Draft TO-REACH Strategic Research Agenda

May 2019

Executive summary

The health systems of the European Union are facing considerable and widely shared pressures of increased demand against limited resources, while also having a shared commitment to universal access to good quality health care financed on the basis of equity and solidarity. To uphold these shared values, health systems and relevant sectors and providers have to embark on a range of strategies and reform efforts and there is considerable potential to learn from the many innovative service and policy solutions being employed across Europe. But for such learning to be effective, there is an urgent need to identify and understand what contributes to successful service and policy innovation and what needs to be in place for such innovations to be implemented more widely and translated effectively into other countries.

The TO-REACH project (**T**ransfer of **O**rganisational innovations for **R**esilient, **E**ffective, equitable, **A**ccessible, sustainable and **C**omprehensive **H**ealth Services and Systems) seeks to support this process by proposing the development of a joint European research programme to support health services and systems so that they become more resilient, effective, equitable, accessible, sustainable and comprehensive in Europe and elsewhere. The TO-REACH Strategic Research Agenda provides a European strategy to advance our knowledge and understanding of the adoption, implementation and potential scale-up of service and policy innovations and their translation to other settings within and across countries.
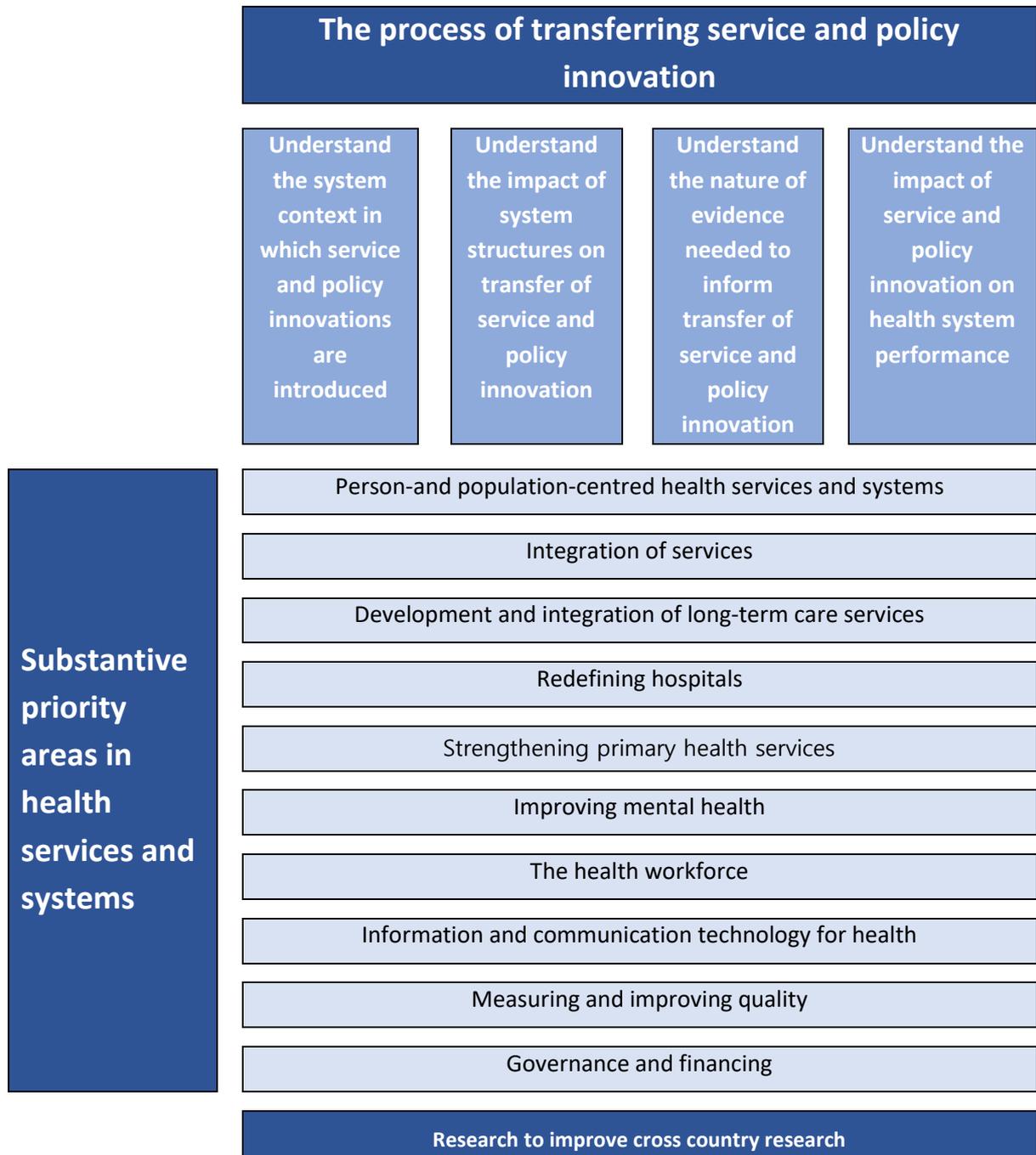
Much emphasis has been placed on technological innovation in medicine and digital health. These have the potential to address key threats to human health, such as the rising burden of chronic disease or antimicrobial resistance. Yet, the successful embedding of new technologies requires changes at many levels to ensure that health systems remain effective, efficient and sustainable for the generations to come. Importantly, realising their full potential involves innovation of services and policies, too, to ensure that advances are systematically embedded in systems so that they benefit patients, populations and society more broadly. In addition, while technological innovation

remains key for improving the health of the European citizens, innovating service organisation and delivery and policies in themselves will be equally, if not more important. This also includes the sustained investment in innovative health promotion and disease prevention policies to reap the long-term health and economic benefits of addressing the causes of causes of ill health.

The European Union presents a shared context for European health systems and a shared European approach is thus the most effective way to address common challenges, and to help develop the necessary research capacity throughout the Union.

This Strategic Research Agenda was informed by systematic analysis of priority challenges for service and policy innovations to strengthen health systems as identified from policy documents as well as through consultation roundtables within Member States and a Europe-wide stakeholder survey, along with a review of the relevant academic literature. On this basis, we propose two interlinked types of priority research needs as illustrated in Figure 1. One reflects the main substantive service and policy areas in which more service and policy innovation is needed. The second identifies the main research input needed to inform the potential transfer and joint development of service and policy innovation.

Figure 1 Overview of main priority areas of the TO-REACH Strategic Research Agenda

The process of transferring service and policy innovation

Understand the system context in which service and policy innovations are introduced	Understand the impact of system structures on transfer of service and policy innovation	Understand the nature of evidence needed to inform transfer of service and policy innovation	Understand the impact of service and policy innovation on health system performance

Substantive priority areas in health services and systems

Person-and population-centred health services and systems

Integration of services

Development and integration of long-term care services

Redefining hospitals

Strengthening primary health services

Improving mental health

The health workforce

Information and communication technology for health

Measuring and improving quality

Governance and financing

Research to improve cross country research

Putting this research agenda into practice requires a partnership and cooperation approach, bringing together stakeholders including funders, researchers, policymakers, practitioners and the

wider public. We propose establishing a European platform to achieve this, and to ensure that this strategic research agenda can be implemented and adapted to the future. Such a platform should address the following components

- A research strand targeted to those priority areas where joint learning has greatest added value and ensuring the knowledge transfer to best support decision making at service and system level;

- A capacity building strand, enhancing R&D expertise on cross-national health systems research.

- An information platform strand, to provide two-way learning between initiatives and ensuring complementarity to existing efforts at national and European level

- A foresight strand, creating a mechanism for horizon scanning and identifying emerging issues in the decades to come.

1 Introduction

The TO-REACH project (**T**ransfer of **O**rganisational innovations for **R**esilient, **E**ffective, equitable, **A**ccessible, sustainable and **C**omprehensive **H**ealth Services and Systems) is a Coordination and Support Action (CSA) funded under the Horizon 2020 programme. Its goal is to prepare a joint European research programme aimed at producing research evidence to support health services and systems so that they become more resilient, effective, equitable, accessible, sustainable and comprehensive in Europe and elsewhere. TO-REACH pursues two main strands of work:

- To prepare, conceptually and methodologically, a research agenda on learning from services and policy innovations and the conditions needed to transfer and implement these from one setting to another, both within and between countries;

- To enhance sustainable cooperation between funding bodies as well as their links with other existing or upcoming funder networks in order to facilitate a joint European research strategy on service and policy innovation to advance health systems.

