Performance management in health systems and services: Studies on its development and use at international, national/jurisdictional, and hospital levels
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Chapter 8
General discussion
This thesis explored the theory and practice of performance management in health systems and services. More specifically, it examined through a series of studies the development and use of performance management at international, national, and hospital levels. The following six research questions were examined:

- What is the scope of the health system stewardship function of national health ministries in the WHO European Region, and how can the consistency and the completeness of health system stewardship be evaluated?
- How can international health system performance comparisons be used for performance management purposes, and how can methodological issues and challenges related to international comparisons be addressed?
- How can health system performance management approaches be developed and used by health ministries to improve health system performance?
- What is the importance of considering risk-adjustment for place of residence when using patient satisfaction rankings for accountability and performance management purposes?
- What performance management model can be developed to support evidence-based decision-making and quality improvement in hospitals of the World Health Organization (WHO) European Region?
- What has been the perceived impact of the implementation of this hospital performance management model in eight European countries, and what have been the perceived enabling factors and barriers experienced by participating hospitals?

In this final chapter, the main findings of the research papers are recapitulated. Later, we discuss methodological considerations pertinent to this thesis. In another section, the findings are subsequently interpreted, placed in a broader context of the knowledge field of performance management, and policy implications are discussed. Finally, we conclude by discussing the implications of the findings for research and propose a possible research agenda related to health system performance management.

**Main findings**

**Objective 1:** Examine the scope of the health system stewardship function of national health ministries in the WHO European Region and methods to evaluate the completeness and consistency of stewardship implementation.

From chapter 2, the review of the literature identified six discrete functions of national health ministries in their stewardship role: to define the vision for health and strategies and policies to achieve better health; to exert influence across all sectors and advocate for better health; to ensure good governance supporting the achievement of health system goals; to ensure the alignment of system design with health system goals; to make use of legal, regulatory, and policy instruments to steer health system
General discussion

performance; and to compile, disseminate, and apply appropriate health information and research evidence. Further, we found that although these six generic functions of health system stewardship are all important, the extent of use of these functions depends on both national context and goals pursued by health ministries. Based on this analysis, an operational framework was derived from the analysis, as well as possible strategies to evaluate the completeness and consistency of the stewardship of health ministries.

Objective 2: Examine how international health system performance comparisons can be used for performance management purposes, including how methodological issues and challenges in carrying out international performance comparisons can be addressed.

In chapter 3, we found through a literature review that accountability and strategy development are currently the major reasons underlying the increased interest in health system performance comparisons. However, mutual learning is gaining further interest with the increasing scientific robustness of knowledge created through health systems research. We also found that the scope of international health system performance comparisons varies by country, type of established health information system, and availability of resources. A review of the scope of international health system performance comparisons allowed identifying different types of initiatives: entire health system comparisons; multilateral comparisons; bilateral comparisons; and disease-specific comparisons.

Further, we examined the lessons learned from the OECD experience in addressing operational and methodological issues related to conducting international health system performance comparisons. We found that six key issues need to be considered when establishing and monitoring cross-country performance indicators: specifying indicators using internationally standardized definitions; controlling for differences in population structures across countries; adjusting for differences in the ability of information systems to track individual patients; controlling variability of data sources; identifying nationally representative data; and determining the retrospective completeness of the time series.

Finally, we found that international health system performance comparisons are increasingly integrated into health system performance management approaches and illustrated this trend with examples from Europe and North America. An important conclusion was that well-designed benchmarking systems had the potential to guide policy development and be used for performance improvement purposes. Desirable characteristics for such benchmarking systems were identified: a focus on strategy and outcomes; adaptability and flexibility; data standardization; policy focus rather than research focus; efforts to translate performance information into simple and actionable instruments built for policy-makers; and sensitivity to political and contextual issues.
Objective 3: Examine how health ministries can develop and use strategy-based health system performance measurement approaches in order to better manage health system performance.

In chapter 4, we evaluated the experience of the Ontario Ministry of Health and Long-Term Care (Canada) in implementing a strategy-based approach to health system performance management, through multiple methodological steps. This was done in the context of health system stewardship enhancement. We found that even in the context of an emergent rather than explicit strategy for the health system, such an approach offers an innovative way to manage health system performance by: establishing the strategic context; measuring performance through a system level scorecard aligned with strategic objectives; and cascading system level performance indicators and targets into accountability agreements with regional health authorities and health care providers. Furthermore, we found that linking systematically strategy, performance measurement, resource allocation, and accountability through a common health system performance management framework enabled systematic discussions of performance expectations and improvement between the health system steward and its agents.

Objective 4: Study the importance of risk-adjusting for place of residence when using patient satisfaction rankings for accountability and performance management purposes.

In chapter 5, we found that for patients treated in Toronto, those who lived outside of Toronto consistently reported higher satisfaction than those who lived inside Toronto (P<0.0001), and that for patients treated outside Toronto, those who lived inside Toronto usually reported higher satisfaction than those who lived outside Toronto (P<0.02). The findings are consistent after controlling for hospital type and adjusting for age, sex, self-assessed health status, and the number of times the patient was hospitalized in the last six months. These findings suggest that where patients live has a small but potentially important impact on how they rate their care. The paper also discussed the advantages and drawbacks of risk-adjusting or not from a stewardship perspective and concluded that the decision to risk-adjust requires an appreciation of the goals pursued (for example, accountability or continuous quality improvement purposes) and of the local context.

