Smarter Health Care
National Research Programme

Synthesis Working Paper:
Quality of Care

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About this Synthesis Working Paper

The NRP 74: Research for better health care

The National Research Programme "Smarter Health Care" (NRP 74) aims to promote innovative health services in Switzerland apt to tackle the practical challenges the health care system is facing today. To this end, researchers have been investigating a wide range of aspects, from the better use of health data and the care of older people at home to case management in emergency wards.

The NRP 74 includes 34 research projects at universities and higher education institutions throughout Switzerland. It is implemented by the Swiss National Science Foundation (SNSF) on behalf of the Federal Council, has a budget of CHF 20 million and runs from 2016 to 2022.

Six critical areas with a synthesis report for each

To address some of the overarching issues facing the health care system today, the NRP 74 has integrated significant research findings from single projects into six topic-specific syntheses. In these six critical areas, researchers analysed their results from different professional perspectives, placed them in a larger context and developed policy options to address current challenges in today's health care system.

These areas are:

- Quality of care
- Patient choice
- Coordination and care models
- Cost and reimbursement
- Health care data
- Building a strong research community (EHCL+)

All six topic-specific synthesis can be consulted on www.nrp74.ch

The Synthesis Team

This synthesis report on the theme of "Quality of care" has been compiled by a team led by a member of the NRP 74 steering committee, comprising a second steering committee member, a principal investigator, and two doctoral students engaged in NRP 74 projects as well as part of NRP 74's Emerging Health Care Leaders (EHCL) programme:

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Table of Contents

Editorial 4

Executive Summary 5

1. Introduction: High on the agenda but difficult to grasp 7

2. Quality of care in Switzerland 9

2.1 Switzerland in international comparison 9
2.2 Approaches to improve quality of care 11

3. Current challenges – and ways to address them 14

3.1 Three overarching issues 14
3.2 Quality measurement 14
3.3 Quality improvement 16
3.4 Quality assurance 17

4. Focus and method of this report 19

4.1 A project overview 19
4.2 Method 19
4.3 Challenges related to quality measurement 20
4.4 Targeting quality improvement 20
4.5 Focusing on quality assurance 21

5. NRP 74 research addressing quality challenges 23

5.1 Quality measurement: Research results from NRP 74 23
5.2 Quality improvement: Research results from NRP 74 24
5.3 Quality assurance: Research results from NRP 74 27

6. Conclusion: Five policy options for better quality of care 30

6.1 Quality measurement 30
6.2 Quality improvement 32
6.3 Quality assurance 33

7. Stakeholders' views on how to improve quality 35

8. Outlook 39

Bibliography 40

Annex I – Interview guide 42

Annex II: NRP 74 research projects on quality of care 43

Glossary 44

Abbreviations and acronyms 45

Editorial

Quality of health care is highly significant for patients and citizens, because it is closely related to the value that health care actually brings to individuals and society. Quality of care research is required to examine and improve aspects such as safety, effectiveness, patient-centeredness, and coordination in routine care settings. The overall quality of health care in Switzerland is high, but there still is room for further improvement. In the Swiss National Science Foundation's National Research Program 74 (NRP 74), quality of care was a priority to which about half of the research projects were assigned. These projects explored specific quality problems and improvement strategies through rigorous empirical research and provided findings that are directly applicable to the Swiss health care system.

This synthesis provides an analysis and interpretation of these quality of care projects. Two researchers (Nazanin Abolhassini and Ana Gureau) interviewed project leaders and examined project reports to analyse findings in three areas: Quality Measurement, Quality Improvement, and Quality Assurance. This framework was derived from current Federal Office of Public Health (FOPH) policy documents. The synthesis was supervised by a scientific advisory group (Marcel Zwahlen, Anne Niquille, and myself) and presented for consultation to a broader group of Swiss health care stakeholders in September 2021. It should be emphasized that the resulting synthesis does not reflect the full content of the projects, but rather provides a specific analysis from a policy-informed perspective.

The synthesis identified a number of issues that are important for decision-makers. For instance, patients' perspectives, particularly those of vulnerable patients, should be integrated when measuring and improving quality of care. Several projects demonstrated how to effectively improve medication management, which is of immediate relevance to the increasing number of people with chronic conditions. The project leaders interviewed also provided many ideas on the pre-conditions for high-quality care and rapid uptake of locally successful initiatives in the Swiss health care system. Further topics are described in the full report.

It was my honour to chair the quality of care synthesis group and to oversee the work, which was obviously done primarily by Ana Gureau and Nazanin Abolhassini. I hope that the results will support health policy in Switzerland and stimulate further studies on Swiss quality of care.

Zürich, in January 2022, Prof. Dr. Michel Wensing

Executive Summary

Context

Quality of care is a broad concept covering aspects such as patient safety, clinical effectiveness, patient-centeredness, timeliness, efficiency and equity. Health care in Switzerland is of high quality in many ways and performs well in international comparison. Nevertheless, like all health systems today, it is facing major issues such as the increasing prevalence of chronic illnesses. It also shows a certain number of intrinsic weaknesses, such as a high degree of fragmentation. These challenges and weaknesses force health policymakers to develop measures to render the system fit for the future. The national quality report[1] commissioned by the FOPH and published after a broad consultation in 2019 confirmed the need to reform the Swiss health care system. The NRP 74 has set out to investigate the potential of novel health care delivery models to improve the quality of care in Switzerland and to strengthen evidence base for decision-making in the Swiss health care system.

Approach

For this working paper, we extracted three broad challenges from the FOPH policy report, referring to the development of:

1. *Quality measurement*: the structures and processes to monitor the quality of care in Switzerland and use the collected information as input for quality improvement and health policy.
2. *Quality improvement*: the structures and processes to continuously improve the quality of care, using educational, organisational and technological methods in health care practice.
3. *Quality assurance*: implementing national and regional arrangements to support quality measurement and improved health care practices, such as laws, regulations and financial incentives.

We then analysed the 16 NRP 74 projects covering various aspects related to quality of care, examined research documentation, consulted the current scientific and grey literature and interviewed project leaders. From this material, we derived practice-oriented policy options, which we then presented to key stakeholders who provided feedback as to their relevance and implementability.

At the end of this process, there are five evidence-bases recommendations offering policy-orientation to decision-makers on how to improve the quality of the Swiss health care system in terms of quality measurement, quality improvement and quality assurance.

Key findings

- Both at the political level and at the level of institutions and professional organisations various steps are being taken to optimize quality and safety in Swiss health care. But the fragmented nature of the Swiss health care system limits their scope and efficiency. The research community calls for more integration, coordination and oversight mechanisms, as well as a comprehensive indicator framework at the national level and across domains (inpatient, outpatient, home care, care homes).

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[1] Vincent, Ch., & Staines, A. (2019). Verbesserung der Qualität und Patientensicherheit des schweizerischen Gesundheitswesens. Nationaler Bericht im Auftrag des Bundesamtes für Gesundheit.

- Quality of care requires an understanding of quality that goes beyond clinical efficiency, as a subjective perception on the part of patients and carers adding value for both. This requires implementing models of shared decision-making and approaching patients and family caregivers as partners to ensure the systematic inclusion of their perspective in care decisions. Such a participatory approach seems to fit well with the Swiss understanding of bottom-up integration.
- With the increasing burden of chronic diseases in ambulatory care due to an ageing population, medication safety appears to be pressing issue in the Swiss health care system. Studies suggest high rates of adverse drug events and inappropriate prescribing in many settings, but there is very little routine data collection, especially in ambulatory care.
- Because many patients receive care from multiple providers, often over a long period of time, coordination of care (e.g., between primary care, hospitals and patients) is crucial. Improving coordination within the medical professions should be a priority, as it can improve clinical effectiveness, reduce inefficiencies and increase equity in Swiss health care.

Recommendations

Quality measurement

Recommendation 1: In all areas of health care, indicators should be harmonized and the interoperability of the systems currently in use should be ensured. The goal should be to create a reliable information system that is accessible to all actors involved and allows precise statements to be made about the quality of different treatment models.

Recommendation 2: The measurement and use of patient experiences in health care (e.g., using surveys among patients) should be an integral part of systems for measuring quality in Switzerland. Large-scale initiatives to pool and analyse health data have so far largely focused on administrative and clinical data systems.

Quality improvement

Recommendation 3: The quality of medication management should be at the forefront of initiatives to improve the quality of health care, using approaches such as medication reconciliation and computerized decision support for prescribing. Medication management is particularly important for patients with chronic diseases, whose number will increase in the coming decades.

Recommendation 4: Improving care coordination (e.g., between primary care and hospitals) should be a priority for quality improvement, as it can reduce inefficiencies and increase equity in the Swiss health care system. The Swiss health care system is perceived by many people as fragmented.

Quality assurance

Recommendation 5: It is recommended that mechanisms be developed or strengthened to facilitate the smooth scale-up of successful subnational initiatives to the national level and broad implementation of national quality-related initiatives (e.g., clinical guidelines) throughout the country.

1. Introduction: High on the agenda but difficult to grasp

Summary

This chapter introduces the concept of quality of health care. It shows that the quality of care, being highly dependent on the complex context and settings in which care is delivered, remains difficult to assess. At the same time, as health care systems worldwide face multiple challenges, understanding and defining quality of care remains high on the international agenda.

Measurable and therefore improvable

Nevertheless, and although quality of care remains a broad concept, certain specific aspects can be measured and thus improved. The U.S. Institute of Medicine defines six areas of quality of care: effectiveness, safety, patient-centeredness, timeliness, efficiency and equity.

The case of Switzerland

By this definition, the Swiss health care system proves to be of high quality in many respects. But there is also room for improvement. The NRP 74 has set out to investigate the potential of novel models of care delivery to improve quality of care in Switzerland.

The quality of health care has been high on the international societal agenda for several decades, driven by high expectation among the public and evidence of shortcomings in health care practice. Quality of care is ultimately determined by the degree to which health care improves important patient outcomes. It has been defined as “its’ expected ability to achieve the highest possible net benefit according to the valuations of individuals and society” (Donbedian, 1980, p.22). Quality of care is thus abstract and difficult to grasp, but specific aspects can be measured and improved.

For a good understanding of the concept, it is relevant to consider that quality is context-dependent and relative rather than absolute, i.e., based on comparison. Therefore, its meaning differs between settings, times, and individuals. In this report, we focus on the quality of care in Switzerland in the year 2020 and subsequent years.

The report “Crossing the Quality Chasm” published by the Institutes of Medicine in the United States (IOM, 2001), which has had enormous influence on the development of quality and safety management all over the world, distinguished the following six domains of quality of care:

- *Safety:* health care delivery does not cause avoidable harm to patients.
- *Effectiveness:* health care delivery is informed by scientific knowledge on benefits of services, avoiding underuse, overuse and misuse.
- *Patient-centeredness:* health care delivery is respectful and responsive to individual patient preferences, needs and values.
- *Timeliness:* health care is available and accessible when it is needed.
- *Efficiency:* waste of resources is avoided, considering provider time, supplies, ideas and energy.
- *Equity:* health care delivery is independent of personal characteristics, such as gender, ethnicity, socio-economic status, and geographical location.

