



Obstacles and opportunities in the cross-border provision of pediatric surgical care through the Euregional Center for Pediatric Surgery

Clients

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Table of Content

Abbreviations	6
Figures and Tables	7
Executive Summary	8
Introduction	9
PREMIUM	9
The Case	10
Process and Timeline	12
Structure of the report	14
PESTLE	15
Political	15
1. General politics	15
2. Health politics	17
3. Cross-border politics	18
Economic	19
1. Healthcare Systems	19
1.1 Healthcare in the Netherlands	20
1.2 Healthcare in Germany	21
1.3 Healthcare in Belgium	22
2. Cross-border Healthcare	23
Social	25
1. Demographics and socioeconomic status	25
2. Visibility of the Center and the mobility of doctors	26
3. Sharing patient information	27
Technological	28

1. The European network on Health Technology Assessment	28
2. The use of platform regarding patient's information	29
Legal	30
1. The existing possibilities regarding the legal status of such Center	31
2. The legal implications regarding the patients	32
Environmental	32
1. Environmental Regulations & Policies	32
2. Impact of Climate Change on Health	34
3. Environmental Sustainability in Healthcare	34
Themes	36
Legal	36
1. Patient Rights Directive and the Social Security Regulations	37
1.1. Introduction to the Instruments	37
1.2. Which instrument should the patients of the Center apply under?	37
1.3. Practical steps of applying for cross-border care under the Instruments	39
1.3.1. The Regulations (Option 1)	39
1.3.2. The Directive (Option 2)	40
1.4. Recommendations & applications	41
2. The EU General Data Protection Regulation	43
2.1. Health data as a form of sensitive data	43
2.2. Right of access to data by the data subject	45
2.3. Age of consent for information society purposes	45
2.4. Final Considerations	45
3. The opportunity of a European Grouping of Territorial Cooperation	46
3.1. The characteristic of an EGTC	47
3.2. The Members of an EGTC	48

3.3. The applicable law to a EGTC	51
4. The implications of the creation of an autonomous legal entity on the existing contractual relationships of the healthcare providers	52
4.1. The implications in case of change of contractual relationship	52
4.2. The implications in case non-modification of employment contracts under EGTC	53
Financial	55
1. Funding Opportunities	55
1.1 Regional and municipal funding	57
1.2 European funding	58
2. Financial Analysis	59
3. Theoretical Financial Model	63
Accessibility	65
1. Minority groups & the patient perspective on quality of care	66
1.1 Patients with a migratory background	66
1.2 Continued education of children with long-term illnesses	67
1.3 Continuity of specialized care	67
1.4 Language barriers	68
1.5 Patient organizations	69
1.6 Satisfaction of the patient population	70
2. Health literacy, comprehensible information and quality of life (QoL)	70
2.1 Influences on the parents' health	71
2.2 Access to healthcare facilities	72
2.3 Therapeutic patient education	73
3. Belgian Ronald McDonald House Alternative	74
Marketing & Communications	75

1. Operations of Medical Team	75
2. Reference Networks	76
3. Health Literacy and Comprehensible Information	77
4. Communication Strategy	77
4.1 Objectives	78
4.2 Target Groups	78
4.3 Key Messages	83
4.3.1 Accessible for All	83
4.3.2 A Healthier, Resilient Region [emphasis on operational benefits]	84
4.4 Key Activities & Roles	85
4.5 Time Plan & Budget	88
Overlapping and Interacting Themes	89
1. eHealth: For Health Literacy & Comprehensible Information	89
1.1 One Center, One Website	89
1.2 Access For All: Healthcare App & eHealth Portal	91
1.3 Content & Development: App, Website, & eHealth Portal	92
2. The Facilitation of Administration through the EGTC	94
2.1 The use of a unique instrument for reimbursement of healthcare	94
Conclusion & Recommendations	95
References	96
Personal communications	104

Abbreviations

BE	Belgium
Center	Pediatric Surgery Center
CB	Cross-border
CBC	Cross-border Cooperation
CBHC	Cross-border Healthcare
CHC	Centre Hospitalier Chrétien
DE	Germany
EGTC	European Grouping of Territorial Cooperation
EHIC	European Health Insurance Card
EMR	Euregio Meuse-Rhine
EGTS EMR	Euregio Meuse-Rhine EGTC, the decision-making body of EMR
ERN	European Reference Network
EU	European Union
FHML	Faculty of Health, Medicine and Life Sciences
FSE-ICIS	Faculty of Science and Engineering - International Centre for Integrated Assessment and Sustainability
FTE	Full Time Equivalent
GDPR	General Data Protection Regulation
GP	General Practitioner
HC	Healthcare
ICT	Information and Communication Technologies
ITEM	Institute for Transnational and Euregional cross border cooperation and Mobility
LAW	Faculty of Law
MUMC+	Maastricht University Medical Centrum +
NCP	National Contact Point
NL	Netherlands
PA	Prior Authorization
Project	Project of realization of the Center

QoL	Quality of Life
RM	Ricardian Model
SBE	School of Business and Economics
SGEI	Service of General Economic Interest
SHI	Statutory Health Insurance
UKA	Universitätsklinikum Aachen
UM	Maastricht University

Figures and Tables

Figure 1	Problem tree of low mobility	24
Figure 2	Categorized stages explained.	46
Figure 3	Financial Analysis MUMC+.	60
Figure 4	Financial Analysis CHC and UKA.	61
Figure 5	Ricardian model example.	63
Figure 6	The concept of integrated care visualized	71
Figure 7	Visualization of the different organizational levels invested in therapeutic patient education and self-management of the affected child family	74
Figure 8	Communication Strategy.	78
Figure 9	Image Cross-Border Healthcare.	89
Figure 10	Image from the Netherlands' NCP website for CBHC	90
Figure 11	Image from Belgium's NCP website for CBHC	90
Figure 12	Image from Germany's website for CBHC	91
Figure 13	Poster presentation by City-Labs	94
Table 1	Election cycles.	15
Table 2	Funding opportunities.	56
Table 3	Actors Involved in the CBHC region of the Project.	79
Table 4	List of key activities and their descriptions.	85

Executive Summary

This report examines barriers and opportunities in cross-border healthcare for pediatric surgery in the Euregio Meuse-Rhine (EMR), first with respect to the PESTLE framework and then according to legal, financial, accessibility, and marketing & communications parameters.

Within the PESTLE framework, political factors affect cross-border healthcare and projects revolving around it directly through political support and indirectly through for example funding opportunities. Moreover, the healthcare systems in the three countries are rather distinctive and have a different foundation. The economic trends in the last decade(s) show that healthcare continues to increase, whereas the labor productivity does not increase with the same rate. There is an unused potential for efficiency and effectiveness in terms of cross-border healthcare. Technological shifts display a movement towards eHealth, and legal developments draw concerns about protection of data and patient rights in cross-border care. The overall level of care could become substantially greater. Social demographics in the region have implications for accessibility and marketing of the Center, and environmental considerations have impact on access and operations both in the short and long-term.

Moving to the themes, the financial section depicts several funding opportunities for the Project. The financial analysis shows that the Maastricht University Medical Center+ has presented positive efficiency gains and profits whereas this does not apply to the Centre Hospitalier Chrétien in Liège; however, personnel costs are substantially higher at Maastricht relative to Liège. In the legal section, we discuss that to enable the social and political recognition of a cross-border cooperation project, it requires a legal status. Among all considerations, the structure of European Grouping of Territorial Cooperation is developed whereas no such structure has been developed under it before which raises legal issues. In accessibility, the report covers numerous concerns over access to care, quality of care, and health literacy and comprehensible information. Within the marketing & communications section, challenges relating to access and operations are identified, and a preliminary communication strategy is developed as a solution. Finally, the overlap and interaction section discusses the application of eHealth and facilitation of administration via the EGTC structure.

Introduction

PREMIUM

PREMIUM is the honors program of Maastricht University (UM) for high-performing, motivated master's students who, once selected, work together in interdisciplinary teams to undertake a project for a client in the business or government sector.

In our case, we worked on a project for the Institute for Transnational and Euregional cross border cooperation and Mobility (ITEM) and Maastricht University Medical Center+ (MUMC+), for whom we identified obstacles and opportunities for the provision of pediatric surgical care across borders in the Euregio Meuse-Rhine(EMR). Centralization of care is occurring in the Netherlands and hence specific expertise regarding pediatric surgery is not available in every academic hospital. Consequently, pediatric patients that would previously have been admitted to MUMC+ for specialized surgery, now might need to travel far to have access to this specialized care (for example, to the academic hospital in Groningen or Utrecht). This can be a burden for them and their families. To be able to provide specialized care to pediatric patients in the region around the MUMC+, the goal is to create an international Pediatric Surgery Center (Center) which stands as a cooperation of specialized pediatric surgeons of the hospitals in Maastricht (MUMC+), Liège (CHC: Centre Hospitalier Chrétien) and Aachen (UKA: Universitätsklinikum Aachen). ITEM supports this, being focused on creating transnational Euregional cross-border cooperation (CBC). Our PREMIUM team, together with the clients at MUMC+ and ITEM, has explored obstacles and opportunities that arise in establishing such a cooperation. This report depicts the most central of them and the processes of uncovering them. Additionally, we provide recommendations for the establishment of the Center in terms of these obstacles and opportunities.

Our PREMIUM team consists of six individuals coming from five different countries (Belgium, Finland, France, the Netherlands, and the United States) and from a strong multidisciplinary background. Two of us are studying Master's programs at the Faculty of Law (LAW), one at the School of Business and Economy (SBE), two at the Faculty of Health, Medicine and Life Sciences (FHML), and one at the Faculty of Science and Engineering - International Centre for Integrated Assessment and Sustainability (FSE-ICIS). The multidisciplinary gave us as a team a

broad view of the topic and an extensive range of expertise in analyzing it. Additionally, most of us are originally from a border region and we have therefore a personal connection with the topic.

The Case

The purpose of the hospitals in Maastricht, Liège, and Aachen is to build a cross-border (CB) center for the surgical care of children and hereby, to provide optimal medical care for the children in the Euregio Meuse-Rhine (EMR).

This project is based in the EMR, which relates to the following countries: Belgium, Germany, and the Netherlands. More specifically, in Germany this entails the “Zweckverband Region Aachen”, which combines the districts of Düren, Euskirchen, Heinsberg, and Aachen. In the Netherlands, this project concerns the southern part of the country, namely the province of Limburg, even though small parts of Brabant also belong to the EMR. Further, there are the Belgian provinces of Limburg, Liège, and Ostbelgien (also often referred to as the East Cantons) concerning the German-speaking community in Belgium. This region has a population of approximately 4 million people, encompasses over 11.000 km², and approximately 50.000 children are born each year (WHO, 2018; European Commission, n.d.). The EMR is one of the oldest alliances in the European Union. There are many challenges and opportunities that affect the cooperation in this region, such as the different languages (French, German, and Dutch), landscapes and cultures. The project focuses on three of these regions at this stage: the southern part of Limburg, the French-speaking region in Belgium and the region around Aachen. (WHO, 2018; European Commission, n.d.)

In the Netherlands, there is currently a trend of centralization of care services, which in the future might also occur in Belgium and Germany. Hospitals have to meet volume-requirements (i.e., treating a minimum number of patients with a specific condition) to guarantee they meet quality standards regarding expertise. When these requirements are not met, departments might be shut down and the care will be provided at a hospital that does meet the requirements. If care facilities get centralized and thus moved away from the EMR, this might result in an underserved population which currently already experiences a lower health standard in parts of the EMR compared to the people in other parts of their countries.

To be more specific, if the children with chronic, long-term and often rare diseases have to be treated far away, parents are sometimes forced to leave the region and move to a city closer to the hospital. Otherwise, it can lead to a significant financial and emotional burden for the parents; not being able to work while traveling to distant locations for specialized care creates undesirable situations for parents taking care of their chronically ill child. In the three countries involved in this project, healthcare (HC) is in general limited to the national borders. The three involved countries are now willing to cooperate to be able to keep providing specialized pediatric care in the region, by giving a legal statute to a moving team of doctors.

At the current moment there are seven pediatric surgeons in total working at MUMC+, CHC, and UKA (three, three, and one, respectively) (Interview 1, personal communication, 3 April 2019). Additionally, there are fellow doctors: one in UKA and two in MUMC+, while CHC has two external co-workers who are doing pediatric surgery in their own specialties. There is already a basis for the cooperation as some of the surgeons work in more than one of the locations and the doctors attempt to regular meetings between the hospitals. (Interview 1, personal communication, 3 April 2019)

Creating an international cooperation that centralizes pediatric surgical care in the EMR and thus combines the three pediatric surgical departments of MUMC+, CHC, and UKA will help retain highly educated and specialized doctors and HC professionals in the region. Consequences of such cross-border cooperation (CBC) would, therefore, be preventing the brain drain that certain parts of the EMR are experiencing. Potentially, this would attract more patients and specialized HC professionals from surrounding regions due to the facility aiming to provide high-quality care with a patient-centered focus and collaboration with local patient organizations.

Creating this international cooperation will also result in the ability to specialize care more into specific fields, with the relevant doctors rotating between the three hospitals so that patients can mostly receive care in their home countries, preventing the creation of cultural barriers and uncomfortable situations for the patient. It will also result in specific research on certain (rare) disease that can be carried out in one of the research centers linked to the MUMC+ and/or UKA. As a consequence, it will keep researchers and supporting staff in the area and potential medical spin-off companies could arise in the long-term providing more

sustainable jobs in the EMR. The staff has more expertise due to knowledge sharing, experience due to a higher number of surgeries and there is a lessened burden since they can share presence. The topic of potential medical spin-off companies will however not be addressed in this report due to time-constraints and prioritizing other more pressing topics.

Solving the above-mentioned obstacles and testing these opportunities in this CB pediatric surgery center could serve as a blueprint model. This model could be used for the other departments in the participating hospitals to establish CBC. In the long run, the use of the model could be expanded for the whole EMR. Although there are previous cases of CBC regarding HC in Europe, we have not been able to find a precedent which could be applied in our situation: there seem to be no previous cases where three centers have merged in one specific field, without the creation of a new physical hospital. Thus, the model put together for this Center would, in the future, also be applicable to other border regions in Europe that have an existing infrastructure (e.g. hospitals, HC centers). Other positive sides of a cooperation similar to the Center are the provision of high-quality services to patients in their home countries and with their mother languages. These are parts that add to the value and attraction of this research, the Center, and its establishment.

Especially in the areas where the state borders do not match with the language or cultural borders, cross-border healthcare (CBHC) might be the only option to provide the services with good cultural and language competencies. Additionally, if the provision of the services can be done by moving the HC professionals and not the patients, the care will remain patient-focused. Furthermore, this would allow smaller hospitals to specialize in specific fields of medicine, with increased efficiency, as the professional will have a larger number of cooperative hospitals to work with. CBHC provision can also decrease or hinder the increasing costs and further enable the specialized and high-quality care provision in the border regions instead of the patients needing to travel more inland or other central areas of the states to receive care.

Process and Timeline

The PREMIUM project officially started in January. After a kick-off meeting with the mentor and one of the coaches, we formed a project timeline and discussed the situation, objective

and desired outcome with both clients. In the following meeting, we discussed our project plan for the months of February until May and went over the 7 W's;

(1) Why: the main goal, in the end, is to help the patients, deliver better care and lessen the burden already imposed by their diseases. Further, the Center will keep services and expertise in the area for patients and for economic benefits.

(2) What: create a merger of three pediatric surgical departments of the hospitals in Aachen, Liège, and Maastricht.

(3) Who: this focuses mostly on the PREMIUM student team, from whom the initial action comes; nevertheless, the clients are involved as well. Same accounts for the PREMIUM mentor who oversees the whole process and ensures a smooth and well-functioning team. Lastly, this also applies partly to other stakeholders such as patient organization and political support. However, the initial action will come from the PREMIUM student team.

(4) Which way: this relates to the project plan and how we handled this boundless project, which will be further explained in the next section.

(5) Where: Maastricht and wherever meetings took place, although the majority of the research was conducted in the city of Maastricht.

(6) With what: all resources available, ranging from public records, governmental publications, academic papers, literature from previous courses, interviews, etc.

(7) When: As already mentioned, the PREMIUM student team is active from January until May 2019.

After our first meeting with the clients, we were rather overwhelmed with the amount of information we received and the complexity and scope of the questions posed. Hence, we decided to get an understanding of the HC systems and all the different aspects that come into play when one wants to help a patient. In order for an efficient process, we decided to use the PESTLE framework. PESTLE is a framework that is mostly used in economic settings, however, it is also suitable to gain a broad understanding of other sectors. It covers the following perspectives: political, economic, social-cultural, technological, legal and environmental. This tool allowed to cover all facets of the project. Doing research and

discussing the findings helped us to create the baseline knowledge to comprehend what this project is about. Moreover, while conducting interviews in a later phase enabled the PREMIUM team to establish a common view and understanding. In addition, the framework allowed us to divide the work and effort, and focus on more specific aspects. To assure that we would cover all the issues, we formed pairs based on our expertise or interests. After one and a half months we realized that we had set the stage for us to progress to the next phase.

By then, we had researched the PESTLE perspectives extensively and wanted to focus on the main themes which were mentioned by the client in the initial client meeting. Thus, we wrapped up the PESTLE phase in March and discussed our findings in the mid-term client meeting. During this meeting, it became evident that we were on the right path, and that the four themes we had finally identified aligned with the interest of the clients. From then on, we focused on the legal framework, the financial structure, accessibility and marketing of the Project. More specific information on these themes will follow in the respective chapters.

For interviews we reached out to several important stakeholders in the three countries. The stakeholders that we were able to connect with included a few of the regions' political stakeholders, pediatric surgeons, a CBHC provider, and a patient organization. The interviews took place after the PESTLE phase and were conducted either via phone or video contacts or in person meetings.

Structure of the report

The rest of the report will have the following structure. First, we will explain the findings in the PESTLE research phase. Consecutively, the issues related to the four main themes are described. It mainly will focus on obstacles and opportunities and if possible, share solutions for the issues. Further, an analysis of how the different perspectives and themes interact and overlap will follow.

PESTLE

Political

The political factors determine the extent to which governments and government policies may impact the Project and the Center. Several of the topics, discussed and searched in the PESTLE stage, are closely governed through laws and therefore further discussed in the Legal part. These included, for example, the recognition of the diploma and permission to work abroad. The political factors, in this case, can be divided into General, Health, and Cross-border political factors.

1. General politics

Generally, the political opportunities and obstacles involving the Center are often realized in the same cycles as the elections. An important opportunity in the political field is lobbying. This should include discussions with stakeholders on several levels (patients, hospitals, municipalities, provinces) and from several viewpoints. In lobbying as in politics, in general, momentum from a crisis should be always used to enhance the situation. Table 1 covers the election cycles relevant to the EMR.

Table 1: Election cycles.

Election	Last election	Next election
The European Union		
Parliament	May 2019	2024
Belgium		
Chamber of Representatives, Federal parliament	May 2019	2024
Regional elections (Communities and Regions)	May 2019	2024

Local elections (Provincial council, Municipal council)	October 2018	2024
The Netherlands		
The House of Representatives (Tweede Kamer)	March 2017	2021
Senate (Eerste Kamer) (indirect)	May 2019	2021
Provincial council	March 2019	2023
Municipal council	March 2018	2022
Germany		
Federal parliament (Bundestag)	September 2017	2021
State parliament (Landtag)	2017*	2022*
Local elections (Kommunalwahlen) e.g. Municipal elections	Every 5 years**	Every 5 years**

* Differs according to state, this information is according to North Rhine-Westphalia.

** Differs according to the local body.

One of the obstacles in politics is the potential disinterest or negative attitude towards the Center from the ruling/winning parties. A good opportunity within the local political arena would be to bring the Project into the agenda of the quarterly meetings that are arranged between the Municipality of Maastricht and UM (Interview 6, personal communication, 10 May 2019). A similar idea should be applied also with other stakeholders: first, one-on-one meetings to familiarize with the stakeholder interests and then meetings (together) with several of them. This could help to generate enough political will which would trigger a chain reaction of willingness to support the establishment of the Center. With political stakeholders

e.g. the municipality, the important aspects of the Center that need to be emphasised are the possibilities it brings in terms of work/employability and new business opportunities, the position in academia through education and doing research in both CBHC and pediatric surgery and the additional economic benefits that are realized through e.g. symposiums and people traveling for them (Interview 6, personal communication, 10 May 2019).

