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Original Article

Frameworks to assess health systems governance: a systematic review

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Abstract

Governance of the health system is a relatively new concept and there are gaps in understanding what health system governance is and how it could be assessed. We conducted a systematic review of the literature to describe the concept of governance and the theories underpinning as applied to health systems; and to identify which frameworks are available and have been applied to assess health systems governance. Frameworks were reviewed to understand how the principles of governance might be operationalized at different levels of a health system. Electronic databases and web portals of international institutions concerned with governance were searched for publications in English for the period January 1994 to February 2016. Sixteen frameworks developed to assess governance in the health system were identified and are described. Of these, six frameworks were developed based on theories from new institutional economics; three are primarily informed by political science and public management disciplines; three arise from the development literature and four use multidisciplinary approaches. Only five of the identified frameworks have been applied. These used the principal–agent theory, theory of common pool resources, North's institutional analysis and the cybernetics theory. Governance is a practice, dependent on arrangements set at political or national level, but which needs to be operationalized by individuals at lower levels in the health system; multilevel frameworks acknowledge this. Three frameworks were used to assess governance at all levels of the health system. Health system governance is complex and difficult to assess; the concept of governance originates from different disciplines and is multidimensional. There is a need to validate and apply existing frameworks and share lessons learnt regarding which frameworks work well in which settings. A comprehensive assessment of governance could enable policy makers to prioritize solutions for problems identified as well as replicate and scale-up examples of good practice.

Keywords: Evaluation, frameworks, governance, health systems

Key Messages

- Health system governance is one of the neglected agendas in health system research.
- There is currently a lack of evidence with regard to how governance can and is assessed at both national and sub-national level.
- Existing frameworks can be adapted to assess governance overall or specific components of governance.

Introduction

Governance is defined as the rules (both formal and informal) for collective action and decision making in a system with diverse players and organizations while no formal control mechanism can dictate the relationship among those players and organizations (Chhotray and Stoker 2009). Some authors criticize the concept of governance for being too vague (Schneider 2004:25) and there is confusion over how best to conceptualize it (Kohler-Koch and Rittberger 2006:28). Governance has been discussed in many disciplines such as political science, economics, social science, development studies and international relations using different theories. Governance matters as it is concerned with how different actors in the world function and operate and the reasons behind their decisions.

Political scientists are of the opinion that governance is not a science which can be 'adequately captured by laws, statues or formal constitutions' (Chhotray and Stoker 2009). Governance is not easily attained with laws, statutes or formal constitutions, rather it is a system level concept (macro level) in which systems or societies are driven by networks. Each network involves multiple nodes (organizations) with many linkages collaborating on different activities (McGuire 2010:437). The assumption is that passing a law or decree from a formal authority cannot in itself achieve engagement of key actors, and negotiation is key to success of governance within networks (Chhotray and Stoker 2009). Political scientists have also expressed concerns that there are insufficient tools to hold people accountable as governance is characterized by complicated policy networks and responsibility is diffused and shared among many stakeholders (Stoker 2006).

Governance in new institutional economics focuses on the role of institutions which shape interactions among actors within the constraints of the institutions (Chhotray and Stoker 2009). Choices are made within the context of institutional rules that shape and govern what is decided (Chhotray and Stoker 2009). This concept of governance has received support from other disciplines including political science. New institutional economists describe governance as a series of actions which secure voluntary co-operation among key actors.

Governance is becoming more important in international development, particularly due to the movement towards 'good governance' in international aid. The World Bank has played a central role in bringing governance into the development agenda, introducing the concept of 'good governance' in 1989 in a landmark report on sustainable growth in sub-Saharan Africa (World Bank 1989). The report encouraged donor countries to be 'selective' and to give aid to countries with a 'good policy environment' (Chhotray and Stoker 2009). In many ways, governance has been used as a political tool in international development, although this is often denied (Chhotray and Stoker 2009).

In relation to health, governance was introduced in the World Health Report in 2000, where the World Health Organization (WHO) defined it in terms of 'stewardship', and called for strategic policy frameworks combined with effective oversight, regulation, incentives and accountability. This definition is based on political ideology; that the health system can be influenced by transparent rules, governed by effective oversight and strong accountability (WHO 2007). More recently, health system governance has been described as 'an aggregation of normative values such as equity and transparency within the political system in which a health system functions' (Balabanova *et al.* 2013). As efforts to strengthen health systems and health service delivery have accelerated during the last few decades, governance has received increasing attention. Prominent international development partners have described governance as being the 'most important factor' for poverty alleviation and development (Graham *et al*. 2003).

Governance comprises different functions both within and outside the health sector. In the literature these are commonly described as 'principles', 'concepts', 'dimensions', 'components' or 'attributes'. These terms tend to be used synonymously in the literature. For this review, we used the term 'principles'. Research is needed both to explore each of the principles of governance in more depth and, to describe and assess governance more generally, in order to identify ways of improving health systems (Lowenson 2008).

Our own work is predominantly around improving availability and quality of maternal and newborn health services in low- and middle-income countries; and we hypothesize that governance principles, if implemented effectively, can make a difference to the functioning of healthcare facilities. Our primary aim was to understand which frameworks for assessing governance in health systems have been developed and how these try to operationalize and/or assess how governance principles at different levels of a health system are implemented. Duran and Saltman (2015) describe hospital governance as dependent on three interrelated levels; (1) the macro-level (health system within which the health facility operates); (2) the meso-level (institutional decision-making) and (3) the micro-level (hospital management focusing on day-to-day operations). Our motivation for summarizing and critiquing frameworks for governance is to understand whether and how they might inform the assessment of governance at the operational service delivery level of a health system (the health facility). In doing so, we acknowledge that frameworks can provide direction on what to consider in assessing governance, but, given the diffuse nature of governance, there is unlikely to be a generic way of assessing governance in health systems.

We conducted a systematic review of the literature to: (1) describe and critique how the concept of governance and the theories underpinning it have been applied to health systems globally; and (2) identify if and how frameworks have been developed and used to assess governance in the health system.