Objective 5: Examine how to develop an international hospital performance measurement model focused on enhancing evidence-based performance management and quality improvement.

In chapter 6, we found that an international hospital performance measurement model stimulating quality improvement and evidence-based management would incorporate six interrelated dimensions of performance: clinical effectiveness, safety, patient-centredness, efficiency, staff orientation, and responsive governance. We also found that in order to support performance management and improvement in the frame
of an international performance measurement project, a number of instruments and interpretation strategies were important: a conceptual framework; criteria for indicator selection; a core set of indicators complemented by a tailored set to reflect local or national context; an operational model of performance; strategies for communicating feedbacks of results to hospitals; education material to support further scrutiny of indicator results; and strategies to foster benchmarking of results and practices between participating hospitals.

**Objective 6: Evaluate the perceived impact of the implementation of the PATH model and the enabling factors and barriers experienced during implementation.**

In chapter 7, we evaluated the implementation of the WHO PATH project in eight countries and 140 hospitals through qualitative methods and found that even in the absence of public reporting, the PATH project was perceived as having stimulated performance measurement and quality improvement initiatives in participating hospitals. Furthermore, we studied enabling factors and barriers to implementation, which were identified as: the leadership and ownership of hospital managers, coordinators, and hospital staff; positioning the project in a supportive environment at national and local levels; the intrinsic features of the project such as a solid evidence base, a multi-dimensional model of performance, and the possibility of international performance and practice benchmarking; and appropriate processes and structures in place at national level. Conversely, barriers to implementation mentioned related to the absence of data, poor data quality, and burden of data collection; the lack of coordination with other quality improvement projects at national level; a limited capacity for and culture of performance measurement and management; and the lack of timeliness of feedback reports provided by the WHO Regional Office for Europe. We concluded that in addition to the intrinsic features of the project, the leadership, contextual, and process related conditions under which international hospital performance measurement and management projects should be designed, developed, and implemented should be carefully considered.

**Methodological considerations**

The methodological limitations specific to each research objective have already been presented in the separate chapters of this thesis. In this section, we will discuss the validity and generalizability of the overall findings as well as the general strengths and weaknesses of the different research methods used. Validity can be defined as *the best available approximation to the truth or falsity of a given inference, proposition, or conclusion* [1]. Generalizability refers to *the ability to generalize the results of a specific study to other settings* [2].

This thesis relied on a multi-disciplinary approach including exploratory and participatory methods, as well as evaluative methods. We reviewed the scientific
literature related to performance management, stewardship, health systems reforms, and complexity theory; reviewed policy documents and carried out policy analysis; contacted experts in various fields to gather methodological guidance; carried out modified Delphi panels to develop performance measurement and management frameworks and select performance indicators; developed ad hoc surveys when necessary; and used unique gatherings of senior policy-makers in order to address many of our objectives. The multi-disciplinary nature of the work undertaken is seen in the mixed use of multi-disciplinary literature reviews, conceptual analysis, statistical analysis, and qualitative evaluation. The main justification for a multi-disciplinary approach was that performance management is a social construct using scientific methods that should be socially acceptable to the users of the information [3]; therefore incorporating elements of context and processes into scientific methods was important. However, the methods used make it also difficult by nature to generalize some of the findings beyond the organizations, populations, or countries studied.

Further methodological considerations are presented below and relate to the validity and generalizability of the findings. For clarity purposes, we separated out the development and the use of performance measurement and management at the international, national, and hospital levels. Table 1 below highlights how the case studies intersect when classified along these lines.

**Table 1: Classification of case studies on development and use of performance management in the health sector at international, national, and hospital levels**

<table>
<thead>
<tr>
<th>Development</th>
<th>International</th>
<th>National</th>
<th>Hospital</th>
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</thead>
<tbody>
<tr>
<td>Stewardship paper (chapter 2)</td>
<td>Ontario scorecard paper (chapter 4)</td>
<td>PATH development paper (chapter 6)</td>
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<tr>
<td>International Comparisons paper (chapter 3)</td>
<td>Place of residence and patient satisfaction paper (chapter 5)</td>
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<td>PATH development paper (chapter 6)</td>
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<tr>
<td>Use</td>
<td>International Comparisons paper (chapter 3)</td>
<td>Ontario scorecard paper (chapter 4)</td>
<td>PATH evaluation paper (chapter 7)</td>
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<tr>
<td>PATH evaluation paper (chapter 7)</td>
<td>Place of residence and patient satisfaction paper (chapter 5)</td>
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**Validity and generalizability of findings related to the development of performance management**

