

### How, Why, and When Do Inter-Organisational Collaborations in Healthcare Improve Performance? A Realist Evaluation

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**Context:** Inter-organisational collaborations (IOCs) have been touted internationally as a tool for organisational improvement and turnaround in the healthcare sector. Such organisational forms include buddying, mergers, provider alliances, and more. Whether IOCs always deliver benefits to care quality, safety, and efficiency, is contested. This is because implementing IOCs causes an increase in complexity and involves significant time and manpower before they function effectively. There remain gaps in our understanding of *what* is key to helping IOCs function correctly, as well as *how* and *why* these IOCs may drive performance improvements on metrics key to healthcare organisations.

**Methods:** We conducted 33 realist interviews with NHS leaders, regulators, patients, and third-sector organisations, and a focus group with eight patients. This included interviewees at several IOC types including four hospital groups, three integrated care systems, two alliances, and two mergers, as well as regulatory bodies. This sample could be considered an “issue network” around IOCs. We used a realist evaluation methodology, adopting our prior realist theory and its context-mechanism-outcome configurations (CMOCs) as a framework against which to test the interview findings. Interview transcripts were coded verbatim and analysed in NVivo 12 software using deductive thematic analysis for elements that matched the prior theory, and inductive for those which did not. The aim was to produce a finalised, refined realist programme theory and updated CMOCs which outline what works in IOCs in healthcare, why, how, and for whom.

**Results:** Many of the elements of our prior theory were affirmed by the interviews. This included a range of mechanisms that were reconfirmed as essential to the functioning of collaborations, including trust, faith, risk tolerance, confidence in contract, cultural integration, and interpersonal communication. Likewise, collaborative functioning was linked to organisational performance through the maximisation of collaborative behaviour. However, greater evidence was identified regarding how these arrangements improve performance. For example, sharing improvement strategies through organisational learning, as well as changing organisational culture to be more productive, were identified as key performance mechanisms.

**Discussion:** Our findings build upon existing realist evaluations of similar arrangements and interventions by delving deeper into what underlies their performance, rather than focusing primarily on their functioning. Our use of a four-step theory-building process, drawing on over 100 papers as well as interviews with practitioners and regulators, is a strength of this analysis. The move towards mandated forms of collaboration, such as Integrated Care Systems and Primary Care Networks in the UK, presents difficulties for underlying trust and relationship-building processes and may necessitate enforcement of collaboration through contract. Our future research seeks to translate these findings into practical guidance for use by those implementing such arrangements.

### Pillars for Planning a COVID-19 Mass Vaccination Center: The Novogro, Milan Experience

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The SARS-CoV-2 pandemic raised the need for Mass Vaccination Centers (MVC) to increase the number of people vaccinated every day. In Italy, Lombardy Region (10 m inhabitants) identified on 3<sup>rd</sup> March, 55 MVC to cover 148.000 vaccinations per day to reach the target of 6.6 million by the end of June 2021.

This presentation aims to describe and analyse the pillars for planning an MVC through the experience that the Gruppo Ospedaliero San Donato had in Novogro, Milan, in March 2021. This centre has the capacity of 5.000 vaccinations per day, with 40 medical doctors and 20 nurses, and around 80 volunteers from Protezione Civile to organise the flux of people.

Safety was considered the first pillar. In this campaign, many young medical doctors have been hired, and after a specific education on COVID-19 vaccines, they immediately started the activity at the centres. The idea of introducing a “senior medical doctor” with specific competencies in immunology or internal medicine, allows the young doctors to have a consultation whenever they need to discuss difficult cases. Furthermore, since the centre is 5 km from the nearest hospital, another choice was to hire an anesthesiologist and to build a 4-bed shock room, with all the equipment for the management of any adverse reaction. Their presence was revealed to be extremely useful for any problem displayed by

the patients and caregivers, from epileptic crises to falls and chest pain management.

The second element was productivity. In the preliminary phase, to accomplish a high level of efficiency, the whole process was divided into segments, to identify and solve possible bottlenecks inside and between every phase. A strategy adopted, was to have multiple modules in every step, thus every problem involving one element does not compromise the flux of people. Besides, to guarantee productivity, a series of protocols and procedures were drawn up by a multidisciplinary team, involving the health management, senior MDs, head of the nurses, and head of the administrative staff, to define clear rules, behaviours, actions cards and responsibilities.

Finally, investments have been made to guarantee comfort for the people. The two buildings host more than 750 chairs for the waiting area before the vaccine and 200 for the monitoring after the vaccine. In the first days of the vaccination campaigns, people coming to the centre were mainly elderly, thus the availability of indoor chairs, allowed people to face positively the waiting before and after the vaccination regardless of the weather. This choice was revealed to be providential whenever problems determined unexpected waiting.

In conclusion, the planning of an MVC included on one hand the productivity and the attention to supply chain management, and on the other the attention to patient safety and experience of care.

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### Inter-Organisational Networks: Rational Behaviour or Institutional Myths?

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**Context:** To address the wicked problems in health care that single organisations cannot solve, such as rising expenditures and staff shortages, health care is increasingly governed through inter-organisational networks, often referred to as whole or goal-directed networks. While heavily theorised, the concept of network effectiveness remains elusive and has gained little empirical attention. To be able to assess if networks contribute to health care's wicked problems, we need a better understanding of what effectiveness means for stakeholders involved in this organisational form. Therefore, this study aims to understand the perceptions and expectations of stakeholders in practice toward network effectiveness.

**Methods:** Between August 2020 and February 2021, we interviewed nine representatives of the main national governmental and regulatory agencies covering the external environment and twelve network participants. Participants of a regional network in the south of the Netherlands were approached. The network was established in 2013 and consists of thirteen organisations in the region, including purchasers (i.e. the main insurer and municipality) and providers of social, curative, long-term, and youth care, and covering multiple goal-directed subnetworks. Participants were asked to describe subnetworks they perceived as (in)effective

and to explain why. Interviews were recorded and transcribed verbatim. Two researchers independently coded the interview data and discussed their findings. Additionally, we made field notes during network meetings between April 2019 and April 2021. Finally, we collected documents (i.e. minutes and media outlets) providing information on the network's history and goals as well as related documents from the national agencies.

**Results:** Our results show that network participants and external stakeholders agree that network outcomes should be related to the network's goal, improve at least patient-level outcomes, and be measurable. However, network participants indicate that they rarely, if ever, measure any outcomes. Nevertheless, they classify some networks as effective even without outcomes. The 'soft' side of collaboration seems decisive to network participants whether they perceive a network as effective. Additionally, network participants stress the importance of safeguarding individual organisational interests. A network can therefore be effective to one organisation while ineffective to another. While network participants perceive the act of coming together and discussing challenges as effective in itself, external stakeholders indicate the 'soft' side to be insufficient and expect measurable outcomes. Nevertheless, they consider ineffective networks as more important than no networks at all. Even networks that are unable to achieve improved outcomes after a prolonged period should continue operations.

**Discussion:** The rationale behind networks lies in the belief that several organisations working together can achieve more than organisations working on their own. Despite stakeholders indicating measurable outcomes at the patient level to be essential, collaboration in itself seems to be an institutionalised norm, even in the absence of improved outcomes. Organisations are expected to collaborate to be legitimate, even though the added value is often unclear. This raises the question of whether networks are in fact solutions to the wicked problems in health care and thus are rational behaviour, or whether this organisational form reflects myths of the institutional environment. Understanding the added value is imperative to assess whether networks are indeed solving wicked problems and do not risk unjustly consuming already scarce resources. Future research should aim to measure outcomes concerning the network's goal and understand how organisations can collaborate effectively to solve health care's wicked problems.

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### Direct Costs of COVID-19 Inpatient Admissions at a University Tertiary Care Centre

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**Context:** The COVID-19 outbreak has posed an unprecedented impact on all dimensions of society. Health systems

and institutions had to adapt to respond to the specific needs of COVID-19 patients while ensuring the safety of the diagnosis and treatment of patients without COVID-19 and of healthcare professionals. These challenges have intensified financial pressures on health systems, whose financial capacity was already vulnerable. Assessing the financial impact of the COVID-19 pandemic on the health system is essential to inform and support policymakers. In this context, this study aimed to characterise the direct costs of COVID-19 inpatient admissions.

**Methods:** We have analysed inpatient data from patients diagnosed with COVID-19, admitted at a Portuguese University Tertiary Care Centre between March 1<sup>st</sup>, 2020 and May 31<sup>st</sup>, 2020. Admissions were eligible if the ICD-10-CM principal diagnosis was coded U07.1. We have excluded admissions from patients: under 18 years old; those who had undergone surgery; those who had been transferred to or from other hospitals; those whose inpatient stay was under 24 hours. Pregnancy, childbirth and puerperium admissions and those with incomplete records were also excluded. To estimate the cost of diagnostic and therapeutic procedures for each inpatient admission, Ordinance No. 254/2018 was used. To estimate the cost of medicines' consumption the average purchase price was used. Regarding clinical consumables, personal expenses and indirect costs, without possibility to direct imputation per episode, the total costs were divided by total inpatient days and attributed to each episode according to the number of days of hospitalisation.

**Results:** We have considered 223 admissions, which represented 2.4% of the total admissions in the period of analysis. At the time of the study, not all admissions were coded. The average length of stay was 12.69 days ( $\pm$  10.16) and the average cost per admission of 8,177€ ( $\pm$  11,534). Twenty-one patients (9.4% of the admissions) had an estimated cost per admission greater than 20,000€, accounting for 44% of the total costs. Most of the admitted patients were men (64.1%) and aged 45-64 years old (30.5%). Around 13% of patients diagnosed with COVID-19 were admitted to ICU, with a register of a higher prevalence of men (86.2%) and patients aged 65-84 years (48.3%). The hospital mortality rate among COVID-19 patients was 9.9%. Human resources accounted for the highest proportion of the total costs per admission (50.8%).

**Discussion:** Results indicate that COVID-19 admissions represent a relevant financial burden for the Portuguese Health System. According to the data available, in Portugal, the rate of hospitalisation for confirmed cases of COVID-19 is around 13% to 16%, thus we can estimate that until the end of the year 2020, between 54,682 to 67,301 patients were admitted to hospitals, which results in a global cost around 447 to 550 million euros. Considering this global cost, it would have been possible to treat 187,363 to 230,600 patients, which means that for each COVID-19 inpatient it would have been possible to treat three patients hospitalised for other causes. Beyond the financial impact, the COVID-19 pandemic has and will have long-lasting consequences on the health system and in the health of populations. These findings highlight the need for financial reinforcement of the health system and underline the need to consider the cost opportunity of COVID-19 admissions.

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## Health Management and Governance – An Excursion on Leadership in the Wake of the Pandemic in the Case of Alpine Winter Tourism 2020 in Tyrol and Vorarlberg

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In February 2020 the alpine village Ischgl, located in the Austrian province Tyrol, reached prominence as a COVID-19 hotspot and starting point for the virus diffusion in Europe. Since then, community leaders such as local authorities, winter tourism and its key stakeholders (e.g. cable cars companies) were under close supervision. Therefore the here presented study focuses on how they align their personal and corporate interests with collective interests to alleviate the spread of the virus and if to what extent they want to be involved and take responsibility in crisis and risk management as a response to the COVID-19 pandemic.

In late summer 2020, a convergent parallel-mixed methods approach was adopted, with April 2021 data analysis is completed and all results are available. It includes data from three focus groups in skiing resorts of Tyrol and Vorarlberg, a quantitative complete online survey, with mayors of municipalities, managing directors of all cable cars companies as tourism associations, and 22 qualitative expert interviews with this target groups in Tyrol and Vorarlberg. There were 105 out of 375 mayors of municipalities, 57 out of 140 managing directors of all cable cars companies, and 37 out of 41 tourism associations of Tyrol and Vorarlberg participating in the online survey. The demand for standardised risk management in tourism was high, the willingness to compromise was low. Inconsistent legal regulations, economic losses, acknowledging risks, and taking responsibility for the own area of influence seemed to be the most conflicted topics.

Uncertainty about legal requirements was widespread and therefore mitigating strategies and measures were often classified as a disturbance of business. Economic concerns were far more prevalent than concerns about public health. Mayors tended to shift responsibility to the executive bodies and rarely addressed the role of community leaders. Managing directors of tourism associations saw themselves as information hubs, but not as crisis managers or coordinators in tourism. Cable car companies, depending on the size of the company, tended to favour mitigating strategies, which did not come with expenditure, and they had a strong lobby. Although demanded and because of individual claims, uniform risk management was only possible at a very late stage in November 2020 and only in selected fields (e.g. establishing a non-mandatory but uniform prevention concept for tourism business – hotels, bars, restaurants). COVID-19 promotes reluctance in making decisions, due to the assumption that doing nothing is better than doing something wrong, the fear to act as community leaders is present amongst our target groups. Leadership, everyone wants it, nobody wants to act upon it during a pandemic. It is the dependency upon community leaders that

made successful health governance COVID-19 risk and therefore health management hard to realise during the winter season 2020/21 in Tyrol and Vorarlberg.

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### **Partnership-Working in Health and Social Care: A Multi-National, Regional Analysis of the Impact of COVID-19 on Health and Social Care Integration**

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**Background:** Policy makers, health care executives, public health advocates, and social service leaders across the globe are increasingly championing the cause of addressing individuals' social needs in conjunction with their medical needs to achieve health equity. Organisations have formed cross-sector partnerships to hasten the integration of health and social care, but little is known about the effects of the COVID-19 pandemic on these partnerships. This study examines these effects and highlights important insights from organisational leaders working to integrate health and social care in their regions.

**Methods:** Key informant interviews were conducted with organisational executives (n=20) using a standardised topic guide to map the landscape of partnership-working between health and social care sectors, prior-to and during the pandemic, in three distinct locales: a mid-sized city in the midwestern United States, a comparable town in the West Midlands region of the United Kingdom, and a small city in the Flemish Brabant province of Belgium. Interviews were transcribed and coded before being analysed using a structured thematic approach. The Study Team subsequently undertook a further process of review and moderation to develop a set of overall findings.

**Results:** We found that in each country that the response to the early stages of the COVID-19 pandemic impacted to increase levels of inter-organisational partnership working, but that there were significant variations between the three case study country sites.

Informants across locales attribute some similar effects to the pandemic including more intentional partnership-working, a temporary easing of inter-organisational competition, faster, more streamlined communication, and increased strain that galvanised some organisational relationships and damaged others. Informant responses also indicate key differences in prevailing methodological approaches to integration between locales and forecast which changes to partnership-working might persist past the acute stage of the pandemic.

**Conclusions:** Our overall conclusion is that organisational health system working was impacted by the COVID-19 pandemic, changing the pace, form and nature of organisational engagement.

That such change was not uniform but rather affected by health system architecture and system operation was a second level finding of consequence. The wider learning, therefore, is that the transmutability of learning on integrated care and partnership working must take into account system differences, but if able to do this that learning on effective practice is translatable between countries and regions operating to different commissioning and management models. As such, the findings offer insights to public health, health care, and social care leaders interested in forging cross-sector organisational partnerships.

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### **Making Lean Management Initiatives Last: Identifying Barriers and Facilitators towards Lean Management Sustainability**

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**Context:** Healthcare providers are facing the combined challenge of increased care complexity and reduced healthcare budgets. Attempts to cope with this challenge include the adoption of Lean Management (LM) principles to reduce waste and variability continuously. While LM has been shown to positively influence care processes' performance, sustaining LM efforts in healthcare over time seems hard. In this research, we ask how a healthcare provider with a highly successful LM program was able to sustain LM over prolonged periods. Our inductive study offers a conceptual framework that shows the identified barriers and facilitators for LM sustainability.

**Methods:** In this qualitative study, we focus on a hospital in The Netherlands that can be considered an exemplary LM case site. The hospital was one of the first healthcare providers in The Netherlands that adopted LM in their care services and has experience with LM for over 10 years. They achieved a wide range of LM improvement activities, such as reductions in the length of stay and in patient waiting times. Through an embedded case study approach, following a replication logic, we examined four departments that had successfully sustained their LM efforts during this period. Here, we had access to both primary and secondary data. Primary data consisted of 15 semi-structured interviews with key informants, and secondary data consisted of documents, reports, and other archival materials. The analysis was performed using first and second-order coding and was based on a codebook.

**Results:** Results indicate the facilitators and barriers that were perceived to influence LM sustainability. The identified facilitators entail specific roles of leadership, communication, education, and empowerment. The identified barriers related to time and space as well as resistance and risk aversion. Concrete leadership behaviours that are supportive of LM include delegating LM responsibilities and highlighting the obtained results from the improvement activities. Next to education, periodically repeating the importance of LM helped in raising and maintaining awareness of LM amongst staff. Finally, the empowerment of staff members is seen as supportive of LM. In terms of barriers, the lack of time and space translate to overall workload and other, often short-term oriented, priorities, which limit the longer-term

oriented LM activities. Employee resistance was prevalent in staff that would hold on to existing routines, and risk aversion relates to fear to make changes and errors, which in turn causes negative feelings towards LM.

**Discussion:** In this study, we were able to show how a successful LM case site sustained its improvement efforts over time. While the identified facilitators and barriers resonate with insights from the change management field, we contribute by a) highlighting what are the dominant LM sustainability issues in a healthcare context and b) demonstrating how these translate into concrete conditions, interventions and activities in departmental care processes. For example, in line with previous findings, we find a pronounced role for the combination of leadership and delegation. Based on our results, we develop a theoretical framework to structure our thinking on LM sustainability. The framework may act as a guide for healthcare organisations to sustainability thinking.

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### National Strategies and Programmes: A Multisectoral Approach in Supporting Public Health at the Municipal Level in Serbia

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Good health is essential for sustainable economic and social development and a basic concern in the life of every person, family and society. The Strategy on Public Health in the Republic of Serbia based on the Law on Public Health (Official Gazette RS, no. 72/09) supports the improvement of health, diseases prevention and reaching a good quality of life of the population. Nowadays, attention on achieving equity in health is the basis and is linked to sustainable development through good governance in the three most important aspects: economic development, social inclusion and environmental sustainability. The national and regional institutes of public health provide technical and expert support to the management and service delivery in the area of public health. To support public health activities at the local level, the Institute of public health of Serbia (IPHS) and the network of the regional institutes of public health (NRIPH) work closely with other stakeholders in the various sectors such as educational, environmental protection, agriculture, transport, including non-governmental organisations. On the other hand, the multisectoral approach is applied at the local level through the Network for Health (established by the Standing Conference of Towns and Municipalities in 2015) and The Health Councils (regulated by the Law on Public health). They are multisectoral bodies consisted of representatives of different sectors and disciplines that assess a public health situation at a local level and create Public Health Plans, increasing a political sensibility for prioritising public health issues.

However, there is not a systematic approach for reducing health inequalities at a municipal level, while identified or emerged problems have been tackled mainly through project activities. Through the Joint Action Health Equity Europe (JAHEE) project, Serbia participated in the overall project objective “to contribute

to achieving greater equity in health outcomes across all groups in society”. Serbia conducted a Country Assessment within the JAHEE project through desk review and interviews with the representatives from NGOs, local self-government units and the NRIPH.

Our results showed that the implementation of Strategy on Public Health was “in an early stage of development” at a local level, due to the low awareness of decision-makers of the importance of health promotion and equity; consequent restrictive financial planning and budgeting for the implementation of public health activities; the lack of human resource capacities and the evaluation of outcomes of implemented public health programmes; There is a need in applying a systematic approach in the implementation of national public health policies and strategies at local/municipal level though organised and predefined planning, programming, monitoring, reporting and evaluation of local public health actions, as well as through strengthening capacities of local self-government units.

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### Cultural Implications on Global Medicine and Health Policy Reform: A Comparative Analysis of Japan and United States of America

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**Context:** The health of a nation depends on the wellbeing of the society that makes it. An individual’s wellbeing is indisputably improved by good health. Environmental, economic, and commercial conditions amongst a society are the strongest determinants of health. Until we see policymakers give the necessary attention to these cultural variables, inequalities of health cannot be reduced, and true health improvements in any given population will be arduous. Hence, to improve the health of the population, we must shift our focus to improving the policies that impact the very populations they set out to protect.

**Methods:** This study will investigate the cultural makeup of both Japan and the United States based on 6 key criteria derived from Hofstede’s Cultural Dimensions Theory (Hofstede, 1992), and examine the implication of these criteria within each of the nation’s healthcare policy structures. In the first part of the study, a Realist Review will be conducted to describe how cultures might influence health policy decision-making and synthesise the evidence accordingly. The Realist Review will allow me to push a unique contribution to understand mechanisms that may influence the outcomes. In the Realist Review, I aim to identify mechanisms that are related to cultural dimensions that may implicate health policy decisions. The second part of the research will draw thorough and subjective expertise from an individual perspective of Japanese and US health policy stakeholders. Ultimately, this will produce suitable mechanisms that yield a more favourable outcome when reforming health policy.

**Results:** My research centres on one main element of analysis: Cultural Implications on Healthcare Policy reform. It investigates the relationship of culture and policymaking, which ultimately provides a substantive theory of cultural impact on healthcare policy reform. The importance of culture in health

policy decision-making rests heavily on the need for more effective policy reform. Healthcare is widely inaccessible, unaffordable, and unequal amongst the US population. By understanding cultural implications on decision-making, we can yield policies that are implemented fairly amongst any given population. The results from my study show a cohesive relationship and heightened understanding of culture in Japanese health policy decision-making. The US show a broken relationship and lack of understanding of American culture in the same sector. To create more effective health policy resource allocation, the US must implement a cultural model to better understand the impact of culture on health policy decision-making.

**Discussion:** The countries of Japan and the United States were chosen for three key reasons: First, Japan and the US are two of the most prosperous nations in the world, having the first and the third-largest economies, respectively. Secondly, Japan consistently ranks as the top nation in the world for quality of healthcare. Finally, despite its economic prosperity, the US is in desperate need of health policy reform. This can be achieved by looking towards an equally prosperous nation such as Japan, and understanding how their decision-making led them to have the top healthcare system in the world. If social science can produce cross-national studies that show what is truly exceptional about social structure, culture, and politics, and what characteristics they share with all modern societies, it will be in a position to specify which policy innovations in other rich democracies could readily be transferred to the US.

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### Modelling Peer Review as a Means of Regulatory Compliance in Specialised Commissioned Services in the NHS

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**Context:** Specialised commissioned services, such as cancer services, in the English NHS, are subject to a separate regulatory compliance and quality improvement process. This work is carried out by the Quality Nursing Service (QNS, formerly: Quality Surveillance Team). One mechanism to ensure regulatory compliance and facilitate service improvement of service is an external inspection by peers or peer review. However, it is unclear how peer reviews are supposed to effect changes in the visited services, in other words: there is a paucity of clarity on the model of the chance of peer reviews, the supposed logic of impact and the conditions for positive change. We report on the findings of a project that was commissioned by QNS to evaluate the peer review processes. The paper reports the findings of the first phase: To identify and develop a robust model of change of peer reviews in the regulatory and quality improvement field of health services.

**Methods:** We conducted a rapid review of published peer-reviewed literature to identify existing models of change underpinning current peer review practice in health care regulation and quality improvement. Two independent researchers applied the PRISMA protocol to bar a quality appraisal of included papers. Rapid review protocols do not require a qualified appraisal if

justified by the relevant review context. To analyse the benefits, scope, utility and rigour of identified models of change we then evaluated them by mapping the constructs against Smithson et al's Impact Domain Framework published in their King's Fund Report in 2018.

**Results:** The search identified 4127 papers, with 2,815 remaining after the remaining duplicates. Title, abstract and full-text screening whittled this down to 16 papers that were included in the analysis. We identified four investigative domains of the impact of peer review in the literature: the 'what' – relating to the aims and scope of the peer review; the 'how' – relating to the nature and practice of peer review; the 'why' – providing direct indicators of assumptions about the effect and impact of peer review; and the 'who' – relating to the specific inter- and intra-professional relationship between peer reviewers and those peer-reviewed. Mapping these domains against the Impact Domain Framework revealed that several aspects of peer review impact currently lack theorisation or are excluded from models of change.

**Conclusion:** Peer review visits are thought to be an essential mechanism of regulatory compliance and quality improvement in the English NHS. However, existing peer review practice is not based on evidence-based theories of change. Our analysis of existing models of peer review, which is the first of its kind, demonstrates that several impact domains have not received sufficient attention which may have led to a poor understanding of what makes an effective peer review in health service contexts.

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### The Efficacy of a Dutch Governmental Support Program for Quality Improvement in Nursing Homes

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**Context:** The program Dignity and pride (D&P) was initiated in 2016 by the Dutch Ministry of Health, Welfare and Sport to improve the quality of nursing home care. The program was specifically aimed at nursing homes with urgent quality issues. Nursing homes received support from multiple coaches for 1–2 years and could apply for government funding to increase the number of care workers. In this study we evaluated 1) whether the quality of person-centred care (PCC) and patient safety were improved after completing the support program and 2) how the program was valued by professionals.

**Methods:** 36 nursing homes (with over 100 facilities) that followed the program between 2016 and 2019 were included. At the start, the majority of the nursing homes (78%) had major quality issues as determined by the Health and Youth Care Inspectorate or executive director. Quality of PCC and patient safety were quantified by a standardised assessment tool which was based on national guidelines. Information on the quality of care at the start and end of the program was obtained from improvement plans and final evaluation reports. Scores ranging from 1 (major issues) to 5 (excellent), were assigned by two independent raters. The final score was determined by consensus. In addition, semi-standardised interviews were held with 43 healthcare professionals

(directors, policy officers, nurses) and coaches from 12 of the 36 nursing homes. They were asked about the main outcome of the support program, how they valued the program, and lessons learned.

**Results:** Almost all nursing homes showed an improvement in PCC and patient safety after completion of the program (average improvement was 1.9 points,  $p < 0.001$ ). At the start of the program, 90% of the nursing homes had a score of 2 or less on PCC and/or patient safety, indicating that the quality of care was not meeting current standards. At the end of the program, 60% of the nursing homes scored 4, indicating good quality of PCC and safety, and none scored 2 or less.

The main outcomes of the support program were: 1) better awareness of the standards of good PCC and patient safety, 2) implementation of PCC according to those standards, and 3) implementation of a systematic approach to continuous monitoring and improving care at both strategic and executive level. Essential preconditions and effective intervention strategies for improvement of care were also identified, on which we will elaborate in the presentation.

**Discussion:** The Dignity and pride support program was successful in improving person-centred care and patient safety in nursing homes with urgent quality issues. A limitation of the study is that certain quality indicators may have not been reported due to the semi-structured nature of the documentation. Future studies should investigate the sustainability of the current outcomes and identify factors that contribute to a sustainable outcome as well as disseminate lessons learned to the entire nursing home sector.

