Improving Service Provision – The Health Care Services' Perspective

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How to improve service provision in the health care sector is a question of high economic and social relevance, as the health service industry represents a major part of developed nations' economy and health care is a service virtually everyone is touched by in their life. The topic embraces different perspectives or levers, including the (re)organization of service provision, a stronger focus on the patient in the service delivery process, and the crucial role of employees in health service provision. We invited a group of well-renown scholars from different academic fields to share with us personal observations, empirical evidence, and interpretations of how to improve service provision in health care in the form of individual commentaries that cover the different perspectives. The resulting special research article includes motivations on why changes in the health care sector make service management research (smr) more relevant, it depicts implications (of smr) for health care organizations, and it outlines suggestions for future research. This article is designed to offer avenues for further service research on different perspectives for the improvement and professionalization of health care – a discipline in which joint efforts of service and health care researchers can have great societal impact.

Introduction

Health care has a pervasive impact on economies and the quality of people's daily life. While health services have certain characteristics in common with other services, they also show distinct features which makes the health care industry a fertile field for service researchers (Berry and Bendapudi 2007). We first briefly describe similarities between health care and other services. Next, we discuss in greater detail dissimilarities between health care and other services.

Health services are similar to other services in that they are characterized by intangibility, inseparability, perishability, and credence service. Yet health care also has uncommon characteristics that merit attention in service research, highlighted in the following.

Customers are sick: Health care customers are usually ill and under stress. Under those circumstances, medical customers can be far more emotional, demanding, sensitive, and/or dependent than they would normally be as consumers. The combination of illness, pain, uncertainty, and fear and the one hand and relief, jubilation and thankfulness on the other influences their ability to make choices. Hence, decision-making is likely to be incomparable to other service situations.

Customers are reluctant: In contrast to most other services, health care is a service that people need but do not necessarily want. Customer reluctance may affect quality of care, due to customer unwillingness to perform the co-producer role necessary for successful service provision, as well as service quality perceptions as customers might evaluate desired and dreaded services differently.

Customers relinquish privacy: Health care services are inherently personal but not private. To receive the best possible care, patients may not only have to disrobe, but they may also have to discuss highly personal matters such as psychosocial issues, even with staff they are meeting for the first time.

Customers need "whole person" service: Health care services need to be customized to fit not only a patient's medical condition but also the patient's age, mental condition, personal traits, preferences, family circumstances, and financial capacity/insurance status. Additionally, health care customers (sometimes) live in the service "factory" – they are patients. Even when service quality is superb, the experience of hospitalization is frightening and patients do not enjoy themselves in hospitals. Lack of control, lack of privacy, unfamiliarity with the surroundings and processes as well as high level of noise all harm the service experience.

Customers are at risk: It is difficult to imagine a service where customers are more at risk than the health care service. Preventable and unpreventable hospital-acquired infections (called nosocomial infections), medication errors, and communication failures such as misinformation in medical records or missing records, poor communication among clinicians, mishandling of patient requests and messages, and inadequate reminder systems all contribute to health care being rather unsafe. At the same time, errors often have more severe and irreversible consequences than in other services.

Health service employees are stressed: Serving acutely ill people is exceedingly stressful work. Doctors and nurses treating people with acute illnesses are visibly more tired and fatigued on the job as any other service providers. The stress is caused both by the behavior of the customers (see *customers are sick and reluctant*) and due to the working conditions, making work mentally and physically demanding, subject to time pressures, often with only few breaks and even interrupted sleep.

Third-party payers, cost of service unknown: Consumers with (any kind of) health insurance do not pay the full cost of the services they use. As such, health care is the only service that consumers commonly purchase without knowing its actual cost.

Distorted market mechanisms: The market mechanism that is taken for granted in other service sectors is broken

in health care. Unlike other services in which demand increases supply, in health care supply increases demand.

High variation in quality of care: Health care services are both labor and skill intensive, contributing to considerable variability in performance from one health service employee/provider to another. Additionally, the relationship between quantity and quality is highly complex, with sometimes increasing volumes leading to better quality, but sometimes also worsening it. Finally, customers have very limited ability to assess the quality, even after service provision.

In conclusion, the health care services sector offers an area of research with high potential for making significant contributions (Berry and Bendapudi 2007). This "special" research article intends to offer in-depth reflections brought together through commentaries of respected scholars on the subject of health service management. The commentaries provide the authors' perspectives on, for instance, crucial research questions and open research areas related to a better understanding of health service professionalization. A goal of this article is to promote further interest and research in health care service.

The first commentary "How to improve professionalization of service provision through changes in hospital organization" by Schreyögg, Winter, and K. Blankart summarize and assess the available evidence on a selected set of hospital strategies' impact on hospital performance. The second commentary "A needs-based approach to mapping dynamic complexity in health service provision planning of noncommunicable diseases" by Duminy, Schoenenberger, Ansah, Matchar and C.R. Blankart makes the case for a needs-based health care planning tool as a means of improving health care service provision through stronger care integration. The third commentary "How learning from errors might improve service provision in health care – The importance of a strong error management culture" by Oppel aims to depict the relevance and peculiarity of a strong error management culture in health service organizations. The fourth and final commentary "An Employee Perspective on Coproduction of Health Care Services" by Thomsen and Jensen provide an overview over prior research on coproduction in health care, present insights from recent empirical work, and derive implications for the health care service provision in nursing homes as well as directions for future research on this topic.

Increasing health service professionalization through organizational changes

By Jonas Schreyögg, Vera Winter, and Katharina Blankart

Introduction

As health expenditures are escalating and public budgets are tight, policy makers have been striving for means to improve the performance of health care organizations. Particularly targeting hospitals, policy makers have applied a wide array of policy interventions across countries since the 1980s. The rationale for this was that hospitals presumably have a high potential to improve their performance and efficiency.

The most important interventions at the government level include changes in payment systems, most notably the introduction of diagnosis-related groups; reforms in hospital planning (e.g. centralized commissioning and decommissioning of hospital services); the introduction of quality assurance systems; and a higher reliance on market-based mechanisms.

Within the health care market, organizations are deeply affected by these government interventions and must balance limited resources, the need for infrastructure improvement, the development and implementation of treatment and technology advances, and a vast array of human resources (Danaher and Gallan 2016). Affected by the government interventions, hospitals may opt to improve their performance by taking individual decisions on organizational changes, albeit within regulatory and payment systems that may give hospitals incentives to choose certain options over others.

We present several hospital-level strategies to respond to recent policy reforms and to other pressures to enhance service provision. Table 1 provides a typology of strategies that are expected to have large impact on the professionalization of service provision and are based on a relatively high level of empirical evidence. In particular, the strategies we consider include forms of hospital cooperation with other hospitals or health care organizations (health system membership and cooperation), privatization, corporatization, specialization, and quality management system certification.

All those strategies aim to professionalize health service provision and increase hospital performance. From a (service) management perspective, it is valuable to know in how far the strategies actually achieve their intended aims. To provide an insight, prior research's evidence is summarized and assessed in terms of its quantity and validity. While the economic literature has traditionally defined hospital performance in terms of financial performance and efficiency, it has started to also consider quali-

Hospital strategy	Definition
Health systems	Multiple hospitals that operate under the centralized ownership of a key organization. Sometimes referred to as hospital corporation (Shortell, Bazzoli, Dubbs, & Kravolec, 2000).
Hospital cooperation	A long-term, purposeful arrangement among distinct but related organizations. Cooperation is characterized by: • form, e.g., formalized versus loose (Granderson, 2011) • characteristics, e.g., patient sharing (Mascia et al., 2012) • direction of cooperation, especially horizontal (i.e., arrangements with competing hospitals) versus vertical cooperation arrangements (i.e., partners acting on different levels along the value chain, e.g., long-term care facilities or rehabilitation institutions, hysician groups and outpatient services; Wang et al. 2001)
Privatization	Selling formerly public organizations to private owners. All or the majority of shares are owned by one or more private owners afterwards.
Corporatization	A change in legal form that separates service delivery from traditional government agencies while keeping the organization in public hands. Specifics of change and labeling of the newly formed entities vary. Generally entails a shift towards a more business-like form, with the new entity having its own legal identity regulated by private law and increased managerial autonomy.
Hospital specialization	Degree of service breadth and depth of a hospital. Specialization based on patient proportions (information about hospital patients grouped into different categories according to their diagnosis) most frequently used measure
Quality management system (QMS) certification	Hospitals participate in internal and external audits of their QMS to show that pre-defined quality standards are fulfilled. National and international, comprehensive and industry-specific QMS standards are established.

