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# **IMPACT OF UNCERTAINTY IN TIMES OF NETWORK FORMATION**

## *Title*

Impact of Uncertainty in Times of Network Formation

## *Authors*

Prof. Dr. Brecht Cardoen – brecht.cardoen@vlerick.com

Prof. Dr. Carine Peeters – carine.peeters@vlerick.com

Prof. Dr. Walter Van Dyck – walter.vandyck@vlerick.com

Dr. Lies Schoonaert – lies.schoonaert@vlerick.com

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## *Reference*

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## *Acknowledgement*

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## Executive Summary

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The idea of organising healthcare in collaborative systems, with a clear focus on health networks, is gaining strength among Belgian healthcare providers. However, many questions remain about the role of the hospital in a network setting (e.g. which activities and responsibilities do hospitals want to take looking from a broader perspective than only the financial aspect), the composition of networks (e.g. who is part of the network) and how these networks can be practically exploited (e.g. how to operationalise and govern the collaboration). Through interviews with hospital directors of Flemish, Brussels and Walloon hospitals several uncertainties impacting these network formations were identified such as the privatisation of care, the role of the patient, scarce funding and evolving technology. During a first workshop, technology, funding and rigidity of the legal and political system were seen as the most important uncertainties that will have an impact on the organisation and composition of networks within a scope of 15 years. Based on discussions we converged to a strategic framework with technology (ranging from supporting to enabling technology) and funding (ranging from pay for service to pay for performance) as the two most important uncertainties on the axes, thereby creating four possible scenarios: Disease care, Privileged care, Connected care and Health care (Figure 1).

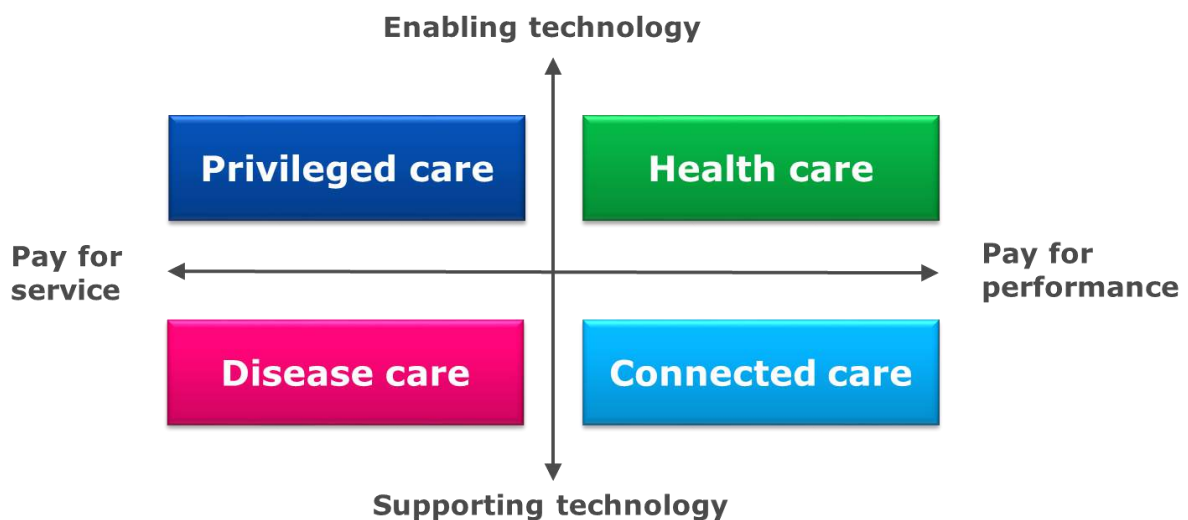


Figure 1. Strategic framework with technology and funding as the two most important uncertainties on the axes, thereby creating four possible scenarios.

In a first scenario (Disease care), technology mainly has a supporting role in a pay for service based system. In this volume-driven scenario, hospitals compete with each other trying to defend their current position, leading to little transparency and a lot of asymmetry in hospital status. In scenario 2 (Privileged care), major technological breakthroughs have occurred which will impact the demand for services. However, the pay for service based system will lead to healthcare at two speeds thereby increasing the role of insurers and

private care. This situation does not incentivise the formation of hospital networks, whereas associations of physicians will gain power. In the third scenario (Connected care), no major disruptive discoveries have been made, but all available care is highly accessible to everybody through tightly regulated networks both at regional and national level with the hospital as the centre of the care system. Standardised health paths have been set in place in collaboration with specialised centres and extramural care. This collaboration made it possible to arrange payments in a bundled, value-based way. In the fourth scenario (Health care), there is a complete shift in focus from curative, disease-oriented care to preventive, health-oriented care. New innovative technology substantially increased the extramural care activity, which is well-embedded in a large network including hospitals, social care, general practitioners and industry. They all share accountability for the quality of care and are rewarded based on their performance and the quality of care. The enormous amount of data available are well analysed and used for data-supported decision making.