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## Response to COVID-19 in France: Identify the Critical Success Factors of Patient Inter-Regional Transfers

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**Context:** The spread of the COVID-19 pandemic has forced health care systems to foster organisational innovations to ensure access to, and quality of care, despite the saturation of intensive care units. In France, 660 patients were transferred from four regions towards six other regions and four neighbouring countries using various modes of transport (plane, helicopter, train, ambulance). The volume and intensity of such medical evacuations make it an unprecedented event for the French healthcare system. Based on the lessons learned about extreme contexts (contexts combining evolutivity, uncertainty and risk), the study objective was to identify and analyse the main drivers of inter-regional patient transfers.

**Methods:** The study consisted of a qualitative analysis based on thirty-nine semi-structured interviews conducted between September 2020 and March 2021 with healthcare professionals who took part in patient transfers as well as with people from various support organisations involved at both local, regional and national levels (Ministry of health, Army, Regional health agencies etc.). Interviews were transcribed and analysed using coding techniques. Documentary analysis was conducted at the same time (notes, emails, press releases, etc.).

**Results:** The findings indicate that the development of patient inter-regional transfers occurred in an “extreme” context given the unprecedented level of saturation of intensive care units, the lack of knowledge regarding the virus and the potential evolution of the pandemic, as well as the relative burnout of health-care professionals involved. In this critical context, transfers were presented as a last resort, a “rescue operation”. The intensity of the evacuations (644 in less than 4 weeks), the number of patients transferred simultaneously, the long distances (some patients travelled more than 700 km), the type of patient involved (severe patients requiring intensive care), and the various modes of transport used, challenged deeply the health care system. While inter-hospital patient transfers are relatively common, the organisation of such inter-regional transfers required new ways to collaborate. We find that the success of such transfers first relies on strong cooperation between professionals. Trust in co-workers character and competency in first selecting patients for transfers and then organising medical evacuations was particularly determinant. The success of transfers also relies on new forms of inter-organisational collaboration, between professionals from various organisations that were not necessarily used to working together, that were even in conflict and between military and civil hospitals. The role of support organisations as coordinators of transfer was found to be decisive.

**Discussion:** This study highlights the specific organisational and human arrangements that allowed the success of these transfers. Our results suggest that the specific context in which they were developed has played an important role. It emphasises the degree to which such extreme contexts can foster collective action and help to legitimise the use of distant transfers. We found that inter-regional patient transfers relied on collaborations both within organisations and between organisations to overcome associated clinical and logistical challenges. Such findings can help to effectively deploy patient transfers in the future, and increase the resilience and readiness of our health systems in case of new epidemic waves. Differences in policy changes and institutional developments across healthcare systems affect the scope of our findings. This research also suggests future studies in different cultures and contexts.

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## Clinical Costing as a Cost-Component of Value-Based Healthcare: A Systematic Literature Review

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**Context:** The focus at the international level has been based for several years now on the concept of value-based healthcare (VBHC) which is oriented towards the research into the best relationship between clinical outcome and cost incurred to facilitate the full care cycle. In the future, it is expected that the ability of the providers to compare health results and treatment costs will

improve through competitive pricing. However, neither valid comparisons based on value nor the full realization of the VBHC concept can be possible without a shared method of the cost related to the full care cycle. Clinical costing is an activity-based cost estimation method suggested by several international studies as a method through which to implement the VBHC approach. The objective of the present work is to examine how clinical costing contributes to the realization of VBHC.

**Method:** The systematic literature review method was used to analyse how clinical costing contributes to the realization of VBHC. The aim of the work is not to investigate the quantitative effects of the application of clinical costing. The research was conducted on four major databases based on their relevance to healthcare: PubMed, Web of Science, Scopus, B-ON. A comprehensive search strategy was developed to capture the maximum number of relevant articles in each database. All possible combinations of these main keywords were identified through an iterative discussion among the authors: value-based healthcare, value-based medicine, clinical costing, health activity-based costing.

**Results:** In the perspective of the VBHC approach, the aim is to maximize the value for the patient through the evaluation of the outcomes related to the full care cycle and comparing them with the related cost incurred in the full cycle, activating, in this way, a system of benchmarking among health organizations which leads to the continuous improvement of the outcome/costs ratio. With clinical costing, it is possible to estimate the costs of the resources used by the activities that compose the care cycle, to compare it with outcomes. This method appears to be adherent to Porter's theoretical model of VBHC and the one outlined by the "Expert Panel on effective ways of investing in health" (EXPH) of the European Commission, regarding the four examined dimensions: (i) allocative value, (ii) technical value, (iii) personal value, (iv) societal value, identified by the EXPH as the four pillars on which the VBHC model is based

**Discussion:** For the practical implementation of the VBHC model, the estimation of the cost component must be done through a method that adapts well to the theoretical model of VBHC and its purposes. The research has shown how in different countries, to guarantee a correlation between resources-activities and patients and support the sustainability of healthcare systems, standard costs and the actual production costs are defined according to a homogeneous logic using clinical costing, too (i) make the ratio outcome/costs of the full care cycle coherent, (ii) allow the activity of economic and health benchmarking among organizations, (iii) make more transparent in terms of the use of resources and the cost of activities clearer for the health providers.

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## Career Anchors of Physician Leaders

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**Context:** The role of physician leaders is essential in the day-to-day operations of healthcare organizations and particularly during healthcare reforms. This makes it important that leaders are competent and especially interested in leadership. American organizational psychologist Edgar H. Schein's career development theory and the concept of career anchors (CAs) are valuable while

studying leaders and their career development in an aim to guide leaders, find the most suitable individuals for different leadership positions and provide leaders with the best working opportunities. According to the theory, one main CA guides the career decisions of individuals. This study aimed to explore physician leaders' CAs.

**Methods:** The research population consists of 145 specialized physicians in Finland. They had either taken part in leadership education for specialized physicians (30 ECTS) or were specialized in public health. Their mean age was 50.3 years (SD 7.3), 68% were women and the meaningful work experience was 22 years (SD 7.7). Data were collected in autumn 2019 by an electronic questionnaire including questions of the respondents' background, career development and a career anchor questionnaire section. The eight CAs are Technical and Functional Competence (TF), General Managerial Competence (GM), Autonomy and Independence (AU), Security and Stability (SE), Entrepreneurial Creativity (EC), Service and Dedication to a Cause (SV), Pure Challenge (PC) and Lifestyle (LS). The CAs were evaluated by CA mean scores (theoretical range 1-9) and the individual most important CAs (the highest individual CA score). The career anchors were analysed for this study by gender, age and work experience.

**Results:** The highest CA scores were found in LS (mean 4.0 – SD 1.3), TF (3.9 – 1.0) and SV (3.6 – 1.3). Examination by gender reveals that men scored the highest in LS (4.1 – 1.1) and women in TF (4.0 – 1.1) and LS (4.0 – 1.3). The highest score in LS (4.3 – 0.9) was found among the youngest participants (under 46 years old). Scores in GM were higher among the younger (50 years or younger) (3.1 – 1.2) than the older participants (older than 50 years) (2.5 – 1.0). The highest GM score was in the participant group with 10 years or less work experience (3.7 – 0.9).

The individual most important CAs were LS (29% of participants), TF (27%) and SV (21%). GM was the most important CA among 10% of participants and was more common among younger participants. LS was the highest among men (35%) and TF among women (31%).

**Discussion:** Knowledge of one's CAs and awareness of one's professional self-image could help individuals in career planning, choosing jobs and requesting working conditions that enable them to do their best for their organization. In the future, younger generations will have different values as well as hopes and wishes for their future. CAs important to physician leaders in this study were LS, TF, and SV. An LS-anchored employee with to reconcile their work, family, and personal life; LS was an important CA among younger leaders. GM-anchored individuals wish to serve as managers and enjoy problem-solving and working with other people. They also thrive on responsibility and require emotional competence to be successful. In this study, GM seemed to be an important anchor among younger participants and those with less work experience.

Previous research has also shown that this anchor is important in supporting retaining managers in leadership positions.



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## Leaders' and Employees' Perceptions on Remote Leadership in a Health and Social Service Organisation

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**Context:** Health care leadership is in flux due to multiple factors. For example, advancements in communication and information technology have enabled distant working and working with virtual teams. Integration of health and social services has typically meant larger as well as geographically dispersed organisations. Recently, the COVID-19 pandemic caused an urgent need to reconsider work and leadership practices in health and social services.

Mutual trust between an employee and a leader with ongoing interaction and communication has been identified as the most crucial factor in remote leadership according to a literature review. Both employees and leaders brought out multiple expectations on leadership practices as well as wishes on leaders' characteristics in the review. However, the studies included in the review did not focus on health and social care organisations. Therefore, this study aims to find out the perceptions of health and social care leaders and employees on remote leadership.

**Methods:** This case study focuses on one health and social service organisation in Finland. It organises health and social services for 40 000 citizens. The joint municipal authority is owned by two cities and two municipalities. One of the strategic goals of the organisation is to develop remote leadership practices. During 2019–2020 two different data collections have been conducted in this organisation. 1) Altogether five focus group interviews were held focusing on remote leadership. The focus group participants represented both health and social care employees and their leaders (altogether 22 participants). 2) Electronic survey was sent to all employees in the organisation (approximately 1600 employees) in September 2020. The response rates were 16% for employees and 59% for leaders. The survey included questions on leadership practices and attitudes towards remote leadership among other items. The focus group material is analysed by content analysis and survey data was analysed by using relevant statistical methods.

**Results:** The results of focus group interviews indicated that remote leadership has many positive aspects, such as strengthens autonomy and work-related well-being among employees and leaders, it saves time and resources and it enhances multi-professional work in the organisations. All these aspects benefit the clients. However, remote leadership requires renewal and rethinking of leadership practices, employment competencies, (virtual) presence at work and use of IT systems.

The leaders agreed that neither physical distance (87%) nor remote leadership practices (79%) affect trust between leaders and employees. Furthermore, 72% of the leaders considered that they had relevant competencies for remote leadership. Their perceptions fell apart whether they experienced that digitalisation was a burden for them as leaders (49% agreed – 47% disagreed). In addition, the leaders were hesitant whether remote leadership increased uncertainty among the employees or not (43% agreed,

36% did not know). Some statistically significant differences were found concerning leaders' age and educational background.

**Discussion:** Remote leadership practices are still evolving in health and social care organisations and many of them have adopted hybrid leadership models mixing both remote and face-to-face leadership practices. The results indicate quite positive perceptions towards remote leadership though there is a need to develop organisational policies, leaders' and employees' competencies as well as leadership practices.

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## Health Management: Organisational and Individual Determinants of the Outcomes in the Hospital Context

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National Health System (NHS) health organisations are complex and in constant dynamic interaction with multiple factors, including political, environmental, societal, legal, organisational, human resources, patients, and other stakeholders.

Understanding the health system implies a global vision of health, which identifies what is needed to improve the access, quality, cost-effectiveness, and responsiveness of health systems, namely factors related to service delivery, leadership and governance, health system financing, health professionals, health products and technologies, information, and research. This research aimed to identify and characterise the organisational and individual determinants of the outcomes in the hospital context related to satisfaction and economic performance.

The study was developed in two phases and used a mixed methodology, using quantitative and qualitative methods, triangulating, and integrating information gathered through different methods and multi-informants.

The first phase resorted to a quantitative study, data were collected through questionnaires from various sources to better understand and characterise the factors in the study related to organisations, professionals, and patients (32 hospital administrators and clinical directors, 470 health professionals and 768 patients). To test the integrated evaluation model of health organisations, path-analysis was used. In a second phase, the systematised information of the results obtained, and the comprehensive model identified were sent to the specialists to obtain a discussion of the information collected, to elaborate recommendations for the management of health organisations and health management policies, using the Delphi method with 45 specialists in management and public health.

The results obtained can be organised in three groups: 1) in-depth results about the characteristics of the organisational culture of health organisations, quality of life of health professionals, psychosocial risks of work, performance management, professional satisfaction, patient satisfaction and economic and financial performance results in the three health organisations involved; 2) integrated model that includes the strength and sense of the interrelationships among inputs, processes and outcomes in

health organisations; 3) construction of a consensus letter about factors that influence the results and quality of health organisations, suggestions for improving the quality of health organisations and road maps to the future.

The results reveal that the Organisational Culture (OC) presents a positive relationship with the Professional's Quality of Life (QL) and the Performance Management (PM) of the Professionals and a negative relationship with the Psychosocial Work Risks (PWR). There is also a relationship between OC and Patient Satisfaction (PS), Professional Satisfaction (PfS) and economic and financial performance results (EFPR).

It is considered that this study contributes to a deeper knowledge of the factors that influence the quality of health organisations and their results and produces recommendations for health organisations to face the current challenges. A systemic, multidimensional, and integrating perspective was used in the study to characterise and understand the factors, stakeholders and respective relationships and influences in NHS health organisations, at the political, organisational, human resources, results associated to professionals, patients, and economic and financial performance levels.

As a product, we have obtained a comprehensive diagnosis model of the factors that influence the results in health organisations and an integrated evaluation method that allows the regular evaluation and monitoring of NHS health organisations, namely in case of implementation of improvement measures and consequently supporting an evidence-based governance process.

Recommendations and paths for action for managers and the continuous and sustainable improvement of health organisations are also presented and discussed.

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### **Decision-Making Processes for Magnetic Resonance Imaging Technology Procurement: Decision-Makers Perspectives**

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Magnetic Resonance Imaging (MRI) has revolutionised the way images of the human body are acquired. But, although medical devices improve diagnosis and treatment, they are also one of the causes of increasing health expenditure. Thus, the purchase of new technologies and the determination of how and when they should be used are among the most important decisions made in the health care system, and by decision-makers in particular. However, empirical research on this topic is sparse. The present research focuses on the Portuguese health system and sheds light on the characterisation of decision-making processes by those involved in MRI procurement.

In terms of research design, two strategies were chosen, aiming at different objectives. To characterise the decision-making process a mixed method was chosen. Data was collected using a questionnaire (40 respondents), and parallel semi-structured

interviews (27 participants). Both data sets were analysed and merged. Descriptive statistics were chosen as a data analysis strategy, as well as content analysis (categorical analysis). To assess competencies for decision-making a questionnaire retrieving only quantitative data was developed (369 valid respondents), and Exploratory Factorial Analysis was performed, followed by Structural Equation Modelling (Confirmatory Factorial Analysis and Path Analysis).

Results show that steps in the decision process are well-defined. Cost and suppliers' characteristics are seen as the most important indicators to guide decisions. Few studies are performed to support the decision, and these are mostly related to the workload of the Radiology Department. No Health Technology Assessment (HTA) study was used. The decision process is characterised by bounded rationality, influenced by intuition and a consultant decision-maker. The decision is a bottom-up process where information gathering and consensus building is undertaken by a committee, although external consultancy is also used. The reasoning and justification for the selection of committee members are unclear. The process is bureaucratic, time-consuming and long. Patients are negatively perceived as stakeholders in the process. Decision-makers have limited knowledge and training in areas of decision-making, health informatics, health economics and especially HTA. This may limit their ability to utterly understand the future implications of their purchase decisions.

To improve procurement processes, the introduction of HTA in the decision-making process related to medical devices can be fostered. To this regard, some recommendations are made: (1) deepen the present research in particular regarding the elements that influence the strategies and tactics adopted in the decision-making process for the acquisition of medical devices (2) foster the uptake of HTA by decision-makers with the establishment of an HTA in-house unit, able to carry out Technology Assessment (TA) studies considering the hospital context and aiming to inform managerial local decisions on the uptake or disinvestment of medical devices (3) promote a team comprise by not only TA multidisciplinary researchers but also by professionals from the health institution able to carry out HTA studies (3) foster common languages and values to increase uptake of HTA studies.

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### **Collaborating within a Bad Marriage: The Case of Joint Purchasing of Expensive Medicine**

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**Context:** Expensive medicines protected by patent law are a driver of the already pressured healthcare budgets in many countries. Joint purchasing by healthcare providers and purchasers (i.e. health insurers) can increase purchasing power towards pharmaceutical companies and thereby reduce this financial burden. Tensed goals between providers and purchasers, as well as the medical specialist's autonomous and expert position, however, complicate such collaboration. Moreover, the actions of pharmaceutical companies seem to prevent overcoming such tensions. Taking a stakeholder theory perspective, we aim to

better understand purchaser-provider tensions and the influence of pharmaceutical companies on their relationship when jointly purchasing expensive medicine.

**Methods:** We conducted a retrospective, qualitative case study around a pilot initiative in the Netherlands aimed at setting up a consortium for joint purchasing of oligopolistic medicine. In this pilot, the national representative organisations of general hospitals and health insurers jointly negotiated with pharmaceutical companies to define a preferred medicine brand, applied for 80% of a pre-specified patient group. The main stakeholder groups were hospitals, health insurers and the pharmaceutical industry. We held 25 interviews with health insurer managers, medical specialists, hospital managers, hospital pharmacists and pharmaceutical company managers, who were involved in or connected with the pilot. Data was analysed based on the Stakeholder Salience model of Mitchell (1997), and the Stakeholder Synergy model of Friedman and Miles (2002). First, we established relationship salience and synergy between hospitals and insurers and their effect on joint purchasing. Secondly, we analysed how the actions of pharmaceutical companies explained these relationships and outcomes.

**Results:** Health insurers reflect high legitimacy and urgency in their role as a guard of healthcare budgets, yet with limited power to achieve successful joint purchasing. Hospitals, on the other side, show limited legitimacy to control healthcare spending, but high urgency to secure their professional autonomy. Hospitals also hold a powerful position in making decisions on medicine purchasing. The insurer-hospital relationship is classified as contingent-incompatible, due to weak ties and tense financial goals. Pharmaceutical companies easily manage to sabotage the collaboration through a 'divide and conquer' strategy. Examples are lowering hospital urgency by offering discounts to individual hospitals and lowering hospital legitimacy by funding research on new medicines. Pharmaceutical companies further reduced the limited trust between insurers and hospitals by preventing transparency on medicine prices through non-disclosure agreements. As a result of the pilot, a discount of 2% was achieved on the chosen medicine, which was considered too low.

**Discussion:** Society and governments expect a collaboration between providers and purchasers of healthcare services and products to achieve the most health gain per dollar spent. Our study, however, shows that both parties fail to take away their relational tensions to successfully collaborate. Our retrospective analysis of the joint purchasing initiative of expensive medicine not only shows the negative effects of incompatible relationships but also the attenuating effect over time of a third stakeholder (pharmaceutical companies). We hereby improve understanding of joint purchasing in healthcare, as well as enrich knowledge on stakeholder theory. By aligning attention for both costs and health goals and creating transparency on medicine prices, insurers and hospitals may be better able to jointly purchase expensive medicine. Insurers, on their side, may reward hospitals financially for reducing medical expenses. Hospitals and governments are advised to reduce their dependence on pharmaceutical companies, for example, related to research funding.

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## Implementing a Flexible Outpatient Appointment System in Presence of Distinct Urgency-Based Blocks

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**Context:** Long waiting times represent a major issue in outpatient healthcare services. Since 2002, the Italian Government has introduced a maximum waiting time for medical service provision of outpatient visits which differs concerning the level of urgency. Annually, regional healthcare providers must guarantee that at least 90% of the most urgent outpatient appointment requests are delivered within their related maximum time to service (*MTTS*). Four different urgency classes (*UC*) can be distinguished: i) Class U (*MTTS*=72 hours); ii) Class B (*MTTS*=10 days); iii) Class D (*MTTS*=30 days); and iv) Class P (*MTTS*=180 days).

**Methods:** The current appointment system (*AS*) for outpatient visits of one of the largest Italian hospital in the North of Italy is based on a rigid computerised procedure: for each operational unit, there exist a distinct block per urgency class  $i$  ( $b_i$ ), where only appointment requests with urgency level  $i$  ( $AR_i$ ) can be assigned to a slot in  $b_i$ . Under such constraints, the system tends to be too rigid. Consequently, forcing procedures are the only way to meet *MTTS* objectives. To this extent, we develop a flexible outpatient *AS*, where, for each urgency class  $i$ , a distinct  $b_i$  is available, but its block size varies according to the expected appointment requests  $E(AR_i)$ . Specifically, at  $t^*$  days of advance, where  $t^*$  varies according to the urgency level, the number of free slots ( $C_i$ ) in  $b_i$  is compared with  $E(AR_i)$  and, if  $C_i > E(AR_i)$ ,  $C_i - E(AR_i)$  slots are moved from  $b_i$  to  $b_j$ , with  $i \neq j$ . This allows decreasing the number of slots that remained unused and, at the same time, reduce the average patients' waiting time.

**Results:** Moving from a rigid to a flexible *AS* system, simulation results provide evidence of a drop in the average patients' waiting time, especially for U and B urgency classes. We rely on an extensive dataset comprehending outpatient appointments details of five hospital operative units in 2018 and 2019. With the rigid *AS*, the percentage of outpatient visits provided in time is equal to 84.5%. This value increases up to 99.2% with the flexible *AS*. Additionally, the flexible *AS* system minimises the number of non-assigned slots per  $UC_i$ . Different days of advance  $t^*$  are assessed for each  $UC_i$ , varying about operative units' characteristics (i.e., the number of appointment requests and the block capacity).

**Discussion:** This paper contributes to the current literature by introducing a flexible *AS* accounting for urgency levels which daily compares the number of free slots concerning the expected appointment requests. This improves hospital performances, allowing to meet the Italian Government *MTTS* targets. The flexibility of our model allows hospitals *AS* to be adapted to big variations in appointment requests, also concerning new constraints, and to evaluate in advance the rooms of improvements in light of stricter *MTTS* standards.

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## Managing Health Systems Better: Lessons Learned from COVID-19 in the Anglo-Phone Caribbean

Professor Damian Greaves

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**Short Paper:** Health System management in the Small Island Developing States (SIDS), of the Anglophone Caribbean, are inherently intuitive. Intuitive decision making (IDM) is fuelled by the absence of a firmly established culture of evidence-based decision-making, under-resourced systems, outdated legislation and regulation, lack of integration of services across public and private agencies, and outmoded public services.

On the one hand, the COVID-19 contagion found broken systems already in a state of perpetual organisational and managing crises. On the other, it gave impetus to the urgency of engagement in a “whole of government”/“whole of Society approach”, to stem the harmful effects of its impact, and gave rise to improvised innovation in management, as evidenced by unprecedented organisational creativity, driven by a sense of urgency and collective identity at the management/leadership level.

**Purpose:** The purpose of this paper is to explore the leadership/management challenges of health systems in the Anglophone Caribbean, which has been exacerbated by the onset of the COVID-19 pandemic. Given this situation, health systems would have to undergo much-needed transformation.

**Design/Methodology/Approach:** The study utilised grounded theory to collect and analyse data on the experiences and perceptions of 20 senior health managers on the health management/leadership arrangements of health systems from seven ministries of health across the region. It used semi-structured, in-depth interviews comprising open-ended questions. Data analysis comprised open, focused and theoretical coding.

**Findings:** The COVID-19 pandemic has exposed the soft under-belly of the management/leadership of Caribbean Anglophone health systems, and the inadequacies of IDM in the ever-looming complexities perpetuated by the COVID-19 contagion. It locates these inadequacies in the larger struggle of the development of the SIDS of the region and the political vagaries over which they preside. There is a dire need and opportunity to transform and improve the management leadership ethos of these health systems, exacerbated by the pandemic. COVID-19 also highlighted instances of improvised innovation and change management in the face of urgency, resource scarcity, and severe public scrutiny.

**Originality/Value:** There is a dearth of literature on Caribbean Anglophone SIDS health system management/leadership. This paper is concerned with the approach to health system management/leadership across island states and lends compelling support to its core function and its role in the quality delivery of health services, the wellbeing of populations served, and individual health status. It also provides directions to policy makers, and senior officials of these systems, as a gateway to a transformative health system management/leadership agenda.

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## Positioning Social Prescribing in the Scenario of Community-Based Interventions for the Transformation of Mental Health Services for Children, Adolescents and Young People: A Review

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**Context:** Social Prescribing is defined as a non-clinical and community-based service that addresses social needs through social solutions. Originated in the UK for isolated and chronic-ill elderlies, the NHS has recently expanded Social Prescribing as an all-age model, including children, adolescents and young people (CYP). From the first results, it is clear that Social Prescribing for CYP, as for adults, is a mental health and well-being service (Bertotti, 2021). This paper aims to understand how social prescribing for adolescents and young people can be positioned in the current scenario of transforming mental health services as a community-based intervention for CYP.

**Methods:** A narrative review through systematic search has been developed. The systematic search has been conducted in an electronic database (SCOPUS and PubMed) and integrated with grey literature capturing the material from 2000 to 2021, through keywords as “adolescent\*” or “young people” and “mental health” or “wellbeing” and “community-based interventions” or “community-based services” or “integrated care”. Title/abstract and full-text review was conducted. After screening 275 texts at the title/abstract level and 119 at full-text level, including 8 papers that were found through citations and were not part of the initial results, a total of 36 papers have been included. Papers have been analysed through a framework based on broader literature that addresses the main challenges called out for youth mental health services innovation and community-based interventions: access, youth-friendliness, stigma-free, youth participation, care ecosystem, sustainability.

**Results:** Several models and policies have been found that address the challenges and need to reform statutory services of CYP mental-healthcare systems. Countries as Australia, Ireland, UK and Canada have developed different models of community-based interventions, that share common principles and are mainly positioned as integrated care services in the primary care tier to promote early detection of at-risk adolescents. Social Prescribing shares common principles and focuses on the same challenges addressed by the other models: how to make services accessible, how to design a youth-friendly and stigma-free service, how to promote youth participation, how to integrate the care ecosystem around CYP and make services sustainable. The main difference is based on the nature of the models, where Social Prescribing focuses mainly on social determinants of health with a non-clinical approach. Another important element is the role played by the Link Worker as an activator of the empowerment process of CYP through the recognition and activation of community resources. No similar role has been identified in other models.

**Discussion:** Social Prescribing, with its de-medicalisation and non-diagnosis centred principle, addresses an implicit gap in the current models and innovations of CYP mental-healthcare

systems which is the potential of developing mental wellbeing through a non-clinical path and a relationship with the community, that for some people can work as an only solution. It has the potential to shift from the effort on how to make mental health services more accessible for CYP to transform how mental wellbeing is addressed and shared in the community. The role of the community in community-based interventions is still unclear as well in Social Prescribing. Especially when focusing on social determinants of health in CYP mental health, further research should look at the impact of services and models moving from on the individual as much as on the community and structural level.