Source: own illustration

Tab. 1: Typology of cooperative behaviors as hospital strategies to enhance service provision

ty of care as measure of hospital performance (Gaynor, Laudicella, and Propper 2012). For each hospital strategy, we summarize the evidence and provide an assessment in how far the studies' research designs allow to infer causality (e.g., whether the studies imitated program evaluation techniques including an intervention and control group, or whether data is only cross-sectional allowing only to test for association). When available, we also name the drivers of the effects associated with certain strategies, i.e., the mechanisms through which the performance gains are achieved. The policy implications of our findings and avenues for further research are subsequently presented and discussed.

An overview of key findings in different research streams

Table 2 provides an overview of prior evidence's key findings for each of the research streams, covering the main effects, drivers, and validity of methods. The table also highlights the challenges in each research stream and the scope for further research.

Of all the evidence, that on the effects of privatization provides the least ambiguous findings, i.e., robust increases in efficiency and financial performance. The effects of the entry of hospitals into health systems on efficiency is similarly strong. Additionally, vertical and horizontal cooperation seem to have a positive effect on efficiency and financial performance. Corporatization has a positive effect on efficiency and financial performance in some of the stud-

ies. The effects of specialization and QMS certification remain largely unclear.

In terms of the robustness of the research designs to make causal claims, of all the evidence, that on the effects of privatization is the strongest. Studies in this research stream use longitudinal designs with control groups. Similarly, strong methods are used in the research on health system entries. Although the other streams of research also contain well-conducted studies with valuable findings, they are predominantly cross-sectional in design and therefore cannot establish causation. Corporatization and QMS certification are the least studied of our hospital strategies.

The drivers of improved efficiency or financial performance are very different depending on the reform or intervention being investigated, but reductions in the number of staff and improved bargaining power in purchasing stand out as being of particular importance.

Implications for practice and further research

Across the research streams studied, changes in hospital organization did not uniformly improve hospital performance. Additionally, the drivers behind the effects on efficiency or financial performance are very different across the hospital strategies examined. This shows the ample options to change service provision when strategies are adjusted according to the health policy environment. The quality of the evidence in this regard is rather mixed. The identified positive effects of hospital entry into health systems, privatization and cooperation on hospital perfor-

Hospital strategy (Exemplary studies)	Main effects on performance	Drivers behind effects	Validity of methods used	Challenges of and scope for further research
Health system entry (Bazzoli et al. 2000; Büchner et al. 2016 & Rosko & Proenca 2005)	• Only a few studies on efficiency and financial performance • Studies show increase in efficiency • Effects on financial performance are not clear	• Synergies in purchasing of supplies (e.g. drugs and medical devices) • Reduction in numbers of administrative and non-clinical staff	• One longitudinal study/others cross-sectional • Sometimes imprecise estimates because of not distinguishing between ownership types	• More studies are needed on financial performance in particular • Future studies should look at hospitals' entry into health systems as an intervention and consider ownership type in doing so
Cooperation (Bazzoli et al. 2000; Büchner et al. 2015; Granderson et al. 2011; Gaynor et al. 2012; Mascia et al. 2012; Rosko & Proenca 2005)	• Several studies mainly on efficiency • These focus more on horizontal than vertical cooperation • Horizontal cooperation increases efficiency and financial performance • The few studies on vertical cooperation find positive effects	• Horizontal cooperation: bargaining power in supplier relationships • Vertical cooperation: patient referrals	• Often small samples • Cross-sectional studies dominating • Complex measurement due to different forms of cooperation	• More studies are needed on effects of vertical cooperation, in particular • Future studies should investigate cooperation within the framework of natural experiments
Privatization (Heimeshoff et al. 2014; Karmann & Roesel 2017; Kruse et al. 2018; Ramamonjiarivelo et al. 2016; 2018; Tiemann & Schreyögg 2012)	• Several studies on efficiency and financial performance (US & Germany) • Studies show increase in efficiency and financial performance • No consistent difference in effect size between for-profit and non-profit privatizations	• Staff reduction (all kinds of staff) • Reductions in number of nursing staff may affect quality of care	• Studies predominantly use longitudinal designs • Well-designed studies including control groups	• Studies on the actual process of privatization are needed (e.g. different strategies) • As some studies found decreasing quality of care after privatization, analyzing the trade-off between quality and financial performance is crucial for future studies
Corporatization (Ferreira & Marques 2014; Lindlbauer et al. 2016; Rego et al. 2010)	• Some studies mainly on efficiency • Studies find mixed results	• In studies where there appear to be positive effects: changes in leadership structure and management systems, as well as an improvement in production and financial resources	• Often small samples • Often crosssectional studies	• Investigate context factors which moderate the corporatization-efficiency relationship
Specialization (Atella et al. 2012; Herwartz & Strumann 2012; Karmann & Roesel 2017; Kim et al. 2015; Lindlbauer & Schreyögg 2014)	• Several studies mainly on efficiency • Contradictory results mainly due to different measures of specialization used	• In studies where there appear to be positive effects: standardization of processes	• Large samples • Well-developed efficiency measures • Mainly cross-sectional	• Need to compare different specialization concepts and to disentangle differences between them (e.g. through simulation studies) • Future studies should attempt to investigate specialization using program evaluation techniques
QMS certification (Lindlbauer et al. 2016; Makai et al. 2009; Pross et al. 2018)	• Few studies • Mostly no significant effect on performance	• In studies where there appear to be positive effects: presumedly stadardization of processes	• Limited comparability of studies due to different outcomes	• More studies are needed • Future studies should investigate QMS certification within the framework of natural experiments

Source: Adapted from Schreyögg (2019), with own additions

Tab. 2: Overview of key findings in different research streams

mance relied on sound methodological approaches that also included treatment and control group designs.

Across all research streams, hardly any studies have assessed the effects on quality of care. This finding is particularly important for health policy as policy makers frequently assume that the interventions that have been implemented since the 1980s have improved hospital performance in terms of quality of care. As evidence hence is rather rare (for quality of care as outcome) or often based on cross-sectional approaches limiting causal inference (for financial performance or efficiency as outcomes), policy makers are well advised to tread more carefully with future policy reforms and when changing incentives in the hospital sector. To identify presence and magnitude of the effects of interventions as well as to isolate the drivers of these effects, pilot trials that include predefined treatment and control groups and defined evaluation periods could be a vital tool to evaluate interventions before their implementation in the entire hospital sector.

Finally, the overview also provides fruitful suggestions for service researchers. When looking at the effects of privatizations and of entering into a health system, there is still considerable need for research. With privatizations, in particular, the underlying processes are not yet fully understood, and the potential trade-offs between increases in performance and changes in the quality of care have not been sufficiently examined. The main challenge of research on privatization is small sample sizes. It is therefore hardly surprising that the few studies that do exist in this area focus on the very large hospital markets in the US and Germany. It would be useful, however, to widen the scope of this research and pursue the same research questions in studies comparing the effects of entering into health systems, privatizations, and corporatizations. Lastly, there is substantial need for further studies in the areas of multi-institutional arrangements and cooperation, as well as specialization. In those research streams, natural experiments investigated using program evaluation design are lacking. One of the main challenges here, however, is that cooperation and specialization cannot be directly observed but rather must be constructed based on survey or administrative data. Moreover, there are multiple constructs of specialization, and each of these measures a different form of specialization. More research is clearly needed disentangling these.

A needs-based approach to health care provision planning in non-communicable diseases

By Lize Duminy, Lukas Schoenenberger, John Ansah, David Matchar, and Carl Rudolf Blankart

Introduction

Non-communicable diseases (NCDs) are the leading cause of death worldwide – accounting for 71 % of all deaths in 2018 (WHO 2018). Countries characterized by high life-expectancy, i.e., high income countries, are especially affected as the likelihood of having multiple NCDs increases with age. The increasing prevalence of NCDs poses major challenges to health care management and planners since service provision for chronic diseases is different to acute conditions which have been the planning focus until recently. Acute conditions are characterized by a short-term, intensive treatment phase, usually from a single health care sector. In contrast, chronic diseases require life-long treatment, often from multiple providers.