Methods

Search strategy and inclusion criteria

We developed two inclusion criteria to meet the above mentioned review objectives. For the first objective, we included any type of report or peer reviewed journal article that reported frameworks for assessing or defining health systems governance. For the second objective we were interested only in articles reporting research or evaluations of the application of governance frameworks (Table 1). We were only interested in articles reporting on governance frameworks which can be applied to the health sector, irrespective of disciplines. The search was limited to English language articles between January 1994 (the year when the term Governance was introduced by the World Bank) and February 2016.

We searched five electronic databases (Scopus, Medline, CINAHL, Global Health Database, Cochrane Library) using key words combined with the Boolean operators (AND, OR). For example, the key words for governance (governance, leadership, accountability, stewardship) were combined with terms relating to the health system (healthcare system, healthcare industry, healthcare reform, health system strengthening) and terms for frameworks (model, framework, indicator, definition, measure). All the terms were searched in abstracts, key words, subject headings, titles and text words. We searched Medline first, and adapted this search

Table 1. Inclusion criteria used to select papers for each stated objective

Objective	Inclusion criteria
1. Identify frameworks assessing governance as related to health systems	Studies (descriptive, reports of international organizations and research institutions) describing or reporting on frameworks developed for the assessment, conceptualization or description of health systems governance.
2. Identify research that explores application of governance frameworks to health systems	Studies (descriptive, observational, intervention studies) that describe the use of governance frameworks in the context of health systems or services.

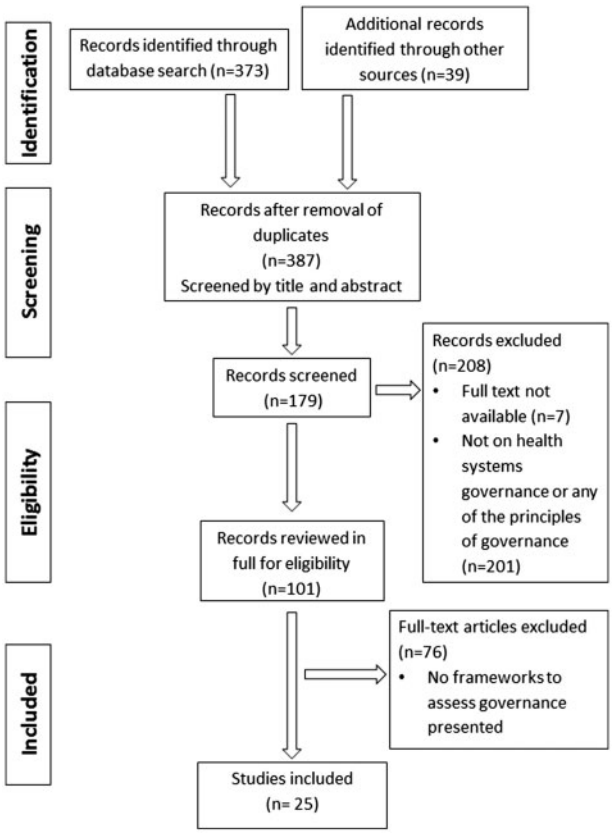

Figure 1. Flow diagram of study selection procedure and results (adapted from PRISMA 2009)

strategy for use with other databases. Search strategies used in each database, including search terms, search strings and results, are outlined in Supplementary Table S1.

In addition to the database search, we searched the online archives of specific journals that publish research on health systems and policy including '*Health Policy and Planning*' and '*Health Policy*' using 'health systems governance' as the key search term. Web portals of institutions including the Basel Institute for Governance, the World Bank and USAID Leadership, Management and Governance project were also searched. Furthermore, we checked the reference lists of studies that met our inclusion criteria and contacted the authors of identified frameworks to ask for any unpublished reports which were considered relevant.

Assessment of quality of included studies

We did not appraise the quality of studies describing frameworks health systems governance, as these were largely descriptive reports (Objective 1). For objective two, we included articles reporting empirical research, and we assessed the quality of these studies using simple criteria based on published checklists (Crombie 1996). Because the study designs were diverse, we appraised studies based on: the description of the study (aim, participants, methods, outcomes); the methods (appropriate to the aim, selection of participants, valid and reliable data collection methods, and adequate description of analysis) and presentation of the study findings. For qualitative studies, this included questions about appropriateness and reliability of analysis; and for those reporting quantitative data, we assessed whether the basic data were adequately described, and whether statistical significance was assessed.

The review identified a total of 10 empirical studies of which 9 were peer-reviewed, 3 were rated as high and 7 as medium quality. (Supplementary Table S2) All studies provided adequate descriptions regarding information of the study such as aims, study participants, methods employed and their intended measures. Seven studies used qualitative methods (interviews, focus group discussions), one used a quantitative method (survey) (Abimbola *et al.* 2015b) and two were mixed-methods studies (Mutale *et al.* 2012; Avelino *et al.* 2013). Seven studies provided information on how study participants were selected (Huss et al. 2011; Avelino *et al.* 2013; Mutale *et al.* 2013; Vian and Bicknell 2013; Abimbola *et al.* 2015a,b, 2016).

Seven studies provided information on methods of data analysis Baez-Camargo and Kamujuni 2011; Avelino *et al.* 2013; Mutale *et al.* 2013; Vian and Bicknell 2013; Abimbola *et al.* 2015a,b,2016. Among the seven studies which used qualitative methods, quotes were included in five; (Baez-Camargo and Kamujuni 2011; Huss et al. 2011; Vian and Bicknell, 2013; Abimbola *et al.* 2015a, 2016). All three studies which conducted statistical analysis provided a rationale for statistical calculations used.

Synthesis of review findings

As governance originates from many different disciplines, we undertook an in-depth analysis offering a theory-informed critique of the identified frameworks and of the literature on governance, extending beyond health systems. The findings of included studies were synthesized using narrative synthesis which is useful in synthesizing different types of studies without losing the diversity in study designs and contexts (Lucas *et al.* 2007; Barnett-Page and Thomas 2009; Wong *et al.* 2013). Included studies are summarized by objective in the results section, and by grouping them by the disciplines from which the frameworks originate.

Results

Description of included studies

We identified a total of 373 articles through database searching and 39 through other sources, of which 25 met the inclusion criteria (Figure 1) (Table 2).