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### Gender as a Driver of Healthcare Sustainability: A Systematic Literature Review

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**Content:** Nowadays, European healthcare systems are called to face important challenges linked to the sustainability of healthcare, both from an economic perspective and in terms of the quality of the healthcare services provided. The ability to ensure clinical and organisational appropriateness, effectiveness and safety for all, regardless of gender and then of the biological and socio-cultural characteristics of individuals, will depend on the propensity of health systems towards ethical and sustainable practices. Indeed, to be truly sustainable and to meet the different interests and needs of all stakeholders, health systems should adopt a wide definition of sustainability, which considers economic, environmental, and social aspects.

**Method:** To achieve our goal, we conducted a systematic literature review (SLR) to understand what has been developed so far in the field, to highlight the possible evolution of studies in the gender medicine area and to strengthen awareness of the importance of encouraging prevention, education and information programs to achieve the sustainability goal. There are three main reasons for choosing this methodology. Firstly, SLR allows for the generation of an independent view on the chosen topic. Secondly, the systematic nature ensures the reproducibility of the process and results. Finally, SLR has the potential to provide an opportunity to bring together previous literature and build a solid theoretical foundation for future research.

The literature analysis covers the period 2016–2020 and was carried out using the Scopus database. To provide keyword and content analyses and present our data synthesis results in line with several descriptive bibliometric analyses, we adopted VOSviewer software.

**Results:** Although studies in the field of gender medicine and the impact of socio-cultural characteristics on the sustainability of the health care system have not yet exploded, the trend of literature on the topic is increasing. We find that there has been a 133% increase in studies on the topic over the analysed period. Our results highlight two main streams of research. Regarding the first one, the relevant trait is to provide high-quality health care

to meet the needs of patients, with specific reference to gender aspects, and enable an improvement in the relationship between patients and physicians. The second strand of research focuses on aspects of health care organisation and planning, illustrating that a gendered approach in clinical practice can significantly contribute to health promotion by improving the appropriateness of care, benefiting both patients and the sustainability of the health service.

**Discussion:** Starting from the assumption that greater attention to gender would allow to correctly reinterpret pathologies, define prevention and treatment activities, Gender Medicine would contribute to the improvement of health, to a better allocation of economic resources and therefore to a cost-effectiveness optimisation. The provision of high-quality care will depend on the ability of health systems to become more resilient and sustainable. In this sense, sustainable health care translates into a combination of three key factors: quality care provided to patients, responsible financing, and minimal environmental impact. Regarding the first aspect, the main priority of healthcare institutions is to provide adequate treatment to patients. Second, regarding financial balance, all institutions, to be sustainable, must be able to cover all costs with their revenues. Finally, concerning the environmental aspect, healthcare professionals must consider the environmental impact of their work, in terms of emissions, waste and disposal.

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### Public Perspectives on Using Societal Values in Oral Healthcare Decisions

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**Context:** When resources are limited and demand exceeds supply, allocation becomes a problem. Making decisions regarding resource allocation in dentistry should involve the public, who often pay for care through patient charges, health insurance and/or taxation. The RAINDROP (Resource Allocation In NHS Dentistry: Recognition of Societal Preferences) study undertook an evaluation of 15 dental services to examine which procedures should be provided by NHS dentists in England by applying the resource allocation/priority setting tool of Programme Budgeting Marketing Analysis (PBMA) whilst also incorporating an established methodology of Willingness to Pay (WTP) to systemically gather views from a representative sample of the public. This study was the first to use methodology directly incorporating public values into the decision-making process using a questionnaire issued to a representative sample of the general public, asking for societal values for 15 dental services. After the evaluation took place resource allocation decisions were made by a panel, including public health representatives, dentists, academics, resource managers and public representatives. This paper evaluates the new methodology using the perspective of the participants who took part in the questionnaire; how they felt their views were

incorporated into the decision making process and their opinions on the decisions made by the panel.

**Methods:** Members of the public who answered the questionnaire regarding dental services were approached to take part in focus groups. Three focus groups took place in two major cities in England, one in the North and two in the South. The sessions used an evolving topic guide, were audio-recorded and transcribed. Analysis was undertaken using the Framework approach.

**Results:** The results indicate those who participated in the focus groups were satisfied with their representation and the way societal values were used in decision making. The themes identified included: transparency, instinct, representativeness, public involvement in decision-making and trusting dental professionals. Participants felt those who have experience in commissioning dental care would fully understand the treatments/implications and were in a better position to make decisions. Participants understood the questionnaire and found the process convenient.

**Discussion:** The results offer validity to the overall methodology proposed for resource allocation for NHS dentistry in England, using a combination of PBMA and WTP, and has the potential to be applied across the wider health sector. Furthermore, the results further encourage the use of societal values to ensure that health-care resource allocation is patient-centred.

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### Breast Cancer Patients' Attitudes toward Digital Mental Health

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**Context:** Digital Mental Health is considered to be an efficacious and cost-efficient strategy to provide mental healthcare to cancer patients, particularly in settings where the capacity for psychosocial services is limited. However, little is known about Breast cancer patients' attitudes toward Digital Mental Health. Thus, this study aimed to explore Breast cancer patients' attitudes toward Digital Mental Health and to investigate factors associated with these attitudes.

**Methods:** A cross-sectional study with 336 Breast cancer patients from five Portuguese hospitals. Attitudes toward DMH, depression, anxiety, Health-related Quality of Life, socio-demographic, clinical and internet-related variables were assessed using validated self-administered questionnaires. Spearman rank correlations,  $c^2$  and multiple regression analyses were computed to explore associations between attitudes and collected variables.

**Results:** Breast cancer patients held a neutral stance toward Digital Mental Health overall, but statistically significant associations were found between attitudes and Depression; and Emotional, Cognitive and Body Image functioning. Social networks use, online health information and mental healthcare seeking, Digital Mental Health literacy and remote healthcare use were positively associated with attitudes. There were no statistically

significant associations between socio-demographic or clinical variables and attitudes towards Digital Mental Health.

**Conclusions:** Higher psychological distress and lower levels of functioning are associated with more positive attitudes toward Digital Mental Health. To promote acceptance, Digital Mental Health programs should prioritise Breast cancer patients fulfilling these criteria. Awareness campaigns could be a strategy to overcome attitudinal barriers.

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### Establishment of a Hospital-Territory Computer Network for the Management and Care of Patients in "Pediatric Palliative Care" in Umbria

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**Context:** Umbria is a region of Central Italy with about 800.000 inhabitants, with 2 Major Hospitals and 2 Local Health Care Services. The pediatric population is estimated to be 129,700 (14.9% of the total) including several chronic onco-haematological, neurological, respiratory, metabolic pathologies, that require great effort from the caregivers for access to a personalised care path, which ensures the shortest possible stay in care facilities. This project aims to build a network between the Pediatric Hospital and Local Facilities, to guarantee a path of diagnosis and care for the children inside the category of "palliative care".

**Methods:** A network needs a punctual and capillary monitoring system that gives information in real-time to all the professionals involved; for this reason, the Maternal Child Department of the Hospital of Perugia plus other faculties involved have drawn up a digital form for the census of patients belonging to the category of "palliative care", that is currently on follow up. All pathologies have been classified according to ICD9-CM codes and then imported into the LOG-80 Computer System, to which all faculties have access. The data resulting from this first analysis will allow us to estimate the amount of population that needed this kind of assistance in the last two years. Currently, the visits for pediatric palliative care provided for patients admitted to the Hospital are monitored in near real-time through the "Company Dashboard".

**Results:** The database will be fed, both by hospital specialists and family paediatricians, and this will constitute an information system useful to create strategies to improve local services. Each point of the network will have access to the information through a web data visualisation system, which will be updated daily. Finally, for admitted patients only, through the data model built with the Qlik Sense software, it will be possible to connect therapy, consultations, radiological and laboratory examinations, surgical interventions and vital parameters for each hospital admission.

The path resulting from the above can provide a complete view of the patient to the faculties involved. The following step will be to export the model to the local services directly, involving family paediatricians and services of home palliative care to provide a personalised electronic file. Through this dossier, containing all the patient's needs, we will better address present and future necessities.

**Discussion:** The natural evolution of current medicine is towards greater integration between hospitals, places of increasingly specialised care, and local facilities, outpost to guarantee basic care and improve quality of life for patients. The COVID pandemic has accentuated this need for integration, exposing the criticality of our NHS at the time when hospitals had to stop providing most treatments for chronic diseases. Especially in the palliative and even more in the pediatric palliative field, the “quality of life” and “highly specialised care” find a need for interpenetration. This project aims to lay the foundations for the response to this need by increasing the level of precision of care and the coordination among faculties, reducing the hospitalisation while providing home care, with the final goal to significantly improving the quality of life of patients and their families.

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## Determinants of Hospital Delayed Discharges in Portugal

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**Introduction:** Delayed hospital discharge is a phenomenon identified since the 50s of the last century, with studied effects on patients' health status deterioration and health system's functioning implications, resulting in high social and economic costs. This study aims to study its extension and determinants for the Portuguese National Health Service (NHS).

**Methodology:** Data results from a survey applied to NHS hospitals in four different years. The analysis focuses on the differences between regions and hospital differences through univariate analysis and verification of explanatory variables, using panel data and multiple linear regression.

**Results:** 3912 delayed discharges and 303180 hospitalisations were identified, corresponding to 6.7% of hospitalised patients and an average length of 77.5 days. About three-quarters of patients are over 65 years of age. Waiting for access to the national long-term care network (RNCCI) is the leading delayed discharged cause (58%), but family-related inability answers for the length of stay (29,8%). The most differentiated general hospitals and hospitals with more than 600 beds have more extended hospital stays. Amid the number of RNCCI beds increases the number of delayed discharges, it reduces their average length.

**Discussion/Conclusions:** The study points to concrete clues about regional differences and determinants that increase delayed discharges. The data obtained will support the definition of health policies and the prioritisation of measures.

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## The Occupational Therapist and the Discharge Support Intervention Program

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Hospital discharge planning is a hugely important part of any hospital admission. It plays a key role in the smooth transition from hospitalisation to the home environment, which is only possible when adequate clinical and community support services are ensured. It represents the link between hospitals, community-based services, organisations, families and caregivers. The purpose of discharge from the hospital is to support the client so that he or she can return home as independently as possible, and to identify or anticipate any difficulties/barriers that the client may find, taking into account his or her occupational performance and the activities that are most significant to him or her.

The importance of Occupational Therapy (OT) at hospital discharge, why OT assessments at hospital discharge?

Occupational Therapy assessments at discharge are primarily aimed at supporting the client to return home as independently as possible. If the client has a sudden change in occupational performance dysfunction, the hospital can and should refer him/her for OT, to identify possible problem situations that may disturb the discharge process. The evaluation with an OT allows the identification of supports and strategies to optimise the client's independence and recovery. Its outcome should be reported in a report and explicitly report occupational performance dysfunction and existing supports at home.

Assessments in OT may include assessment of activities of daily living (ADLs), mobility, transfers (chair, car, bed, toilet), existing supports, cognition, personal care, among others. The OT may propose the use of short- or long-term technical aids, modifications or other recommendations for safety and home precautions, making the transition from hospitalisation to home easier, faster and safer, anticipating any difficulties the client may have when at home.

According to the client's occupational dysfunction, the OT will evaluate his home environment, and make recommendations regarding fall prevention, mobility (bathroom, kitchen, bedroom, living room) and self-care ability.

The OT can also assess pre-discharge accessibility while the client is still in the hospital. This service will assess the home and make recommendations to facilitate safe discharge. It may train the client, but also the caregivers, recommendations and advice on the use of support products and teaching fall prevention strategies, making environments safe and accessible, to ensure the sources of the most cost-effective solutions available taking into account the care needed by each client.

It is also important to mention that at the mental health level, home caregivers can make environmental changes if necessary, but their intervention is essentially based on strategies and training in the performance of activities of daily living so that the client can feel safe and autonomous in his performing.

Assessment is done using formal and informal methods, interviews, observation, standardised and non-standardised tests. The client and caregivers participate as much as possible in decision-making throughout the assessment process.

Intervention is primarily aimed at maximising the client's ability to be independent, minimising injuries, reducing periods of disability, and decreasing periods of hospitalisation.

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## Untangling the Interrelatedness within Integrated Care Programmes for Community-Dwelling Frail Older People: A Rapid Realist Review

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**Context:** Integrated care programmes (ICPs) for community-dwelling frail older people work for some, but not for others. Why and how ICPs work, is rather unknown because the 'mechanisms' and the 'context' often remain underexposed. The objectives are 1) to identify the relationships between the context in which ICPs are applied, the mechanisms by which ICPs do (not) work, and the outcomes resulting from this interaction, and 2) to analyse to what extent the World Health Organization framework on integrated people-centred health services (IPCHS) is applied in ICPs.

**Methods:** A rapid realist review (RRR) was conducted to identify the mechanisms of ICPs that operate in particular contexts to generate outcomes. Peer-reviewed (reviews and meta-analyses) and non-peer-reviewed literature reporting on integrated care for community-dwelling frail older people ( $\geq 60$  years) were included. Selection and appraisal of documents were based on relevance and rigour according to the Realist And Meta-Narrative Evidence Syntheses: Evolving Standards (RAMESES) criteria. Data on context, mechanisms, and outcomes were extracted. Per source publication, context-mechanism-outcome configuration(s) (CMOC(s)) were aimed to be identified. Factors were categorised into the five strategies of the WHO-IPCHS framework.

**Results:** 27 papers were included. The two most prevalent WHO-IPCHS strategies as part of ICPs are "creating an enabling environment", followed by "strengthening governance and accountability". For ICPs to demonstrate positive effects on the functionality of older people, the satisfaction of older people, informal caregivers and healthcare providers (HCPs), and a delayed placement in a nursing home, it is essential to establish multidisciplinary teams of competent HCPs providing person-centred care, closely working together and communicating effectively with other stakeholders. Heterogenous effects were however found for hospital-related outcomes, quality of life, healthcare costs, and use of healthcare services. Older people and informal caregivers should be involved in the care process to get a better picture of the patient's wishes and needs, and shared decision-making should be established. Financial support, efficient use of information technology, and organisational alignment were found essential.

**Discussion:** This study shows that ICPs for frail older people are still in development, as most ICPs do not address all five WHO-IPCHS strategies. To optimise ICPs for frail older people the comprehensiveness of the WHO-IPCHS framework and the interaction between context items, mechanisms, and outcomes should be taken into account from different perspectives (system, organisation, service delivery, healthcare provider, and patient).

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## Exploring the Factors Causing Discontinuity of Chronic Care

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**Context:** As welfare and life expectancy grows worldwide, environment and lifestyle-induced chronic diseases become increasingly common. Chronic diseases are non-curable, their symptoms vary, and deterioration of health could be prevented with timely interventions. Constantly varying care needs are challenging to fulfil leading to unintended care discontinuity and a decrease in care quality. Discontinuity of care is defined as the non-realisation of intended care such as a care plan. This study aimed to explore factors leading to discontinuity of care among chronic abdominal patients.

**Methods:** This research was conducted as a single-case study, the case company being a major Finnish private healthcare provider offering primary and secondary healthcare services to private, occupational healthcare, and insurance customers, and to the public sector. A holistic view of the research phenomenon was achieved through a mixed-methods approach using semi-structured interviews as the main data collection method. Data saturation was reached with ten interviews in total. Primary care physicians (n=4), nutritionists (n=3), and nurses (n=3) were interviewed, as chronic abdominal patients are likely to receive care from these professionals. Patients' perspective on care needs was sought through a patient survey (N=71) with the Finnish Inflammatory Bowel Disease Association, which simultaneously acted as a way of triangulation. The analysis was done using grounded theory.

**Results:** We find four key drivers for discontinuity of chronic care: patient's situational (1.) and internal psychological (2.) challenges, which may lead to a voluntary disenrollment from care, and healthcare system-related caregiver (3.) and technological (4.) challenges, which may lead to involuntary care discontinuity or act as an incentive for voluntary disenrollment. Patient's situational challenges include changes in life, radical life events, and financial or schedule related reasons which healthcare organisations have no control over. The patient's internal psychological challenges include fear, lack of motivation, misconceptions, and uncertainties, which could be prevented or fixed with adequate information. Caregiver challenges include suboptimal resource allocation during appointments and incoherent ways of working between professionals leading to care quality inconsistencies. Technological challenges relate to digital development, which



can be siloed and uncompleted, and users' ability to use a digital tool for example due to deteriorated eyesight or lack of the right technology.

**Discussion:** Discontinuity of care decreases care quality, care outcomes and quality of life, as intended care is not realised, and the patient may even go untreated. We suggest that these concrete solutions helping to mitigate discontinuity of chronic care are implemented into practice:

- Enabling continuous access for chronic patients to continue their care without having to start the care process from the beginning each time their condition changes.
- Maintaining a continuous care relationship which lowers the threshold for starting or continuing care.
- Care plans should be consistently created, followed, and updated for every patient enabling continuous monitoring and timely interventions.

Our research provides a starting point for healthcare decision-makers and developers to analyse their environment and systems for further development of chronic care. Further quantitative research on the relevance of challenges in chronic care is needed.

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### Towards Platform Solutions in Care Coordination - Identifying Occurrences of Fragmentation in Parkinson's Disease Care

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**Context:** Preventing fragmentation of care pathways for chronically ill patients requires integration and coordinated actions. This study focuses on the identification of fragmentation occurrences in Parkinson's disease (PD) care in the Finnish healthcare context. Fragmentation is defined as a situation where the totality of care is divided into several parts that do not communicate or adjust to each other. As the incidence and severity of PD symptoms vary highly, the coordination of care requires special attention. We identified fragmentation from a multi-provider perspective to design socio-technical solutions for integration and coordination.

**Methods:** A constructive research methodology is used. First, a detailed description of an illustrative PD patient journey was explicated through expert interviews and national Current Care Guidelines. Building on this investigation, the key care participants were identified and their roles, relationships, and communication practices regarding PD care were mapped. Second, informants (N=10) were selected using theoretical sampling to cover the relevant care participant types, representing public, private, and third sector service providers. Data was collected through individual and semi-structured interviews around four main themes: 1) emergence of care needs; 2) shift of the caregiving responsibility (hand-over in); 3) decision-making before care tasks (set-up); and 4) the transfer of caregiving responsibility (hand-over out). The data was processed with simultaneous and thematic data analysis including continuous comparison. Two focus group (N=8) discussions were arranged to validate the initial insights.

**Results:** Our results indicate that fragmentation in PD care occurs in four themes: 1) creating, utilising, and communicating the care plan; 2) locating and updating prescription information; 3) patient's motivation and compliance to care; 4) communication from one caregiver to another, and from caregiver to the patient and their family members. Unifying issues across these themes are the lack of system-level integration, and the insufficient use of automated decision-making support and communication. Care plans do not update automatically; manual updates, searching, and communication of care plans may result in the loss of relevant information. Furthermore, decision-making is clouded by information overflow and multi-channel forms, rendering the overall picture of a patient's condition unclear. From the patient's perspective, this confuses communication between the parties involved and hinders the implementation of the care plan.

**Discussion:** Building on the identified fragmentation themes, we can develop solutions that support both the integration of PD care services and systems, and coordination between PD care participants. In particular, we believe that platform business economy offers means to tackle the reviewed challenges. A single service provider approach is not adequate, but an interdisciplinary network offered by the platform ecosystem is needed. Complementary roles and a shared logic are central in the development of the proposed platform solution that would automatically update patient records with actionable and real-time knowledge to alleviate fragmentation. This would make the care plan visible and intelligible to the necessary parties. The responsibilities of the platform cover the facilitation of PD care plans, maintaining up-to-date information, and simplifying information that supports decision-making. Further research on the governance structures of such platform ecosystems in healthcare is needed.

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### Reforming Care for People with (Multiple) Chronic Conditions: What Matters to Them?

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**Context:** Many countries are reforming the organisation and delivery of chronic care because of their growing populations with multiple chronic conditions (multimorbidity). Awareness has raised that the comprehensive needs of people with multimorbidity call for alignment of services that go beyond (single) disease management programmes and single-disease chains of care. To guide the development and implementation of person-centred integrated care for people with multimorbidity, the Integrated Multimorbidity Care Model (IMCM) was developed as part of the European Joint Action CHRODIS. We explored to what extent the model reflects the priorities and preferences for care of Dutch primary care patients with multimorbidity.

**Methods:** We conducted a mixed-methods study, consisting of two parts. First, we organised focus groups and held telephone

interviews with 20 adults with multimorbidity recruited via general practices throughout the Netherlands. Each participant was asked to prioritise maximally three of the sixteen components (elements of person-centred integrated care) proposed by the IMCM and to explain her/his priorities, to get an understanding of underlying values. Subsequently, we conducted a survey among 863 patients with multimorbidity (registered in 14 general practices) to collect information about their preferences regarding the practical implementation of the prioritised components in chronic care provided by Dutch general practices and their local partners. Focus groups and interviews were transcribed and thematically analysed; survey data were analysed using descriptive statistics.

**Results:** Participants in the focus groups and telephone interviews gave most priority to (in order of assigned importance) 1. having one health record shared with all care providers involved in their care, 2. regular comprehensive assessments of their health problems and related needs, 3. being supported by care providers to self-manage their chronic conditions, 4. care coordination, and 5. shared decision-making with their main care professional(s). Despite the substantial support for these components, participants in both the qualitative and quantitative study made different trade-offs, for instance in the case of sharing medical data they weighed the value of continuity and safety of care versus the value of privacy differently. Participants in the survey showed little interest in self-management support from primary care nurses; the latter being at odds with current policy to give nurses a greater role in supporting self-management of people with chronic conditions.

**Discussion:** The relevance of the IMCM components was confirmed by Dutch primary care patients with multimorbidity. The model shows which elements of care need to be addressed in caring for people with multiple chronic conditions; it does not specify how this should be done, as this will depend on local resources and patient preferences. Care preferences of people with multimorbidity are likely to be context- and culture-sensitive. We, therefore, recommend conducting similar studies in other countries and settings as well. Moreover, we advise local care providers to explore the care preferences of their patient populations with (multiple) chronic conditions, as practice populations may differ (e.g. age, ethnicity and socio-economic situation), which not only impact the population needs but probably also the values and preferences for care. These insights could then be used to develop tailored integrated care at a local scale.

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## From Design to Practice: People-Powered Integrated Health

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Health and social service organisations around the world and in Europe specifically are moving towards integration and becoming more people-centred. But there is no one-size-fits-all approach. Effective integration requires significant planning,

cross-sector collaboration and alignment of people, policies, and practices for better outcomes.

Integration is context-driven; it requires trusting relationships, resources and unity across health and social service ecosystems. Among other requirements, clear expectations are needed. International standards of excellence provide a common language, expectation and focus for teams as they move through phases of integration. Standards built with policy makers, health system decision-makers, providers, patients, caregivers, and academics help establish trust and open the door for collaboration.

Building on the introduction of standards, deeper integration requires leaders to manage across sectors and organisational boundaries, so that people can receive coordinated and comprehensive care at the right time, by the right provider, in the right place.

So how do leaders tackle integration? What is the first step? Who needs to be involved? What are some of the tools that are available to help organisations in Europe transition towards integration of care?

In this session, attendees will learn how to apply a standards framework and customised tools to guide healthcare organisations in their integration journey. In addition, the capacity to enhance healthcare services using an integrated approach to advance quality will be discussed.

Specifically, under the more consolidated standards and assessment programs framework, the session will reference distinction and assessment programs for integrated trauma and stroke networks that have been implemented by several prestigious European healthcare organisations.

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## Navigator: On-Line Clientship Profiling Helps to Tailor Integrated Care

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**Context:** Needs for health and social care vary among people with chronic conditions and multimorbidity. To help these people and their care professionals to plan individual care that meets these needs, a clientship model distinguishing different clientship profiles and matching care pathways have been developed and implemented in Finland.

This paper aims to describe the Finnish clientship model and the corresponding online tool (Navigator) for assessing a person's clientship profile and potentially matching care pathways; and discuss how clientship thinking can help to tailor health and social care to people's needs, as such improving person-centredness and care integration.

**Methods:** The Finnish clientship model is based on two dimensions: 1) the medical complexity of a client's conditions and

2) the personal and social resources the client has to manage in the everyday life. Combining these dimensions results in four clientship profiles: self-management, community, co-operation and network profile. Different client profiles point to different needs for (integrated) care.

The client's condition and resources are assessed by the client and care professional in interaction, using the online Navigator tool (in Finnish 'Suuntima'). The tool includes questions for the client on her/his resources and questions for the care professional on the complexity of the client's medical care and services needed.

The two-fold assessment results in a clientship profile, with a suggested set of care interventions and services (e.g. for care delivery, coordination and self-management) that fit the profile of the client. The care pathways are meant to guide individual care planning; they are not intended to be prescriptive but rather to help the client and care professional to discuss potential options for (self-)management and treatment.

**Results:** The clientship model and the Navigator tool have been implemented in several regions in Finland for several years. Experiences gathered by using this approach in different care settings show benefits for both clients and care professionals: 1) The client's voice is heard and her/his resources are made visible. 2) Joint assessment creates common language: the client, family/close others and care professionals of different disciplines and organizations create a common understanding of the client's situation. 3) Care pathways matching different clientship profiles are concretized, considering individual resources, aiming rather to equity than equality of care. 4) Scarce resources can be allocated to clients with the highest needs, as such contributing to cost containment by avoiding overlapping and unnecessary services. Currently, two scientific studies are in progress, one focusing on the feasibility and validity of the Navigator online tool (Riihimies et al. 2020; 2021), the other one on the effects of profiling clients on quality and costs of care (Mäkinen, forthcoming).

**Discussion:** Clientship-based care pathways can be regarded as a concrete "manifestation" of person-centred integrated care. Clientship profiling helps professionals to offer a care pathway that fits the needs for care and support of a specific client. The aim is seamless and continuous care, based on the client's medical complexity and personal/social resources. Most important is that the client is self-assessing the resources (she/he knows best) and that both the assessment of the medical complexity and the resources are discussed with the client so that the client is fully involved. This is crucial, considering that professionals often 'think alone' and make an 'assessment' in their minds, usually not explicitly telling the client. For the future, more evidence is needed to validate the approach and the underlying care pathways.

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## Adherence to COVID-19 Prevention Measures and Willingness to Vaccinate in Greek adults: The Role of Health Literacy

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**Context:** COVID-19 has rapidly emerged as a major threat to public health. Low Health Literacy (HL), mental stress and poor life satisfaction are significantly associated with serious negative health outcomes. The study aimed to investigate the main factors determining: a) the level of adherence to COVID-19 prevention measures and b) the willingness to vaccinate against COVID-19, among Greek adults.