To reach "Health care", seen as the ideal scenario, several paths are possible. Major technological innovation will induce a vertical movement, while changing the funding system into pay for performance will induce a horizontal movement. Which movements we will eventually make depends on the health care system in place and the technological progress that is being made. While Belgian policy is enforcing a horizontal shift from Disease care to Connected care, we do also see initiatives following the vertical shift from Disease care to Privileged care. The current challenge for hospitals is to take those decisions that will pay-off in any of the scenarios, thus helping to move towards robustness and resilience in their particular network constellation.

# Introduction

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Hospitals are making managerial decisions today that should still be valid tomorrow. The challenges of our healthcare system are well known and comprise financial (austerity and decreasing budget), operational (cost consciousness) and clinical (quality and outcome) angles. The speed by which the landscape is changing, however, introduces substantial uncertainty that might impact the return and quality of today's actions, especially when it comes down to finding the right constellation in which to collaborate. We refer to the recent study<sup>1</sup> of De Pourcq et al. (2016) to learn more about the different governance models for hospital collaborations, who differentiate between health systems, health networks and the establishment of a new organisation. Whereas the decision-making power of health systems resides with a central overarching board, health networks exhibit still some decision-making rights on the individual hospital level. In case the collaboration is targeted towards a limited set of services, in contrast to the two previous models, a new organisation can be installed. The aim of our study is not to drill down to the particular governance model of a collaboration between hospitals. Therefore, we will semantically refer to any collaboration as a 'network'.

The formation of networks can be seen as a trend which appears to be irreversible<sup>2,3</sup>. Many questions, however, are still open and concern decisions on who, what, where, when, why and how. The search towards an appropriate answer appears to be strongly dependent on uncertainty following from the healthcare evolution. So we need to differentiate trends from uncertainty, as the latter points to elements we do not yet clearly know. Think, for instance, about the trend of m-health which is acknowledged by the patient and health community, yet still a lot of uncertainty remains when it comes to the extent and speed by which it will impact current care models, for instance due to questions about reimbursement, responsibility and quality. Is m-health more a hype than a game changer? Similarly, we can argue that the trend of network formations is known and hospitals will react upon that, but substantial uncertainty remains, impacting strategic and operational decision making.

## Research question

How will the healthcare landscape potentially look like within 15 years, and what are then the main characteristics we need to take into consideration? Can we develop different scenarios that might help hospital directors in assessing the robustness or resilience of their (future) network, by identifying and thinking along major uncertainties?

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<sup>1</sup> De Pourcq K., De Regge M., Callens S., Coëffé M., Van Leuven L., Gemmel, P, Van den Heede K., Van de Voorde C. and Eeckloo K. 2016. Governance Models for Hospital Collaboration. KCE Report 277 – Health Services Research, p.138. This document can be electronically retrieved from: <https://kce.fgov.be/publication/report/governance-models-for-hospital-collaborations#.WRH0GOWGPD4>

<sup>2</sup> <http://www.deblock.belgium.be>

<sup>3</sup> Kips Johan. 2015. Regionale Ziekenhuisnetwerken. Brussel: Zorgnet-Icuro

## Methodology

The methods of this research project are twofold<sup>4</sup>. By means of preparatory interviews with hospital directors (mainly CEO/CMO) of Flemish, Brussels and Walloon hospitals, we did familiarise ourselves with the current evolution in the Belgian healthcare system and did identify the main uncertainties impacting today's decision making for tomorrow. The uncertainties of the interviews were the input of a first workshop in which they were validated and/or refined by our hospital director participants. Through discussions on the impact of the uncertainties on the healthcare landscape, the group converged to a shared opinion of the two most important uncertainties that on their turn would be the input for the scenario analysis.

In a second workshop, the participants had the opportunity to describe the different scenarios and elaborate on the possible implications for the healthcare landscape and its stakeholders. This report summarises the outcome of this research process.

## Towards the scenarios

The interviews resulted in a shortlist of six dimensions that might have a substantial impact and therefore should be considered:

- ✓ **LOW/HIGH PRIVATISATION OF CARE.** How will the balance of public and private practice evolve over time? Privatisation might be linked to the provision of clinical care services (e.g. consultation outside the hospital), but also to supporting services such as laboratory activity (e.g. bringing technical activities outside the hospital). Also, the role of private healthcare insurance and the willingness and ability to pay of patients for particular care in a particular setting should

### What is 'scenario analysis'?

Scenario analysis is a projection methodology to create different worlds or futures, which we eventually call scenarios. Typically, the scenarios are formed by their extreme positioning on two dimensions, creating a two-by-two matrix. The choice of dimensions obviously impacts the futures that will appear. To increase relevance, one should try to identify dimensions with (i) a high impact on outcome and (ii) a high level of uncertainty. Any scenario that is created should in essence be plausible. Important to note is, however, that scenario analysis does not make any aspiration to assign probabilities of occurrence to the different futures. The main advantages of scenarios is that they might point attention to possibilities we would otherwise not consider. Also, they create "memories of the future", allowing to recognise weak signals of change sooner as the future unfolds.