The Swiss health care system: high-performing but facing challenges

Switzerland has a good health system and favourable population health outcomes. Nevertheless, like all health systems today, it is facing major challenges such as the increasing prevalence of chronic illnesses. It also shows a certain number of intrinsic weaknesses, such as a high degree of fragmentation. These challenges and weaknesses force health policymakers to develop policies aimed at making the system fit for the future (Health2020, 2020, FOPH). Another pressing issue is the need to improve the collection, processing and use of health data for practice, policy and research. New models of health care delivery need to be developed and evaluated with respect to their outcomes. Last but not least, there is the need to build a community of health services researchers providing rigorous research in “real-world practice settings” (SNSF, 2015, p.7).

Against the background of these overall challenges, the NRP 74 has set out to examine the current quality of care and its variation and to investigate the impact of different health care delivery models on the quality of care. These results can ultimately have an effective impact on shaping policy actions to improve quality of care in Switzerland.

2. Quality of care in Switzerland

Summary

This chapter draws on various international surveys, such as the OECD Health Statistics or the Survey conducted every three years by the Commonwealth Fund Foundation, to show how the quality of care in Switzerland compares internationally in terms of the six aspects of quality discussed in Chapter 1. Overall, Switzerland appears to perform well in terms of quality of care, not least thanks to the general good health of its population. At the same time, international benchmark studies also reveal some problem areas. For example, Switzerland performs somewhat worse than other high-income countries in terms of patient safety, effectiveness or patient-centeredness. To a considerable extent, this seems to be due to the fragmentation associated with a complex and decentralized health care system.

Measures to improve the quality of care in Switzerland

On the level of institutions and professional organisations various steps are being taken to optimize quality and safety in Swiss health care. However, their implementation on a broader scale seems to be hampered by a lack of coordination. The underlying problems were identified in a national report on quality and safety in health care (Vincent and Staines, 2019) and are now being addressed in part at the policy and strategic level (Health 2020) through legislative amendments and the creation of a federal Health Quality Commission.

2.1 Switzerland in international comparison

For an adequate interpretation of the information available on the quality of health care in Switzerland, it is helpful to emphasize the general good health of its population. Regarding life expectancy at birth, for instance, Switzerland with 83.6 years is second only to Japan (OECD, 2019, p.69). The total mortality from preventable diseases is second-lowest, after Israel, while the mortality from treatable diseases is lowest of all surveyed countries (OECD, 2019, p.73). A total of 80.2 % of the Swiss population rated their health as good or very good, which is in the upper range of all countries (OECD, 2019, p.85). Canada achieved the highest score with 88.5 %, while neighbouring countries such as France (67.4 %) and Germany (65.4 %) scored substantially lower.

This section, using international benchmarking studies, examines how Switzerland compares with other countries in terms of the six aforementioned aspects of quality of care (OECD, 2019, Schneider et al., 2017). Additional figures on the quality of health care in Switzerland can be found in a recent national report commissioned by the Federal Office of Public Health (FOPH) (Vincent and Staines, 2019). The emphasis in this section lies on *quality problems*; it does not provide a comprehensive assessment of the quality of health care in Switzerland. All data sources have issues with validity and representativeness, which we do not discuss here. The figures for Switzerland may hide substantial variations across different health care providers within the country.

Patient safety

The Organisation for Economic Co-operation and Development (OECD) uses national health data across a range of countries. Among 19 countries, Switzerland had the highest rate of reported foreign bodies left in patients during surgical procedures, although absolute numbers are very low: 12.3 per 100.000 hospital discharges (OECD, 2019, p.123). The number of post-operative pulmonary embolisms or deep vein thrombosis after knee and hip surgery appears to be in the upper range in comparison to other countries: 339 per 100.000 hospital discharges (OECD, 2019, p.123). The number of patients with obstetric trauma is also in the upper range: 8.5 per 100 instrumental deliveries and 2.3 per 100 non-instrumental deliveries (OECD, 2019, p.125). In terms of system governance, Switzerland has national legislation on quality and safety, which is one of the most frequently implemented functions of safety governance; however, in a health care system characterized by decentralized decision-making, safety governance seems fragmented (Auraaen et al., 2020, p.120).

The latest Commonwealth Study, a comparative analysis of the performance of health care systems in 11 high-income countries conducted every three years by the Commonwealth Fund Foundation, ranked Switzerland 6th out of 11 countries with respect to performance in 2017 (Schneider et al., 2017, p.5). This study is based on a large-scale survey among health care providers and citizens. In terms of the care process, which includes patient safety, Switzerland ranks 7th out of 11. For instance, 14 % of Swiss respondents reported that they had experienced a medical, medication, or lab mistake in the previous two years (Schneider et al., 2017, p.19) and 36 % among those taking two or more prescription medications agreed to the statement “Health care professionals did not review medications in the past year”.

Effectiveness

The Commonwealth Study ranks Switzerland 4th out of 11 for health care outcomes (Schneider et al., 2017, p.5). This ranking is largely based on OECD health data. With respect to avoidable hospital admissions, Switzerland is one of the better performing countries. Per 100.000 inhabitants, the numbers are 138 for asthma and chronic obstructive pulmonary disease (COPD), 174 for congestive heart failure, and 73 for diabetes (OECD, 2019, p.127; 129). Likewise, five-year survival rates for major cancers are higher in Switzerland than in many other countries, i.e., 97 % for breast cancer, 67.3 % for rectal cancer, 67.8 % for colon cancer, 20.4 % for lung cancer, and 32.2 % for stomach cancer (OECD, 2019, p.139; 141; 143). On the other hand, the thirty-day mortality rate after hospital admission for acute myocardial infarction was about 7 % in the year 2007 (no newer data available), which is at the higher end of the spectrum (e.g., the figure is 3.2 % in Denmark) (OECD, 2019, p.133).

Patient-centeredness

The Commonwealth Study ranks Switzerland 7th out of 11 for the care process, which includes the subdomain “engagement and patient preferences” (Schneider et al., 2017, p.5). For instance, 72 % of Swiss respondents agree to the statement “doctors always treated the patient with courtesy and respect during their hospital stay”. For this item, the degree of agreement in other countries ranges from 48 % (Germany) to 80 % (Australia). A total of 87 % of Swiss patients reported that care physicians spent sufficient time in face-to-face contact during ambulatory visits. Across 21 countries, this figure varied from 42.1% (Japan) to 97.5% (Belgium) (OECD, 2019, p.147).

Timeliness

The Commonwealth Study ranks Switzerland 8th out of 11 for the care process, which includes the notion of “timeliness” (Schneider et al., 2017, p.5). Specific items show, for instance, that 57 % of Swiss respondents reported that they were able to see a doctor or nurse on the same or on the next day when they last needed medical care, while 58 % of respondents found it somewhat or very difficult to get after-hours care (Schneider et al., 2017, p.21).

Efficiency

According to the Commonwealth Study, Switzerland performs relatively poorly (place 8 out of 11) with regard to administrative efficiency. For instance, 50 % of respondents agreed with the statement “Doctors report time spent on administrative issues related to insurance or claims is a major problem” (Schneider et al., 2017, p.22). “Doctors report time spent on administrative issues related to reporting clinical or quality data to government or other agencies is a major problem" is agreed to by 33 % of respondents (Schneider et al., 2017, p.22). Gaps in hospital discharge planning and transitional care (categorized as an aspect of health care coordination) are reported by 45% (Schneider et al., 2017, p.19).

Equity

The Commonwealth Study placed Switzerland 4th out of 11 with respect to equity (Schneider et al., 2017, p.5). Examples of issues reported by respondents include "cost-related access problems to health care in previous years" (with a reported 15 % in access disparity experienced by people with low incomes compared to those with higher incomes) and "skipping dental appointments because of the cost in the past year" (with a reported difference of 16 %) (Schneider et al., 2017, p.23).

2.2 Approaches to improve quality of care

Quality of care is not only a measurable aspect of health care, but also involves dedicated activities by health care providers, managers, and policymakers. They can take a number of actions to assess and improve the quality of care, using a variety of strategies such as data-based feedback to health care providers, organizational culture changes and performance-based reimbursement schemes. These strategies may be one-off, such as in a particular project, but ideally, they are applied on an ongoing or repeated basis. The latter typically requires governance, resources, and organization within hospitals, ambulatory care practices, cantons, and health care systems as a whole. Many health care institutions and professions have established structures and processes to improve quality of care, such as standards for hospital accreditation, the development of clinical guidelines or continuing professional education. The establishment of such structures is a hallmark of high-quality health care in itself as it contributes to continuous learning and health care improvement.

The need for a comprehensive strategy

Structures for quality and safety management exist in Swiss health care, but their coordination and implementation appear suboptimal. In 2013 the Swiss Federal Council adopted a comprehensive strategy entitled "Gesundheit 2020" (Health2020, 2020). "Health2020" defines four overreaching priorities for action, comprising twelve objectives with three activities each – a total of 36 activities. These will be implemented in stages and are intended to complement activities already underway in the health care system. One of the four priority areas (priority area 3) is to ensure and increase the quality of health care. The first objective in this area (Objective 3.1) is to promote the quality of services and health care delivery, and one of the measures is to reduce ineffective and inefficient services, medicines and processes to increase quality and to reduce costs (Health2020, 2020).

A long-term national endeavour

The interventions and structures needed to improve the quality of health care in Switzerland were summarized in a national report focusing on the federal level (Vincent and Staines, 2019, pp.11-12). Key recommendations relate to:

- Involving patients and caregivers as partners
- Engaging and supporting professionals
- Improving and using quality and safety information
- Supporting patients, caregivers and staff after harmful events
- Education, training and research for quality and safety
- Building capacity for safe, high quality care

- National programmes to improve patient care
- Governing, leading and regulating for safe, high quality care

The authors write: "We hope that this report, developed with many Swiss colleagues, will be the foundation for a much larger, more coordinated national effort to improve the quality and safety of care. We hope that our report, and the accompanying short reports, will inspire legislators, politicians, leaders, civil servants, educators, health care professionals and patients to engage in this quest for safe, high quality care in Switzerland. This is a long-term national endeavour, a journey of collective learning, but it can start today." (Vincent and Staines, 2019, p.51).

The political response

After a broad consultation, the FOPH published a formal response to the report of Vincent and Staines (BAG Faktenblatt Nationaler Bericht zur Qualität und Patientensicherheit im Gesundheitswesen – Verbesserung der Qualität und Patientensicherheit des Schweizerischen Gesundheitswesens (Okt. 2019)).

This document, which represents the policy response to the report, endorses many of its recommendations. These are summarized in terms of five themes:

1. Data management systems for measuring and monitoring quality and safety in the Swiss health care system need to be improved.
2. Quality of care is high in Switzerland, but health care is expensive and patient safety in hospitals can be improved.
3. Many research and improvement activities in the Swiss health care are small and short running. Sustained initiatives at the national level are rare.
4. The professional competencies and other prerequisites for effective quality improvement are not available everywhere and need to be strengthened.
5. The governance of activities to monitor and improve the quality of Swiss health care is weak and needs to be strengthened.