Carrying out research on the development and use of performance management of health systems and health services required engaging decision-makers and system managers and grounding our research in the decision-making processes of ministries of health and hospitals, in order to make research findings socially acceptable to
users. We engaged decision-makers through different methods: we designed and implemented consensus building methods which aimed at clarifying concepts under study, boundaries of objects evaluated, terms used, and select performance indicators. It was particularly important at the international level, where terminology can be often understood in vastly different ways depending on national cultures and contexts, and where terms (such as stewardship) often translate poorly to languages other than English [4]. Methods used to build consensus all relied on extensive reviews of the literature (stewardship and PATH conceptual models at international levels, Ontario health system scorecard at national level) coupled with nominal group techniques (Ontario Ministry of Health and Long-Term Care study, PATH) or Member States consultations and deliberations (stewardship paper). These processes offered the advantage of associating decision-makers and experts in clarifying or developing concepts and defining terms used. In addition, these processes helped strike a balance between a focus on issues of strategic importance to decision-makers and the application of scientific methods. Processes engaging policy-makers in the identification of emergent strategies [5] had been documented in earlier research on strategic management in the cancer sector [6]. A result is that the frameworks developed and performance measures selected raised a greater interest on the side of decision-makers. This is consistent with several studies and systematic reviews showing that linkage and exchange of knowledge between health services researchers and those who can use their results is the best predictor of when and how research gets used [7–9]. This is also consistent with research findings demonstrating the need to combine content, context, and process in health services research, in order to effect change [10].

There are, however, some limitations to the generalizability of the findings that should be pointed out. The review of the literature on stewardship applied to the health sector showed that the application of the stewardship model to societies less eager to accept an involvement-oriented approach, as opposed to a control-oriented approach, is problematic [11]. The methods used to develop the stewardship operational model and the associated evaluation framework were consistent with the values of the WHO European Member States; however these collective values do not reflect the reality of all individual countries and it is likely that there are limitations to the generalizability of the stewardship model to all Member States of the WHO European Region. In contrast, the study about the Ontario Ministry of Health and Long-Term Care showed that the development and use of a health system performance management approach was associated with the implementation of a stewardship model, in a jurisdiction located outside of the WHO European Region [12]. At the hospital level, the PATH model was developed using similar consensus methods based on a review of the scientific literature and a survey of data quality and data availability in Europe. The review of the literature focused on the international literature; however the survey focused on
a sample of 20 European countries and two jurisdictions/countries outside of Europe (Ontario in Canada and Kwazulu-Natal in South Africa) [13]. The two jurisdictions/countries are currently not participating in the PATH project, but other countries from the European Region have joined the project [14]. In addition, findings of the evaluation of the implementation of the PATH project in eight European countries showed that elements of leadership, context, and processes are critical to the success of the project. The generalizability of the model beyond participating countries is therefore still unclear [15].

**Validity and generalizability of findings related to the use of performance management**

At an international level, the approach to performance management related to international comparisons was tested through a process for the OECD Member States in contexts sufficiently different that the approach could be applied to other countries, depending on the existence of a minimum level of data quality available and sufficient willingness to use evidence to inform decision-making [16]. However, the use of international comparisons for performance management purposes through benchmarking and peer learning is currently being developed through several initiatives [17–21] and if design elements of successful initiatives have been proposed [22], evaluations of these benchmarking experiences still have to be carried out.

At a national level, the Ontario case study on performance management showed also potential limitations to the generalizability of its findings. The study was limited to a single jurisdiction in a context supportive of the introduction of a performance management approach at a time when the Ontario Ministry of Health and Long-Term Care was heavily engaged in implementing the stewardship model. The study on place of residence and patient satisfaction found that place of residence may or may not be considered as a necessary risk-adjustment variable depending on the objectives pursued by the health system steward: accountability or continuous quality improvement. This finding shows that the decision to risk-adjust for some variables also depends on contextual elements, which limits the generalizability of the findings. In addition, this study was limited to one single jurisdiction and further research should be carried out to confirm similar findings in other jurisdictions.

At the hospital level the small sample size used for the evaluation of the PATH model in eight European countries limits the generalizability and the robustness of the findings. However, the paper offered important lessons about international hospital performance measurement projects that were consistent with the findings of this thesis and supported by the scientific literature—for example, the findings related to the importance of combining content, context, and process in health services research, in order to effect change [10].
Overall, we attempted to use our position of privileged observer embedded in policy processes to get more in-depth knowledge about the context and processes influencing decision-making related to performance management. From this perspective, the opportunity to work for an international organization such as the WHO and at jurisdictional and national levels in Canada was invaluable to engage decision-makers and system managers in our research. In order to ensure a high level of validity, measures were taken to triangulate and ascertain the robustness of the findings and their interpretation: we made extensive use of networks of experts, senior decision-makers, and key informants in several countries and discussed systematically findings among authors. However, some limitations to the generalizability of the findings should be taken into consideration when interpreting the results of these studies.

**Interpretation of results**

This thesis explored the development and use of performance management in health systems and services at international, national, and hospital levels. Key findings of the thesis are now grouped according to three overarching themes: the conceptual consistency and alignment between the concepts of health system performance management and health system stewardship; the importance of contextualization in efforts of policy-makers and system managers to manage health system performance at various levels of the health system; and the need to build performance management instruments and processes for use by policy-makers and system managers. The findings related to the conceptual consistency between health system performance management and stewardship applies at each level explored in this thesis. For the other two themes, findings on the development and use of performance management are presented separately at the international, national, and hospital levels.

**Consistency and alignment of the health system performance management and health system stewardship concepts**

Our findings suggested a conceptual consistency between health system stewardship and health system performance management at different levels of the health system.