A further reading we would recommend about scenario analysis is: Schoemaker Paul. 1995. Scenario Planning: A Tool for Strategic Thinking. *MIT Sloan Management Review*, 36 (2), pp. 25-40. Alternatively, many books of this author are available on this topic.

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<sup>4</sup> The authors would like to express their gratitude and appreciation towards all the participants of the interviews and workshops for their contribution and sharing of insights, and therefore would like to thank the following institutions: UZ Brussel, UZ Leuven, AZ Nikolaas, AZ Sint Lucas, Grand Hôpital de Charleroi, OLV Aalst, Algemeen Ziekenhuis Oost-Limburg, Hôpital Erasme, Cliniques Universitaires Saint-Luc.

be considered. To what extent will private healthcare insurers drive change in the healthcare landscape?

- ✓ **PASSIVE/ACTIVE ROLE OF PATIENT IN CARE.** Closely related to health literacy, the patient might shift from a passive role in which he or she just follows the care trajectory that is prescribed, to an active role in which he or she co-designs the care process. A more active patient might also be critical in the assessment of quality of care, and act upon that. Patient centricity will increase, not only by the care institutions who will adapt their focus, but also due to the patient who is not accepting anything else.
- ✓ **REIMBURSEMENT SYSTEM OF CARE.** Here we look at the uncertain evolution of funding systems and mainly differentiate between a pay for service and a pay for performance system or value-based system, which can be designed as a bundled payment system or capitation system. In this report, we do follow the definitions on reimbursement systems by Porter and Kaplan<sup>5</sup> and understand *pay for service* to be a payment model where services are paid for separately in which quantity of care is rewarded instead of quality or efficiency. In *capitation*, the healthcare organisation receives a fixed payment per year per covered life and must meet all the needs of a broad patient population, regardless whether the patient seeks care or not. In a *bundled payment system*, providers are paid for the care of a patient's medical condition across the entire care cycle - that is, all the services, procedures, tests, drugs, and devices used to treat a patient.
- ✓ **LIMITED/EXTENSIVE EXTRAMURAL CARE.** To what extent will services still take place inside a hospital setting as we know it today? Extramural care does not only point to services physically leaving the hospital, but might also include separating services that will become fully independent and hence lead to activity loss for the hospital. Therefore, this dimension might be closely linked to the privatisation of healthcare.
- ✓ **SUPPORTING/ENABLING TECHNOLOGY.** We define a supporting technology here as an invention, improvement or innovation that does not entail a radical change in the capabilities or economics of healthcare. It mostly helps professional care givers to provide better/faster/cheaper care. An enabling technology, in contrast, is understood to bring radical changes to the healthcare system. This kind of technology enables entirely new forms of care and/or care delivery and e.g. might allow the patient to perform services that would otherwise still require the help of a healthcare professional. Moreover, disruptive technologies typically simplify complex problems<sup>6</sup>, whereas supporting technology further develops already complex systems and applications.
- ✓ **RIGID/FLEXIBLE GOVERNMENTAL BODY.** The Belgian healthcare system is continuously confronted with healthcare reforms and shifts of responsibilities between the federal and regional level. How fast will new governmental ideas and propositions find their

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<sup>5</sup> Porter M. and Kaplan R. 2016. How to pay for healthcare. Harvard Business Review, 94, nos. 7-8 (July–August 2016): 88–100.

<sup>6</sup> Christensen C., Bohmer R. and Kenagy J. 2000. Will disruptive innovations cure health care? Harvard Business Review, 78, no. 5 (September–October): 102-112.

way to practice, and how radical will the changes be? Also, to what extent will the government allow for flexibility and creativity, or strictly regulate healthcare?

“If you could ask a future teller to clear two uncertainties within 15 years, which ones would you choose?”. By means of this central question we asked our workshop participants to discuss the different dimensions and to select a set of two key dimensions that are considered to be highly uncertain yet impactful. An immediate consensus was found on the reimbursement dimension, with main uncertainties about the transition from pay for service to a pay for performance setting. After convergence, technological uncertainty was identified to be a second dimension, differentiating between supporting and enabling technology. These two key dimensions create eventually four scenarios for which an appropriate name was proposed by the workshop participants. The next sections will deal with the scenarios in further detail.