2. Health politics

Pediatric surgery is one of the official surgical specializations in Germany but not in Belgium or the Netherlands. This brings about issues concerning qualification and education of pediatric surgeons that are well discussed in the article of Kortese (2018). Additionally, the health systems including the reimbursements and insurances differ greatly between these countries.

In the Netherlands, HC is highly centralized with the exceptions in long-term care of elderly and youth that are decentralized to the responsibility of municipalities (Kroneman, Boerma & Groenewegen, 2016). One example is a specialist hospital, in Utrecht, treating just pediatric cancer patients. Pediatric surgery is developing into an even more centralized form, as the objective of some stakeholders is to provide it according to specialties inside the pediatric surgery field (Ure & Bax, 2001; Wijnen, 2017). This is now attempted to do through quotas, a minimum number of patients that are needed to be treated each year, by the pediatric surgery 'board' (Interview 1, personal communication, 3 April, 2019). However, these quotas are not legally binding and therefore they work more like guidelines. If this reform would take place it might mean long travels for the children to the specialist centers. Additionally, the children with multiple problems might need to be treated in several hospitals or by less specialized doctors (Wijnen, 2017).

In Germany, HC as an addition to governance is highly decentralized (Busse & Blümel, 2014). Availability of many pediatric surgery units across the country leads to a heterogeneous distribution of care and unavailability of specialized care (Interview 5, personal communication, 17 April 2019). The opinion of a German pediatric surgery professor was that specialization in parts of pediatric surgery is highly needed, but also referred that the system in the Netherlands is an extreme end of that. Additionally, his view on providing pediatric

surgery for patients across borders was highly supportive and positive (Interview 5, personal communication, 17 April 2019).

In Belgium, HC governance is highly centralized, and provision is for the most parts the responsibility of regional and communal levels (Gerken & Merkur, 2010). According to the care program for children, the HC for children should take place somewhere where multiple HC services can be provided and additional activities beyond care are provided (Gerken & Merkur, 2010). Specific trends for pediatric surgery or its future in Belgium were not elaborated in the literature found for this project.

Additionally, there are more organizational politics that might affect the Center, for example, the policies inside the hospitals about the treatment protocols of certain diseases (Wijnen, 2017). All patients and their situations are individual. Additionally, the practicalities of the treatment often depend on the doctor. However, unified guidelines for diagnostics, treatment, and aftercare can smoothen the cooperation between hospitals with homogenizing the procedures and strengthening the evidence-based practice of medicine. Composing this kind of guidelines for the Center and thereon for other centers is an opportunity.

3. Cross-border politics

The general political environment in the EU Member States is moving towards more right-wing populist, nationalistic, anti-EU arguments and views (Dennison & Zerka, 2019). Even if the similar movement would not be taking place in the border regions, usually at transnational and the EU level the majority view of the Member State is more prominently presented. Still, the EU as an institute is standing behind CBC and keeps investing in its research and realization projects (e.g. through INTERREG). In this area, the atmosphere is favorable for CBC is and it is one of the top priorities (Interview 6, personal communication, 10 May 2019). For the municipality, investments in this area are coming back with 3-4% profit while the investments to other parts of the Netherlands with 1% (Interview 6, personal communication, 10 May 2019).

Bureaucracy (e.g. diploma and permit recognitions) is one of the main obstacles in CBC. This hinders the area's growth and realization of its power: in comparison to the "Randstad", a

similar area, the growth rate is 1-2% and in the “Randstad” 3.2% (Interview 6, personal communication, 10 May 2019). The fact that countries want to protect their own benefit needs to be remembered when discussing CBC. If the Center benefits countries in an unequal manner, it will most likely cause political resistance towards the Center and might even be a threat to closing the Center. This was what happened in theory in the case of IZOM (Integratie Zorg Op Maat: tailored healthcare) that was providing CBHC in the EMR (Leloup, Delecrosse & Lewalle, 2017; Interview 4, personal communication, 11 April 2019). In IZOM, a cooperation agreement was signed by the regional HC insurers (Glinos, Boffin and Baeten, 2005). Patients were free to choose the hospitals instead of being sent to one in particular by the HC providers. However, it was stopped by Germany and Belgium in July 2017 because patients would go more to foreign hospitals than their national ones, especially the Belgian patients because of the cheaper cost of care (Sociale Verzekeringsbank, 2017). This freedom was even considered as positive discrimination for border region inhabitants.

Economic

The economic factors relate to economic growth, interest rates, exchanges rates and inflation rate. In this case, however, we analyzed the economic environment by focusing for instance on the difference in HC systems and overall trends in the HC industry. After the research on the economic factors which (may) influence the Centre, it will continue in the economic theme. Herein, different funding obstacles and opportunities will be discussed, as well as a theoretical model which highlights the different stakeholders and factors to be considered.

1. Healthcare Systems

There are many differences in the set-up of the HC systems among the three countries. Nevertheless, there are a couple of similarities, such as the fact that expenses account for approximately 10-11% of GDP and they have been increasing for a longer time. In a study by the Netherlands Institute for Social Research, it was shown that expenses have doubled relative to 1998 and that rate of provision vs. expenses has expanded negatively since 2011 (Eggink, Ooms, Putman, Ras, Torre & Wierda, 2018). There are several factors causing the development in expenses: staff is getting older, non-staff costs such as administrative, technology or equipment costs have increased, and since 2013 the labor productivity has

decreased relative to expenses. All of this indicates the need for cooperation and efficiency gains in order for HC to remain affordable for all people and governments (Eggink, Ooms, Putman, Ras, Torre & Wierda, 2018).

1.1 Healthcare in the Netherlands

In the Netherlands, HC can be divided into primary and secondary care. The main difference is that secondary HC does not require immediate action. Further, the national government is responsible for arranging HC priorities, monitoring access, expenses, legal implications, and overall quality. It also assists Dutch citizens with a basic affordable benefit package through subsidies from national taxation. Approximately 84 percent of citizens purchases a mixture of complementary voluntary insurance for instance for dental care or physiotherapy. However, this does not allow people to have faster access to care. The statutory health insurance is financed under the Health Insurance Act. Then, health insurers receive the collected contributions with a risk-adjusted capitation formula and they are expected to compete on both quality and cost. As a control measure, insurers are not allowed to share profits among their shareholders (The Commonwealth Fund, 2018).

In general, the market is composed of four large conglomerates accounting for 90 percent of the total industry. In terms of coverage the Dutch government, specifically, the Ministry of Health, relies on advice from the 'Nederlandse Zorgautoriteit' (Dutch HC Institute) to regulate and oversee the health system. Insurance companies are legally required to provide a standard package and some of the more specific treatment are partially covered, e.g. specific chronic conditions. If you are older than 18 years, you have to pay an annual deductible of €385 for HC costs out of your own pocket and other costs can be reimbursed up to a limit. GP care and children's health are exempt from cost-sharing. This is covered by the government and they provide HC allowances, subject to asset testing and income ceilings, to ensure that the low-income families remain to have access to high-quality care (The Commonwealth Fund, 2018).

Further, authorities have been working to establish a central health system to store and share electronic health records. Patients have to approve of this and can always withdraw or gain access to their own files. Cost containment has been a central topic, especially during the 2012 elections. In general, the main control measure is to have market forces compete on quality

and costs while this is being regulated to improve the efficiency of care (The Commonwealth Fund, 2018).

1.2 Healthcare in Germany

In Germany, health insurance is mandatory for all citizens and provided by two systems. Namely, competing non-governmental health insurance funds (“sickness funds”) in the statutory health insurance (SHI) system, and substitutive private health insurance. Most university hospitals are owned by the respective states whereas municipalities play a role in public health activities and own half the number of beds. Still, the government or its subsidiaries have no direct role in direct financing or delivery of HC. It is self-governed within the sickness funds and provider associations which are together represented by the Federal Joint Committee. Sickness funds are financed by compulsory contributions as a percentage of gross wages. Coverage is universal for all legal residents and citizens employed earnings less than €56,250 are mandatorily covered by SHI. If one earns more, they may remain in the public scheme or purchase substitutive health insurance, which also covers civil servants. Approximately 86 percent of the population is covered by the sickness funds and 11 percent through private health insurance (The Commonwealth Fund, 2018).

Sickness funds cover a wide range of services such as preventive services, hospital care, and dental care. All prescriptions are covered if they are not excluded by law due to e.g. lifestyle drugs. Small copayments are required for citizens for example €5-10 per outpatient prescription, €10 per day at a hospital and €5-10 for prescribed medical devices. Children under 18 years old are exempt from cost-sharing and for adults there is a cap of two percent of household income, except of chronically ill people since in that case, the cap is at one percent. As of 2015, medical cards are used by all the people under the statutory health insurance. (The Commonwealth Fund, 2018)

The e-Health act ensured a secure digital communication and provided concrete deadlines for implementing infrastructure and electronic applications. Physicians under the sickness funds receive additional fees for transmitting, collecting and documenting electronic medical and emergency reports. If they do not participate, they will receive reduced remuneration. Recently, there has been a focus to increase competition and purchasing power has been handed over to the sickness funds. In addition, there has been a shift away from the overall

budget for hospital and collective caps for physicians towards and emphasis on quality and efficiency (The Commonwealth Fund, 2018).

1.3 Healthcare in Belgium

The Belgian HC system has a more complex structure than the Netherlands, due to the responsibilities being split between the Belgian Federal government and the three Regional governments; these being the Flemish and French-speaking communities and the German-speaking community. The federal government is mainly responsible for: sickness and disability insurance, the protection of public health, the regulation of medicines, the organization and financing of HC facilities, the organization of HC professions, emergency care, international cooperation and agreements, CBC and the support of various councils and consultative bodies. The communities are mainly responsible for health promotion and prevention, environmental HC, the financing of HC infrastructure (including hospitals), the programming, planning, recognition and inspection of HC facilities and the training of HC professionals. The Belgian hospital involved in this project is located in the French-speaking community of Belgium and therefore falls under its responsibilities (Curvers and Willems, 2018; Gerkens and Merkur, 2010).

In Belgium, HC can, in general, be split into three layers: first-line care, second-line care, and chronic or long-term care. The first line is the primary care provided by GPs, emergency services and non-urgent care such as diagnostic or follow-ups of patients in polyclinics. The second line consists of acute and immediate care provided by hospitals for patients requiring acute and curative care, possibly with technical interventions such as surgery or technical diagnostics. Lastly, chronic and long-term care is provided to patients needing long-term stay in a facility or at home using home-care services (Curvers and Willems, 2018; Gerkens and Merkur, 2010).

Most hospitals in Belgium are private entities with others being governed by a public institution and seven being university-affiliated hospitals. The Walloon hospital, in this case, is a private hospital. Hospitals are funded in certain ways by the Belgian government, but there has been a push for several years to merge some hospitals and diminish the total number of hospitals due to there being too many hospitals and hospital beds per capita. In some Belgian cities, such as in Brussels and Liège, there are often multiple hospitals present

in one city, which is not common in other countries with efficient HC systems (Curvers and Willems, 2018; Gerken and Merkur, 2010).

Health insurance, on the other hand, is provided to nearly every individual in the country. Belgian children and adolescents up to the age of 25 are automatically enrolled at the health insurance fund of the head of the family, unless they become fiscally independent at an earlier age. After this, all students above 25, workers, employees and individuals receiving unemployment benefits have to become a member of one of the five recognized mutualities, which exist in Belgium. These mutualities are non-profit health insurance funds which are funded by the federal government of Belgium and are organized into 60 (mostly) regional mutualities and health insurance funds. Their funding is distributed by the 'Rijksfond voor Ziekte- en Invaliditeitsverzekering' (RIZIV) (National Institute for Sickness and Disability Insurance) and derived from federal subsidies and the mandatory social security contributions which is automatically deducted from employers' and employees' monthly salaries and transferred to the 'Rijksdienst voor Sociale Zekerheid' (RSZ), which is the National Institute for Social Security also managing the RIZIV. Individuals can also decide to take on and pay for extra insurances at the mutualities or private insurance companies which cover things on top of the publicly funded insurance (Curvers and Willems, 2018; Gerken and Merkur, 2010).

2. Cross-border Healthcare

In a case study by the European Commission on the border between Finland and Sweden, they found similar obstacles arising from the different national systems, in terms of both legal and administrative aspects (Jeffrey & Morosi, 2017). The EU gives its citizens the right to receive HC in the other Member States and also allows citizens to work across borders. This has stimulated citizens to move to wherever opportunities lay in the labor market. Studies have shown that HC personnel is very much willing to work across borders (Jeffrey & Morosi, 2017). Still, there are multiple factors that contribute to low levels of patient and personnel mobility. As Figure 1 illustrates, this can be considered from multiple aspects. The bottom half illustrates the drivers of the problems: there are linguistic barriers which result in a lack of information on services available across borders as well as differences in organization and planning of HC systems.

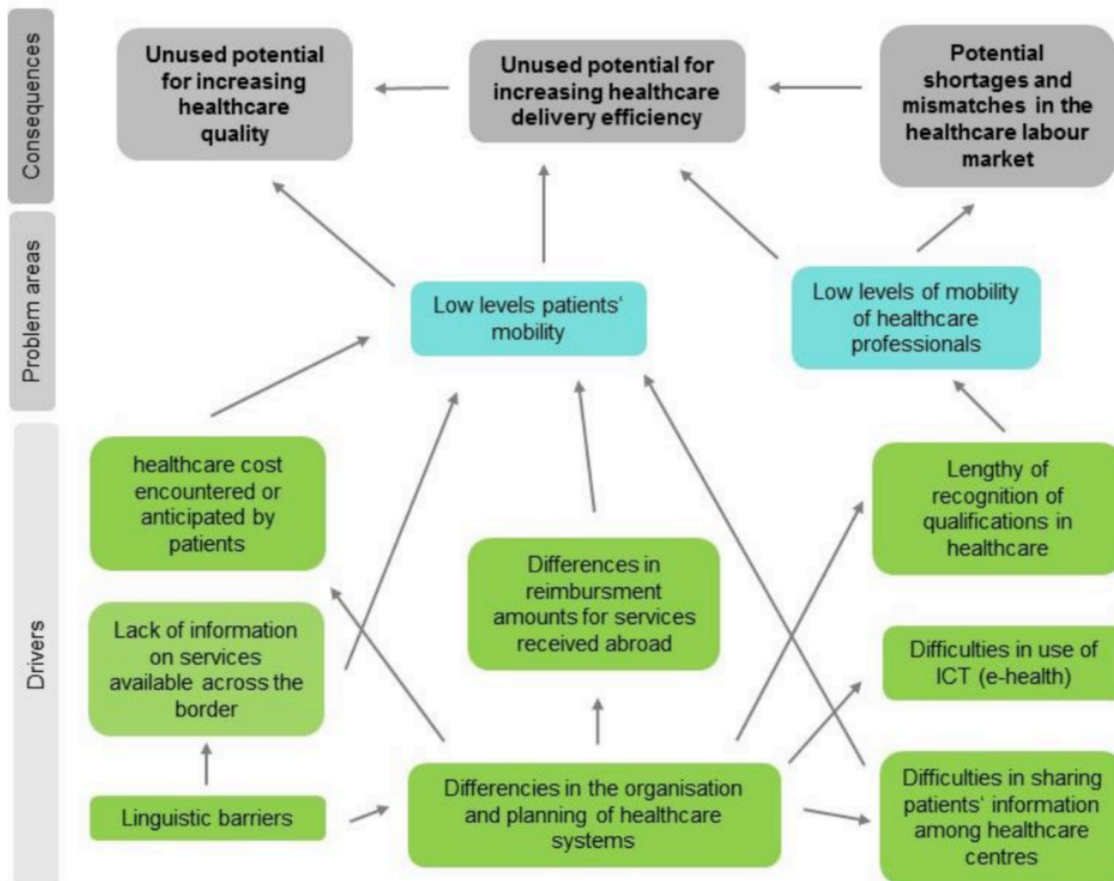


Figure 1: Problem tree of low mobility (Jeffrey & Morosi, 2017).

In this case, the national contact points (NCPs) may be able to assist in offering additional information. Nonetheless, only ten percent of people have heard of this; hence, there will still be a lack of information (European Commission, 2015). Furthermore, there are difficulties in sharing patients' information among the different HC centers. Consequently, there are issues with the differences in the use of ICT (eHealth), the costs and reimbursement per treatment as well as the recognition of the qualifications in HC. All of these arguments can be bundled into two main problem areas: low levels of patient mobility and low level of mobility of HC professionals. As a result, we see a shortage and mismatch in terms of the HC labor market. For instance, all hospitals need to have a minimum amount of staff present at all times (Interview 1, personal communication, 3 April, 2019). However, since there is no formal cooperation yet the EMR is essentially overstaffed at times. Conversely, not all centers possess the same specialties and skills, therefore patients have to travel for more than two hours to receive specialized treatment even if it could be offered just across the border (Client meeting 1, personal communication, 4 February, 2019). Evidently, this leads to a discrepancy in supply

and demand for the HC labor market. Second and closely following, this results in an unused potential for efficiency and effectiveness and thirdly, the quality of HC is not optimal. The overall level of care in the EMR is high, yet by combining efforts it could become substantially greater.

In the second phase of the document highlighting the themes, there will be a more extensive analysis of the situation and possible funding opportunities.

Social

When using the PESTLE framework and looking at the social factors, we more broadly looked at sociocultural factors. In this report we defined sociocultural factors as “used to describe the differences between groups of people relating to the social class and culture in which they live” (Cambridge University Press, 2019). During the analysis for sociocultural factors, we therefore looked at the demographics of the different regions, at the health literacy of the population but also, for example, the mobility of HC professionals, attitudes from consumers and stakeholders, and accessibility and advertising of such a potential pediatric surgical center.

1. Demographics and socioeconomic status

Demographics-wise, we examined the current and future trends in the relevant provinces and regions of the EMR. In total, the EMR includes a population of more or less 4 million people, with the regions of Aachen and the province of Liège (including Ost-Belgien) accommodating the largest parts (Stadt Aachen, 2019). The southern part of the province of Limburg currently has a shrinking and aging population due to younger generations moving to the Dutch ‘Randstad’ or searching opportunities in other EU countries. The Belgian province of Limburg has a more or less stable population (Leroy and Holderbeke, 2012). Although no pediatric surgical unit would be located in this province, it would still be an interesting region to attract patients from. Patients from this province usually have to travel at least to the University Hospital of Leuven to receive specialized treatment. For the province of Liège and the region of Aachen, a population increase can be expected, primarily also due to the fact that both regions include a large minority group with a migration background (Geelen et al., 2007).

In the EMR, 0-14 year-old individuals comprise about 15% of the total population. The region of Liège has the largest young population, with South-Limburg being at the other end having the oldest population in the EMR as well as a shrinking one. Each of the regions has also a sizeable minority with a migration background, mostly with Polish, Italian, Turkish and Moroccan backgrounds. This is a result of the mining history in most of the regions of the EMR (except for Ost-Belgien) (Geelen et al., 2007). The closure of the mines in each of these regions was however not without consequences. The closure temporarily caused high unemployment rates in several of the regions and caused the economic downfall of some regions. This resulted in a continued lower education level in most of these regions. This was therefore also one of the reasons to which the universities of Hasselt and Maastricht were founded 48 and 43 years ago, respectively (Geelen et al., 2007; Curvers and Willems, 2018).

The lower-education level in this region, of course, has an influence on the health literacy of the relevant patient population in the EMR. This is an important challenge, since health information is an important resource for patients to understand and engage in the management of their health conditions (Ishikawa, 2008). Patients, and especially parents in the case of the Center, from the relevant regions might have difficulties understanding the information the HC professional is giving them. This is especially important with regards to patients suffering from long-term ailments, since the understanding of health information is important to promote good long-term health and care for the patient (Ishikawa, 2008). It is also important for the parents to make informed decisions together with the treating HC professional and to be involved in the long-term care process of their child (Brabers, 2017).