We make the case for implementing needs-based health care planning as a means of improving health care service provision planning. To this end, we show how a single country could initiate such a shift in health care service provision planning by using Switzerland as an example. Switzerland is a country with a regulated, universal health insurance system with not-for-profit health insurance policies offered by private and public providers (De Pietro et al. 2015). Health care financing is regulated at a national level, while provision of care is the responsibility of the 26 cantons (De Pietro et al. 2015; OECD/WHO 2011). Compared to other European countries, supply-side regulation is low (OECD/WHO 2011). Most cantons do not have high entry barriers[1] to offering services in the outpatient sector. Cantonal hospital lists[2] are used to manage the supply of inpatient sector at the regional level.

Health care planning is performed at the macro- and micro-level (see *Fig. 1*). Like most social health care systems,

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[1] E.g., Physicians must have worked for at least three years in an inpatient facility before being allowed to open an outpatient practice that charges against the public health insurance scheme in the Canton of Bern. This rule does not apply to General Practitioners, to General Internal Medicine, and some paediatrics specialties.

[2] Hospital or positive lists are used as measures of supply regulation by the cantons. A listing on the positive list entitles hospitals to charge services to the public health insurance. Cantons can therefore manage supply of hospital services by adding or removing hospitals from the list. In reality, cantons are often owner of the inpatient facilities or otherwise involved which induces governance conflicts resulting in a rather soft regulation.
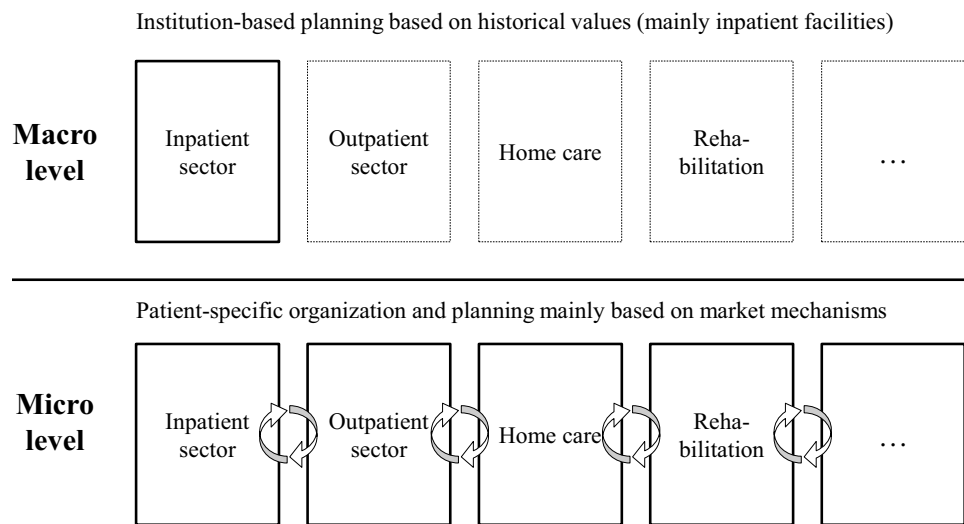
Institution-based planning based on historical values (mainly inpatient facilities)

Fig. 1: Organisation and planning on macro- and micro-level in Switzerland

in Switzerland, macro-level planning is carried out at the institutional level with hospital lists, while micro-level planning and organization of the various service providers is primarily decentralized. This planning approach, which at the macro-level only focuses on a single sector, i.e., the inpatient sector, is sufficient in a system dealing predominantly with acute conditions. Today, however, the main burden has shifted to chronic illnesses (Wieser et al. 2018) that require planning of coordinated cross-sector care.

We therefore propose the use of a complementary macro planning tool that (i) involves other sectors, (ii) uses population demographic projections in conjunction with treatment needs rather than historical values as a basis for planning, and (iii) has a dynamic forecasting component. The aim of this paper is to first establish the structure for such a tool, i.e., develop a qualitative systems map that focuses on health care needs, and second to outline the characteristics of the proposed planning tool.

Methods

To gain deeper understanding of the complexities of providing services to individuals with chronic diseases, various stakeholders must be engaged so that different perspectives can be consolidated into a single systems map. To this end, we used the systems modelling methodology of Group Model Building (GMB) which has been found to be a useful approach in engaging different stakeholders in developing a deeper understanding of difficult and complex problems (Vennix 1996). Problems may be difficult because they are complicated and involve many moving parts and details, or complex because they involve many potential interactions and explanatory pathways (Hovmand 2014). GMB has been applied successfully in other health care contexts including Singapore (Ansah, Matchar, Koh, and Schoenenberger 2018), Cambodia (Ansah et al. 2019), Australia (Allender et al. 2015), and the USA (Homa et al. 2015). Additionally, many authors have suggested that health care

policy and planning can benefit from systems modelling (Atkinson, Page, Prodan, McDonnell, and Osgood 2018; Dieleman & Haakenstad 2015; Sniehotta et al. 2017).

We followed a four-step approach to develop the Systems Map (SM), the structural input for the proposed Planning Tool (PT) that will be a quantified system dynamics model. In the first step we invited relevant local stakeholders to participate in a workshop – herein referred to as GMB workshops – to discuss effective ways to provide health and social services to individuals with chronic diseases. We then facilitated a first GMB workshop with these local stakeholders, to gain a comprehensive overview of the Swiss health care system. Subsequently, a second GMB workshop was organised with both local and international stakeholders to develop a qualitative representation of chronic disease management based on the system dynamics modelling methodology (Andersen and Richardson 1997; Richardson and Andersen 1995; Sterman 2000). The aim of the workshop was to provide a comprehensive system overview of chronic disease management. This workshop was led by a systems modelling expert with significant experience in group modelling facilitation. Finally, the qualitative framework developed by stakeholders was refined and validated using literature reviews and follow-up interviews.

The GMB sessions were conducted in Bern, Switzerland, in May and June 2019. The attendees included health care policy makers (federal and cantonal level), health care professionals (in- and outpatient physicians and nurses), home care practitioners (home nursing and palliative care), a patient representative, and researchers in the fields of primary care, aging/geriatrics, nursing, and policymaking. Three senior researchers experienced in GMB were involved in planning and execution of the sessions.

GMB is a catalogue of activities (termed "scripts") developed and validated by systems dynamics (SD) modelling experts to empower multiple stakeholders to develop

structural models (Andersen and Richardson 1997; Richardson and Andersen 1995; Vennix 1996). The GMB scripts used throughout the project are the Nominal Group Technique script (Stroebe, Nijstad, and Rietzschel 2010; Vennix 1996), the Outcome Elicitation script (Andersen and Richardson 1997; Luna-Reyes et al. 2006), the Variable Elicitation script (Andersen and Richardson 1997; Luna-Reyes et al. 2006), and the Structural Elicitation script (Luna-Reyes et al. 2006).

Systems Map (SM)

The SM, serving as the structural basis for the proposed PT, is shown in *Fig. 2*. The SM is contextualised for the Swiss health care system, emphasising the linkages among the quadruple aim: care, population health, cost, and meaning in work (Sikka, Morath, and Leape 2015). The SM consists of stocks, flows and auxiliary variables. Auxiliary variables, shown as plain text, instantaneously react to connected elements while stocks, shown inside a square, are elements that accumulate over time. Flows are changes per time unit that influence stocks and are represented by parallel lines with a valve. The stocks, flows and auxiliary variables are connected by causal links (arrows) (Sterman 2000). A plus sign indicates a positive direction of a causal relationship while a minus sign signals a negative relationship. For example, referring to *Fig. 2*, the plus sign on the arrow between the variable quality of consultation and the degree to which health care needs are met indicates that an increase in the quality of consultation leads to an increase in the degree to which health care needs are met. In contrast, if quality of consultation decreases, the degree to which health care needs are met will decrease as a result. Parallel lines cutting through the middle of a causal arrow indicate a time delay between cause

and effect. Our SM is divided into four sectors – Population Health, Cost/Efficiency, Experience of Care, and Meaning in Work as shown in *Fig. 2*.

Population Health

Health care service delivery and resource planning have been shown to improve when populations are segmented into meaningful health states (Lynn, Straube, Bell, Jencks, and Kambic 2007). There are many segmentation tools available (Eissens van der Laan, van Offenbeek, Broekhuis, and Slaets 2014; Lafortune, Béland, Bergman, and Ankri 2009; Liu, Tian, and Yao 2012; Lynn et al. 2007), and the tool we found appropriate given its' explicit focus on NCD management was the Simple Segmentation Tool (SST) developed by Duke-NUS Medical School in Singapore (Chong 2018). The SST uses a needs-based approach to segment the population. For brevity, our conceptual model segments the population into three health states – rather than the SST's seven health states. They are (i) Healthy Population – individuals with no risk factors; (ii) Stable Chronic Population – individuals diagnosed with one or more chronic diseases that are either asymptomatic or symptomatic but do not require frequent acute care, and (iii) Complicated Chronic Population – individuals with chronic diseases with any degree of frequent acute care needs (Ansah et al. 2018).