As already discussed in this thesis, stewardship is seen by many countries as the appropriate basis on which to reconfigure the role of the state in the health sector and encourage decision-making that is ethical, fair, and economically efficient [11,23]. The concept of stewardship is grounded in numerous disciplines, in particular philosophy, political science, law, public administration and management, organizational theory, management science, and other disciplines such as complexity theory [11]. Several functions of health system stewardship were identified, and all relate to a set of health system objectives and take place within a certain national
context. Both goals pursued and national context influence the mix of health system stewardship functions required to achieve health system goals [4]. More fundamentally, health system stewardship is a concept defining the role and responsibilities of the state in pursuing constant improvements in health system performance in an increasingly efficient manner. In practical terms, it means that the stewardship role of the state aims at maximizing health gains rather than simply protecting the health of citizens or delivering health care services [24]. Stewardship is therefore primarily about ‘what’ are governments’ roles and responsibilities in the health sector; however it doesn't answer the question about ‘how’ to pursue improvement in health system performance. The paper on stewardship proposed that national ministries of health could mobilize six different functions of stewardship to achieve their objectives and that health system performance assessment was the appropriate instrument to assess its effectiveness [4].

Health system performance management is primarily about ‘how’ to pursue performance improvement through a managerial and cyclical approach to performance improvement. Performance management refers to the instruments and processes required to improve performance in line with policy objectives, in a given context [25,26]. The concept of performance management is grounded in management science and organization theory and is reflected in the empirical experience of the private sector industry in managing performance in increasingly sophisticated ways [27]. The concept relies heavily on the measurement of the achievement of goals pursued and of intermediary steps to achieve these goals, in a multi-dimensional fashion [28]. The review of the literature used for the PATH project found that a multi-dimensional approach of performance measurement and management should be used, which would support information users in assessing simultaneously all interconnected dimensions of performance in order to form a judgment on hospital performance [29]. This conceptual model tends to encompass most organizational performance theories and is grounded in earlier research on organizational theory [27–29]. Private sector performance management used in the health sector includes the balanced scorecard model [30,31], strategy maps [6,32], the use of targets and accountability mechanisms [33], portfolio management [34], the use of incentives to influence providers’ behaviours [35], and performance and practice benchmarking [36]. In addition, Boland and Fowler argue that performance management is cyclical by nature and that a feedback loop exists between the respective actions of measuring performance, taking corrective action, and achieving an outcome response [37]. Interest from national health ministries in managerial approaches arose from the literature on new public management, and specifically from the management sciences stream of this literature, which advocates for the introduction in the public domain of private sector management ideas and techniques [38]. Empirical examples in the private sector [39], the public sector [40,41], and the health sector [41,42] in particular
show that strategy-based performance management can result in improvements in health outcomes and improved cost-effectiveness by aligning strategy, performance measurement, resource allocation, accountability, and incentives. In addition, management literature from the private sector showed that a strong intelligence generation function is a key determinant of performance [43]. This is consistent with the principle of sound decision-making which is underpinning both the stewardship and performance management concepts.

Overall, if stewardship and performance management originate from different disciplines, and if the two concepts are different in nature (as previously described, stewardship is fundamentally about the ‘what’ when performance management is about the ‘how’), they are consistent and align in practice. Such conceptual richness justified the use of a multi-disciplinary approach to carry out research on health system performance management. An illustration of this conceptual consistency and alignment is in how the stewardship functions and the performance management framework derived from the review of the literature relate in various ways: the function of strategy formulation and policy development overlaps; the health system governance and accountability function in the stewardship framework relates to the accountability component of the performance management framework; the intelligence generation function relates to the performance measurement and target-setting component of the performance management framework and to the need for sound decision-making; and attention to system design relates to the feedback loop between performance results and strategy redevelopment in the performance management framework.

At a hospital level, the review of the literature supporting the PATH project found that performance measurement is a multi-dimensional construct requiring a careful interpretation of results, an understanding of trade-offs between performance indicators and performance dimensions, and testing some of the causal relationships supporting actions for performance improvement [29]. This finding is consistent with the performance management framework, which includes a feedback loop having the function of testing some of the causal relationships explaining the achievement or not of performance expectations and assigning responsibilities for performance improvement between the steward and its agents.

Finally, the literature on the stewardship theory of management (defining the agents in the principal-agent relationship as stewards whose motives are aligned with the objectives of the principals) showed that there are certain conditions under which the agency theory (pointing to principal-agent divergence of interest calling for control of the principal over the agent in order to limit losses due to this divergence) may not be necessary and the stewardship theory of management may be more appropriate [44]. Conversely, the review of the literature on stewardship also showed that stewardship may not be the most appropriate approach depending on national context and on the culture of stakeholders’ involvement in decision-making, and that
in some cases the agency theory may be more appropriate [11,23,44]. Ultimately, these examples show that the concepts of stewardship and performance management are not only consistent and aligned but have also influenced each other over time; and that contextual elements play a role in defining the appropriate approach to achieve better outcomes.

**Importance of context in health system performance management at international, national/jurisdictional, and hospital levels**

An important finding of this thesis was that the implementation of performance management depends on contextual elements and values. This finding was consistent for the development and use of performance management at the international, national, and hospital levels.