In order to improve the quality and cost-effectiveness of medical services provided under the compulsory health insurance system, Parliament approved a partial revision of the Federal Health Insurance Act (KVG/LAMal) in mid-2019. This partial revision of the KVG/LAMal also required an amendment to the Health Insurance Ordinance (KVV/OAMal).

Creation of a federal Quality Commission

In the course of the revision of the KVG/LAMal in mid-2019, the Federal Assembly decided to create a Federal Quality Commission (Federal Assembly, 2019). This commission consists of representatives of the cantons, service providers, insurers, insured persons, specialists, and patient associations. Its mission is to advise policymakers and other health care stakeholders, to develop quality indicators through third party mandates, and to implement national programs highlighting quality practices likely that can improve patient safety.

The amendment went into effect on 1 April 2021. The Federal Council is now responsible for setting targets every four years for ensuring and promoting the quality of health care under mandatory health insurance and for reviewing the achievement of targes. This is to ensure that the Federal Council takes the lead in quality development.

A new strategy for the years 2021 to 2032, which will underpin the Federal Council's four-year goals, is currently in the pipeline. It will be based on the conclusions of the national quality report of November 2019, as well as on further validated findings from Switzerland and abroad.[2]

Towards uniform funding?

Another political proposal, still being debated in parliament, aims to introduce uniform financing of outpatient and inpatient health insurance services (EFAS), including care provided in nursing homes and care services at home. This would also provide the cantons with suitable instruments for controlling the range of services and for quality assurance[3].

These various initiatives are related to the development of a sustainable health system, which is supported by the Swiss Academy of Medical Sciences (SAMS) in two positions papers (SAMS, 2019, SAMS., Basel 2012.). From a global health perspective, it is also important to consider the environmental impact of health care (Lenzen et al., 2020, p.273). The SAMS raises awareness on this point. However, there is still a long way to go before a comprehensive adoption of a national policy on environmental sustainability of the health system, as recommended by the World Health Organization (WHO, 2018) becomes a reality.

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[2] Source and further details: https://www.bag.admin.ch/bag/de/home/das-bag/aktuell/medienmitteilungen.msg-id-82453.html

[3] https://www.gdk-cds.ch/fr/assurance-maladie/financement

3. Current challenges – and ways to address them

Summary

In addition to the challenges described by Vincent and Staines, the NRP 74 research community has identified three essential and overarching issues which need to be addressed if quality in the Swiss health care system is to be improved. These are:

Quality measurement, i.e., the establishment of systems for the continuous measuring of quality of care and the use of these measurements for quality improvement and targeted health policy measures

Quality improvement, i.e., the establishment of continuous activities to improve quality of care in health care practice and to implement innovations throughout the Swiss health care sector.

Quality assurance, i.e., the implementation of coordinated and binding health care system conditions, structures and incentives.

Although in all three areas multiple initiatives are underway, the fragmented nature of the Swiss health care system limits their scope and efficiency. The research community thus calls for more integration, coordination and oversight mechanisms, and a comprehensive indicator framework at the national level and across domains (inpatient, outpatient, home care, care homes).

3.1 Three overarching issues

This report focuses primarily on the challenges as described by Vincent and Staines (2019) and corroborated by the FOPH. In addition, while the quality related research projects within the NRP 74 covered a diverse range of aspects, three overarching issues emerged as essential challenges to the quality of care in Switzerland and will be discussed here.

- *Quality measurement,* i.e., the structures and processes monitoring quality of care in Switzerland and using the information collected as input for quality improvement and health policy.
- *Quality improvement,* i.e., the structures and processes to continuously improve the quality of care, using educational, organisational and technological methods in health care practice.
- *Quality assurance,* i.e., the national and regional arrangements to support quality measurement and improved health care practices, such as laws, regulations and financial incentives.

3.2 Quality measurement

The first challenge concerns the establishment of systems for the continuous measuring of quality of care and the use of these measurements for quality improvement and health policy. This challenge may be subsumed under “quality indicators”, but it goes beyond the availability of measures and the more technical aspects of data collection. Within the NRP 74, these aspects are addressed in the synthesis report on data systems in Swiss health care.

Systems for quality measurement also comprise, for instance, methods for analysing measures and reporting to decision-makers with a view to learn and improve health care.

In Switzerland, “only a small number of national indicators are collected, mostly focused on hospitals and acute care” (Vincent & Staines 2019). In addition, there are few coordinated quality measurement activities at a national level. At the time of writing, the following indicators for quality of care and patient safety[4] are used:

1. Swiss Inpatient Quality Indicators (CH-IQI)[5] (acute care hospitals): Case numbers; mortality.
2. Swiss National Association for Quality Development in Hospitals and Clinics (ANQ):
    - Acute-somatic hospitals: Patient satisfaction; postoperative wound infection; potentially avoidable rehospitalization; falls, bedsores; knee and hip implants.
    - Psychiatry: Patient satisfaction; burden of symptoms; containment measures.
    - Rehabilitation clinics: Patient satisfaction; quality of life; functionality; general state of health.
3. Externe Qualitätsförderung in der ambulanten Medizin (EQUAM) (independent practices): used very little.
4. Home care: indicators under development.
5. Care homes: indicators under development.

Thus, the only performance management system administered by the federal government is CH-IQI. This system is only poorly informative for a comprehensive concept of quality and is also very limited in scope, covering only acute care. ANQ, which also focuses exclusively on inpatient care, is a system delegated to a private foundation, which may raise questions about data privacy and accessibility.

The research community calls for more integration

Not only is there no comprehensive indicator framework at national level across domains (inpatient, outpatient, home care, care homes), but thre is also no integrated surveillance or oversight. This major problem has been raised multiple times by the NRP 74 research teams, who define the following approaches to change the situation:

- Existing indicators should be consolidated into a a coherent national quality monitoring framework;
- Additional indicators should be added to reflect a comprehensive concept of quality of care, particularly with regard to patient-centeredness;
- Access to data from quality measurements for research should be facilitated.

Changes related to integrated systems for monitoring quality of care are desired at several levels, notably at the level of the federal government as demonstrated by the establishment of the Federal Quality Commission and its mandate. The health services research community is also strongly in favour of greater and better integration, as evidenced by discussions with the principal investigators (PI) of the research groups involved in the NRP 74. Support for national quality monitoring systems appears to be more uneven among service providers, who sometimes fear an increase in their administrative burden, or the development of quality indicators that do not reflect the realities of practice. Due to a tradition of strong professional autonomy, practitioners also tend to resist government intervention and may be “frustrated by the lack of recognition of their commitment to high level of quality” (Hügli-Jost 2020).

In order to implement possible solutions, coherent federal government leadership by the FOPH is needed, i.e., bringing together relevant actors at the federal and cantonal levels in a clear and structured

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[4] Source and further details: https://www.bag.admin.ch/bag/en/home/versicherungen/krankenversicherung/krankenversicherung-qualitaetssicherung.html

[5] https://www.bag.admin.ch/bag/fr/home/zahlen-und-statistiken/zahlen-fakten-zu-spitaelern/qualitaetsindikatoren-der-schweizer-akutspitaeler/qualitaetsindikatoren-chiqi-spezifikationen.html

cooperation framework, as well as adequate political and financial support. The question arises whether the newly created Federal Quality Commission can fulfil this task.

3.3 Quality improvement

The aim is to establish continuous activities to improve quality of care in health care practice and to implement innovations throughout the Swiss health care system. Many activities can contribute to quality improvement. These include continuing professional education, patient empowerment, and organizational changes. Many improvement activities and related research projects in Swiss health care are small and limited in time. Sustained initiatives at the national scale are rare. This contrasts with the growing international body of research literature on quality improvement and implementation of evidence-based practices.

A delicate point: medication safety

Given the growing burden of chronic illness in ambulatory care settings due to an ageing population, medication safety appears to be an urgent area of concern in the Swiss health care system. Studies suggest high rates of adverse drug events and inappropriate prescribing across many settings, but there is very little routine data collection, particularly in ambulatory care. No comprehensive national strategy explicitly dedicated to medication safety exists in Switzerland, and health care regulations differ widely among cantons.

Several national, regional and local quality improvement initiatives and projects have been proposed to address this issue. Patient Safety Switzerland, for example, has been conducting national programmes for patient safety improvement since 2012. One of these successfully completed programmes is “Safe Medication in Hospitals” – the implementation of medication reconciliation at point of patient entry into the system. Medication reconciliation is the systematic compilation of a comprehensive list of patients' current medications and the consistent use of this list by all health care providers involved, as well as the patients themselves and their caregivers (BAG, 2017).

National improvement programmes

In addition, four national improvement programmes have been initiated under the name "progress!" with significant funding from the FOPH. Patient Safety Switzerland is responsible for their development and implementation. The progress!-programme "Safe medication at interfaces” (2014–2017) focused on the implementation of systematic medication reconciliation in hospitals and consisted of an awareness campaign for professionals and the general public (Fishman et al., 2018). An in-depth project was conducted with eight pilot hospitals to gain experience with medication reconciliation on hospital admission. At the end of the program, Patient Safety Switzerland, together with key health care stakeholders, published a charter declaring medication reconciliation a necessary standard and describing important framework conditions for its implementation[6]. Another progress!-programme currently underway addresses medication safety in nursing homes through a multi-level approach, including a Delphi consensus study[7].

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[6] Source and further details: www.patientensicherheit.ch/de/themen/Pilotprogramme-progress--/progress--Sichere-Medikation/Charta-Sichere-Medikation/mainColumnParagraphs/04/download_website.pdf

[7] www.patientensicherheit.ch/programme-progress/sichere-medikation-in-pflegeheimen/

However, most studies and probably most improvement activities across the country are small in scale, limited in scope and uncertain in terms of measuring the clinical impact of interventions. The long-term sustainability of any improvements is hardly ever addressed (Swiss Nurses Association, 2019).

According to the project teams of the quality-related research projects within NRP 74, the following approaches could significantly improve the situation:

- Implementation of a medication therapy management focusing on inappropriateness and medication errors;
- Rational use of resources focusing on overuse/underuse of care or medicines;
- Patient engagement and integration focusing on communication with vulnerable patients.

3.4 Quality assurance

The third challenge relates to health care system conditions, i.e., governance, structures and incentives. As the Swiss health care system consists of multiple subsystems (cantonal, municipal, sectoral), there is minimal oversight at the federal level. This fragmented leadership creates the conditions for a diffusion of responsibility and oversight. In terms of quality assurance there is a “lack of consensus on the nature of a national coordinating body and a fear of excessive central control” (Vincent & Staines 2019). Therefore, while “safety and quality organisations are doing valuable work individually”, “it appears to be difficult to establish coordinated national programmes” (Vincent & Staines 2019). Quality initiatives are mostly project-based and thus limited to a certain institution, municipality or canton, rarely achieving a meaningful scale-up. Previous research on quality assurance has also found that “few initiatives have been directed at understanding or improving the patient experience, and Swiss patient organisations do not seem to be prominent in the national strategy” (Vincent & Staines 2019).