1.1 Context

The health systems of the European Union have a shared commitment to universal access to good quality health care financed on the basis of equity and solidarity. (1) Countries differ in the way they have translated those values into practice, reflecting the wider political, economic and societal context within which health systems sit. At the same time, European health systems face similar pressures. Key among these is the rising burden of chronic health problems and of multimorbidity, which, combined with population ageing and increasing frailty at old age, means that the goal that the European Union has set itself in 2011 to increasing the average healthy lifespan of EU citizens by 2 years by 2020 (2) is unlikely to be achieved. Advances in medical technology, from diagnostic testing to therapeutic treatments and procedures, have considerable potential for novel ways of organising and delivering services, such as providing care closer to people's homes in response to these changing needs. But countries have to ensure that any such technology is used effectively and appropriately and at a cost that is affordable, with associated changes carefully balancing growing consumer expectations and respecting people's needs, wants and preferences (3). There is equally an urgent need for effective measures to prevent disease through reducing the major chronic disease risk factors and addressing the causes that drive exposure, and creating healthy environments to enable people participating in society as a whole.

Many countries are also facing shortages and the uneven distribution of health and care professionals, and there is a need to develop policies for the effective recruitment and retention of health (and social) care workers within a changing context of service delivery, which requires adjustments to the composition and skills of those providing care (4). These challenges come against a background of persistent and, in some settings, rising health inequalities and inequities in access to and utilisation of health care services, (5) alongside increasing fiscal constraints for countries across Europe and the associated need to reducing inefficiencies in spending on health.

An effective response to these pressures requires innovative service and policy solutions. As countries are embarking on a range of strategies and reform efforts to address these increasingly complex challenges, there is considerable potential to learn from the many experiences across Europe by means of comparative cross-country health services and systems research. (6) Cross-country comparison offers opportunities for mutual learning and reconsideration of policies, cross-fertilisation, or even policy transfer, where appropriate (7). However, for such learning to be effective, there is an urgent need to identify and understand what contributes to successful service and policy innovation and what needs to be in place for such innovations to be implemented more widely and translated effectively in other countries.

This Strategic Research Agenda seeks to support these efforts by providing an overall European strategy to advance our knowledge and understanding of the key elements in the adoption, implementation and potential scale-up of service and policy innovations and their translation to other settings within and across countries.

1.1.1 Why are 'innovative solutions' in health services and systems needed?

Technological advances and innovations in medicine, such as the development of new drugs or of novel diagnostics have been crucial in improving population health globally. Examples include the discovery of insulin in the early 20th century, or the more recent development of antiretroviral drugs for the treatment of HIV, all of which transforming previously life-threatening conditions into diseases that people live with, rather than die from. These (and numerous other) new forms of treatment also had fundamental consequences for the delivery of health care, requiring the setting up of arrangements at the different tiers of the system so that patients can access these new drugs (e.g. financing arrangements, supply chain), through to guideline development and implementation along with monitoring arrangements to ensure that the intended effects are being achieved (e.g. controlling viral load) and to detect and manage side effects.

Technological innovation in the health sector remains key, and relevant developments are supported by a range of initiatives at EU level. This includes the digital health agenda (8) and the Innovative Medicines Initiative (9), along with more specific actions such as the International Consortium for Personalised Medicine (IC PerMed) (10). Importantly, given the complex challenges contemporary health services and systems are facing, there is a need for innovative solutions, in which novel technologies also play a role, but for their introduction into health services and systems to be successful, a good understanding of the context within which they are being implemented will be essential. Crucially, embedding new technologies requires innovation at organisational, service and system level, too, to ensure that they will benefit populations and society as a whole, in keeping with the fundamental values driving EU health systems. Thus, research on the timing of the introduction of pharmaceutical innovations in Europe has emphasised the role of factors acting at health service and system levels in different countries to support the diffusion of new drugs (11). Lack of attention to these factors can have considerable implications for the successful implementation and spread of such innovations in health. This has, for example, been documented for the introduction of digital health technologies. Some commentators have highlighted that large-scale policy initiatives to rapidly implement telehealth technologies "despite known uncertainties around complexity, costs and benefits … have led to what might be considered inappropriate allocation of finite resources" (12).

Yet, while technological innovation remains key for improving the health of the European citizens, innovating service organisation and delivery and policies in themselves will be equally, if not more important. This also includes the sustained investment in innovative health promotion and disease prevention policies to reap the long-term health and economic benefits of addressing the causes of causes of ill health (13). Examples of service innovation include the introduction of organised care for people with stroke and the centralisation of stroke services, which were shown to significantly improve clinical outcomes (14) among stroke patients; a classic example for policy innovation is health in all policies to address the key social determinants of health.

Overall, there is a clear need for innovative solutions that take account of the complex set of interests and priorities of those involved in the organisation, delivery and financing of services, which are likely to differ at the different tiers of the system and across different sectors to ensure that European health systems continue to provide accessible health (and social) care that is of high quality, responsive, affordable and financially sustainable, while also addressing the underlying determinants of health to improve population health overall.

1.1.2 The nature of health systems: neither simple nor complicated, but complex

How to achieve service and policy learning was initially thought of as a relatively straightforward 'pipeline', where evidence would be generated, synthesised, communicated and applied in practice, with research focused at removing blockages along the way (15). However, research and experience have shown that the challenge is more complex; specifically, the challenge of bringing about change in complex systems (16). The difference that this implies is described in Table 1 below.

Table 1: Simple, Complicated and Complex Problems[9].

Simple, complicated and complex problems		
Simple: Following a recipe	**Complicated: Sending a rocket to the moon**	**Complex: Raising a child**
The recipe is essential	Formulae are critical and necessary	Formulae have a limited application
Recipes are tested to assure easy replication	Sending one rocket increases assurance that the next will be OK	Raising one child provides experience but no assurance of success with the next
No particular expertise is required. But cooking expertise increases success rate	High levels of expertise in a variety of fields are necessary for success	Expertise can contribute but is neither necessary nor sufficient to assure success
Recipes produce standardized products	Rockets are similar in critical ways	Every child is unique and must be understood as an individual
The best recipes give good results every time	There is a high degree of certainty of outcome	Uncertainty of outcome remains
Optimistic approach to problem possible	Optimistic approach to problem possible	Optimistic approach to problem possible

Health systems are complex systems, in that they are groups of people and organisations who act in ways that are neither predictable nor controllable, and whose actions are interconnected and thus create patterns and effects that cannot be foreseen from individual actions or small parts of the system (17). Thus, the process of turning service or policy innovation in one place into service or policy innovation elsewhere is not simply a case of identifying the innovation and trying to get others to do the same thing – on the contrary, simply attempting to replicate innovative solutions in an identical way elsewhere is unlikely to succeed. Rather, each new place – department, or practice, or hospital, or region, or system – has to be approached as a new challenge. Learning from innovation elsewhere can still be achieved but has to be adapted and rethought in each situation, taking account of its specific context.

1.1.3 The shared European context

Among the key concerns of European decision-makers are the rising costs of health systems. Although health spending has slowed among many countries following the global financial crisis of the late 2000s, it has been projected that spending will continue to rise in the medium to long-term. According to the OECD, among the key drivers of health spending growth have been, mainly, new technologies and economic growth, as well as changing demographics and institutional characteristics of health systems (18).

As noted earlier in this report, new health technologies have to potential to both expand the scope of medical services and their quality, while also increasing the overall cost of care. However, it is equally important to recognise that new technologies can also improve the efficiency of health services and contribute to lowering costs long-term. The European Union has worked to maximise its potential to support biomedical innovation through supporting research and technological development, establishing a common regulatory framework and single market for health-related products, and more broadly aiming to support biomedical innovation and collaboration between researchers across Europe. The impact of economic growth has been linked, largely, to increasing expectations on the quality and scope of health care, showing that as national income as measured

by GDP rises, so does the aggregate health spending. However, these relationships are complex and differ by country. (19) Similarly, the impacts of population ageing and the role of health systems in themselves are difficult to disentangle, and relative impacts change over time and across countries.