**Methods:** This cross-sectional, population-based study was conducted in Greece. The participants were recruited from the 21<sup>st</sup> of February to the 3<sup>rd</sup> of April 2021, during the lockdown period and the 3<sup>rd</sup> COVID-19 wave. Participants were invited to take part in an online survey and the snowball sampling method was employed. An online form of the specifically designed questionnaire was distributed by email and Facebook<sup>TM</sup>. A total of 2029 adults (75.3% women and median age 38 years) participated in the study. Participants completed questions about sociodemographic and anthropometric characteristics, adherence to COVID-19 prevention measures and willingness to vaccinate against the disease. A specifically designed seven items questionnaire related to participants' implementation of COVID-19 prevention measures, was created and the instrument had a Cronbach's coefficient of 0.796. Health literacy levels, perceived stress levels, life satisfaction and adherence to Mediterranean Diet (MD), were also assessed. Multiple linear and logistic regression analyses were employed, respectively, to evaluate a) the main determinants of adherence to COVID-19 prevention measures and b) the main determinants of the willingness to vaccinate against COVID-19.

**Results:** The median (IQR) score of COVID-19 adherence to the prevention measures tool, was 23.08 (3.83) (range 1–35). Concerning the willingness to vaccinate, 57.5% reported that they are willing to vaccinate against COVID-19, 12.1% reported that they did not want to vaccinate and 30.4% were undecided. According to the linear regression analysis, women, obese participants, those with a chronic disease and those willing to vaccinate, were positively associated with higher adherence to prevention measures. Age, HL, satisfaction with life and adherence to MD were positively associated with higher adherence. Logistic regression revealed that being a woman decreases the odds of having the willingness to vaccinate against COVID-19. Also, higher age, education and adherence to measures, increase the odds of willingness to vaccinate.

**Discussion:** The current study provides an urgently needed, better insight into the factors affecting adherence to the prevention of COVID-19 and willingness to vaccinate against the disease. Throughout the pandemic, health literacy has manifested itself as an essential, potentially life-saving determinant of health and health-related behaviours. In the current study, older age, health literacy levels, life satisfaction levels and adherence to MD, were positively associated with higher adherence to the prevention measures of COVID-19. Women were less willing to vaccinate but their reported adherence to the prevention measures,

was statistically significantly better, in comparison to men. The results of the study could be used by practitioners, researchers and policy makers working in the field of prevention and management of COVID-19, in the community.

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### Assessing the Impact of Anti-PD-1/PD-L1 Inhibitors on Cancer Care Health and Budget in Ireland

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**Background:** In Ireland, the incidence of cancer was estimated to be 30,272 in 2018 with approximately 9,621 deaths. Over the next five years, the incidence of all invasive cancers is expected to increase by 39% in males and 27% in females. Despite chemotherapy being considered the standard of care in many oncology diseases, it is associated with high levels of toxicity. The introduction of immunotherapy treatments in oncology has revolutionised cancer care, offering improved health outcomes in a range of tumour types. Many treatment options with the potential for use in several cancer types has led to concerns around the long-term affordability of these products. The objective of the study is to estimate and inform current discussion around the potential public health and economic impact of PD-1/PD-L1 inhibitors in Ireland.

**Methods:** The Health Impact Projection (HIP) model estimates the key clinical health and economic outcomes of PD-1/PD-L1 inhibitors in eight high incidence cancers: adjuvant melanoma, metastatic melanoma, first-line non-small cell lung cancer (NSCLC), metastatic triple-negative breast cancer, Neo-adjuvant triple-negative breast cancer, head and neck cancer, urothelial carcinoma and renal cell carcinoma, over a five-year period (2020–2024) compared to the SOC treatments. SOC includes chemotherapy, immuno-oncology treatments not part of the anti PD-1/PD-L1 class (e.g. ipilimumab) and radiotherapy. It includes an assessment of the relative health benefits such as life-years gained, and utility-adjusted life years gained while drawing on budget impact analysis for its structure and methods. The HIP compares the economic and health outcomes in two scenarios; a world without anti PD-1/PD-L1 treatments, where patients are treated with SOC, to those obtained in a world where patients are treated with a mix of SOC and anti PD-1/PD-L1 treatments.

**Results:** The model shows that over five years, the clinical benefits offered by the introduction of anti PD-1/PD-L1s include an additional 3,194 life-years, 2,411 progression-free life years, 2,638 quality-adjusted life years and the avoidance of 92 adverse events. PD-1/PD-L1 inhibitors produce an average annual budget impact that is equivalent to 0.32% of total healthcare expenditure. Amongst this figure is a reduced burden of indirect costs and end of life costs – both of which fall with anti PD-1/PD-L1s on the market. For two high incidence indications, 1L NSCLC and metastatic melanoma, incremental five-year economic impact per anti-PD-1/PD-L1 treated patients were €88,505 and €11,980 respectively.

**Discussion and Conclusion:** Ireland faces uncertainty in cancer care with pressure to reduce costs – the HIP helps demonstrate the value of anti PD-1/PD-L1s. Problems stem from a healthcare system that is fragmented and orientated towards dealing with acute conditions. Anti PD-1/PD-L1s are predicted to improve outcomes in Ireland with PFS gains being the largest. In 2020, the budget impact of this class in Ireland is expected to represent a somewhat significant portion of total expenditure on cancer medicines but a small portion of total healthcare expenditure. The increasing number of new indications will also require additional planning to ensure continued access to such innovative treatments. By projecting budget impact over five years, this model should help inform multi-annual budget planning for innovative oncology medicines. This model informs planning by helping quantify the impact of immuno-oncology treatments on health and budget in different scenarios.

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### Delivering Value and Improving Care with Primary Care Estate

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**Context:** The challenges facing the UK's health and care system are well understood: how to safely and effectively serve an ageing population with multiple and long-term health needs within the context of financial and workforce constraints.

Primary care estate in the UK is no longer suitable for satisfying all current demands and the long-term plan for the future of health and social care in the UK. Primary Healthcare Properties (PHP) has worked with Good Governance Institute (GGI) to assess the options available to health system leaders in creating an effective primary care estates strategy and capital plan to deliver it.

One area this is exploring is whether a Third Party Developer (3PD) scheme could work. This would mean private sector partners acting as both contractor and developer, as well as taking on the role of a long-term strategic partner and sharing the risk associated with the venture with NHS commissioners and organisations.

**Methods:** This qualitative analysis of the effectiveness of existing primary care facility arrangements alongside the needs of health and social care in an NHS context has been developed through:

- A substantial review of existing literature including looking at population growth and the index of multiple deprivations
- Consultation with a range of senior stakeholders from within the NHS about commissioning new primary care premises and opportunities for the future
- Engagement with the leadership team at PHP to explore success factors in a live context
- The development of focus groups to test emergent findings

**Results:** The report, by drawing on the experience of those in the NHS and PHP shows that flexible and modern purpose-built buildings have a significant contribution to make to the realisation of the ambitions to improve health and wellbeing outcomes for local communities. 3PD offers a viable and proven method

for such premises to be delivered throughout the UK in relatively rapid timescales.

Recognising that PCNs, boards and governing bodies operate within highly complex environments, the report developed a set of strategic questions intended to promote thought and engagement. The right questions can support health and care leaders to strengthen their understanding of the primary care estate landscape.

**Discussion:** The questions raised by the report, which could be used in the context of both the UK and internationally to explore what is needed to develop primary care estate are:

**System:** Is there a clear picture of the quality of primary care estate within the system? If not, how will we gain one?

Will the current estate successfully fulfil the need of our population in 5 and 10 years?

**Place:** Is there a clear picture of local primary care capacity and capability linked to patient needs?

Have we explored all opportunities to develop or repurpose existing estate to meet future primary care needs?

**Neighbourhood:** Have we identified areas of deprivation and inequality in outcomes that may benefit most from improved primary care provision?

Are the PCN roles and responsibilities clear and understood at all levels, particularly around estates and the workforce?

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## 10 Years after Knowledge of Diabetic Patients in Slovenia

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**Background:** With the rising prevalence of diabetes mellitus type 2 (DMT2) and the need for a better level of confidence for better treatment decisions, DMT2 patients need to be empowered also through better knowledge about their disease. In 2011, Slovenia introduced model practices intending to improve chronic disease management. The same year, the National Diabetes Prevention and Care Development Programme was implemented. This study aimed to evaluate and compare the level of knowledge within the elderly DMT2 patients before and after the implementation of the program and model practices.

**Methods:** Diabetes knowledge test was used in two cross-sectional studies where the samples of 179 and 191 type 2 diabetes patients 65+ were surveyed in 2011 and 2020, respectively. Besides descriptive statistics, non-parametric tests were used to compare the level of knowledge, and a general linear model was used to test the interaction effects between the time of measurement and demographic variables.

**Results:** The general knowledge about diabetes has not significantly changed ( $U=16942$ ,  $p=0.809$ ) in the past decade. The average scores in 2011 and 2020 were  $7.98\pm 2.41$  and  $7.96\pm 2.36$  respectively. The average level of knowledge has slightly worsened for patients in the age group 80+, while it remained approximately the same in the other three age groups (65–69, 70–74, 75–79).

There was no significant difference between the older people leaving in urban and rural areas, and the level of education is the most important predictor for better results.

**Conclusions:** Despite the introduction of reference practices and various points of receiving information about the DMT2, and despite the National Diabetes Prevention and Care Development Programme, the knowledge of elderly diabetic patients in Slovenia remained at the same level or worsened. Our study suggests that education programmes more adapted to the age and specific needs of the patients are needed to increase the knowledge and empowerment of the patients.

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## Defending the Rights of Children with Special Needs

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**Context:** The Models of Child Health Appraised (MOCHA) project was a Horizon 2020 project whose main goal was to appraise the models of primary child health care in each European Union (EU) and European Economic Area (EEA) country. One of the aims of the project was to identify the societal influences on child health care to assess contextual factors of child health policy. Within this study, the analysis of the strongest public discussions was linked with child health services in the EU and EEA. Several concerns related to the disability of the child and child with special needs were identified.

**Methods:** To explore the most influential topics of public concern which shape national health policy a qualitative thematic analysis of strong public and professional discussions related to child health services in European countries was performed. The author's questionnaire, validated by an independent Expert Advisory Board, was distributed via the group of Country Agents (CA) of the MOCHA project, who were national experts appointed in each of 30 European countries. Data was collected between July and December 2016. The research process included the following steps: data collection; incorporation of the data into the qualitative software tool Nvivo11; generating a list of ideas arising from data; assigning the code; identification of umbrella themes; revision of umbrella themes; final naming of themes. From 71 case studies, 8 overarching themes were defined. This work devotes its attention to one of them – children with special needs.

**Results:** When concerns related to the disability of the child and child with special needs are at stake, it always calls the public's attention. The sensitivity to problems of a vulnerable child raises the intensified debate on the situation of people with disabilities or special care needs in terms of financial benefits, access to care and services in several European countries. For example, in Poland, the discussion was provoked by parents of disabled children to increase the financial benefits. In Croatia, the public concern referred to the rights of children with disabilities and their carers. The parents of children with disabilities protested against discriminatory, contradictory and inequitable laws which were changed to their disadvantage. In Iceland, the problem of children

with special needs related to the transition of child health care services to adult healthcare services for children with complex care needs was publicly discussed.

**Discussion:** Under the Convention of the Rights of the Child “in all actions concerning children, whether undertaken by public or private social welfare institutions, courts of law, administrative authorities or legislative bodies, the best interests of the child shall be a primary consideration”. Consequently, any discriminatory movement against children provokes a strong societal reaction. Parents and carers acting as the main actors of the proximal child environment are upholding their rights on the front lines. Children with special needs require special attention. Lack of sufficient financial support, discriminatory law or limited access to services can have far-reaching effects in terms of their health and wellbeing. Our study shows that even though children’s rights are universally recognized and undisputed, there are situations in which they are infringed in the light of the law. Societal initiatives act here as a guardian defending the rights of children with special needs.

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### The Innovative Drugs Economic Impact in the Management of COVID-19 Hospitalised Patients

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**Context:** Literature reported the innovative drugs capability to reduce the COVID-19 patients’ length of stay and the need for oxygen therapy (Dawoud et al., 2020; Beigel et al., 2020; Recovery Collaborative Group, 2021; Wadaa-Allah et al., 2021). The study aims at defining the real-life impact of innovative drugs introduction on the overall economic resources’ absorption required for the hospital management of COVID-19 patients, from their first access to discharge, thus comparing an initial condition of absence of such medications to their routine use in the Italian clinical practice, where their implementation is not standardised yet.

**Methods:** A time-driven activity-based costing analysis was implemented for the definition of economic resources’ absorption considering the COVID-19 patients’ hospitalisation, according to real-world data derived from six Italian Hospitals. Data related to *i*) human resources; *ii*) haematological exams; *iii*) diagnostic procedures; *iv*) drugs; *v*) equipment; *vi*) personal protective equipment; *vii*) cleaning service and meals; *viii*) general hospital costs were collected from anonymous administrative and accounting flows by cost centre provided by the management control of the hospitals, estimating the COVID-19 resources absorption related to the length of stay. For the economic assessment of innovative drugs, the technical indications were considered.

Once having collected the flows, the most frequent hospital clinical pathways (considering the internal transfers between wards, based on the patient’s clinical improvement or deterioration), were valorised according to *i*) Low-complexity medical

hospitalisation; *ii*) Medium-complexity hospitalisation, with the presence of hospital beds equipped with C-PAP or non-invasive ventilation; *iii*) High-complexity hospitalisation-ICU.

**Results:** Innovative drugs introduction could lead to an average reduction of the entire hospital stay equal to 29% and a consequent decrease in oxygen therapy’s days (-38%). These advantages result in a significant saving in the overall economic resources’ absorption, concerning the main clinical pathways conducted by COVID-19 patients, for the same situation without innovative drugs: *i*) 29% spent 13.28 days between a medium and a low-complexity hospitalisation (€10.042;-7%); *ii*) 16% spent 12.64 days between a low and a medium-complexity hospitalisation (€10.073;-9%); *iii*) 8% spent 16.69 days between a medium and a high-complexity hospitalisation (€20.556;-28%); *iv*) 12% spent 16.14 days between a high and a medium-complexity hospitalisation (€18.175;-26%), and *v*) 5% spent 13.15 days between a low and a high complexity hospitalisation (€14.666;-20%). In low-intensity and medium-intensity areas, additional investments are needed for innovative drugs introduction (respectively +9% and +16%).

**Discussion:** The study presented the results about the economic evaluation of the COVID-19 pandemic in Italy, thus showing a comprehensive picture of the hospitalised individuals’ analysis in six Italian hospitals, and comparing the presence or the absence of innovative drugs administration. In this view, despite huge investments are required for the drugs’ acquisition and the related increase of the general drugs cost by more than twice a time, the medical and hospitalisation costs would present a decrease of 30%, with important organisational advantages in terms of hospital beds release, thus leading to the potential capabilities for hospitals to take in charge more COVID-19 patient requiring a hospitalisation. In conclusion, the introduction of new innovative drugs could represent a relevant strategy to save scarce healthcare resources during this pandemic, with a shorter hospital stay and fewer ICU admissions.

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### COVID-19 as a Driver for Change: Hospital Outpatient Pharmacy Proximity (HOPP) Program @ CHULC (Centro Hospitalar Universitário Lisboa Central)

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The response to the COVID-19 pandemic led to the implementation of changes aiming to reduce the risk of infection and, thus, improving safety in the provision of health care. The HOPP Program is an example of this change and was implemented at CHULC to promote access to hospital drugs in local pharmacies, focusing the process on the needs of patients, safeguarding and ensuring their safety and, consequently, potentially favouring adherence to therapy and health outcomes.

CHULC’s pharmacy department serves a population of circa 14,000 chronic patients that regularly visit one of the centre’s six hospitals to refill their prescriptions for specific medication that, per national regulation, is exclusively dispensed by hospitals.

As the first wave of COVID-19 hit Portugal, a lockdown was put in place to reduce the spread of the disease. This lockdown (and a host of associated mitigation measures) created barriers for these patients' need to visit the hospital.

Faced with this disruption, CHULC had to urgently find a solution that would allow continued access to medication and simultaneously keep their patients safe. The pharmacy department designed and implemented a series of work processes and structural changes that allowed it to ship all hospital medication to local pharmacies around the country. To achieve this, partnerships were established with both National Pharmacies Association (ANF) and Pharmaceutical Distributors Association (ADIFA), and even regulatory context had to be altered by ministerial decree. But on March 26<sup>th</sup> 2020, a mere 8 days after the lockdown was implemented, the first patients were picking up their medication in a local pharmacy of their choosing.

Currently, and after 13 months, the HOPP Program supports 10,196 users (72.7% of the target audience); 54,644 deliveries were made at local pharmacies with 0% of shipping failures. avoiding hospital visits with no additional clinical value; 1,652 local pharmacies were involved (in Portugal and Azores and Madeira islands). HIV, transplants, chronic kidney disease and oncology are the main therapeutic indications delivered. The Program resulted in direct gains for its users, namely the reduction of travel time and costs, the reduction of waiting time at delivery, and the reduction of absenteeism from work. Preliminary analysis by ANF estimates these gains at € 271.6/patient/year.

The HOPP Program is centred on the patients' needs and preferences, with achievements in access and improvement of people's satisfaction and sense of security, particularly relevant in the past year, ensuring the success of the pharmacological intervention and the sustainability of the process. The results demonstrate that there is a solid basis to support the widespread development of proximity models, demonstrating the added value of the continuum of care between hospital and community pharmacies, and collaborative patient monitoring work, beneficial for both patients and the healthcare system.

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### **Gender Disparities in Access to Healthcare during the COVID-19 Pandemic: Evidence from the SHARE COVID-19 Survey for the Aged 50+ Population in Europe**

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This paper aim at investigating the gender-based differences in the nexus between social exclusion and mental health and COVID-19 health care use for the aged 50+ population in 26 European Union Member States plus Switzerland and Israel. This paper will employ the Survey of Health, Ageing and Retirement (SHARE Survey) in Europe. The SHARE survey is the largest pan-European social science panel study collecting bi-annually micro data on health, socioeconomic status, and social and family networks of people aged 50 and older. The SHARE COVID-19 Survey collected between June and August 2020 consists of 26 EU Member States as well as Switzerland and Israel. The data was

collected specially for social exclusion including the aged population's social contacts, as well as access to health care in the SHARE (Survey for Health, Ageing and Retirement) COVID-19 Survey. This paper will employ a concentration index to measure inequality in health and health care use. Both Blinder-Oaxaca methods for decomposing mean outcome values and the quantile regression decomposition methods (i.e., Recentered Influence Function or RIF methods) for decomposing outcomes and health care use along the distributions will be employed as well.

This paper seeks answers to research questions on which health policies may work effectively for all to promote the integration of aged populations into the European societies, as well as to promote individual prosperity and health solidarity for all in Europe. In addition, this project will address the gender-based differences due to the social-constructed roles of aged 50+ men and women, in the health care utilisation during the COVID-19 pandemic, in various types of European Welfare States. This paper will offer empirical evidence to support policies that promote healthcare care based on gender equality, linking the Sustainable Development Goals 3 (Good health and wellbeing for all) and 5 (Gender Equality). The research outputs to be obtained will have a large potential to draw the attention of both the scientific community and public policymakers in high-income countries currently undergoing a significant demographic change of ageing society, and to raise public awareness about the prevalence and impacts of disparities in health care access and disseminate effective individual-, community-, and population-level public policy interventions to reduce and encourage the elimination of health disparities, including redistribution of income/wealth, reforming health services provisions for deprived communities and minority groups, plus regulatory policies to limit the impacts of lifestyle-behavioural risks.

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### **What Happened to Hospitalisations due to ACSC in Portugal before and after the Crisis?**

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**Context:** Hospitalisations for health conditions known as Ambulatory Care Sensitive Conditions (ACSC) could have been potentially prevented by outpatient care. Hospitalisations for ACSC have negative consequences for the efficiency of health systems and the well-being of users. In 2009, Portugal was affected by an economic and financial crisis, which led the country to resort to foreign aid through the Memorandum of Understanding (Troika). The monitoring of the impact of expenditure reduction measures did not happen in Portugal in the context of potentially avoidable hospitalisations. This study aimed to test the association between the economic and financial crisis and hospitalisations for ACSC.

**Methods:** In the Hospital Morbidity database, hospitalisation for ACSC was identified, according to the methodology of the Agency for Healthcare Research and Quality (conditions were pneumonia, chronic obstructive pulmonary disease, heart failure,

hypertension, urinary tract infection, diabetes), in the municipalities of Mainland Portugal, between 2007 and 2016. The Wilcoxon test was used to compare the rates of hospitalisations for ACSC between the pre-crisis period (2007–2010), crisis (2011–2014 - Troika intervention in Portugal) and post-crisis (2015–2016). Spearman correlations were performed to test if variations in hospitalisation rates were associated with variations in socioeconomic variables (rates of enrolment at the job centres- as a proxy for unemployment, and average monthly earnings).

**Results:** Between 2007 and 2016, 10,94% of the 8.2 million hospital admissions registered in Portugal were for ACSC. Of the six ACSC analysed, Pneumonia accounted for 40% of these hospitalisations. Total hospitalisations and hospitalisations for ASCS increased progressively between 2007 and 2016. The Central Inland and Northern regions of the country had the highest rates of hospitalisations for ACSC. Although significant increases in hospitalisations for ACSC were observed over the analysed years, there was no correlation between the socioeconomic variables included in the study and hospitalisation rates.

**Conclusions:** The results allow us to conclude that during the period of the economic and financial crisis, defined by the duration of the Troika's intervention in Portugal, there was an increase in potentially avoidable hospitalisations generated by ACSC. The analysis indicated that there were disparities in hospitalisation rates between municipalities in the Central Inland and Northern regions when compared to the rest of the country. Although no correlation was found between the selected socioeconomic variables and the number of hospitalisations, the identification and analysis of reasons for the increase of hospitalisations for ACSC should be further analysed. In addition, the effects of extraordinary circumstances (such as a crisis) on the well-being of the population and the quality of health services should be monitored.

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### Quality Development of Multidisciplinary Team Meetings in Oncological Care Including Patients' Perspectives in Treatment Decisions: An Overview

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In cancer research, quality development in multidisciplinary team (MDT or "tumour board") meetings has not much attention to the German-speaking area, although they play an essential role in cancer treatment. MDTs meetings provide treatment recommendations based on available information and collective decision-making in teams regarding medication and therapy using a high range of financial, human and time resources. The MDT means to improve communication and decision-making between healthcare professionals in delivering cancer care and the patients. Since their implementation in Austria, MDTs have become a standard practice for cancer patients, and they aim to deliver high-quality cancer care and, ultimately, they are intended to improve survival. Nevertheless, the outcome for Austrian patients is average compared to other European countries, and evidence for the effectiveness of MDTs is still missing. The Concord 3 study underlined the insistence of the research topic, and in consequence, there are potentials for improvement. This

project developed an instrument to support multidisciplinary teams (decision-making, patient-centred care) to improve MDTs outcomes and started an economic evaluation of MDTs. We conducted a systematic review of the literature and developed a framework for MDTs and their effectiveness as a basis for further analysis. Semi-structured interviews were carried out with expert MDT members, including surgeons, oncologists, radiologists, histologists, and research nurses for clinical trial recruitment of an academic hospital in Austria. We selected six MDTs of breast, head and neck, lymphoma, liver, and pancreatic tumours. We assessed MDT experts' view on quality in structures, processes (decision-making, documentation, compliance on recommendations, communication, patient preferences), outcomes (survival rate or quality of life) and changes in procedures due to COVID-19 since March 2020 (virtual meetings). Based on the findings, a qualitative and quantitative self-assessment tool was compiled, including variables to assess the current situation of the MDT. Next, we implemented the self-assessment tool as a pilot study in selected tumour boards in Austria, e.g., the Medical University of Vienna. This project revealed the critical function of MDTs in cancer care regarding different healthcare factors, e.g., improved effectiveness, encouraging patient-centred care, quality of multidisciplinary decision-making and conclusions about MDTs current economic significance and their impact on cancer treatment in the future. The implemented model shows the effectiveness of individual MDTs and indicates possibilities for improvement (using a self-assessment tool). Relevant outcome parameters are integrated into analysis, in-depth, examining the work within multidisciplinary teams. Furthermore, the project investigates the patient perspective in treatment decisions to obtain a better health outcome for cancer patients by implementing the developed self-assessment tool to enable continuous improvement of MDTs.

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### Defining Delayed Discharges of Inpatients and Their Impact in Acute Hospital Care: A Scoping Review

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With the ever-increasing demand for acute healthcare, the hospital discharge process and delayed discharges are considered relevant in achieving optimal performance in clinical settings. The purpose of this paper was the review the literature to identify conceptual and operational definitions of delayed discharges, identify causes and effects of delayed discharges, and also to explore the literature for interventions aimed at decreasing the impact (in terms of reducing the number of delays) of delayed discharges in acute healthcare settings.

An extensive literature search yielded a total of 26,248 records. 64 research articles were included in the scoping review after considering inclusion/exclusion criteria and resorting to the PRISMA search strategy. The search was conducted between January 2017 and March 2020 and covered literature ranging from 1990 to 2019. Results were reviewed and filtered by authors and tables were created to classify the chosen articles (n = 64), allowing for the organisation of findings and results.

Conceptual and operational definitions were analysed. A delayed discharge was conceptually defined as 'an instance where



a medically-fit patient is needlessly kept in hospital due to internal organisational/operational factors or when a patient is flagged as in need of alternate level of care and is delayed because of deferred transition of care and/or lack of external transfer-of-care arrangements. Operational definitions of delayed discharges were found to be more difficult to establish, particularly in light of the vast number of different scenarios and workplace interventions uncovered in the literature. In turn, causes and effects of delayed discharges were extracted and represented in diagrammatic format, together with specific interventions used in acute health-care settings to lessen the effect of delayed discharges. The main causes of delayed discharges were faulty organisational management, inadequate discharge planning, transfer of care problems, and age. The main effects were bed-blocking, A+E overcrowding, and financial implications. The main interventions included a 'discharge before noon' initiative, 'discharge facilitation tools', 'discharge delay tracking' mechanisms, and the role of general practitioners and social care staff.

This paper fills a gap in the fragmented literature on delayed inpatient discharges by providing a research-based perspective on conceptual and operational definitions, causes and effects, as well as interventions to minimise their impact. The findings and definitions are intended as points of reference for future research.

### Hospital at Home versus Hospital Care in Patients with the Main Diagnosis of Influenza and Pneumonia

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**Context:** Up to 650,000 deaths annually are associated with respiratory illnesses caused by seasonal influenza (CDC, 2018). 140,000 people die each year in Europe of pneumonia. Portugal is one of the countries with the highest number of deaths from pneumonia, 90% of patients are over 65 years of age (OECD, 2019). During the 2018/2019 influenza season, an estimated 3,000 people deceased following airway infection (INSA,2020).