2. Visibility of the Center and the mobility of doctors

Next to demographics, we also looked into the visibility of the current cooperation which exists between the pediatric surgeons of the three hospitals. We noticed there was not much visible advertising and publicity present in the news surrounding the current cooperation. Neither did we find a website or page with information about the cooperation when searching through different key terms in different languages. Creating awareness among the patients living in the EMR (and potentially outside of it) about the existence of the Center is important since it might encourage them to not seek care in other facilities at further distance. Not only is it important to be visible through traditional media, but also by setting up an effective social

media campaign for example. Awareness of the brand is therefore not only driven by traditional and social media, but also by the innovativeness and novelty of the ideas and technologies used in the Center. Next to that, social media also play an important role in patient education, as well as engaging a certain community in the Center's activities. The engagement might of the patient population might therefore lead to the formation of networks and support groups (Househ, 2013). Visibility of the Center will also generate certain consumer attitudes and opinions as well as from certain stakeholders such as insurance companies in the three different countries. Visibility will therefore be an important factor to manage through effective communication strategies targeted towards the public and stakeholders. Involvement of patient organizations into the functioning of the center could be an example of managing consumer attitudes and opinions.

Then, we looked into the mobility of doctors and the recognition of their professional qualifications in the three relevant countries. We however quickly realized that such a study was already performed by ITEM (Kortese, 2018). We, therefore, decided to not look any further into this matter.

3. Sharing patient information

We also looked into the possible challenges there could be regarding the sharing of patient information and potential ethical issues related to this. Currently there is no effective method in place to share data between the different locations in the three countries in which the center is located. However, it is critically important to share data efficiently with the patients and their GPs and to make sure they are serviced in a language they can understand. This because for the Center the doctors are the ones that are traveling between the different locations of the center. This challenge could be addressed through several new developments and solutions in the field of eHealth. It could also decrease the barrier for low-income patients to receive adequate care while not having to generate transportation costs if a physical appointment is not necessary. A challenge for the Center in the future could be the exchange of data between the different hospitals in different countries. This mainly results from the use of three different ICT systems in each of the current pediatric surgical units in Aachen, Maastricht and Liège. Integrating these could be a costly hurdle to take. Although the main

intention is to treat the patients in their national centers of care since this would also entail fewer problems regarding the request for care abroad from the patient's insurance company.

The most important cross-cutting themes defined during the research for the sociocultural aspect of the PESTLE framework were health literacy of the patients and in this case more specifically the parents. Another cross-cutting topic is making the pediatric surgical center and its unique cooperation visible in the EMR where its main target group is located, through advertising and publicity. There seems to be an opportunity for eHealth applications and a unified website to be implemented to help improve the patients' and parents' health literacy. This could also be a good opportunity to create a unified CB application (as a web and mobile application) where both the patient and HC professional can easily access their data. This might especially be useful for a HC professional travelling CB from another unit to be able to view the patients' health history. Lastly, there is the ease of access to care, regarding the language barrier but also regarding the mobility of the patient and therefore the ability of the patient (and parents) to reach the facilities. The challenges and potential opportunities for most of the identified cross-cutting themes in the sociocultural aspect are discussed under the communication & marketing and accessibility chapters of this report.

Technological

Technology has been interpreted as an instrument used to provide services of better quality. We ruled out the use of telemedicine as a technological communication instrument because it was decided that one of the parties moves physically which could be the patient or the HC provider. There is no lack of medical expertise regarding the diagnosis and treatment of the patient in the area concerned. We examined the other ways to share medical general knowledge of care in general, eg. European network on Health Technology Assessment and about the patient in particular through platforms.

1. The European network on Health Technology Assessment

Health technology assessment is a multidisciplinary process that summarizes information about the medical, social, economic, and ethical issues related to the use of health technology in a systematic, transparent, unbiased, robust manner. Its aim is to inform the formulation of safe, effective, health policies that are patient focused and seek to achieve the best value

(European Commission, 2019d). The overall goal is to create a network within the practices of the Member States to provide reliable, timely, transparent, and transferable information (Kristensen, Mäkelä, Neikter, Rehnqvist, Håheim, Mørland, Milne, Nielsen, Busse, Lee-Robin, Wild, Espallargues and Chamova, 2009). However, the development of research and innovation is not the main priority of the center at the moment compared to its process of establishment. It has the ambition to be the biggest center of pediatric surgery of Europe which entails, therefore, this aspect of development in the future (Client meeting 2, personal communication, 28 January 2019).

2. The use of platform regarding patient's information

Regarding data of patients, there is an issue about its transfer between patients and HC providers across borders. It is essential for the complementarity of care provided by the different HC providers and for the overall quality of care for the benefit of the patients. We decided to focus on how information and communication technologies (ICT) are used in the three countries for discharge summary, health records, e-prescription and the likelihood of a platform shared between the three hospitals to transfer this information in order to provide good quality HC. As there is no framework developed on the national level, we looked at case studies of CBHC cooperation within Europe and possible promotion of eHealth by the EU, especially Digital Service Infrastructure and Konfido (Secure and Trusted Paradigm for Interoperable eHealth Services) (Konfido, 2019).

eHealth or “digital health and care” has been defined by the European Commission as “tools and services that use ICTs to improve prevention, diagnosis, treatment, monitoring and management of health and lifestyle” (European Commission, 2019a). The Commission aims to facilitate the transfer of patient data cross border in the EU. Therefore, electronic CB health services are being progressively introduced on a European level and should be implemented before 2021 regarding prescription and patient summary.

At the national level, the most known developed project is the Danish platform MedCom . It is a non-profit organization, publicly funded by the Ministry of Health, Danish Regions, and Local Government of Denmark, that made the cooperation between all actors within HC a priority. The aim is to develop sustained electronic communication to ensure continuity of care by opening a dialogue with all partners, following up and monitoring what exists. The

project is promoted abroad to develop the standardization of electronic communication including in CBHC. It was expanded to the other Nordic countries as Norway, Sweden and Estonia and Lithuania (Baltic eHealth project). In addition to Medcom, the Smart Open Services for European Patients (EpSOS) project is relevant relating the electronic health record systems within Europe, where pilots were created for the National Contact Point (NCP) to exchange patient information (Medcom, 2019).

We consider that eHealth is a really important aspect to ensure the everyday operation of the Center ,but it is still in development. As the aim is not to create an infrastructure from the ground, we have to consider the current systems used by the three hospitals concerned.

However, technology is not our field of expertise. Two elements can be retained from this research. First, MedCom's skills can be relevant to provide the right information on time to ensure the quality of the Centre. Furthermore, they work on many aspects of the relationship between patients and HC providers, including the communication, as the Interpretation service project from 2008 within Denmark illustrates. Secondly, we can presume that the cost of this kind of platform is expensive and that their field of expertise is still limited to Denmark. However, they base their research on openness and communication with all stakeholders which ensures the quality of the service. Their goal is included in the eHealth policy of the European Union which enables then access to funding as European Commission Competitiveness and Innovation Programme (CIP) within the ICT Policy Support Programme for example (MedCom, 2019).

Legal

Within the legal field, the research started out with the consideration of the different rules regulating health. According to article 168 of the Treaty of the Functioning of the European Union, the definition of health policies and the responsibility for organizing and delivering HC is in the hands of the Member States, while EU institutions have the responsibility to support the Member States and foster collaboration between them. The project includes three different Member States of the European Union, which means that the national rules regarding health need to be considered. After brainstorming about the legal problematics, it was found that two sorts of natural persons are concerned: the patients and HC professionals.

In addition to these two groups, the third task was to look for which legal status would fit the best to the Project to be recognizable as such, independently from the hospitals and countries. As the Project focuses on a CB relationship, it entails a foreign element and we thus had to look further in the existing harmonization scheme through Regulations and Directives from the EU legislature.

1. The existing possibilities regarding the legal status of such Center

We looked at the possibilities of legal status at different levels. The national level turned out to lack power regarding CB situations. On the regional level, there may be a possibility to expand Benelux to Germany as it is mutually recognized. In this case, Luxembourg may be then involved which was not considered in the Project. On the international level, the Council of Europe developed the Madrid Convention. However, even if the resulting Euregional Cooperation Grouping (ECG) is a unique legal person, it is governed solely by the law of the Member State in which it has its headquarters. Furthermore, while Germany has ratified it, The Netherlands and Belgium are a step behind by having only signed it (ITEM, 2018). The European level thus turned out to be the most relevant for pursuing legal status.

As the rules of the national HC system mainly entailed issues on reimbursement, we decided to look at how they were solved on the EU-level by the harmonizing Patient Rights Directive. Similarly, we decided to not go on with the part on rules regarding HC providers. This included liability issues that differ from state to state. The main problem that arises in the literature is the question of recognition of qualifications across borders (Costigliola, 2011) which has been researched by ITEM (Kortese, 2018). These topics were divided between the legal status of the center and the rules and rights regarding patients.

Regarding the legal status, at a smaller level, as the health sector is usually managed at the national scale, the municipalities would not have enough powers to conclude an agreement. From a sectoral point of view, we could envisage an agreement between the three hospitals. It first seemed limited because only the unit of pediatric surgery is concerned and it would not be recognized as an autonomous entity being able to develop itself aside from the whole hospital and thus receiving funding for this particular project. The project we found that was the most similar in this regard is a HC cooperation of an emergency unit followed by a pediatric unit between the public hospitals of Braunau in Austria and Simbach in Germany. This entailed

the creation of a private company with limited liability (GmbH) but it failed due to the lack of harmonization between territorial conceptions about the future of HC (European Observatory on Health Systems and Policies, 2013). The only legal status that seems to match to our project is the regional one: European Grouping of Territorial Cooperation (EGTC) which is governed by Regulation 1082/2006 and amended by Regulation 1302/2013. The idea was to base the Project on an EGTC in connection with the existing EU programs such as Interreg and the broader transnational CB structure EGTS EMR.

2. The legal implications regarding the patients

The focus with regard to the Patient Rights Directive was on the right of the patients of the Center to move beyond the borders of their country to seek for care, and what complications and opportunities the Directive provides. Similarly, for the GDPR, the research focused on how exactly the new EU data protection rules protect health data, since the Center will be processing such data and needs to be aware of its obligations under the Regulation. In the context of both instruments, the idea is also to look into the similarities and differences between the national implementations and how these could reflect in the Center.

Environmental

The environmental factors can have impacts both in the short term and the long-term setup and operations of the Center. Environmental factors are divided into regulations, impact of climate change on health, and environmental sustainability in HC.

1. Environmental Regulations & Policies

Environmental regulations and policies exist across all sectors, including healthcare. Environmental regulations relevant to the development of the CBHC center are those relating to the mobility of the medical team, which is primarily linked to emissions from transport. Impacts could be from increased trips from a more mobile surgical team.

Environmental regulations relating to emissions come largely from the EU and national levels. For example, in the Netherlands, there are national commitments for the Dutch energy transition, which is focusing on reaching renewable energy targets as part of national

sustainability goals and Dutch targets from the 2015 Paris Agreement (Rijksoverheid Nederland, n.d.; United Nations, 2015). Furthermore, national goals are motivated by binding EU legislation under the framework of the EU Energy Strategy and Energy Union. As part of its strategy, the EU has set targets for 2020 and 2030, covering emissions reduction, improved energy efficiency, and an increased share of renewables in the EU's energy mix (European Commission, 2019b). For example, the Clean energy for all Europeans package fixes two concrete targets for the EU toward 2030: a renewable energy target of at least 32% and an energy efficiency target of at least 32.5%. Member states are now also required to submit national energy and climate plans (European Commission, 2019a).

Increasingly, ambitious targets to address climate change and other environmental challenges are also being set at regional and even local levels. While these targets are largely (legally) non-binding, they establish the direction of political will. Any projects that go in contradiction to these targets may have a harder time finding political support. This applies to the CBHC region of the Center, as Limburg, North Rhine-Westphalia, and Liège have established ambitious targets for emission reduction. In Limburg, the goal is to have the province be CO₂ neutral (i.e. a balance of emissions and reductions/offsets) by 2050 (Provincie Limburg, 2018). In North Rhine-Westphalia (the province including Aachen), the goal is to achieve an 80% reduction in total CO₂ emissions compared to 1990 levels (The Climate Group, 2016). For the Province of Liège, their climate plan focuses on being in line with the EU targets for emission reduction and renewable energy production, as well as improving on energy efficiency and inspiring municipal projects and climate action (Province de Liège, n.d.).

Environmental policy also exists at the local level within the CBHC region of the Center. Maastricht, home to MUMC+, aims to be CO₂ neutral by 2030 (Gemeente Maastricht, n.d.). Aachen, where Uniklinikum Aachen is located, joined the Covenant of Mayors for Climate & energy in 2009 and committed to a 40% reduction of CO₂ by 2020 (Covenant of Mayors, n.d.). In addition, MUMC+ is part of the UM. UM has its own sustainability plan, which is to be climate neutral by 2030 (Maastricht University [UM], 2018). According to the municipal website, the city of Liège does not yet have a formal climate plan beyond that of the Province. However, it is participating in the Interreg V B North West Europe "Climate Active Neighborhoods" project (Communale Liège, 2019).

In light of environmental regulations and policies, particularly those relating to emissions and climate, the planning of the mobility of the medical team should be careful. The traveling of the medical team could decrease the total amount of distance traveled by patients if they had to go to a specialized center in their own country. However, there are still impacts from the travel of the medical teams themselves. It will have to be considered the mode of transport being used, whether there are low-carbon/carbon-neutral options, and how logistics can be planned to make trips efficient and as minimal as possible.

2. Impact of Climate Change on Health

For long-term considerations, climate change is likely to produce a higher number of “climate refugees” as areas become uninhabitable due to extreme climate variation and resource depletion (United Nations High Commissioner for Refugees [UNHCR], 2017). This will impact the number of people attempting to access the HC system in Europe and is closely linked with the element of social sustainability and accessibility. Additionally, an overall warming global climate increases the potential for increased disease transfer (European Environment Agency, 2012; Adhoot & Pacheco, 2015). Children are a vulnerable population, and therefore increased transmission and admittance of acute cases related to this transmission are possible (European Environment Agency, 2012; Adhoot & Pacheco, 2015). Furthermore, climate change is contributing to an increase in both the frequency and severity of extreme weather events, including extreme heat (EASAC, 2018). As children are more vulnerable, especially those already ill or with precarious medical conditions, extreme weather events like extreme heat pose a significantly larger risk to the pediatric population (CDC, 2013). As such, this could also increase the needs for increased pediatric care.

3. Environmental Sustainability in Healthcare

A growing trend in recent years has been an increasing focus on the environmental component of sustainability in HC (WHO, 2016). This has largely focused on the operations of medical facilities, with energy usage and efficiency, as well as on construction, with LEED/other sustainably certified buildings on the rise (WHO, 2016).

An emphasis on a digital strategy in HC also includes environmental considerations (WHO, 2019; Holmner., Rocklöv, Ng, and Nilsson, 2012). For environmental benefit, the pediatric CBHC Center has immense potential for an e-Health component. An e-Health component would have an impact on emissions produced by providing care, by potentially reducing the number of required patient trips (and even surgical team trips). This fits in well with regional, municipal, and university (in the case of UM) goals for greenhouse gas (GHG) emission reductions in their operations. The eHealth component is further discussed in its own section, as it comprises elements from Funding, Legal, Marketing & Communications, and Accessibility.

Themes

A few weeks before our midterm presentation, our team made the transition from the PESTLE framework to our own constructed framework. We did this by taking the information we had gathered from the PESTLE analysis and doing a system analysis (Enserink et al., 2010a) for each factor, from which we determined the spatial and temporal boundaries, key drivers, trends, uncertainties, and causal relationships. We went through each letter's system analysis of PESTLE at our team meeting on March 1st to determine from what we had researched what was important and what was less relevant to the scope and time frame of the project. After looking at the information we ended up with, we noticed that there were many overlaps across the letters. From this, we clustered the important information into the different categories of the framework: legal, financial, accessibility, and marketing & communications. For us, this new framework made more sense in organizing and implementing the information, because many challenges and opportunities cut across the different aspects of PESTLE. The latter was useful during our initial research to gain insight, but moving forward this new framework was more operational and understandable as we were able to focus our attention more in-depth to a selection of important and comprehensive topics.

Legal

The following section will look into the EU rules. In the two first parts, we consider the patient rights and the right to privacy with regard to medical care through the Patient Rights Directive, Social Security Regulations, and General Data Protection Regulation (GDPR). The focus will be on the obstacles and opportunities that these rules pose for the establishment and the functioning of the Center, and the national implementations of the rules will be referred to where necessary. We will then consider in the two last parts the legal status through the EGTC Regulation to assess the concrete obstacles and opportunities of its creation, and its implications in the existing legal relationships.

1. Patient Rights Directive and the Social Security Regulations

1.1. Introduction to the Instruments

There are two relevant EU instruments to be addressed together under the topic of Patient Rights (European Commission, 2019e, p. 1). These are the Directive 2011/24/EU on the application of patients' rights in cross-border healthcare (hereafter: The Directive) and the Social Security Regulations 883/2004 and 987/2009 (hereafter: The Regulations). The Directive provides rules on the facilitation of CBHC by regulating matters such as reimbursement, prescriptions, e-Health, and health literacy via the establishments of National Contact Points (European Commission, 2018a, p. 2). Regulation 883/2004 coordinates the social security system, while Regulation 987/2009 lays down the relevant procedures (European Commission, 2019f, p. 6).

Before going into the applicability of the instruments in the context of the Center, it should first be pointed out that as both the Directive and the Regulations apply in situations where a patient goes into another EU Member State for care. As the aim of the Center is to have the doctors travel across the border to the patients, and not the other way around, it should be kept in mind that the legal issues on patient mobility will only arise in the rare circumstances when a patient has to travel. In other words, these issues can be avoided by treating the patient in his or her state of affiliation. However, it is also unavoidable that a patient will have to travel from time to time, and it is therefore important to pay some attention to the issues that might arise from such cases.

1.2. Which instrument should the patients of the Center apply under?

The Directive and the Regulations provide two separate ways to guarantee CB treatment of patients in the EU (European Commission, 2019e, p. 1). Both of these two instruments work differently and apply in slightly different circumstances. Due to this, the possible obstacles in relation to the Center differ depending on the CBHC avenue one uses. Thus, the first issue to clarify is the interrelationship of CBHC under the Directive and the Regulations.

As long as it is applicable, a patient is free to choose to apply for HC under either instrument (European Commission, 2019b). Thus, in a Center where CBHC is provided, it is extremely

important to provide clear information to the patients as to which avenue they should take. There are several differences between the Directive and the Regulations, which may make one or the other a more attractive option. The four most important ones relate to whether the care is planned or unplanned, the status of the hospital as a public or a private one, whether or not Prior Authorization (PA) is required from the insurance company, and the payment for and reimbursement of care (European Commission, 2019f, p. 6). Each of these will now be discussed in turn.

Firstly, both of the two instruments can be used for both planned and unplanned care (European Commission, 2019f). As pediatric surgery is mostly planned care, the remainder of the paper will focus on this type of care. Furthermore, it should be noted that in case the care is unplanned, CBHC is more straightforward, and all a patient would need to do is to show his or her European Health Insurance Card (EHIC) at the hospital and they will be reimbursed under the Regulations. Even in the absence of the card, the Directive will cover for it without the need for any PA (European Commission, 2019e). Secondly, the Directive applies on care in both public and private hospitals, whereas the Regulations can only be resorted to where the care takes place in a public hospital (European Commission, 2019e).

Thirdly, the Regulations, in principle, always require PA by the patient's insurance company, whereas the Directive merely allows for states to require such authorization (Directive 2011/24/EU, article 8(1)). The last aspect to consider is the difference between the schemes of reimbursement between the two instruments. This is a relevant aspect, and needs to be explained in a bit more detail.

According to Chapter III of the Directive, the insurance company in the home state only needs to reimburse the patient "up to the level of costs that would have been assumed by the Member State of affiliation". The Directive usually requires the patient to pay the treatment upfront, only to be reimbursed afterwards, which has been criticized to amount to an obstacle for access to care (European Patients Forum, 2016, p.10). Furthermore, according to article 7, the care obtained abroad needs to be covered by the home insurance scheme as well. Conversely, the Regulation provides for reimbursement up to the amount that would be reimbursed in the country of care, and that the care obtained can be something that does not fall into care reimbursed under the home insurance scheme. In other words, if a Belgian

patient would travel to the Netherlands for care under the Directive, he/she would be reimbursed only up to the amount that the Belgian insurance company would reimburse for such care. However, if the CBHC would take place under the Regulations, the Belgian person would be reimbursed for the entire costs that the Dutch insurers would pay him, which would cover the whole cost of the treatment in case the Dutch treatment would be more expensive.