The transition of the population across different health states is hypothesised to be influenced by the degree to which health needs are met (Derose and Petitti 2003). Thus, the better an individual's needs are met the slower a condition's progress (and the worse they are met the quicker the progress). Consequently, the ability to identify the needs of each population segment and meet those
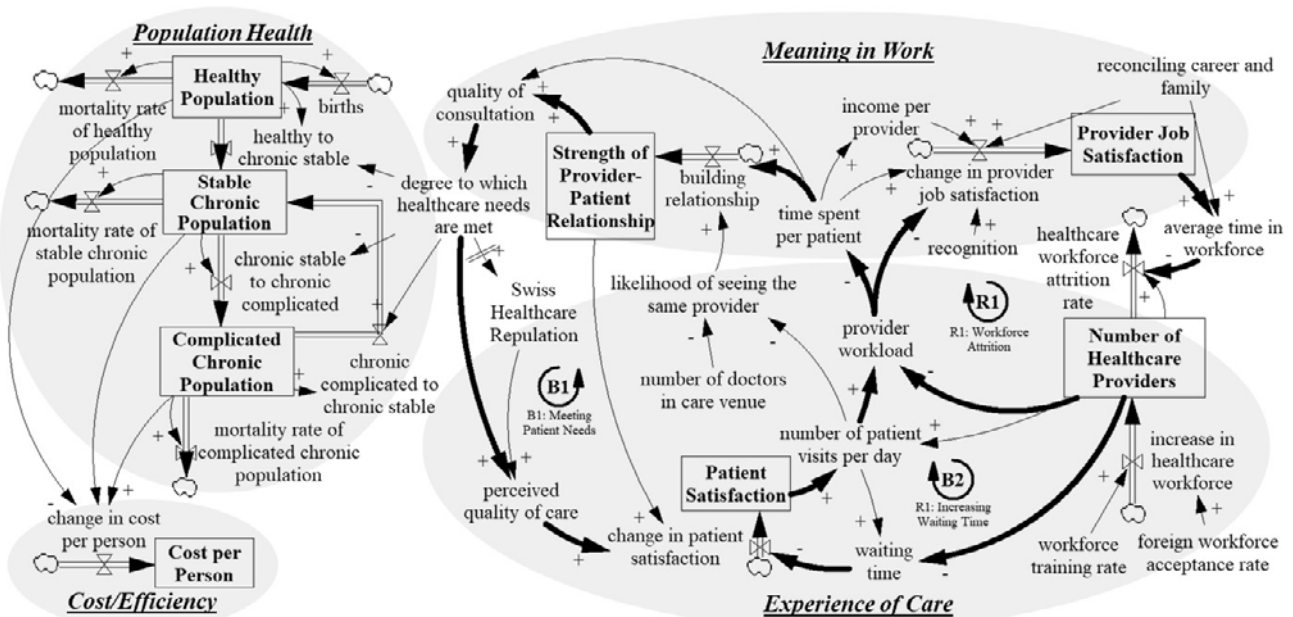

Fig. 2: NCD health care service provision map as a basis for the Systems Map (SM)

health and social services needs is critical to achieving the goal of population health.

Cost/Efficiency

The explicit focus on NCDs through a needs-based segmentation is also intuitive from a cost/efficiency perspective since 79.4 % of Swiss health care costs are attributed to NCD management (Wieser et al., 2018). Within the Cost/Efficiency sector, we present the resulting per capita cost of providing health and social care services. As the Swiss health care system does not have global or sectoral budgets and provision of care is prioritised over costs, the variable cost per person does not substantially influence any other variable in the system.

Experience of Care

The Experience of Care sector captures the main factors and feedback mechanisms that drive changes in *Patient Satisfaction*. The three main factors identified by stakeholders as responsible for changes in *Patient Satisfaction* are *waiting time*, *perceived quality of care*, and the *Strength of Provider-Patient Relationship*. The two feedback loops primarily driving the behaviour of *Patient Satisfaction* have a balancing effect in the long-term. **Feedback loop B1: Meeting Patient Needs** shows how an improvement in *Patient Satisfaction* is likely to increase *provider workload*, which all things being equal will decrease the *time spent per patient*. Consequently, *quality of consultation* and *degree to which health care needs are met* per visit is expected to decrease, leading to lower *perceived quality of care*, which negatively affects *Patient Satisfaction*. Likewise, **Feedback loop B2: Increasing Waiting Time** indicates that increased *Patient Satisfaction* increases *provider workload* and decreases *Provider Job Satisfaction* which, in turn, reduces *Number of Health Care Providers* resulting in a longer *waiting time*, thus decreasing *Patient Satisfaction*. Increasing the *Number of Health Care Providers* will reduce provider workload and waiting time for patients.

Meaning in Work

The Meaning in Work sector captures changes in the *Strength of Provider-Patient Relationship* and *Provider Job Satisfaction*. The main variable identified by stakeholders that influences change in the *Strength of Provider-Patient Relationship* is *time spent per patient* in consultations as well as the *likelihood of seeing the same provider* during each visit. Likewise, for *Provider Job Satisfaction*, the variables: *time spent per patient* in consultations, *income of providers*, *recognition* and *reconciling career and family* were identified as the key variables. **Feedback loop R1: Workforce Attrition** shows the potential, reinforcing behaviour that results from a low level of *Provider Job Satisfaction*: if the *provider workload* is too high, *Provider Job Satisfaction* is reduced, re-

sulting in more providers leaving the workforce before retirement – reducing the *Number of Health Care Providers* – placing further strain on *provider workload* if all things remain equal. As explained earlier, the *Strength of Provider-Patient Relationship* was found to influence *quality of consultation* and consequently *Patient Satisfaction* (Feedback loop B1: Meeting Patient Needs); while *Provider Job Satisfaction* is assumed to influence *Number of Health Care Providers* lost to employee attrition which influences *Patient Satisfaction* through increased *waiting time* (Feedback loop B1: Meeting Patient Needs).

Summary

We developed a SM to serve as the underlying structure of the proposed NCD health care service provision PT. The crisp intuitive SM provides qualitative macro-level information to health care decision makers. It helps stakeholders and policy makers to develop a deeper understanding of the dynamic linkages and interrelationships between the quadruple aim. Major insights from the SM are the identification of discernible variables that have an impact on disease progression, i.e., transitioning to a worse health state. This also implies that the type and intensity of service delivery has a long-term, accumulative effect on population health. Additionally, the systemic nature of the SM – and therefore the resulting PT – facilitates intervention exclusively in health care planning that does not require any changes to service provision protocols.

One of the limitations of facilitative research methods such as GMB is that there is no objective measurement of evaluating the modelling efforts (Rouwette, Vennix, and van Mullekom 2002). It is therefore not straightforward to be sure that the entire health care system, with all perspectives, is captured within the SM. We addressed this potential issue by engaging as many stakeholders within the Swiss health care sector as possible, involving expert group model builders with experience in both the topic and method at hand, as well as validating the outcome using a combination of expert opinion, and a literature review.

Outline of the proposed planning tool (PT)

The development of the SM in this paper was the first step towards creating a PT – a tool within a macro-level planning framework. The proposed macro PT would complement rather than substitutes existing planning in Switzerland. Current planning efforts focus on hospital planning at the macro-level. On this level, the proposed PT not only allows other health care sectors to be included, but also allows the dynamic prediction of the impact of planning. Planning on the micro-level, i.e., disease- and patient-specific medical driven planning will not be directly affected. However, insights from the PT may be used to foster the

integration of care and to shift care to sectors where health care provision is more appropriate according to the care needs per health state. In addition, the macro PT would facilitate the identification of frequently unmet chronic health care needs through comparison of a specific individual's needs with the typical service package of that health state (Chong and Matchar 2017). Valkronic, an integrated care programme in Spain for patients suffering from long-term conditions, is an example of where risk segments have informed the integration of care and has reportedly led to improved clinical outcomes, including reduced utilisation of emergency care services (Vuik, Mayer, and Darzi 2016). Similarly, the proposed macro PT has the potential to promote cooperation between different health care providers by reducing the lack of coordination between actors.