Sixteen articles describe frameworks for assessing governance and 10 empirical research studies which describe how frameworks

Table 2. Overview of governance frameworks for health systems by type of discipline used to develop the framework

Disciplines	Name of the framework (underlying theory if any)	Application in empirical research (Author, year) (Country)
New Institutional Economics	Multi-level framework of Abimbola *et al.* (2014) (Theory of common pool resources)	Abimbola *et al.* (2015a) Abimbola *et al.* (2015b) (Nigeria)
	Accountability framework of Baez-Camargo (2011) (Principal–agent theory)	No
	Social accountability framework of Baez-Camargo and Jacobs (2013) (Principal–agent theory)	No
	Brinkerhoff and Bossert's framework (2008, 2013) (Principal–agent theory)	Mutale *et al.* (2012) (Zambia) Ramesh *et al.* (2013) (only literature review) Vian (2011) (Vietnam)
	Accountability framework of Cleary *et al.* (2013) (Principal–agent theory)	No (only literature review)
	European Commission (2009) (Principal–agent theory)	No
Political Science and Public Administration	Health work's accountability framework of Berlan and Shiffman (2012)	No (only literature review)
	Accountability assessment framework of Brinkerhoff (2004)	No
	Patron–client relationship framework of Brinkerhoff and Goldsmith (2004)	No
International Development	Framework of Islam (2007)	No
	Health development governance framework of Kirigia and Kirigia (2011)	No
	Framework of Mikkelsen-Lopez *et al.* (2011)	No
Multidisciplinary	Governance framework of Baez-Camargo and Jacobs (2011)	Baez-Camargo and Kamujuni (2011) (Uganda)
	Governance assessment framework of Siddiqi *et al.* (2009)	Siddiqi *et al.* (2009) (Pakistan)
	Cybernetic framework of Smith *et al.* (2012) (System theory)	Smith *et al.* (2012) (Australia, England, Germany, the Netherlands, Norway, Sweden, Switzerland)
	Vian (2008) framework to identify corruption in the health sector (Theory of institutional analysis—North 1990)	No

can potentially be used to assess health systems governance were identified.

One previous review on governance (a non-peer reviewed report) was conducted to inform the development of a framework which would be specifically used in surveys of the countries included in the Health Systems 20/20 project (Shukla and Johnson Lassner 2012). The report provides an overview of the current literature on governance in the health sector. The authors discuss 10 principles termed 'enablers' in detail and outline existing frameworks; highlighting how effective governance is associated with health outcomes in three country-level studies.

I. Description and critique of governance frameworks

We identified a total of 16 frameworks developed to assess governance in the health system. Of these, six frameworks were developed based on theories from new institutional economics; three are primarily informed by political science and public management disciplines; three arise from the development literature and four use multidisciplinary approaches (Table 3).

Frameworks originating from new institutional economics. Six frameworks conceptually originate from New Institutional Economics: EC (2009), Baez-Camargo (2011), Brinkerhoff and Bossert (2008), Baez-Camargo and Jacobs (2013), Cleary *et al.* (2013) and Abimbola *et al.* (2014). Among these, five use 'principal–agent' theory (Brinkerhoff and Bossert 2008; European Commission 2009; Baez-Camargo 2011; Baez-Camargo and Jacobs 2013; Cleary *et al.* 2013) while Abimbola *et al.* (2014) use Ostrom's theory of 'common pool resources'.

Principal–agent theory. In 'principal–agent' theory, a 'principal' hires or contracts an 'agent' to undertake a particular service (Chhotray and Stoker 2009). Agents may have similar as well as different objectives from those of the principal. Agents, usually have more information than the principal, providing them with an advantage to pursue their own interests at the expense of the principal. Fundamentally, the theory looks at how much of the value that the agent produces should go back to him/her in the form of incentives i.e. the agent (healthcare provider) produces certain services for the principal (the government), for which the agent expects some form of payment (Chhotray and Stoker 2009).

The other distinctive feature of the 'principal–agent' theory is that the principal does not have complete control over the agent and only has partial information pertaining to the behaviour (production) of the agent (Stoker 1998). This can lead to difficulties such as selection of agents, negotiation of services and monitoring of the information. Therefore, governance frameworks using the 'principal–agent' theory take into account the uncertainty and complexity of the outcomes of the behaviour of the agent (Stoker 1998).

Frameworks to assess health systems governance that draw on 'principal agent' theory, assume that governance is the result of interactions among principals and agents with diverse interests. Two key assumptions using 'principal–agent' theory are; (1) there are incentives and sanctions for the different actors which are performance-based and are used to stimulate accountability and,

Table 3. Summary table of governance frameworks identified, grouped by discipline

N	Author (year)	Name of the framework	Characteristics of the framework	Underlying theory if applicable	Purpose of the framework	Analytical focus
New Institutional Economics						
1	Abimbola et al. (2014)	'Multi-level' framework	A multi-level framework composed of three levels of the health system hierarchy; operational (citizens and healthcare providers), collective (community groups) and constitutional (governments at different levels). Theoretical underpinning borrowed from the concept of 'governing without government'. Under such situations, communities with similar interests can develop their own rules and arrangements to manage the common pool.	Ostrom's theory of 'common pool resources' (governance to manage 'common pool resources or the health system' and the 'tragedy of commons')	To assess governance of three levels of a health system (collective, operational and constitutional governance)	• Focuses on: (1) the essential role non-state actors can play in governance, (2) the rules and institutions that can be formed among communities with the same interest • Analyses formal ('rules-in-form') and informal ('rules-in-use') actors • Focuses on social interactions among different levels of the health system.
2	Baez-Camargo and Jacobs (2013)	Social accountability framework	Using the 'principal–agent' theory, the framework consists of two routes of accountability: short (direct) and long (indirect) routes. Direct accountability- is where citizens can 'voice' their preference or choose other alternatives (exit). Indirect accountability requires institutional capacity and a functioning public system.	Principal agent theory	To assess accountability	• Focuses on; (1) incentives that make people accountable, (2) institutional analysis-what are the rules set by institutions and (3) power distribution within institutions
3	Baez-Camargo (2011)	Accountability framework	Similar to above	Similar to above	Similar to above	Similar to above
4	Brinkerhoff and Bossert (2008, 2013)	'Principal–agent' model of governance framework	Governance is the result of interactions among principals and agents with diverse interests. Agents will provide services to the principals as long as they have some incentives but they have more information than principals. Principals will find ways to overcome the information asymmetry without much transaction costs.	Principal agent theory	To assess governance of a health system at national level	• Focuses on interactions among principals (citizens) and agents (state and healthcare providers) of a health system. • Using principal–agent relationship, analyses eight governance principles
5	Cleary et al. (2013)	Framework of accountability mechanisms in health care	A framework to assess accountability pathways among principal and agent. The accountability mechanisms are sub-divided into three critical factors responsible for functioning: resources, attitudes and values.	Principal agent theory	To assess accountability at primary care settings	• Focuses on: (1) incentives and sanctions for different actors, (2) information asymmetry and power difference between different groups of actors
6	European Commission (2009)	Governance analysis framework	The assessment starts with context analysis and stakeholders' mapping. Among the different principles, this	Principal agent theory with predefined principles (Development literature)	To assess governance of the public sector	• Assessment starts with context analysis and stakeholders mapping