The primary responsibility of health systems in the European Union lies with the Member States. But these operate in an increasingly shared European context, which are, directly or indirectly, by the wider policy framework set by EU Member States across many areas. The European policy framework includes a legal dimension (for example, cross-border care, data protection, working time) and a financial dimension (such as in research, or direct investment in health infrastructure through the European Structural and Investment Funds and the European Investment Bank, and indirectly through the recommendations of the European Semester), as well as direct cooperation (for example European reference networks and other forms of cross-border care such as in border regions or through remote provision of services such as telemedicine). It also provides a common platform for a data and statistics on a wide range of policy issues to inform decision-making and enable cross-country comparisons (including the EU health data and indicators and the State of Health in the EU knowledge cycle). As well as creating a shared policy context for Member States, these areas of European action also need specific research to facilitate mutual learning to ensure that the impact of European policies and actions for health systems are as effective and constructive as possible.

1.2 Why do we need a European research agenda for health services and systems research?

Given that the principal responsibility for health systems lies with the Member States, and that service and policy innovation requires a context-specific approach, why is a European research agenda necessary? Moreover, as we have noted, European health systems vary in terms of institutional and organisational arrangements. However, the common challenges facing health

systems in Europe mean that all countries need to identify solutions that will help improve population health and ensure that systems are resilient, effective, equitable, accessible, sustainable and comprehensive. There is therefore considerable potential for learning across health systems.

It is against this background that it has become ever more important to better understand the key conditions that enable the transfer, and possible scale-up, of innovative service and policy solutions from one setting to another one. The comparative policy literature has highlighted the role of differences in health systems' organisation, financing and governance, and their role in health system performance. Yet, what is less well known is how service and policy innovations may explain differences in performance. Similarly, literature on evaluation and implementation research has examined the factors influencing the adoption, implementation and sustaining of innovation in health service organisation and delivery, and for achieving the intended effects (20). But what we do not yet fully understand are the specific conditions under which scale up and joint development of a given service or policy innovations are successful and implemented in different settings.

Importantly, what is seen as service innovation in one setting might already constitute routine practice in another one. This is particularly the case for innovations that are being translated from one health system to another one. This is because strategies that are being implemented tend to reflect the characteristics of individual health systems, such as the relationships between, and responsibilities of, different stakeholders in the regulation, funding and delivery of health care. This issue presents an important challenge for policy-makers and practitioners looking elsewhere for inspiration to innovate services and policy to improve health systems (21).

A **shared European approach to health services and systems research** will contribute to addressing these challenges by, first, more effectively addressing common research challenges by working together; and, second, putting in place the framework conditions needed to support the necessary research across the region and beyond. Taken together, the SRA will thus help realise the full potential of our collective investment in health.

2 Approach

The aim of the Strategic Research Agenda is to provide a European strategy to advance our knowledge and understanding on the adoption, implementation and potential scale-up and joint development of service and policy innovations and their translation to other settings within and across countries.

For funders, it is intended to guide European research funding in this area, as well as to provide a basis for shared priorities and collective action by research funders within the Member States.

For researchers, the Strategic Research Agenda is intended to identify key methodological and subject priorities for research, and to support the development and strengthening of the community of researchers working on service and policy innovations in health systems across Europe.

The Strategic Research Agenda has been developed by means of three components:

1. Identifying priority challenges for health services and systems in Europe and elsewhere;
2. Reviewing what is known about transfer of service and policy innovation between countries and health systems and to identify key issues that are required for the successful transfer;
3. Combining and refining the priority challenges for health service and systems together in the light of the key issues for in order to develop strategic European research priorities.

2.1 Identifying priority issues

In order to identify the priority challenges for policy, we drew on three sources of data:

a) a mapping of policy documents and strategic roadmaps at national and international level, including from major international projects in the field of health services and systems research;

b) national roundtable expert consultations in TO-REACH partner countries, with 15 consultations covering 14 Member States; and,

c) online consultation among the wider scientific and stakeholder communities, with over 600 responses from 40 countries, most of which within Europe, but also from other TO-REACH partner countries (US, Canada and Israel).

2.2 Review of existing literature

We reviewed existing academic literature on transfer of service and policy innovation between health systems and organisations. The review focused on health services and systems research in particular, while also considering the wider social and political sciences literature on policy transfer and lesson-drawing, diffusion of innovation, implementation, evaluation, international comparison and cross-border learning.

2.3 Proposing strategic European research priorities

The priority challenges identified for European health systems require different types of research to address. Building on the above review of literature on the transfer of service and policy innovation, we developed a conceptual model, which brings together identified priority challenges and the key research needs set out in the review to propose specific European research priorities for transfer and joint development of service and policy innovation.

3 Strategic research agenda

This section sets out the strategic research needs that TO-REACH has identified. These are grouped along two dimensions:

- The first dimension includes the main substantive service and policy areas in which service and policy innovation is needed. We identified ten main components or priority areas within which specific priority questions can be identified.
- The second dimension identifies five key components of research required to inform the potential transfer and joint development of service and policy innovation.

The following addresses each dimension in turn.

3.1.1 Priorities on the content of service and policy innovation

We identified ten overarching priority areas which can be grouped under three themes: **overall design principles** for health services and systems; **sector-specific priorities** and **supporting conditions**. Identified priorities are interlinked and should not be viewed in isolation.
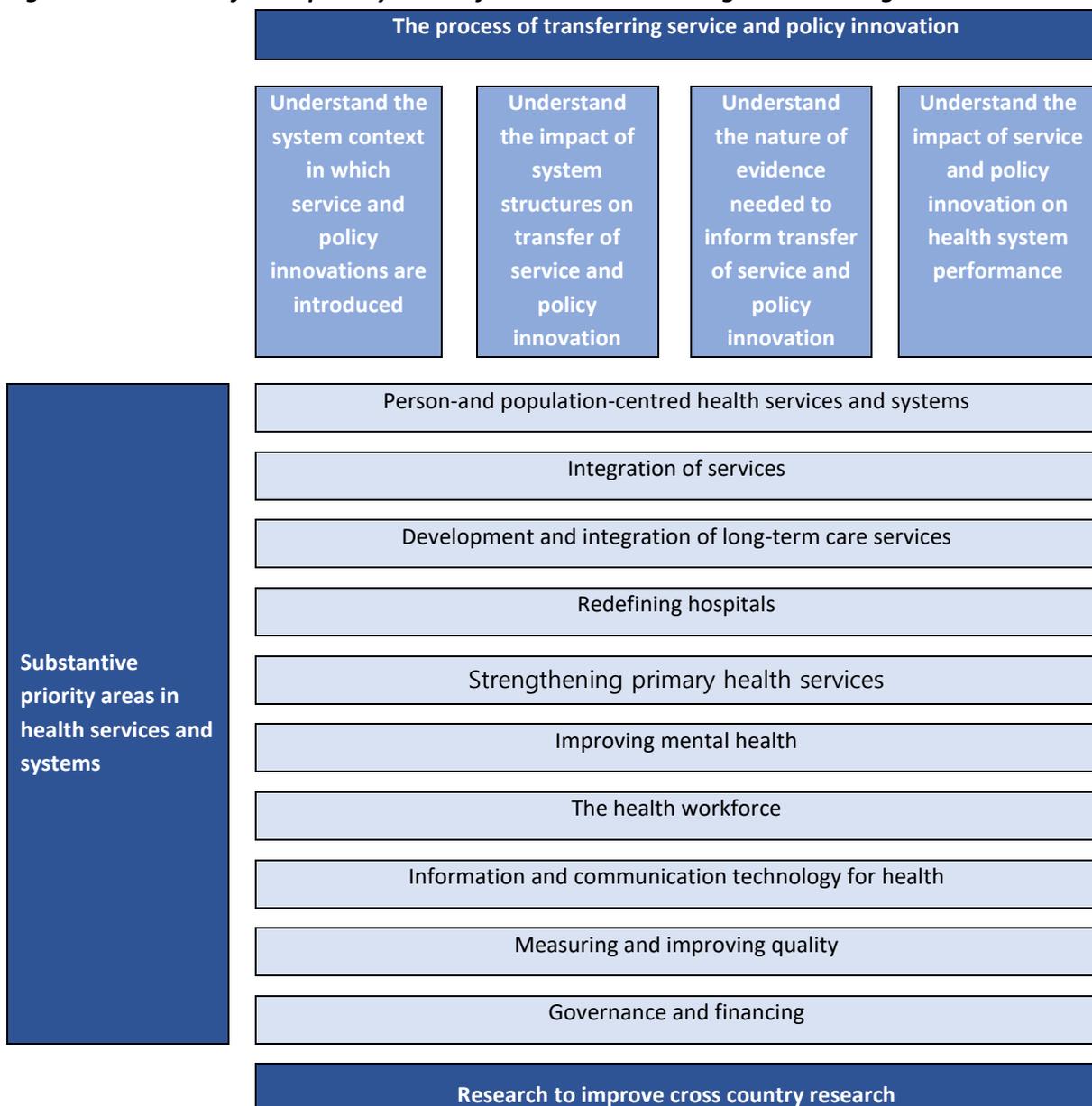
1. As overarching design principles, health services and systems need to be organised as **Person- and Population-Centred Care**, with ample attention to individual and population needs.