**Methods:** We developed an observational, retrospective, cross-sectional study involving a total of 3145 patients admitted to the hospital at home (HH) and in-hospital patients, in two Portuguese hospitals, from January 2016 to December 2018. The patients were over 18 years old and had a main diagnosis of influenza or pneumonia. We developed a risk adjustment model (logistic regression) to compare the probability of death between the two groups.

**Results:** Among the 3145 patients enrolled, the group of HH were 294 patients and 2851 were inpatient hospital. The mean [SD] age, 75,11 [15,09] years; and 52,31% were men. HH patients were younger than in-hospital patients, with a mean lower Charlson's comorbidity index (1,66 vs. 2,19;  $p < 0,001$ ). HH group of patients have a mean length of stay of fewer than 1,66 days. The differences for mortality in the hospital at home compared to inpatient hospital care were, for all ages, (14,18% vs. 23,83%,  $p < 0,001$ ), for patients over 65 years (19,62% vs. 27,28%,  $p < 0,001$ ).

**Conclusions:** HH seems to be associated with lower mortality in patients with influenza or pneumonia.

### Strategic Upgrading for Efficiency Improvement: the Preoperative Checklist in the Protocol "Femoral Neck Fracture in Patients over 65 Years" at the UOC of Orthopaedics and Traumatology – University Hospital of Verona

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**Context:** It is estimated that every year in Italy there are about 120000 new cases of femur fracture, with a mortality of 5% at 30 days, 18% after one year and an estimated permanent disability of more than 30%.

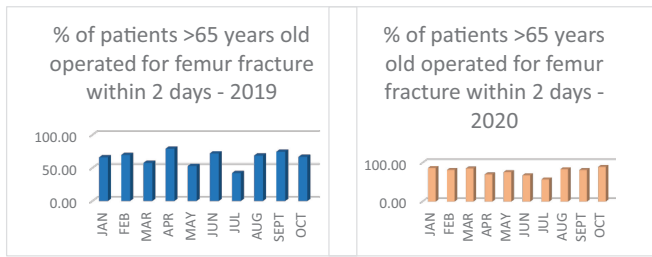
In the interventions for femoral neck fracture, the literature shows an association between early intervention and reduced mortality: waiting times beyond 48 hours have been associated with an increased risk of major complications.1-6.

From October 2019, a new tool was introduced to further improve the efficiency in orthopaedic interventions: a preoperative checklist was created, named "Valutazione preliminary triage anesthesiologist" (Preliminary assessment of anesthesiological triage) to make the patient's path to surgery faster, without detriment to the safety of the same.

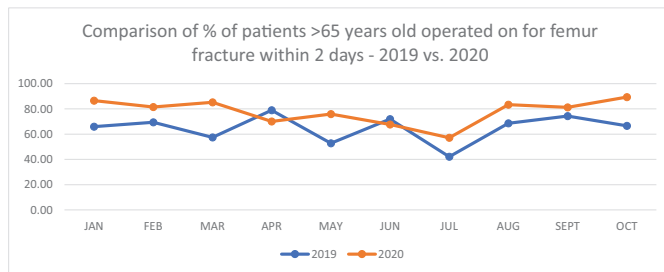
**Methods:** For our study, we selected all patients, of any sex, admitted from the ER with a diagnosis of proximal femoral neck fracture (ICD9CM diagnosis code 820. XX), at any department, aged 65 years or older. Preoperative checklists were collected daily to verify correct and complete completion. The patient recruitment interval ran from October 01, 2019, to September 30, 2020.



Data regarding the number of admissions and surgeries performed were collected through data extractions from the software in use at the hospital for the management of operative documents, from January 01, 2019, to October 31, 2020.



**Results:** In the months from April to July 2020, the percentage drops significantly; this deficit can be attributed to the reduced surgical activity due to the COVID-19 emergency combined with the physiological drop in surgical activity present in the summer months (same in 2019) due to the reduction in surgical activity for the holidays of the practitioners.



Another data taken into consideration was the average pre-operative waiting time, particularly concerning the compilation of the pre-operative checklist.

PATIENT OPERATED WITHIN 48 HOURS	N.	MEDIA (HOURS)
<b>YES</b>	<b>191</b>	<b>36,43</b>
WITHOUT CHECK LIST	13	31,77
WITH CHECK LIST	178	36,77
<b>NO</b>	<b>44</b>	<b>131,43</b>
WITHOUT CHECK LIST	3	163,00
WITH CHECK LIST	41	129,12
<b>Total</b>	<b>235</b>	<b>54,22</b>

Finally, the relationship between checklist completion and adherence to surgical timing was calculated. We can observe that the percentage of patients who were operated after 48 hours with a checklist and without a checklist is superimposable (18,8% vs. 19%).

CHECKLIST	Operated within 48 hours	
<b>Without checklist</b>	yes	13 (81,2%)
	no	3 (18,8%)
<b>With check list</b>	yes	178 (81%)
	no	41 (19%)
<b>Total</b>		<b>235</b>

**Discussion:** The collected results show how, in general, the Unit of Orthopaedics and Traumatology had an improvement in the values of the indicator on the percentage of patients over 65 years of age with femoral neck fracture operated within 48 hours of admission from the start of using the preoperative checklist, but then suffered a setback in this improvement, during the period of less surgical activity given by the COVID19 emergency and the summer break.

It would therefore be useful and interesting to continue this monitoring project to verify, with more consistent case histories, what the real tool is that has led to improved performance.

### Implementation and Transfer of Successful Digitally Enabled Integrated Person-Centred Care Solutions across Europe – The JADECARE Joint Action

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**Context:** The ageing population, with the growing burden of chronic conditions and multimorbidity, is constantly increasing the demand for more comprehensive, efficient and smarter personalised care delivery based on innovative solutions. Digital innovation has the potential to improve coordination and provide more targeted, personalised, effective and efficient health care. The transformation of health systems in Europe and the design, development and implementation of innovative solutions ensuring systems' sustainability is highly needed.

In this framework, JADECARE (Joint Action on implementation of Digitally Enabled integrated person-centred CARE) intends to reinforce the capacity of health authorities to successfully address the transition to digitally-enabled integrated-person-centred care. It is focusing on the transfer and adoption of four original Good Practices (oGPs), concerning integrated care, chronic conditions, multimorbidity, frailty and complex needs, self-care, prevention and population health, disease and case management. They are: Basque Health strategy in ageing and chronicity: integrated care (Spain), Catalan open innovation hub on ICT-supported integrated care services for chronic patients (Spain), The OptiMedis Model-Population-based integrated care (Germany) and Digital roadmap towards an integrated health care sector (Denmark).

**Methods:** During the JA, health authorities will improve knowledge in implementation and process evaluation methodologies including sustainability. The transfer of oGPs will focus on the preparation of the local environments for the implementation. The methodology will allow the transfer in different contexts: socioeconomic, cultural, legal, models and maturity of health systems. A learning community will be created for developing, collecting and exchanging knowledge through "twinning actions", dedicated seminars and workshops, and other activities.

JADECARE involves partners from 17 European countries, providing a complete scenario of the idiosyncrasy and differences that can be found. The local context, maturity of integrated care

models, legal frameworks, culture/values and relevant leaders will be considered for each of the 23 “next adopters”. The project started on October 1st, 2020 and ends on September 30th, 2023.

JADECARE will impact European health systems by implementing innovative digital integrated care solutions and helping to change the model of care provision. It will settle the basis to implement integrated care at a large scale by knowing how to transfer successful experiences and to create innovative/tailored practices. This will also have an impact on healthcare professionals, patients, carers, the general population, health authorities and the industrial sector.

Elements of sustainability will be addressed in the implementation. The long-term effect of JADECARE will be supported by involving stakeholders participating in governance bodies who can provide political support and commitment to integrated care.

A three-step implementation strategy will be used for oGP transfer. It was defined in JACHrodis-Plus to be appropriate from the scientific point of view, applicable considering data availability and feasible according to the project’s timeline and resources:

- Pre-Implementation: planning and preparation
- Implementation: roll-out and operation (based on PDSA cycles)
- Post-Implementation: impact assessment and learning

**Results and Discussion:** As JADECARE has just started, we do not yet have results nor discussion.

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### **SIDERA<sup>^</sup>b, a New Telerehabilitation Approach: Economic and Organisational Impacts**

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**Context:** Rehabilitation services’ demand is increasing, due to population ageing, demographic changes and economic developments. In addition, the COVID-19 pandemic has severely impacted healthcare processes redesign, imposing to create more sustainable care<sup>1</sup>. Telemedicine plays a crucial role, guaranteeing patients’ taking in charge and continuity of care<sup>2</sup>.

SIDERA<sup>^</sup>b platform, designed for Parkinson Disease (PD), Chronic Heart Failure (CHF) and Chronic Obstructive Pulmonary Disease (COPD), is an integrated multi-domain and multi-device system for telerehabilitation. The platform’ test in Fondazione Don Gnocchi Hospital (Milan), resulted in a positive clinical outcome: a cross-over study, enrolling 141 patients, experienced traditional and SIDERA<sup>^</sup>b rehabilitation was designed.

**Methods:** The study aimed to validate SIDERA<sup>^</sup>b platform in comparison with traditional rehabilitation processes, approaching

with MAST technique<sup>3</sup>. Results deriving from organisational and economic impacts will be presented, in particular: organisational capacity evaluation, process mapping, activity-based costing, cost-effectiveness and budget impact (BIA) analyses<sup>4,5</sup> were performed.

An additional qualitative organisational impact was analysed, collecting the perceptions of healthcare professionals using SIDERA<sup>^</sup>b, with validated questionnaires (a 7-item Likert scale<sup>6</sup>) and TAM model<sup>7,8</sup>.

The traditional rehabilitation processes costs were compared to SIDERA<sup>^</sup>b platform, extracting data from the Lombardy Region Datawarehouse related to healthcare services (hospitalisations, outpatient and rehabilitation services, emergency department accesses, pharmaceutical expenditure), provided to more than 55,000 patients in 2017–2018.

Innovative rehabilitation processes were evaluated considering variable and fixed costs related to the design and development of SIDERA<sup>^</sup>b platform and the time spent by clinicians: a reimbursement tariff was also proposed.

**Results:** From an organisational perspective, qualitative results showed a higher organisational effort in the introduction of rehabilitative processes, both for SIDERA<sup>^</sup>b platform and traditional rehabilitation (respectively -0.11 vs -0.08 for COPD; -0.06 vs -0.20 for CHF; -0.36 vs 0.08 for PD), amply rewarded in 36-month time horizon. The innovative platform requires training courses and additional hospital meetings, resulting in an investment of 2,400€ in the first 12 months, for 300 patients.

The use of SIDERA<sup>^</sup>b in the whole Lombardy Region could save 479 days of hospital stay per year.

The annual cost of rehabilitation processes per patient was estimated as, respectively, traditional vs innovative 8,459.14€ vs 6,016.00€ for COPD, 7,624.19 € vs 4,512.00 € for CHF and 8,770.95 € vs 6,016.00 € for PD. The BIA revealed a cost-saving of 74.143.917,87€ in 5-year for the Lombardy Region Healthcare Service, due to the introduction of SIDERA<sup>^</sup>b platform.

**Discussion:** Thanks to telemedicine services, as SIDERA<sup>^</sup>b platform, patients could have an active role in the home care pathways, assuring a continuum of care between hospital and home: benefits were demonstrated also from organisational and economic perspectives, assuming both the Regional Healthcare Service and the Hospital points of view, relying on real-world information.

Healthcare providers managing rehabilitation services must be knowledgeable about the telemedicine solutions that could free up economic resources to be reinvested in the enlargement of the population taken in charge.

The COVID-19 pandemic drastically modified traditional healthcare pathways and hospitals accesses. In this view, telemedicine solutions are fundamental for healthcare systems in delivering personalised healthcare services, considering also the imperative of “safety care”, in particular for chronic and fragile patients.

Future steps of research will involve different public Hospitals in Lombardy Region, to determine the scalability, transferability and generalisability of SIDERA<sup>^</sup>b platform in other settings.

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### Acceptability of Digital Technologies: The Intention to Adopt T-CUBE Solution in COVID-19 Pandemic

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**Context:** Any strategies, grounding on telemedicine services, digital technologies and artificial intelligence, represent a key part of the European and Italian response to COVID-19, for the continuous monitoring of both COVID-19 patients and those who are not COVID-19 infected but suffer from chronic diseases.

The study aims at investigating the acceptability for healthcare professionals to use an innovative telemedicine platform (whose name is T-CUBE) designed as a telemonitoring care program integrated with telerehabilitation and tele-supporting activities, for patients with or without COVID-19, by addressing the following research question: which are the key factors determining T-CUBE intention to use in the clinical practice?

**Methods:** Despite digital technologies positive impact on process efficiency improvement, their adoption is usually related to a professional resilience to change, because digital technologies being usually perceived as disruptive innovations. According to the above, the study proposed a theoretical framework that includes the Technology Acceptance Model – TAM2 core constructs, useful for predicting the individual's acceptance of telemedicine solutions, focusing on social and cognitive instrumental factors.

In October 2020, a qualitative questionnaire based on TAM2 was administered to clinicians, psychologists and rehabilitative professionals taking charge of both COVID-19 individuals and chronic patients, requiring strict monitoring and rehabilitative activities. Authors assess how perceived usefulness, perceived ease of use, image, job relevance and output quality, would affect T-CUBE intention to use. Inferential analyses, through a specific regression model, were conducted to define the main aspects useful to understand the factors impacting such digital technology adoption in clinical practice.

**Results:** Results demonstrate that T-CUBE acceptability and intention to use is strictly dependent on its usefulness ( $\beta=0.296$ ,  $p\text{-value}=0.003$ ) and ease of use ( $\beta=0.491$ ,  $p\text{-value}=0.021$ ) perceived by the healthcare professionals involved, as well as by its capability to produce a high-quality output ( $\beta=0.981$ ,  $p\text{-value}=0.016$ ), in terms of adequate care of patients, thus being the factors that most influence T-CUBE adoption in the routine practice (Adjusted  $R^2=83.7\%$ ).

No statistically significant differences were found concerning the seniority of the respondents, thus demonstrating that no digital divide exists. Furthermore, a negative relationship emerged between image and T-CUBE intention to use ( $\beta=-0.185$ ,  $p\text{-value}=0.035$ ). Healthcare professionals would not utilise T-CUBE for enhancing their “status symbol”, but they voluntarily would use the innovative technology only if they can find real usefulness and advantage for improving patients' health results.

**Discussion:** Due to COVID-19, telemedicine, in general, has played a crucial role, with its ability to minimise physical physician-patient contact, and to optimise healthcare system capacity during demand surges, guaranteeing the taking in charge of the patients and the continuity of care. To ensure the success of any digital technology, it is important to have the user's acceptance of that technology.

Thus, healthcare professionals would effectively use the innovative platform T-CUBE, when it will be available, to guarantee the taking in charge and the continuity of care, for COVID-19 patients or chronic patients suffering from cardiac and pulmonary disease, both requiring telemonitoring, tele-supporting and tele-rehabilitative activities, thus promoting and improving the general wellbeing of the population.

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### Effectiveness of Indicators for National Control (KUVA Indicators) as a Decision-Making Tool

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**Context:** The amount of healthcare data is dramatically increasing due to digitalisation. Data analytics in healthcare is expected to reduce costs of care, provide more effective and efficient treatments, and predict population health and the risk of illnesses. In Finland, electronic health records and national databases provide a platform for the development of National Health Indicators (NHIs) to measure outcomes that aim to improve

national steering of welfare policy aligned with the principles of value-based healthcare. The purpose is to provide a tool for managing, planning, monitoring social and healthcare services and control.

**Methods:** This study aims to explore the effectiveness of NHIs and their mechanisms, i.e., whether and how NHIs work as an assessment and steering tool and support the integration of the multiple perspectives, interests and information needs of healthcare managers.

We use qualitative documentary analysis and key informant interviews to describe the starting points and process of building NHIs in Finland by asking:

1) How the national NHIs were built (the developmental context and aims); and

2) How NHIs are expected to improve decision-making at the national and regional level of the regionally organised health system

**Results:** Although NHIs reflect the aims and values of each four-year government health policy, the long-term strategic purpose is to improve the health system by analysing the well-being and state of health of the population, the need for services, and the quality, costs, and effectiveness of care. NHIs are used as baseline information in the yearly national assessment process of service provision and negotiations between the Ministry of Social Affairs and Health and the regions. After publishing the first version of the NHIs, a new government program (TOIVO) was launched to develop the database and fill in the missing information production lines (non-institutional social services, emergency care and costs, and human resources used for services). Also, the regions are adapting their management information systems to align with NHIs. Recently, the indicators of the cost-effectiveness of care have been developed in response to the needs of knowledge management according to a value-based healthcare steering model.

**Discussion:** NHIs play a remarkable role in the assessment of the national healthcare system. The guidelines for steering the regions are primarily based on the information provided by the NHIs guiding regional level negotiations. Indicators have so far been retrospective, focusing on what was done. To better respond to the information needs of national- and regional-level managers, NHIs should provide information on how and why actions were considered effective.

The national database and NHIs ensure that the steering information is publicly available to all actors involved in the steering process. However, it takes decades to build an effective system that considers the long-term impacts and different information needs of stakeholders. This would require collective knowledge formation and dialogue on the most beneficial indicators. Finland has just taken the first steps towards a shared view by building the national integrated database and the open indicator information system.

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## Socio-Organisational Evaluation of a Tele-Expertise Experiment for Skin Cancer Detection: The Perspective of General Practitioners

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**Context:** The incidence of skin cancer has shown an increasing trend over the last four decades. In this context, the delay to access a specialist opinion strongly impacts patient outcomes. However, the medical demographics of dermatologists in France have been decreasing over the past years. Hence, a tele-expertise (TLE) experiment for skin tumours detection, which allows general practitioners to obtain feedback from a dermatologist within 7 days using a smartphone application, has been set up since 2015. Thus, this study aims at understanding the advantages and drawbacks of TLE in the detection of skin tumours perceived by general practitioners.

**Methods:** Exploratory study carried out with 15 general practitioners participating in the tele-expertise experiment in the Hauts-de-France region. The inclusion criteria were: 1) to have the access codes to the digital device; 2) to have been participating in the experiment for at least 12 months; 3) have made more than two TLE requests. Semi-structured interviews were conducted between February and April 2021, by videoconference or telephone. The recruitment of subjects was interrupted when they reached saturation point. The interviews conducted were fully transcribed and analysed using a comprehensive method.

**Results:** The main advantages perceived by general practitioners are: (i) fast access to specialised feedback; (ii) formalisation of the request and commitment of the dermatologist; (iii) ease of regulating patients to a specialist; (iv) lower travel frequency and stress for patients; (v) ability to send medical information securely. The drawbacks are mostly related to the lack of functionalities and the graphical user interface of the application.

**Discussion:** Tele-expertise is a well-accepted technological innovation in dermatology among general practitioners, which enables the best use of the scarce medical resources available in the region and to address the needs of patients. The sustainability of TLE in dermatology and its extension to other territories is possible and desirable. Tele-expertise in dermatology has its place in enabling the early management of malignant skin tumours. The qualitative approach makes it possible to understand general practitioners' visions after the introduction of technological innovation into their practices.

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## A National Survey on the Knowledge and Perception of Artificial Intelligence in Radiology

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**Context:** Knowledge and trustworthiness in artificial intelligence (AI) among responsible stakeholders are fundamentals for its implementation in everyday radiology practice. Currently published studies on this topic were mainly focused on general awareness about AI, the willingness of radiologists to help in AI development and expectations for the future of the radiology profession. Therefore, we conducted a national survey to reveal basic knowledge about AI and perception of AI in the aspect of trust and independence.

**Methods:** An anonymous questionnaire was distributed on a national level in Croatia among radiologists and radiology residents practising in all three levels of the healthcare system. Groups of questions were focused on basic knowledge about AI, and perception of AI confidentiality assessed by 9 questions on a Likert scale from 1= do not have confidence at all to 5= absolute confidence in AI. AI confidentiality score was made and validated by Cronbach alfa coefficient of internal consistency that was satisfactory (0.78). Parametric tests (t-test for independent sample and one-way ANOVA) were used to assess differences in AI confidentiality score and other socio-demographic parameters, including knowledge. All p values below 0.05 were considered significant.

**Results:** The overall response rate was 45% (144 of 321). Thirty-seven per cent of participants (n=54) was not aware of the difference between machine learning and AI, while only thirteen per cent of respondents (n=19) reported using AI tool in everyday practice. However, 81% of them (n=117) would like to be involved in AI projects and more than 85% believe that AI would enhance interpretation of radiology reports and increase the availability of radiology services. Men had a higher AI confidentiality score compared to women: 32.4±5.2 vs 30.0±4.5; p=0.004. Also, significantly higher values had those radiologists who worked with AI every day: 33.4±4.8 vs. 30.8±4.9; p=0.033 and those who think that AI should become an obligatory topic in medical schools' curricula (31.6±4.7 vs. 27.1±5.4; p=0.001).

**Discussion:** According to our study, there is a need to develop and implement educational programs dedicated to AI in the medical school curriculum. The finding is significant because the respondents are arguably in a suitable position to provide an informed opinion based on the impact of AI on their profession and its future. Considering the increasingly common use of AI in health care, medical education lags by at least a step behind technological developments. Collectively, despite the fact radiologists in Croatia have limited access to both AI tools and education, the level of their trust in the accuracy of AI is very high.

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## SustHealth v2: An Evidence-Informed Assessment Tool for Sustainable High-Quality Healthcare Buildings

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**Context:** Healthcare facilities are complex infrastructures where different features from technological, social, clinical and architectural fields interact. In modern healthcare systems, there is a constant need for quality in terms of process, outcome and structure. Several tools already evaluate the quality in terms of process and outcome but very few can assess the built environment. Since the 90s Evidence-Based Design (EBD) researchers states that there is a significant relationship between health, well-being, organisational outcomes and the built environment.

**Research Gap and Objective:** Although several papers, reviews and empirical studies have been recently published on hospital assessment topics, there are not many instruments able to systematically measure the whole hospital qualities as-built environment. Therefore, starting from an existing framework, the research objective is to implement, weight and test the tool with new indicators, methodologies and variables informed by the most recent available scientific evidence. The tool will act as a decision support instrument for hospital strategic management when dealing with operative facilities.

**Methodology:** 1) A literature review has been conducted to understand the existing situation in terms of hospital quality evaluation. Several tools and regulations have been also included and analysed to highlight the most important evaluation criteria and methods. 2) The existing framework has been implemented and a new structure has been set up. The different indicators have been validated through semi-structured interviews and the criteria and macro areas have been weighted with Simon Roy Figueras (SRF) multicriteria and Deck Card Method (DCM) with international figures experienced in the field. 3) The tool has been applied to a sample of Italian hospitals and the results have been compared and discussed for further developments.

**Findings:** SustHealth v2 is a hierarchical model composed of 3 macro areas: Social, Environmental and Organisational qualities. Each macro area has 5-6 criteria with 2-4 indicators each. Every indicator is measured with 2-9 operative variables.

After stakeholders' analysis and Decision Makers interaction, the SRF DCM procedure contributed to define the final weight assigned to each macro-areas, respectively 49%, 29% and 22%.

The application and test of the tool on two pilot Case Studies (CS1 and CS2) in northern Italy highlighted transversal criticalities such as Sustainable Accessibility (CS1=0.04/0.16; CS2=0.11/0.16), Sensitisation and Education (CS1=0.06/0.18; CS2=0.10/0.18) and well-established issues such as Risk management (CS1, CS2=0.16/0.18) and Security (CS1, CS2=0.14/0.19). At the same time, the more recent case study (CS1) was able to achieve higher scores in energy (0.15/0.0.19), waste management (0.07/0.07), as well as future-proofing characteristics (0.20/0.23) while the older (CS2) found more difficulties in achieving similar scores.

**Outlook:** SustHealth v2 can support hospital strategic management in highlighting an area of improvement and investments. The application of the tool on two pilot case studies allowed to test its possibility of scaling up to a wider sample of hospital buildings and organisations at the national and international level.

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## Train Healthcare Professionals for Environmental Sustainability of Health Services

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The Healthcare's climate footprint is equivalent to 4.4% of global net emissions. The figure is largely known and documented. The top three emitters countries, the United States, China, and collectively the European Union, comprise more than half the world's total healthcare climate footprint (56%). Currently, healthcare must respond to the growing climate emergency not only by treating illnesses linked to the climate crisis but also by practising primary prevention and by radically reducing its emissions as an industry.

Only informed and well-trained professionals can successfully mitigate the impact of climate change, reduce healthcare's greenhouse gas emissions, and prepare it for the ecological upheaval to come. Therefore, there is a need to amplify the training for health professionals, especially those who are actively involved in the management and decision-making process related to health programs, on the basic concepts of climate change and its health impacts, as well as on how to plan mitigation and adaptation in the healthcare industry.

Furthermore, we observe a rising interest from healthcare professionals and institutions for environmentally-friendly professional practices. Not only these new practices can safeguard the environment, which is an increasingly compelling challenge (energy, food, anaesthetic gases, transportation, purchases and wastes ... contribute to health care's global climate footprint), but they also give healthcare institutions leadership in their communities. Finally, they can have positive externalities, such as new platforms for educating students, patients and members of the public and they can save money.

To this end, in 2020, EHESP School of Public Health designed a new and mandatory "climate change, transitions and health" skills set that trains healthcare professionals (such as hospital and nursing homes managers...). The course based on transversal skills frames of reference, suitable for use in a variety of teaching programs, is designed to meet the current and future needs of healthcare organisations to effectively carry out their energy and ecological transition and to reach, among others, a few key-objectives:

1. Mitigation – Reduce healthcare's carbon footprint
2. Resilience – Prepare for the impacts of extreme weather and the shifting burden of disease.

Thus, the course aims the acquisition of new professional skills: (1) Analyse a health situation through the lens of climate change issues, (2) implement strategies to take into account these issues and reduce carbon footprint (3) improve advocacy to mobilise and leverage various networks.

The EHESP aim is to raise awareness among all healthcare stakeholders and help them understand and analyse the increasing complexity of the world in which they work. Only well-trained health professionals will be able to undertake the necessary efforts while achieving global health goals such as universal health coverage and working towards the Sustainable Development Goals.

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## Management of Pharmaceutical Waste: The Practices and Perception (Example from Serbia)

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**Context:** The current literature data suggest that improper disposal of medicines is a global problem and that the most common reason reported for not returning medicines to pharmacies or other collection sites is lack of information and awareness on the existence of available collection schemes in the community. This research aimed to examine the current methods of disposal of unused medicines from households in Serbia, the willingness of Serbian residents to participate and bear the costs of organising the unused medicines collection program and to define factors contributing to an individual's willingness to participate and pay for a medicine collection program.