At the international level, the review of the literature on stewardship showed that stewardship takes place within an overall framework of agreed norms and values which is not limited to the health sector and that stewardship functions should be related to goals pursued and to national context [4]. One of the findings of the thesis, for example, was that it was important to align health system goals with other government policy agendas. In addition, context and values condition how the various health system stewardship functions of national health ministries can be mobilized to achieve specific objectives. Examples of the discussions of the 53 Member States at the 2008 WHO Regional Committee for Europe and of expert groups commissioned by the WHO identified several challenges in implementing stewardship in practice, all related to contextual elements: the difficulty of arbitrating between short-term political pressures and the need to focus on mid- and long-term health system performance improvement objectives; the relatively short average lengths of time ministers of health are in office; a possible lack of alignment between the health sector agenda and overarching government goals; and a limitation or lack of powers and policy instruments to implement change in the health system [45–47]. These challenges make it even more difficult for national health ministries to implement consistently managerial approaches such as health system performance management.

Recent experiences of countries in international health system performance comparisons also showed that countries are increasingly driven by an interest in strategic management and practice benchmarking, not only performance benchmarking [36]. Peer learning and benchmarking depend therefore on understanding performance levels or performance improvement in a given context. Several examples pointed to benchmarking experiences where context and values were the determining factors in the choice of the benchmark countries or health systems [17–21]. Other examples point to experiences where the identification of common features in the political, socio-demographic, and epidemiological development is the key factor in the selection of regions benchmarking structural, functional, and quality differences in health services.
A number of desirable characteristics for international benchmarking networks were defined and include sensitivity to political and contextual issues: interpretation of indicators should not lose sight of the policy context within which they are measured, of the players involved in formulating and implementing policy, of the time lag needed to assess the impact of different policies, and of aspects of health care that remain unmeasured by available data [22]. These design elements should also take into consideration past experiences with misuses in the adoption of best practices from other jurisdictions, which include the selection of information to further political goals, the importation of modes or practices without validation, and differing and potentially contradictory motivations [48].

At jurisdictional level, the Ontario Ministry of Health and Long-Term Care study found that context and national values are embedded in performance management through the focus on strategy, which drives performance improvement by linking performance measurement, resource allocation, and accountability in an integrated performance management cycle. In addition, the selection of performance measures to be included in accountability agreements with Local Health Integration Networks was therefore partly derived from the health system and local health system scorecards, and partly from an assessment of local priorities. Accountability agreements also included monitoring indicators, which were partly related to system priorities and partly to local priorities. This is a possible response to some of the critics of performance management outlined in the first chapter of this thesis [49]. Practical limitations to the successful implementation of health system performance management relate to the powers and span of control of the agent (in the case the Local Health Integration Networks) to enforce accountability agreements and direct change to achieve specified objectives [50]. This is obviously an important structural and contextual element that can impede the implementation of performance management in practice. Finally, a challenge to a full implementation of the performance management cycle was to align performance management with operational and business processes of the Ministry of Health and Long-Term Care. Doing so is challenging and requires changes to be operated within large bureaucracies, since often they do not have control over their operating and budgeting processes, often set up by ministries of finance or other governmental agencies [12].

At the jurisdictional level again, the study on the importance of place of residence in patient satisfaction showed that if all performance factors are not taken into consideration when risk-adjusting performance measures, comparisons can be misleading and potentially affect rankings if these were used for accountability purposes [51]. More importantly, the discussion of the findings pointed to the fact that the decision to risk-adjust also depends on contextual factors: we concluded that risk-adjusting can be important if patient satisfaction scores were used for accountability purposes, however the decision to risk-adjust may also be debatable if this indicator is
used for continuous quality improvement purposes. In fact, in that case, risk-adjusting for place of residence may distract Toronto hospitals from taking all the measures necessary to improve the level of satisfaction of their patients. This was evidenced by the fact that in the case of the Ontario study, place of residence was not used as a risk-adjustment factor but improvements in Toronto hospitals during the period of the study were higher than in non-Toronto hospitals.

At hospital level, the importance of context was acknowledged through the different methodological phases applied to the development of PATH. A criterion for the selection of the performance indicators included in the core set was contextual validity (is this indicator valid in different contexts?); a survey was carried out in 20 countries to assess the relevance of the performance indicators selected in different national contexts; and a tailored set of 27 indicators was proposed to complement the core set of indicators, in order to reflect hospital or national specific priorities. Finally, if data standardization was limiting international comparisons at the outset, an international benchmarking network was proposed for hospitals to share best practices for quality improvement and gave the flexibility to users to build context in this peer learning approach [29]. From the perspective of the use of performance management, the evaluation of the PATH project suggested overall that if different quality improvement pathways could effectively stimulate hospital performance improvement in different ways [52,53], the conditions under which these pathways should be designed, developed, and implemented should be carefully considered depending on a number of enabling factors, such as: leadership and local ownership, positioning of the project in the local or national context, and the existence of supportive processes and structures at national level.