2. To be successful at this change, this requires **Integrating Services** across all Health Sectors, as well as Across Traditional Health System Boundaries.

3. What Does That Imply for the Development of specific Sectors?

    a) **Long-term Care** Requires to be Developed to Meet (Future) Demand.

    b) **Hospitals** will Experience New Roles, Tasks, and Organisational Structures.

    c) Integrated Services Require a Strong **Primary Care** focus.

    d) **Mental health services** need to be reinforced.

4. Which supporting mechanisms are needed for all sectors alike?

    e) Adequate Numbers, Skill Mix, Roles and Tasks of **Healthcare Professionals**.

    f) Adequate and people-centred **Information and Communication Technology**.

    g) Attention for **Quality Improvement** and how to measure it.

    h) Improvement in **Governance and Financing**.

For each of the priority areas we identify both strategic needs as well as example research topics to be addressed, both on the near future and – where possible - with a more forward looking and pro-active perspective, shaping the future of our health systems in the next decades. A more extensive clarification on each of the ten overarching priority topics for European health systems is provided in Appendix A. As overarching priority, the example of person- and population centredness is clarified in greater detail below.

3.1.2 Linkage of content priorities to priorities on transfer of innovation

The linkage with the five remaining types of questions, on the transfer of innovation, is exemplified in Figure 1. It juxtaposes the two dimensions of strategic research needs as described above while also highlighting the need for methodological improvement by means of greater insight into the generalisability and applicability of cross-country comparisons. We will describe these in greater detail below.

Figure 1 Overview of main priority areas of the TO-REACH Strategic Research Agenda

The process of transferring service and policy innovation			
Understand the system context in which service and policy innovations are introduced	Understand the impact of system structures on transfer of service and policy innovation	Understand the nature of evidence needed to inform transfer of service and policy innovation	Understand the impact of service and policy innovation on health system performance

Substantive priority areas in health services and systems

- Person-and population-centred health services and systems
- Integration of services
- Development and integration of long-term care services
- Redefining hospitals
- Strengthening primary health services
- Improving mental health
- The health workforce
- Information and communication technology for health
- Measuring and improving quality
- Governance and financing

Research to improve cross country research

3.2 Highlighted priority topic: Person- and Population Centredness

To illustrate the types of content priorities, including their linkage to the dimension on service and policy transfer, we here describe the priority topic of person- and population-centred services and systems, also as it gives a good example of how this overarching priority area plays a central role for all other priority areas. At the outset it is important to note that there remains considerable uncertainty about what is actually meant by person-, population or, indeed, people-centredness and how this can be effectively implemented at the different levels within systems (22). Here, a collaborative European approach to research can help understand how stakeholders in different countries, including the wider public, think about the idea of people-centredness and what it means (or should mean) in their individual contexts. European health systems are at different starting points as will be the aims and objectives of people-centred strategies, along with the understanding of what is (or is not) acceptable in a given setting (23). A key point here is the readiness of decision-makers at different levels to truly move towards more person-centred strategies, since this will require a rethink of some of the more fundamental processes that have traditionally governed the provider-centric and expert-based organisation and financing of health services and systems. Better understanding of these issues will be crucial to inform whether the various strategies that are being implemented in different settings are actually appropriate for a given system, and, more importantly, collaborative research can help identify which strategies are more likely to 'work' in different settings for whom and how. Carried out retrospectively, such research can help uncover the challenges different systems are and have been facing in implementing comprehensive approaches, while prospective research can identify the key 'ingredients' needed to effectively implement a given strategy, thus providing the much needed evidence to optimise decision-making informed by experiences elsewhere.

Within this overarching theme, particular issues that arise centre around creating conditions that enable people as service users, patients, carers, their families and communities to play a more central and directing role in their own care as well as in shaping the system that serves them. It

also touches upon the implications of precision-medicine for individuals and societies, presenting opportunities to optimise care for an individual through the development of targeted treatments and therapies based on individual genetic or biological factors. This will have considerable implications for how health services are organised and funded, which, given the strains systems are already facing in relation to population ageing and pressures on public finances, will require careful planning and investment against wider system goals of accessibility and universality, to ensure that such innovation does not exclude the most vulnerable in society (24). Again, there is considerable potential for strategic learning across countries, and, indeed, given the emergent nature of many of these technological innovations, a significant opportunity to prospectively explore the effectiveness and consequences of different approaches in different settings so as to optimise scarce resources.

Strategic research need: how to design health systems and services to become more person- and population-centred.

Highlighted subthemes and questions

- What are the most effective approaches to engagement that consider people's values and preferences at the level of the individual patient-professional relationship, the organisation, governance and financing or the wider society in order to systematically implement person-centred strategies?
- What are the most effective strategies for investing in supporting the public, as patients, clinicians, or decision-makers, in acquiring the skills and competencies to critically engage, ask questions, express values and preferences and understand risks?
- How do we ensure that we optimise linkages between the different tiers of the health system to ensure systematic and systemic implementation of effective person-centred strategies and minimise unintended consequences?
- Which types of measures can best increase health literacy and digital literacy by targeting citizens and/or health professionals? And how to design preventive and curative services for those with lowest health literacy and fewer possibilities for self-management?
- How to unlock the potential of health promotion and disease prevention by means of concrete strategies, involving multiple actors and sectors?
- What measures are effective to prevent poverty and job loss of informal carers and how can informal carers be supported in vulnerable life stages and among vulnerable groups?

> - What are the competences and contextual conditions needed to deliver personalised medicine and how will personalised medicine affect health services and systems in the future?