**Methods:** The survey included randomly selected patients older than 18 years visiting private pharmacies in the four largest Serbian cities. Data were collected by trained interviewers during the period from December 2017 to November 2018. The questionnaire included information regarding the presence of unwanted medicines within the household, general medicine disposal practices, the likelihood to participate in medicine take-back program, willingness to pay for a medicine disposal program (per prescription and visit), importance to the environment, and demographic variables from participants. The data was analysed by basic descriptive statistics, nonparametric statistical tests and advanced econometric modelling.

**Results:** The most commonly reported reasons for the presence of unused medicines within households were not finishing the full therapy (34%) and not knowing what to do with the expired medicines (19.8%). Although most of the respondents believed the most appropriate disposal method for unused medicines was returning them to a pharmacy (81.9%), the most reported disposal method was throwing medicines into the garbage (59.1%). The majority of respondents had never received advice about the proper disposal of medicines from households nor participated in an organised collection program. 80% of respondents are very or somewhat likely to participate, however less than half of the respondents are willing to pay for the collection of their unused

medicines. The factors that influenced willingness to participate are environmental awareness and income, while the factors affecting willingness to pay, are previously received advice about proper disposal, education level, number of unwanted medicines in the household and gender.

**Discussion:** Targeted public educational campaigns should be organised continuously, but advice on proper medicine disposal must routinely follow medicine dispensing. Educating the general public about environmental concerns is an essential step in altering disposal practices, however, to result in more pro-environmental behaviour it is necessary to make the action easy and use familiar locations such as pharmacies as collection locations. The model where pharmacies take financial responsibility for the disposal of unused medicines without some kind of reimbursement is not recommended. One of the valuable solutions is an implementation of the Extended Producer Responsibility (EPR) laws which require that pharmaceutical manufacturers manage their products in all phases of their life cycle, including end of life treatment and waste management. To comply with this legislation pharmaceutical manufacturers and others involved in the product chain should plan, manage and fund take-back programs to ensure the collected medicines are properly managed.

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### Climate Pact Ambassador Role in the Decarbonisation of the Healthcare Sector

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Climate change requires swift action aimed at adaptation and mitigation. The health sector is witnessing increased healthcare needs due to climate change and emerging diseases. Globally, the health sector is emitting 5% of total greenhouse gases (GHG). It is necessary, thus, to make a strategic decision for the decarbonisation process of this sector. To become an environmentally friendly and sustainable healthcare system requires a broad and fundamental transformation. The COVID-19 pandemic crisis has been a significant disruption to all health systems but confirms the need to transform them into zero pollution systems.

The objective of the EU Green Deal and European Climate Pact is to encourage actions aimed at climate neutrality. The role of the European Climate Pact Ambassador is, among other things, to motivate and contribute to the understanding of the need for actions aimed at mitigation and adaptation to climate change. Encouraging the health sector for climate-friendly actions designed to reduce GHG is of great importance, as well as all strategic decisions in that direction.

The health sector should focus on the energy efficiency of their buildings, different work processes, low-carbon transport vehicles, but also initiatives for the green environment. Medical waste management, including recycling of single-use personal protective equipment and other waste, is a big challenge during

the COVID-19 pandemic with a possibility for large achievements in reducing pollution and saving on embedded carbon in disposable matters. The Healthcare sector contribution to air pollution, land and water pollution also needs to be considered. Digital health innovations should be considered as a potential in providing health care that is reducing GHG emissions. It is also important to underline that the healthcare sector has a significant role in improving intakes of healthy, sustainable food and teaching healthy dietary choices.

European Academies' Science Advisory Council (EASAC) and Federation of European Academies of Medicine (FEAM) produced an important document for healthcare professionals regarding the decarbonisation of the Health Sector. In this Commentary, it is underlined that policy-makers and health sector managers should work together in developing climate change mitigation and adaptation actions.

Necessary action could be strengthened by Climate Pact Ambassadors aiming to ensure that the health sector itself achieves ambitious decarbonisation targets and systems change in the healthcare sector which requires that healthcare organisations at all levels adopt the sustainable organisational culture. Besides the primary task of the healthcare sector – healing patients and improving their health, healthcare professionals should be aware of their responsibility in potential externalities due to GHG emissions, (as a population health consequence). The health sector should emphasise also the importance of decarbonisation in the education process, through formal education, as well as lifelong learning.

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### Examining Psychological Safety in Healthcare Teams to Inform the Development of Interventions: Combining Observational, Survey and Interview Data

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**Context:** Healthcare professionals who feel psychologically safe believe it is safe to take interpersonal risks such as voicing concerns, asking questions and giving feedback. This contributes to improved team learning, creativity and performance. Therefore, psychological safety is vital for healthcare teams to provide safe and effective care. However, despite the importance of psychological safety in healthcare teams, there is little guidance on how psychological safety can be improved. This research aims to develop an in-depth understanding of psychological safety within healthcare teams and to build on this understanding to inform the development of future interventions to improve it.

**Methods:** A mixed-methods approach was used. Survey, observational and interview data were triangulated to develop an in-depth understanding of psychological safety within four healthcare teams, working within one case study hospital. The teams taking part included one multidisciplinary and three unidisciplinary teams. Observational and survey data were collected during and immediately following team meetings. Individual



interviews were conducted with 31 individuals across the four teams. Thematic analysis was used to analyse these interviews. Findings from across all three data sources were analysed in relation to voice and silence, learning, familiarity, and support. Interviews captured individual-level experiences of psychological safety and provided an insight into psychological safety both within and outside meetings, as well as within a historical context.

**Results:** Results from surveys, observations and interviews were considered together to gain an in-depth understanding of psychological safety within these teams. Survey and observation results captured team level dynamics which gave context to our understanding of individual-level perceptions of psychological safety. Survey results indicated a high level of psychological safety. However, observations and interviews captured examples of silent behaviour and a lack of learning behaviours. In addition, interviews highlighted examples of low levels of support from other team members and a lack of familiarity between certain team members. Team members reported feeling more psychologically safe talking about difficult subjects during one-to-one interactions. Healthcare professionals attributed their experience of psychological safety to their personal characteristics, their past experiences, and their beliefs about whether they were valued and whether issues were appropriate to raise at work.

**Discussion:** This research responds to recent calls for the use of multiple methods to capture a more accurate and nuanced understanding of psychological safety in healthcare teams. Based on the findings from this study, recommendations are made for the development of interventions to improve psychological safety. Findings deepened our understanding of how leadership and interpersonal dynamics influence psychological safety. Analysis of interviews highlighted the wide variation in individuals' experiences of psychological safety within healthcare teams. Results underscored the importance of giving time during meetings and creating safe spaces to prioritise learning, foster familiar relationships between team members and discuss more personal issues or experiences rather than only focusing on operational issues. Lastly, interventions should encourage awareness that all team members play a valuable role and explicitly ask for input from team members who are more vulnerable to low psychological safety, such as junior team members.

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### Evolution of Tasks and Responsibilities at Home Care Level: A Focus on Nursing Role

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Demand for home care is expected to grow in the following years. People would like to be treated at their home and healthcare systems start considering home care as a possible cost-effective solution for facing the increasing demand for chronic and long-term care. However, home care is a labour-intensive sector involving several professionals whose availability is currently declining. An effective solution adopted at the hospital level is task shifting practice, defined as 'the rational redistribution of tasks among health workforce teams'<sup>1</sup>. By referring to this theoretical framework, this research investigates if there is an evolution of tasks

and responsibilities at the home care level, focusing on the nursing role.

A systematic review of the existing literature about changes and revolutions of the nursing role in-home care was performed, analysing 127 papers published on Scopus since 2008 in countries with a public health care system. The papers were filtered according to their effective pertinence to the home-care environment and were analysed through a framework that was built in accordance with task shifting literature. More precisely, results were analysed by looking at how tasks and responsibilities are moved, the main roles involved, and the enablers and the requirements for a successful evolution of roles in the home care context. The aggregated results were analysed to find out the recurrence of each factor and possible correlations.

From the systematic literature analysis, 23 empirical case studies were identified, distributed in 10 countries. Particularly, 14 cases refer to nurses, 9 to caregivers, 6 to health assistants, 3 to patients and 5 to other health professionals. Focusing on nurses, their role is enhanced by performing new healthcare activities (53%), by organisational activities (27%), by relational activities (13%), and by expanding their knowledge (7%). The major enablers for home task shifting are patient needs (65%), efficiency and quality needs (60%) and staff shortages (57%). Among the requirements emerges the need for training and collaboration between the different health professionals, as well as the development of new policies.

This study highlights limited attention of the academic literature on the evolution and transferability of tasks in-home care, opening new lines of research in this field. The results of this research provide an initial contribution for addressing this gap, showing how this evolution may happen at the home care level and, in particular, how the nursing role is affected by these changes. Moreover, this research supports home care providers and practitioners in recognising and promoting roles changes in their health and social care organisations.

Literature findings will be integrated and investigated in the following months through workshops and interviews with directors, nurses and clinicians belonging to two Italian cases delivering home care services.

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### Ready for Lunch? Bread and Butter of Care Integration

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This study investigates food as practice in care integration. Indeed, food makes and breaks social boundaries (Scholliers, 2001). Lunch and dinner meetings are mundane in organisations and food habits can tell about these organisations (Altman & Baruch, 2010). Tamin et al. (2011) have highlighted how food creates liminal spaces among consultants and clients. Other researchers advocate for the role of food and drink in trust creation and team building (Cunha, Cabral-Cardoso, & Clegg, 2008; Kniffin, Wansink, Devine, & Sobal, 2015; Pentland, 2012; Silva et al., 2014; Taminiau et al., 2011). Food seems to contribute to organisational culture and organisational belonging (Altman & Baruch, 2010;

Strangleman, 2010). Despite such interesting research, food in organisations is an understudied area and little research responded to scholars' calls for further explicit research (Cabral-Cardoso & Cunha, 2003; Ferguson & Zukin, 1995).

In the context of sharing the workplace among co-workers, social moments are essential to community building. These moments are so often planned around coffee, snacks, and lunch. In this study, the researcher investigates food as practice in four healthcare organisations known as multi-professional health homes (MHH). In MHHs healthcare practitioners are self-employed and share the workplace. This specific form of co-location-based organising aims at catalysing collaboration and results in almost specialised co-working spaces (Fabbri, 2016).

**Data and Methods:** The researcher collected data through an inductive, experience-based approach in four MHHs from the South-West of France. The data collection lasted two weeks, in April 2017. The researcher was on the field from 8.00 am to 8.00 pm, five days a week. The researcher had the opportunity to attend three meetings in the evening, which led to non-participant observations, and the kick-off meeting of the emerging project, where she was involved. During the two weeks of data collection, the researcher slept over in informants' places. Over the whole period, the researcher observed and participated in 29 meals (8 informal breakfasts, 4 organisational lunches, 7 informal lunches, 3 organisational dinners, 7 informal dinners) and several coffee breaks.

**Findings:** In their "working alone, together", lunchtime appeared to be a key to developing community sense, sharing thoughts, and potentially collective entrepreneurship. In one of the MHHs, all practitioners get then lunch together at 12h45, the one who gets his work done first goes to purchase food for all. He contacts others either by passing by in the corridor or by SMS to ask for their preferences. Their lunch is at 12h45 and no patient gets an appointment at this time. They use the waiting room to share lunch. They have then a ritual of bringing tables together, setting, eating, and cleaning the waiting room.

In another MHH, there is another intriguing agreement. Five of them agreed to prepare food at home for five people once a week. This way, food meets their standards as healthy and fresh without having to prepare food each day. However, they do not get lunch altogether as is the case in the other MHH. Lunchtime ranges between 12:00 and 2:00 pm. These five would help themselves and share lunchtime with other co-workers. This lead to making small groups changing every day with different people coming and leaving. This creates an atmosphere in which story-making, telling and reporting are dynamic with different digests.

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## Mapping Mental Health Professionals' Journey along the Digital Mental Health Intervention Process: A Qualitative Study

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**Context:** Despite Digital Mental Health's potential to provide cost-effective mental healthcare, its implementation in clinical settings is limited and little is known about the Digital Mental Health intervention process and factors impacting its implementation. Thus, the current study aimed at characterising in-depth the Digital Mental Health intervention process and exploring factors impacting its different stages.

**Methods:** A qualitative study using in-depth semi-structured interviews with mental health professionals (N=13) – psychologists and psychiatrists – was conducted. Transcribed interviews were thematically analysed following Braun and Clarke's method.

**Results:** The Digital Mental Health intervention process includes five stages, namely i) Indication evaluation; ii) Therapeutic contract negotiation; iii) Digital psychological assessment; iv) Technology setup and management; and v) Interventions delivery and follow-up. Digital Mental Health's low threshold accessibility and professionals' deontological duty to provide support triggered this process. Conversely, the lack of structured intervention frameworks; the unavailability of usable, validated, and affordable technology; and the absence of structured training programmes, negatively impacted the process.

**Conclusions:** To overcome such barriers and encourage sustained adoption of Digital Mental Health, the development of practice frameworks and evidence-based technology and training is key.

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## How to Survive and Thrive through Challenges and Change: Employee Resilience among Dutch Hospital Staff in 2020

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**Context:** Health care organisations' survival, thriving and effectiveness depend on their ability to withstand and adapt to significant challenges and change, that is, on their resilience. Research on how to promote and improve resilience among employees has sparked the interest of health care organisations. Employee resilience has been acknowledged to strengthen organisational systems and infrastructure and to ensure organisational sustainability. Recently, employee resilience thus became a focus of health care quality management in the Netherlands. Health care organisations are interested in the extent to which employee resilience can maintain performance levels and lower unsafe

behaviours. The aim of the present survey study was therefore to get a first understanding of the state of employee resilience among Dutch hospital staff.

**Methods:** Among five hospitals across the Netherlands, we administered the Employee Resilience (EmpRes) questionnaire in 2020 (Näsweil, Malinen, Kuntz, Hodliffe, 2019). Hospital staff was divided by their nursing, medical and supporting function (N = 3014). The EmpRes measures an employee's competence to deal with unexpected work situations and to adapt to those circumstances in a flexible and competent way. The questionnaire consists of nine questions that can be answered on a 5-point Likert type scale ("1 (Almost) never to 5 (Almost) always"). An example item is: 'I learn from mistakes and improve the way I do my job'. A higher score indicates higher employee resilience.

**Results:** The mean score of all respondents was  $M = 3.55$  ( $SD = .70$ ). This means that hospital staff indicated on average that they regularly to often resiliently dealt with crises or work pressure by adapting flexibly to the situation. The medical staff scored significantly higher on average on employee resilience compared to the nursing staff and the supporting staff. Nursing and supporting staff members did not differ from each other.

**Discussion:** This was the first time that employee resilience was measured among Dutch hospital staff. The results show that generally hospital staff scores above average on employee resilience, but there is still room for improvement. Also, there is significant variation between staff functions. Management implementations should therefore focus on decreasing the variability among different staff functions and further increase overall employee resilience.

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### Artificial Intelligence Innovations in a Small Medical Practice: Perspectives and Obstacles

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**Context:** AI in medicine is one of the most promising, but at the same time, one of the most difficult issues. Diagnostics, automatization, robotisation, treatment plans and biopharmaceuticals are the main areas of the medical field where AI has already become reality.

One clinic consists not only of medical personnel, but it is a complex organisational ecosystem that includes management systems, marketing, advertising, accounting and finance, etc. The use of AI pursues, first of all, the reduction of health care costs.

But there are some questions: how many clinics are ready to use or are already using AI technologies in their practice; what are the obstacles to the wider application of existing innovations.

The study was conducted in Russia. Russian healthcare is interesting for observation and analysis; it can be described as being in a state of crisis. The problems of accessibility and quality of care are becoming more acute, give an even wider spectrum for analysis and discussion.

**Methods:** To better understand the processes associated with AI introduction into real practice, the activities of an orthopaedic clinic in Moscow (Russia) were analysed. An analysis was done based on monitoring the processes established in its activities. Examples of changes in business processes and possible alterations

of the economic changes and growth after the introduction of several AI-based technologies and applications were considered.

To establish the involvement of the clinic employees in the process of introducing AI in their work and to acquire their opinion on the benefits of AI using, a survey was conducted.

**Results:** The clinic's goal is leadership via cost savings. This strategy gives it the advantage of being profitable even in a highly competitive environment. From the perspective of this strategy, the use of technologies based on AI makes it possible to save on the expensive labour of doctors and specialists, as well as improve the work of the call centre and save on advertising by optimising campaigns using AI.

At this stage, there are many advantages and disadvantages of using AI in the activities of a given clinic, but AI is developing with amazing speed.

**Discussion:** In a small clinic, it is important to have a clear understanding of how much cost and speed, as well as the ability to adapt its functionality for a specific task, will be necessary before technologies or robotics with AI are introduced.

AI is one of the most promising factors for health care development, both from the point of view of medicine itself and in the field of management of a medical institution and marketing strategies.

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### Patient or "Homo Consumer": How Changes in the Institutional Logics Change the Healthcare System

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**Context:** This study focuses on the efficiency of the healthcare system, which is a widely discussed topic nowadays. It is so for both high and low developed economies in the current pandemic.

Usually, the researchers focus on healthcare providers, but also identify other important actors: employers and government agencies, fiscal intermediaries and regulatory structures. At the same time, they do not consider patients as a factor that brings changes in the institutional logic.

However, there is a paradigm shift from a medical model to a patient-centred model nowadays. The patient acts as a consumer of services, i.e. as a client.

**Methods:** As a result, it becomes obvious the necessity of a more detailed study into the Institutional Logics of all actors, with an emphasis on studying the patients' IL. This can help improve healthcare management.

Thus, a survey was conducted among doctors and healthcare managers in Russia to check whether the patients with their IL are actors in the healthcare field, and how their IL is taken into account by other actors. The survey results show the system of the doctor-patient relationship and establish the correctness of the hypothesis that the patient plays the role of a client in the commercial medicine of Russia.

**Results:** The question arises why the majority of researchers do not consider patients' IL as decisive in the organisational structure of health care.

As a result, the research's conceptual basis is the analysis of the interaction of various subjects in the field of healthcare, based on

the organisational approach and considering the healthcare system as an ecosystem.

It is impossible in modern conditions of client-oriented healthcare not to take into account the patient's unique logic. The understanding of how the patient's (client's) IL functions can be a decisive factor in determining the quality indicators of medical services and treatment for management improvement.

**Discussion:** In the contemporary environment of accessible information and a changed way of thinking as well as the level of education, the relationship between doctors and patients has changed its structure. This phenomenon can be traced to the example of private (commercial) medicine in Russia. The patient's IL is converted into the "Homo Consumer's" IL and nowadays the patient is not only a subject of treatment but also a partner, i.e. consumer. The patient's IL should be considered for understanding the economic processes in healthcare.

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### E-Handover in Surgery Improves Clinical Efficiency and Adherence to COVID-19 Infection Control Measures

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**Introduction:** The ongoing coronavirus disease 2019 (COVID-19) pandemic has impacted all aspects of clinical practice. A district general hospital's surgical department identified that ward rounds based on a paper-based handover system did not adhere to good COVID-19 pandemic infection control measures, including social distancing, reduction of footfall, and reducing contact events during documentation. Surgical E-Handover was introduced as a quality improvement project focussing on increasing efficiency and improving patient safety and compliance with COVID-19 social distancing measures. Other objectives were to reduce the risk of information governance breaches. During the COVID pandemic, there was a significant investment in digital technology, which supported rapid advancement in the use of electronic healthcare solutions to deliver new ways of working. We used the opportunity of the emergency situation to disrupt existing work patterns and introduce surgical E-Handover.

**Methods:** A quality improvement team of stakeholders was assembled, and a project to introduce E-Handover was carried out using the trust quality improvement methodology aligned to the Institute of Healthcare Improvement (IHI). Questionnaires were sent out pre- and post-implementation to evaluate the impact of using E-Handover during ward rounds.

**Results:** The efficiency of ward rounds was improved and improving compliance with COVID-19 social distancing measures was highly successful. These outcomes were achieved by reducing footfall during ward rounds, as key clinical information was available at the bedside ( $p < 0.001$ ). Doctors spent less time in crowded clinical multi-disciplinary team (MDT) rooms, and the integrated paper healthcare records were not accessed by multiple staff members simultaneously. The implementation of the E-Handover improved the safety and efficiency of the surgical

department, particularly regarding potential information governance breaches ( $p < 0.001$ ).

**Conclusion:** Surgical E-Handover, as compared to a printed patient list, significantly improved clinical efficiency and adherence to COVID-19 social distancing measures. E-Handover should be routinely used in surgical ward rounds.

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### Four Meta-Theoretical Ways to View Integrated Care

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**Context:** What is integrated care? Is it constituted by its underlying causal mechanisms or its socially constructed realities? By the everyday practices in organizations or the personal experiences of individuals? It seems that the meta-theoretical assumptions of integrated care are rarely explicitly addressed in studies.

This paper aims to increase our understanding of integrated care by reflecting on the different meta-theoretical approaches underpinning it. A 'Four Seasons Framework' (Hujala et al. 2019) is used to illustrate visually different paradigms: social constructionism ('summer'), pragmatism ('spring'), phenomenology ('autumn') and critical realism ('winter'). The paper draws on a Finnish study on middle-managers cross-boundary collaboration.

**Methods:** The participants of the study (Management across boundaries, 2018–2020) funded by the Finnish Work Environment Fund) consisted of middle-level managers (altogether 38 people) working in health and social care. The focus was on middle managers' cross-boundary collaboration in integrated care for high-needs clients (elderly people, children and families, people with mental health and drug problems).

Different methods for producing research material for each approach was used: day-a-long group discussions (social constructionism), shadowing (practice-based approach) and arts-based workshops using visual methods and creative movement (phenomenology). The discussion sessions and workshops were recorded, and the data consists of transcriptions and visually produced material (e.g. drawings). Discursive and visual analysis methods were used to analyze the data. Triangulation of researchers from different fields (health and social management scientists, social psychologists, dance pedagogues, visual arts experts) was utilized in the interpretation process, summarizing the results from the critical realist ('winter') approach.

**Results:** The findings of the study, based on different meta-theoretical study designs, open interesting insights into the multi-level nature of managers' collaboration in different integrated care contexts, in this case particularly related to high needs clients.

The five discourses identified in the social constructionist ('summer') part of the study – ideal, defensive, structural, financial and mutual support discourses – reveal that defending one's own professional or organizational territory maintain the silos of health and social care – silos that integrated care was intended to dismantle. At the practice level (practice-based 'spring' approach)

fighting for the financial and other resources of the manager's unit/organization builds almost a tangible obstacle for integrated care. The 'autumn approach' (phenomenology) findings show that conscious or unconscious individual experiences, e.g. the conflict between the values of integrated care at the personal level and the explicitly stated formal values of the organization, may cause stress and lower motivation.

**Discussion:** Different ontological and epistemological approaches to integrated care research reveal different realities, in which IC stakeholders, such as middle-level managers, struggle to find their own way to exist and face complex, often contradictory challenges. Critical 'underlying' factors affecting managers' cross-boundary collaboration in integrated care contexts emerge and can be identified in different spheres: in talk, in practices and individual experiences.

High needs clients form an important target group, which needs holistic management orientation covering both individual, organizational and societal levels. Particularly middle-level managers experience pressure to balance between a systems-level approach to management versus their own individual leadership orientation.

Manager's cross-boundary collaboration is at the core of integrated care. The development of this crucial element of IC benefits from research addressing meta-theoretical bases of study designs. Diverse meta-theoretical approaches complement and enrich one another in terms of depth of analysis.

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### Primary Care Teams: Dynamics after COVID

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**Context:** COVID pandemic has turned primary health care services upside down. After a first wave that nearly blocked accessibility, new waves of COVID patients have surged together with a tsunami of care needs. Most Primary Care Teams (PCT) have shifted from face to face care to virtual care, mostly through phone calls and also through email.

**Measures:** This new situation has shown the necessity for new strategies. The huge amount of phone calls comes hand in hand with delays in care for chronic patients and difficulty for family physicians to prioritising. A new phone switchboard and an app facilitated this prioritisation. Simultaneously workload has changed workforce profile having hired non-clinical professionals to support COVID patients tracking and vaccination process. Also, nurses and nurse aides have needed extra hours working and home care has evolved with a specific group of nurses dedicated to more complex situations.

**Results:** One option is training health clerks as clinical assistants. They act as the first contact proxy for the whole team so they are to understand the needs of the patient, the significance of clinical professionals' choices for diagnostic or treatment and be as empathic as possible. To help them to answer patients' needs, call centres have been substituted by phone switchboard apps that give patients options for their specific needs and give professionals options to prioritise them. PCT has shifted from looking for doctors and nurses to a clinical assistants' search.

As for the clinicians, there are two paths to explore. On one hand, both nurses and doctors are to identify those patients to attend soon face to face, either for them suffering from chronic diseases that require follow-up, either because they show new symptoms. On the other hand, they are to receive support for dealing with increased demand as many patients, after a long time away from health services, get in contact presenting a long list of diseases, new and old. Currently need for nurses to develop full abilities and making them a gateway for patients prior to the doctor is another priority.

Nevertheless, a year after the start of the pandemic it all results in an increased workforce expenditure, a huge number of contacts with the team as a result of increased accessibility for people used to digital tools and delays in the follow up chronic patients.

**Discussion:** PCT managers are to balance accessibility with equity facilitating access to those who need it before everyone.

From now on PCT need to adapt to this new situation, considering both COVID persistent cases, non-COVID needs and (hopefully not) new pandemics.

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### Digital & Innovation Skills Helix in Health – The DISH Project

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**Introduction:** The DIGITAL & INNOVATION SKILLS HELIX IN HEALTH – DISH project is an Erasmus+ Sector Skills Alliance project with seven partner countries (Norway, Germany, Spain, England, Poland, Belgium, and Denmark). A triple helix is established in each country, covering a health care provider, an educational institution, and a cluster of tech companies. This construction of partnerships leaves the DISH project with a multi collaborative approach to developing digital and innovation skills in health care. The DISH project started in November 2018. Since spring 2020, the COVID-19 pandemic has been a challenge and has left the project with some testing problems.

**Methods:** The DISH project has *an innovative approach* and builds on developing three concepts necessary to achieve innovative and digital skills. Each concept addresses capacity found in the triple helix partnership in each country. The Learning Innovation Unit (LIU) is a concept that gathers a group of people involved in digital skills training. The group covers all stakeholders in the following skills training. Here the cluster of tech companies (IT departments) plays an essential role. The "On the Job Training" concept establishes skills training in simulation facilities or clinical practice. Here the Healthcare providers play a central role. Educational institutions play a central role in developing an assessment concept to assess the competencies achieved. All three concepts are thus central in the effort to achieve DIGITAL & INNOVATION SKILLS IN HEALTHCARE. After developing the concepts, each country will test the concepts on 5 test sites and 100 staff members.