Considering all of the concerns above, the Regulations seem like the more attractive option. If successful, the patients could get reimbursed up to the costs in the country of care (and not the country of affiliation). This is especially relevant in the pediatric Centre at hand, since care in the Netherlands or Germany can often be more expensive than that in Belgium (Client meeting 1, personal communication, 4 February, 2019). Thus, by applying the Regulations, a patient could overcome the obstacle of having to pay a substantive amount out of their own pockets in case care in their country of affiliation is much cheaper than in the country of care.

1.3. Practical steps of applying for cross-border care under the Instruments

1.3.1. The Regulations (Option 1)

In case a patient at the Center needs to apply for treatment in one of the two other Member States than which they are a citizen of, the first thing to check would be if the Regulations could be applied. The Regulations are applicable in three instances: for unplanned care by the use of the health insurance card; for planned HC under a form of PA (called the “S2 form”); and finally, for certain special arrangements made in relation to posted workers, frontier workers and pensioners residing outside of their country of social security insurance (European Commission, 2019c, p.5). Since this report focuses on planned care, the S2 form seems like the only feasible route. After establishing the scope of applicability of the Regulations, two possible obstacles should be pointed out.

Since in most cases the care would be planned, the S2 form should be utilized. The form must be submitted before traveling abroad for care, meaning that PA is always required in case of planned care under the Regulations. When approved, the form will work as proof of PA. (European Commission, 2019e, p. 18). Thus, it needs to be made sure that the form will be accepted in order for the patients of the Center to move across the border. Secondly, the Regulations are only applicable to public hospital care. Since the CHC in Belgium is a private

one, the S2 form route will only be available for care in the hospitals in Maastricht and Aachen. However, an interesting consideration arises with regard the possible future legal form of the Center. If the three pediatric surgery centers were, in the future, combined into an EGTC as discussed in section 3 below, the EGTC as a public institution might allow the use of the S2 form also in the context of the otherwise private Belgian hospital, which would allow for the Regulations to be applied in nearly all cases.

1.3.2. The Directive (Option 2)

If the application of the Regulations fails, the applicability of the Directive can still be checked. The Directive could be applied in each of the three hospitals, as it applies in both private and public care (European Commission, 2019e, p. 12). However, the use of the Directive poses two further obstacles: the PA systems and the issues of reimbursement.

Although the Directive does not automatically impose PA systems, Member States can implement such a system in their national law (Directive 2011/24/EU, article 8(1)). Due to this freedom, the rules slightly differ between Germany, Belgium, and the Netherlands. It should first be said that the Dutch implementation does not require any PA arrangements to be made when seeking CBHC under the Directive. Thus, this will not be an obstacle with regard to Dutch patients under any circumstances, and as long as they fulfill the conditions in the Directive, they will be able to go across the border to Germany or Belgium and receive reimbursement.

However, the German and Belgian patients will, in certain situations, need to ask for PA from their insurer. Under article 8 of the Directive, PA may be required in cases where the care is subject to planning and involves either an overnight stay in a hospital or the use of highly specialized infrastructure or equipment. The article provides for other grounds of PA as well, but it can be said that in all situations where the surgery is not an emergency and is planned, pediatric surgery will fit into the conditions outlined above. Thus, as long as the case is not one of emergency, a German or a Belgian patient will have to obtain PA from his or her insurance company.

It is, in some cases, possible for the PA to be refused. Article 8(6) of the Directive lists all the possible grounds, mostly relating to safety risks or the quality of care. Arguably the most probable ground that the state of affiliation can invoke is mentioned under article 8(6)(d),

namely, the argument that the patient could be treated in his/her own Member State within a period of time that is medically justifiable (European Commission, 2019b). Thus, this raises an obstacle: if the insurance company refuses to authorize the CBHC, the patient would not get reimbursed for the treatment. However, it could be argued that this creates an impediment on a person's right to CBHC granted under the Directive, as well as possibly on their freedom of movement. Furthermore, it should be noted that the PA system should not be overused, and the Member States need to make sure that they do not implement it in a manner that would prevent the patients from the exercise of their rights (European Commission, 2018a). In last resort, in case the PA would be refused, there are still always possibilities to appeal this decision (European Commission, 2019e).

The second major obstacle under the Directive is the method of reimbursement, which is regulated under article 7 of the Directive. As is already apparent in the discussion above, the conditions for reimbursement are much less favorable to the patients under the Directives as they are under the Regulations. Firstly, patients are reimbursed only up to the costs in the state of affiliation (Directive 2011/24, article 7(4)). Secondly, the patient will need to pay the treatment upfront by him/herself, and only acquire reimbursement after the treatment. Finally, reimbursement may be limited under article 7(9), although such limitations must be communicated to the commission, and reimbursement may never be limited in cases where PA has already been given. However, the Commission has not received any notifications of limitation under article 7(9) (European Commission, 2018a).

1.4. Recommendations & applications

To conclude, it should first be remembered that the obstacles noted above materialize only if patients have to move, while the 'standard' way the Center aspires to treat patients is by the doctors moving around treating patients. This creates different obstacles, which earlier research conducted by ITEM has looked into (Kortese, 2018).

Where the patient moves, the case is usually one of planned care, and thus this report has not looked into cases where emergency treatment is necessary. However, in such cases, the patient can always be treated under the Regulations as long as he/she has the EHIC card, or alternatively, under the Directives, which do not allow the Member States to impose PA requirements in cases of unplanned care. Thus, for planned care, this paper finds that there

are generally fewer obstacles if the Regulations are found to be applicable. This is due to the more favorable reimbursement conditions. Therefore, patients are generally at a good position where the Regulations apply and the S2 form can be used.

However, the Regulations will not apply in all cases: for example, they are only applicable in the context of care in public hospitals. Furthermore, an S2 form needs to be approved. Thus, if the Regulations are found to not be applicable, it is possible to still obtain treatment under the Directive. However, Belgium and Germany impose PA requirements under this instrument, and the reimbursement conditions are not as favorable as those under the Regulations. The European Patients Forum, for instance, has voiced its concerns with regard to the obstacles for the access of care in these cases, and that front-up payment may be a barrier to effective treatment for a patient with less economic resources. Instead, according to the organization, care across borders should be given to those who need it, instead of merely those who can afford payment in advance (European Patients Forum, 2016).

Finally, after having concluded the specific implications of the application of the instruments to the pediatric surgery Center, a few words should be said about the opportunities that the Directives create for CBHC. By harmonizing the rules in the EU Member States, the Directive generally creates better opportunities for states to cooperate in HC.

The freedom of patients to choose care is an important aspect of this instrument with regard to the operation of the pediatric surgery center. Although the Member States can limit the provision of care under article 4(3) of the Directive, none of the three states under consideration in this report have done so. This points to the fact that none of the three states seems to be so inherently against CBHC that they would see necessary to limit it due to 'overriding reasons of general interest'. The Directive also makes sure that all Member States ensure the recognition of CB prescriptions, and set up National Contact Points (Directive 2011/24/EU, articles 11 and 6). In addition, article 10(3) of the Directive encourages cooperation in CB regions specifically, which is highly relevant to the case at hand, and it can be concluded that all of these developments are beneficial for the good working of the Center.

2. The EU General Data Protection Regulation

After having considered the patient rights in a broad sense, some consideration should be put into a more specific field of patient rights: privacy. In the Patient Rights Directive of 2011, the importance of these rights is highlighted, and the Member States are made to assure that the right to privacy is protected and that the patients have access to their medical records (Directive 2011/24, article 4(2)(e-f)). Although privacy rights are included in general instruments such as the Patient Rights Directive, the EU has recently enacted legislation specifically towards the protection of data.

The European Union has had data protection rules since 1995, but a new set of instruments was proposed in 2015 in order to modernize the existing rules and to address the discrepancies between the national implementations of the Member States (European Commission, 2015, p.1). The main instrument of this package, the General Data Protection Regulation (GDPR), not only applies to the processing of data in EU Member states by EU companies, but also to the processing of data by non-EU undertakings insofar as they offer services or monitor behavior in the EU (Regulation 2016/679/EU, article 3). Since the pediatric surgery center is completely based in the EU and all its activities are done on its soil, its activities will always fall under the scope of application outlined in articles 2 and 3. It must thus be made sure that the Regulation is respected at all times.

Since the GDPR is a Regulation and not a Directive, there is no need to implement it into national law: instead, all the rules of the Regulation are directly applicable in the Member States' legal systems (Fazlioglu, n.d.). However, some sections of the GDPR were left 'open', which gives states a chance to apply the rules in a slightly different manner. Thus, possible obstacles with regard to the GDPR and its application in the three national systems should be looked into.

2.1. Health data as a form of sensitive data

The general rules for data processing are listed in article 6, which requires that in order to process one's data, the data subject has to have given consent and/or the processing needs to be necessary for one of the reasons listed in the article. However, article 9(1) enumerates certain types of data for which the requirements of processing are stricter, and this includes

genetic data, biometric data, and data concerning health. For example, one option for processing sensitive data is that 'explicit consent' (instead of regular consent) is acquired from the data subject. Thus, the safeguards for processing health data are higher than the standard safeguards of article 6.

Since article 9 is a fundamental safeguard on privacy rights, it logically follows that the Member States do not have much say in its application in the national system. At first glance, it seems that there is not much discrepancy between the systems. The national implementations follow the wording of the regulation quite loyally; for example, explicit consent is specifically required in Section 51(5) of the German implementation as well as section 22(1)(a) of the Dutch implementation.¹

However, some leeway is given to the Member States; in paragraph (2)(g) for example, states are allowed to implement reasons of 'substantial public interest' in accordance with their domestic law, under which processing of sensitive data could be conducted. Thus, as explained in article 10, it is possible for the Member States to design specific circumstances where it would be in the public interest to process data, even where the data subject has not given (explicit) consent. The German implementation allows for the processing of sensitive data by public bodies where "processing is necessary for urgent reasons of defense or to fulfill supra- or intergovernmental obligations of a public body of the Federation in the field of crisis management or conflict prevention or for humanitarian measures" (Federal Data Protection Act of 30 June 2017, Section 22(1)(2)(d)). In the same vein, the Dutch implementation refers to article 9(2)(g) of the GDPR and lists several exceptions to the prohibition of processing sensitive data. These include, for example, occasions where the Netherlands has certain obligations under international law under which data processing is required (the Dutch General Data Protection Regulation Implementation Act, Section 23).

Thus, although the GDPR harmonized the rules on the protection of health data to a large extent, there can still be cases where the national laws can allow for the processing of health data without the explicit consent of the patient. It is needless to say that these grounds differ

¹ Official English translations for all three states could not be found. The implementation for Germany was retrieved at: https://www.gesetze-im-internet.de/englisch_bdsch/englisch_bdsch.html#p0043, and for the Netherlands at: <https://www.akd.nl/o/Documents/UAVG%20ENG%20DEF.pdf>. No translation for Belgium was found, and several reports and articles commenting on the implementation were used instead.

between the three Member States, and thus should be kept in mind in the development of the Center.

2.2. Right of access to data by the data subject

Article 15 of the GDPR regulates the right of access to data by its subject and lists the numerous categories of data that the subject must be allowed access to. These categories should be the same in all Member States, and in accordance with paragraph 3, all subjects must be allowed a copy of their personal data during processing. However, under the same paragraph, the states are allowed to have different rules for any further copies that the subjects may request, and states may allow the data processors to charge a 'reasonable fee' for such copies.

It seems, however, that the rules on access to data will not amount to a great obstacle in this context. The Dutch and Belgian implementations do not seem to include specific provisions on fees. In Germany, the initial requests to access must be free of charge, and fees can only be charged where the request is manifestly unfounded or excessive (Federal Data Protection Act of 30 June 2017, Section 59(3)). As the burden of proof is on the data processor, it is unlikely that access to data will amount to excessive costs under the German implementation.

2.3. Age of consent for information society purposes

Finally, one aspect in the implementations that differs is the age of consent for information society purposes. According to article 8, consent for the processing of data is lawful and effective only for people past a certain age: for those who have not reached the age limit, parental consent is necessary. This age limit can be set by the Member State, although it cannot be lower than 13. As an example: Belgium has set its age limit at 13 (De Muyter, 2018), whereas the Netherlands has set theirs at 16 (see Section 5(1) of the Dutch implementation). Since the patients are children and will be in this age range, the age requirements for consent must be kept in mind while working in the three different Member States.

2.4. Final Considerations

The age of consent and the specific conditions for processing sensitive data differ slightly between the three states, but no insurmountable obstacles were found with regard to the

differences. Although the Member States were given some discretion in implementing the GDPR, it is still a Regulation, and the fundamental aspects seem similar in all three states. This is understandable, as GDPR was enacted specifically to harmonize data protection in the European Union in order to protect the citizens' rights (European Commission, 2015, p. 1). Thus, it seems that the close-to-uniform rules of the GDPR pose more opportunities than obstacles when it comes to the establishment of the Center.

3. The opportunity of a European Grouping of Territorial Cooperation

To establish an EGTC, the Regulations² lays down different criterion to fulfill. The report already answers some of the administrative requirements as for example the objectives and tasks of the structure as well as the composition of its board (see Pestle section Health Politics, p. 17). The amended version of the EGTC Regulation makes clear on how to organize an EGTC once established, but it is not developed in this report. Figure 2 summarizes the main steps for its establishment (Metis, 2009).

Stages	Code	Indicators
Idea		The prospective members have undertaken exploratory actions or preliminary negotiations to set up an EGTC.
In preparation (since XY)		<p>The willingness to establish an EGTC has been either:</p> <ul style="list-style-type: none"> ▪ Communicated officially to the CoR or to the European Commission. ▪ Declared on a major cross-border or transnational event ▪ Expressed in a letter of intent or similar document of the prospective members. <p>The convention and the statutes are in the process of elaboration. Official representatives from at least two partners can be identified</p>
Awaiting approval (since XY)		The prospective members have notified the Member State under whose law it has been formed of its intention to participate in an EGTC and have sent that Member State a copy of the proposed convention and statutes (Art. 4.2 of the Regulation).
Constituted (since XY)		The statutes have been registered and/or published in accordance with the applicable national law in the Member State where the EGTC concerned has its registered office (Art. 5.1 of the Regulation) and the EGTC has aquired legal personality.
Operational (since XY)		The EGTC has its own structure and/or staff in service.

² Regulation (EC) No 1082/2006 of the European Parliament and of the Council of 5 July 2006 on a EGTC and Regulation (EU) No 1302/2013 of the European Parliament and of the Council of 17 December 2013 amending Regulation (EC) No1082/2006 on a EGTC as regards the clarification, simplification and improvement of the establishment and functioning of such groupings

Figure 2 : Categorized stages explained (regardless of the code colour) (Metis, 2009)

The main issues regard the basic element of its creation as the legal status of its members and implications of its seat of registration regarding to the law applicable to its functioning. First, it is important to keep in mind what this legal status is supposed to be used as.

3.1. The characteristic of an EGTC

The establishment of an EGTC should be a simple procedure that brings together different levels of administration into a single entity having its own legal personality and central management (Interview 2, personal communication, 10 April 2019). It also enables a European legal status that makes possible any funding at the local, national and regional level because of its broad recognition. It is a powerful European instrument to endorse CBC. We first thought that the process was to change from Interreg to EGTC, but Interreg is a funding framework given to local cooperation in a general manner instead of for specific tasks. It exists alongside the EGTC and enables its creation.

Currently, cooperation is already taking place between Belgium, Germany and the Netherlands. First, there is a cooperation between Aachen and Maastricht hospitals: UKA rents the Dutch providers which enables UM to pay their salaries as planned by their contract (Interview 1, personal communication, 3 April, 2019). Secondly, offices as Grensinfopunt informs CB workers on how to override the different obstacles entailed by this special status. Thirdly, a lot is already done through the political entity Euregio Meuse-Rhine.

The latter is a transnational cooperation structure gathering the border regions of Belgium, Germany and the Netherlands. Their status changed last April from a Dutch foundation to an EGTC. It considered the latter as the only instrument available within the EU to facilitate this activity. The biggest issue faced was that Dutch law is applicable thus they were responsible before Dutch public authorities. However, their seat is in Eupen in Belgium which was conducive to confusion for public authorities to authorize projects: Belgium authority would consider the Dutch ones responsible and Dutch authorities did not understand its role in the management of a structure in Belgium. Thus once established, an EGTC is recognized clearly by the authorities. It is not because it creates stability that it cannot be adapted in time: it

functions as a contract based on a certain convention and statutes (EGTC Regulation, articles 8 and 9) that can be amended.

This highlights the importance of the role of public authorities in this kind of cooperation. EGTC facilitates cooperation but not to an extent that the competences of each public authority at the higher administrative level are transferred to it, only precise tasks are delegated (EGTC Regulation, article 1). It is possible for any Member State on which the activity takes place or where the seat is registered, to prohibit the activity if it is contrary to its public interest, which is subject to its own discretion (EGTC Regulation, article 13). The need of political support is also revealed when choosing the Member States where the EGTC is registered because while it only needs to be notified for the other Member States concerned, the first needs to authorize this first step of the establishment (EGTC Regulation, article 4).

3.2. The Members of an EGTC

First, the members have to be defined. The Directive provides an exhaustive list of the possible legal status of these members: public authorities (at a national, regional or local level), public undertakings or undertakings with a service of general interest (EGTC Regulation, article 3). The initial idea was to only involve the units of pediatric surgery of each of the three hospitals because it does not concern the entire structures. However, from a legal point of view, units are not separate legal entities which requires us to find alternatives, as developed below.

Regarding the first category of “public authorities”, it leans mostly on the political support to the project. From a legal point of view, it depends on the authority having competence regarding health. The Netherlands is a decentralized unitary unit: its Constitution provides a unique parliament that legislates and a unique government that supervises the provinces and municipalities to which a certain degree of autonomy was given for better management of the Kingdom (Figuee, 2007). While health is dealt by the Ministry of Health, the EGTC is dealt by the Ministry of the Interior and Kingdom Relations (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties). Belgium and Germany are federal states which means that their regions have more competences and autonomy having their own legislative power. Germany deals with health at the national level while Belgium confers to its communities the general competence of health including the recognition of the qualification of providers, the standards

of quality of care and insurance matters. Alongside its regions are competent for the mobility, infrastructure, and employment (and thus EGTC). Regarding the latter in North Rhine-Westphalia Germany, the authority responsible for it is the Ministry of Economic Affairs, Innovation, Digitalisation and Energy (Ministerium für Wirtschaft, Mittelstand und Energie) (European Committee of the Regions, 2019).

Regarding the second category of 'public undertaking', it refers to specific criterion to fulfill: its requirement to be "public" comes from the public authority holding the majority of the company's subscribed capital or controlling the majority of the votes or appointing more than half of its administrative, management and supervisory body (EGTC Regulation, article 3(1)(d)). The question is whether the hospitals would fulfill them. As the object of the EGTC must be precisely defined (EGTC Regulation, article 7), the hospitals may not misuse its power to extend the project against the will of the team. However, as "public" indicates, only public hospitals should be concerned, which is the case of UM and UKA being university hospitals but not CHC. At the same time, hospitals are considered as 'bodies governed by public law' under Belgium law by the Annex III of Directive 2004/18/EC which is considered within the scope of "public undertaking". The Annex does not differentiate between public and private hospitals but it provides only a non-exhaustive list of examples. However, it is not a requirement that all the members have the same statute thus it is also recommended to examine the last possibility.

Regarding the third category of undertaking with service of general economic interest (SGEI), there is no requirement of being public but the object of the undertaking is limited to a SGEI. It falls under the scope of Commission Decision of 20 December 2011 on the application Article 106(2) of the Treaty on the Functioning of the European Union to State aid in the form of public service compensation granted to certain undertakings entrusted with the operation of SGEI. It must be neither driven by a non-economic interest as the police and judicial activities or social which targets vulnerable citizens in respect of solidarity and equal access such as social services. It must be an economic activity which means that it is provided in return for payment but without being based on economic efficiency. To be qualified as SGEI, the existence of the service must depend on the public (financial) intervention without which it would not be supplied. It is generally the case for hospitals. Public authorities must identify it as being of particular importance to the citizens. Its qualification of SGEI depends on the

discretion of the Member States. Its personal scope of application is not as restricted as the social service of general interest because it is addressed to all citizens or a certain category and not to vulnerable citizen. Children having surgery are not considered as socially “vulnerable” citizen. The respect of these criterion is strictly controlled by the European Commission³ (European Commission, 2019g). As the State finances a private undertaking, it must not misuse the tax money from the citizens. Furthermore, it must not give a disproportionate advantage to one undertaking and hinder other undertakings from establishing and conducting their business in a context of competition as promoted in the common market of the Union. However, these criteria appear to be vague and troublesome. The assessment is made on a case-by-case basis and the Annex only gives non-exhaustive examples.