3.3 Research into the process of scaling and transferring innovation

The previous section outlined the key priorities areas for strategic research on service and policy innovations to support health services and systems in Europe. Using a conceptual review of the literature, we synthesised what we know and what we do not know about the conditions for and determinants of successes and failures in the transferring and scaling-up of service and policy innovations between regions and countries. We also sought to identify the specific methodological problems related to transferability research. The review was guided by a conceptual framework, which also serve as basis for guiding strategic comparative research and assessment as proposed in this strategic research agenda (Figure 2).
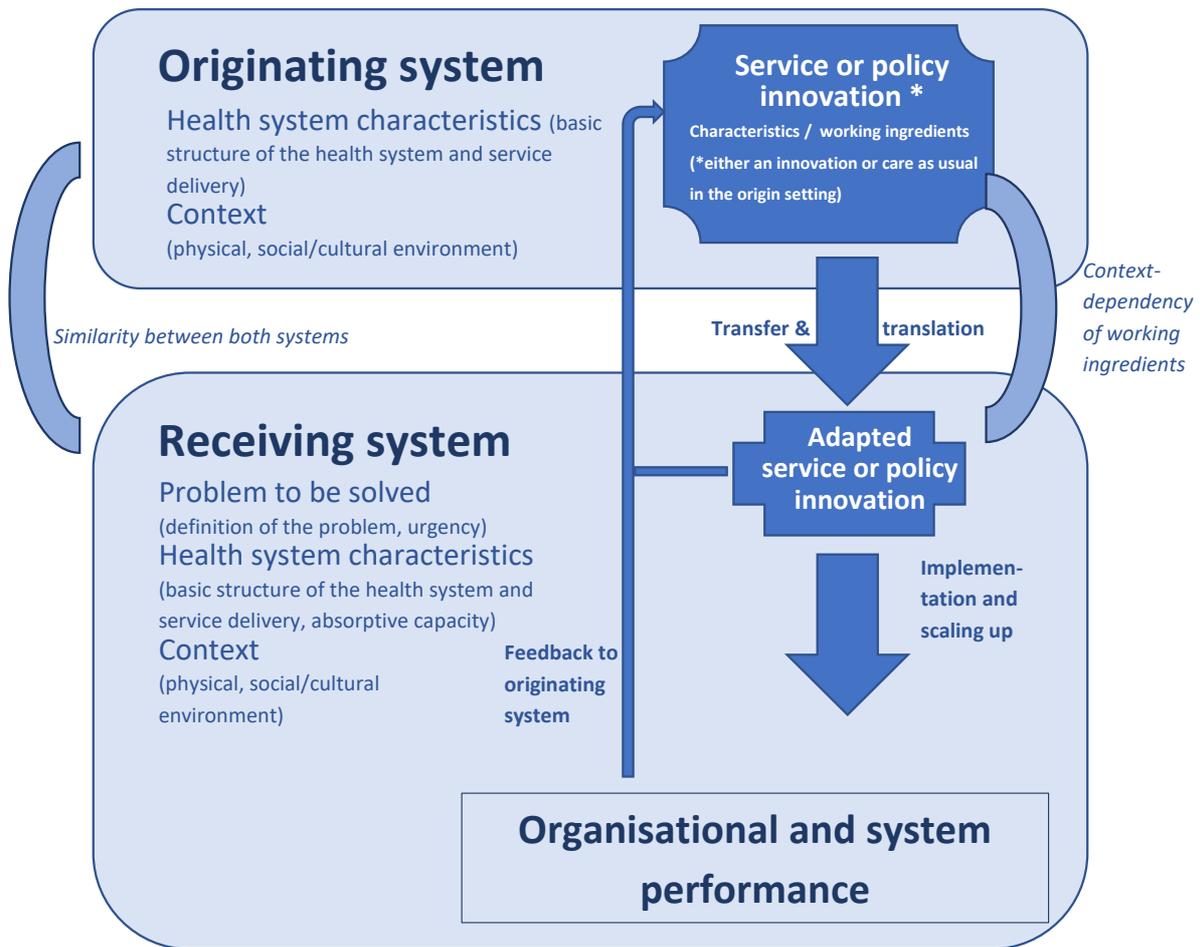
Originating system

Health system characteristics (basic structure of the health system and service delivery)
Context
(physical, social/cultural environment)

Service or policy innovation *

Characteristics / working ingredients
(*either an innovation or care as usual in the origin setting)

Similarity between both systems

Context-dependency of working ingredients

Transfer & translation

Receiving system

Problem to be solved
(definition of the problem, urgency)
Health system characteristics
(basic structure of the health system and service delivery, absorptive capacity)
Context
(physical, social/cultural environment)

Feedback to originating system

Adapted service or policy innovation

Implementation and scaling up

Organisational and system performance

Figure 2: Overview of the process of learning from elsewhere

The framework highlights the key elements that we have investigated further in our review:

- characteristics of the innovation and the system from which it originates

- translation and adaptation to the receiving system

- decision making and implementation of the innovation, including scaling up (where appropriate), and

- effects on the performance of the receiving system.

This has identified a number of gaps in our understanding about the transfer and possible scaling of promising service and policy innovations, which we have identified as priority learning field for this SRA. These are:

1. Understanding the system context within which innovations are being introduced

2. Understanding the arrangements at the different levels of the system and their impact on the transfer of service and policy innovations across regions and countries

3. Understanding the nature of evidence needed to inform the transfer of service and policy innovations

4. Understanding the impact of service and policy innovations on health system performance

5. Research to improve cross-country research

We describe each of these in turn.

3.3.1 Understanding the system context within which innovations are introduced

Understanding of the system context is of key importance for the adoption, implementation and sustaining of service and policy innovation and, in particular, for evaluating the potential and likelihood for these to be transferred elsewhere. This includes understanding of both the context of the system from which the service or policy innovation originates and that of the receiving or adopting system. Clearly health systems are complex, with differences at the different tiers of organisation, governance and finance. Policymakers and researchers tend to look to certain countries for examples of innovations, typically based on past (shared) history, language or the availability of published evidence. However, there is little robust evidence on *what characteristics of health systems* are most conducive to the transfer of service or policy innovations to other systems. We also lack knowledge of other aspects of context, such as the socio-cultural and political factors. These are determined by the values embedded in a given system and they are important for the successful transfer of service and policy innovations. Further, contextual factors are often studied as 'facilitators' or 'barriers' – yet, they are part of normal conditions of practice (25). This means they interact with each other and with the innovation and these relationships are likely to change over time (22) This will all impact on the transferability of innovative practices.

Overall, the systematic study of contexts and how they relate to transferability is an important but vastly under-researched field. Existing analyses of health system typologies might provide a useful starting point for characterising what it is about context that we need to better understand (26). But successful cross-national learning not only requires an analysis of the relevant institutions, but also of the wider political and economic system within which health systems operate, as these have clear implications for what is and what is not doable or acceptable in terms of service or policy innovation (27). An important part of context is also the role of international organisations and institutions, and in the context of Europe, that of EU institutions in particular. This also requires systematic study in relation to the translation of successful innovations between countries.

Strategic research needs: how can we systematically study system contexts and their impact on transferability or uptake of service and policy innovations?

3.3.2 Understanding the arrangements at different levels of the system and their impact on the transfer of service and policy innovations across regions and countries

Several countries have established formal arrangements at national level to support service innovation in particular. However, we do as yet have little evidence of the impact such initiatives have had, and, importantly, how relevant evidence can also inform our understanding of the key health system requirements for the successful transfer of innovations. Even if such evidence was available, it may not be easily accessible to international audiences if not published in the English language. Here, comparative analyses of national or regional strategies to advance service and policy innovations should be supported.

Much of our discussion has focused the transfer of service and policy innovation between health systems. Yet, there are also a number of European-level actors that play an important role in both the development as well as spread of service and policy innovations. EU institutions have an important role to play through legislative measures, such as in relation to health and safety and professional mobility. However, other actors such as the device and pharmaceutical industries,

professional bodies, patients' organisations and the health service industry more broadly are developing pan-European strategies to spread innovation. There is a need for systematic policy and economic studies of the emergence of relevant service and policy innovations, how they reach European-level policy agenda and/or how the spread across European countries to help understand the process of the transfer of innovations in health that follows routes other than those discussed above. Such analyses could also help identify clusters of countries that share specific meso- and macro-level features (language, culture, health system features, actors) and their role in spreading or transferring innovations.

Strategic research needs: what are the impacts of different arrangements and organisations at different levels (organisational, system, European, International) on the transferability of service or policy innovations?

3.3.3 Understanding the nature of evidence needed to inform the transfer of service and policy innovations

There is a need to better understand the nature and level of evidence that is required to effectively inform service and policy innovation transfer. We need to better understand the types of knowledge policymakers and others need to possess to act upon international evidence and the degree to which existing knowledge indeed facilitates the adoption and implementation of service and policy innovations. We know that policymakers draw inspiration from a wide range of sources, from informal exchanges with policy makers from other countries to site visits to formal exchanges in the context of international meetings (28), but we have little understanding on whether and how this knowledge then translates into greater readiness for the adoption and adaptation of innovation from elsewhere. There is also lack of research on how this can be measured empirically.

Challenges also arise from the relative 'novelty' of some of the service and policy innovations that are not yet fully implemented in a given country but that may be of interest elsewhere. These are typically not well documented and without undertaking primary research it is often only possible to describe these innovations, with limited scope for assessing their consequences. There is thus a

need for the further development of approaches that help understand the transfer potential for service and policy innovations, in particular those that are at an early stage in only a small number of countries or that are changing rapidly.