#### About the choice of dimensions

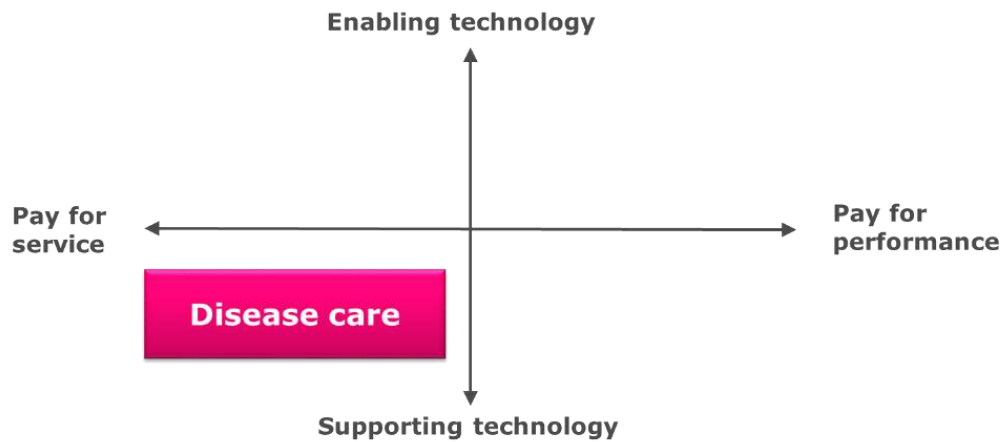
We had the opportunity to repeat the exercise in which we assess the shortlist of dimensions with all heads of departments of a particular general hospital. These physicians also identified in consensus the dimension dealing with the reimbursement system of care to be key. However, their second dimension appeared to be the one differentiating between a free and regulated healthcare system, so pointing towards the dimension of ‘rigid/flexible governmental body’. This choice potentially follows from the physician’s expert position as self-employed professional and the corresponding freedom-to-act.

Recently, a study from Imperial College Business School reports on how the NHS might look like in 2030. Also by means of a scenario analysis methodology, four different futures are developed and discussed. Interestingly, the dimensions they retained for their scenario analysis were the rate of technology adoption and the level of public engagement with their health (which we defined as the ‘passive or active role of the patient’). Insights from the report, describing the four different future scenarios, can be retrieved from: <https://wwwf.imperial.ac.uk/business-school/knowledge/health/how-will-the-nhs-look-in-2030/>



# Scenario 1: Disease care

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In scenario 1 (Disease care – treating the disease) we create a future world in which funding of care follows a fee for service system and in which technological advances are mainly supporting. The global aim is to cure the patient who's already suffering from a disease. There is a lot of competition and rivalry between the different hospitals and physicians or physician groups. Service-based funding incentivises volume-driven care as seeing more patients imply more fees and more pressure on the healthcare budget. There is no transparency between the different healthcare players, including insurers, since they do not substantially share information and data (since having access to data might leverage and protect the competitive position), and all compete for the same patients. Consequently there is no attention for preventive care, as prevention is not funded and would lower the activity level of the care provider due to a decrease in demand for curative interventions. One does not structurally strive for quality and there is little incentive to innovate, eventually leading to mediocre, basic care with a lot of compromises. All hospitals try to defend their current position (red ocean strategy) by mainly operational excellence, though in reality often not excellent and boiling down to first order problem solving. The most efficient, powerful hospitals strengthen their position causing huge asymmetry in knowledge, power and quality compared to less organised hospitals. The chance of receiving mediocre care, urges patients to raise their voice and to start thinking about their mobility, as they want better service, lower cost and nearby healthcare accessibility. The patients start to realise they have a choice in determining where treatment will take place, potentially even in an international environment, and create a basis for disruption to come.

### This scenario in keywords

- Focus on disease
- Volume-driven
- Keep on going and reactive
- Decentralised organisation
- General hospitals are very similar to each other, only few have differentiated offer
- Care is not integrated
- Standard treatment
- Slow introduction of innovation