A concrete opportunity came up several times is the use of a ‘foundation’. It is a legal status existing at the national level that has the specificity of having no members and a non-profit driven aim. It fits to the characteristic of a hospital unit. Its team of professionals are individuals having their own legal capacity but we cannot consider that they will work in this unit for the whole life of the EGTC (that should be indefinite). The legal status give flexibility regarding the professionals working in the hospital. However it is based on private law thus it may not fulfill the requirement to be qualified as “Member” of an EGTC.

Regarding the Dutch system, the Regulation considers foundation as a public undertaking under Dutch law. However, it seems that they were created as an annex of Ministries and thus enjoying the same status⁴. It would mean that it needs to be not only supported but incorporated within the political organization of the State. It seems like the project could not fall neither under the ministry of health because of its cross-border element and neither under

³ Commission Regulation (EU) No 360/2012 of 25 April 2012 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to de minimis aid granted to undertakings providing services of general economic interest and Communication from the Commission on the application of the European Union State aid rules to compensation granted for the provision of services of general economic interest

⁴ such as the foundations ICTU beneath the Ministry of the Interior and Kingdom Relations (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties), Syntens beneath the Ministry of Economic Affairs, Stichting Participatiefonds voor het Onderwijs beneath Ministry of Education, Cultural Affairs and Science, Stichting Silicose Oud Mijnwerkers beneath Ministry of Social Affairs and Employment, Stichting Uitvoering Omslagregeling Wet op de Toegang Ziektekostenverzekering beneath Ministry of Health, Welfare and Sport

the ministry of foreign affairs because of its healthcare interest. Even if it was, it would mean that the whole EGTC would be driven by the national interests of that Member (especially if the EGTC is registered in the same state) and it would compromise the cross-border interest of the Project.

Under the German legal system of the Annex III of Directive 2004/18/EC, the German definition of Stiftung (foundation) (Bürgerliches Gesetzbuch (German Civil Code) subtitle 2) could be considered as fulfilling the criterion of “bodies governed by public law” (Directive 2004/17/EC of the European Parliament and of the Council article 2(1)(a)): it must operate in the general interest and not neither in an industrial or commercial one, be subject to state control and not included in the suggested field. However the Annex does only consider cultural, welfare and relief foundation and not healthcare.

Under Belgian law, two types of foundations exist: a private one which entails the same issues raised above and a public one. The public one can only aim to philanthropic, philosophical, religious, scientific, artistic, educational or cultural interests thus it does not involve the activity of the Center (Service Public Fédéral Justice, 2019). There is no reference to any foundation status within the Belgium suggestion of the Annex.

3.3. The applicable law to a EGTC

Once the members defined, one member should be designated to represent the EGTC. It does not lead to inequality between the members by creating a hierarchy of competence. However, this choice remains important because it defines the law applicable to EGTC (EGTC Regulation, article 2(1)(c)). In our case, it would depend on the recognition of diploma and the national implementation of GDPR and the Patient Directive. Relating to the legal relationships between EGTC and further partners, it was made clear that the registered seat is unimportant because the principle of freedom of contract applies (EGTC Regulation, article 8). Parties of a private contract are free to design the contract binding them up to what the national laws and applicable European laws (and principles) provides.

For other aspects, if it does not fall into the scope of European legislation or the EGTC Convention, national law applies. As it can differ significantly, agreement could take place. However it can cost time for public authority to find a consensus. For example, it took two

years for the Spanish and French ministry of Foreign Affairs to simplify the transport of corpses and the recognition of newborn babies across borders within the framework of the EGTC Cerdanya (Interview 2, personal communication, 10 April 2019).

4. The implications of the creation of an autonomous legal entity on the existing contractual relationships of the healthcare providers

We first decided that we would not focus on the consequences of the Center on the liability of the health-care providers. There is no information available on that subject because it depends on the special circumstances of each hospital, health-care system and countries. However, the issue of the employment contract surfaced again during the interviews. On one hand, a pediatric surgeon asserted that all doctors would keep being employed by their “home” hospitals. On the other hand, a regional political stakeholder made us aware of the practicality of EGTC. There is a will to expand the current cooperation which necessitates a more appropriate framework. It seems like a step back to continue relying on the current employment relationship while the movement of the providers itself is intensified. The question is then to know what additional benefits encompass the EGTC. We could imagine that the surgeons are hired partly by the EGTC for their cross-border activity. It does not seem reasonable that they are entirely hired by the EGTC for the purely domestic situations.

4.1. The implications in case of change of contractual relationship

As a question of liability, we can question whether it is appropriate for the hospital hiring the surgeon to be liable for a surgery made in another hospital on a patient that is not known by this latter. It would entail to assess whether the current employment contract is suitable for a higher frequency of cross-border activity. If there is a need to change the employment contract, it would be logical to have one harmonized form for all health-care professionals working with the EGTC. Even if the providers are kept on being employed by their respective hospitals, an internal revision would be necessary (Interview 1, personal communication, 3 April, 2019). The “applicable law” of the EGTC is not relevant in contractual relationship thus it raises some issues e.g. the salaries. According to each national system of the Member States concerned, the monthly salary is calculated whether in terms of hours worked, numbers of patients taken in charge or types of operations. Despite our research It is not clear on how each system works. Another issue would be the duration of this kind of financial transaction.

It takes between six months to one year and a half for French doctors to be paid after providing care at Cerdanya's hospital (Interview 2, personal communication, 10 April, 2019).

We did not succeed to get information on the employment contract of the members concerned. This could be an issue, as it had faced other EGTCs regarding CBHC (Interview 2, personal communication, 10 April, 2019). However, the situations were not similar enough to draw from them. For example, EGTC Cerdanya did not face the implications entailed by mobile employees because it concerns a unique hospital situated in Spain where it was registered and to which national law applies (Interview 2, personal communication, 10 April, 2019). With this lack of information, it is difficult to fully assess the potential of using the EGTC. Grensinfopunt may be of use to identify the barriers that the conclusion of a cross-border employment contract entails for the worker in terms of administrative burdens, for example for the reimbursement of loans (Interview 4, personal communication, 11 April 2019). Thus, we differentiate two possibilities: whether the employment contract is modified by the creation of the EGTC or not.

4.2. The implications in case non-modification of employment contracts under EGTC

If the contract stays the same, we have to imagine what it entails regarding the invoices. A possibility is that the patient pays first the host hospital of care which then pays back the service of the surgeon to its employer. It may raise an issue of taxation, because taxes on these invoices may be paid then twice for the same service provided. Another possibility is to use the EGTC as intermediary. The invoice would come from the EGTC to the patient who would pay it, and the EGTC would then pay the human and material resources used by each hospital (or directly the HC providers). Payments may not be immediate and the reimbursement rate may not be the same according to the different national system; thus, a solution would be for the EGTC to have its own budget to fulfill the gaps (Interview 2, personal communication, 10 April, 2019).

For this matter, EGTC Cerdanya has a special budget for five years. It is mostly used to pay the difference of health insurance reimbursement between both systems for the patient in the aim of not suffering any burden from the cross-border collaboration. However, it is not a long term solution because the fund was loaded by the initial funding of 20 million euros which is in limited quantity to help the project to grow. The aim is to be autonomous in the long term

with healthcare authorities paying the hospitals for each healthcare service provided (Interview 2, personal communication, 10 April 2019). The idea is still unclear, and it places the EGTC in a difficult situation. To avoid it, all payment transfer should be foreseen in advance to avoid additional cost. Compared to Cerdanya, our Center does not consider the movement of the patient as the primary focus, so the divergent reimbursement rate gaps may not be an issue. In any case, it is still important for the EGTC to have a budget for its daily functioning: it has its initial budget that can be supplied by the membership fees of its members (EGTC Regulation, article 9(2)(f)).

The administrative burden of differentiation of systems was solved by the bilateral agreement between the hospitals of Diant and Charleville Mezieres establishing a zone of access to CB childbirth care. All the invoices were sent to a unique French insurer who transferred the bills to the different mandatory and voluntary health insurance fund. As the French voluntary health insurances are not allowed to pay foreign hospitals, instead of the patient paying first and getting reimbursed, the Belgium hospitals got the authorization to have the stature of French official hospitals and thus to open French bank account to receive payments directly (Footman, Knai, Baeten, Glonti and McKee, 2014). This contractual centralization can serve as an illustration to use the EGTC as central operation unit.

Another possibility is a contractual relationship between insurers and hospitals as it exists between Dutch insurers and Belgium hospitals for specialized services (Glinos, Baeten and Boffi, 2006). We contacted the organization CZ gathering all Dutch insurance companies for further information on the opportunity for an agreement with UM, UKA, and CHC but were not able to receive further information on this.

Relating to the difference in reimbursement rate, Finnish and Swedish health national authorities made an agreement to coordinate the coverage by considering the supply and demand of service (Jeffrey and Morosi, 2017). As the Project is subject to growth, precise numbers of patients are not accessible. The spread of patients among hospitals is not organized yet. At a larger scale, the idea would be to create a universal coverage of standardized minimum basket for health benefits that would be first defined at the national level before being harmonized at European level. However, it cannot go beyond the status of assumption based on general political support from the Member States. Regarding the

sensibility of the health sector and the different approach relating to national contexts (including the quality and safety standards), we cannot foresee this costing methodology in the near future.

Another dimension to take into consideration is the difference between the insurance of the patients and the insurance related to institutions as hospitals. In the Netherlands, insurance companies determine in advance how many of each specific surgery will be taken in charge which prevents the hospitals to provide more care than planned. In the case of CBHC, the foreign patients will not be taken into consideration while assessing these quotas which discourages such cooperation (Interview 1, personal communication, 3 April, 2019). It is then necessary to plan the quotas in a more appropriate way and adapt them through discussion and agreements.

Financial

The financial theme is a continuation of the PESTLE Economic part and it describes the most prominent opportunities and obstacles in financing the Center and its establishment. This theme is divided into three different sections. The first section, Funding Opportunities, focuses on the opportunities in funding the establishment of the Center. The second section, Financial Analysis, depicts the current situations of the three hospitals on a general financial level due to the lack of department specific data. The last section, Theoretical Financial Model, gives an example of Ricardian model and applies it into the Project while identifying the different factors and aspects affecting the financing of the Center.

1. Funding Opportunities

The different funding opportunities for the Project are presented in this section. The section is divided according to the different levels that provide funding for projects e.g. municipal, regional, and European. This Project is taking place at the end of the “season” of multiple European funding opportunities and therefore new opportunities beyond this research might come up after 2021. There is a possibility to apply funding for the whole Project or a part of the project. However, due to the frequently extensive applications, a singular funding for whole Project would be preferable.

In the table 2, the found funding opportunities are shown. Later on, the more applicable ones are introduced in more detail.

Table 2: Funding opportunities.

<i>Name of the fund</i>	<i>Themes relating to the Project</i>	<i>Period</i>	<i>Future</i>
The European Union			
Connecting Europe Facility (CEF)	Growth, jobs, & competitiveness; Digital services (E-Health)	2014-2020	?
Horizon 2020	Research & Innovation; Societal Challenges: Health, Demographic Change, and Wellbeing	2014-2020	Horizon Europe 2021-2027
European Territorial Co-operation (ETC) → Interreg (EMR)	Territorial development	2014-2020	2021-2027
European Territorial Co-operation (ETC) → Interreg (North West Europe)	Social innovation	2014-2020	2021-2027
European Social Fund	Employment and education	2014-2020	2021-2027
Regional and Municipal			
Small Euregional projects (EGTS EMR)	Culture, sport, & civic engagement CBC	Yearly budget	Yearly budget
People to People (EGTS EMR)	Awareness of CBC Labor market, education & youth	Yearly budget	Yearly budget
Subsidy projects (Province of Limburg (NL))	Culture, care, & sports; Sustainable	Yearly budget	Yearly budget

	organizations		
Subsidies (basic / flexible) (Municipality of Maastricht (NL))	Through networking; Economic benefit of the Project	Yearly budget	Yearly budget

There were also several funding opportunities that we were only able to partially link to this Project for the time being. However, when the Project description and all of its goals are solidified these opportunities might be more feasible. These opportunities included funds through programs like Erasmus, Employment and Social Innovation program (EaSI), Global Europe (European Neighborhood Instrument (ENI) and Instrument for Pre-accession Assistance (IPA II)), European Investment Bank (EIB), and European Fund for Strategic Investments (EFSI).

1.1 Regional and municipal funding

Applying for funding on decentralized levels of government like the region, province, or municipality is different in comparison to EU level. It is somewhat more political and less strictly structured due to the size of the organizations. Therefore, lobbying and networking are significant parts of getting funded. More about lobbying is explained earlier in this report (see Political section 1). The subsidized funding from the Dutch province of Limburg is an option for the Project even though it might not fit the category of CBHC optimally (Provincie Limburg, n.d.). However, according to the interviews, there is strong support for engaging CBC projects in this area (Interview 4, personal communication, 11 April, 2019; Interview 6, personal communication, 10 May 2019).

Another opportunity in gaining political support to access funding, especially on these regional and municipal levels, is through stakeholder analysis. This would include analyzing where the stakeholders stand and what are their interests and priorities. This can be done from the point of view of what would drive them to fund this Project. A stakeholder analysis creates an opportunity to explain the Project for each of the stakeholders in a way that allows emphasizing the aspects that are important for them. For example, regarding the Maastricht Municipality, the important part of the Project is that it would be sustainable and it would

benefit the area on an economic level (Interview 6, personal communication, 10 May 2019). This can be leveraged in applying the marketing & communications activities (see Marketing & Communication section 4.4). Enserink et al. (2010b) provides a suitable framework for stakeholder analysis.

EGTS EMR arranges smaller funds for CBC. The size of the Project is out of the scope of these funds. However, this would give funding opportunities for an event or small part of the Project. Under the funding for “Small Euregional projects”, the possibility is to get co-funded for 50% of the budget of maximum €2,500 (EGTS Euregio Maas-Rijn, (n.d. a)). The “People to People” funding could co-fund projects or events of maximum budget €37,500 (EGTS Euregio Maas-Rijn, (n.d. b)).

1.2 European funding

In general, the EU is providing several opportunities for projects to get funding on the basis of the project aims. The EU funding application processes and eligibility of the projects are strictly defined and the usual rule is that you can receive funding from only one EU source at a time. Lobbying and networking are still an opportunity that should be used also when applying for EU level funding. At the EU level, the following options were found to be possible funding opportunities for the realization of the Center. European Territorial Co-operation funding through Interreg is one viable option either through North West Europe’s or EMR Interreg bodies. Interreg could provide co-funding around 50 % of the project budget. The projects funded through Interreg can be budgeted around €500,000. Both Interreg bodies will have their next application period supposedly in February 2020, however, no specific information on this has been released. Interreg EMR has used its funding of 2014-2020 for territorial development and therefore, to apply for funding from them it is needed to wait until the new period of 2021-2027. North West Europe Interreg body might not be the first choice for application because of the Project is more regionally set on the area of EMR. (Interreg North-West Europe, n.d.; Interreg Euregio Meuse-Rhine, n.d.)

Interreg EMR has provided a comprehensive overview of applying for co-funding from the provincial, community, and other levels, when applying also for Interreg funding. The document is available for download in their website.⁵

2. Financial Analysis

In these past few months it was not been possible to consult the financial specialist from MUMC+. As a result, we were not able to receive specific reliable data for a full financial analysis of the pediatric center at MUMC+. Consequently, it was not possible to get a deeper understanding of the strategy document from MUMC+. Specifically, it is not evident how the client ended up with the growth rates for the number of surgeries conducted at the three locations, the revenue forecast as well as the margins and profitability ratios. However, based on the annual reports from MUMC+ and CHC we will highlight a number of key trends and ratios which are relevant for the Project (CHC, 2012; CHC, 2013; CHC, 2014; CHC, 2015; CHC, 2016, CHC 2017; MUMC+, 2012, MUMC+, 2013; MUMC+, 2014; MUMC+, 2015; MUMC+, 2016; MUMC+, 2017). Unfortunately, the annual report from UKA is not open to the public and as a result, very little information is available. Therefore, the analysis will mostly focus on CHC and MUMC+. After this financial analysis, this section will explain the Ricardian model which serves as a theoretical framework for creating collaboration in economic terms.

Figures 5 and 6 show a wide range of values and calculations for MUMC+ and CHC based on their annual reports. Unless stated otherwise, the following analysis will describe the situation at MUMC+ and CHC unless UKA is specifically mentioned. Even though this analysis is executed at the overall level of the hospital and there is no specific information available for the respective departments, this analysis still has value for the Project. The pediatric department may be more (or less) profitable relative to other departments in the hospital such as cardiology or oncology; similarly, their staff and material handled during surgeries may be more (or less) expensive. Nonetheless, if we consider the hospital to be a continuum then, on average, the trends and ratios in the following analysis will be a representation of the facts that the Project will have to deal with. Based on interviews, there is no reason to expect that

5

https://www.interregemr.eu/IManager/Download/881/75625/19137/1841455/EN/19137_1841455_YvVu_180614_cofi-procedures_partner_regions_EN.pdf

a pediatric department at CHC will be more expensive in relation to other departments at CHC relative to the pediatric department at MUMC+ (in relation to other departments at MUMC+).

MUMC						
	2017	2016	2015	2014	2013	2012
	x 1.000	x 1.000	x 1.000	x 1.000	x 1.000	x 1.000
Revenue	€ 711.410	€ 681.870	€ 682.893	€ 650.768	€ 633.347	€ 571.785
Revenue Growth	4,33%	-0,15%	4,94%	2,75%	10,77%	
Revenue / FTE	€ 147,44	€ 145,61	€ 146,70	€ 139,71	€ 137,89	€ 128,78
Revenue / FTE Growth	1,26%	-0,75%	5,00%	1,32%	7,08%	
Operating Expenses Total	€ 678.286	€ 653.923	€ 640.237	€ 616.345	€ 590.130	€ 546.054
Personnel Costs	€ 394.441	€ 384.569	€ 380.615	€ 366.366	€ 350.461	€ 332.102
Personnel Costs / Operating Expenses	58,15%	58,81%	59,45%	59,44%	59,39%	60,82%
Full Time Equivalent	4.825	4.683	4.655	4.658	4.593	4.440
FTE Growth	3,03%	0,60%	-0,06%	1,42%	3,45%	
Personnel Costs / FTE	81,75	82,12	81,76	78,65	76,30	74,80
Depreciation Expenses	€ 36.843	€ 31.735	€ 33.252	€ 33.743	€ 46.837	€ 30.941
Depreciation Expenses / Operating Expenses	5,43%	4,85%	5,19%	5,47%	7,94%	5,67%
Other Costs	€ 247.002	€ 237.619	€ 226.370	€ 216.236	€ 192.832	€ 183.011
Other Costs / Operating Expenses	36,42%	36,34%	35,36%	35,08%	32,68%	33,52%
Net Income	€ 24.303	€ 20.086	€ 33.958	€ 26.268	€ 35.035	€ 18.467
Profit rate	3,42%	2,95%	4,97%	4,04%	5,53%	3,23%

Figure 3: Financial Analysis MUMC+.

	CHC						UKA
	2017	2016	2015	2014	2013	2012	2017
	x 1.000	x 1.000	x 1.000	x 1.000	x 1.000	x 1.000	
Revenue	€ 451.256	€ 443.088	€ 426.927	€ 421.291	€ 404.562	€ 398.141	€ 13.300.000
Revenue Growth	1,84%	3,79%	1,34%	4,14%	1,61%		
Revenue / FTE	€ 147,95	€ 153,90	€ 144,09	€ 143,44	€ 138,74	€ 138,29	€ 391,18
Revenue / FTE Growth	-3,87%	6,81%	0,45%	3,39%	0,32%		
Operating Expenses Total	€ 449.403	€ 434.686	€ 419.852	€ 411.909	€ 400.609	€ 389.891	
Personnel Costs	€ 199.197	€ 190.784	€ 186.268	€ 182.705	€ 180.889	€ 173.498	€ 2.180.000
Personnel Costs / Operating Expenses	44,32%	43,89%	44,37%	44,36%	45,15%	44,50%	
Full Time Equivalent	3.050	2.879	2.963	2.937	2.916	2.879	34.000
FTE Growth	5,94%	-2,83%	0,89%	0,72%	1,29%		
Personnel Costs / FTE	65,31	66,27	62,86	62,21	62,03	60,26	64,12
Depreciation Expenses	€ 20.475	€ 18.730	€ 20.022	€ 20.499	€ 18.211	€ 21.079	€ 35.900
Depreciation Expenses / Operating Expenses	4,56%	4,31%	4,77%	4,98%	4,55%	5,41%	
Other Costs	€ 229.731	€ 225.172	€ 213.562	€ 208.705	€ 201.509	€ 195.314	
Other Costs / Operating Expenses	51,12%	51,80%	50,87%	50,67%	50,30%	50,09%	
Net Income	€ (294,00)	€ 4.839	€ 4.599	€ 7.121	€ 2.004	€ 3.449	?
Profit rate	-0,07%	1,09%	1,08%	1,69%	0,50%	0,87%	?