Strategic research needs: What type of evidence is needed to inform the transfer of service and policy innovations?

3.3.4 Understanding the impact of service and policy innovations on health system performance

There is lack of robust research on how service and policy innovations impact the performance of the health system, both in the originating and the adopting country. As countries are seeking to address the different health system challenges we described earlier, there is a risk for duplicating or competing innovations. This has been identified as a significant, albeit frequently overlooked, and even less studied, contextual factor (29). Competing priorities may lead to disengagement, fatigue and uncertainty among stakeholders, and they may cause additional costs.

A related challenge is that of unintended consequences of innovations, again an issue of concern for both the originating and the receiving country (30). There may be a risk for innovations to reinforce or even increase existing inequalities in a given population as we have noted earlier for digital health innovations. Research in the United States has also shown that wealthy communities tend to adopt innovations early relative to poor communities (31), and this experience highlights the need for a much better understanding of how to best design (and transfer) service and policy innovations to ensure they benefit all citizens. This is related to the capacity of organisations, regions or countries to absorb innovation.

Strategic research needs: How do service and policy innovations impact on the performance of health systems and how can we measure this?

3.3.5 Research to improve cross-country research

When looking for inspiration and possible solutions to domestic problems or challenges, policymakers, practitioners and researchers tend to look at countries on the basis of historical ties or geography, or similarity in the principal organisation and financing of health care (for example tax-based vs. statutory health insurance systems; centralised vs. decentralised systems). Such an approach may be reasonable as a common or shared history might reduce the number of 'unknown' or uncontrollable factors that are likely to impact the transfer of policies, such as acceptability of a given service or policy innovation. However, at the same time it might risk missing valuable opportunities for mutual learning. There is an urgent need to develop systematic approaches for identifying country 'units' for comparison in order to optimise learning.

We have highlighted the need for more systematic work to better understand the context for transferring of innovations across systems. This may require innovative methodological approaches, too. One example is the 'Collaborative Reflexive Deliberative Approach' to systematically study the implementation of team-based primary care in different countries that were more or less introduced in at the same time (32). This approach helped better understanding of the 'common contextual factors' that were seen to have influenced the successful implementation of teamwork in primary care in different settings. This approach to 'parallel' evaluation may help enhancing the comparability of studies and, by implication, the factors that have facilitated (or hindered) the successful introduction of service innovation.

A continued challenge is the lack of longitudinal studies. Evaluations of innovations tend to be time-limited and are typically too short to systematically assess the long-term impacts of a given change (33). A sufficient time frame for monitoring and evaluation will be of particular importance for studying the impacts of the transfer of innovations, especially for scaling up processes. A related challenge is that of readily available data and information about innovation activity in different countries that would help inform policy development in a given setting.

There are several measurement problems in the study of transfer and adoption of service and policy innovations. Examples include measurement approaches to the readiness of health systems to learn from each other (34) and relevant measures of capacity for innovation at different levels (organisations, health systems) (35). There is a need for developing methods and tools to enable systematic assessment of innovations from the perspective of transferability to other countries. Given the unpredictability of interactions between an innovation and an adopting organisation or system, with many feedback loops, may require the application of complex systems theory and the use of simulation models.

Strategic Research Needs

What are the most effective approaches to support service or policy innovations in health systems and how can this evidence be used to inform the transfer of innovations?

What are the (individual and organisational) constraints of those working in policy to use evidence and how do countries address this issue?

How do service and policy innovations impact on the performance of health systems and how can we measure this?

What types of instruments or tools could help decision-makers assess the transferability of service and policy innovations in different settings?

4 Putting the Strategic Research Agenda into practice

We have described a set of strategic research needs for research on health services and systems in Europe and beyond. However, this is only one part of what is needed for a strategic research approach. Putting this into practice requires the active engagement of those responsible for, involved in, and users of health services and systems; for those funding research; and for those responsible for and involved its implementation in practice. This section proposes a partnership approach for putting this strategic research agenda into practice.

4.1 A shared approach to health services and systems research

A shared European approach to health services and systems research will contribute to addressing the challenges described here by, first, more effectively addressing common research challenges by working together; and, second, putting in place the framework conditions needed to support the necessary research across the region and beyond. Taken together, the SRA will thus help realise the full potential of our collective investment in health

Common research challenges at European level

As noted, European health systems are facing a range of common challenges. A shared European approach can inform policy development by working together on some of these challenges and for which the pooling of resources and research capacity at European level holds out the promise of success. There is increasing recognition that the traditional way to delivering health services is not well equipped to meet the changing demands on European health systems. Many countries are now experimenting with novel ways of promoting and preventing health and of organising and delivering health care to better meet people's increasingly diverse health and care needs (36). There are promising examples in many settings, but it has been difficult to translate needed change into large-scale, sustainable and effective strategies to service organisation and delivery more widely.

There is also considerable potential for strategic learning about how to best support service and policy innovations at system level, including understanding the changes that are needed to embed

an emergent innovation, be it a technology, service or policy into the system, and the likely impacts and implications, both intended and unintended (e.g. potential to increase inequities by excluding more marginalised populations from accessing the innovation), to ensure that their benefits are widely distributed and shared, are sustainable and meet societies' needs more broadly.

Building the necessary research capacity across Europe

European research will enable establishing the capacity and framework conditions that can help to support the necessary research throughout Europe, including at national and regional level. Part of this is building a shared understanding for European health services and systems research. There is a need for a shared vocabulary to ensure that we can build on and learn from research done throughout Europe and beyond. The current lack of such an understanding can be seen to undermine high-quality, comparative health services and systems research (37). As the part of the world with the largest collective commitment to health systems, Europe has a unique opportunity and a particular need to collectively establish a common 'language' to critically advance the quality of HSSR and so optimising its use and usefulness for informing policy.

Building research capacity is also about developing the skills and human resources for collaborative and multidisciplinary health services and systems research locally and across countries in line with the researcher mobility agenda and with the ultimate goal of improving health systems. Developing capacity for cross-country research will be essential to help understand and provide context for a given innovation in a given context, and to identify the key factors that need to be in place in a given setting for the innovation to be implemented successfully, so informing the potential for joint development and for translating or transferring the innovation elsewhere. This in turn requires capacity for international comparative health services and systems research that is underdeveloped in most of the Union.

Realising the potential of our investment in health

Europe and EU Member States invest a great deal in their health systems and in research to develop them; our health systems represent one of our greatest collective investments in solidarity and innovation. However, health-related research in Europe has remained principally focused on biomedical and technological innovation, whereas health services and systems research has received much less attention. As discussed earlier in this document, while biomedical and technological innovations have created enormous potential for improving health, together with other innovative interventions including on prevention and promotion realising their full potential will require innovation at organisational, service and system level, too, to ensure that they will benefit populations and society as a whole, in keeping with the fundamental values driving EU health systems. Existing research that could help to address that is sparse, limited at European level, and patchy across the Member States.

4.2 Partnership and cooperation approach

As described above, health systems are complex, and learning from innovative solutions elsewhere depends on understanding both the originating and receiving systems and organisations, taking account of the specific context within which innovations are being implemented and rolled out. In order for research to be effective, it is therefore important to integrate these different perspectives in setting research priorities and carrying out the research in order to ensure the close engagement with different settings and stakeholders that is vital for its successful use in practice.

The TO-REACH project is itself a first step towards establishing such a partnership and cooperation approach, involving policymakers, funders, researchers and other stakeholders from across the European Union but also from other TO-REACH partner countries (US, Canada and Israel).

. For the strategic research agenda to succeed in practice, this partnership approach should be taken forward and expanded.

4.2.1 European platform for learning and collaboration

A European platform for learning and collaboration would provide a mechanism for strengthening the capacity of Europe in this area. This could include:

- Bringing together interested actors from funding, research, policy, practice and the wider public to work together in addressing these strategic challenges;

- Providing information-sharing mechanisms on research and innovations in this area, in particular to address the relative lack of mechanisms to identify and share service and policy innovations;

- Supporting the strengthening of capacity throughout the European Union, so that every European health system has the capacity necessary to evaluate and support research in service and policy innovation in their own health system;

- Developing shared conceptual frameworks for research in this area to improve the value of research in each system and supporting the potential for learning from each other.