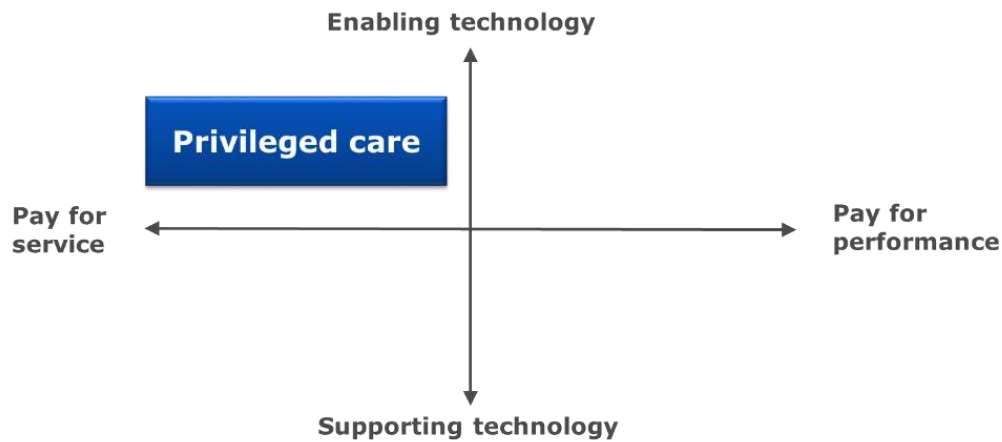
### This scenario's alternative name

- Divide et Impera

Since hospitals see each other as competitors and limit the sharing of information and data, the formation of networks among hospitals only develops slowly, and often only because there is a real and urgent need (yet little willingness). The asymmetry of knowledge and quality makes that less organised hospitals need to find some other hospital to treat highly complicated diseases, hence taking a step towards care networks. The way networks are organised is by having a powerful and efficient hospital running the network and imperatively setting the lines for other hospitals that want to collaborate with them, mainly for particular specialties. For the powerful hospitals, networks are a means to attract more patients and retain their status. For less organised hospitals, networks are becoming a necessity to assure appropriate treatment for the patients of their area. Healthcare providers, other than hospitals, might not immediately be considered to be incorporated in the network. Industry is seen as a supplier, rather than a healthcare partner or stakeholder.

## Scenario 2: Privileged care

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In scenario 2 (Privileged care) major technological<sup>7</sup> breakthrough discoveries are realised that can range from being either very expensive (e.g. think about new clinical detection

### This scenario in keywords

- Focus on disease and volume
- Incentive to innovate
- Proactive when affordable
- Decentralised organisation
- Specialisation in private hospitals
- Care is not integrated
- Standard treatment for many, innovative treatment for happy few
- Unbalanced introduction of innovation

### This scenario's alternative name

- Two-speed healthcare

methods) to being rather cheap (e.g. think about a future DNA test). The technological advances will impact the demand for healthcare, which can rise substantially putting even more pressure on the healthcare budget. Waiting time for treatment will originate, and be the trigger for private healthcare insurers to take a more dominant role in the system. The fixed and predetermined budget based on service-based reimbursement involves healthcare at two speeds: the ones who can afford extra insurance and/or pay out-of-pocket and the ones who can't. This induces increased selection of care by the insurance companies and patients. Care institutions who have been investing in the enabling technology would like to financially cover up for the risk and investments. Wealthy people will look for ways to get access to the best quality treatments, skipping

queues, and will find this opportunity with their private insurer who'll contract the best care and cure, or potentially organise this themselves<sup>8</sup>. Medical doctors are independent,

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<sup>7</sup> We focus here on technological events, though also non-technological breakthroughs can be enabling and drastically impact the way healthcare is performed. Think - for instance - about Buurtzorg, a model for quality home care that differs from the traditional setup. Buurtzorg originated in The Netherlands, though is rapidly expanding internationally towards the United States. More information can be retrieved from <http://www.buurtzorgnederland.com> or <http://www.buurtzorgusa.org>.

<sup>8</sup> A recent example of this can be found in Finland with OP-Pohjola, which is Finland's leading financial services group providing a unique range of banking, investment and insurance services. They are

might join forces to form one powerful front and association against hospital management, and lead the discussion on what will happen inside the private practice they're setting up, potentially supported by the medical industry who might start thinking about providing care instead of solely supplying for care. Moreover, for complicated care that does not fit their private practice, medical specialists will long to be part of the (better paid) high-end care institutions, making that those institutions will have the chance to select only the best and even further deepen the gap that will exist with public hospitals. So in this scenario you'll see that next to general public care, private care is increasingly available in both general hospitals and high-end focused clinics. In addition the question raises whether the wealthy people will still show solidarity and are still willing to contribute to this healthcare system that does not give them much back<sup>9</sup>. The patient reacts against this system and raises his voice, putting pressure on the insurance companies and the government.

The scenario of privileged care has little incentive for the high-end hospitals to network, since they already attract patients by themselves and by means of the health insurance provider with whom they have beneficial contracts. There is little for them to be found at public hospitals, so no further steps on network formation are sought. The same holds for private practices, since we are still in a fee for service system – preventing the surge of prevention - and sharing patients for treatments you can do yourself seems irrational. If the formation of networks is hence not forced by the government, all players compete for the same patients thereby blocking all possible collaborations. Public hospitals, however, might eventually need to join forces to keep up with their private counterparts and need to find each other's complimentary strength. So if, at all, networks arise, they will mainly comprise public hospitals.

