their correction would continuously take place, rather than being addressed in the months preceding an accreditation visit, curbing the surge of activities and the associated cost typically observed. Participants expressed concerns about negative aspects of accreditation, including the demands on financial and human resources, lost opportunities as a result of the redirection of financial resources to accreditation, and the potential negative impact on the morale of faculty members and staff of certain requirements.
Blouin et al. (2019) Quality culture	Continuous Quality Improvement culture	The organisational culture at individual institutions delivering medical programs is frequently not oriented towards supporting CQI initiatives. An assessment of the degree of implementation of CQI at each program, correlated with its organizational culture, would better inform the association between organizational culture and the presence of a culture of quality.
Bowker (2017)	Aligning QA processes	Many programmes require both institutional and professional accreditation reviews, which can result in faculty being in a near constant state of preparing for QA and/or accreditation reviews or fulfilling a reporting requirement. There is evidence that faculty and staff members often view these preparations and reporting processes as labour-intensive and time-consuming, and as a distraction to T&L activities. There is great interest in finding ways to maximize efficiency in the program review process in Canada as well. Aligning institutional and accreditation reviews may be appropriate under certain circumstances and may assist to reduce the resource requirements (in terms of time, costs and participant fatigue). However, aligning these reviews may be inappropriate for programs with difficulties. Aligned reviews are facilitated by considerations such as discussing the idea early and regularly with both institutional and accreditation representatives, nominating a liaison person, sharing documents openly, ensuring that the composition of the review panel meets the needs of both groups and allocating sufficient time for the site visit.

Author (year)	Focus of study	Challenges, Facilitators/Barriers, Feasibility
Chandran et al. (2013)	Site visit	Factors that may be associated with successful planning for an accreditation visit include choosing carefully the team to lead accreditation planning who have leadership experience and complementary expertise, allowing sufficient time for planning, and establishing firm deadlines for deliverables. Establishing successful working groups and an accreditation task force also worked well to facilitate a successful visit, as did communicating clearly about the visit to stakeholders and undertaking practice for the visit. Planning for an accreditation visit requires a significant investment of resources in terms of staff time, infrastructure and project management capabilities to lead planning for the accreditation, communicate effectively with staff and gather appropriate evidence to support their claim for accreditation.
Crampton et al. (2019)	Self-evaluation and site visit (in risk-based model)	Self-assessment required as part of accreditation can encourage reflection and lead to revision of processes. In contrast, the formality of the written assessment was sometimes seen as onerous and unlikely to result in open disclosure. Based on the findings of the study, the authors modified their conceptual model for understanding the way in which GMC quality assurance may result in positive or negative outcomes based on features of the context. Contexts in which there is adherence to the regulator's Quality Assurance Framework facilitated by features such as openness and trust, effective communication, communication with the regulator and a focus on quality improvement are likely to lead to positive outcomes. In contrast, in contexts where there is resistance to external accreditation, factors such as poor communication and relationships, unclear boundaries and responsibilities and a lack of feedback on QA can lead to negative outcomes.
Davis (2018)	Self-evaluation and site visit	The accreditation process is understood and presented as intrinsically stressful. Presents model for mitigating stress of accreditation process: primary interventions such as engaging with the accreditation process, and routinely linking programs to accreditation standards; secondary interventions (such as gathering additional resources, developing a work plan for responding to accreditation requirements, and ensuring team members were familiar with the standards and their tasks; and tertiary interventions such as responding effectively to accreditation concerns).
Davis & Ringsted (2006)	Curriculum impact of outcomes-based approach	Acknowledges concerns about validity of the traditional (input-based) accreditation process, especially in the context of the shift to outcome-based graduate medical education. However, while objectives of the desired broad aspects of competence can be written, judging the quality of education in each of these aspects is not yet well described or validated. Argue that the ultimate outcome measure of a quality medical education is reflected in excellence in patient outcomes. More research and development in outcome-based education is needed to identify effective and valid methods. This is a challenge but may find parallel in recent developments in assessment validity.
de Paor (2016)	Accreditation recommendations (input-based)	Professional programs may be challenged by the responsibilities of institutional and professional quality assurance processes that may align, but may also come into conflict.
Eiff et al. (2014)	Impact of curriculum changes on accreditation outcomes	Programs that are in the process of major curriculum change may temporarily experience difficulties with regulatory compliance, resulting in shorter accreditation cycles during the redesign process. Programs that are already in good standing with the regulator may be better-placed to balance the competing demands of curriculum change with accreditation requirements.