- Distinguishing between an applied work stream focusing on specific topic areas that need improvement, and a more fundamental work stream to assess how improvements fit best with national circumstances.

4.2.2 Stakeholder engagement

Putting in practice the Strategic Research Agenda within a European platform for learning and collaboration requires the engagement with a wide range of stakeholders both at national and European level.

PATIENTS AND CITIZENS INVOLVEMENT – Providing high quality care to all European populations is a crucial challenge of today's health systems. Policies and research should centre on and involve patients and citizens. Being involved in an EU wide research initiative allows individuals as patients and members of the public to identify gaps and barriers they experience in current health systems and provides opportunity for active engagement and, potentially, co-design of services. This way,

policy development will be better able to include what really matters to people and address the key challenges. It is increasingly recognised not only that patients and the public form an important stakeholder group within the European health systems domain, but that there is now an imperative to ensure that they are systematically and meaningfully engaged at all points in design, commissioning and delivery of health care and services. It is envisaged that people-centeredness will be integral to the design, management and delivery of the SRA and that each priority area will develop its own public and patient involvement (PPI) strategy.

POLICY MAKERS – In order to develop research and actions that inform policy effectively we need to respond to the continuous emerging challenges faced by policy makers and jointly set priorities for innovative health services and systems models with also a foresight looking perspective. Policy makers are already involved in TO-REACH through the project Policy Advisory Council (PAC). The EU wide research initiative will help them interacting between relevant health stakeholders and EU countries. This will help them setting the priorities and facilitate the creation of concrete action plans and guidelines.

LOCAL and REGIONAL AUTHORITIES – Local and regional authorities play a crucial role as they need to take evidence-based decisions in order to assure high quality care for the regions. These decisions need to be evidence-based and focus on data and empirical research on one hand. On the other hand, they also need to listen to patients and their caregivers and to consider the population impact of their decisions. Being involved in an EU wide research initiative will give local and regional authorities easy access to knowledge that can help them assess which strategies they can best employ. This will facilitate the authorities to take decisions about the efficient use of resources.

PAYERS – High quality care needs an effective and sustainable finance system. Payers such as health insurers need to have evidence and data to find the most cost-effective ways to allow high quality care. They need to know how quality care can be improved in a practical way. Being involved in an

EU wide research initiative will allow them to address their needs but also to access data and as such develop an evidence-based health insurance system.

HCPs – Health Care Professionals are central players in delivering high quality care. As such they play a critical role in improving access and quality health care for the population. Insight in the problems of HCPs is crucial in order to identify and implement more effective ways to organise and manage high quality care and innovation. Involving HCPs in an EU wide research initiative will allow to get the HCPs perspective on high quality care and innovation.

HEALTHCARE PROVIDERS – Providers such as health centres or hospitals provide the structure in which health care can be provided. Therefore, their organisation and management are crucial to deliver high quality care. An EU wide research initiative can help providers to base and improve their organisation and management (e.g., more efficient use of resources, better care for patients and the population they are responsible for and preparedness to innovation in health) based on the available research evidence.

RESEARCH FUNDERS – In order to stimulate research that contributes to the delivery of high quality care throughout Europe, research funders need to know what the research priorities in current and future health systems are. By bringing research funders together in an EU wide research initiative effective research allocation will be ensured.

RESEARCH INSTITUTES – In order to organise, manage and finance health systems, data and evidence should be collected on the basic what (e.g., research on transferability, absorptive capacity, scalability and performance enhancement) and how (e.g., methodological approaches) of research into high-quality health care. Moreover, such health services and systems research should be translated, transferred and implemented into the real world. Being involved in an EU wide research initiative will help research institutions to get input from the real world and focus their research on the main EU priorities.

4.2.3 Looking to the future: a European Joint Programme on health services and systems research

Health is a sector driven by constant innovation. The research challenges identified through the TO-REACH project can only represent a starting point and a snapshot at this moment in time. Still, never as much as today do health systems recognise the need for innovation to establish service and policy reforms. Experiences in European countries show that it is possible to improve services step by step, but more needs to be done to ensure that innovative solutions identified in one place or jointly developed can be scaled-up or transferred to benefit populations at large. To date, there are significant knowledge gaps on how to overcome the barriers for implementation of innovations in the European health systems, thus underusing valuable and scarce funding resources to facilitate meaningful change. Part of taking forward strategic research must therefore include mechanisms for constant renewal of our understanding of the challenges facing European health systems and their implications for service and policy innovation. As new biomedical and technological innovations emerge together with other relevant innovative interventions, including on prevention and promotion, their implications for the design of health services and systems must also be taken as a focus of research and a strategic resource for planning and ensuring the long-term future of European health systems. A European joint programme as proposed by TO-REACH should help enhance the added value of cross-national research and improvement by addressing the following components:

- A research strand targeted to those priority areas where joint learning has greatest added value and ensuring the knowledge transfer to best support decision making at service and system level. This should generate new knowledge on the process of jointly identifying effective ways of learning across health sector domains, disease areas and population groups and the transferability of innovations between them. It will require a structured approach when undertaking research and seeking to learn from innovative solutions elsewhere.

- An information platform strand, to provide two-way learning between initiatives and ensuring complementarity to existing efforts at national and European level. It should build on the groundwork of similar initiatives at European and national levels in order to have a common focus and avoid duplication of valuable resources.

- A capacity building strand, enhancing R&D expertise on cross-national implementation research. This will provide opportunities for Europe to enhance its competitive position by providing integrative and balanced models if they are adequately designed, experimented and implemented at affordable costs. It also requires leadership and coordination to maximise value of research investment by helping avoid failed implementation

- A foresight strand, creating a mechanism for horizon scanning and identifying emergency issues as part of a wider strategy to ensuring that there is systematic prioritisation of research areas that face greatest changes and highest need, both now and in the decades to come.

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Appendix

Below, we provide a more extensive clarification on each of the nine overarching priority topics for European health systems. Note. The first priority of person- and population centredness is already discussed in paragraph 3.2.

Integration of services
Strategic research needs: how to integrate health and care services and systems across organisational boundaries, including relevant services and systems beyond the traditional health system?
Person- and population-centred care requires integration of services and systems, and this is the second big field of priorities and challenge for the years ahead. This means both integration of services within the health system (such as between primary and secondary care, or bringing together integrated models of care for people with multimorbidity) and integration with services beyond healthcare, such as social care, community care and occupational care, as well as with services involved in health promotion. Highlighted subthemes and questions include: • How to establish a standardised integrated care pathway for people with mental health problems, consistent at national, regional and local level, and what are effective approaches to integrate social services and mental healthcare? • Which types of silos are meaningful and what is the optimal degree of integration with the social domain and the wider environment, also taking into account the client perspective concerning integration? • How can prevention be implemented from an integrated approach, embedded in the care process, including suitable financial tools? • How can financing arrangements facilitate or impede integrated care and how to integrate budgets across the healthcare system, including e.g. social care, for more efficient resource allocation? • What are optimal models of integrated care given regional differences and how can integration of services best fit local circumstances, e.g. between rural and urban areas?

Development of long term services
Strategic research needs: how to best organise, provide and finance long-term care services, including geriatric and palliative care?
Long-term care services is a challenge that is particularly linked to demographic ageing and the projected rise in the numbers of elderly people who will require long-term care. Particular issues include de-institutionalisation, in conjunction with different forms of long-term care, as well as strengthening geriatric and palliative care. Highlighted subthemes and questions include: • What is the optimal balance between forms of long-term care, including new and mixed models of care according to the respective needs? • How do primary care services, housing and welfare need to be organised in order to facilitate de-institutionalisation? • To what degree are professional carers equipped to align care provision and shared decision making with relatives and other informal carers?

- What is needed to spread palliative treatment and how can palliative care interventions be developed, implemented and researched in elderly and home care? How do geriatric and palliative services best link with other types of care?

Redefining hospitals

Strategic research needs: rethinking the long-term future of hospitals in the light of wider changes to health care; and developing pathways of hospital redevelopment from existing structural, organisational and financial models within different health system contexts.