Extending macro level planning to additional sectors will inevitably increase the complexity of planning. It implies the management of all service and provider types as well as their multifaceted interactions. An innovative approach to minimise the increase in complexity is to make use of a needs-based instead of a disease-based approach (Lynn et al. 2007; Stevens and Gillam 1998). The needs-based approach to health services planning as suggested in this paper implies segmenting the population in terms of their health care needs, i.e., their ability to benefit from health care (Stevens and Gillam 1998) and then to match appropriate health care services to each segment (Chong and Matchar 2017). Disease-specific planning results in far greater complexity because of the large number of different chronic diseases associated with an equally large number of comorbidities. Compared to the existing sector-based planning, this needs-segmentation approach to planning provides novel insights regarding health service provision requirements of the entire population while limiting the increase of planning complexity.

The proposed tool may also support Switzerland in achieving its goal to increase efficiency by better coordination (Schweizerische Eidgenossenschaft 2014). Focussing on meeting needs per health state reduces mismatches between health care needs and service provision. Service provision beyond what is required does not only increase health care costs, but also increases avoidable complications (Berwick and Hackbarth 2012). Waste is reduced by ensuring that the right service provider gives the right type of service with the right quality at the right time at the right intensity. However, although our proposed PT promises to have a significant effect on waste elimination without compromising population health – especially if implemented at a federal level – a reduction of waste comes along with a reduction in the health care providers' income (Reinhardt 2012); therefore, substantial resistance to the introduction of a new macro PT could be expected by providers and cantons.

In addition to direct cost savings, our macro PT would enable the implementation of an indirect, long-term cost containment strategy by providing adequate health care to each health state (Chong and Matchar 2017). In the long run, provision of adequate care per health state could result in a decrease in expenditure as positive health outcomes are generated (Ansah et al. 2018). One of the strongest arguments for the application of our macro PT is therefore positive health outcomes, avoidance of complications, and slower disease progression instead of cost containment itself.

Conclusion and Future Research

This qualitative macro SM provides a validated structural base for the development of a health care service provision PT. As the underlying system structure drives system behavior in system dynamics models (Sterman 2000), further research should define and validate the causal relationships between variables using mathematical functions for the Swiss context. Finally, the PT needs to be initialized by determining the initial values of elements to serve as a tool within a health care planning framework. It would have the ability to predict the long-term effects of changes in health care provision on the quadruple aim – thereby giving health care decision makers the ability to estimate long-term effects of health policy interventions in terms of population health, experience of care, meaning in work and efficiency. To assess the effects of new health policy initiatives is especially important when new cost-containment measures, changes to service provision protocols or changes in models of care are debated at a political level.

How learning from errors might improve service provision in health care – The importance of a strong error management culture

By Eva Oppel

Understanding the nature of errors in health care service provision

Errors in health care can be defined as preventable adverse effect of care, such as inaccurate or incomplete diagnosis or treatment of a disease, injury, syndrome, behavior, or infection (Leape 1994). While there is no uniform classification, errors in health care can be characterized along different dimensions (*please note:* The following list does not claim completeness). First, it is important to distinguish between errors and failures. Failures refer to negative outcomes (i.e., low patient satisfaction scores) and may be the result of an error although not every error necessarily leads to failure. To cite an example, an error that is detected and corrected instantly or an error that happens in a safe environment will not automatically lead to nega-

Types of medical errors	Examples
Errors in Diagnosis	• Errors or delay in diagnosis • Failure to employ indicated tests • Use of wrong tests and therapy
Errors in Treatment	• Error in performance of an operation, procedure, or test • Error in administering treatment • Error in dose or method of using a drug • Inappropriate care
Errors in Prevention	• Failure to provide prophylactic treatment • Inadequate monitoring of follow-up treatment
Others	• Failure of communication • System failure • Equipment failure

Source: Adapted from Elder et al. (2002)

Fig. 3: Classification of Medical Errors
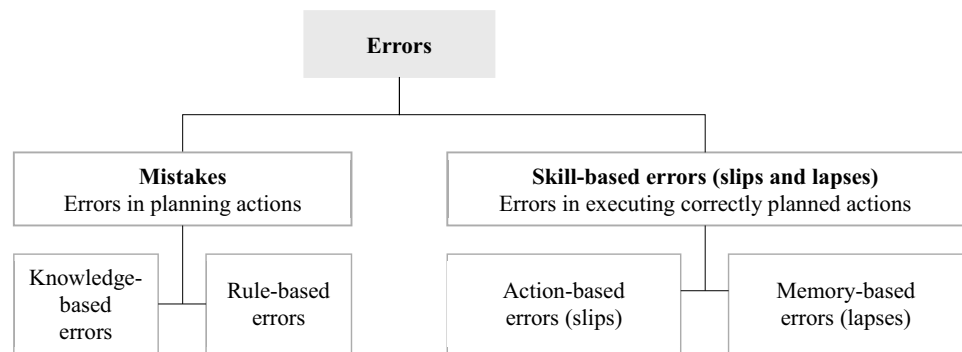
Source: Adapted from Ferner and Aronson (2006)

Fig. 4: Alternative Classification of Medical Errors

tive outcomes. Further, the same error (e.g. prescribing the wrong medication) may lead or not lead to negative consequences, depending on the context and boundary conditions under which the error occurs (e.g. depending on the particular medication and on the patient's overall health status) (Homsma et al. 2009). Second, errors might be classified based on the nature of the error (see *Fig. 3*).

Finally, focusing on the development and sources, errors can be classified as knowledge-based mistakes, rule-based mistakes, action-based slips, and memory-based lapses (Ferner and Aronson 2006) (see *Fig. 4*).

Knowledge-based errors can be related to any type of knowledge, general, specific, or expert and result from the lack of knowledge or wrong knowledge, e.g. incorrect drug product selection (based on indications, contraindications, known allergies, existing drug therapy, and other factors) that lead to medication errors. Rule-based errors involve the misapplication of a good rule or the failure to apply a good rule, or the application of a bad rule. A medication error example is the injecting diclofenac into the lateral thigh, the usually preferred site for intramuscular injection, rather than the buttock, which is preferred for

diclofenac (Ferner and Aronson 2006). An action-based error can be defined as the performance of an action that was not what was intended. An example is the addition to an infusion bottle of the wrong amount of drug (Ferner and Aronson 2006). Memory-based errors occur when something is forgotten; for example, giving penicillin, knowing the patient to be allergic, but forgetting (Aronson 2009).

Despite different approaches to classify and distinguish errors, errors in health care have one thing in common: They mostly may lead to severe negative and often irreversible consequences, such as increase of mortality rate, infections, disabilities, and physical injuries, with substantial individual and/or societal costs. An expanding body of literature demonstrating a high incidence of medical errors has raised public concern about the safety of modern health care delivery (Graber 2013; Rothschild et al. 2005). Given this evidence and the negative impact of errors in health care, it is not surprising that, individuals and organizations make every effort to prevent errors from occurring in the first place (Bates et al. 1995; Bates et al. 1998). However, some human error will prevail and it is impossible to eliminate errors completely despite all efforts to pre-

vent them (e.g. Zhao and Olivera 2006). In this context, an interesting question to consider is, whether and how errors – if they are going to occur anyways – might be used to benefit health care service provision. Put differently, the question is how do we have to deal with and manage errors in order to reap the benefits of making errors and thereby continually improving quality of care?

This commentary aims (1) to briefly introduce the two dominant strategies of dealing with errors, and (2) to reflect what interventions and organizational boundary conditions are needed to unfold learning from errors and thereby improving health care service provision. It shall stimulate further research that informs health service managers about successfully designing and developing error management interventions.
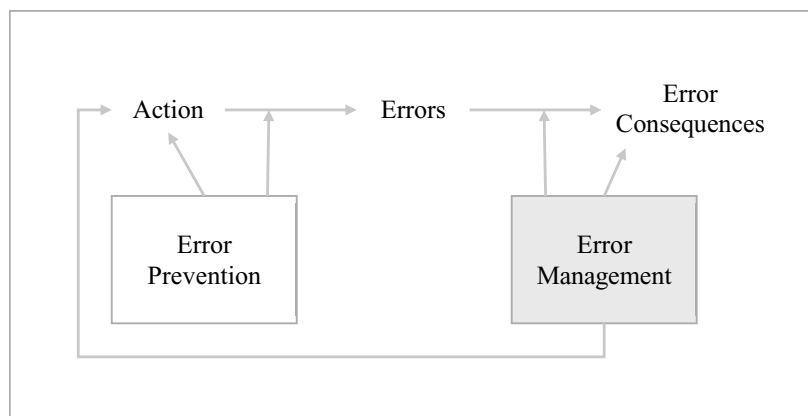
Error Prevention and Error Management in Health Service Organizations

