# Self, at Home, and Digital if Possible, Drivers to Population Health Management

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**Abstract**. The Dutch healthcare system is known for its strong emphasis on primary care and a decentralized approach to healthcare delivery. This system will have to adapt in view of the ever-increasing demand and overburdened caregivers, because otherwise it will eventually be insufficient to offer patients adequate care at sustainable costs. The focus must shift from the volume and profitability of all parties involved to a collaborative model for achieving the best outcomes for patients. Rivierenland Hospital in Tiel is preparing for a shift from treating sick patients to promoting the general health and well-being of the population in the region. This "population health" approach aims to maintain the health of all citizens. This transformation to a value-based healthcare system, centered on the needs of patients, requires a complete overhaul of the current systems and its entrenched interests and practices. The regional healthcare transformation requires a digital transformation characterized by several IT implications, such as facilitating patient's access EHR data and sharing information at patient journey level to support the partners involved in the regional care and cure for patients. The hospital is planning to categorize its patients in order to establish an information database. This will help the hospital and its regional partners to identify opportunities for regional comprehensive care solutions as part of their transition plan.

**Keywords.** ecosystems, patient care planning, care continuity, population health management, integrated health care systems

## 1. Introduction

The sustainability of the Dutch healthcare system is threatened by a number of factors, including an aging population, the rise of multimorbidity among patients, a shortage of healthcare workers, excessive competition, and rising costs. A shift is necessary from a focus on treating diseases to a focus on maintaining health throughout an individual's lifespan. This will require a change in mindset and a shift towards preventative care and holistic approaches to health and social care. By focusing on self, at home, and digital if possible, we also intend to make better use of the value of data. Telemonitoring services for example, can help patients manage their health remotely and provide valuable data for their healthcare providers, ultimately leading to better outcomes and potentially reducing costs. The Rivierenland hospital, a general hospital in a region with almost

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200,000 inhabitants, is collaborating with its regional partners to establish a collaboration structure and a new collaborative model of care. With a goal of promoting the idea of "positive health", this effort aims to make a valuable contribution.[1] This will ultimately lead to the healthcare system in the area being more sustainable in the long run.[2]

The Integrated Healthcare Agreement (IZA) in the Netherlands has gained commitment from all stakeholders, resulting in greater regional collaboration and a focus on prevention within the sector.[3] The Ministry of Health is promoting the IZA as the primary policy and allocating funds to support the overhaul. The shift towards a holistic approach to wellness involves reducing the overreliance on medicalization within the healthcare industry. The transition from healthcare to health includes slowing down medicalization. Prompt identification of a patient's health concerns and conducting a thorough and speedy evaluation, if required, is crucial in determining the optimal means of supporting the person.[4] The national healthcare policy is transitioning from a focus on market competition to an emphasis on strengthening regional cooperation. This transition involves the need to realize a digital infrastructure and accelerate the broad adoption of innovations, while also phasing out outdated healthcare practices. As the healthcare system shifts its focus to maintaining health, it must consider in the equation a range of social factors such as housing, living environment, social cohesion, and income policy. In order to effectively address these social issues and bring about meaningful change in the healthcare system, several aspects including funding, stakeholders, governance, and IT systems, must be restructured.

To better understand the patient population and predict the future healthcare needs and costs of specific patient groups, patients can be classified based on their health status, utilization patterns, and demographic characteristics using the Johns Hopkins Adjusted Clinical Groups (ACGs) system. The ACG system has been found to be a useful tool for stratifying Dutch healthcare populations.[5] The value of the data can also be improved by assessing the Kaiser Permanente risk model as the foundation for discussions on shifting to a model of care that emphasizes multimorbidity team work and a digitally-based regional care model.

The EU4Health is a European Union program that also aims to improve healthcare and foster innovation. It prioritizes areas like promoting health and preventing illness, implementing digital technology, and developing the healthcare workforce.[6] The objectives of the EU4Health program are considered part of the Tiel approach.

## 2. Methods

Various studies have been carried out in which the research results have been used as input for drawing up a transition plan that should be ready by mid-2023.

For the past 4 years, a collaborative effort between diverse care providers and the social sector has been dedicated towards developing novel approaches to provide optimal care to senior citizens right where they need it. The goal is to ensure that senior citizens are well-equipped for their later years and can enjoy good health, while residing in a comfortable and familiar setting, with access to medical assistance if needed. In 2020, a non-profit care consultancy (MURA) carried out a research study on the present and upcoming conditions of care and elderly care.

In 2020, the largest health insurer in the region (MENZIS) published a regional vision for 2030 as an extra impulse for regional cooperation and prevention. The vision was created in collaboration with local healthcare organizations, general practitioners,

municipalities and patient associations and shows how supply and demand for health maintenance and patient care will develop over the next 10 years.

The OECD (Organization for Economic Co-operation and Development) 'Health at a Glance 2022' report to compare key indicators for population health and health system performance across OECD member countries and key emerging economies provide lead principles for the transition.[7]

In the year 2020, the formation of a committee dedicated to innovation marked the start of a mission to advance digital technology and information systems, with a focus on making healthcare processes "future-proof" through technology rather than solely prioritizing the technology itself. Subsequently, in 2021, the initiation of an EHR optimization process ensued, emphasizing consistent registration procedures across all specialties to ensure uniform online access for patients.

Finally, an administrative consultation has been organized every quarter from 2020. All parties involved in providing, organizing, or paying for care are represented in this platform, including the directors of these care providers. It plays a crucial role developing ideas and finding solutions for addressing the care challenges for the Rivierenland area.