Figure 4: Financial Analysis CHC and UKA.

The first two lines show the revenue streams and revenue growth. Given that there is a period of six years, it is evident that MUMC+ fluctuates more than CHC even though, in general, their growth rates are higher. However, this has to be put in context with other variables without drawing a full conclusion at this stage. Full Time Equivalent (FTE) represents the number of people working at a location for a specific year. At the end of 2017 respectively 4,825 and 3,050 people work at MUMC+ and CHC. There is a steady increase since 2012, though the growth also fluctuates heavily. Then, if one compares the revenue versus FTE, it gives an idea of the amount being earned per worker at the hospital. Based on the current numbers, there is only a small difference between MUMC+ and CHC. On the other hand, based on the figures from UKA this number would be considerably higher which may indicate that UKA earns more money for their services relative to FTE with respect to MUMC+ and CHC. As stated earlier, the Netherlands Institute for Social Research had studied the effects of HC expenses and showed that it has doubled since 1998. Furthermore, labor productivity has decreased while the same effect has not been seen for the expenses (Eggink, Ooms, Putman, Ras, Torre & Wierda, 2018). To study this effect, the growth rate of revenue/FTE has been computed. In

comparison to the revenue growth rates, the revenue/FTE growth rate is generally favorable for the MUMC+ whereas it is unfavorable for CHC. In essence, this shows that MUMC+ has a higher growth rate of revenues in comparison to the growth in FTE. This implies that the employees have been more efficient and/or the efficiency rates are the same however they have earned more for their services. Thus, this is a positive trend showing efficiency gains. In contrast, CHC shows exactly the opposite effect indicating that they have been earning relatively lower with respect to the FTE.

Personnel costs account for the majority of costs in total for the hospitals. There is however a considerable difference between MUMC+ and CHC. MUMC+ has substantially higher personnel costs than CHC, which confirms the information received during the interviews. This fact will return in the theoretical model. Similarly, the ratio of personnel costs vs. FTE draws the identical picture highlighting that personnel is more expensive at MUMC+ relative to CHC. The UKA ratio is comparable to the value at CHC. Further, the depreciation expenses give an idea of the costs of the material. There are basically costs for equipment and material that are spread out over their useful life. The depreciation expenses on average account for approximately 5% of the total operating expenses. Still, the average for MUMC+ is 5,76% and 4,76% for CHC. This could indicate that MUMC+ writes down their equipment more aggressively representing an accounting process, hence this information would not be of added value for the project. In contrast, it may also implicate that the costs for equipment are higher for MUMC+ than for CHC either due to the fact that equipment is more expensive or advanced at MUMC+, or that CHC uses their equipment relatively longer and as a result, they are able to spread the costs over more years. Nevertheless, MUMC+ and CHC are located in the same region and the quality of HC does not differ extensively. As the difference in the ratios is minor as well, we will not include this factor in the theoretical model.

Lastly, this analysis will include the result at the end of the year being the net income. MUMC+ has been able to make a profit in the last couple of years and earning a profit margin (net income / revenue) of around 3-5%. In contrast, CHC has struggled to make a profit as net income fluctuates around the breakeven point. In the last five years, the profit margin has continued to decrease and CHC made a loss in the last year. As a result, the hospital in Liège will have major incentives to turn this around and earn a positive net income again.

3. Theoretical Financial Model

In the next section, the Ricardian model (RM) will be explained with an economic example (Feenstra, 2012). Consecutively, it will be applied to the Project. The RM attempts to explain the existence and the differences of international trade using the concept of comparative advantage, which is an economic term refers to the ability to produce goods or provide services at a lower opportunity cost than another party. Then, opportunity cost represents the benefits an individual misses when choosing one alternative over another. The principle of comparative advantage holds that a person will more produce more of and consume less of a good for which they have a comparative advantage. In other terms it boils down to the following, you are able to produce a good at a lower relative opportunity cost than another party.

Produce Country	Cloth	Wine
England	100	120
Portugal	90	80

Figure 5 (left): Ricardian model example.

To give an idea of how this works, we will show the most basic example of the RM. In this case there are two countries (England and Portugal), producing two goods (Wine and Cloth) with only factor of production being labor. For instance, figure 5 shows that England has to commit 100 hours of labor to produce 1 unit of cloth, whereas for Portugal this is only 90 hours of labor. In addition, in the same time, England would be able to produce $5/6$ units of wine ($= 100/120$), respectively Portugal could produce $9/8$ units of wine ($= 90/80$). In this case, Portugal has the absolute advantage in producing cloth due to fewer labor hours whereas England has a comparative advantage due to lower opportunity cost since it costs them more units of labor to produce wine vs. cloth in contrast to Portugal. If there were no trade at all, England would need 220 hours of labor and Portugal 170 hours to get one unit of cloth and one unit of wine. However, if they realize that combining efforts yields a higher utility, they will have higher efficiency at producing. In this case, if England spends 220 labor hours to product cloth while Portugal spends 170 hours to produce wine, they will have 2.2 units of cloth ($= 220/100$) and 2.125 ($= 170/80$) units of wine. Then, under free trade circumstances

trading would result in higher consumption of wine and cloth for both countries since they have more than 2 units of each good.

Naturally, this basic economic model has several assumptions such as free trade, only two goods being produced and consumed, labor being the only factor in the production and that the fact that gains are only static gains among others. In reality, there are many factors which affect the strategic setting of international trade such as export subsidies and import restrictions.

In essence, the RM is a useful framework. However, it is still based on a lot of assumptions which do not hold in reality. In order to establish a model with a collaborative agreement from the three hospitals, the different factors and aspects have to be identified. In the case of the Project, the first factors are the number of patients being treated. Optimally, an analysis of the number of patients treated at which hospital with a specific disease will shed a light on the expected number of patients for future years. Following this, there are more hospitals in the region, and if the Project becomes a success then this will attract more people. Further, the HC systems vary a lot between countries and subsequently so does the reimbursement system and level. Even though the financial analysis showed that the revenues per FTE were approximately equal for CHC and MUMC+, the underlying systems and rates were distinctive. Hence, this needs to be accounted for in the Project. Another fact is that UKA and MUMC+ are public hospitals whereas CHC is a private hospital also implies there are different organizational structures on both the departmental level as the comprehensive hospital-wide level. In addition, the financial analysis showed that personnel are more expensive (on average) at MUMC+ relative to CHC and hence presents a larger share of the total costs. In order for the Project to succeed, there has to be a consensus on the scale of the salaries for the employees. Either there needs to be a change, e.g. Belgian employees earning more money (although this increase has to be covered by incoming cash flow as well,) or there has to be an acceptance among the team that a difference exists. In any case, this needs to be handled with caution as the level of salary is often a major influencer on team chemistry and in an earlier stage, team bonding (Client meeting 1, personal communication, 4 February, 2019). Consequently, there has to be an overview of the number of FTEs at the three locations on all levels from pediatric surgeons to doctor's assistants and secretary. This will give an indication on teams which are currently over-/understaffed and thus, it allows for a better

planning and organization arrangement. For instance, at specific times a minimum number of doctors have to be physically present at or able to go to the hospital in case of an emergency. In an optimal planning scheme, it would allow a minimum number of people to standby and hence, the pressure and stress levels of staff will be reduced increasing the motivation for this project to become successful. There are also costs involved that do not directly relate to personnel being equipment costs or administrative costs for instance. A centralized system would be able to reduce costs as well as communication issues among the three locations.

In terms of cooperating, it is evident that all parties have incentives to cooperate and along these lines, improve the quality of care but moreover, provide better service to patients. Yet, as in any cooperation, the different stakeholders are also aware of the current situation. For instance, CHC has been struggling to be profitable in the last couple of years (Interview 1, personal communication, 3 April, 2019). Furthermore, based on the financial analysis there is pressure on CHC to become more efficient. This also applies to the HC system in general, as the whole HC sector is under pressure due to decreasing labor productivity relative to expenses. In addition, HC has increasingly been centralized in the Netherlands and given the information provided during the interviews, this will also happen in Belgium in the near future (Client meeting 1, personal communication, 4 February, 2019; Interview 1, personal communication, 3 April, 2019). As a result, there is an incentive from multiple parties to collaborate. This will also benefit innovation, education and research, and development in the EMR. For instance, this project can attract leading academics to the hospital which will foster and spur development. Correspondingly, this may serve as a reinforcing loop and lead to a chain reaction, which would boost the whole region. As a consequence, other stakeholders, such as the political partners, will encourage the project to a greater extent and may be more inclined to provide (non)financial support.

Accessibility

Accessibility of a HC facility is dependent on a multitude of aspects. Facilitating access to care mainly concerns helping people to make use of the appropriate HC resources so that the patients can preserve or improve their health. There are three main aspects that are part of accessibility, which are: the availability and adequate supply to services, the opportunity to obtain HC and making sure all population groups have access to services. Accessibility can,

therefore, be measured in terms of affordability, physical accessibility, and acceptability of utilized services. When considering accessibility it is also important to look at the equity side of it. This can be measured through availability, utilization, and outcomes of services (Gulliford, 2002).

1. Minority groups & the patient perspective on quality of care

Under this chapter we brought together several topics which were mostly defined during our initial analysis using the PESTLE framework. Some of the topics in this chapter were also identified during the interviews with experts in the field and were therefore initially grouped together as sociocultural acceptance. Since other chapters also became more diverse throughout the interviews, we framed the chapter differently due to other chapters also entering in the sociocultural aspects of care and to avoid confusion. Important to note is that all topics in this chapter have mainly been examined from the patient's perspective.

1.1 Patients with a migratory background

The term migrants will here be defined as “people who have moved to and settled in a country but have a different ethnic background from the majority” (Norredam, 2007). As stated in the sociocultural aspect of the PESTLE framework, there is a significant minority of people with a migratory background present in the EMR. Looking at statistics of the pediatric surgical center regarding patients with a migratory background is important to identify if there is a lower consumption of HC services by this group when comparing the hospitalized population to the general population. The hospitalized population should in general be randomized and therefore reflect the population of the different provinces/regions in which the three pediatric surgical units operate. If this is not the case, a certain group might encounter a barrier in the search for care. According to the interviews we had with patient organizations and some HC professionals in the field of pediatric surgical care this, in general, was not a problem. According to a HC professional practicing in the area of Mainz, this was not even the case for current migrant communities or even refugees from, for example, Syria (Interview 5, personal communication, 17 April, 2019). The main barrier that could arise is effective communication with those minority groups, which sometimes do not yet fully speak or comprehend the local language. The HC professional in Mainz said they therefore set up a database of all the HC professionals (nurses, doctors, administrative personnel) and

documented the languages they are able to speak (Interview 5, personal communication, 17 April, 2019). If a patient or family would then arrive not speaking the local language properly one of the personnel could then be the interpreter. However, other studies have identified that there can be differences in access to care for migratory populations, including refugees, between European countries; this should therefore be considered for the development of the Center (Doctors of the World, 2017).

1.2 Continued education of children with long-term illnesses

During our research and interviews we also came across the topic of continued education of children with long-term illnesses. Chronic illness may be a challenge for the child and parents and can adversely affect school experiences, whereas a child's and/or adolescents' education is important to reach its full social, emotional, cognitive, mental and physical potential. Patients suffering from a chronic illness are of course not all the same and have therefore mixed experiences and outcomes. Studies nevertheless show that patients suffering from chronic illness are often performing worse than their student without chronic health issues (Lum et al., 2017). As a pediatric surgical center, it could therefore provide support to the patient. Whether it is through the help of a psychologist or technical solutions which help the hospitalized child to follow their normal track of education or a combination of both. Lum et al. (2017) identified through their meta-review that the most effective approach in improving the academic and social functioning of the child and chronically ill patient is through engagement with the school and more specifically engage with the relevant teachers to improve their knowledge of the chronic illness of the student. This way their attitude towards the patient's illness can be managed and uncertainties regarding the impact of the chronic illness on the student can be addressed leading to better support and psychological outcomes for the student. Communication and collaboration between HC professionals and the educational sector are however required to ensure that the teacher's educational practices are supportive across the needs of the pupil's chronic disease (Lum et al., 2017).

1.3 Continuity of specialized care

An important factor one of the patient organizations addressed was the guaranteed continuity of specialized care. The organization gave the example of a very knowledgeable and specialized doctor in a hospital providing care but who suddenly left the team to pursue job

opportunities at another HC institution (Interview 3, personal communication, 10 April, 2019). It would therefore be in the best interest of the pediatric surgical center to set up a system and policy so that specialized care would be guaranteed for and provided to chronically ill patients as long as no suitable replacement could be found for the HC professional wanting to pursue job opportunities outside of the pediatric surgical center (Interview 3, personal communication, 10 April, 2019). Depending on the legality of such a policy, this could be included in the contract, but could also be a spoken policy and a selection criterion when recruiting new specialized HC professionals. How this policy should be set up, however, was also not mentioned in the conversation by the patient organization and is therefore an idea stemming from a brainstorm session. The concern of guaranteed continuity of specialized care appears to be a rightful concern which, if not provided, could have consequence for and influence on the reputation and building up of prestige of the pediatric surgical center. We should mention that our client mentioned that they are specifically recruiting HC professionals who are interested in working in this region and therefore not specifically the hospital itself. He therefore applies a certain type of screening already, which however holds no contractual guarantee that the recruited HC professional will still guarantee continuity of care if they change their mind afterwards (Client meeting 2, personal communication, 28 March, 2019).

1.4 Language barriers

As cited earlier, there can sometimes be language barriers between migrant populations and HC professionals. In this case, the language barrier could arise due to the fact that the doctor does not speak the same language as the patient since the doctors of the Center are travelling between the different units of Aachen, Liège and Maastricht. A HC professional from Mainz suggested making registries of staff with the languages they speak (Interview 3, personal communication, 10 April, 2019). The patient organization therefore addressed that it is also important that the nursing staff can effectively communicate with the HC professionals (Interview 5, personal communication, 17 April, 2019). However, there is already a cooperation between the doctors of the three different hospitals and therefore this possibly has already been addressed (Client meeting 1, personal communication, 4 February, 2019). Culturally, there might be a difference in the way doctors engage with patients and staff. During the conversation with the patient organizations it was addressed that German doctors often adhere to a hierarchical system regarding staff and patients with patient involvement

not being as high as in the Netherlands or with younger doctors in Belgium. The same can be said in general regarding Belgian HC professionals of the older generation according to the patient organization. It stressed that this is an aspect that should be monitored. Such a hierarchical ideology could create a barrier regarding engagement and information uptake with regard to the patient (Interview 3, personal communication, 10 April, 2019). This however seems to be addressed internally in the current cooperation when recruiting new HC professionals (Client meeting 2, personal communication, 28 March, 2019).

1.5 Patient organizations

One of the patient organizations interviewed also praised their current cooperation with the doctors and team members of the project. They wish to continue this cooperation and potentially extend it so that patient organizations could be included in the functioning of the pediatric surgical center. The patient organizations viewed it from the point that they could be present for a certain number of hours in the hospital to interact with the patients and their family directly and potentially direct some concerns. The patient organization in this case suggested to be available for three hours a week for example. The organization could therefore be part of a process of quality improvement and therefore decrease any barrier that would exist regarding the access of care. A person representing the patient organizations could for example be hired and provide treatment and insurance information but also help to build a support network for the patient and their family by including them in or inviting them to activities organized with fellow patients. Examples of such activities would be contact groups for patients, organizing youth days, organizing a yearly congress, etc. The organization also noted that often (in most current pediatric surgical care centers) the transition from “chronic pediatric care” to “chronic adult care” is a challenge. Due to patients having had treatments for nearly two decades most of the time with the same HC professional and then having to switch to another professional. The organization thinks this would be a great aspect to include while setting up the pediatric surgical center, to ensure that there is a smooth transition between pediatric and adult care. In general, a patient organization can be a potential intermediate level between patients and HC professionals, being a representative for the patient population and being able to voice concerns or believed shortcomings in care provided. While on the other hand providing information to patients regarding the financial

aspect of the treatment as well as creating a support system amongst patients sharing a similar condition (Interview 3, personal communication, 10 April, 2019).

1.6 Satisfaction of the patient population

The same patient organization also suggested to develop a questionnaire which polls about the satisfaction of the patient population to understand how good the service is provided by the pediatric surgical center. This could identify barriers and potential improvements in service which are not directly visible to the HC professionals and researchers, but might help the patient feel more at ease with the care provided (Interview 3, personal communication, 10 April, 2019). Of course, such a questionnaire will be catered mostly towards the parents of the children, but maybe an innovative system could be developed over the years which could indicate how well a child is feeling during treatment and how receptive it is of the treatment being given. It could also serve as a good indicator for the psychological well-being of children with chronic ailments when being scientifically based. Such questionnaires could also question the parents on how well they feel they understood the health information and could give an indication of the health literacy (see definition under the next section) of the population which visits the pediatric surgical center. Since such questionnaires are anonymized these problems cannot be addressed individually per patient but could be addressed through leaflets and information campaigns, informing the patients about certain health issues and/or incentivizing the patients to interact with the HC professional.

2. Health literacy, comprehensible information and quality of life (QoL)

The World Health Organization (WHO) defined health literacy as ‘the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health’ (WHO, 2010). Therefore, health literacy has a broader meaning than reading pamphlets and successfully making an appointment with the health practitioner. By improving people's access to health information and their capacity to use it effectively, health literacy is critical to empowerment.

An important note to make during this chapter is that much of the research was based on the concept of integrated care. This concept can take on many different forms and was kept in the back of our minds due to its pursuit to overcome risks of fragmentation in healthcare

service (NHS England, 2010). Integrated care (see figure 6) should therefore make sure that users of care do not ‘fall between the cracks’ of care and create links between healthcare providers through both real and/or virtual integration. The concept can be split up into two types: horizontal and vertical integrated care. Horizontal integration refers to the real and virtual integration of care between providers operating at the same level, whereas vertical integration thus means to integrate care services between providers working at different levels (Curry and Ham, 2010). To clarify this, with integration we mean collaboration in this chapter. Specifically, this is between the different units of the Center but also in the creation of networks and alliances with other potential supportive services such as psychologists or educational staff at the patient’s school.

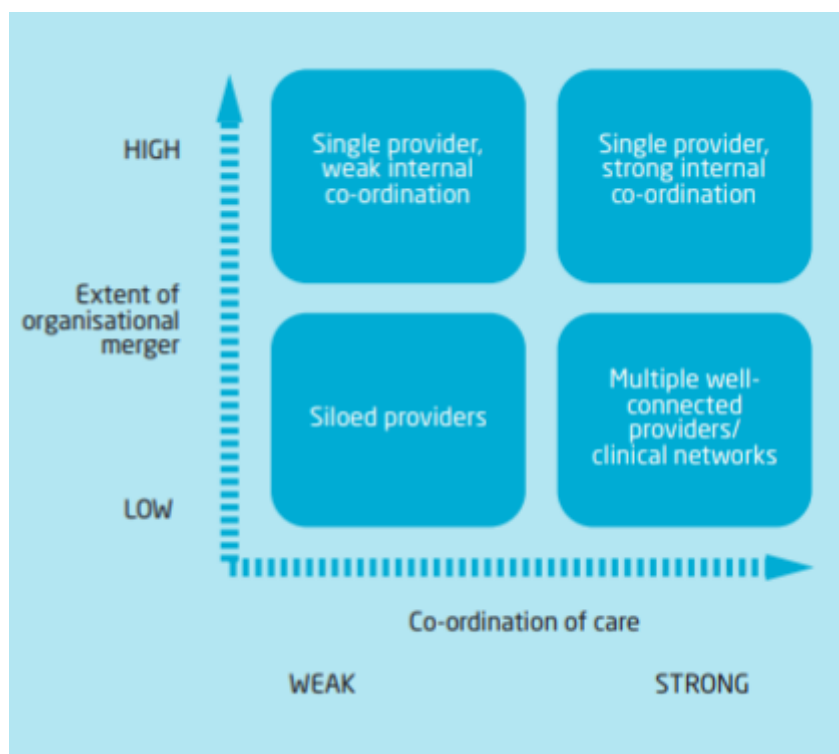


Figure 6: The concept of integrated care visualized (Curry and Ham, 2010).