Strategies of dealing with errors can be classified in (1) error prevention and (2) error management (Goodman et al., 2011). *Error prevention* aims to eliminate errors before they occur (see first arrow between "action" and "errors", see *Fig. 5*). Considering the potential adverse and even fatal consequences of errors in health care, it is not surprising that health care organizations place a strong focus on promoting error prevention strategies (e.g. Bates et al., 1998). For example, prior research investigating incidence and preventability of adverse drug events (ADEs) found that serious ADEs were common and often preventable (Bates et al. 1995). Building on the findings that most ADEs resulted from errors at the ordering stage, but many also occurred at the administration stage, the authors suggested prevention strategies targeting both stages of the drug delivery process. Further, there has been much effort in research and in practice to develop standardized safety guidelines to promote error prevention (e.g. Leape, Berwick, and Bates 2002). Concentrating too narrowly on error prevention, however, bears the risk that errors go undetected. For instance, if hospital staff becomes too confident in their error prevention, they might get less attentive

to potential error situations, such as in prescribing medication. In turn, quick detection of medication errors might be impeded and the risk of undetected errors, that tend to unfold into more severe error consequences than those that are detected quickly, increases (Zhao and Olivera 2006).

Further, a number of conditions prevalent in health services context increase the occurrence of making errors. Prior research indicated that the likelihood of errors increases with high workload; time pressure; quick changes between tasks; when new things need to be learned about the task, the technology, or the patient; and when the coordination demands of a task are high (e.g. Goodman et al. 2011). In consideration of the increasing staff shortage problems and the acceleration of technological progress in health care, it can be expected that heavy workloads or adapting to new technology will exacerbate the working environment and thereby increase the likelihood of errors.

Summing up, since not all errors can be completely prevented, and therefore purely relying on error prevention has its limits, error prevention needs to be complemented by strategies of *error management*. Error management aims at effectively managing errors *after* they have occurred and – if possible – before negative error consequences unfold (see second arrow between "errors" and "consequences", see *Fig. 5*). That is, while error prevention aims at avoiding errors, error management aims not at avoiding errors per se but at minimizing negative error consequences (Frese and Keith 2015). Error prevention and error management should not be considered as mutually exclusive but rather as complementary. While error prevention strategy may be useful in well known and predictable situations, error management strategies might serve as second line of defense when error prevention failed to avoid errors. Further, even if errors do not unfold negative consequences in the first place, error management is important to avoid latent errors, that might lead to negative consequences at some later point in time, when combined with unfavorable conditions (Goodman et al. 2011). For instance, using Electronic Health Records (EHRs), along with a seamless flow of information between physicians

Fig. 5: Error prevention and error management

and specialists can play a crucial role in ensuring that clinicians are aware of patients' comorbidities and that they exercise caution when implementing treatments that would be obvious choices for more conventional patients.

Acknowledging the fact that errors won't be avoidable completely and might even increase, it seems interesting to explore positive exploitation opportunities of errors, i.e. whether and how errors might be used to benefit health service provision without compromising patient safety?

Overall, errors may have a positive function if they successfully stimulate learning and innovation in organizations (Frese and Keith 2015; Putz, Schilling, Kluge, and Stangenberg 2013; van Dyck, Frese, Baer, and Sonnentag 2005; Zhao 2011). More specifically, learning may be enhanced by errors because errors provide negative but informative feedback on what still needs to be learned (Heimbeck, Frese, Sonnentag, and Keith 2003). That is, errors indicate that something is wrong and thus needs to be changed, thereby promoting a readiness for changing and adapting behavior. To maximize learning from errors, it is important, that learning is not confined to the lesson of not making the very same error in the future again. To optimize the learning effect and thereby improving health care provision, health providers need to be trained to transfer their learning experience from one error situation to potential future error situations including latent errors whose negative consequences have not yet developed. One approach to train learning from errors can be found in *error management training*, a training method, which explicitly incorporates errors into training. Prior research has shown, that error management training leads to better individual performance than conventional training methods that focus on correct strategies and on error avoidance (Heimbeck et al. 2003; Keith and Frese 2008). Concluding from these findings on individual learning in training, learning in health service provision may be improved when health care providers are actually allowed to make errors. This can be achieved by the integration of simulations into the training of health care professionals. Simulation-based training provides a context for making errors in a high-fidelity environment without risks to actual patients. Intentionally encouraging errors during simulation-based training can allow health care professionals to have better emotional control and foresight to manage the situation if it occurs again with live patients (King, Holder, and Ahmed 2013). Error management training becomes particularly important in situations with changing and challenging task demands such as new technology in surgery or in emergency care.

The importance of an error management culture

Despite explicit error management training, learning from errors, latent errors or near misses can also happen more

implicitly on the job. However, learning from errors requires a *strong error management culture*. The concept of error management culture assumes that organizations implicitly or explicitly adopt a shared system of norms and values as well as common practices and procedures of dealing with errors (van Dyck et al. 2005). Error management culture may involve error communication (i.e., open communication about errors with supervisors and/or colleagues), coordinated and effective error handling, as well as error detection and harm control. A health care organization with a strong error management culture that fosters an awareness of error occurrence as well as open communication about errors might encourage employees to learn from errors both individually and collectively (Hofmann and Mark 2006; van Dyck et al. 2005). Yet, due to different context-specific reasons – such as fear of reprisal, the concern of lawsuits, time constraints, uncertainty of which incidents to report, and concerns of implicating others – problems of underreporting of medical errors and a lack of open error communication are particularly evident in the health care sector (Abstoss et al. 2011). However, if employees are blamed or if there are other negative reactions to errors, errors tend to be hidden, thereby preventing open error communication and learning from errors (Putz et al. 2013; Zhao and Olivera 2006). That is, to unfold the potential of errors to stimulate learning, a shared perception of psychological safety is needed. Psychological safety implies that employees feel safe for interpersonal risk taking and has been found to improve learning (Cannon & Edmondson, 2005; Edmondson, 1999). Considering that medical errors are frequently related to interactions within the health care provider team (Buljac-Samardflic, van Woerkom, and Paauwe 2012), feeling safe for interpersonal risk taking seems to be particularly crucial. Thus, a positive interpersonal work environment seems to be essential in facilitating a constructive discussion of errors (Naveh and Katz-Navon 2014; Oppel, Mohr, and Benzer 2017). Indeed, Edmondson (2003) found that the likelihood of hiding errors is associated with employee perceptions of others' disapproval and/or the negative personal consequences that employees might experience. Also negative interpersonal behaviors, such as bullying behaviors, were found to affect handling of medical errors in hospitals (Wright and Khatri 2015). This evidence is especially informative given the persistent problems associated with health care providers underreporting adverse events as well as the resulting negative patient consequences despite increasing investment in error reporting systems (Naveh and Katz-Navon 2014). Effective reporting of errors is critical to discovering process defects in complex systems (Abstoss et al. 2011). Considering that, reporting systems work only if employees are willing to use these systems, health care organizations are well advised to foster a positive interpersonal work environment that creates psychological safety, i.e. an atmosphere in

which individuals are willing to reveal, discuss, and learn from errors.

Recommendations for further research

Despite comprehensive literature on strategies of dealing with errors and an overall agreement on a global positive effect of error management culture on health care performance, we need a more detailed understanding of how effectively managed errors might unfold positive effects, such as stimulating learning in health service provision. Thus, research that deals with exploring individual and organizational boundary conditions that enable learning from errors in health service organizations is highly warranted. For instance, exploring organizational and team enablers of error-learning; mechanisms to avoid blaming and enhance learning in interdisciplinary hierarchical health care teams; how to involve patient feedback on errors to enhance learning, are only a few examples of promising avenues for future research. Furthermore, research is needed to investigate coping and support mechanisms that help health professional involved in errors in order to ensure a positive learning experience. In this context, it is particularly interesting to explore ways to overcome health care specific barriers to open error communication, such as concerns of implicating others in reporting errors.

Coproduction of Health Care Services: An Employee Perspective

By Mette Kjærgaard Thomsen and Ulrich Thy Jensen

Coproduction of Health Care Services

The coproduction concept was developed in the late 1970s and early 1980s, and one of the first definitions outlined by Parks and colleagues (1981) described coproduction as the mixing of inputs from public employees and service users to the provision of public services. Later definitions have expanded coproduction to include volunteers and community groups as coproducers of public services (Alford 2009; Bovaird 2007). *Tab. 3* below outlines a typology of coproduction developed by Bovaird and colleagues (2015), which distinguishes between individual and collective coproduction.