**Results:** The characteristics of the LIU vary in each of the countries. Some countries use the same LIU each time, and others "build" a new LIU each time a training session is to be set up. All countries are aware that both management, staff, and IT/tech

companies should participate in the LIU meetings. The “On the Job Training” are more homogeneous in the different countries, although some training sessions are being held in simulation facilities and others on site. The elements in training, though, are similar. The assessment concept takes offset in the educational institutions in each country. The assessment concepts are in line with ECVET. EQAVET recommendations are applied and followed, which means that the assessment of competencies fits European standards even though they can vary between the concrete technology and setting. All three concepts are tested (in draft format) in the respective countries and finalised in autumn 2021.

**Discussion:** Suppose healthcare professionals adapt to the new policies and practices that accompany the current digitalisation in health care. In that case, the nurse’s traditional work role needs amendment in terms of the scope of work tasks and established views of conventional nursing. The DISH project includes a view on these perspectives during both LIU meetings and training sessions.

The digitised systems should provide the healthcare staff adequate resources to support patients’ self-management while still maintaining the values associated with person-centred care. The DISH project focuses mainly on the process of becoming more digital in the daily workflow. The global and urgent response to the COVID-19 pandemic has forced healthcare staff to adopt technologies broadly.

The DISH project shows that a strong personal relationship between a company/IT representative and healthcare providers is of paramount importance. Solid personal connections in the LIU meetings are essential when integrating technology into clinical practice.

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### **The Pediatric Orthopedics Workforce in Romania and its Impact on Clubfoot Patients’ Access to Health Care Services**

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Health systems need to have enough Pediatric Orthopedists, who are adequately qualified and trained, to ensure clubfoot patients’ proper access to the needed care. The Romanian healthcare system has been long experiencing shortages of properly trained pediatric orthopaedics surgeons. This paper aims to provide an overview of the Romanian Pediatric Orthopedics workforce, link it with the patients’ perceived needs, and identify potential solutions to address the identified challenges.

We used multiple data sources. First, we accessed secondary data available in the Activity of the Healthcare Institutions (Activitatea Unităților Sanitare), a yearly report issued by the National Institute of Statistics. Second, we conducted interviews with parents of children diagnosed with clubfoot across Romania.

Between 2009 and 2019, the number of specialists in Pediatric Orthopedics fluctuated noticeably, with a decrease of 59% in 2015 compared with 2009. Only 4% of all the orthopaedic surgeons in Romania are currently orthopedic pediatric surgeons. Furthermore, the Ponseti method, the elective method to treat clubfoot, is under-approached by the pediatric orthopaedic surgeons across Romania, which calls for the need to develop specialised training opportunities.

Given the weaknesses provided by the current data, we conclude that the pediatric orthopaedics workforce deficiencies have to be addressed urgently. Policy options should focus on raising awareness around this issue. The guidelines that emphasise the recommended treatment of musculoskeletal disorders should represent a standpoint for specialists and future specialists in the pediatric orthopaedics field.

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### **SCIROCCO Exchange Knowledge Transfer Programme for Capacity-Building in Integrated Care**

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**Context:** The SCIROCCO Exchange project supports authorities in the adoption and scaling-up of integrated care. To maximise the value and impact of the SCIROCCO Exchange online self-assessment tool, a personalised Knowledge Transfer Programme was co-designed in 9 European regions to support the scaling-up of integrated care and improve existing system design. One year into a global pandemic, which brought a brutal stop to in-person activities, and stretched resources in health and social care systems, SCIROCCO Exchange facilitated targeted knowledge transfer, based on the findings of the initial maturity assessment and the subsequent definition of priorities and needs.

**Methods:** The SCIROCCO Exchange Knowledge Transfer Programme provides bottom-up personalised assistance and practical support to tailor the local needs and priorities in 9 European regions that are seeking support in preparing the ground for the transition and scaling-up of integrated care and/ or to improve their existing system and service design.

Partners first assessed the maturity of their system via the SCIROCCO Exchange online self-assessment tool, which led to a shared vision on the situation via consensus-building workshops between regional stakeholders.

They then defined their priorities and needs for the Knowledge Transfer Programme, as well as stakeholders to be involved, indicators of success, and activities they would like to implement, based on an inventory of different knowledge transfer activities with details on purpose, resources needed and targeted stakeholders

Activities initially proposed had to go online providing new opportunities for learning and testing in the context of the COVID-19 pandemic.

**Results:** 9 European regions co-created their Knowledge Transfer programme. The Knowledge Transfer Activities are classified into 5 main categories: 1/ Expert mission to receiving region; 2/ Events in receiving region; 3/ Capacity-building activities in receiving region; 4/ Study visit to transferring region; 5/ Exchange,

secondment or placement of staff. The online knowledge transfer activities fit in the same 5 categories and serve the same purposes: a webinar on goal-oriented care, offered by Flanders functioned like a study visit to show practice and receive feedback. Other webinars functioned like conferences for experience sharing, producing collective intelligence, engage stakeholders...

Peer learning activities tailored to the needs of partners were organised on the implementation of Electronic Health Records, Readiness to change, service redesign, or the use of data to inform decision making. Capacity-building activities were organised on EU funding in Puglia and agile management in Lithuania.

**Discussion:** What are the main elements of the success of the Scirocco Exchange Knowledge Transfer Programme and how can these be used in other contexts to encourage peer learning to support the scaling-up of integrated care and improve the existing system and service design?

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### Fostering a Managerial Perspective on Electronic Health Records Use in Long Term Care

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Traditionally, the Long - Term Care (LTC) sector lagged behind the healthcare one is embracing the digital revolution. Yet, in the past years we have been witnessing an increasing interest in the introduction of Health Information Technology (HIT) and in particular, Electronic Health Record (EHR) also in LTC settings (Ko et al., 2018). Extant literature has explored the potentials of the use of such systems in LTC mainly through four perspectives: the impact on organisational performance (e.g. Hill and Tambe, 2016), on quality of care and residential outcomes (e.g. Hertzum, 2021); on workforce organisation and clinical decision making (e.g. Alexander et al., 2015); and on the care continuity process, to make it smoother (Lim et al., 2015). In all four perspectives, it is still unclear, whether the introduction of EHR leads to managerial improvements. Moreover, though insightful, previous studies have adopted the organisation, the workforce or the residents as their unit of analysis, largely neglecting the managerial view on the benefits and drawbacks in the introduction of EHR in LTC, to grasp the effect of such tool on the operations management, people strategy, strategic and operational planning, performance management. We believe that literature on the EHR utilisation would benefit from such a perspective, in that it can provide hints on the decision makers' view on potentials and backgrounds of the instrument and set the ground for further studies on how this affects the management of digital technologies.

Building on these premises, this work aims to detect the managerial perspective on the benefits and drawbacks resulting from the introduction of HIT in LTC facilities. To answer this question, we developed an online survey based on the main results observed in the literature on HIT in LTC (the previously mentioned 4 perspectives) and will submit it to the top management of over 100 nursing homes in Italy between May and June 2021. The Italian context can provide interesting insights in that there is no normative requirement to introduce the EHR (as there is in the US):

hence, nursing homes adopted it for reasons other than legislative pressure and/or incentive that require further clarification. Moreover, the Italian LTC sector is still far from being digitalised and is expected to face great pressure due to its increasingly ageing population.

We can count on a unique dataset resulting from nursing homes that all adopted the same software: the differences in terms of size, geographical distribution and revenues will allow for further detection of differences in the use and perceived benefits and drawbacks of the very same technical device. Moreover, this will allow us to focus on organisations in a mature stage of EHR introduction to shed light on the perceived benefits and risks.

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### Proposals for Financial Stability and Structural Reform of the Croatian Healthcare System

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At the end of 2020, the total liabilities of public health institutions (excluding pharmacies) in Croatia were 11 billion HRK, with liabilities due at 4.5 billion HRK. In 2020, an average of 220 million HRK of new debt was generated per month. At the end of February 2021, some hospitals had unpaid debts to wholesalers for medicines and medical supplies that had been owed for more than 2 years.

Croatian Health Employers' Association, as the largest and the oldest healthcare employers' association in Croatia, presented its proposals for financial stability and structural reform of the Croatian healthcare system. In this paper, we present some of them.

According to our estimates, the proposed measures would provide increasing revenues and reducing expenditures by more than 5.5 billion HRK per year, without increasing health insurance participation (now 16,5%) and, with the primary condition being that there is full compliance with the law regarding the amount of the funds paid from the state budget for health care.

We propose the payment of health institutions due obligations (clean start) and the implementation of reforms to prevent new debts.

Reforms would include a reform of supplementary and additional health insurance, and the exclusion of both sick leave and maternity leave pay from the health fund.

The operations of health care institutions management are affected by the following:

1. Management holds no sway over prices of health services paid by the national health insurer to health institutions.
2. Legal limitations placed on human resources management.
3. Salaries in health care are determined by the law and collective agreements and do not depend on work performance.
4. Regardless of the achieved professional and financial results, management is subject to change depending on political changes.

Therefore, it is necessary to fully professionalize management through education, a different system of performance evaluation, and depoliticization.

We propose a change in the method of contracting the prices of health services paid by the national insurer to health institutions, so that the representative of health institutions and the national insurer agree on prices, with the final arbitration of the Ministry of Health.

Functional integration of hospital departments would create centres of excellence and reduce costs.

Further informatization by completion of eReferral and eOrdering (the ePrescription project was completed in 2011) and additional regulation of the relationship between public and private work, would reduce waiting lists.

Compatibility of information systems and the development of databases would enable the monitoring of treatment outcomes and, accordingly, the editing of drug lists.

An increase in controlling would help to make more rational use of existing resources.

The implementation of the proposed measures requires the consensus of all participants in the health system.

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### **Developing Synergy across Transdisciplinary and Through Multisectoral Approaches within the Context of Transformational Change in the Kingdom of Saudi Arabia through Collective Leadership**

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**Context:** Healthcare leadership in the Kingdom of Saudi Arabia (KSA) is undergoing a 10-year transformational programme introducing the most significant change in the history of its healthcare. The scope is considerable, constituting a large-scale transformation. Healthcare is one of eight themes of the reform programme aiming to offer a fulfilling and healthy life for its population. With over a quarter of a million employees spanning 300 hospitals and over 2,000 primary healthcare units, this is a major task for the Ministry of Health. In 2018, the Healthcare Leadership Academy was created and is playing a major role in leading healthcare transformation.

**Methods:** The paper considers the KSA Healthcare Leadership Model (HLM) aim to support the development of more than 28,000 healthcare professionals, in a transdisciplinary and multisectoral approach to healthcare transformation. There is a unique opportunity to evaluate the long-term impact of transformational change in improving healthcare leadership and governance on a longitudinal basis. The current COVID-19 pandemic presents both challenges and opportunities which provide an additional context for considering these challenges. The paper will explore the results of a regional literature review, the purpose of which is to consider the benefit of developing an accountability imperative framework as a means of improving both collective leadership and governance through accountable leadership in the Kingdom. Using a realist evaluation framework, it then analyses the opportunities (from the review) alongside existing strengths and weaknesses within the context of the vision and more immediate lessons from the COVID-19 pandemic response using a collective leadership framework.

**Results:** Developing transdisciplinary and multisectoral working are major elements of transformation. The research explores the mission and vision of the HLA to “*unleash individual and collective leadership potential to achieve better health and care through accountable leadership.*” The paper will consider synergy between accountable and collective leadership as an innovative approach to improve governance through transformative mechanisms aligned to a 360° Collective Leadership Model. Two key pillars of the HLM are those of care and accountable leadership. The paper will explore the model within the context for reform in the KSA and the potential opportunities afforded by a shift to collective leadership based on the ‘SAPPHIRE’ project (Saudi Arabia Private and Public Healthcare Impact of Reform Evaluation). This project seeks to undertake a ten-year longitudinal study about the development and practice of collective leadership and the impact on the transformation programme for healthcare as part of the 2030 vision.

**Discussion:** The transformation programme that is taking place in KSA is without doubt one of the largest of such programmes across the globe. Taking account of the wider 2030 vision for the KSA healthcare system, the concept of transdisciplinary research and practice across multisectoral healthcare systems will be essential in integrating social and health sciences in a humanistic approach to leadership. This relational approach will need to be supported by the equally important requirement to consider healthcare as a complex adaptive system if the aims of the mission and vision are to be realised. The initial research that this paper presents will show that the understanding of systems and structures alongside the need to build appropriate skills and behaviours will be crucial in the achievement of the ambitious and innovative collective vision that drives the HLM. The Kingdom of Saudi Arabia is undergoing a paradigm-shifting transformation. The delivery challenge is considerable

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### **Organisational Impact Related to the Introduction of Automated Technologies for Pharmaceutical Logistics in the Hospital Setting**

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**Context:** In the healthcare sector, pharmaceutical logistics integrated models are emerging: the use of innovative technologies, often automated, could overcome the critical issues of traditional dispensing systems in a hospital setting. Such integrated systems could allow the achievement of several important objectives, both from a managerial (i.e. the complete traceability of the drug, a clear control of stock, the reduction of the number of expired drugs), and a clinical perspective (i.e. error reduction, from the prescription phase to the drug administration and consequently a better patient safety). These advantages are often not yet totally recognised by stakeholders (clinicians, pharmacists and legislators).

**Methods:** The study aimed to demonstrate the value of dispensing automated technologies, in the hospital setting, to the



different stakeholders involved (end-users, policy and decision-makers involved in the introduction of innovative technologies, tender supervisors, etc.), focusing on the organisational impact, following a Health Technology Assessment approach. The perceptions of 42 Italian healthcare professionals (14 pharmacists, 14 nurses, 6 other professionals, 8 decision-makers), were collected using validated questionnaires (a 7 level Likert scale, from -3 to +3) considering both a short-term (12 months) and a long-term (36 months) time horizon. In the analysis, these four scenarios were assessed:

- Scenario 1: Manual dispensing
- Scenario 2: Presence of centralised automated Drug Dispensing System in the Hospital Pharmacy
- Scenario 3: Presence of decentralised automated Drug Dispensing System in the Wards
- Scenario 4: Presence of automated Drug Dispensing System both in the Hospital Pharmacy and in the Wards

**Results:** Results showed a low organisational impact of dispensing automated technologies solutions in the 12-month time horizon (-0.71, 0.50, 0.49, 0.63 respectively for Scenario 1,2,3,4). Indeed, there is a presence of trade-off between organisational efforts (i.e. training courses, hospital meetings) and beneficial effects (i.e. stock management, storage capacity, drugs allocation criteria, impact on healthcare professionals' workflow, organisational well-being and satisfaction). Considering the 36-month time horizon, on average, the scenarios with the presence of automation obtained higher positive results compared with the 12-month time horizon (respectively -0.70, 1.08, 1.12, 1.27 for Scenario 1,2,3,4). The assessment, based on the professional role, showed that, on average, the pharmacists and decision-makers gave higher scores to Scenario 2,3,4 than nurses. Potential users seem to be more confident than already users to achieve better results with automation after 36 months of implementation, while already users were more severe in the judgement of organisational efforts.

**Discussion:** The introduction of dispensing automated processes requires a specific design and good management skills to obtain effective and efficient results, respecting the different cultures of healthcare professionals involved. Indeed, in the implementation of automated processes, the end-users often face problems, from an organisational and structural perspective, discouraged also by the healthcare professionals' resistance to change. In this view, the production of real-world evidence could be essential to communicate the core elements of the automated dispensing technologies, with different stakeholders (policy and decision-makers, end-users, tender supervisors, clinicians, pharmacists, patients, etc.), on the basis of the divergent point of views and specific needs: indeed literature is mainly focused on safety evidence. Future steps of research will involve different stakeholders in some European countries in order to determine the generalisability of results.

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## How did COVID-19 Pandemic Help Implement Telemedicine in Health Systems?: Short Overview of Facilitators and Barriers

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**Background:** The outbreak of SARS-CoV-2, the virus that causes COVID-19 is a public health emergency of international concern. Telemedicine is an effective option for minimising the transmission risk to healthcare personnel (HCP) and patients while allowing the provision of care to be delivered.

The short review aimed to review barriers and facilitators of telemedicine uptake during the COVID-19 pandemic. It presents several advantages and potential disadvantages of telemedicine and analyses what the COVID-19 pandemic has changed in the existing health care organisation to allow for substantially broader use of telemedicine. It also describes examples of good clinical practice in several healthcare institutions during this pandemic and hypothesises which of these new ideas and organisational solutions that started during COVID-19, would remain useful for the future organisation of health care systems.

**Methods:** We have searched PubMed and COBISS for relevant evidence. In addition, we searched the web for case studies, demonstrating barriers and facilitators for the implementation of telemedicine in health systems.

**Results:** The COVID-19 pandemic permitted health systems across the globe, to test telemedicine and its effectiveness. There are still many barriers for telemedicine to become mainstream. The factors impairing the uptake of telemedicine are human, organisational and technological. Therefore, it is important to establish a legal framework within which telemedicine can start operating safely for the patient and the healthcare professional. It is necessary to invest in the infrastructure of health care institutions so that they will be able to renew and adapt to newer programs. It is also necessary to secure this infrastructure by developing security and detection systems against computer intrusions into health system programs. Basic protocols for emergency response in the event of an intrusion into the health information system also need to be developed.

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## The Role of Procurement in Driving Innovation and Delivering Better Outcomes

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The COVID pandemic has shown how rapidly innovation can be adopted in response to necessity. It is indeed the mother of invention - and innovation. Innovation has been evident at the organisational, societal, and individual levels. I am sure everyone can think of examples: 3-D printing of parts for masks, new supply-chains for PPE, remote medicine and rehabilitation solutions. A crisis is a strong driver of creativity and innovation.

What about procurement? It is perhaps unfortunate that the vital work of our procurement departments in the smooth operation of healthcare operations is only noticed when something

goes wrong. Who can forget the issues with sourcing PPE during the earlier stages of the pandemic? Procurement is a powerful, and underused strategic tool. Our experience shows that new approaches to procurement that drive innovation to address unmet needs lead to better goods and services, and in turn better outcomes. And while a crisis can highlight unmet needs not previously evident and create a fertile ground for innovation, forward-looking management and pro-innovation procurement can identify and anticipate unmet needs and deliver solutions. We don't always need a crisis to innovate!

This abstract concerns the work of the EU-sponsored project EcoQUIP+, which aims to demonstrate how the strategic application of procurement and collaboration among hospitals can drive innovation and deliver solutions to identified 'unmet needs'.

The presentation will discuss what is meant by innovation, outline the principles of innovation procurement as a strategic healthcare tool and present several innovation procurement projects that have attracted the interest of other healthcare providers in a collaborative procurement approach.

**The principles and practices of innovation procurement:**

Innovation Procurement is all about procurement in a way that stimulates the supply chain to invest in developing better and more innovative goods and services to meet the unmet needs of organisations and society. How we buy things can either hinder innovation, or it can instead stimulate innovation, unlocking the

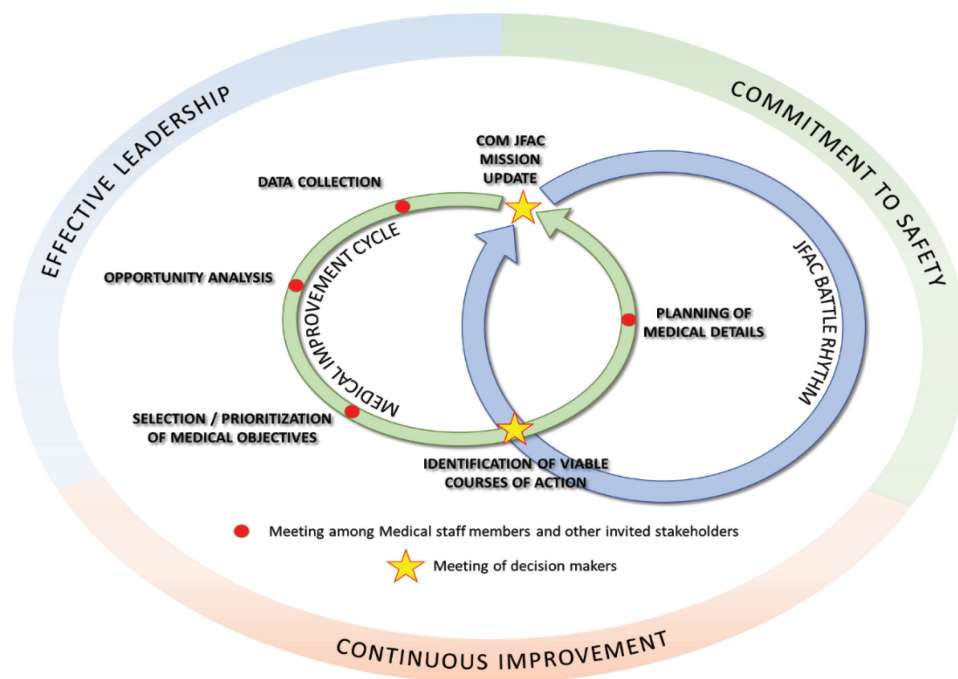
creativity and innovation potential of suppliers. The presentation will outline some of the tools and processes that have proved effective in delivering innovation - and better healthcare services.

**The importance of collaboration and demonstrating a wider demand:** The healthcare sector is, in principle, an excellent lead market; if one hospital has an unmet need, this is likely to be shared by others. This means that if one hospital can identify a need and engage suppliers in providing a solution, the supplier has a potential market of more than 15,000 hospitals in Europe and potentially a global market opportunity.

**Conclusion:** Beyond the pandemic, other challenges need new approaches and new solutions that present opportunities for healthcare transformation. The pressures on healthcare technically, demographically and financially mean that innovation is increasingly a necessity as the existing solutions fail to meet the needs of hospitals, healthcare professionals and patients.

In conclusion, we will address the question: How can healthcare procurement become more strategic in its approach and more effective at driving innovation and how can collaboration amongst healthcare providers be enabled?

Innovation procurement offers a practical way forward. But this will not happen on a significant scale without the leadership of healthcare management and collaboration among healthcare providers.



**Fig. 1.** The medical (green) and operational (blue) decision-making processes supporting the three core pillars of HROs. The medical improvement cycle and the JFAC battle rhythm need to be coordinated to generate cross-sectorial understanding and leverage combined solutions to deliver improvement in aeromedical support on-air and space operations.

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## Quality Improvement Plans in Allied Air and Space Commands – A Case Study from the NATO STEADFAST JUPITER-JACKAL 2020 exercise

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**Context:** High-Reliability Organisations (HRO) are organisations that achieve safety and performance goals with fewer than anticipated accidents despite operating in highly complex and hazardous environments. Aviation, in general, is mentioned as one of the most successful examples for the longstanding tradition in applying the three core pillars of HROs: the commitment to leadership, the culture of safety and the continuous process of improvement. HRO principles need time to generate the right mindset, while crises can ramp up quickly and NATO response may require the activation of multinational military commands with personnel of different backgrounds.

**Methods:** During the execution phase of the NATO Steadfast Jupiter-Jackal (STJU-JA 2020) joint exercise (29 Nov to 11 Dec 2020), the Medical Branch of the Joint Forces Air Component Command (JFAC) was challenged to receive a report of a dangerous complication triggered by inflight conditions of an otherwise trivial endemic infectious disease. Clinical outcomes could have compromised the safety of all air operations and the sustainment of the whole military campaign. A medical response was needed to protect personnel and the mission. An Aeromedical Safety and Quality Improvement Plan (ASPIP) was developed to support the Medical Director and related staff and synchronise decision making with other key elements of the headquarter (logisticians, pilots, financial and legal advisors, intelligence officers...). A novel healthcare improvement strategy for allied military air/space commands (Figure 1) was tested to facilitate problem-solving in groups of stakeholders with little common training and experience. HRO principles are leveraged in the ASPIP so that NATO medical support standards and civilian healthcare quality improvement solutions can translate into physical actions and consequently lead to optimised patient outcomes.

**Results:** The JFAC ASPIP was applied to achieve compliance with the new medical support requirements and accomplish a coordinated force health protection response. An Aeromedical Governance Team (AGT) was gathered, identified objectives and developed three initial courses of action (COA): most likely, most effective, least engaging. They were presented and discussed during the day's Air Strategy Meeting, thus being incorporated into the Air Tasking Order (ATO) cycle, and eventually presented to the JFAC Commander for approval in the ATO Release Briefing. The selected COA was translated in a Plan-Do-Study-Act (PDSA) cycle by the AGT to deliver the medical measures to the population at risk, exploiting the already available military medical/non-medical support channels. Once approved by the JFAC Commander, the solutions returned to the medical staff who dispatched directives to subordinate formations. Observations and feedback provided by the training audience showed that the cross-sectoral cooperation within the headquarters ensured ongoing deconfliction and harmonisation with other combat and support requirements before uncoordinated action could have been taken with fragmented initiatives. Even if the implementation of

the ASPIP should have been continued with the assessment of outcomes and with the finalisation of achievements, the training objective related to the testing of the command and control procedures within the JFAC was considered accomplished.

**Discussion:** Aeromedical Safety and Performance Improvement Plans may represent keystone documents in allied air and space commands to assist the harmonisation of aerospace medical solutions with combat requirements. Synergies achieved in structured team-based decision making can enhance the synthesis of multidisciplinary information to generate aerospace medical situational awareness and the development of solutions to accomplish improved patient outcomes with optimized effectiveness and efficiency.

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## Hospital at Home in Portugal the First Five Years: Numbers, Figures and Patterns

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**Context:** The Hospital at Home (HH) movement, in Portugal, started in October 2015. Currently, a total of 28 HH units are part of our NHS. The main objective of HH is to make health care closer and patient-centred and with a greater capacity to resolve illness situations during the patient's life. This study aimed to characterise demographically and clinically the patients hospitalised in HH, in the first five years in Portugal.

**Methods:** We developed an observational, retrospective and cross-sectional study of all patients admitted to the hospital at home (HH), from January 2016 to December 2020, in the hospitals of the Portuguese NHS.

**Results:** Of all patients, 60,5% have 65 years or more. The most frequent diagnosis was influenza and pneumonia and 81% of episodes with severity level 1 or 2, The in-hospital mortality rate was 1,59% and the rate of readmissions in 30 days was 3,99%. The mean length of stay was 11,22 days. 98,16% of patients and 98,87% of caregivers were satisfied with the HH model.

**Conclusions:** HH proves to be an alternative to conventional hospitalisation and its numbers have increased since it was implemented. This model provides continuous and coordinated assistance to patients who, requiring hospital admission for hospitalisation, fulfil a set of clinical, social and geographical criteria that allows them to receive their care at home.