(Continued)

Table 3. (Continued)

N	Author (year)	Name of the framework	Characteristics of the framework	Underlying theory if applicable	Purpose of the framework	Analytical focus
		in sector operations	framework focuses on accountability among different stakeholder groups. The framework does not include citizens among its six clusters of stakeholders.			• Focuses on type of accountability among key stakeholders (excludes citizens)
Political science and public administration						
1	Berlan and Shiffman (2012)	'Health worker accountability' framework	A framework to identify factors which shape the accountability of healthcare providers. Social interactions and norms operating within the system and context are prominent features of this framework.	No theory identified	To assess factors which may shape accountability of healthcare providers in developing countries	Accountability
2	Brinkerhoff (2004)	Accountability assessment framework	Framework to map accountability using components of public accountability; financial, performance and political accountability.	No theory identified	To assess different forms of accountability	Accountability
3	Brinkerhoff and Goldsmith (2004)	Framework to assess patron–client relationship	Framework to identify reasons why clientelistic practices persist. The authors use realist evaluation approach comprising of context, actions (mechanisms) and outcomes.	No theory identified.	• To develop a diagnostic tool to identify the patron–client relationship in development assistance • To identify harmful patron–client relationships and identify their trade-offs.	Trust and legitimacy The framework was developed for use by donor institutions
International development						
1	Islam (2007)	Governance framework from the health system assessment manual—Version 1	The framework is composed of two components: general governance based on six World Bank governance measures, and, health sector specific governance which is linked to stewardship in the health sector.	• No specific theory identified as used. Authors adapted WB principles of governance in developing their framework	To directly assess overall governance and health system-specific governance at national level.	To provide evidence that there is a relationship between governance indices and health system performance or outcomes.
2	Kirigia and Kirigia (2011)	'Health development governance' framework	This framework is intended for use in Africa and comprises 10 principles and 42 sub-functions. Using a similar formula to the one used by UNDP to calculate the Human Development Index, the authors developed their own scoring from 0% (very poor) to 100% (excellent) for each function.	• No specific theory was used. The authors adapted UNDP principles of governance and Siddiqi's framework to quantify the functions of governance.	• To directly assess governance at national level • To provide a scoring of governance with comparison between countries over time • To alert policy makers to areas needing improvement.	The framework tries to quantify governance using rules-based measures such as the existence (or not) of certain policies or guidelines.
3	Mikkelsen-Lopez et al. (2011)	Framework to address governance of the health system	The framework uses a problem-driven approach and considers the five health system building blocks under five proposed principles of governance.	• No identified theory was used but the authors used the system thinking approach applied to the WHO health system building blocks	To assess governance of a preidentified problem in a health system, filtering through each of the health system building blocks	• To assess all four levels of a health system (national, district, facility and community) using the health system building blocks

(Continued)

Table 3. (Continued)

N	Author (year)	Name of the framework	Characteristics of the framework	Underlying theory if applicable	Purpose of the framework	Analytical focus
Multidisciplinary						
1	Baez-Camargo and Jacobs (2011)	'Inputs-processes-outputs' governance framework	The framework starts with a stakeholders' and power distribution mapping (including both formal and informal actors). The framework is presented as a visual process map of causal links between inputs, processes and outcomes to provide better explanations and easier application.	• Institutional analysis theory (North 1990) from New Institutional Economics • Development literature and predefined principles	To assess governance of a health system with a pre-identified problem in health system performance	• Analyse governance as being the result of interactions among different key stakeholders (formal and informal actors) • Assess predefined governance principles in terms of inputs (strategic vision, participation and consensus orientation), processes (accountability, control of corruption, transparency) and outcomes (responsiveness, equity and efficiency).
2	Siddiqi et al. (2009)	Governance assessment framework	The framework aims to directly assess health system governance using a hierarchical approach from national to policy implementation level. A total of 10 governance components are disaggregated into 63 broad questions under their relevant domains.	• Institutional analysis theory (North 1990) • Development literature; the authors adapted the UNDP principles of governance in developing their framework	• To assess overall governance of a health system at three levels of the health system (national, district, facility) using governance principles • To provide a context specific assessment of governance of the health sector	• To assess different players in the health market of a health system (government, for-profit and not for-profit providers, informal networks etc.) • To analyse the context of institutions (incentives, rules that influence behaviour of key actors)
3	Smith et al. (2012)	'Cybernetic' framework	The Cybernetic model of leadership and governance is a mix of traditional hierarchy, market and network types of governance. The framework includes three governance components: setting priorities, performance monitoring and accountability.	• System theory	A system can self-regulate through feedback mechanisms.	• Focuses on how systems use information and how they seek to monitor actions to steer towards their goals. • Focuses on accountability and management of networks.
4	Vian (2008)	Framework to identify corruption in the health sector	This framework is based on the assumption that key players in the health system have certain opportunities which are the product of formal and informal rules and constraints set by the institutions. Corruption occurs as a result of taking advantage of opportunities within the institutions.	• Institutional analysis theory (North 1990)	• To guide policy makers in examining corruption in the health sector • To identify possible ways to intervene	Corruption as seen from the view point of government. The framework also considers other factors such as socio-interpersonal pressures, rule of law, individual and organizational level influences and interactions and key stakeholder interests.