## 3. Results

MURA expects the number of elderly aged 75+ to increase from 8% in 2019 to 17% in 2050. In June 2020, the Regional Picture of the Elderly in Rivierenland was presented to professionals and directors which resulted in three recommendations:

1. **Prevention:** through a healthy lifestyle: Encourage seniors to maintain a healthy lifestyle, with an emphasis on physical activity and nutrition. Maintaining social connections is also important and can be a motivator for physical activity. Positive health and solution-focused approaches are important for prevention: How can we motivate people? What brings happiness and pleasure? What works well and what can we learn from it?

2. **Appropriate housing**: Seek out and provide appropriate housing that meets the needs and preferences of seniors. This includes not just adapted homes, but also considering the physical and social living environment and whether it invites movement and social interaction.

3. **Empowering seniors:** to have more control over aging: Focus on helping seniors maintain or increase control over their health and life as they age. This includes helping seniors become aware of their future and supporting them in making choices to maintain or increase their control, such as by having early conversations about their preferences and needs as they age.

The MENZIS study identifies two important developments:

1. **Development of care demand**. The population in the region is growing by 2% until 2030. There has been a 55% increase in the number of residents with dementia in the region due to the aging of the population. (48% at a national level). The number of chronically ill people is growing more than the average in the Netherlands. Joint wear and tear and cardiovascular diseases have experienced the most significant growth. Mental illnesses (mood disorders and anxiety) are growing only slightly in the coming years. The proportion of residents with overweight is increasing (from 52% to 60%), while the proportion of smokers is decreasing (from 20% to 15%).

2. **Development of care supply**. The number of care providers is expected to decrease by about 5% until 2030. The shortage of specialists in geriatric medicine is expected

to continue to increase. In mental health care (GGZ), the vacancy rate of all professions has strongly increased in recent years. A further increase in the shortage is also expected here. In terms of absolute numbers, the shortage is largest in nursing. The majority of the projected 80,000 care staff shortages in the Netherlands for the year 2022 can be attributed to this factor. Sick leave in the care sector has been increasing since 2014. Absence is almost a third higher than the average for employees in the Netherlands. The turnover in the care sector has also been increasing in recent years, standing at almost 16%. Informal care (the potential for informal caregivers) will decrease in the Rivierenland region by almost a third until 2030, but will remain more favorable than the average in the Netherlands.

Important conclusions from the OECD report are that lifestyle choices that are harmful to one's health, as well as poor environmental conditions, are ongoing issues that negatively impact the quality of life, reduce lifespan, and make populations less resilient to health crises. Additionally, relatively little money is spent on disease prevention, which makes up only about 3% of overall health spending on average.

As of today, patients can choose from three methods to access their records, namely the patient portal, Blue Button download, or a personal health environment. Additionally, two pilot telemonitoring programs have been launched to monitor patients with chronic obstructive pulmonary disease (COPD) and heart failure (HF). A dedicated service desk has also been established to offer guidance for digital care. Furthermore, care providers who are registered can now access a patient's hospital EHR, provided the patient has granted permission.

A plan for transformation is presently in the works, aimed at providing guidance to establish a sustainable healthcare system in the area. To further shape the transformation, various changes are being implemented. These transformations are organized under three pillars: 1) Care in motion, 2) Innovation and digitization, and 3) Patient in control.

## 4. Discussion

Self, at home, and digital if possible, will have to prove to be a critical success factor important in sustaining the effectiveness, accessibility, and affordability of healthcare.

The advancements made towards the healthcare system in the Rivierenland area will lead to an interconnected network that prioritizes the physical and mental health of the community, offers tailor-made treatment to patients, streamlines the overall process of healthcare providers, and ultimately achieves better health results while simultaneously cutting down expenses. To shift towards a sustainable, value-based health care system, it is necessary to foster a distinct form of collaboration involving bundled payments, which are intricate and comparatively novel.[8] This transformation brings together various stakeholders to address common challenges and inefficiencies. Much can be learned from the Greater Manchester project, where trust was the fundamental underlying issue for transformation of the health care model.[9]

By stratifying patients, we can gain a deeper understanding of how costs are distributed, the degree of multimorbidity, and potential inefficiencies within the delivery of care. It will unlock the potential of the Epital Care Model (ECM) for the introduction of digital care.[10] The operationalization of the concepts of Self, Home, and Digital through the ECM model make it a valuable tool for driving the IZA transition. By utilizing patient-centered data, we have the potential to identify and minimize wasted

resources, while also enhancing efficiency. The first small, yet significant, steps towards patient-centered care will be taken to achieve the required transition to IZA standards.

Currently, electronic health records often only include a limited list of issues addressed at the institutional level. True person-centered care requires a more comprehensive and holistic approach that results in a comprehensive overarching care plan of the patient journeys. There is a lack of awareness among healthcare providers regarding patients' ability to access their data, the type of data that is viewable, how the data is organized, and the fact that data may have different names in various systems.

## 5. Conclusion

Care will become unaffordable if we continue as we are now. Relatively little money is spend on maintaining health, while the greatest profit seems to be achievable there. Success is heavily reliant on establishing a regional governance structure and embracing digital transformation, which in turn requires strong collaboration with regional partners. The transformation towards appropriate care requires innovations in technology and digital solutions to make healthcare more efficient and effective. One way to enhance healthcare and advance digital/hybrid care models is by leveraging the insights gleaned from data. To achieve this, it's essential to prioritize improving the digital competencies of staff since their proficiency is a key determinant of success.

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