Another aspect related to quality assurance is the “poor coordination of care” in care pathways, involving “missing test results and medical records, conflicting information from different providers and unnecessary repeat testing” (Vincent & Staines 2019). This issue may be a result of the fact that Switzerland did not yet manage to implement an electronic patient record (EPR) across its entire health care system, notwithstanding the fact that a new federal law, brought into force on April 15 2017, requires hospitals and nursing homes to adopt interoperable electronic health records (EHRs) to facilitate data sharing and cooperation among health care providers (De Pietro & Francetic 2017) [8]. We note that coordination of care is the topic of a separate synthesis report of the NRP 74 programme; here we focus on this aspect as an element of quality of care.

Binding measures are needed

A third aspect related to quality assurance is the extent to which evidence-based clinical and other guidance is available and accurately implemented. In this sense, previous research has found that “guidelines were followed in about two-thirds of cases [in surgery], but active surveillance was performed in fewer than half” (Vincent & Staines 2019). Amendments to the Federal Health Insurance Act (KVG/LAMal) introduced in 2019 and taking effect in January 2021 confer an important role to the federations of service providers and insurers by requiring them to enter into nationally valid quality agreements. These agreements, which must be approved by the Federal Council, will introduce binding quality improvement measures. The law provides for sanctions in the event of a violation of these

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[8] See: Federal Law on Electronic Patient Records (EPRA) https://www.bag.admin.ch/bag/fr/home/gesetze-und-bewilligungen/gesetzgebung/gesetzgebung-mensch-gesundheit/gesetzgebung-elektronisches-patientendossier.html

conventions. The federations must also inform the Federal Quality Commission and the Federal Council annually about the goals achieved and the improvement measures to be implemented.

Based on feed-back from the NRP 74 research teams, we identified the following approaches to improve quality assurance:

- Reporting, monitoring, and control mechanisms should be strengthened, with a clear division of responsibilities between cantonal and federal authorities;
- Coordination of care pathways should be improved;
- National clinical practice guidelines should be developed;
- The scale up of subnational initiatives should be strengthened.

Similar to the challenges related to quality measurement (1.3.2), changes in quality assurance are needed at multiple levels, including the level of the federal government. Among service provider associations, readiness to embrace change may vary for the reasons discussed above. Possible solutions to the challenges described here should therefore best be implemented by the Federal Quality Commission, although the question of the scope of its mandate remains open.

4. Focus and method of this report

Summary

This chapter explains the methodology of this working paper. Sixteen projects of the NRP 74 have addressed aspects linked to quality of care and provide evidence in several specific areas. These findings, the insights gained in extensive exchanges with NRP 74 project leaders and relevant stakeholders as well as the information gathered through consultation of the current scientific and grey literature in Switzerland are placed within a thematic framework.

Sound and practice-oriented evidence

Thus, it becomes possible to broadly outline where the NRP 74 projects can contribute novel insights to current discussions and developments in the respective contexts of quality measurement, quality improvement and quality assurance. These projects will be discussed in more detail in the next chapter.

It is clear that NRP 74 projects can only represent a fraction of the entire health care system. Nevertheless, the present report provides sound and practice-oriented evidence in several specific areas pertaining to the improvement of quality of care and thus offers policy-orientation to decision-makers.

4.1 A project overview

Within the National Research Programme "Smarter Health Care" (NRP 74), sixteen projects contributed to the theme of quality of care (Puhan et al., 2020, p.5), which was one of the central themes of the programme and its call for proposals in 2015-2017. Given the breadth and complexity of the overall theme within each challenge, the individual NRP 74 projects, while covering different aspects, overlap in some areas. Figure 1 (p. 21) provides an overview of the challenges (as derived from Swiss policy reports), the themes derived from the NRP projects that relate to quality of care issues, and the linkages of these themes to specific aspects of quality. This chapter presents this thematic panorama and the related projects.

4.2 Method

This working paper draws on NRP 74 documentation and interviews pertaining to quality of care and provides a synthesis of key results and findings. Evidence was collected from three sources: 1) project documentation (proposal summaries, interim and final reports), 2) semi-structured interviews with project leaders, 3) scientific literature on the topic of quality of care and policy documents relevant to the Swiss context. The interview guide is provided in Annex 1.

This synthesis does not provide comprehensive summaries of the research projects analysed here (these are provided in the annex) but extracts the information which is relevant to the current Swiss context. It also does not detail the quality of Swiss health care is (e.g., for each aspect of care). The list of domains is not exhaustive. For instance, health care coordination might be added, but since this topic is addressed by another NRP 74 synthesis working paper, we will only treat the aspects of quality of care listed above.

4.3 Challenges related to quality measurement

With regard to quality measurement, this working paper will focus on *what* is currently measured in terms of attention dedicated to quality of care, on *how* quality of care is measured, on *who* has access to this data, and on *what is being done* with the collected data, and will then link this state of facts with the corresponding research results (see chapter 5).

As in other health care systems, the debate about how to better capture quality of care remains open between process versus outcome indicators. This was true for NRP 74 as well, with some project teams advocating the former and emphasizing the need for a paradigm shift from "improving the numbers" (e.g., by reducing the incidence of adverse events) to “avoiding to treat patients poorly in the first place”. This would also mean “doing less” to achieve “smarter health care”. As one of the PIs noted: “We need to understand where we can stop doing something, reduce something, discuss something more with patients to best understand (their needs) and take a decision. So, we should not only focus on what to do more, but where to be more efficient.”

The analysis of the NRP 74 projects (based on interviews and documents) provided three overreaching themes relating to quality measurement:

- Indicator development and harmonisation: project no. 27
- Patient-centeredness: projects no. 8, 11, 14, 15, 20
- Research and learning: project no. 14

4.4 Targeting quality improvement

The challenge of improving quality encompasses several domains where innovative approaches, solutions and know-how need to be implemented. Three topics were identified as particularly relevant by the project groups:

- Medication therapy management issues, with a special focus on inappropriateness and medication errors, are addressed projects no. 6, 9, 14, 19, 22, 34
- The rational use of resources, with a focus on overuse/underuse of care or medicines, is addressed by projects no. 3, 8, 15, 17, 20, 26, 27
- Patient engagement, with a focus on communication with vulnerable patients, is covered by projects no. 11, 20, 34

Figure 1: Overview of quality issues addressed by NRP research projects

Challenges identified by NRP 74	Themes	Projects	Domains of quality care as defined by the IOM report					
			Safety	Effectiveness	Patient centredness	Timeliness	Efficiency	Equity
Quality measurement	Indicator development and harmonisation	27		x			x	
	Patient centredness	8, 11, 14, 15, 20		x	x		x	
	Research and learning	14						
Quality improvement	Medication therapy management	6, 9, 14, 19, 22, 34	x	x	x		x	
	Rational use of recources	3, 8, 15, 17, 20, 26, 27		x	x	x	x	x
	Promoting patient engagement and integration of vulnerable patients	11, 20, 34		x	x		x	
Quality assurance	Surveillance mechanisms	19		x			x	
	Coordination of care	8, 17, 34		x	x		x	x
	National guidelines	3, 26, 17		x			x	x
	Scale-up of initiatives	27		x			x	

4.5 Focusing on quality assurance

With regard to quality assurance, this working paper focuses on the structures and incentives of the health care system designed to ensure quality of care. While none of the NRP 74 projects reviewed for this report specifically addressed quality assurance in the health care system, several relevant themes emerged from in-depth interviews with project leaders. These include surveillance mechanisms, coordination of care, adaptation or development of national guidelines, and scale-up of successful initiatives at subnational level.

These components appear to be closely related to the currently not yet implemented electronic patient record system, which is widely seen viewed as the centrepiece of quality assurance. As previously mentioned, the Federal Law on Electronic Patient Records[9] which sets the stage for the introduction and dissemination of electronic patient records, entered into force in April 2017, but, as highlighted by several PIs, “Switzerland is still quite far away from achieving this”. The flow of information between different areas of health care (outpatient, inpatient, general practices) remains inconsistent. As one of the PIs noted: “There are different interfaces, and a lot of information gets lost; each level or each entity of care pursues their own interests and there are no or not enough incentives to pursue the overall best interest of the health care system in a way that leads to optimal patient outcomes.”

Interviewees cite several examples, such as hospitalisation records that are not shared with general practitioners (GPs), specialists or community care services upon discharge, or cases where “the hospital discharge prescription does not match the prescription from specialists or GPs”. In addition, instances seem to be frequent where “the transition between hospital and home is heterogeneous and often poorly organized; very few hospitals have some form of discharge management system. University hospitals sometimes employ discharge managing nurses, but in almost none of the other hospitals is there an organized system for the discharge procedure.” Finally, interviewees reveal that it is not currently clear who owns hospitalisation data and that patients encounter difficulties in accessing it: “At the moment, the patient has to send a formal request to the hospital administration, and it is up to them to decide what to share with the patient. Each canton regulates access to hospital records differently.”

While coordination of care is a dedicated topic of another NRP 74 synthesis report, it is important to understand this aspect as an essential part of quality of care. An overwhelming majority of the project leaders consulted for this report stresses that poor coordination of care poses significant barriers to quality assurance: “Currently there is a segmentation of care, it is hard to provide good quality if there is no flow of information", is one of the points made, another states: “At the moment, care pathways are very fractioned. It is not clear who is the care manager or care coordinator. This means that the patient needs to adapt to the system, not the system to the patient.”

Respondents also mention the great variety of care models currently practiced in Switzerland, which they generally consider as positive. The main issue with building upon these successes is coordination, as highlighted by this statement: “Some cantonal administrations support local authorities by providing regulations, instruments and financing, while some others do very little”. The overall conclusion can be summed up as “Everyone is doing something, but independently, no one is there to put the pieces together. There are many initiatives to address this issue, especially in French-speaking cantons, but progress is very slow and the prospects unclear.”

The following NRP 74 projects address challenges associated with quality assurance:

- Surveillance mechanisms: project no. 19
- Coordination of care: projects no. 8, 17, 34
- National guidelines: projects no. 3, 26, 17
- Scale-up: project no. 27

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[9] https://www.bag.admin.ch/bag/fr/home/gesetze-und-bewilligungen/gesetzgebung/gesetzgebung-mensch-gesundheit/gesetzgebung-elektronisches-patientendossier.html

5. NRP 74 research addressing quality challenges

Summary

This chapter first provides a general assessment of already existing evidence, research and implementation efforts related to quality of care and then describes the contribution that specific NRP 74 projects have brought forth. It gives a more detailed description of these projects, including their background, methods used, results, and conclusions for implementation, and highlightd key themes within the three overarching themes we have defined earlier:

1. *Quality measurement:* indicator development and harmonization, patient-centeredness, research and learning;
2. *Quality improvement:* medication and therapy management, rational use of resources, and patient engagement;
3. Systemic *quality assurance* arrangements*:* monitoring mechanisms, coordination of care, national guidelines and scaling up initiatives.

Lack of integration and coordination as well as insufficient involvement of patients and their needs emerge as some of the main problems that health services research can help to solve.