The typology uses two criteria to distinguish between individual and collective coproduction. The first criterion concerns whether citizen inputs to coproduction are delivered individually (e.g., an individual service user or a volunteer) or collectively (e.g., a group of volunteers). The second criterion relates to whether citizens benefitting from coproduction (in terms of services received) enjoy such services individually (e.g., mainly benefit an individual service user) or collectively (e.g., benefits a wider group of service users or an entire community).

In health care services, several examples of coproduction exist that can be classified according to the typology outlined in *Tab. 3*. For example, a patient who exercises after a surgery to improve her/his health status (Jakobsen & Andersen 2013) is an example of private individual coproduction (box A). On the other hand, two or more volunteers arranging social activities for elderly living at a nursing home (Thomsen & Jensen 2018) is an example of philanthropic collective coproduction (box D).

Two Shortcomings in Existing Research

Coproduction of health care services holds many promises for increasing the quality and quantity of health services: involving service users or volunteers bring more information and resources into the care process. Yet, two shortcomings in the existing research prevent us from assessing the true potential of coproduction. The first area that has been neglected in much of past research is endogeneity problems in observational (non-experimental) studies, which may question the internal validity of the study. For example, studying the antecedents of coproduction of health care among service users or volunteers may involve different endogeneity problems. First, certain types of service users or volunteers may choose to self-select into coproduction initiatives. Second, a coproduction initiative aimed at increasing coproduction of health care may target service users or volunteers with specific characteristics (see Andersen et al. 2017; Jakobsen 2013 for a general discussion). Whether it is issues of omitted variable bias or reverse causality as described here, coproduction scholars are in critical need of expanding their toolbox with instruments that can help disentangle and isolate the antecedents and consequences of coproducing health care services. Experiments arguably offer the first-best solution to these challenges. While their application in co-

		Benefits from coproduction	
		Individually enjoyed	Collectively enjoyed
Inputs to coproduction	Individually provided	A Private individual coproduction	C Philanthropic individual coproduction
	Collectively provided	B Private collective coproduction	D Philanthropic collective coproduction

Note: An adapted version of table from Bovaird et al. 2015.

Tab. 3: Typology of coproduction

production research is still sparse, experiments hold much potential. In order to study the antecedents of coproduction of health care among service users or volunteers, researchers can, for example, randomly distribute information or materials targeting at increasing coproduction efforts (e.g., Jakobsen 2013; Thomsen & Jakobsen 2015), and map whether motivation and resources might be necessary and sufficient to enhance coproduction of health services among service users and volunteers. In this way, scholars might induce exogenous variation in antecedents of coproduction of health care to assess their true effects on actual coproduction behavior.

The second area that has been largely neglected in past research relates to taking health care professionals' view seriously. Most of the existing literature on coproduction has centered on conceptual debates over when and what (health) services qualify for coproduction (Alford 2009; Parks et al. 1981), and how to enhance resources or motivation to coproduce among service users (for an overview see Andersen et al. 2017). While a strong focus on service users and volunteers and their resources and motivation to coproduce is warranted, this one-sided focus constitutes a real problem for coproduction research. Health care professionals represent the other side of the equation, and without proactive and positive coordination on the part of service professionals, it is difficult to see how collaborations between health care professionals on one side and service users or volunteers on the other side would emerge. To truly assess the merits of coproduction for improving the quantity and quality of health care services, a more comprehensive look at health care professionals and their response to and attitudes towards coproducing health services in collaboration with service users and volunteers is therefore desperately needed.

Taking Service Professionals Seriously in Coproduction Research: Illustrations from Two Experiments

Combining experimental studies with a focus on health care professionals' attitudes and responses to coproduction activities offers a rigorous approach for starting to disentangle professionals' role in coproduction. This approach offers researchers the opportunity to investigate, for example, how health care professionals react when service users or volunteers are involved in performing certain tasks in the organizations, or what strategies and behaviors public managers can pursue – such as engaging in strategic communication – to help provide service professionals with sufficient resources to balance workplace demands and stressors. Below, we present two recent experimental studies that serve as examples on how future research can use experimental approaches to elicit causes and effects of health care professionals' perspective on coproducing health care services with volunteers.

The first experiment was conducted in 2018 among around 900 nursing home professionals in Denmark. Results from this experiment are reported in Thomsen & Jensen (2019). A key expectation in the literature on coproduction is that volunteers bring with them inputs in terms of effort, time, and information, all of which add to and elevate the production of public services. However, what if professionals see volunteers less as a resource, and more as a threat – to their own job, the monopoly of the profession and/or the quality of the care delivered to the service users? To examine this question a vignette experiment was designed to investigate whether health assistants at nursing homes view volunteers as threats depending on the type of task volunteers were expected to assist with. The study differentiates between two types of tasks: core and complementary. Core tasks are central to the mission of the organization (Brandsen & Honingh 2016) and are closely linked to the professional background of health care staff and their successful execution rests on specialized, theoretical knowledge obtained through formal education and training. This is not the case with complementary tasks.

In the vignette experiment, health assistants were presented with a vignette describing volunteers either (1) assisting with a core task – assisting elderly residents with eating their meal, or (2) assisting with a complementary task – acting as a table host during mealtime to help create a cozy atmosphere. Health assistants were randomly assigned to one of the two vignettes and subsequently asked to rate the extent to which they generally see volunteers as a threat to their own job, the monopoly of their profession, and the quality of the care delivered to the users.

The results showed that health assistants saw volunteers as a greater threat to the quality of the care when they were presented with a scenario in which volunteers assist with a core task compared to a scenario in which volunteers assist with a complementary task. The study did not find any effect of the type of task on health assistants' view on volunteers as a threat to their own job or the monopoly of their profession (Thomsen & Jensen 2019).

One reason why professionals might be concerned about volunteers is due to heightened uncertainty over volunteers' roles in the organization, and what that means for the expectations to and responsibilities of professionals themselves. In a second vignette experiment conducted among around 250 nursing home professionals (health assistants, nurses, pedagogues and therapists) in Denmark in 2018, it was explored whether managerial communication can be used strategically to reduce ambiguity among nursing home professionals about volunteers' roles. Results from this experiment are reported in Jensen and Thomsen (2018).

While volunteers bring with them many resources to co-production processes, they also create or exacerbate management challenges of ensuring clear roles in health care organizations. To test whether managers in health care organizations can help reduce role ambiguity in face of volunteer influxes, a vignette experiment encompassed two different communications following the presentation of two new volunteers at a nursing home in Denmark. The first message introduced the volunteers but failed to specify expectations to the duties of the new volunteers. The second communication added a brief passage specifying the duties of volunteers by addressing the allocation of task responsibilities. Again, nursing home professionals were randomly assigned to one of the vignettes, and subsequently asked to rate the extent to which they generally perceive volunteer roles to be ambiguous, and to what extent the division of labor between volunteers and professionals themselves is sufficiently clear.

The results provide optimistic news for managers of health care organizations, but also tells a cautionary tale. Nursing home professionals who received the strategic communication specifying the duties of the new volunteers reported significantly lower perceptions of ambiguity about volunteer roles and about the relative roles of volunteers and professionals than nursing home professionals who were exposed to the baseline communication. However, when the respondents are asked about communication in their own organization, only a small share of the respondents reported that their managers actively communicate expectations to and responsibilities of new volunteers in their organization (Jensen & Thomsen 2018).

Implications for Provision of Health Care Services and Directions for Future Research

The results from these two studies have important implications for practice and the provision of health care services. The results on threat perceptions among nursing home professionals suggest that policy makers and managers should not always assume that nursing home professionals view volunteers as a resource. Instead, volunteers may be viewed as a threat to the quality of care when they solve core tasks in contrast to complementary ones. Such threat perceptions among nursing home professionals may eventually harm the quality of care delivered to the end users since threat perceptions have been shown to lead to tension and conflict between volunteers and service professionals (Kreutzer & Jäger 2011; MacDuff 2011). It is therefore important that policy makers and managers are cautious about what kind of tasks volunteers solve in a health care context. The results on ambiguity about the roles of volunteers among nursing home professionals suggest that a low-cost and easily implemented communication initiative may reduce ambiguity among nursing home professionals about volunteer roles. This is also im-

portant knowledge to improve service provision in health care, since ambiguity may lead to frustration and turnover among service professionals (Nesbit et. al 2016), which may harm the quality of care delivered to the end users.