2.1 Influences on the parents’ health

Several international studies have recently drawn the attention towards the health of parents and surrounding family of chronically ill children. The studies show that these family members show significantly more distress and higher vulnerability of both their physical and mental health compared to parents of healthy children (Vonneilich, 2014). This mainly is caused by having a high financial and emotional burden, for example caused by finding adequate

support for their children in school or kindergarten (Cousino & Hazen, 2013; Lindstrom, Aman, & Norberg, 2010). The burden of care might therefore also translate into hindering the life chances of the parent such as career options and cultural and social activities. Overall the parents and/or family members surrounding the chronically ill patient will often forget about paying attention to themselves and their social circle (Lindstrom, Aman, & Norberg, 2010). These are of course indirect factors and challenges which the Center cannot fully address, especially not on its own. But in the long term the Center could for example develop an integrated HC plan or guidebook for parents and could also educate the parents about this aspect, which falls together with the aspect of health literacy of the population. Building a support-group might also be advantageous but could be difficult to form due to possible language barriers in the area. There is still a lot of discussion about official best practice interventions for this aspect of long-term childcare and therefore the suggestions we did are more food for thought to start a brainstorming process about the challenge. These suggestions might also not have a very significant impact on improving the quality of life (QoL) of the parents. Their QoL is more influenced by the policies set by the national governments regarding the social provisions and compensations which support their lives (Vonneilich, 2014). We also have to note that this is a fairly recent aspect we came across while doing this study and therefore did not question our interviewees extensively about this topic.

2.2 Access to healthcare facilities

One of our interviewees mentioned that increasing access to the HC facilities for long-term and chronically ill patients with grave disabilities can be of importance. One of the patient organizations addressed, for example, the use of the “Behinderdeschein” or “certificate of disability” in Germany which provides a small financial relief on the burden of extra costs of chronically ill patients while taking into account the gravity of the condition. Certain patients can therefore have access to discounted or free public transportation which often also includes identical conditions for their guiding individual. Compared to the forms that have to be filled in regarding the reimbursement of transport costs which Dutch insurance companies sometimes provide (Interview 3, personal communication, 10 April, 2019). It could therefore be useful to be addressed to local governments, especially with the Gemeente Maastricht having expressed interest in the project during our interview (Interview 6, personal communication, 10 May, 2019). HC facilities themselves could also for example already

provide relief to these patients by providing chronically ill patients needing long-term and frequent care with free or discounted access to parking lots or even with parking spaces close to the health facility itself.

2.3 Therapeutic patient education

A way to overcome the challenge of parents and patients with limited knowledge and potential psychological side effects related to the managing of their child's medical condition, is through what is called therapeutic patient education (see figure 7). This approach aims to reduce parents' disease-related stress as well as increase their ability to support their child in coping with the illness. It also aims to increase the parents' own awareness of how chronic illness can affect the health of the entire family (Ahrens and Staab, 2015). These programs have successfully been implemented in the treatment of many chronic diseases such as asthma, diabetes, chronic pain and cardiovascular disease (Stalder et al., 2013). Several so-called theoretical behavior-change models exist which support and sustain the gathering of knowledge and integrating it into the parents' or patient's routine. Such a theory is the social learning theory which assumes that patients and parents learn best from one another through various forms of support and feedback (Dunbar-Jacob J., 2007). The end goal of such therapeutic patient education is to enable the patient and the parents to have realistic goals and enter a process of 'problem solving' while accepting the disease. This should also lead to the empowerment of the parents (and the patient) to seek social support themselves and enhance the own motivation to cope with the chronic disease and treatment. Setting up a patient education program is however complex and needs a stepwise approach with educational and psychological interventions. These interventions should however build on the patients (or in the Center's case possibly the parents') preference and shared decision making in the context of the individual knowledge, anxieties, motivation and sociocultural situation of the patient (or their parents) (Ahrens and Staab, 2015).

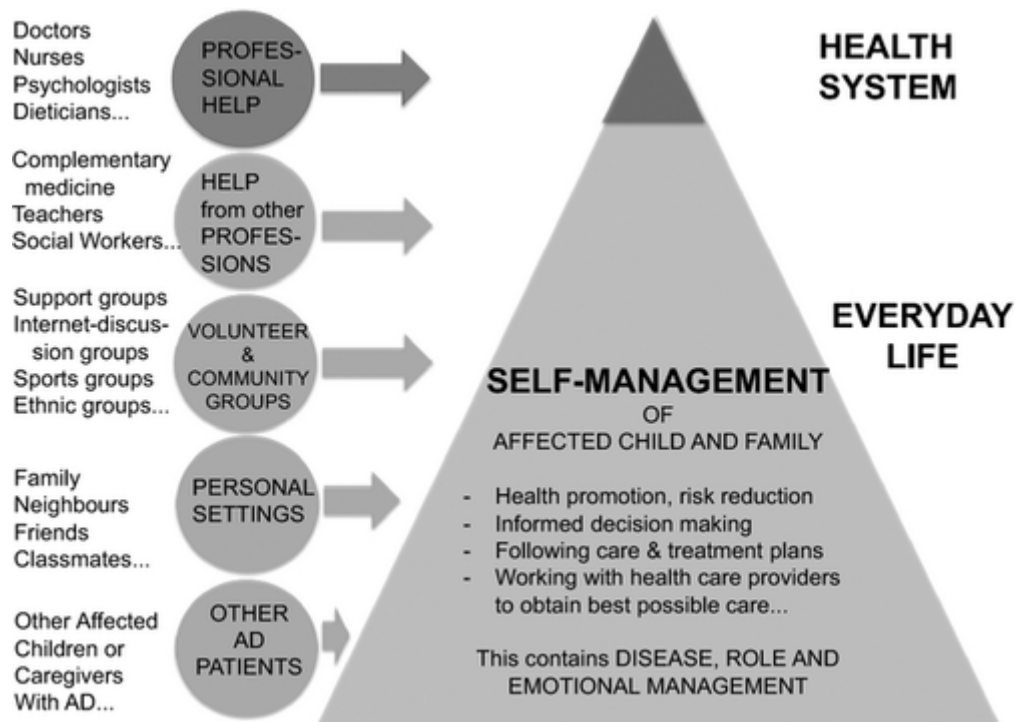


Figure 7: Visualization of the different organizational levels invested in therapeutic patient education and self-management of the affected child family (Ahrens and Staab, 2015).

3. Belgian Ronald McDonald House Alternative

As a team, we had noticed that in Germany and the Netherlands many university hospitals had a Ronald McDonald House located near their facilities. These houses are part of the Ronald McDonald House Charities which support ill and disabled children and their families by letting family members of long-term hospitalized children can live temporarily. The charity also owns special rooms where ill or disabled children and their families can relax after their treatment and it also organizes holiday and sporting activities. Both Maastricht and Aachen have a Ronald McDonald House located near the hospital facilities. Liège on the other hand, as well as Belgium, entirely lack the presence of a Ronald McDonald house. This made us wonder if there was an alternative to the Ronald McDonald house. In a lot of hospitals of Belgium, it is possible to “room-in”, meaning that family members reserve a room in the hospitals and pay a certain fee to the hospital. In CHC it is indeed possible according to their website and online documents that a hospital bed can be put to the disposal of family members as long as the hospitalized person occupies a single person room (CHC, 2019). It is not made clear if this involves costs for the hospitalized patient and/or their family members (CHC, 2018).

It, however, is possible that a Ronald McDonald House will be located somewhere in Liège in the future. Currently, the Ronald McDonald House Charity is building its first house on the campus of the University Hospital of Brussels (Ronald McDonald Kinderfonds België, 2019). This might provide an opportunity in the future for CHC if it has a cooperation with MUMC+ and UKA to have a Ronald McDonald House near its campus. However, since there are multiple hospitals located in the city of Liège including a university hospital, this might need some lobbying and prove a challenge.

Marketing & Communications

Marketing & communications are key to the success of the Project and future Center in that information and plans need to be clarified and strategically structured about how the Center will function, how patient needs will be addressed, and how the public and key stakeholders will view the Center and its role in society. The following section describes barriers and opportunities related to these needs in the areas of operations of the medical team, reference networks, and health literacy and comprehension.

1. Operations of Medical Team

For marketing & communications, several key barriers have come up in research and in interviews. These come from both the side of general internal and external communications and the side of communication with patients. For communication with patients, a clear challenge exists with the legal protection of and the logistics of access to patient information. If doctors are the ones travelling most to provide treatment, they will need to have ready access to patient information. Challenges related to the GDPR and privacy are explained in detail in the legal section (see Legal section 2). This is a challenge, but also an opportunity, to establish and coordinate the eHealth systems between the three pediatric units. It is a challenge in that coordinating the ICT systems would be time-consuming and incur significant costs (European Commission, 2019a). Additionally, the current use of eHealth and data sharing within each country varies significantly. For example, in Germany the sharing of health records is centralized, but the sharing of data between hospitals is not (Interview 5, personal communication, 17 April, 2019). However, the opportunity could be the establishment of an

eHealth system that facilitates not only communication between doctors, but also could increase accessibility for patients to access their own HC information.

From the general marketing & communications standpoint, potential logistical barriers exist for operations of the medical team from both a staff logistics standpoint and also relating to environmental regulations in the region. From a logistics standpoint, the movement of doctors and patients (as needed) has to be well-coordinated, with appropriate staff (skill and language wise) ready and available as needed. Additionally, environmental regulations may pose a challenge in the future for the movement of doctors to different regions, particularly relating to additional emissions from the travel of medical staff. While these barriers need concrete logistical solutions, they are linked closely with marketing & communications in that not addressing these properly could result in internal disorder (with staff logistics) and bad publicity or less support from political actors (with environmental regulations).

2. Reference Networks

If the Project aims to pursue membership in or establishment of specific reference networks related to pediatric surgery, there are additional opportunities for marketing & communication that could benefit the Center. European Reference Networks (ERNs) are a framework created by the European Commission that are

virtual networks involving healthcare providers across Europe. They aim to tackle complex or rare diseases and conditions that require highly specialised treatment and a concentration of knowledge and resources (European Commission, 2017).

The existing ERNs specifically for the field of pediatrics are the ERN PaedCan (pediatric cancer), the ERN TRANSPLANT-CHILD (transplantation in children), and the ERN ITHACA (congenital malformations and rare intellectual disability) (European Commission, 2017b). Membership in or creation of ERNs for pediatric surgery specializations could allow for further connections of specialized surgeons for the Center and could even foster recruitment. Additionally, ERNS could serve to provide valuable continuity of care, provided that all relevant stakeholders (including patient organizations) are included in the process (Interview 3, personal communication, 11 April, 2019; see also Accessibility section 1,).

3. Health Literacy and Comprehensible Information

In relation to the operations of the medical team, the establishment of an eHealth system could also address the barrier of health literacy & comprehensible information (for definition, refer back to Accessibility section 2). This barrier arises from the fact that while the EU has worked to make information about CBHC available since the establishment of the Patient Directive, most EU citizens do not understand the information available or do not know where to find correct information (European Commission, 2019h). To potentially address this, if an eHealth portal is established linking the three pediatric centers, patients could access their records and communicate via messaging with doctors and medical staff from multiple locations. This is covered more in depth in the section “eHealth.”

An additional general marketing & communications barrier is the visibility of the center. The pediatric surgery units, particularly MUMC+ and AKA and MUMC+ and CHC, have worked together for quite some time (Client meeting 2, personal communication, March 28, 2019) but record of that partnership is difficult to find information about online and it is not centralized. However, opportunities exist for all of these barriers in developing a strong internal communications plan and a strong external plan with marketing included.

4. Communication Strategy

All of the barriers and opportunities discussed above can potentially be addressed with the development of a strong communication strategy before the center is formally established. A communication strategy would help set the unified pediatric center up for success by addressing in that it could: convey the project purpose to external actors; make things happen, as projects are not isolated; communication helps to move the project forward; make project priorities transparent; identify where resources should be concentrated; and inform stakeholders, whose agendas are busy, about activities in good time (Gesundheit Österreich Forschungs und Planungs GmbH, 2018). The elements of a communication strategy are found below (Figure 10, image from Gesundheit Österreich Forschungs und Planungs GmbH, 2018). For the purposes of this report, we feel that it is most valuable to focus on the objectives, the target groups, the key messages, and the activities. Roles, time plan, and budget are obviously critical elements, but given the time frame, we will provide more general guidelines on these

fronts. We will attempt to incorporate the roles into the activities portion of the communication strategy.



Figure 10 (left): Communication Strategy ((Gesundheit Österreich Forschungs und Planungs GmbH, 2018)

4.1 Objectives

For objectives, the following three were selected: 1) Provide clear and easy-to-understand information & communication channels on CB pediatric care for patients; 2) Provide clear information and organization to pediatric surgery center partners on who is to

communicate what, when, and how; and 3) Provide clear information for GPs & other medical providers for the purpose of referrals. These objectives are the primary focus of the communication strategy because they will prepare the Center for the work it wants to accomplish and can help with continued success of the Center by creating clarity and transparency around the work they are doing.

4.2 Target Groups

For target groups, the following have been identified based on our interviews and based on literature⁶. Following elements of the actor analysis framework of Enserink et al. (2010b) and modifying the application to suit marketing & communications, we have made an inventory of actors involved. Enserink et al. (2010b) define an actor as “a social entity, person or organization, able to act on or exert influence on a decision” (p. 80). Making an inventory of actors, and mapping out their current relationships, can help to clarify the needs and interdependencies of actors related to the pediatric center and allow for better formulation

⁶ Sources: Interview 6, personal communication, 10 May, 2019; Client meeting 1, personal communication, 4 February, 2019; Interview 3, 10 April, 2019; Interview 4, personal communication, 11 April, 2019; Interview 5, personal communication, 17 April, 2019; euPrevent, n.d.a; euPrevent, n.d.b; European Commission, 2018b; European Commission, 2019h; Doctors of the World, 2017

of key messages per actor group. Table 3 below describes each actor and the suggested focus for key messages.

Table 3: Actors Involved in the CBHC region of the Project.

Actor	Description & Focus for Key Messages
Patient Populations	
European Patients within CBHC region	EU Nationals who are part of the pediatric population, and their parents/legal guardians. Even though they are citizens of the EU, EU reports have shown there is still not clarity for many on the process of HC in their own country, let alone another. Need clear, <i>concise</i> information on how to access care at the Center
Migrant Patients within CBHC region	Migrant patients and parents/legal guardians; already have additional potential complications for accessing care in their country of residence, and if CBHC is needed/recommended they may need additional guidance on what care they can pursue/not pursue. For this group, it is most beneficial if they are aware they can receive care from specialized surgeons, but in their country of residence.
Refugee Patients within CBHC region	Refugee patients have additional challenges accessing care (like sometimes having restrictions on accessing non-emergency care) in general once they are in the EU, and even more so if they need to access care in another EU country
Patient Advocacy Groups	
Patient organizations	Patient organizations are involved in the care of patients within ERNs, but also petition on behalf of patients in cases where surgeries or other issues come up in the treatment of the disease(s)/medical

	condition(s) that the patient organization represent(s). They are an important group to have on board for the functioning of the Center
euPrevent	euPrevent is a program partnered with EGTS EMR that focuses on topics such as patient empowerment for CBHC within the EMR. Largely concerned with accessibility and health promotion, and have two programs focused on health needs of pediatric population. Could be a excellent partner for operations, accessibility, and visibility of the Center.
Healthcare Providers	
The Center	Providing (specialized) pediatric surgical care to the EMR
CHC	One of the non-university hospitals in Liège; currently has surgeons working in Maastricht, and has collaborated with MUMC+ for quite some time. Has specialists involved in other surgical departments that could join the center for pediatric cases
AKA	University hospital of Aachen, so has a significant focus on research. Long-standing collaboration with MUMC+, but different style of working (more hierarchical)
MUMC+	University hospital & one of our clients (pediatric unit specifically); has been main initiator/driver on collaboration for the Project, as has worked in close collaboration with AKA and CHC for some time
GPs/other medical providers	GPs and other medical providers are important for the overall view of patient care, as they are the ones seeing patients most often. GPs and other medical

	providers need to be aware that the Center can be a future option for pediatric surgical care for the EMR, and should be made aware how they can be included (i.e. communication within the app, potential ERNs, etc.)
Information Providers	
Patient organizations	Patient organizations not only advocate for patients, but serve as an important contact point and source of information relating to particular medical conditions
Grensinfopunt	An important information point and service for CB information, focused on working, living, and studying across borders in the EMR. An important contact for providing information on the movement and employment of the medical teams across borders; should coordinate with closely
National Contact Points	Information sources established under the EU Directive on Patient Rights for CBHC. Most often directed source for CBHC information at the EU and national levels, so would be beneficial to reach out to them explicitly. Could also aid them in providing certain information that can address some of their capacity challenges and provide specific localized information for EMR on their websites for NL, BE, and DE
Political Actors	
Ministries of Health	Responsible for constructing and implementing policies to promote a healthy population while adhering to EU regulations and international health policy. Also responsible for regulating insurance and HC provision, providing funding, and providing information on HC access

Municipalities (Maastricht, Aachen, Liège)	Strong history of cross-border collaboration, but still need a business case or strong case of benefit to region in order for additional support for activities of the Center
Provinces (Limburg, North Rhine-Westphalia, Liège)	Same as municipalities; also have to consider needs of other municipalities and regions within their respective borders, so may not be as strong a partner as the municipal level in terms of active political support and/or funding
EGTS EMR	Facilitate and upscale collaboration and cooperation within 5 partner regions of Aachen, German community in Belgium, Liège, Belgium Limburg and Dutch Limburg
Other Healthcare Actors	
Insurance companies	Higher reluctance to support CBHC; would likely be more in favor of mobility of medical team. Important contact to ensure patients know differences between insurance providers per country
euPrevent	In addition to a focus on patient empowerment, euPrevent has other regional, national, and international HC partners and has projects focused on health improvement. Could also therefore be involved/interested to be involved in a project with the Center, or know how the Center could contribute to their goals for health within their existing programs
Academic Institutions	
UM	UM funds and aids in facilitating the research and innovative projects at MUMC+
ITEM	As one of the clients and specializing in cross-border cooperation and research, they are an important partnership to

	maintain throughout the development and operation of the Center
Aachen University	Has the same role as UM in the funding and facilitation of research and projects at AKA
Media	
Local & regional newspapers	An important source to keep updated via press releases and invitation to key informational/promotional events to spread visibility and awareness of the center
Local & regional TV	Same as above, just covers an additional media format

4.3 Key Messages

The key messages are centered on the themes of accessibility, operational benefits, and transparency. Based on these themes, two key messages were developed: “Accessible for All” and a “A Healthier, Resilient Region.”

4.3.1 Accessible for All

The key message “Accessible for All” should highlight the different ways that pediatric care can be accessed by different patient groups. There should be distinct information available for EU nationals, migrants, and refugees, to ensure that each distinct population is aware of their options for care with the Center. Additionally, the benefit of having multi-lingual care should be emphasized. The fact that patients can stay in their home country, and that there will be translation even if their surgeon is from another country, is an extra assurance and point for the quality of care for the patients and their families/caregivers.

The physical accessibility of the Center should also be highlighted, particularly for patient populations & patient organizations. It would be beneficial to explain the role of the Ronald McDonald houses, particularly for patients that require frequent in-person follow up care or long-term care. Additionally, messages to patient populations should emphasize that the goal

of this Center is to minimize the amount that the patients and their families have to travel for care. This can be highlighted in marketing of the Center as a benefit to patient comfort and ease of care.

Stressing the accessibility component to patient populations and patient groups is key for the visibility and attractiveness of the center. Patients want to feel that there is an emphasis on the quality of care, not just concern for quotas or research purposes (Interview 3, personal communication, 10 April, 2019). Furthermore, this could strengthen the ties with and support of patient organizations, which are seen as a valuable and trusted resource to patient populations (W. van Gemert, 28 January 2019).