5.1 Quality measurement: Research results from NRP 74

5.1.1 Indicator development and harmonisation

As mentioned previously, national quality indicators for long-term care institutions (care homes) are currently under development. The NRP 74 project no. 27 (see Annex II for details) contributed directly to this process (as secondary project outcome) by means of building upon a "nurse-led quality of care model" for care homes. The model aimed at transforming how care homes operate and integrate quality of care comprehensively. The primary outcome of the project was to show that such a model can reduce the number of avoidable hospitalisations.

5.1.2 Patient-centeredness

Central to a whole series of projects is the finding that an increased patient focus is essential to a comprehensive understanding of quality. In the context of project no. 8, it has been found that the attitude of care teams significantly affects how patients perceive the treatment and comply with it. This leads to the conclusion that there is a need for understanding quality beyond clinical efficiency, as a subjective perception on the part of patients and carers creating value for both parties. Project no. 15 looked at the overall satisfaction of families having children with special needs, which it found to be "very good".

A specific dimension of patient satisfaction was addressed by project no. 20, which focused on the spiritual concerns and resources of patients. The project understands spirituality as "a particular and somewhat neglected dimension of communication". A majority of chronic pain patients in the survey wished to address spiritual aspects in their treatment. The inclusion of the spiritual dimension should not be confined to palliative care at the end of life, but should be included in other areas of health care as well.

Patient needs from a health care provider perspective

From the perspective of health care providers, project no. 8 found that the dimension of carer satisfaction must be part of a comprehensive understanding of quality, as it directly impacts the decision whether to remain in or abandon the profession. In the context of health care services for children with special needs, project no. 15 found the overall satisfaction of therapists and GPs to be very high. The referring physicians were basically satisfied with the quality of care but brought up the issue of the lack of personnel resources (therapists) and long waiting lists. Project no. 20 found that health care providers questioned about the inclusion of spirituality varied between openness and reluctance. A lack of training was identified as the main barrier. The communicative ability to address spiritual needs in the context of therapy planning cannot simply be taken for granted but requires training that so far hardly exists in Swiss educational institutions.

In terms of findings specific to single health sectors, project no. 8 establishes that the same results in terms of clinical efficiency can be achieved at a bearable cost in acute care in the home setting, with the added benefit that this also “puts patients at the centre”. In addition, project no. 14 successfully confirmed the non-inferiority of shorter antibiotic treatments (individualised and biomarker-led) compared to longer antibiotic treatments for bloodstream infections (affecting mainly older persons). The project also validated C-reactive protein (CRP) as an indicator of response to antibiotic treatments.

Project no. 11 developed a new patient-defined outcome measuring quality of health care in an end-of-life setting. The team showed that it is possible to define a shared care plan based on a shared understanding of the disease and its potential progress, with sizeable positive effects, including a shared sense of security.

Project no. 15 found that some children with developmental disorders are identified relatively late in the current identification process. This is a preliminary finding but identification at an earlier age and the subsequent referral to an appropriate therapy can improve quality. There are several projects in Zurich aiming at an improved early identification process. Resistance on the part of the families is also considered.

5.1.3 Projects regarding research and learning

Project no. 14 piloted a model to automatically import data from routine electronic patient files into the study database, thus reducing the workload of care professionals and the risk of human errors in manual data entry. The model consists in an “automated pathway” that ensures the transfer of “baseline and follow-up clinical parameters from the patient’s electronic hospital chart to a study database” by means of an electronic label or tag assigned to each patient enrolled in the trial (NRP 74, project no. 14, Final report). This feature can be repurposed for other trials. The model was also designed to automate participants' recruitment and randomisation processes, but this function was not used in the project.

5.2 Quality improvement: Research results from NRP 74

In selected areas, the available evidence shows a wide range of implementation and research efforts aimed at improving the quality of care. Most studies, however, and probably most improvement activities across the country, are small in scale, limited in scope and uncertain in terms of measuring the clinical impact of interventions. The national programs have been valuable initiatives, but they have also been quite small in scale with generally fewer than ten participating institutions and very little formal evaluation (Vincent and Staines, 2019, pp.27-28).

The most immediately effective quality improvement initiatives are those with a strong focus on a core clinical issue or a specific clinical process or pathway (Vincent and Staines, 2019, p.6). Another class of interventions focuses on improving the underlying system permitting staff to work more effectively and improving care across clinical settings (Vincent and Amalberti, 2016, p.84). For instance, medication errors have been reduced by standardising forms and protocols, by including pharmacists in ward rounds and by the introduction of computerised prescribing (Miller et al., 2011, p.314, Avery et al., 2012, p.1316). Errors can also be reduced by enhancing the quality and safety of working conditions, for instance, by improved interface design or by minimising the interruptions and distractions that greatly increase propensity to error (Vincent and Staines, 2019, pp.6-7).

5.2.1 An urgent matter: Projects regarding medication management

Potentially inappropriate medication (PIM) is a patient safety issue worldwide and a quarter of older Swiss people received PIM (Midão et al., 2018, p.214). In a study using data from four health insurers, 22.5% of Swiss people aged over 65 were exposed to PIM, which was associated with a higher risk of emergency admissions to hospital (Reich et al., 2014, p.6). Contraindicated or potentially contraindicated drug-drug interactions affect over one patient in a hundred in ambulatory care in Switzerland (Bucher et al., 2016, p.4). Project no. 6, aimed at optimising the medication of elderly nursing home residents, showed the potential for deprescribing PIM in care homes, highlighting the necessity of improving collaboration between medical professions and reforming the prescribing system. Project no. 34, also related to safer medication therapy management (MTM) for home-dwelling older adults, tried to identify factors causing undesirable side effects; this project pointed to the fragmentation of care pathways and to the necessity of patient-centred clinical pathways and medication management after hospital discharge. Project no.19 highlighted that the systematic review and optimization of medication at discharge from hospital combined with a clearly defined communication protocol between hospitals and general practitioners leads to fewer readmissions and better patient health. Project no. 14 confirmed the non-inferiority of shorter antibiotic treatments (individualized and biomarker-led) compared to longer antibiotic treatments in the case of bloodstream infections mainly affecting older persons.

Another project, no. 22, aimed at improving prescription appropriateness among multimorbid elderly persons on polypharmacy, using electronic decision-making assistants. The same goal is pursued by the ‘Smarter Medicine’ campaign, launched in some regions of Switzerland, which is designed to encourage activities and interventions for optimized of drug treatments, and to avoid unnecessary medical tests, treatments and procedures, such as avoidable drug prescription (Vincent and Staines, 2019, p.19). Furthermore, the medication reconciliation method has been shown to improve communication at treatment interfaces and to reduce medication errors and adverse drug events (Kwan et al., 2013, pp.399-400).

Medication safety – another area of concern

Despite the recommendation to introduce systematic medication reconciliation on hospital admission across Switzerland, this is currently standard practice in only one Swiss hospital (Muff et al., 2019). Progress has been made regarding the introduction of other measures to improve medication safety, such as computerised prescribing systems and standardised medication processes (Ceschi, 2019). However, project no. 22 reveals that the implementation of electronic decision-making assistants in the Swiss context is still challenging.

Finally, regarding adverse drug events, there are no studies carried out at a national level on the occurrence of adverse drug events and medication errors in Switzerland (Fishman et al., 2018). The Swiss Patient Safety Foundation has provided a comprehensive overview of the available information on medication provision and medication safety in Switzerland (Fishman et al., 2018). Its review of empirical research showed that medication safety is an urgent area of concern in the Swiss health care system. Adverse drug events and medication errors are common, and polypharmacy and its attendant risks are widespread (Vincent and Staines, 2019, p.19). More than 27 % of patients have an adverse drug reaction during their hospital stay and 8 to 15 % of patients overall have experienced an adverse drug event of some kind (Fishman et al., 2018). The NRP 74 project no. 9 focused on one category of high-risk medications (anti-thrombotic drugs), widely used in geriatrics. This project put the emphasis on reducing the incidence of adverse events and preventing poor treatment of patients in the first place. Detection of medication-related problems already exists in hospitals, but is not well developed and could be improved so as to better identify factors likely to trigger adverse drug events.

5.2.2 More with less: Projects regarding rational resources use

Quality issues in terms of the rational use of resources (underuse, overuse and misuse of care or medicines) may also relate to geographic variations in the rates of health services use (Chassin and Galvin, 1998, p.1003). In Switzerland, upon the modification of the Federal Health Insurance Act (KVG/LAMal) (see chapter 2), actors at all levels of the health system must ensure that the prescribed level of quality is efficiently guaranteed (KVG/LAMal). The underlying logic is that continuous improvement involving all parts of the system will increase efficiency, quality and safety, making it possible to deliver “more with less”. The question of how to deliver high-quality, equal and efficient care to the population is therefore one of the most central issues facing the future development of quality improvement activities (Lifvergren, 2013, p.7).

Better integration and coordination are key

Lack of integration and coordination especially with regard to the care of older patients with chronic multiple conditions, is one of the areas that lead to inefficiencies in health care systems (Anell, 2005). As part of NRP 74, project no. 11 sought to define a common care plan for end-of-life patients and investigated whether proactive treatment and nursing care planning, combined with optimal coordination, could prevent patients needing hospitalization. Project no. 27 aimed to develop a care model for chronically ill residents of Swiss nursing homes to reduce unnecessary hospital admissions. Project no. 20 examined the spiritual dimension of pain management in chronic pain patients and investigated an e-learning tool to improve communication and thus efficacy. Project no. 8 sought to analyse the feasibility, acceptance and cost-effectiveness of home treatment for acute mental illness and suggested ways to improve the collaboration between the medical and non-medical professions, including quality-based practices that are adequately institutionalized and remunerated.

In terms of resource utilization, it is worth noting the differential (geographic and financial) access for certain patient groups (e.g., dementia patients and children with developmental disorders) due to differences in resource allocation. Previous studies showed significant geographic variation in per capita consultation costs, with higher costs in urban areas than in rural ones. Costs were higher in areas with a higher supply of care, and residents of urban and high-income areas used more specialist care and incurred higher costs than residents of rural areas (Busato et al., 2012, p.21).

Geographic variation in resource use

Several studies acknowledged the geographical variation in health care in Switzerland (Pellegrini et al., 2014) and that Swiss health expenditures vary considerably from one canton to another (Eggli et al., 2019, p.1278). As part of NRP 64, project no. 26 addressed regional differences in the treatment of chronic diseases. It found variations in the utilization of health care services; health insurance related incentives (deductibles, managed care plans or supplemental insurances) also had an impact on utilization. The structure of the incentives in the current Swiss health insurance system may actually trigger suboptimal behaviours and suboptimal health care utilization.

Project no. 3 identified regional and temporal differences in the performance of inpatient elective interventions between the French-, Italian- and German-speaking regions in Switzerland. This project highlighted the necessity of mobilizing funding and designing guidelines for specialist interventions adapted to the Swiss context. Project no. 17 addressed the issue of early dementia diagnosis from the point of view of the institutions providing it. It also aimed to determine how different cantonal approaches, located at the intersection between health care and social services, deal with the ethical issues related to diagnostic practices.