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## Assurance: A Key Steering Tool for Good Leadership

Mr. Joao Figueiredo

Good Governance Institute, United Kingdom

The workforce has long been the single biggest challenge for the National Health Service (NHS). Added to the difficulty of recruiting health and care professionals is the additional need to ensure that those professionals have the right skills, values and behaviours to deliver the best possible service to patients.

To address this challenge and shape the workforce of tomorrow, the Health and Social Care Act of 2012 established Health Education England (HEE).

Over the past eight years, HEE has become a key player across the NHS on a local, regional and national basis. This presents the organisation with a unique set of challenges. HEE is a national body comprising seven regional directorates that play major leadership roles in the geographies they manage, making decisions on how best to assure and support performance in their region, as well as supporting local system transformation.

As the organisation matured and new leadership was adopted, it became evident that HEE needed to review its governance model – in particular the systems that assure that the organisation's accountable officer can take from the various structures, managerial arrangements and processes.

The Good Governance Institute (GGI) is working with HEE to review the delegated authority given to groups or senior staff to make sure that the principle of subsidiarity is functioning properly.

By providing proper assurance, the GGI review will support the board's risk appetite and assurance framework. It will also unpick and clarify the different contributions made by assurance and performance management, which are said to be conflated in HEE.

The aim of this review is to enhance the stewardship of the organisation so that controls are effective and there is an ethical culture, acting with legitimacy to add value to the organisation's core purpose. It will also be a platform for later changes and development to manage out unwarranted variations in structure and practice, particularly at a regional level.

The accountability handbook, to be published in July 2021, will become an integral part of shaping HEE's governance model and assurance framework and can be used as an example to other national bodies.

This review has been developed through:

- An in-depth review of executive committee structure and terms of reference and other key governance forums and reporting mechanisms
- Consultation with HEE's national and regional leadership and post-graduate deans
- Engagement with key local, regional and national stakeholders via a survey
- Development and socialisation of recommendations
- Development of an accountability handbook to ensure the organisation has a single operating framework for assurance

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## Home Palliative Care Costs

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<sup>1</sup>NOVA National School of Public Health, Public Health Research Center, Universidade NOVA de Lisboa, Portugal;

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**Background:** Breast cancer is the second most diagnosed cancer worldwide. Its progression reduces patients' quality of life, but timely and continuous palliative care may alleviate the disease's symptoms and complications. According to the literature, palliative care should be provided through integrated and patient-centred services, such as home care. However, Portugal lacks 61% of the estimated necessary capacity of palliative care community support teams. This work aims to estimate the costs of home palliative care for patients with malignant female breast cancer, skin metastasis, non-hemorrhagic tumour wound, with no other metastasis.

**Methods:** Based on the literature review, we identified the resources that could be included in-home palliative care for selected patients. Using a modified Delphi technique and a panel of nineteen experts from different backgrounds in palliative care, we estimated the costs of home palliative care for patients with malignant breast cancer, per visit, in Portugal. The panel confirmed the resources used in-home palliative care and provided the quantities required for each visit. These costs were valued according to the national official tariffs and prices for the National Health Service. Then we estimated the costs for the entire population, based on the estimated prevalence of the studied subgroup of breast cancer patients.

**Results:** Estimated palliative home care costs were 109 euros per visit, 36% of which were related to human resources, 40% to medicines, 21% with clinical consumables and 3% with transportation. We estimated that a week of home palliative care for each patient had a cost of 325 euros. Based on data we collected from experts, about 8.4 million euros were estimated to be necessary to provide home palliative care to patients with malignant female breast cancer, skin metastasis, non-hemorrhagic tumour wound, with no other metastasis.

**Discussion:** This work adds to the existent literature by quantifying the costs related to home palliative care in Portugal. The percentages of costs per visit will always depend on the multidisciplinary of the team, and the type of patients involved, either by pathology or by the stage of the pathology, however when

comparing the results obtained with previous studies, we find similarities in the fact that human resources are together with medicines the main cost shares. Despite being influenced by the assumptions necessary for the estimates and the fact that costs for patients and informal caregivers were not considered, our results provide evidence that may be used to support the expansion of home palliative care and increase response to the needs of cancer patients in Portugal.

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## Digital Primary Care Visits Designed for Different Patient Segments - A Systematic Review

Ms. Sanna Lakoma, Ms. Laura Pitkänen, Dr. Paulus Torkki

University of Helsinki, Finland

**Context:** Digital healthcare services have the potential to increase productivity and accessibility of healthcare services. They are therefore being developed constantly. From the point of view of Finnish primary care, where patients are often segmented according to their service needs, it would be useful to know which segments these services are targeted at.

Our systematic review focuses on the digital health services which replace a general practitioner's (GP) appointment in primary care. The research questions are:

- From which perspectives have primary care digital services been studied?

- Which modalities do these services employ?

- Which patient segments are they aimed at?

**Methods:** This systematic review is conducted following the PRISMA Protocol. It includes studies published in English from January 2010 to May 2020. Papers were eligible for the review 1) if they focused on a digital health intervention used in a primary health care setting, and 2) if the intervention replaced a face-to-face appointment with a GP. Such interventions included for example e-mail messages, phone calls, video calls, and electronic symptom assessments.

We cross-tabled the studies according to methodology and perspective. The perspectives of the studies were classified according to the four aims of Quadruple Aim, with the addition of a fifth category for descriptive studies. We also cross-tabled the studies by the targeted patient segment and modalities used. Each study can include more than one perspective and modality.

**Results:** Out of the 36 studies included, 10 were tailored for the needs of a patient segment: 5 for patients with long-term service needs, 5 for patients with infrequent service needs. Targeted users were classified mostly by a medical condition. The rest of the studies (26) didn't differentiate between patient segments.

The most often used perspective was that of the clinician (16/36 studies). 15/36 studies were descriptive. Costs and outcomes were rarely utilised as a perspective: costs in only one study, outcomes in six. Patient experience was the perspective chosen in 11/36 studies.

Among all the interventions, the most common modality used was a phone call (20), and the second most common were asynchronous messaging and video consultation (10 each).

**Discussion:** Digital services have mostly been developed to serve the whole heterogeneous population of primary health care.

Many articles noted that the services needed further development, or that face-to-face visits were preferred. We argue that developing the services to fit the needs of a patient segment might help make them more acceptable and suitable for the patients.

In studies included in this review, the most common digital technology for communication between patient and professional was the telephone. More modern solutions could also make the services more acceptable.

The most often used perspective in these studies was that of the clinician. To develop these services to fit the needs of patients, more studies from the patient perspective are needed.

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## Health Workforce Support Needs in the Light of the COVID Crisis (Example from Serbia)

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The COVID pandemic revealed all the weaknesses of health systems. Lack of capacity to accommodate patients and lack of appropriate equipment, inadequate organisation of treating non-COVID patients, and numerous challenges along with a large number of deaths have affected all health professionals.

Lots of these challenges were and are monitored and measurable, and measures have been and are being taken according to possibilities. However, significant impacts and changes are changing health professionals personally and professionally, though still not wholly visible and impossible to assess the crisis consequences on health professionals' mental health.

Although research on the impact of the pandemic on the mental health of the population, patients, and health professionals has already been made, it appears that there are neither enough actions nor the possibility to take action to support health workers.

The paper aims to present an example of the activities taken by the Group Analytic Society Belgrade (DGAB) in the COVID pandemic emergency circumstances. Wishing to support health professionals and associates, and student volunteers, DGAB has organised and created online groups. The setting is defined, participation in the group is open and voluntary, in compliance with confidentiality and non-disclosure principles. The goal of the support group to health professionals is to exchange experiences, feelings, and mutual support in daily work. Online groups thus become a space for connection, understanding and common reflection, therefore influencing the capacity building for health professionals' resilience in the pandemic crisis conditions.

Group leaders have experienced group analysts, members of DGAB. The paper aims to present the challenges and aggravating circumstances in forming groups. A gap between the present need for support and the difficulties to form groups is noticed. The aggravating circumstances to form an online group can be seen as strong resistance in accepting the offered help, i.e. negating the need for support, while experience with health professionals individually indicates a feeling of helplessness and hopelessness, and the impossibility of any help (which can be a projection of the

situation in “severely affected” health systems). Moreover, there are extraordinary circumstances in planning shifts, engagement, and the need to provide time for physical recovery and family time after difficult shifts in the “red zones”, to temporarily suppress the job-related thoughts. Therefore, it is important to further explore the ways to overcome the noticed resilience, to exchange experiences in providing support to health professionals to ensure the strengthening of human resources capacity and health systems in general.

The pandemic crisis has created the need for a complex approach and support to the most valuable part of the health system, human resources, whether in a COVID or non-COVID system, so health systems could achieve sustainability and overcome the current crisis.

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### **Structural Registration and Discussion of Patient Outcome Data for Improving Quality of Cardiac Care: Approach of the Netherlands Heart Registration**

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**Context:** Patient outcomes are increasingly important in the interests of quality management in healthcare, for example by the introduction of Value-Based Healthcare principles. Several indicators to assess the quality of care for heart patients have been defined and/or published by ICHOM and several national initiatives. Registries provide online dashboards and yearly reports at different levels of transparency. Still, one can question how to optimally use this information to improve cardiac care and learn from each other. In this presentation, we will discuss how patient outcomes are used to identify potentials for improvement of the quality of care in nationwide transparent committees which are part of the Netherlands Heart Registration (NHR).

**Methods:** The NHR is a registry of all cardiac interventions performed in all Dutch hospitals. Currently, a total of seven registries are facilitated by the NHR, i.e. Ablation, Atrial fibrillation, Cardiothoracic surgery, Heart failure, Pacemaker/ICD, Percutaneous coronary interventions (PCI) and Transcatheter heart valve interventions (THI). For each registry, a so-called registration committee is instituted that consists of cardiologists or thorax surgeons from participating hospitals. The primary objective of these committees is to monitor outcomes per hospital, discuss differences in processes of healthcare delivery, initiate additional research, define hypotheses and share good practices in case of clinically relevant or significant variation of outcomes.

**Results:** Yearly, three to four meetings are organised for each registration committee. During committee meetings, outcome data from all participating hospitals are discussed to identify potentials for improvement. For this purpose, committee members are regularly invited to present processes of care in their hospital, for example when being identified as an outlier regarding a certain patient outcome. Transparency of outcomes is essential here as this is required to identify best practices. By creating a non-competitive and confidential setting, cardiologists and thorax surgeons are encouraged to share delicate information with

colleagues. For example, in meetings of the THI registration committee, high mortality scores after transcatheter aortic valve implantation (TAVI) have been subject to discussion. For this purpose, one of the members has presented the process of care in his/her hospital to discuss differences between hospitals, seek explanations and identify potentials for improvement together. Also, volumes and order of a combined procedure of PCI and TAVI have been mapped to identify relevant follow-up questions on these types of procedures and patients. Moreover, additional research on the cardiogenic shock is currently performed on the initiative of the PCI registration committee resulting from high numbers of complications in these patients, while the committee of the Cardiothoracic surgery has initiated a project in which additional data is collected to gain more insight into re-interventions after an aortic valve replacement.

**Discussion:** Structural registration and monitoring of patient data within the registries facilitated by the NHR allows insights into outcomes of heart patients. This provides hospitals with the opportunity to improve the quality of cardiac care. Additionally, cardiologists and thorax surgeons accomplish a form of supervision by themselves on their cardiac care in this way. To further optimise the use of patient outcome data, the NHR (together with several partners) is currently building an infrastructure for research based on the existing registries, such as registry-based randomised controlled trials (RBRCT). This infrastructure will enable research on real-world data from routine clinical care and provides opportunities to evaluate and further improve cardiovascular care.

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### **The Demand for Urgent Care Services in Portugal**

Dr. Patrícia Alves Rocha

Centro Hospitalar de São João, Portugal

**Introduction:** The demand for emergency care in Portugal increased by 5.2% between 2013 and 2019 and it reached its peak in the last 6 years with 6.4 million episodes. As a result, the pressure on this type of service and the overcrowding of hospital emergency departments increased.

In Portugal, it's common to go directly to the emergency department, instead of looking for other services, such as primary care or calling SNS 24 helpline. Often, studies focus on the supply side, ignoring decisions on the demand side, forgetting that the demand for health care services results from an individual choice process.

**Objectives:** The primary aim of the present study is to assess whether access to a health care service before being admitted to an emergency department is effective in reducing the number of non-urgent patients, that is blues and greens according to the Manchester triage system, and to compare with walk-in admissions. Furthermore, demographic, temporal and socioeconomic factors are identified for non-urgent visits (according to the Manchester Triage System).

**Materials and Methods:** The dataset provided for this analysis was retrieved from the hospital's information system. An observational, cross-sectional study will be conducted with all patients admitted to the Emergency Department of São João Hospital during 2019.

**Results:** Patients who call the SNS 24 helpline and were sent to the emergency department are, on average, more acute than patients who went first to primary care. The percentage of avoidable emergencies varied between 2.1% and 26.7%, depending on definitions and without taking into account the individual characteristics of each patient.

**Discussion:** Identifying greens and blues in the emergency department as avoidable is an excess estimate, even excessively. If one considers that the patients who were previously referred to the emergency department (either by their family doctor or by calling the SNS 24 helpline) are never false emergencies, the similarity of their profile and walk-in admissions patients' suggests few cases of false ex-ante emergencies (before hospital observation) even if ex-post (after observation and Manchester Triage assessment) they aren't an acute case;

Data shows that the SNS 24 helpline is more efficient at trialing patients to the emergency department than family doctors. However, even with this information, without information about symptoms to incorporate in the model, one can't conclude that all the greens and blues are false emergencies.

**Conclusion:** The impact and function of the SNS 24 helpline, as well as other health technologies, should be measured to have a greater impact. It's essential to improve the levels of health literacy, promote the critical spirit of citizens regarding their health decisions and use of the available tools. This is one of the public health challenges in Portugal in the future.

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### Occupational Risk Perception and Work-Related Diseases Prevention

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**Abstract:** Every year there is an increase in the number of work-related deaths, with an estimated 6500 daily deaths by occupational diseases. Several studies show that the perception of occupational risks acts as a precursor to preventive attitudes and behaviours of workers, fundamental for the reduction of the high social and economic impact of occupational diseases. Nevertheless, attention paid to the perception of occupational risks is scarce and even controversial. To better understand this relationship and its relevance for the dynamization of Occupational Health services, this study focuses on a model used by behavioural safety programs associating it with the psychometric paradigm, to understand the worker's risk perception of a Portuguese Health Education and Research Institution (Portugal).

**Methods:** This cross-sectional study covered a total of 84 workers. Of these, 73% had a very differentiated academic background (doctorate, and post-doctorate degrees). Workers can carry out their activities in more than one work area. 60% work in Research, 49% in the Education, 42% in Laboratories and 7% in a Medical Clinic, 18% in the Administrative area and 22,6% in the General Services area. Risk perception was assessed using an

online questionnaire that included sociodemographic and occupational information, perception of exposure to occupational hazards and risk perception (cognitive and emotional).

**Results:** 95% of participants reported exposure to at least one occupational risk factor, but only 22% perceived the risk (probability of accidents and illnesses associated with the work performed). 50% of workers did not express concern about suffering an occupational accident that could result in some disability status or even their death. There was a positive correlation between the perception of exposure to occupational hazards and risk perception ( $p < 0,001$ ) and that, the greater the perceived risk, the lower the tolerance to it ( $p < 0,001$ ). While teaching, research and laboratory work is associated with low perception and high-risk tolerance, individual variables such as gender, age, educational qualifications, and professional category did not influence the perception of risk.

**Conclusions:** The results show differences between the perception of exposure to risk factors and the perception of professional risk. These are of great interest, especially for the prevention of occupational diseases, whose technical knowledge (definition, characterisation, toxicity, exposure levels) is fundamental of the occupational physician. They suggest that understanding how risk is perceived by workers is determinant for the complementarity of the on-site diagnosis of real work situations as a way for designing, selecting, and implementing the consequent strategies for effective risk prevention and risk management in the workplace.

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### Occupational Risk Perception in Health Education and Research: Better Knowledge, Better Prevention

Master of Occupational Health Paula Madaleno<sup>1</sup>,  
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Workers of Biologic Sciences and Health, in the exercise of their occupational activities, are exposed to several occupational hazards. Its identification is an indispensable condition to protect the health and well-being of workers, which is essential for good productivity.

**Objective:** To identify the occupational hazards and risks of occupational and "work-related" diseases from workers from a Public Health Education and Research Institution located in Lisbon (Portugal).

**Methodology:** A descriptive study was carried out by applying a structured questionnaire to collect information regarding the perception of exposure to physical, chemical, activity-related or ergonomic, microbiological, and psychosocial risk factors, risk perception (cognitive and emotional) and sociodemographic and occupational variables.

**Results:** 95% of workers report exposure to at least one occupational hazard. By work area, exposure to risk factors related to the activity or ergonomic (74%) was reported by all professional categories and work areas with greater relevance for work performed in the laboratory (89.8%). Exposure to physical hazards such as inadequate temperature and lighting were perceived by 60% of

workers and mainly in laboratory work (77.7%), teaching (73.7%) and research (72.7%). Exposure to microbiological agents (51%) and chemical substances (49%) is perceived mainly by professionals who work in the laboratory with a frequency of 81% and 82%, respectively. Exposure to psychosocial risk (33%), mainly career progression, were reported by 84.6% of professionals at general services and by 79.3% in teaching. Regarding the perception of risk, the results show that workers have difficulty perceiving occupational hazards since only 14.6% of participants considered the probability of having an occupational accident to be high, 14.8% of acquiring an acute illness and 25 % of chronic disease. About 45% of workers were not concerned with the severity and implications of the accident or illness in their lives. Differences were identified in the characterisation of risk perception considering the work area and antiquity time in the institution.

**Conclusion:** Understanding how workers identify, perceive, and evaluate the probability of an injury or illness occurring because of exposure to risk factors present in their work environment, is an indispensable condition for effective occupational risk management. Only in this way is it possible to define health surveillance protocols and planning effective preventive and health-promoting measures at work on an individual and or collective level. In this context, the definition of adequate policies aiming to improve risk communication and to increase the motivation for workers' participation in the management of occupational risks is crucial for the protection of their health.

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### **Delineating the Type 2 Diabetes Population in the Netherlands Using an All-Payer Claims Database: Specialist Care, Medication Utilisation and Expenditures 2016–2018**

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**Context:** The prevalence of type 2 diabetes is rising and almost all patients utilise specialised care and medication. However, exact insight into what medical specialities and medication are used remains limited. Due to data restrictions, prior studies often focus on subgroups of the type 2 diabetes population, for instance, determined by a single insurer or provider. By using all-payer claims data, we aimed to describe, in detail, the healthcare utilisation and expenditures related to medical specialist care and medication of the complete type 2 diabetes population in the Netherlands.

**Methods:** For this retrospective observational study, we used an all-payer claims database that contains individual-level claims data of all health insurers in the Netherlands and covers 99.9% of the Dutch population. Comprehensive data on specialist care and medication utilisation and expenditures of the type 2 diabetes population (n=900, 522 in 2018) were obtained for the years 2016 to 2018 and analysed descriptively. Data were analysed across medical specialities and for various types of diabetes and non-diabetes medication.

**Results:** Specialist care utilisation was diverse: different medical specialities were visited by a considerable part of the type 2 diabetes population and almost two-thirds of specialist care users visited two or more different medical specialities per year. The largest share of patients had consultations at ophthalmology (26.9%), followed by internal medicine (23.2%), cardiology (21.1%), surgery (14.6%), and neurology (10.7%). Total expenditures on specialist care were €2,498 million in 2018, i.e. 10.6% of national expenditures on specialist care. In total, 97.8% of patients used non-diabetes medication and 81.8% used diabetes medication; 25.6% of medication expenditures were for diabetes medication. For both specialist care and medication, mean expenditures per treated patient were higher than median expenditures, indicating a skewed distribution of spending.

**Discussion:** Our study showed the potential value of all-payer claims databases to gain detailed insight into complete care use and expenditures of a disease population. Despite integrated diabetes care organised in the primary care setting, the use of and expenditures on specialist care and medication of the Dutch type 2 diabetes population is considerable and diverse. These heterogeneous healthcare use patterns are likely caused by the presence of comorbidities. Additionally, we found that a small part of the population is responsible for a large share of the expenditures. The current disease-specific treatment approach may therefore not help all type 2 diabetes patients sufficiently. Future research should characterise these patients as a shift towards more patient-centred care could lead to improvements in their health and a reduction of overall costs. In conclusion, exploiting the value of all-payer claims data can support health management and support the financial sustainability of health care systems.

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### **Examining Specific Leadership Competencies of Medical Social Workers, Used in Managing Child Protection Cases within Multi-Disciplinary Teams in a Children's Hospital**

*Ms. Sheila Mc Crory*

Children's Health Ireland at Crumlin, Ireland

**Abstract:** This presentation explores the leadership competencies used by medical social workers managing child protection cases in the multi-disciplinary teams in a children's hospital. This abstract is part of a dissertation submitted in fulfilment of the Master of Science in Leadership in Healthcare, Health Service Leadership Academy/UCC in November 2019.



**Objectives:** The objectives of the study are:

- To achieve a better outcome for families attending the hospital who are the subjects of Child Protection cases;
- To understand specific leadership competencies used by Medical Social Workers and to examine this concerning the new legislation and in particular mandatory reporting in Child Protection.

**Literature:** Nine competency frameworks are explored. The literature on Child Protection outlines the lessons learnt from child abuse inquiries, the development of child protection and social work services in Ireland. The literature on teams points to the benefits of team working, the existence of an authority gradient and the multi-disciplinary competencies that are evident in teams. Some literature on reflective journaling is also included.

**Methodology and Themes:** 12 semi-structured interviews were undertaken with consultants and senior nurses who work in areas with a lot of child protection cases. Thematic analysis was used to develop initially codes, then themes from the data. These are Emotional Impact, Medical Social Work Knowledge and Access, Challenging professionals, Tusla and how medical social workers help, Leadership and Interprofessional Competencies.

**Findings:** The findings are that Consultants and senior Nurses experienced having a Medical Social Worker on their team as a positive experience, and they had seen evidence of many leadership competencies. The presentation finishes with several conclusions and recommendations for improvements within the Medical Social Work Department.

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## Digital Technologies in Healthcare: What Best Practices and Challenges?

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**Context:** Industries across all sectors have experienced radical changes in the past decade, as the result of digitalisation. The healthcare sector has also been deeply affected by this transformation, moving toward the use of health information technology (HIT). The benefits linked to this transformational process primarily concern improvement in the quality of service provided and cost reduction. For example, technologies as electronic health records (EHRs) provide a reduction in errors as well as timely access to patient information compared to paper-based medical records. However, realising these benefits requires high investment and significant challenges, especially in terms of digital transformation management capabilities. The purpose of this article is to analyse potential best practices for managing digital transformation in the healthcare sector, as well as barriers, through a review of the literature on the topic.

**Methods:** A systematic literature review method was used to analyse how healthcare organisations manage and implement digital technologies. The research was conducted in the PubMed, B-ON, ScienceDirect and Scopus databases, using these keyword combinations: 1) “digital technology” and “healthcare”;

2) “innovation management” and “healthcare”. This research was limited to articles published between 2011–2020. It is believed that the consideration of the last decade represents a sufficiently extended period to also assess how the process of managing digital technologies has evolved as innovation has advanced.

**Results:** Emerging findings from the literature review conducted show that researchers have focused primarily on studying the cost-benefit relationship associated with the use of digital technologies in healthcare. Regarding the management of digital innovation, the greatest difficulties experienced by actors responsible for this process concern changes in the organisational structure, which then makes pre-existing organisational practices questionable. Indeed, innovation requires a reorganisation of the healthcare structure, but current studies focus directly on the adoption phase of innovation, without explaining the strategies adopted at the moment before its implementation. This does not allow us to capture which organisational model is more efficient to ensure the efficient management of innovation.

**Discussion:** Research on innovation in healthcare organisations is prominent, but it is not sufficiently comprehensive concerning technology management practices. To this end, future research should identify efficient practices and processes to ensure the efficient implementation of digital technologies in healthcare. This study provides several implications for healthcare executives and professionals, who should contribute to the formulation and dissemination of innovative strategies, including through discussion and information sharing with their employees, to ensure the organisational success of the health system as a whole.

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## Metrological Assessment of Infusion Pump Emergency Practice in Times of Pandemic: The COVID-19 Case

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**Background:** The unprecedented conditions public health institutions are experiencing due to the COVID-19 pandemic has forced hospital administrations to take measures outside the usual work practices to manage numerous challenges. These include the reduction of exposure of health care staff to COVID-19 and management of shortages of competent staff, medical devices, personal protective equipment (PPE), and critical medications. Examples of extraordinary measures are the use of drug delivery devices outside the patients' room or outside manufacturer specifications. Other practices have been the postponement of calibration and maintenance of equipment for patient-critical use. Unfortunately, these pandemic-based decisions can lead to large dosing errors which often result in adverse incidents and increased morbidity

and mortality. Metrologists and clinical physicists working on the Metrology for Drug Delivery project used their expertise to support clinicians and hospital administrations in finding best practices to operate under these challenging conditions.

**Methods:** A careful and responsible assessment of the risks related to these extraordinary practices was made by the project experts. Three specific drug delivery situations were chosen: 1) use of devices outside patients' rooms, 2) risk assessment of alternative device use and 3) delay of maintenance. The experts outlined potential dangers and recommended ways to address them.

**Results:** A new case study, report and flyer were released on the drug metrology website to trace and tackle the potential dangers and recommend ways to address them for the three situations mentioned above. These ranged from testing the flow rate and volume delivered when using extension lines, especially at low flow rates, when operating pumps outside the room, to criteria under which volumetric pumps can replace syringe pumps or a quick dosing error check to be carried by internal personnel.

**Conclusion:** Metrology can advance the understanding of how drug delivery devices perform in ideal and nonideal conditions, through the establishment of measurement and testing protocols targeting setups used in hospitals. Testing with the actual fluids used for patient infusions can identify setup errors and quantify uncertainties. This type of testing enables the development of best practices and methodologies for the safe use of drug delivery devices also in these challenging conditions.

**Acknowledgements:** This work has received funding from the EMPIR programme co-financed by the Participating States and from the European Union's Horizon 2020 research and innovation programme.

*i* [https://drugmetrology.com/wp-content/uploads/2021/01/18HLT08-MeDDII-Publishable-SummaryM18\\_finalACCEPTED.pdf](https://drugmetrology.com/wp-content/uploads/2021/01/18HLT08-MeDDII-Publishable-SummaryM18_finalACCEPTED.pdf)

*ii* <http://drugmetrology.com/meddii-contributions-to-help-fight-covid-19/>

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