The central role of hospitals in the health system is changing as both needs and the nature of care evolve. With the shift from a focus on acute care to the long-term management of chronic conditions, the needs for centralised care services are different; greater integration of different services and less need for specialised in-patient care. However, this evolving role of hospitals creates its own challenges to existing financial and operational models. Highlighted subthemes and questions include:

- What should the hospital of the future look like? What are the core tasks and roles of hospitals in particular within integrated services?
- To what extent do factors like population size of a region, the structure of the healthcare system etc. affect the necessary design for hospital reorientation?
- How to balance high-tech approaches to the role of hospitals with the soft skills needed to provide person-centred care, especially for vulnerable groups with lower health literacy?

Strengthening primary health services

Strategic research needs: rethinking the role of primary care in the light of wider changes to health care and the context of different health systems

Primary care has the potential to play a pivotal role in addressing several of the topics identified above, being the natural starting point for person and population-centred approaches, as well as a focal point for integrating different services. However, with the changing roles of other parts of the system and changing health needs, realising this potential of primary care requires its own innovations. Highlighted subthemes and questions include:

- What tasks and roles should primary care assume within integrated services and what is the right skill-mix and level of specialisation in primary care in comparison to other sectors?
- How can primary care providers take a more active role in prevention?
- How can access to primary care be improved and how to make working conditions more attractive for staff working in primary care, in particular in remote areas?
- What types of financing models best support interdisciplinary work in order to establish that that people are cared for by a team in their local area?
- What is the role of primary care in mental health of children and young people and how can primary care be more skilled in diagnosis and support?
- How to redirect people making unnecessarily use of emergency services to primary care and what types of primary care facilities can help divert patients from emergency services?

Improving mental health

Strategic research needs: how to strengthen the role of mental health within the wider health system, and how to integrate mental health services with other relevant actors beyond the health system?

Mental health services are widely under-developed across European health systems, despite the high personal and societal costs of leaving mental health issues uncared for. This topic also links to other areas such as person-centred care and integrated services. Highlighted subthemes and questions include:

- How can access to mental care services be improved in particular for vulnerable groups and what capacities and skill mix are needed in mental services?
- Mental health of children and young people, including how to scale up services to address the rising problem of mental illness in childhood and adolescence and better understanding the determinants of mental illness in children and adolescents in order to develop preventive and early warning programmes?
- What are suitable forms of integrating mental care and what forms of therapeutic interventions are effective in integrated services?
- How can prevention and early detection of mental health conditions be improved?
- How can therapies be altered to also include other services and stakeholders (e.g. occupational care, employer)?

The health workforce

Strategic research needs: how to redistribute tasks and responsibilities, and rethinking training and practice that enables health professionals to work together more effectively in integrated services; mechanisms for long-term planning of the health workforce; and how to address regional imbalances?

Ensuring an adequate health workforce with the right skill mix, tasks and responsibilities, and one that is sufficiently attractive to ensure that sufficient people can be trained, recruited and retained within the health workforce is a key condition for the health system as a whole. It is considered of key importance to tackle the growing mismatch between skills present and skills needed to meet future demands and to rethink traditional division of roles and tasks among health professions and others. Highlighted subthemes and questions include:

- How to deal with health workforce migration and brain drain, especially in low income countries, but also within countries within remote and rural, de-populating regions?
- To what degree can nonfinancial incentives such as working conditions help improve attractiveness of the professions and what incentives matter for whom and what stage of one's career?
- How to curb the declining quality of life of health professionals, with increased levels of absenteeism, burnout and frequent desires to quit the profession as well as high prevalence rates of addiction, suicidal ideation and harassment and violence?
- Investing in improved workforce planning, including access to reliable and comparable information to do so and enhancing cross-national learning to assess what type of health workforce planning fits what type of healthcare system and labour market situation
- Determination of a balance in skills needed in order to meet growing demands, of managing multi- and co-morbidity or coordinating services of different disciplines and to have the (communication) skills to involve patients in decision making and help them master their health problems in everyday life.

- What types of competences and professions are needed to deal with technological innovation (e.g., big data, block chain, AI) etc?
- How could the medical and nursing training be structured to allow nurses to diagnose and to analyse test results, to extend the scope of nursing practice to some areas of diagnostics?

Information and communication technology for health

Strategic research needs: how to make best use of information and communication technology to support efficient and effective health care?

The health sector lags behind other sectors of society in making good use of information and technology to improve efficiency and effectiveness of healthcare. There are examples of cutting-edge technological innovation such as the use of big data and artificial intelligence and the potential to enable people to take more responsibility for managing their own healthcare. However, there remain also deep-seated obstacles to the effective use of information and communication technologies to support efficient and effective care, including through providing data and feedback on a much quicker basis than through existing epidemiological systems. Information and communication technology is also vital to support the communication within the health system that is essential for integrated services, for example. Highlighted subthemes and questions include:

- How to overcome the barriers to a smooth flow of information between different parties within a learning health system given the multitude of fragmented IT-solutions, the structure of data, privacy regulations and ethical considerations?
- What standards, harmonisation, and privacy regulations are needed to make use of the wealth of available data for discovering underlying epidemiological relations and organisation weaknesses?
- What are the consequences of digitalization and new technology for service providers and users and how will relations between patients and healthcare professionals change through the uptake and use of digital tools (e.g. for data collection, information, diagnostics and self-management)?
- How does e health need to be designed to be user friendly and intuitive to most end users, including those with lower digital health literacy? How can it best facilitate health promotion and disease prevention and what are their short and long term health outcomes?
- What types of competences and professions are needed to deal with technological innovation, big data, block chain, AI etc and can they contribute to keeping care available within de-populating and understaffed regions?
- How will Artificial Intelligence and blockchain technologies impact the delivery of healthcare services, and what are the ethical implications? To what extent can they support administration and decision making in diagnosis and treatment and how will they affect task sifting between different staff levels?
- What is the relation between digitalisation and elderly care? What challenges and opportunities will the digital revolution imply for elderly care when the computer-experienced people reach old age?

Measuring and improving quality

Strategic research needs: new mechanisms for measuring quality and outcomes in healthcare that help to make a step change in improving quality and reduce unwarranted variation in healthcare

As described above, variations in performance within health systems remain wide, and ensuring that performance more consistently reflects good practice not only provides better care for individual patients but holds out the scope to improve the efficiency of health systems as a whole. Measuring quality has however historically been challenging, and doing so in a way that facilitates learning from other organisations and systems even more so. Highlighted subthemes and questions include:

- What are the consequences of intended and unintended variations in access and quality of care, when is diagnosis and treatment excessive and how does medical culture influence unjustified variations in outcome?
- What is needed to safeguard patient safety and how can quality guidelines and their adherence be improved? What are the effects of the adherence or non-adherence of physician to treatment guidelines, what does it mean for the content and importance of guidelines and how does this affect patient views?
- What are innovative, meaningful, and robust quality indicators and how can quality indicators be defined to also mirror quality of life rather than quality of provision? How can people be involved in this definition?
- How can quality of home care best be measured and monitored?

Governance and financing

Strategic research needs: models and issues of governance and sustainable financing for European health systems

How to ensure good governance within the health system is a fundamental challenge. There are enduring tensions between management and professional autonomy, between national accountability and local responsiveness, between evidence-based policy and shared decision-making. Particular challenges refer to:

a) the financing of healthcare, from how resources are collected and allocated to the impact of different incentives,
b) the innovation systems generating biomedical, organisational and other health innovations, including the assessments of particular health technologies; and,
c) ensuring resilience of the health system in the long-term.

Highlighted subthemes and questions include:

- Are there alternative means of funding for expensive pharmaceuticals and technologies? what models of procurement are effective and how can they be implemented in order to safeguard access?
- What is the effect of competition between health providers (and insurances) and of a concentration of markets? What is a good balance between public and private funding and treatment of patients?
- How can funding be secured/made sustainable, while upholding solidarity?
- How can governance and management strengthen quality, patient safety, and cost-efficiency in the best way and how can governance support transfer of innovations across services and systems?

	- What is the optimal balance between local, regional, and national responsibilities as well as between institutionalisation and de-institutionalisation - How can accountability be strengthened and how can fraud, informal payments, creative billing etc. be prevented? - How can the learning capacity of the care system can be strengthened and how research can contribute to this, for example by use of patient feedback at both local and national level