High-quality, timely care has the potential to improve outcomes and can help reduce associated adverse outcomes for individuals with mental disorders (OECD, 2019, p.136). Project no. 15, which looked at early diagnosis of developmental disorders in children, showed that these are identified relatively late in the detection process (this is a preliminary finding, but diagnosing development disorders at an earlier age may facilitate referral to appropriate therapies and thus improve quality). A critical problem highlighted by this project is the increasing number of children needing services while therapeutic capacity (the proportion of resources available to meet children's needs) is not increasing. The second problem is the need of a centralized and shared database bringing together all the data on these patients and the therapies they receive to provide a comprehensive view of the situation.

5.2.3 Patients' voices need to be heard: projects on patient engagement

Public satisfaction with the Swiss health care system is high, although the Swiss are increasingly aware of errors and problems in their care (Vincent and Staines, 2019, p.9). However, an optimistic bias due to non-utilization of health care services should be taken into account (Perneger et al., 2020, p.6). The Swiss population has very little information about standards of care, and Swiss patient organizations are not well represented in the governance of the health care system. Patients could play a much stronger role by providing feedback on their experience of care, verifying the accuracy and completeness of medical records, and reporting specific concerns and the quality and safety of care (Vincent and Staines, 2019, p.41).

A scout to help patients navigate the system

The Swiss health care system is very complex, and this is particularly challenging for the ageing population and for any patient with complex needs (Vincent and Staines, 2019, p.38). The Swiss Academy of Sciences has proposed that patients with complex problems should have a designated "scout" to help them navigate the system and get the care they need (Swiss Nurses Association, 2019). Furthermore, there is evidence that vulnerable groups may find it difficult to access care and sometimes receive a different standard of care (Vincent and Staines, 2019, p.41). Several country-wide programs also cover nursing home safety and quality issues. For example, the National Dementia Strategy (Bundesamt für Gesundheit, Nationale Demenzstrategie 2014-2019) promotes the development and implementation of needs-oriented health care services, care coordination and interprofessional collaboration. In addition to increasing dementia-relevant knowledge and skills, it supports informal caregivers and promotes new models of care and data monitoring.

Project no. 20 on the spiritual dimension of pain management further emphasized that the spiritual and social dimensions must be an integral part of communication with patients. Project no. 34 (safer medication management for home-dwelling older adults with chronic conditions) pointed to the fragmentation of care pathways and the necessity of patient-centred clinical pathways. The need for a shared care plan was also mentioned in project no. 11 on end-of-life planning; this project sought to define a shared care plan for patients at the end of life end-and explored whether proactive treatment and nursing care planning and optimal coordination could prevent patients from needing hospitalization.

5.3 Quality assurance: Research results from NRP 74

5.3.1 Surveillance mechanisms: The need of systematic reviews

Project no. 19 examinded discharge procedures in Swiss hospitals and found that several different systems are currently in operation (e.g., resulting in different kinds of discharge records being sent to GPs). The project provided a foundation for optimised medication and communication at hospital discharge and found that systematic medication list review is a cost-effective and well-accepted measure that is effective in ambulatory care with the ability to improve this aspect of quality. The project team emphasized that it did not interfere too much with existing procedures in hospitals and refrained from top-down instructions because of acceptance issues. This implied a varying degree of implementation of the proposed tools. Further research needs to clarify how comprehensive and "mandatory" such measures need to be in order to still be implemented in routine practice while having a positive impact on patient health.

5.3.2 Coordination of care: Harmonizing pathways and roles

Project no. 34 developed care pathways upon hospital discharge, including medication management. The project outcomes thus targeted, among other things, the fact that hospital records are not shared with GPs, specialists or community care services. While the project was noted some improvements in this regard, especially in French-speaking cantons, progress at the national level appeared very slow and with unclear prospects.

Project no. 8 found that in the field of psychiatry, acute home treatment is more open to multidisciplinarity and flat hierarchies than inpatient care. The same clinical efficiency outcomes are more easily achieved in a patient-centred setting. In addition, the project found that the attitude of care teams has a significant impact on how patients perceive treatment and how well they adhere to it.

Furthermore, project no. 17 identified the need to better define and consolidate the place, role and importance of patients and their families in long-term care, especially in the home setting. It also emphasized the need to adequately incorporate informal care into care planning, specifically in the context of dementia.

5.3.3 Projects regarding national guidelines

Project no. 26 found that the quality of clinical guidelines is currently very heterogeneous, with some specialist societies producing multiple good-quality guidelines and others producing guidelines without clarifying how they were developed.

As the project's main objective was to assess the variations in adherence to guidelines across Switzerland, it focused primarily on clinical recommendations and guidelines for 24 health care services related to chronic diseases. These were analysed using health insurance claims data from different fields. The project found that there was not much geographic variation, which is indicative of the quality of care in Switzerland. Among the factors influencing variation, health insurance related incentives (deductibles, managed care plan or supplemental insurance) had a significant impact on utilisation (e.g., deductibles reduced utilisation of recommended health care services, so people with higher deductibles used non-desirable care as well as desirable care less). Thus, the structure of incentives in the current health insurance system may actually trigger suboptimal behaviours and utilisation of health care services.

In terms of planned interventions, project no. 3 consistently found differences between French-, Italian- and German-speaking regions, with interventions appearing less likely to be carried out in the former two than in the latter. One possible explanation suggested by the project team was physician preference and approach to decision-making. This finding is at odds with earlier findings that that care was used more often in French-speaking regions. Another finding contradicting previous evidence is that private health insurance does not automatically lead to higher uptake of health services.

Finally, project no. 27 developed a nurse-led model to improve the quality of care in nursing homes. The model aimed to change the way care homes operate and to encourage them to comprehensively integrate quality of care. The primary project outcome shows that such a care model can reduce the number of preventable hospitalisations.

5.3.4 NRP 74 projects on scale-up initiatives

Project no. 27, an implementation science project, also examined the sustainability of the tested model. It found that ten of the eleven participating care homes were still using the model and successfully integrating it into their existing processes.

6. Conclusion: Five policy options for better quality of care

Summary

The NRP 74 aims to strengthen the evidence base for decision making in the Swiss health care system. As shown in the last chapter, its results can contribute to this goal at various levels. In this chapter, we discuss and present five policy options that emerge from these results as well as from extensive exchange with researchers and stakeholders in the three fields of actions along which this working paper is structured, i.e.:

1. *Quality measurement activities* directed toward indicator development and harmonisation, patient-centeredness, and the promotion of research and learning;
2. *Quality improvement activities* to put in place necessary measures and activities to improve quality in specific areas, such as optimized medication therapy management and improved care coordination;
3. How to establish a *quality assurance system* for better surveillance and coordination of care, how to establish national guidelines, and how to facilitate the scale-up of initiatives.

The main conclusions are *five policy options:*

- Quality measurement indicators should be standardized and integrated across the country.
- Quality measurement should include measures of patient-centred care (e.g., focus groups, surveys).
- Medication management (especially for the chronically ill) needs to be improved.
- Better coordination of care is needed to increase efficiency.
- The scale-up of regional initiatives to the national level should be facilitated.

6.1 Quality measurement

6.1.1 Discussion

A key demand that has emerged in numerous exchanges with project teams is the need to resolve some of the many conflicts of interest between quality and cost that seem to be inherent in the health care system (e.g., that insurers lack incentives to effectively control health care costs, that health care providers are paid by volume rather than other criteria) and to rethink the place of financial incentives in improving the quality of care (projects no 6, 8, 22).

A paradigm shift is called for

Since the measurement of quality often depends on reimbursement data in Switzerland, a “decoupling” of the two aspects is deemed a good starting point for improved quality measurements. Thus, a paradigm shift from "Who pays for the intervention?" to "What are the health benefits for the patient within the care pathway, now and over a lifetime?" would be needed. One of the prerequisites for this is the availability of data beyond reimbursement claims, such as survey data and medical record data. Currently, providing such data is not standard practice.

Quality needs harmonised indicators

In order to harmonise indicators across health care sectors (inpatient, outpatient, home care, care homes) at the national level and to promote the interoperability of data-collection, communication between data systems used by different sectors must be ensured as vulnerable patients change from one sector to another, e.g., from outpatient care to long-term care. Currently, each sector uses its own documentation system. There is no visible patient pathway, except to some extent in the data collected by health insurers, but there is no database in Switzerland providing a comprehensive and unbiased overall view. This leads to difficulties in the cross-sectoral analysis of patient pathways by the care system, although the latter is crucial for the adequate interpretation of quality measures. Adequate development and implementation of a harmonized indicator system would require dedicated funding and leadership at the national level.

Patients at the centre

In relative terms, many NRP 74 projects relate to strengthening patient-centeredness in Swiss health care. This requires implementing shared decision-making models and approaching patients and family caregivers as partners to ensure the systematic integration of their perspective into care decisions. Such a participatory approach seems to fit well with the Swiss understanding of bottom-up integration.

One concrete measure to achieve more patient-centeredness would involve targeted training at pre- and post-graduate level to encourage health care providers to integrate decision-sharing into their practice. Another would funding the development of communication tools for patients to better inform them of the value of proposed care measures. A third element would be to integrate measures of patient reported outcomes (PROMs) and patient reported experience (PREMs) into continuous quality measurement, i.e., the use quality indicators designed to include patient perspectives. The measurement and use of patient experiences in health care (e.g., through patient surveys) should be an integral part of quality measurement systems in Switzerland.

Patient centeredness can also be seen as an aspect of quality improvement. Care plans and clinical pathways, for example, should be patient-centred and include the perspectives of patients and family carers, especially when dealing with vulnerable groups such as children with developmental disorders or home-dwelling older adults. In this context, raising awareness among patients and families and appropriate training of health care providers appear important (projects no. 11, 20).

Research relies on data

There is an assumption that the main “clients” of patient data are the health care institutions themselves (e.g., hospitals), but research is conducted, if at all, only by dedicated data science departments in larger institutions. Consolidating applied research at the health care level therefore appears to be a non-negligible approach, as routine clinical data can form the basis for higher process efficiency and thus better quality of care. Hospitals should have a clinical data warehouse for research and clinical improvement projects. There needs to be an understanding that these data are collectively funded and belong to the patients and citizens of Switzerland, not to hospitals. In this regard, the current legal framework appears too vague and allows for very different interpretations of who owns the data.

Working with health-relevant data at the hospital level is the future of person-centred inpatient care and efficient follow-up procedures. Initiatives such as the Swiss Personalized Health Network (SPHN), which, under the leadership of the Swiss Academy of Medical Sciences (SAMS) and in collaboration with the Swiss Institute of Bioinformatics (SIB), is building coordinated data infrastructures to make health-relevant data interoperable and shareable for research in Switzerland, should be vigorously supported.

6.1.2 Policy options for quality measurement

Based on the considerations discussed in the previous subsection, the NRP 74 research results, and our reading of the literature, we call for the following actions:

- *Recommendation 1, which addresses the policy level:* Quality indicators should be standardized and integrated throughout Switzerland and the interoperability of the systems currently in use should be ensured.
- *Recommendation 2, which addresses the management level:* Patient-centeredness should be included in quality measurements, i.e., the measurement and use of patient experience in health care should be an integral part of quality measurement systems in Switzerland.