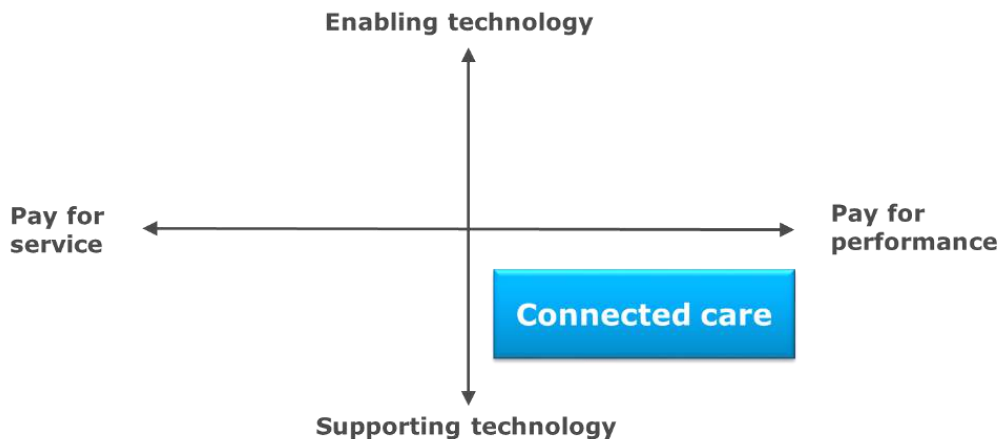
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now expanding their activity portfolio outside of their traditional portfolio to private healthcare provision with a focus on reduced treatment times so that patients more quickly find their way back to their job, therefore positively impacting society. For more information, see <https://www.pohjola.fi/pohjola?cid=-1599>.

<sup>9</sup> This point was also recently mentioned by Peter Degadt, CEO of Zorgnet-Icuro, raising the question whether technological advances will be affordable to all people, and how solidarity might be impacted (Degadt P. 2017. Blijft nieuwe technologie voor iedereen betaalbaar? CxO Magazine Weekend, Edition 20 – April).

## Scenario 3: Connected care

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In scenario 3 (Connected care) we live in a world that had some new innovations that support the healthcare system to make it faster and cheaper, but no major disruptive discoveries have been introduced. The present healthcare system is not very agile, but provides access to everybody. At national level the information technology has matured to a level that captures all data and medical files, and there is exchange of the planning and follow-up of every patient among the chain of care through standardised health paths including more attention to prevention and connecting multiple stakeholders also outside the hospital. All national regulations are implied at regional level in a good collaboration between hospitals, doctors, pharmacy, home-care and residential care, striving for continuity of care. The good collaboration along the patient track made it possible to arrange payment in pay for performance and to take first steps to value-based healthcare, with a clear focus on health outcome and cost consciousness. Healthcare expenditures are reimbursed based on subjective (e.g. PROM - Patient Reported Outcome Measures or PREM - - Patient Reported Experience Measures) and objective, evidence-based clinical measures. Voices start to raise to assign the overall healthcare budget per region conform the population (capitation) with some supra-regional budgeting for the centres of excellence that will arise to achieve the aim of quality. However, the fixed budget decreases over time and initiates thoughts about prevention. The tight budget furthermore limits innovative investments in this society with increased need of care for the aging. Fortunately, partnerships with industry

### This scenario in keywords

- Focus on best quality for minimal cost
- Operational excellence and standardisation
- Proactive when available
- Virtually centralised, physically decentralised health care
- Specialised centres
- Care is collaborative and well-coordinated
- Echeloned treatment
- Costs put innovation under pressure

### This scenario's alternative name

- "I have a complete file, but not a perfect cure"

have been set up to keep innovating the hospitals, especially within med-tech departments<sup>10</sup>.

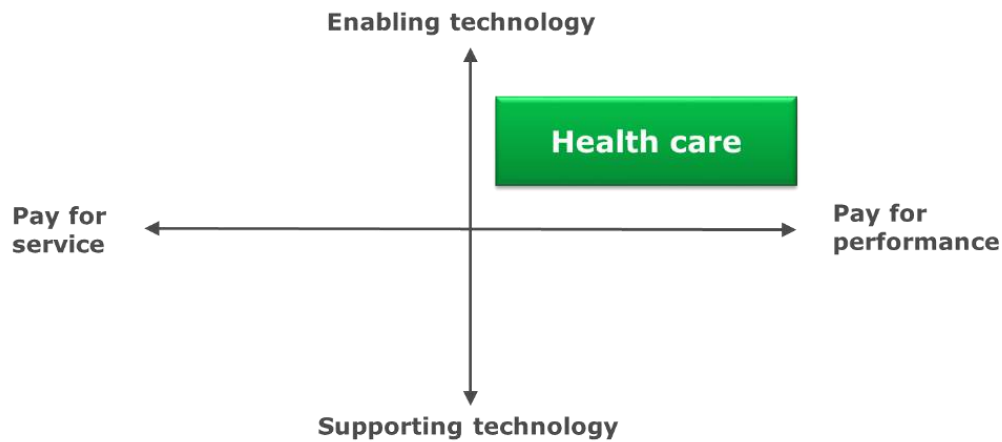
In connected care, networks are seen as necessary and useful instruments to rationalise and coordinate the supply of care. The collaboration will lead to the necessary volumes of treatments needed in the specialized centres for excellence, and will also allow patients to get qualitative treatment at different locations but close to home (i.e. an echeloned system in which different stages of the care pathway are provided by different types of healthcare providers, making more rational use of specialised resources). The economies of scale brought by the network will also help to reach the aim of operational excellence. The networks will extend above just hospital care, and include different care-oriented stakeholders who are taking important roles in the trajectory of a patient, fostering the continuity of care.