(2) information asymmetry and power difference among different groups. Healthcare users are normally regarded as 'principals' while the state and healthcare providers are 'agents' providing healthcare services to users (Brinkerhoff and Bossert 2008; European Commission 2009; Baez-Camargo 2011; Baez-Camargo and Jacobs 2013; Brinkerhoff and Bossert 2013; Cleary *et al.* 2013). Agents provide services to principals as long as they have some incentive to do so, but they have more information than principals. At the same time, principals will find ways to overcome the information asymmetry without incurring high transaction costs. For instance, users will look for alternative providers by comparing price, quality or value. In addition, context matters in these frameworks as the 'principal–agent' model is a highly complex set of interactions and not a closed system. It helps to explore how policy makers respond to citizen demands, how health service providers and users engage to improve service quality, and how service providers and users advocate and report on health outcomes.

The framework by Brinkerhoff and Bossert (2008, 2013) is based on a World Bank (2004) accountability framework. The framework depicts three principal–agent relationships: government and healthcare providers; healthcare providers and citizens; and government and citizens. The other framework which uses the 'principal–agent' theory is the governance framework of the European Commission (2009). The EC (2009) framework aims to assess governance at sector level especially in the context of development and aid assistance worldwide. The EC framework takes into account the importance of context and assessment starts with context analysis and stakeholder mapping. Similarly to the framework by Brinkerhoff and Bossert (2008, 2013), the EC framework considers power, interactions and functions of stakeholders as core governance issues, but also includes principles of participation, inclusion, transparency and accountability. Among different principles, the framework focuses on accountability among different stakeholder groups. Though the framework is intended to be used for development and aid assistance, the framework does not include citizens among the defined clusters of stakeholders. The EC (2009) framework has a ready-to-use tool with detailed instructions. Examples from previous EC projects globally are provided with suggestions on how to improve governance. Although the authors do not empirically test the framework, they suggest how it might be applied it to a fictional country in sub-Saharan Africa.

Baez-Camargo (2011) and Baez-Camargo and Jacobs (2013) proposed an analytical framework of 'social-accountability' by adapting the World Bank accountability model (World Bank 2004). Using the 'principal–agent' theory, Baez-Camargo (2011) presented incentives and sanctions within two routes towards accountability: short (direct) and long (indirect) routes. Direct accountability is most suitable in the competitive market where citizens can 'voice' their preference or choose other alternatives (exit). On the other hand, with indirect accountability, the link between citizens and healthcare providers is considered 'indirect' as the government agent is involved in the accountability relationship; citizens hold the government agent accountable either through political representation (votes) and the government holds healthcare providers accountable to deliver healthcare services. Direct accountability has received the most attention as it can be promoted either through citizens' participation in service planning, or voicing concern about service providers' performance (voice), or through citizens' choosing other providers (exit). However, it is important to be careful about applying the concept of direct accountability to health care in settings where market competition fails to provide healthcare services to the most vulnerable groups. The authors include tools for key informant interviews.

Another framework using 'principal–agent' theory is the accountability assessment framework for low- and middle-income countries developed by Cleary *et al.* (2013). By adapting the Brinkerhoff and Bossert (2008) framework, the authors emphasize the accountability pathways among three groups of key actors (politicians/policy makers; healthcare providers and citizens). The Cleary framework claims to assess both external and internal accountability mechanisms via three critical factors: resources, attitudes and values. The authors highlight that adequate resources are critical for the health system to function properly while it is important to understand the attitudes of healthcare providers and policy makers without neglecting the values of citizens.

Theory of common pool resources. Our review identified one framework which uses theory derived primarily from economics; Elinor Ostrom's theory of 'common pool resources' (Ostrom 1990). This theory describes governance as an autonomous system with self-governing networks (or systems) of actors (Stoker 1998). The theory assumes that actors in self-governing networks can not only influence government policy but can also take over some of the business of the government (Stoker 1998). Ostrom's theory focuses on creating different institutional arrangements to manage open resources which are finite. Communities can form self-organized networks or systems composed of interested actors who will develop incentives and sanctions to manage the resources on their own (Stoker 1998). The theory assumes that self-organized systems are more effective than regulation imposed by the government as there will be increased availability of information and reduced transaction costs (Stoker 1998). Indeed, the theory postulates that in situations where government is 'under-governed', social norms fill those gaps (Olivier de Sardan 2015). A similar assumption is highlighted by Dixit (2009) civil-society organizations and non-governmental organizations emerge to fill gaps in functioning when government organizations serve poorly. The theory proposes that there are three levels of a common pool resource problem: (1) an operational level where the working rules are set, (2) a collective level where communities set their own rules, and, (3) a constitutional level from where the set rules originate (Ostrom, 1990:45).

Using Ostrom's theory of 'common pool resources', Abimbola *et al.* (2014) developed a multi-level framework to analyse primary healthcare (PHC) governance in low- and middle-income countries. The authors borrowed the concept of 'governing without government' in situations where overall governance situations are not functioning. In such situations, communities with similar interest might develop their own rules and arrangements to manage the common pool. Ostrom argued that self-governing arrangements lead individuals or groups to cope with problems by constantly going back and forth across levels as their key strategy. Abimbola's framework (2014) describes the three collective levels of health system hierarchy as; (1) operational (citizens and healthcare providers), (2) collective (community groups) and (3) constitutional governances (governments at different levels). A multi-level framework is believed to be more effective at assessing governance than a single unit assessment. Operational and collective governance can mitigate the failure of constitutional governance, although, there is also some overlapping of roles and responsibilities.

Frameworks originating from political science and public administration. Three frameworks conceptually originate from political

science and public administration disciplines: Berlan and Shiffman (2012), Brinkerhoff (2004) and Brinkerhoff and Goldsmith (2004). None of the frameworks mention any particular theory on which their frameworks are based. The concept of governance for political scientists focuses on 'formal institutions, accountability, trust and legitimacy' for governance (Pierre and Peters 2005:5). They are interested to see how collective decisions are made among key actors (both government and non-government actors) with different power (Chhotray and Stoker 2009). Thus, governance from political science and public administration focuses on both inputs (the processes) and outputs (results of governing networks) (Chhotray and Stoker 2009).