Author (year)	Focus of study	Challenges, Facilitators/Barriers, Feasibility
Feist et al. (2017)	Impact of accreditation on program directors	Many program coordinators reported that they had little experience in their accreditation role and that programs were underprepared for the implementation of the accreditation system. There was difficulty in gaining faculty involvement in the requirements of the new (outcomes-based) accreditation system and a lack of faculty knowledge about the changes. Other challenging workforce features included: high turnover, unpaid overtime, inconsistent job titles, limited career paths, inadequate training, and nonacademic supervision. Successful implementation of the new accreditation system was linked to increased coordinator experience, supervision within Graduate Medical Education, and greater administrative support for the coordinator role.
Fishbain et al. (2019)	Site visits, self-study, shift from input focus to outcomes	Despite a clear shift internationally from input to outcomes and risk-based models, local contexts and culture remain important considerations before adopting a particular model as implemented elsewhere. Risk-based models still require considerations of feasibility and costs.
Fox Garrity & Finney (2007)	Accreditation standards (input vs output)	In some contexts there remains a tension between outcomes-based standards and a widespread belief that it is an inherent responsibility of faculty to determine course and program content. Furthermore, it was also found to be difficult to define and quantify outcomes assessment standards. In practice, accreditors may place a heavier emphasis on outcomes assessment in their accreditation decisions than in their written standards.
Frank et al. (2012)	National accreditation systems	Different international approaches to professional accreditation between countries reduce the mobility of graduates. One approach to reducing this impact may be to develop international systems of accreditation (for the example of planning programs) to assess international programs against comparable standards.
Lurie et al. (2009)	Assessment approaches for outcomes	The ACGME Outcomes Project was based on the assumption that the general competencies, once defined, would reveal themselves in a straightforward way through available measurement approaches. This aspect remains a considerable challenge to develop objective measures which correspond directly and specifically to the desired outcomes.
Ostwald, Williams & Fuller (2009)	Input-based standards and processes	Stakeholders' perceptions of the impact of the accreditation process in terms of cost and resourcing may have a significant impact on the effectiveness of accreditation. Architecture academics frequently mentioned high cost as a negative aspect of accreditation that directly impacted on the budget for teaching. Overly prescriptive accreditation and accreditation documentation that was difficult to understand and did not adequately distinguish between the responsibilities of programs and practices was a further challenge associated with accreditation. The accreditation experience was also seen as overly reliant on the composition of the panel, with some panel members regarded as having preconceived ideas about the schools or a punitive view of their role as an accreditor.
Philibert et al. (2013)	Programme reporting requirements (risk-based model)	Reporting of scholarly outputs as part of the implementation of a risk-based approach to accreditation was more streamlined, simplified and standardised, allowed for regular review of outputs and ensured accurate recoding of outputs.
Sellars & Clouder (2011)	Clinical educators' perceptions of accreditation process	*N/A*

Author (year)	Focus of study	Challenges, Facilitators/Barriers, Feasibility
Sweet et al. (2014)	Benefit of collaboration for accreditation process	Requirements for the EIP risk-based accreditation model included annual reporting, which many regarded as challenging, although this perception was greatest for the early years of participation and became less onerous over time. Others did not perceive the annual reporting as onerous and believed it was necessary independent of the pilot. Costs associated with participating in the pilot also increased for many participants due to new staff, more staff time, more travel, and more resources (e.g. IT). The EIP accreditation model was regarded as a good model, particularly for programs with no significant problems as it allowed them to undertake their own planning and modifications rather than responding reactively to regular site visits.
Swing (2007)	Programme responses to the shift to outcomes-based accreditation	Developing appropriate measures to assess resident outcomes can be challenging. In the context of the Outcome Project, the accreditation process had not shifted substantially to include outcomes data as part of accreditation. Shifting to an outcomes-based accreditation system requires substantial investment in developing, implementing and maintaining data collection systems to assess the impact on resident performance of a competency-based medical education. Further development and implementation of assessment tools and electronic data collection systems will be needed before this change can occur and before effects of competency-based education on resident performance can be evaluated.
Tackett et al. (2019)	Evidence base for accreditation in UME internationally (models unspecified)	Despite the fact that new accreditation systems are being developed and refined, there is limited evidence to support existing UME accreditation practices or to guide the creation or improvement of accreditation systems. Many studies treated accreditation as a single, overall intervention, resulting in inconsistent relationships between UME accreditation and programme outcomes (due to the limited ability to control for confounding variables). The multifaceted nature of and the wide variation in accreditation practices across different settings limits conclusions that can be drawn about its usefulness from existing evidence. More research is required to optimise the value of (UME) accreditation for students, programmes and society.
van Zanten & Boulet (2013)	Comparative outcomes of accredited medical programmes	Prior ability of graduates in the study population was not known, and therefore could not be accounted for in the study. The study was cross-sectional and therefore does not provide support for causation.
van Zanten et al. (2012)	Comparative outcomes of accredited medical programmes	*N/A*
Volkwein et al. (2007)	Impact of an outcomes-based accreditation model on program quality	The voluntary accreditation context makes generalisability to other contexts difficult. For example, the phased adoption of an outcomes-based accreditation process for engineering programs may have allowed underperforming programs to delay accreditation under the new system in order to implement substantial curricular changes to ensure they met the new requirements.
White et al. (2013)	Curriculum change in response to an adverse accreditation report (input-based)	Successful implementation of the curriculum reform was attributed to: a clear mandate and agenda for change by the Dean; rapid decisions and course of action; faculty provided with support to change teaching practices; resistance being acknowledged and addressed; an enhanced recognition of the role of education as a contributing discipline and source of expertise.

Appendix 2: Extracted References

This list contains references included in the data extraction phase. References cited in the general body of the report are listed separately in Appendix 4.

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APPENDIX 3: GENERAL REFERENCES

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