**Building for use by balancing out the use of scientific methods with the engagement of information users**

Management is a social construct using scientific methods that should be socially acceptable to the users of the information [3]. A first step in our research was to clarify the intended audience of health system performance management information. The object studied in this thesis is health system performance management, focused on the international, national/jurisdictional, and hospital levels; therefore the information users identified were health sector senior policy-makers and hospital managers. Carrying out research on the development and use of performance management in health systems and health services required engaging policy-makers and hospital managers in the development of performance management instruments and processes as well as grounding our research in the decision-making processes of ministries of health and hospitals so that performance management instruments and processes would be fit for use.
A major finding of this thesis is that performance management should be built for use by concomitantly using scientific methods and engaging with information users. An example applying at the three levels is the development of sets of performance indicators at international, national, and hospital levels for performance measurement and management purposes, which involved an engagement of experts and policy-makers or hospital managers to select indicators based on methods to assess their validity and reliability. The OECD Health Care Quality Indicators project, the Ontario health system scorecard development process, and the PATH project all engaged information users and experts through expert panels and used similar methods of modified Delphi panels [54] using criteria of relevance, scientific soundness, and feasibility [55] to select a core set of performance indicators derived from an initial performance framework [12,16,29].

In addition, at the international level, the six discrete functions of health system stewardship were identified through a review of the literature and discussed at the Regional Committee for Europe of the WHO in September 2008, which involved delegations of 52 Member States. Furthermore, a number of desirable characteristics for international benchmarking networks to guide policy development [56,57] were identified: a focus on strategy and outcomes; adaptability and flexibility; data standardization; policy focus rather than research focus; efforts to translate performance information into simple and actionable instruments built for policy-makers; and sensitivity to political and contextual issues. Interestingly, evaluation studies showed that despite limitations in comparability of performance measures, international benchmarking networks could be successful when they allowed exchange of experiences and peer learning activities [58]. These results were confirmed by the findings of the evaluation of the PATH project presented in this study. This last point tends to confirm that an engagement with users in the design of international benchmarking networks is an important condition to their success [56].

At a jurisdictional level, the study of the Ontario Ministry of Health and Long-Term Care used the strategy mapping approach developed by Kaplan and Norton [32] to articulate the system's emergent strategy [5] in the absence of an explicit strategy for the Ontario health system. The strategy map developed was used as the basis to select a core set of performance measures which in turn were cascaded to different levels of the health system and embedded within accountability agreements between the Ministry of Health and Long-Term Care and Local Health Integration Networks. The strategy map was developed by engaging with senior decision-makers in the ministry through interviews and consensus meetings: all members of the executive management team were interviewed as well as members of the senior management team responsible for the implementation of various strategies; and so were key health system stakeholders. In total, more than 25 face-to-face interviews were carried out; two consensus building meetings were held; and the health system strategy map
was endorsed after discussion at the Senior Management Committee of the Ministry, gathering the Deputy Minister of Health and the various Assistant Deputy Ministers. This was a way to ensure that the performance management approach developed would be socially acceptable. Furthermore, our evaluation of the Ontario experience with performance management showed that managing performance at health system level implies in practice a discipline and consistency in how performance measurement is used for performance management and accountability purposes. For example, cascading performance indicators from a health system scorecard into local health system accountability agreements was possible at the level of a jurisdiction (the Ontario health system in Canada) and maintained the integrity of pursuing specific health system goals in the context of decentralized delivery of care. Ensuring strategic consistency between conceptual frameworks used at health system and local health system level was important from the perspective of policy-makers. In addition, such an integrated performance management cycle builds feedback loops into the performance management cycle. This is motivated by the necessity of a dialogue between the steward of the health system and its agents in order to define respective responsibilities for health system performance improvement.

At the hospital level, the PATH instrument and processes were developed through experts’ and hospital managers’ engagement. Four expert meetings were held during the development phase, which gathered over 20 experts (academics and hospital managers) for each expert meeting. Consensus building methods such as modified Delphi panels were used to select the core set of performance indicators, as described above. As a result of this development phase, PATH included a multi-dimensional model of performance and two sets of performance indicators: a core set enabling benchmarking and performance comparisons at national or international levels; and a tailored set which would enable hospitals to tailor performance measurement to their strategies. In addition, important criteria for the design of the core set of the PATH indicators were to ensure a high level of face, construct, and content validity of the set of indicators. In practice, it meant that the indicator set should provide a view of performance that intuitively reflects the performance of the organization as a whole and provides insights for performance improvement. Finally, a balanced dashboard was built for hospital managers with the constant feedback of the field and was intended to follow the interests and authority of the users and the structure of accountability and authority within the institution [29]. These additional instruments and processes were developed to ensure that the PATH project would be built for use by hospital managers; still relying on a solid evidence base.
General discussion

Policy implications

Policy implications at international level

At the international level, the first policy implication would be to encourage international organizations to carry out or fund evaluations of implementations of health system stewardship and health system performance management. These evaluations should document the context and values in which the health system stewardship function and performance management approaches were implemented, as well as the barriers encountered by countries to implement an integrated performance management approach. In 2008, Member States of the WHO Regional Office for Europe endorsed the Tallinn Charter [59] with an explicit reference to stewardship as one of the four functions of health systems and endorsed a policy paper on health system stewardship at their 58th Regional Committee for Europe [60]. Since then, a health system stewardship and governance programme was created and regular health system performance assessments were carried out in several countries of the WHO European Region [61]. Several recent evaluations of national health plans or countries’ health systems by the WHO and the OECD assess the stewardship function of national health ministries [62,63].