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<sup>10</sup> A very recent example of this can be found in the (until recently financially unstable) Admiraal de Ruyter Ziekenhuis in Zeeland, The Netherlands, where Siemens now owns the new operating theatre, rented to the hospital. Moreover, they deliver up-to-date medical equipment and devices for a designated period. More information can be retrieved (in Dutch) from: <https://fd.nl/economie-politiek/1196993/siemens-eigenaar-van-nieuw-vastgoed-ziekenhuis-in-zeeland> (April 2017).

## Scenario 4: Health care

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In scenario 4 (Health care) there is a complete shift in focus from curative, disease-oriented care to preventive, health-oriented care leading to a decrease in curative treatments. This future world feels as if it takes place in a new kind of society. There is a continuum of

### This scenario in keywords

- Focus on health, cost and disease (triple aim)
- Clinical excellence
- Preventive and proactive
- Virtually centralised, physically decentralised health care
- Specialised centres and substantial extramural activity
- Integrated total care
- Personalised treatment
- Fast innovation

### This scenario's alternative name

- "I met my doctor at Basic Fit"

wellness-embedded care from especially prevention over cure to home care and social assistance<sup>11</sup>. New innovative technology (e.g. genome sequencing, diagnostics) has established more precise and less invasive treatments and reduced the treatment length and the hospital stay (or necessity for it). This results in a substantial shift from the hospital to more extramural players, giving rise to down-scaled hospitals that are embedded in a well-organised network. All the different players in the network (health coach, doctors, social care...) connect with each other through the general practitioner, share the accountability and are rewarded based on their performance and the quality of care (subjective and/or objective) through bundled payments. Physicians might evolve from doctors that cure to coaches that prevent. Note that in this scenario, the industry (e.g. pharma, medical device companies, technology providers, etc.) would be part of the

network too, and could be accountable for delivering part of the "value" (outcome versus cost) in a reimbursement system characterised by pay for performance. So in contrast to 'Connected care' (scenario 3) where the hospital remains in the centre of the care system,

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<sup>11</sup> We refer for a related example to the Henry Ford hospital at West-Bloomfield in Detroit US, a hospital that refers to its activities as those of a 'Community Centre for Well-Being' rather than a hospital (<https://www.henryford.com/locations/west-bloomfield>).

the hospital in this scenario is only one of the many types of actors linked through a network. The enormous amounts of data available are well analysed and are used to help doctors in their diagnosis and to enhance scientific discoveries (e.g. think about evolution in machine learning and artificial intelligence, such as IBM Watson or Dr. Google). These shifts in focus and technology have been creating new jobs such as medical engineers and rearranged the physician's job (more focus on healthcare and use of data-supported technology in their daily professional life). In this patient-centred system the patient is highly involved in the choice of care.



## Conclusion and next steps

The different scenarios are summarised and sketched in Table 1. Although scenarios do not necessarily build upon historical patterns, one can reason that the current Belgian healthcare system has a lot in common with the 'Disease care' (scenario 1), in which the consequences of the fee for service system are still very tangible and where care providers are doing great efforts to first move from paper to a fully electronic data registration inside the hospital before thinking about connecting to all other stakeholders in the healthcare eco-system.

|                            | <b>DISEASE CARE</b>                         | <b>PRIVILEGED CARE</b>                          | <b>CONNECTED CARE</b>  | <b>HEALTH CARE</b>   |
|----------------------------|---|---|--|--|
| <b>TECHNOLOGY</b>          | <b>Supporting technology</b>                | <b>Enabling technology</b>                      | <b>Supporting technology</b>   | <b>Enabling technology</b>   |
| <b>REIMBURSEMENT</b>       | <b>For service</b>                          | <b>For service</b>                              | <b>For performance</b>   | <b>For performance</b>   |
| <b>Focus</b>               | Disease                                     | Disease   | Best quality for minimal cost  | Triple aim: health, cost, disease  |
| <b>Incentive</b>           | Volume                                      | Volume through innovation                       | Operational excellence and standardisation                               | Clinical excellence  |
| <b>Mode of action</b>      | Reactive                                    | Proactive when affordable                       | Proactive when available   | Preventive and proactive   |
| <b>Organisation</b>        | Decentralised, limited differentiated offer | Decentralised with strong privatised healthcare | Virtually centralised, physically decentralised with specialised centres | Virtually centralised, physically decentralised with specialised centres and substantial extramural activity |
| <b>Integration of care</b> | Not integrated, protective                  | Not integrated, protective                      | Collaboration and coordination   | Integrated total care  |
| <b>Treatment</b>           | Standard                                    | Standard for many, innovative for few           | Echeloned treatment  | Personalised treatment   |
| <b>Innovation</b>          | Slow  | Unbalanced due to two speeds                    | Under pressure due to cost consciousness                                 | Fast   |
| <b>Network</b>             | Power play networks                         | Little to no networks                           | Networks with hospitals in central position                              | Networks with hospitals not necessarily in central position, industry as stakeholder                         |