Berlan and Shiffman's framework (2011) assumes that healthcare providers in low- and middle-income countries have limited accountability to their consumers as a result of both health system and social factors. Oversight mechanisms, revenue source and nature of competition are related to the health system while consumer power and provider norms are considered under social factors. Their framework helps to identify factors which shape the accountability of healthcare providers. In addition, social interactions and norms operating within the system and context are prominent features of this framework.

Brinkerhoff's framework (2004) is also based on accountability, and aims to map out public accountability mechanisms: financial, performance and political accountability. In this framework, performance accountability is defined as agreed upon targets which should theoretically be responsive to the needs of the citizens. Political accountability emphasizes that electoral promises made by the government should be fulfilled. Brinkerhoff highlights the need to map out the accountability linkages among key actors and to examine actors' interactions as too few linkages can lead to corruption while too many can undermine accountability effectiveness. Together with his framework, Brinkerhoff proposes three strategies to strengthen accountability; (1) addressing fraud, misuse of resources and corruption, (2) assuring compliance with procedures and standards and (3) improving performance. The framework includes an accountability assessment matrix which allows the user to rate accountability linkages among key actors.

The third framework that draws on political science assesses the patron–client relationship or clientelism in health systems (Brinkerhoff and Goldsmith 2004). Despite the unpopularity of clientelism, it is regarded as an essential principle of governance which can affect corruption and accountability mostly at macro/national level. The purpose of the framework is to identify reasons why clientelistic practices persist and the authors use the concept of realist evaluation theory comprising of context, actions (mechanisms) and outcomes. Although the framework has not been used in the field, the authors present a diagnostic framework with sample questionnaires.

Frameworks originating from international development. In the development literature, governance focuses on predefined principles which development specialists believe to be critical for 'good governance' in aid assistance. The three frameworks identified (Islam *et al*. 2007; Kirigia and Kirigia 2011; Mikkelsen-Lopez *et al*. 2011) focus primarily on how governance is defined, how it can facilitate effective aid policy, and, unlike any of the other frameworks, those in international development are concerned with how governance might be measured. Kauffman and Kraay (2007) propose to measure governance in two ways using rule-based measures (e.g. a policy or a procedure exists) and outcome-based measures (e.g. the policy has been implemented or the rule has been enforced) (Chhotray and Stoker 2009).

Islam (2007) present a health systems assessment manual which includes a framework to assess governance, developed under the Health Systems 20/20 project (USAID). The aim is to guide data collection providing a rapid but comprehensive assessment of key health system functions. Based on the six domains of the health system (1) service delivery; (2) health workforce; (3) health information systems; (4) access to essential medicines; (5) financing; and (6) leadership and governance. This framework groups indicators into general governance (e.g. voice and accountability; political stability; government effectiveness; rule of law; regulatory quality and control of corruption) and health system specific governance indicators (e.g. information/assessment capacity; policy formulation and planning; social participation and system responsiveness; accountability; and regulation). The authors suggest various sources of data for the different indicators, including interviews with relevant key stakeholders and desk-based review of relevant documents and reports.

Another framework that attempts to measure governance is one based upon Siddiqi *et al*. (2009), which also includes principles of macroeconomic and political stability (Kirigia and Kirigia 2011). The authors emphasize that development in health cannot occur without political and economic stability in the form of a national economic development plan or poverty reduction strategy, a medium-term government expenditure framework, and a non-violent electoral process. The authors argue that individual and aggregate scores of governance are needed to alert policy makers to areas needing improvement. This is the only framework identified in our review which tries to quantify governance by using rule-based measures such as existence of certain policy or guidelines. The authors propose a scoring system that determines whether governance is very poor (0%) or excellent (100%) for each function. Kirigia and Kirigia (2011) argue that scoring allows assessors to identify areas for improvement, and an overall index representing the overall governance situation in any given country can be calculated.

The final framework (Mikkelsen-Lopez *et al*. 2011) is based on systems thinking, and uses a problem-driven approach to assess governance in relation to an identified problem to highlight the barriers to good governance. The framework assesses governance in all four levels of a health system (national, district, facility and community) using the established WHO health system building blocks and five proposed principles of governance: (1) strategic vision and policy design; (2) participation and consensus orientation; (3) accountability; (4) transparency; and (5) control of corruption. The authors developed this approach in response to other frameworks on governance that provide snapshots of any given governance situation, but are unable to identify specific areas of weakness and/or how to intervene. However, despite providing a way to identify barriers to good governance, the framework does not easily allow for comparisons between different contexts, and it is not clear if it has actually been applied in practice.

Frameworks originating from more than one discipline. Four frameworks appear to be based on principles of more than one discipline (Vian 2008; Siddiqi *et al*. 2009; Baez Camargo and Jacobs 2011; Smith *et al*. 2012). Three of these (Vian 2008; Siddiqi *et al*. 2009; Baez Camargo and Jacobs 2011) draw on the 'institutional analysis' theory of North (1990), originally derived from new institutional economics. The frameworks also seem to reflect predefined governance principles in line with the international development literature.

Theory of 'institutional analysis'. Douglas North's theory of institutional analysis assumes that markets are created and maintained by institutions. North defined 'institutions' as the rules of the game and 'organizations' as the players. Institutions consist of formal rules and informal constraints while organizations consist of groups of individuals with common objectives (North 1990). North's principal argument is that individuals within an institution have certain opportunities which are the result of specific formal and informal constraints that constitute the institutions. Using the theory of North (1990), Vian (2008), Siddiqi *et al.* (2009) and Baez Camargo and Jacobs (2011) highlighted that institutional analysis is key to assessing governance in order to understand the institutional arrangement and rules set by the organizations. A mapping of the power distribution can be used to identify the key decision makers who affect the behaviour of health system actors.

In addition to application of North's theory of institution analysis, Siddiqi *et al.* (2009) propose a comprehensive framework to assess governance based on the UNDP principles of governance. This framework includes ten principles, disaggregated into 63 broad questions under three relevant domains: context, processes and outcomes. In conceptualizing governance in this way, the authors suggest that their framework could be used to compare governance functions across countries. The framework is intended for use at both national (policy formulation) and sub-national levels (policy implementation and health facility levels) to assess all essential principles of health systems governance; something which other frameworks do not aim to do. In particular, the potential for application of the framework at subnational level is a unique feature as most other governance frameworks are developed for macro-level assessment.