In addition, international organizations should consider further supporting efforts of their member states in assessing health system performance as well as carrying out international comparisons of health system performance. Specifically, international organizations should be encouraged to support performance and practice benchmarking through small peer groups of countries, possibly focused on health system strategies and common reform objectives.

Further, it should be acknowledged that addressing the methodological difficulties of health system international performance comparisons and health system performance assessment requires continued investments in information systems. Such investments are important to implement performance management approaches on a larger scale, since performance management relies heavily on performance measurement [40]. Data quality, timeliness, and accessibility are important stakes from that perspective. It would also be beneficial for countries interested in implementing health system performance management to further invest in data linkage activities. In difficult economic and fiscal contexts, data linkage may be a way to enhance the value of health information available by linking, when possible, information on health system transformation with information on health outcomes. Interesting data linkage initiatives are currently piloted or implemented in a number of countries, for example in Nordic countries or in Canada with the Longitudinal Health and Administrative Databases initiative by Statistics Canada [64].
Finally, an important finding of the evaluation of the PATH project was that the contextual, process, and structural conditions under which international hospital performance measurement projects should be designed, developed, and implemented should be carefully considered. In practical terms, developing methods for countries to assess their degree of preparedness to participate in international hospital performance measurement projects such as PATH would be advisable. It may also be advisable for the WHO Regional Office for Europe to incorporate the findings of the evaluation presented in this thesis in their future development plans for the PATH project. The suite of performance measurement and management instruments of the project could add guidance to participating countries on how to assess a national context before implementation of such a project and how best to position the project; to define what minimum support processes should be in place at hospital and national levels and how to structure them; and to better understand how to maximize the value of international benchmarking networks.

**Policy implications at national and/or jurisdictional level**

A first policy implication would be for national health ministries to consider the minimum conditions to embark upon a rationale decision-making model involving a constant monitoring of mid- and long-term health system strategic issues. The need for minimum political stability, minimum level of quality of health information systems, and a culture prone to stakeholders' involvement in decision-making should probably be considered first. In addition, national health ministries interested in performance management could review how the various components of the performance management framework presented in this thesis relate to their policy functions and operational activities, and how their performance management activities are integrated to enhance the effectiveness of their efforts to improve health system performance. Especially, the clarification of the strategic intent of national health ministries would be a useful way to indicate what are the long-term and short-term objectives of the national health ministry and how success will be gauged. In addition, ensuring that performance management activities take into consideration the objectives pursued as well as the context and values in which health system transformation takes place was found to be critical to successful performance management approaches. Finally, embedding feedback loops into performance management cycles can support the clarification of roles and mutual responsibilities for the health system steward and its agents.

Furthermore, the findings of this thesis called for prudence on the side of policy-makers when using performance measures for accountability purposes. Depending on the nature of unmeasured risk factors, it may or may not be realistic or credible to hold clinicians or other providers fully accountable for performance differences, and policy-makers need to weigh competing arguments when deciding on the appropriate
use of risk-adjusted data. One of the findings of the study was that decision-makers should make the decision to risk-adjust depending on the objectives pursued as well as on other important contextual elements.

Policy implications at hospital level

A first policy implication of this thesis for hospitals is that performance measurement systems used for performance management purposes should be based on a robust conceptual framework providing a multi-dimensional perspective of performance; and on a small set of performance indicators derived from reviews of the scientific literature and offering a good level of face, content, and construct validity. In addition, strategies should be developed to support hospital managers in understanding the trade-offs between performance indicators and performance dimensions; and cognitive tools (such as visualization aids presenting, for example, performance trends and comparative performance) developed to support hospital managers in forming a judgment about overall hospital performance. Investments in business intelligence instruments could be considered when hospitals have the necessary resources to do so. All the principles stated above are currently used at the Canadian level for over 600 hospitals participating in the Canadian Hospital Reporting Project, for which performance results on a core set of clinical effectiveness and financial performance indicators are already available privately to participating hospitals and will be made public in March 2012 [65].

Furthermore, as already mentioned, hospitals should consider if the contextual, process, and structural conditions are met to successfully implement hospital performance measurement projects. Finally, the value of benchmarking networks at local, national, or international levels could be enhanced by developing practice benchmarking opportunities which would take into consideration the context of implementation of performance improvement activities.

Scientific implications

This section addresses the scientific implications of the theory and practice of health system performance management.

This thesis focused on the development and use of performance management at health system and health services levels. A number of findings added some additional knowledge to the field of health system research in general and health system performance management in particular. A first set of findings relates to the adaptation of rationale approaches such as management science or epidemiological approaches in political contexts at health system and health services levels. From this perspective, the importance of linking performance management approaches and contextual elements in order to implement change was an important finding for research
in the field of performance management and is consistent with the broader literature on health services research [10]. This finding was consistent at the international level (study on stewardship), national level (study on strategy-based performance management in Ontario, Canada), and hospital level (evaluation of the PATH project). This thesis also helped to define more precisely key concepts such as health system performance management, health system stewardship, and hospital performance measurement and management. In addition, this thesis proposed evaluation methods to assess the effectiveness of the implementation of these key concepts: an evaluation method was derived from a review of the literature to assess the completeness and consistency of the concept of health system stewardship in practice; a performance management framework was developed to support national health ministries and possibly provider organizations in reviewing their operationalization of performance management; and a conceptual model for hospital performance measurement and management was derived through various methods.