Table 1. Summary of the four different scenarios based on key differentiating characteristics.

The current momentum for hospitals to implement and/or upscale the use of the electronic patient record<sup>12</sup> will be a strict prerequisite to move to any context as described in 'Connected care' (scenario 3) and 'Health care' (scenario 4), identified to be the ideal scenario from a societal perspective. Moving diagonally from 'Disease care' to 'Health care' is unlikely<sup>13</sup> to happen in the upcoming 15 years. Our workshop participants indicate that a horizontal shift from 'Disease care' to 'Connected care' is more likely to be expected, before convergence to 'Health care' takes place (Figure 2). Indeed, this shift would be in line with the current governmental ideas and policy<sup>14</sup> about the necessary redesign of the healthcare system, putting a lot of emphasis on the costs, and making marginal steps towards a pay for performance in which outcome should become more important than activity. Alternatively, 'Privileged care' can be the step-in-between to move towards 'Health care'. From the workshops, we deduce that some hospitals might prefer this vertical shift above the horizontal shift, especially in the light of providing and preserving innovative healthcare.

The current challenge for hospitals is to take decisions in their own specific context that will pay-off in any of the scenarios, thus helping to move towards robustness and resilience in the network constellation. Also, every scenario can be at the basis of a more in-depth analysis on what elements can cause its failure or success and can be studied from different angles. For example, how to safeguard the necessary innovation a healthcare sector is in need of?

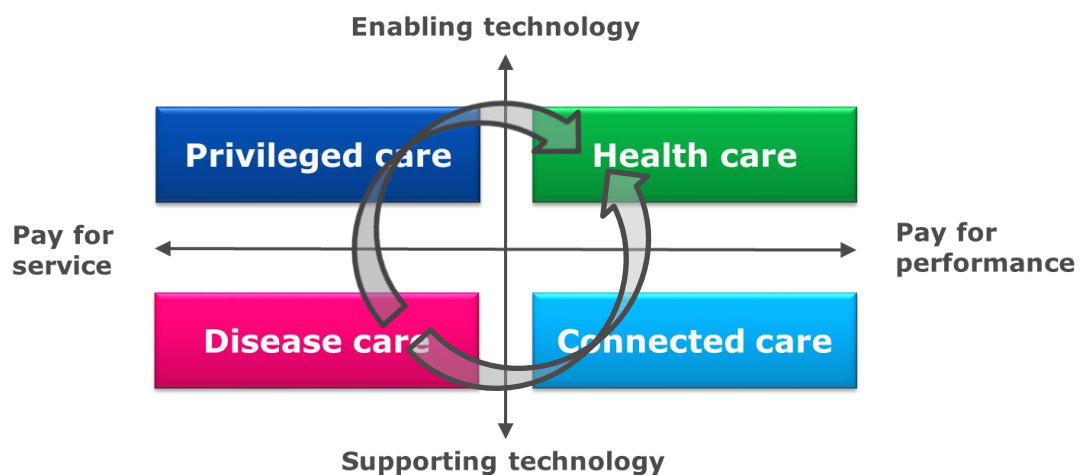


Figure 2. Potential transition strategies from Disease care to Health care as identified by the workshop participants.

<sup>12</sup> Cardoen B., Cumps B and Boëne M. 2017. Towards an IT Roadmap for Belgian hospitals. Vlerick Business School, HMC White Paper.

<sup>13</sup> Recall that scenario analysis does not have the intention to assign probabilities of occurrence to different scenarios, and that here terminology like "unlikely" or "more likely" are used to illustrate potential shifts.

<sup>14</sup> <http://www.deblock.belgium.be>



BRUSSELS - GHENT - LEUVEN - ST. PETERSBURG  
VLERICK BUSINESS SCHOOL - THE BUSINESS SCHOOL OF GHENT UNIVERSITY AND KU LEUVEN  
STICHTING VAN OPENBAAR NUT - PUBLIC UTILITY FOUNDATION - VAT BE 0424 244 049  
HQ: REEP 1 - 9000 GHENT - BELGIUM - T + 32 9 210 97 11  
INFO@VLERICK.COM - WWW.VLERICK.COM