Baez-Camargo and Jacobs (2011) propose an 'inputs, processes and outputs' framework for health systems governance in low-income countries. The authors acknowledge the existence of other frameworks to assess health systems, but set theirs apart by focusing on generating information on the complex context within which the health system operates. The framework draws on the values of good governance articulated in the development literature, and 'Institutional analysis' to map out key stakeholders and the power distribution among them. The framework is presented as a visual process map of causal links between inputs, processes and outcomes, which they believe helps to provide a better explanation of governance and easier application of the framework. The authors provide detailed methodology, tools and procedures for using the framework in practice, but acknowledge that their model cannot assess health systems governance in its entirety. It is recommended for use in contexts where a particular problem has first been identified.

Vian's (2008) framework specifically analyses corruption in the health system from the perspective of the government. It draws on North's principal argument that key players in the health system have certain opportunities which are the product of formal and informal rules and constraints set by institutions (North 1990). The author also employs 'principal–agent' theory as the framework takes into account asymmetric information among different actors with diverse interests within a health system. The framework is based on the assumption that corruption in the health sector is driven by pressures of government agents to abuse, opportunity to abuse, and social factors supporting abuse of the system. Therefore, the framework is diagnostic in nature as it aims to identify potential abuse that can occur at each step of a health service delivery process.

Smith *et al.* (2012) describe a 'cybernetic' framework for leadership and governance which uses systems theory. This theory is interdisciplinary and is concerned with discovering patterns in the way systems (including health systems) operate. Smith *et al.* consider it important to view governance as hierarchical (rules and responsibilities for allocating resources) and horizontal (both incentives and the market regulate purchasing power, and systems produce common values and knowledge through professional norms). Cybernetics focuses on how systems use information, and how systems monitor actions to steer towards their goals. The framework includes three key principles related to this: setting priorities, accountability (inputs into the health system) and performance monitoring (output). The framework focuses on the leadership principle of governance and was developed for use in health systems in high-income countries, so would require adaptation to low-and middle-income settings.

II. Description of how frameworks have been applied to assess governance in health systems

Among the 16 frameworks identified that can potentially be used to evaluate health systems governance, only 5 (Brinkerhoff and Bossert 2008; Siddiqi *et al.* 2009; Baez-Camargo and Jacobs 2011; Smith *et al.* 2013; Abimbola *et al.* 2014) have actually been applied. (Supplementary Table S2).

Among the 12 publications describing how frameworks have been applied, seven use 'principal–agent' theory; two make use of the theory of 'common pool resources'; two use North's institutional analysis; and one uses 'cybernetics' theory.

Studies which used 'principal–agent'theory . Among frameworks using 'principal–agent theory', Brinkerhoff and Bossert's framework is the most commonly applied (five studies; Mutale *et al.* 2012; Vian *et al.* 2012; Brinkerhoff and Bossert 2013; Cleary *et al.* 2013; Ramesh *et al.* 2013) while the other three studies (Huss *et al.* 2011, Avelino *et al.* 2013; Vian and Bicknell 2013) used a variant of the 'principal–agent' theory. The USAID health system assessment team used Brinkerhoff and Bossert's governance framework in their manual for assessing health systems. According to Health Systems 20/20, the manual is currently used in 23 Health Systems 20/20 projects funded by the USAID in countries in East, West, and Southern Africa, as well as in the Caribbean islands (Health Systems 20/20, 2012).

Mutale *et al.* (2012) adapted Brinkerhoff and Bossert's framework to assess governance at health facility level in Zambia while Ramesh *et al.* (2013) used the framework at national level in China. Cleary *et al.* (2014) adapted Brinkerhoff and Bossert's framework to assess accountability mechanisms in low- and middle-income countries. Vian *et al.* (2012) employed Brinkerhoff and Bossert's framework to assess corruption in the Vietnamese health system.

Three other studies (Huss *et al.* 2011; Avelino *et al.* 2013; Vian and Bicknell 2013) applied the 'principal–agent' theory to assess governance in Brazil, India and Lesotho. Huss *et al.* (2011) applied a variant of the 'principal–agent' model in their assessment of governance focusing on corruption in Karnataka State, India. Contrary to the traditional application of 'principal–agent', Huss *et al.* refer to the 'state' as 'principal' while 'public service providers' are 'agents' to deliver certain services for 'citizens'.

All studies used two principal–agent relationships—the relationship between citizens and government and between government and healthcare providers—with the exception of Vian and Bicknell (2013) who use a single principal–agent model (state-healthcare provider). The studies evaluate the principal and agent engage and interact to accomplish a collective effort and clearly highlight the importance of information asymmetry.

Studies which used 'multilevel framework' of governance. Two studies (Abimbola *et al.* 2015a,b) applied the 'multilevel framework' by Abimbola *et al.* (2014).

Abimbola *et al.* (2015a) adapted the 'multilevel framework' to identify the effect of decentralization on retention of PHC workers in Nigeria. The framework was used to assess government, communities and intrinsic health workers' factors influencing retention of PHC workers in a decentralized health system. The framework helped identify incentives for, and motivation of, PHC workers and the reasons they remain in post despite socio-economic hardship.

The 'multilevel framework' was also applied to provide recommendations to improve health system governance at operational level among tuberculosis (TBC) patients in Nigeria (Abimbola *et al.* 2015b). The framework was used to assess the three different levels of governance: constitutional (federal government); collective (communities) and operational (healthcare providers at local health market). In this, the concept of Williamson's Transaction Cost Theory (1979) was used to identify the costs incurred by TBC patients to receive appropriate anti-TBC treatment from a qualified provider working within the health system. Transaction costs are difficult to measure thus Williamson suggested looking into 'the issues of governance comparatively'. The central argument of Williamson's theory is that 'high transaction costs' can be attributed to governance failure which requires looking for alternative modes of governance to achieve 'economizing' results (Williamson 1999). In both studies, self-governing individuals at three levels of a system are trying to overcome a common problem by identifying ways which are workable for them.