6.2 Quality improvement

6.2.1 Discussion

The NRP 74 projects on quality improvement provided ideas on three topics: medication management (focus on appropriate drug use and medication errors), the rational use of resources (avoiding of underuse and overuse), and patient engagement (focusing on communication with vulnerable patients).

Poor medication reconciliation poses risk to the elderly

Medication management is particularly important for the growing number of patients with chronic conditions. The quality of medication management should be at the forefront of initiatives to improve the quality of health care, using approaches such as medication reconciliation and computerized decision support for prescribing. Many projects achieve useful results at the subnational level but are never scaled up to the national level. Others achieve excellent results in terms of cost reduction and improved use of medication, but cannot be scaled up due to resistance from health insurers.

As discussed in the context of quality measurement (chap. 6.1.1), multiple (financial) conflicts of interest sometimes seem to stand in the way quality improvement. Efficient medication management is also hampered by different hospital discharge procedures (e.g., different types of discharge records sent to GPs). Critical medication review at hospital discharge (i.e., recommendations for quality procedures) is needed, as is a quality improvement system for the transition from hospital to home, which today is often heterogeneous and poorly organized, and there are few hospitals that have a discharge management system in place (see projects nos. 19, 34). Some university hospitals employ discharge nurses, but almost none of the other hospitals have an organized system for discharge procedures (see project no. 34). Finally, mechanisms to detect medication-related problems should be developed (e.g., electronic decision-making assistants, computerised prescribing systems, and standardised medication processes; see project no. 22).

More collaboration and enhanced inter-professionality

Another key issue that emerged from the research results and interviews with project teams is the perceived fragmentation of the Swiss health care system. Because many patients receive care from different providers, often over a long period of time, coordination of care (e.g., between primary care, hospitals, and patients) is critical. Improving coordination within the medical professions should be a priority because it can enhance clinical effectiveness, reduce inefficiencies and increase equity in the Swiss health care system (project nos. 8, 11, 17).

This calls for better collaboration between medical and non-medical professions, including quality-oriented practices that are appropriately institutionalised and remunerated. Interprofessionalism, i.e., collaboration between different medical professions (e.g., MDs, pharmacists, nurses) should also be improved, including through quality-oriented financial incentives or remuneration anchored in the mandatory health insurance system. Finally, a new style of collaboration to promote interaction between hospital and primary care is called for, possibly through incentives and changes in the reimbursement system.

6.2.2 Policy options for quality improvement

Based on these findings, research results and our reading of the literature, we call for the following actions:

- *Recommendation 3, which refers to the management level:* The quality of medication management should be at the forefront of initiatives to improve the quality of health care, using approaches such as medication reconciliation and computerized medication prescribing decision support.
- *Recommendation 4, which refers to the management level:* Improving care coordination (e.g., between primary care and hospitals) should be a priority for quality improvement because it can promote the rational use of resources, reduce inefficiencies and increase equity in Swiss health care.

6.3 Quality assurance

6.3.1 Discussion

Although none of the NRP 74 projects examined quality assurance arrangements, valuable impulses emerged from the discussion with the project leaders. These include, in particular, the call to strengthen and expand successful regional initiatives for quality improvement, such as the care model in Swiss nursing homes (project no. 27), which focuses on interprofessional cooperation and coordination.

Barriers for knowledge sharing, translational science and learning from successful projects are seen to reside in the fragmentation of the health care system, especially along cantonal boundaries. This hampers the potential for scale-up, and makes dissemination and application of research findings beyond the study setting and at a national level very time-consuming and labour-intensive. As a result, much potential for quality improvement and assurance is lost.

Guidelines and registries made in Switzerland

Also deemed central are multiprofessional clinical guidelines, which can support care coordination by guiding professional behaviour along care pathways (project nos. 3, 26). The mobilization of funding and the development of guidelines for specialist interventions (at least for the most common ones) adapted to the Swiss context therefore seem essential. Currently, the impression is that although there are many guidelines, most health professionals prefer to use various foreign guidelines (e.g., from Germany, the EU, the United States).

National adaptation is important, because guidelines with care pathways adapted to the specifics of the local network of care service providers are needed and can also mitigate potential conflicts of interest. This can be achieved, for example, through contracts on quality standards between insurers and professional associations. One example is the joint pilot project of the Swiss Medical Association (FMH), santésuisse and curafutura, which is testing the establishment of a concept for quality development in the outpatient sector. [10]

Another important component of quality assurance are health-related registries, which contribute to the transparency and comparability of medical services while providing important data for clinical and epidemiological research, health policy and planning. Since there is a large number of different registries in Switzerland, the FMH is trying to provide an overview with its online platform "Forum medizinische Register" and, together with ANQ, H+, SAMS and Unimedsuisse, has published recommendations for the establishment and operation of health-related registries. These recommendations contain minimum standards, including data protection and data quality[11].

6.3.2 Policy options for quality assurance

Based on these considerations, findings, research results and our reading of the literature, we call for the following actions:

- *Recommendation 5, which addresses the policy level:* Develop mechanisms to ensure the transfer of regional initiatives to the national level and promote the broad implementation of quality-related national initiatives (e.g., clinical guidelines) throughout the country.

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[10] Source and further details: www.fmh.ch/files/pdf25/schlussbericht-pilotprojekt-veroeffentlichung-der-qualitaetsaktivitaeten-der-ambulant-taetigen-aerztinnen-und-aerzte-v2.pdf

[11] www.fmh.ch/themen/qualitaet-saqm/register.cfm#i113068

7. Stakeholders' views on how to improve quality

Summary

To obtain feedback on the relevance and focus of the policy recommendations presented in chapter 6, a dialogue event was held with key stakeholders in the autumn of 2021 This chapter summarizes the feedback provided, not least with regard to factors that could hinder or facilitate their implementation.

The event, attended by a diverse panel of experts, representing the Federal Quality Commission, the National Association for Quality Measurements in Hospitals and Clinics, Swiss health insurers, the medical profession, nursing professionals, patient safety organisations, pharmacists, hospital directors, and federal and cantonal health authorities.

In general, stakeholders consider changes that can be made in the local context and on the ground (e.g., improving the medication management) to be easier to implement than those that require an adjustment of systemic and political framework conditions. As the single most important prerequisite for successful change in terms of efficiency and coordination, stakeholders advocate strengthening interprofessionalism.

At a dialogue event held in Berne on 10 September, 2021, the synthesis team presented the three main thematic areas (quality measurement, quality assurance and quality improvement) and the topics for policy recommendations resulting from the synthesis work. The goal was to receive feedback on the relevance and focus of these recommendations and to discuss their feasibility for implementation. The event was attended by a variety of experts, representing the Federal Quality Commission, the National Association for Quality Measurements in Hospitals and Clinics, Swiss health insurers, medical practitioners, nursing professionals, patient safety organisations, pharmacists, hospital directors, and federal and cantonal health authorities.

Presentations and discussions focused on the five policy options presented in Chapter 6:

- Indicators for quality measurement should be standardized and integrated across the country.
- Quality measurement should include measures of patient-centred care (e.g., using focus groups, questionnaires).
- Medication management (especially with regard to the chronically ill) needs to be improved.
- Increased efficiency through better coordination of care.
- Provisions need to be made to ensure the scale-up of regional initiatives to the national level.

While stakeholders did not question the relevance and interdependence of the issues raised, they expressed a number of specific reservations about the feasibility of the desired change processes. Not least, as several participants emphasised, because of the specific, fragmented – and thus very complex – design of the Swiss health care system, in which social and political framework conditions pay a major and decisive role with regard to possible system changes. Also, since personal health data are considered "particularly worthy of protection", their use is severely restricted, which complicates any effort to improve interoperability. This is seen as an obstacle by most stakeholders, as digitization could contribute to strengthening quality of care and patient safety.

Central insights: Strengthening health services research and exchange with policymakers

Stakeholders agree that changes that can be made in the local context and on the ground (e.g., improving medication management) are easier to implement than that require adjustments to systemic and policy frameworks.

Another central conclusion is that the feasibility of implementing quality improvement measures must be accompanied by research (such as that presented by NRP 74) in order to initiate successful change processes, since available resources are limited. In this sense, the stakeholders would like to see more collaboration and exchange between health services research and policymakers and emphasize the role that the Swiss National Science Foundation, the State Secretariat for Education, Research and Innovation (SERI) and the Federal Quality Commission should play in this regard.

And, crucial point: the stakeholders stress that more health care quality is not necessarily high on the agenda politically. For them, it is therefore important to emphasize that better health care should primarily be about patients and society, not about cost reduction.

Standardised indicators

Although standardized indicators are generally seen as highly relevant, their implementation is considered difficult by stakeholders, especially in the area of ambulatory care. The medical profession fears an excessive increase in bureaucracy, which it sees as a threat to quality per se, since there is already not enough time for interaction with patients. For nursing professionals, the prevailing lack of time and human resources is also problematic, as the indicators could lead to misinterpretation and misapplied resources. For example, a low number of elderly patients falling out of bed could just as easily be an indicator for better care as of a staffing shortage that results in patients being tied to their beds. Standardisation, then, could mask very different outcomes and create false incentives.

The selection and definition of indicators is therefore seen as crucial: They should ensure comparability across different care settings. They should measure what is measurable (structural indicators to determine efficiency and proportionality), but they should also go beyond to englobe the issue of quality of life, not least in long-term care for the chronically ill, the elderly, and people with disabilities. And they should reflect patient needs while also meeting policy and strategic goals. Reconciling all of these is seen as extremely difficult.

Other critical issues raised by the stakeholders include funding and organisational requirements for the necessary IT technology to process the data collected and make it available to health services and research. The stakeholder panel emphasized that the legal and technological prerequisites for a nationwide use and exchange of health indicators are not currently in place: Current data protection laws and the complete lack of interoperability between different IT systems are seen as huge obstacles. This problem, according to the stakeholders, should be tackled by the Swiss Personalized Health Network (SPHN) and the SERI. A decisive political step is deemed necessary to make interoperability standards binding.

Finally, the role of health services research is again stressed: the usefulness and effectiveness of the indicators to be put in place must be scientifically proven.

Patient-centeredness in quality measurement

This is a key issue for the expert panel and one that has not been given due attention. Current hospital assessments, for example, are deemed to insufficiently reflect patients' views, although some data (e.g., the Helsana study on patient satisfaction) would be available. It is pointed out that to be useful, patient assessments should be based on both their experience as well as on outcomes, as stakeholders consider it difficult for patients to evaluate quality of care objectively.

For this reason, many of them plead for patient education measures. With the help of civil society, i.e., patient organizations, the necessary skills should be provided to enable patients to have a say in health decisions and choices. At the same time, measures must also be taken to improve communication between health professionals and patients. The caveat being that the most highly trained health care providers cannot develop an effective supportive stance if they are chronically short of time.