Although these two studies provide interesting insights into health care professionals' perspective on coproduction and potential implications for the provision of health care, they also raise several issues on coproduction of health care services that should be examined in future studies. First, the studies only include nursing home professionals. Coproduction of health care may take place in other health care areas than nursing homes such as doctors' clinics, hospitals, home-based care and at physiotherapy clinics. However, we know little about health care professionals' perspective on coproduction in these latter areas, which may be topics for future research.

Second, many health care services include employees with different level of professionalism (i.e. specialized, theoretical knowledge and professional norms). For example, nursing homes employ health assistant, nurses, pedagogues, and therapists, whereas hospitals employ porters, health assistants, nurses, and doctors. However, we do not know much about whether threat perceptions or ambiguity about the roles of volunteers differ across professions. One could, for example, imagine that health assistants employed at nursing homes are more likely to perceive volunteers as a threat to their own job than nurses, due to a lower degree of specialized, theoretical knowledge.

A third issue to be studied in future research is whether the qualifications of volunteers matter for health care professionals' perceptions of volunteers as threats and ambiguity of roles of volunteers. Scholars, for example, argue that service professionals are more likely to perceive volunteers with the same education as service professionals as a threat to their own job (Kreutzer & Jäger 2011). A final issue to be studied in future research is whether coproduction of health care service differs cross-nationally. Health care systems differ considerable across countries in terms of how they are organized and to what extent health care services are provided by public, nonprofit or for-profit organizations – and one may therefore imagine that health care professionals' perspective on coproduction may differ cross-nationally.

Viewpoints on improving health care service provision

By Vera Winter and Mette Kjærgaard Thomsen

The health care industry represents an important sector of developed economies, both in terms of spending on health as a share of GDP (OECD average around 8.8 % in

2017, OECD Health Statistics 2019) and in terms of employment (OECD average around 10 % of total employment in 2015, OECD 2017). Health spending and employment are furthermore growing more steadily and less affected by economic tendencies than other industries (OECD 2017). But besides its economic relevance, health care is an industry that touches virtually everyone in their life. Doctor consultations and hospitalizations are services everyone needs usually several times in their lives, even though it might be a service most people would like to not use. Yet demographic changes, in particular ageing populations, will change the pattern of demand for health and social services. This could include greater demand for long-term care services and will require new care delivery models that will involve greater integration of services. A constant aim and challenge are to ensure access to services and to increase the productivity of the health providers, as well as to improve the continuity and quality of care for the patients (OECD 2017).

As the challenges for health service provision are manifold, so are the researchers that try to provide answers to pressing issues. Research on health care is widespread. Disciplines include epidemiology, population health, health economics, health care management, and health services research. Within this diversity, health services research (HSR) can be defined and delineated as "the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviors affect access to health care, the quality and cost of health care, and ultimately, our health and well-being" (Rich and Collins 2018). Over the years, the focus of health service research has shifted in several ways. In its earlier years, the predominant focus of health service research was on the financial and organizational challenges of the hospital industry and regional planning for health care services in a broader sense. Since then, the objectives have evolved towards the aim to reveal patterns of care and compare clinical outcomes, to provide data-driven policy analyses addressing some of the most important macrolevel questions related to health care and to generate many new methods and measurement tools for understanding the behavior of those who use and provide health care services in a variety of settings (Zinn et al. 2017). In an analysis of five decades of health service research, Luft (2017) depicts several changes in health service research's focus. To start with, research seems to mirror the real-world shift from inpatient to outpatient setting's relevance and an accompanying larger focus on care integration. Within research on hospitals, there is a substantial increase in studies focusing on human resources. Additionally, policy trends, such as new insurance programs or changed reimbursement systems are reflected in research trying to analyze its consequences in terms of

evaluating the achievement of objectives and identifying potential unintended effects. Finally, there also seems to be a shift towards more country-specific studies, which might indicate a rising willingness to look across national borders and to learn from other countries in a benchmarking sense (Luft 2017). In sum, health care service and health care service research are a valuable, evolving and diverse field with lots of potentials to increase professionalization. How health care services are or could be professionalized can be studied from different perspectives.

One natural starting point is of course the service provider. The provider perspective in providing quality health care is highly important (Lee et al. 2013). Every health care system is complex, and organizations must balance limited resources, the need for infrastructure improvement, the development and implementation of treatment and technology advances, and a vast array of human resources (Danaher and Gallagan 2016). Health care providers generally need to ensure efficiency, productivity, access, and high quality of care. As outlined in Schreyögg et al.'s commentary from the perspective of hospitals as one of the major health service providers, health service organizations are heavily affected by government interventions and several strategies to increase professionalization are applied and have (partially) been evaluated by researchers.

In the face of health system change, there is growing concern about the wellbeing of the care providers, i.e., the employees in health service organizations as another crucial perspective for service research (Bodenheimer and Sinsky 2014). As health care systems respond to pressures to provide high-quality care in an increasingly resource-constrained environment, there is a risk of endangering employees' health, declining satisfaction and engagement for care providers, which can have direct consequences for patients' satisfaction and the quality of care (Gittell 2016). The requirements on health service employees are complex: they must manage role multiplicity; they must be exceptional communicators, demonstrate interpersonal sensitivity, and physical and emotional resilience (Danaher and Gallagan 2016). Health service employees yet are not a uniform group; they include physicians, nurses, pharmacists, medical and technical assistants, as well as nonmedical staff such as administrators and volunteers. In that context, understanding and improving the relationships across the professional groups is a further challenge. Tackling one of the potential relationships, Thomsen and Jensen address the question of employee-volunteer coproduction in their commentary.

Another highly relevant perspective is of course the one of the patients. The patient is a very special type of customer for various reasons. Potentially most importantly, health care is a service people do not necessarily want, but are

somehow forced to demand; further, it involves individuals who are highly vulnerable (Berry and Bendapudi 2007). The service rendered is personal with actions directed at the individual's body or psyche. It is also fraught with emotion (Berry and Bendapudi 2007; Gallan et al. 2013) and can elicit fear and anxiety as well as relief and jubilation. Health needs can be acute or chronic, reflecting a specific episode or unfolding over multiple encounters across the lifetime of an individual. A much broader and deeper understanding of the health care customer is hence needed than in any other service context to deliver the best possible service experience. One important challenge from a patient perspective is the topic of patient safety, i.e., how to create a reliable service free from error (Danaher and Gallagan 2016). Oppel's commentary will contribute to this discussion on error prevention and error management with a particular focus on the error management culture.

Finally, service research can move beyond the perspective of single providers and towards an integrated perspective. Potentially, this is one of the greatest areas for increasing professionalization. Until now, health care organizations and departments often operate as "silos," where each unit functions independently of the others. This means that many firms are struggling with adopting a truly integrated approach to health care (Danaher and Gallagan 2016). Resistance to change is a further reason that many health care firms are finding it difficult to transition to a people-centered model of care where the customer is placed at the center of care (Anderson et al. 2013). Adopting this perspective, Duminy et al. elaborate on a more holistic approach to the organization of health care providers on the macro-level in the wake of shifting from acute to chronic care.

In sum, service research can greatly contribute to the professionalization of service provision in the health care sector and is important for the health care sector, because health care is in need of improvements in efficiency, productivity, compassionate and patient-centered care, access, and inclusion. It has to acknowledge that health services rely strongly on health workers, and that the professionalization of human resource management is one of the greatest challenges in health systems. Additionally, the possibilities and expectations of high quality of care are rapidly expanding, necessitating that service researchers provide responses how service providers can achieve these standards. Finally, health services become increasingly patient-centered and service integration represents a major challenge within fragmented health systems with strong subsector boundaries (primary care, secondary care, tertiary care, etc.).

But not only can the health sector benefit from more service research, it is also a highly interesting research field. For instance, it represents a service sector with increasing and very rich data available (Zinn et al. 2017). Further-

more, compared to more classical service sectors, professionalization of the health industry has been much slower due to the high degree of regulation and the only weak (if at all) functioning of market mechanisms. Hence, service researchers may find a vast plethora of fruitful research avenues. Due to the nature of its service, service research can also have a high societal and social impact, directly affecting individuals' lives and well-being. To conclude, health care is "as pure, complex, important, and challenged as a service can be" (Berry, cited in Danaher and Gallagan 2016). A stronger and wider bridge between the academic service disciplines and health care seems a highly valuable endeavor. Service researchers can offer much in helping health care services become more effective and efficient, more accessible and equitable, more satisfying to receive and to perform.

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