Studies which used North's theory of 'institutional analysis'. Siddiqi *et al.* (2009) used their own framework to assess governance of the health system in Pakistan, and explored governance principles in depth using qualitative interviews. The authors assessed three different levels of the health system—national (policy formulation) and sub-national levels (policy implementation and health facility levels). The authors highlighted the importance of understanding the socio-political context of a country and show that the principles of health systems governance are value driven. In addition, Siddiqi *et al.* emphasize that health system governance can be improved without improving the overall governance of a country.

Baez-Camargo and Kamujuni (2011) conducted an assessment of the governance of the public sector drug management system in Uganda using the framework of Baez-Camargo and Jacobs (2011). The assessment started with an institutional mapping which included interviews with both formal and informal sectors of the supply chain in Uganda. Focus group discussions were also conducted with healthcare providers, patients and representatives of patient advocacy groups.

Others. Smith *et al.* (2012) applied their cybernetic framework at national level to seven health systems in high-income settings (Australia, England, Germany, the Netherlands, Norway, Sweden and Switzerland). The framework is composed of three key nodes of governance (setting priorities, accountability and performance monitoring) which serve as the guiding principle for assessing hierarchy, market and network governance. One important lesson highlighted by the authors is that competency and capacity at the different levels of a health system are crucial for successful implementation of the leadership and governance model.

Discussion

This systematic review brings together the literature on health systems governance, firstly by describing and critiquing how the concept of governance and the theories underpinning it have been applied to health systems, and secondly by identifying which frameworks have been used to assess health systems governance, and how this has been done to date globally. A total of 16 frameworks were identified, which, in principle, can be used at national (policy formulation) and sub-national (policy implementation) levels of a health system. Frameworks originate mainly from three disciplines: (1) new institutional economics; (2) political science and public administration; and (3) the international development literature.

The most commonly used theories which underpin the available frameworks originate from new institutional economics and include the 'principal–agent' theory, Douglas North's theory of institutional analysis and Elinor Ostrom's theory of 'common pool resources'. Frameworks that originate from the development literature tend to pre-define principles of governance and are the only ones to attempt to measure governance (for instance, Kirigia and Kirigia 2011). The majority of frameworks assess overall governance while some assess specific principles of governance such as accountability, corruption and patron–client relationship.

Most frameworks assess governance in health systems using qualitative methodology, based on the premise that governance is the result of interactions among different actors within a health system, and that studying the reasons for and the extent of interaction can be used to document good governance. Other authors propose using mixed methods; collecting data on framework indicators (e.g. Mutale *et al.* 2012) in combination with in-depth exploration of specific problems identified.

It is encouraging to see that there are three frameworks that have been used to assess governance at all levels of the health system; Brinkerhoff and Bossert (2008), Siddiqi *et al.* (2009) and Abimbola *et al.* (2014). Governance is a practice, dependent on arrangements set at political or national level, but which needs to be operationalized by individuals at lower levels in the health system; multi-level frameworks acknowledge this and recognize the importance of actors at different levels. Some assessment frameworks explicitly mention pre requisites needed for successful application, such as the framework by Baez-Camargo and Jacobs (2011) which requires a governance problem to be already identified, and the cybernetic model presented by Smith *et al.* (2013) which requires users' familiarity with the health system.

This review also illustrates that health system governance is complex and difficult to assess; the concept of governance originates from different disciplines and is multidimensional. Governance more generally has been debated and studied from many different perspectives. This review attempts to synthesize how these perspectives have led to the development of governance in health systems. Critical analysis shows that frameworks for assessing governance may be applicable in one setting but not another. There is no single, agreed framework that can serve all purposes as the concept of governance will likely continue to be interpreted openly and flexibly. However, for governance principles to contribute to health system strengthening in countries, and ultimately to impact on outcomes, it is critical to at least evaluate and monitor if and how governance works (or not) in practice. As each health system operates in its own context, and different components of governance may need to be prioritized over others in different settings and at different times, it is important that any assessment of governance recognizes the particular circumstances and has a clear purpose. Assessing health systems governance can raise awareness of its importance to health policy makers, identify problems or conversely, document success stories. This can encourage and catalyse improvement in health systems. The aim of this review was to provide an overview of

frameworks available and describe how they have been developed, adapted or applied to assess health systems governance in operation. We recognize that the main utility of the synthesis is not to identify features of a single agreed framework, rather the frameworks identified and reviewed can help assessors to identify relevant questions to ask of health systems governance, and identify elements that could be included in an assessment.

Outside of the limited evidence on how governance can be assessed in health systems, this review also highlights examples of how governance has been assessed in other disciplines. Both rules-based and outcomes-based approaches to assess governance have been critiqued for their limitations as they largely depend on how and what you propose to measure (Chhotray and Stoker 2009). Though such assessments provide valuable insights, the approach is somehow limited as it often fails to be explicit about the measurement (Chhotray and Stoker 2009). This highlights that it is more important to identify what governance arrangements are considered appropriate for a particular context (prescriptive measures) than to judge the governance of a particular system (diagnostic measures) (Chhotray and Stoker 2009).

The findings of this review could help to inform discussions among policy makers in countries considering governance as a mechanism to support health systems strengthening. Findings will help decision makers form a view on what governance is, and which principles are important in their context. Policy implementers at a more local level may choose and adapt one of the available frameworks or tools to assess governance and/or identify gaps in governance arrangements.

Conclusions

A variety of frameworks to assess health systems governance exist, but there are not many examples of their application in the literature. There is a need to validate and apply the existing frameworks and share lessons learnt regarding which frameworks work well in which settings to inform how existing frameworks can be adapted. A comprehensive assessment of governance could enable policy makers to prioritize solutions for problems identified as well as replicate and scale-up examples of good practice. Governance is not an 'apolitical' process, and there are no absolute principles that define governance; it is a diffuse concept that cuts across disciplines, and borrows from a range of social science theories. However, whether it is applied to health systems or political science, governance is concerned with how different actors in a given system or organization function and operate and the reasons for this. In the context of health systems governance, we believe a multidisciplinary approach to assessment is necessary.

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Supplementary Data

Supplementary data are available at *HEAPOL* online.

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