Improving medication management

Of all five policy options, improving medication management is seen as the easiest to realize, at least within institutions and silos, while interfaces (e.g., hospital discharge or care home admission) remain more problematic. That said, stakeholders stress the complexity of the underlying issues that need to be addressed. One of these is strengthening interprofessional collaboration, both in the area of education and training and in terms of regulations that enable interprofessional care, such as authorizing pharmacists to prescribe medications in hospital of care home settings.

Medical practitioners and nursing professionals also underline that problems with medication may simply indicate a lack of personnel and resources. Another sticking point in this context is once again incompatibility of informatic systems and interoperable digital health records across the health care supply chain. In this context, the introduction of the electronic patient record may, according to stakeholders, represent a significant improvement and provide an effective tool to support medication administration.

Last but not least: Stakeholders stress that the scientific evidence in terms of cost-effectiveness, mortality and hospitalization rates, or even health and well-being associated with a better medication regimen remains inconclusive.

Improving efficiency and coordination

Strengthening interprofessionalism is again seen as one of the critical measures for greater efficiency and coordination. For the stakeholder panel, this means clearly defining roles and competencies and valorizing the role of pharmacists and nursing professionals by expanding their professional functions. Other areas where the panel believes better care coordination would benefit efficiency overall system efficiency include community-based care and home-based care services.

Barriers identified by the experts include the fragmentation of the Swiss health care system due to its decentralized structure and relatively high degree of local autonomy, the high number of health-related actors and agencies, and a diverse sociocultural, economic and geographic landscape. This leads to silos and resistance due to perceived conflicts of interest (e.g., on the part of medical associations) that hinder cooperation.

Three initiatives, considered to move in the right direction, are highlighted by stakeholders. One is the EFAS alliance committed to the rapid introduction of uniform financing of outpatient and inpatient services to eliminate disincentives and strengthen integrated care. The next are the alternative health care plans (Alternative Versicherungsmodelle or AVM) which combine a network of general practitioners and other medical providers, and use gatekeeping mechanisms for cost efficiency without compromising quality of care. The third is «Ambulant vor Stationär» (AVOS), a provision introduced in 2019 that limits reimbursement for six groups of procedures to the outpatient setting, except in special circumstances.

Scale-up of local initiatives

This point is met with mixed responses. Some stakeholders believe there are several instances promoting transferable approaches, such as the «Forum Medizinische Grundversorgung» (FOPH) or «Masterplan Bildung Pflegeberufe» (SERI), or even examples of successful up-scaling, such as the concise recommendations and alerts on patient safety issues offered by «Quick-alert», a web-tool developed by the Swiss Patient Safety Foundation. Others consider that these are limited to geographic or professional sectors and therefore see the need for a curated interprofessional national platform organizing regular exchanges between health professionals under the auspices of the FOPH.

Scale-up is considered positive as long as it is based on locally grown initiatives, as quality cannot be imposed from above, according to the stakeholder panel. Sociocultural differences between language regions as well as regional differences in available health care services must be considered as well.

8. Outlook

Quality of care is one of the most relevant principles of health policy and is increasingly mentioned, not only at a national level, but, in the context of the Sustainable Development Goals, also in an international context. Consequently, there is a wealth of research, literature and policy recommendations on this topic. However, it is hardly ever possible to directly transfer scientific results from other countries to Switzerland, or to successfully adopt implementation examples one-to-one. The specific - and very complex - design of the health care system as well as the social and political framework conditions are determining factors for possible strategies to measure, improve and assure quality of care in Switzerland.

This is what makes the contribution of NRP 74 so valuable. The 16 projects dealing with quality of care have analysed actual "real-life" processes in the Swiss health care systems, always considering the specifics of the system as a constitutive framework. The evidence-based knowledge thus generated about how to improve the quality of the Swiss health care system provides an arsenal that policymakers can draw on to make informed strategy decisions to address quality issues.

This working paper provides a synthesis of the research findings on quality of care and the insights on quality measurement, quality improvement and quality assurance that the scientific community involved in the NRP 74 has gained in five years of research. It also forms the basis for the exchange with stakeholders in the Swiss health care system that the NRP 74 has repeatedly sought.

For only together can researchers, health policymakers and patient-oriented health care professionals sharpen their conclusions and develop options for action that will have a real impact on high-quality health care in Switzerland.

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Annex I – Interview guide

1. You are aware that according to the NRP 74 synthesis concept, each project is allocated to one (or several) of the following six topics: 1) quality, 2) patient choice, 3) coordination and care models, 4) cost and reimbursement, 5) health care data, 6) EHCL. Your project has been allocated to the first topic. Any thoughts on this distribution?
2. Which key project finding(s) would you consider to be most relevant for the topic assigned, i.e., "Quality of health care"?
3. Based on your experience with project implementation, what interventions would be most needed for achieving quality improvements in Switzerland? (incl. *beyond the health care system*)
4. For projects that tested concrete interventions to improve quality of care (e.g., continuing professional education, organizational change): What was the intervention? How was it adopted in the studied setting? How do you evaluate its overall effectiveness?
5. Based on your experience with project implementation, what are the steps to be taken in order to achieve improved data collection processes in Switzerland? (i.e., data for assessing and monitoring quality of care, including the indicators currently used / planned in different areas of the health care system, e.g., outpatient, inpatient, home care). Without going into technical details, what can be learned from your experience with project implementation on data collection for quality of care?
6. Based on your experience with project implementation, what health care system arrangements or reforms would be most needed for improved quality assurance in Switzerland? (e.g., governance, framework conditions, funding, coordination etc.) (mainly *within the healthcare system*)
7. Do you have any comment to add concerning the synthesis process?
8. (optional, if there is time left) What stakeholder groups (e.g., primary care physicians, health insurers) would you suggest involving in the synthesis process? How would you involve them?
9. (optional, if there is time left) What challenges and barriers did you encounter in the process of carrying out your project that would also be relevant for the synthesis process?

Annex II: NRP 74 research projects on quality of care

NRP Project No. 3: What factors affect the performance of elective interventions in Switzerland? (Prof. Dr. med. Drahomir Aujesky, Universität Bern)

NRP Project No. 6: Interprofessional quality circles improve medication in nursing homes (Prof. Dr. Olivier Bugnon, Université de Lausanne)

NRP Project No. 8: Cost-effectiveness of home treatment for acute mental illness (Prof. Dr. Luca Crivelli, Scuola universitaria professionale della Svizzera italiana)

NRP Project No. 9: Automatic detection of adverse drug events in the geriatric care (Prf. Dr. Chantal Csajka, Université de Genève, Université de Lauanne)

NRP Project No. 11: End of life: more quality and less suffering through better planning and coordination? (Prof. Dr. med. Steffen Eychmüller, Universität Bern)

NRP Project No. 13: The closure of general practices can lead to regional undersupply and more costly consultations (Prof. Dr. Michael Gerfin, Universität Bern)

NRP Project No. 14: Antibiotic durations can be reduced without risk (Dr. MD Angela Huttner, Université de Genève)

NRP Project No. 15: Provision of care for children with developmental disorders in the canton of Zurich (Prof. Dr. med. Oskar Gian Jenni, Universität Zürich)

NRP Project No. 17: Diagnosing dementia: cantonal policies and ethical issues (Prof. Dr. Barbara Lucas, Haute école spécialisée de Suisse occidentale)

NRP Project No. 19: Critical review of the medication list when leaving hospital necessary, but not sufficient (Dr. med. Stefan Neuner-Jehle, Universität Zürich)

NRP Project No. 20: The spiritual dimension of pain therapy (Prof. Dr. Simon Peng-Keller, Universität Zürich)

NRP Project No. 22: Optimising medication with electronic decision-making assistants in patients with multiple chronical illnesses (Dr. med. Sven Streit, Universität Bern)

NRP Project No. 26: Impact of scientific evidence on regional differences in medical services provision is smaller than expected (Prof. Dr. Matthias Schwenkglenks, Universität Zürich)

NRP Project No. 27: Development of a nurse-led care model for nursing homes (Prof. Dr. Michael Simon, Universität Basel)

NRP Project No. 29: Better identification and treatment of mental disorders in primary care (Prof. Dr. phil. Birgit Watzke, Universität Zürich)

NRP Project No. 34: Safer medication management for home-dwelling older adults (Dr. Henk Verloo, HES-SO Valais-Wallis)

Glossary

The following definitions have been borrowed from the United States National Library of Medicine, the Cochrane Library, the British Medical Journal (BMJ), Centre for Evidence-Based Medicine, WHO and the Federal Office of Public Health.

Complementary health insurance: It represents the insurance for co-payments, meaning that it insures the difference in price of a health service, covered by the compulsory health insurance, and the full price of the service.

Deductibles: the amount that people have to pay themselves before their reimbursement (or Mandatory Health Insurance) coverage kicks in.

Grey literature: refers to documents and other research-based material issued in limited amounts outside formal channels of publication and distribution. Examples include scientific and technical reports, government documents, doctoral theses and unpublished material.

Inpatient /stationary: An individual who has been admitted to a hospital or other facility for diagnosis and/or treatment that requires at least an overnight stay.

Managed care: Managed care is a health care plan that integrates the financing and delivery of health care services by using arrangements with selected health care providers to provide services for covered individuals.

Outpatient / ambulatory: A patient who is receiving ambulatory care at a hospital or other facility without being admitted to the facility.

Quality indicators: Quality indicators can be defined as measurable, objective indicators of the efficiency of the key segments of a system.

Abbreviations and acronyms

ANQ – Swiss National Association for Quality Development in Hospitals and Clinics

CH-IQI – Swiss Inpatient Quality Indicators

COPD – Chronic obstructive pulmonary disease

CPR – C-reactive protein

EFAS – Einheitliche Finanzierung ambulanter und stationärer Leistungen (uniform financing of outpatient and inpatient services)

EPR – Electronic patient record

EPRA – Federal Law on Electronic Patient Records (EPRA)

EQUAM – Externe Qualitätsförderung in der ambulanten Medizin (external quality assurance in the outpatient care)

FMH – Foederatio Medicorum Helveticorum (The Swiss Medical Association)

FNSNF – Swiss National Science Foundation

FOBT – Fecal occult blood test

FOPH – Federal Office of Public Health

GP – General practitioner

H+ – Swiss Hospitals is the leading national association of public and private hospitals, clinics and special-care institutions.

HER – Electronic health record

IOM – Institute of Medicine

KVG/LaMal – Swiss Federal Law on Compulsory Health Care

KVV/OAMal – Swiss Health Insurance Ordinance

MTM – Medication therapy management

NRP – National Research Programme

OECD – Organization for Economic Cooperation and Development

PBRN – Practice-based Research Network

PI – Principal Investigator

PIM – Potentially inappropriate medication

PREM – Patient reported experience measurements

PROM – Patient reported outcome measurements

SAMS – Swiss Academy of Medical Sciences

SCPC – Selective Contract for Paediatric Care

SHIS – Swiss Health Interview Survey

SIB – Swiss Institute of Bioinformatics

SNSF – Swiss National Science Foundation

SPHN – The Swiss Personalized Health Network

WHO – World Health Organization