Finally, this thesis showed that it was important to use performance indicators with caution: beyond the specific findings related to the importance of considering place of residence when measuring patient experience, the study showed that not risk-adjusting for variables such as place of residence can alter performance rankings in a context of accountability. This study also found that contextual elements and especially objectives pursued by the steward should be considered when making the decision to risk-adjust. In any case, a correct conceptualization of the performance issue measured is paramount when adjusting for risks, and further research is still required in this area.

This thesis required a multi-disciplinary approach to tackle the main research question. It implied reviewing the literature from different disciplines such as management science, public administration, complexity theory, political science, public health, and health services research. In addition, we used various methods to engage health system practitioners in this research. One of the scientific merits of this thesis may have been the involvement of health system practitioners in the development and/or implementation of the research strategies. It allowed pursuing our research objectives in meaningful ways since performance management requires findings to be socially acceptable by the information users, while ensuring a high level of scientific rigour to the research.

As already discussed, the performance management paradigm is pivotal to the different waves of New Public Management approaches to better managing public services. New Public Management offers three broad streams of theory already introduced: neoclassical public administration and public management; management sciences; and new institutional economics. These orientations offer different perspectives to the reconfiguration of public sector activities but share
the common objective to transform services through a greater focus on managing performance and service improvement. This thesis has explored mainly the second theoretical stream, management sciences, which advocates for the introduction in the public domain of private sector management ideas and techniques. A number of performance management instruments and processes that could be applied to the public sector were studied and evaluated; and this thesis found that the stewardship and performance management models were conceptually aligned and consistent, and that performance management could be an instrument of health system stewardship in practice, under certain conditions. However, our research found that the theoretical boundaries between the three streams of New Public Management are not completely defined and there could be some level of overlap between management sciences, the neoclassical public administration theory, and new institutional economics. In particular, authors argue that the stewardship theory of management and the agency theory (part of the new institutional economics stream presented above) should not be opposed, but that there are certain conditions under which each theory is necessary [44].

Finally, a research and development agenda on health system performance management and health system research could be derived from this thesis. First, as already described, the importance of context, values, and goals in determining appropriate performance management approaches and tools in pursuit of health system performance improvement is poorly researched, and evaluations of implementation could add to the growing field of knowledge on health system performance management.

Second, there is a growing contribution of complexity theory to the field of health system research that could contribute to the body of work on health system performance management [66].

Third, the complexity of power plays between multiple stakeholders requires finding legitimate roles for different actors to carry out change. Therefore, more research is required about how to engage and involve different system actors in performance management: citizens at health system level, or patients and clinicians at hospital and system levels, for example. This is particularly important when resources are scarce and the relative value of competing investments has to be evaluated.

A fourth set of scientific implications relates to the difficulty of determining quantitatively the relative contribution of the health care system and of secondary and tertiary determinants of health to the achievement of health gains. It is an important area for future research so that national health ministries can assess the relative value of their investments in health and act on the factors influencing the goals they are pursuing in their stewardship function.
Fifth, another area requiring further research is the definition of supportive approaches to benchmarking and policy learning at different levels of the health system. At an international level, there are still debates about defining groupings of countries for which performance comparisons are meaningful. This is also true at the sub-national level or at the facility level. The literature on variations in health care and health systems shows the potential for peer learning and performance improvement; however it is still unclear what are the most effective ways to generate a supportive dialogue among parties willing to learn from one another. Furthermore, international performance measurement projects are rarely evaluated and their impact in different national contexts should be further researched.

A sixth poorly researched issue of importance to health system performance management relates to better understanding the trade-offs between performance measures and performance dimensions within a single performance framework [67]. This is also true at the different levels of the health system and complicated by the fact that managing health system performance requires the integration of patient-based and population-based performance indicators within a single health system performance framework, which has important sampling and statistical implications for analysing performance.

Finally, the improvement in clinical data systems and new possibilities for linking clinical data with survey data open new opportunities to re-examine the range of useful predictor variables in risk-adjustment models and enable fair and meaningful comparisons. This is also a promising area for future research related to health system performance management and accountability.
Conclusion

Based upon the six research objectives previously stated which were subsequently explored in the preceding seven chapters, some general conclusions on the development and use of performance management in health systems and services can be drawn. These conclusions are presented in the box below.

- Performance management requires conceptual clarity, a solid evidence base, and supporting instruments and processes meeting the information needs of decision-makers and system managers.
- Health system stewardship is a promising avenue for national health ministries to achieve better health system outcomes and performance management an appropriate instrument to implement stewardship in practice.
- Context is paramount when considering implementing health system stewardship and health system performance management approaches.
- Indicator selection for performance management purposes should rely on a solid scientific basis and engage experts and information users.
- Despite methodological challenges, the value of international health system performance comparisons is enhanced when focused on policy learning and performance improvement.
- Linking health system strategy, performance measurement, resource allocation, and accountability is a powerful lever to achieve better health system outcomes.
- It is important to embed performance management into policy functions and operational activities.
- It could be misleading to use performance indicators for accountability purposes when the proper variables have not been risk-adjusted for.
- International hospital performance measurement projects should consider elements of context, leadership, and processes in their design, development, and implementation.
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