4.3.2 A Healthier, Resilient Region [emphasis on operational benefits]

The emphasis in communication and future marketing for the center (particularly for political actors, academic institutions, other HC actors, and the media) should be on how the Center can contribute to a healthier, more resilient region. CBC is an emphasis in the EMR, and has a higher return on investment in this area than some other parts of the Netherlands (Interview 6, personal communication, 10 May, 2019). As discussed in the Financial section, HC can be a challenging area to make a business case for; thus, the Center should demonstrate especially the added value of the center to regional health (which can in part be translated economically), health research, and sustainability of the region.

As two of the three pediatric units belong to university hospitals (Aachen and MUMC+), they can contribute valuable information to research on the pediatric populations in the region (Interview 1, personal communication, 3 April, 2019). Academia is seen as a valuable investment for the region, so contributions in this region should be communicated regularly and in depth to political actors and academic institutions (especially since academic institutions will likely be key investors in the Project) (Interview 6, personal communication, 10 May, 2019).

Sustainability can also be emphasized to political actors, academic institutions, other HC actors, and the media. Investing and supporting the Center can be translated into an investment into the long-term health and wellbeing of the region, as well as an innovative means to provide care in a way that reduces environmental impact. Because of the challenges

of climate change in the future (see Environmental section 2), and the demographics of the region (see Social section 1) the Center could serve as a valuable resource to address potentially increasing needs for specialized pediatric care in the region. This is especially key to emphasize to the political actors in the Netherlands, as there is the move to centralized care that could leave the south of the Netherlands without a pediatric surgery specialization (W. van Gemert, personal communication, 28 March 2019; Interview 1, 3 April, 2019). Additionally, since the emphasis is on the mobility of the surgeons and medical teams, this can be highlighted as a benefit to insurers and political actors by not having money towards HC leaving the country (Interview 1, personal communication, 3 April, 2019).

4.4 Key Activities & Roles

For key activities, the two central ones we feel should be developed are the unified website and the mobile application. The website and app could provide information on CBHC process, information on the pediatric surgery center, its benefits to the region, and updates on the work being done there, and an eHealth portal for patients and providers. Further detail on this is in the “Overlap: eHealth” section. Additional activities are listed in Table 4 below, divided by internal components and external components. Internal components are focused on activities that should be undertaken by the members of the Project, and focus mostly on communication items/activities to be accomplished before the Center becomes operational. External components are the activities that extend communication beyond the members of the Project, and are focused on once the Center is ready to become operational as a single entity. These activities were derived from interviews, literature, and our own brainstorming.

Table 4: List of key activities and their descriptions.

Key Activity	Facilitator	Description
Internal Components		
Source information for website	Project partners [all three pediatric units]	Find Information relevant not only for patients, but also to display for GPs/other medical providers and information on patient organizations

Develop contacts database	Project partners	In order to best target the distribution of information amongst the actors mentioned in the Target Groups section, the Project partners should maintain a database (CRM can be useful for this purpose) of contact information for non-patient actors. This can make later distribution of information easier, and facilitate consistent communication with all relevant actor
Coordinate ICT system/ eHealth portal details	Project partners; dedicated IT person/personnel	Between the three pediatric units, they will need to either coordinate their existing ICT systems, or establish their own ICT/use of the eHealth portal in order to facilitate easy sharing of patient information and care progress
Develop mobile app & eHealth portal [framework]	Project partners	The Project should focus on developing [at least] the framework of both the mobile app and eHealth portal. Further details can be found in the “eHealth” section
Develop proposals for funding of eHealth/app development	Dedicated team of grant writers from ITEM (suggestion from Interview	Once (at least) the framework of the eHealth portal and app are developed, the Project should pursue writing proposals for continued funding of their development. Depending on the funding, this could also provide opportunities of learning from others with similar projects and getting assistance for development
Test application & website utility with focus group	Dedicated IT person/personnel , research group from ITEM	testing the application and website utility with a focus group and incorporating feedback
Develop info “packages”	MUMC: for patient organizations, have had consistent contact over course of this	Information packages should be developed according to specific target groups. This is additional information that is specified to each actor group, and would demonstrate interest in having these actors involved and supporting the

	<p>Project, and patient organizations are not as present in Belgium (Interview 3, personal communication, 10 April, 2019)</p>	<p>Center.</p> <ol style="list-style-type: none"> 1. For GPs/medical providers: <ol style="list-style-type: none"> a. How they can work with/refer patients to the Center, and what they can expect in terms of involvement in care process 2. For information providers: (Grensinfopunt, etc.) <ol style="list-style-type: none"> a. What information can be provided on their websites regarding the Center 3. For patient organizations: <ol style="list-style-type: none"> a. Information on accessibility of the center for patients, and how they can be involved in the care process 4. For NCPs: <ol style="list-style-type: none"> a. What information can be provided on their websites regarding the Center specific to the EMR 5. For political actors: <ol style="list-style-type: none"> a. What information can be provided on their websites regarding the Center specific to the EMR b. Information on benefits of the Center for the EMR
External Components		
Plan for Kick-off event	Project partners	To draw attention to the initiation of this center, the Project can plan an event and invite actors within the EMR and relevant to the functioning of the EMR (see Marketing & Communications section 4.2)

Distribute info "packages"	Project partners, within their respective countries and/or networks	Distributing the targeted info packages ensures that additional contact is made to relevant actors to establish a network for the Center. Intentionally distributing the information beyond just having it available on the website and app could generate additional interest in the Center and potentially garner more support
Attend relevant municipal/provincial meetings	Project partners, within their respective countries	If wanting the support and/or funding from municipalities or province, the Project members should be present at and willing to discuss/present the importance of the Center to the municipalities and provinces in the EMR.
Launch event for mobile health app/eHealth portal, followed by distribution of information to sign-up and use	Project partners, dedicated IT personnel	The launch could be beneficial to spark interest and usage of the mobile app and eHealth portal. This could include an info session on how to use the app and eHealth portal. An event such as this should be followed up by mail and/or email distribution of information to patients and medical providers on how to sign up for the eHealth portal and download the app

4.5 Time Plan & Budget

As for the time plan, we see for now that the initial focus should be on the internal communication elements, and then moving to the external communications component once those elements are addressed. Internal communication elements should be firmly established before the opening of the center. Additional guidelines on internal communication between members of the Project can be found on the website of Gesundheit Österreich Forschungs und Planungs GmbH. The budget is the trickiest element; given its theoretical nature, it is unclear on how much the application development would require. Additional costs will likely stem from the coordination of the ICT system for eHealth as well as the website domain. Furthermore, it is likely that a dedicated website/app manager will be needed. The estimated salary for is approximately €35-40,000 based on Glassdoor salary reviews for general IT

positions in Netherlands. IT manager positions are generally paid much higher, in the €65-70,000 range, but this may not be necessary for just managing the website and app details (Glassdoor, n.d).

Overlapping and Interacting Themes

1. eHealth: For Health Literacy & Comprehensible Information

Relevant to both the “Marketing & Communications” and “Accessibility” themes is addressing the barriers and opportunities associated with health literacy & comprehensible information. For us, key ways to address the barriers and opportunities associated with these (described in the sections on marketing & communications and accessibility) is to develop a unified website and a mobile application with an online eHealth portal.

1.1 One Center, One Website

The added value of having a unified website for the Center is that it centralizes all of the necessary information that patients, patient organizations, and medical providers would



Figure 9: Understanding of CBHC in Europe (European Commission, 2019h).

need to understand how the Center would function, and the processes patients need to undergo to receive care there. This is key, given that according to the European Commission, the majority of EU nationals do not understand how CBHC works, and also many do not know how to access specialized HC within their own country (European Commission, 2019h; see image above, Figure 9). This challenge is also heightened for migrants and refugees, as noted

in the accessibility chapter. Additionally, the way information on CBHC is distributed now is not consistent. All EU countries are required to have a National Contact Point (NCP) website, but the information provided per site varies. Figures 10-12 below of the NCP websites for the Netherlands, Belgium, and Germany display some of these differences.

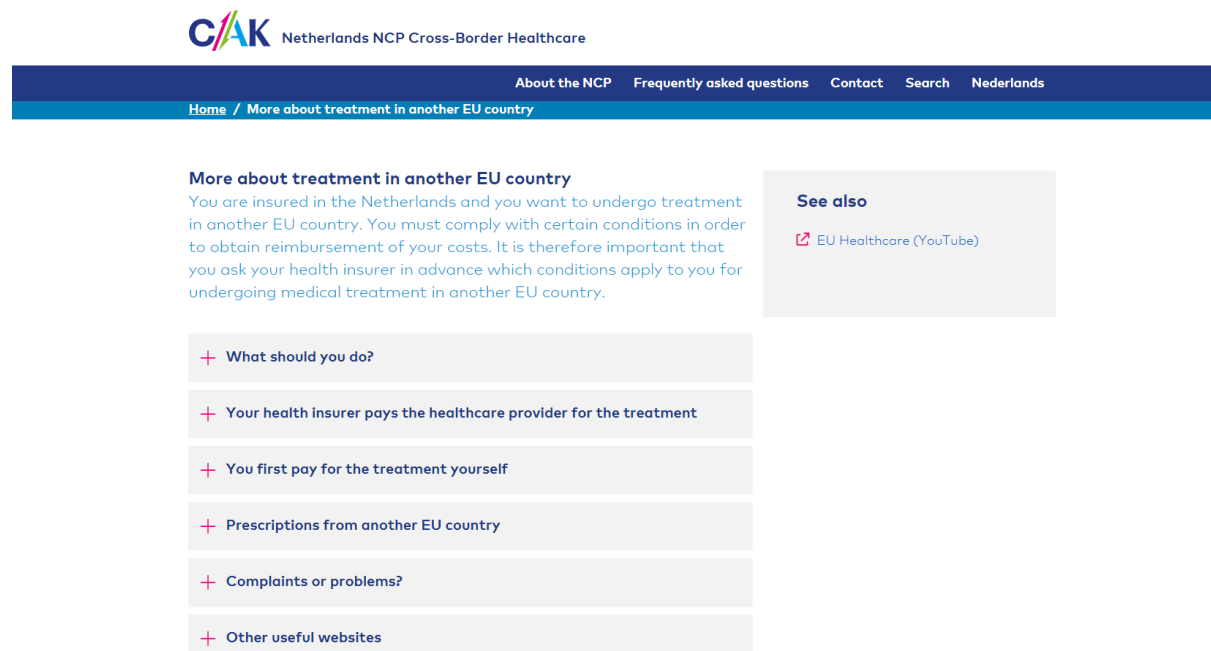


Figure 10: Image from the Netherlands' NCP website for CBHC (CAK, 2019).

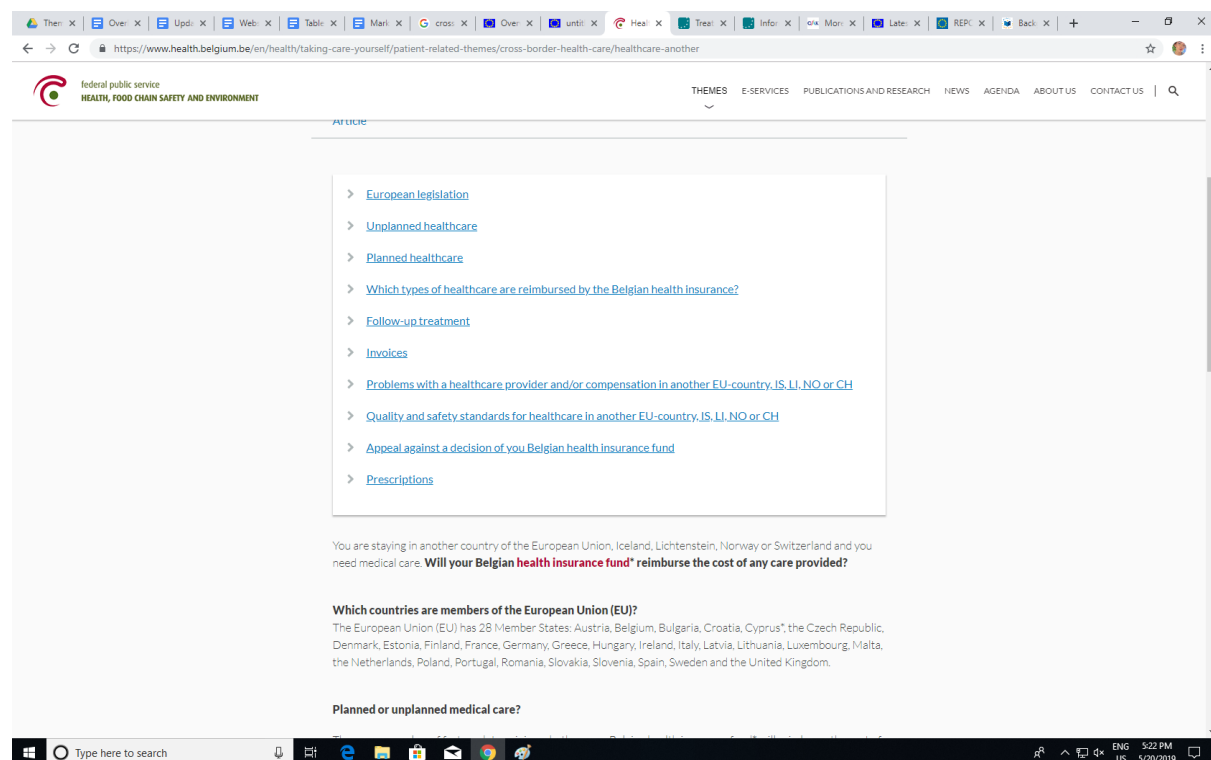


Figure 11: Image from Belgium's NCP website for CBHC (Federal Public Service for Health, Food Chain Safety, and Environment, n.d.).

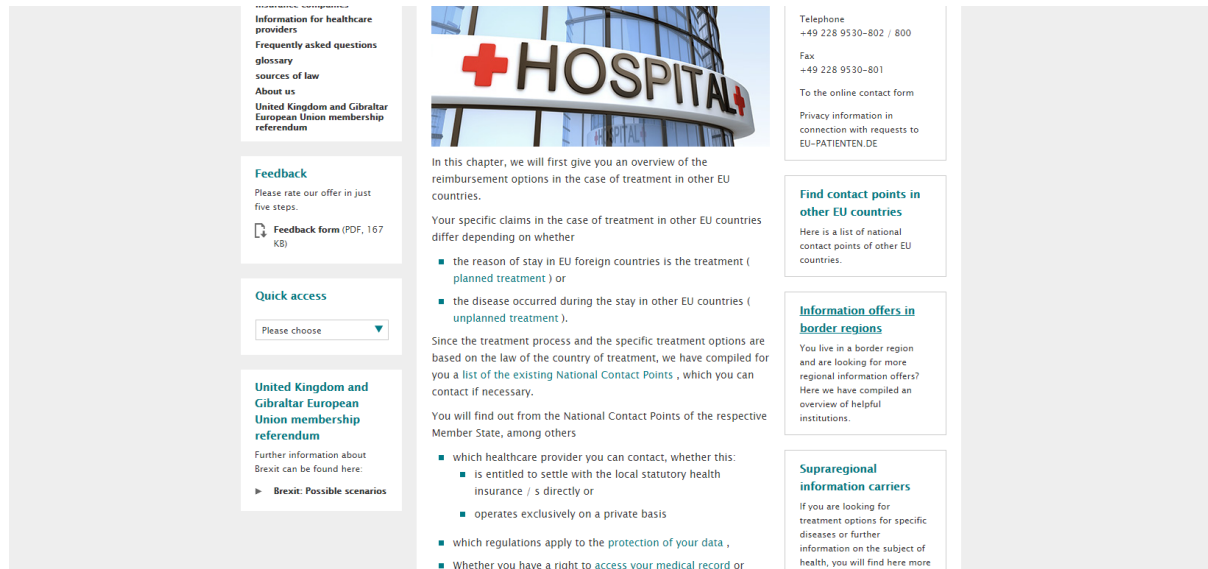


Figure 12: Image from Germany's website for CBHC (EU-Patienten DE, 2018).

Most of the NCP websites refer you to the NCP website of another country; this has potential to cause confusion or frustrate people looking for clear pathways for receiving HC. Additionally, not all information is available in English, which limits access for all EU citizens in accessing the information of another country (European Commission, 2018b). Thus, an opportunity exists for the Center to have a clear outline of how care works for patients if they have to leave their home country for care, or if they are remaining in their home country. This information should be available for patients in Belgium, Netherlands, and Germany in one section of the website.

1.2 Access For All: Healthcare App & eHealth Portal

The added value of having a HC app and an eHealth portal is in empowering patients and giving them better direct access to elements of care. Additionally, a comprehensive HC app and eHealth Portal can facilitate coordination of care and research efforts between the three hospitals and different medical providers. Studies have shown that mobile applications for HC can serve functions of: providing information on how to access HC, managing and updating patient data for monitoring chronic conditions, educating patients on conditions, allowing

opportunities for telemedicine and remote HC, and supporting symptom and diseases research for patient populations (Bouros, Wheeler, Tavors, and Jones, 2011; Ventola, 2014; Boulos, Brewer, Karimkhani, Buller, and Dellavalle, 2014). Opportunities such as the ones described could facilitate better management of care for chronic conditions, and potentially reduce the number of in-person visits (especially if implementing an option for telemedicine). Even for acute care, having an app that allows for easier exchange of information between patients and providers, and between providers, could also minimize administrative burdens and communication challenges (Bouros et al., 2011; Ventola, 2014; Bouros et al., 2014).

Furthermore, there are existing pilot projects where best practices and models could be derived from. A relevant case study is Zuyderland, which in partnership with developer Sananet created a pilot for the app “MijnIBDcoach” (ICT & Health, 2019). The app has reduced the number of required hospital visits for patients with IBD, and facilitates communication between patients and medical staff via the app (ICT & Health, 2019). It is also a partnership between Zuyderland and health insurer CZ, showing there is promise in garnering support from insurance companies for this kind of initiative (ICT & Health, 2019). Additionally, Medify has produced live demos for multiple procedures that factor in e-consent⁷ (Medify, n.d.) This allows for patients to prepare for particular procedures at home, instead of requiring a doctor’s visit. Features like these could help facilitate access to care and better communication between medical staff and patients about care, but could also contribute to cost savings by reducing travel needs of medical staff and patients.

1.3 Content & Development: App, Website, & eHealth Portal

In developing the website and the app, we believe several key information elements should be present on both. This includes, but is not limited to: a portal for expenses and descriptions, practical information on the process of CBHC, contact information (potentially including an online chat option), a glossary of key terms, and links to national contact points and patient organizations. For the app (and online eHealth portal linked on the website, like MyMUMC+), there should also be the option for messaging care providers, billing, and scheduling

⁷ To view: <https://livedemos.medify.eu/>

appointments, and a privacy section including consent forms for sharing patient information across borders.

Challenges for developing the mobile health app and the website includes the provision of information/ site text in multiple languages. English, Dutch, French, and German have to be accounted for, and our patient organization interviewee suggested including Turkish and Arabic for migrant populations could be beneficial (Interview 3, personal communication, 10 April, 2019). Additionally, the app should also be available in portal form online for patients without a smartphone. This could be an additional challenge for establishing the website. The app and the online eHealth portal would also need to be linked to the three different ICT systems used by the hospitals, or the center would need to coordinate its own ICT system for pediatric patient info sharing in advance. This would also mean that forms containing patient information will have to be standardized across the three pediatric surgical centers. Finally, if providers/ patient organizations/ etc. need to add information, there is the requirement to have someone to manage, edit, and update the app, eHealth portal, and website as needed.

However, several opportunities exist in connection with funding for the center when it comes to eHealth initiatives. The EU has been promoting eHealth initiatives, and several subsidies exist for innovative uses of eHealth (see Financial section 1). Additionally, the center could make use of ICT university college students to make a first app and experiment with the use of different information systems.

During an event related to our university commitments we crossed a representative from City-Labs Brussels. They developed in collaboration with Metrolabs Brussels and other stakeholders several services to improve prevention, diagnosis and care of patients affected by chronic disease in Brussels. One such service is a mobile app for remote monitoring of patients with chronic diseases. The City-Labs representative expressed his interest in the future Center and our current project and therefore expressed his willingness to collaborate on a future app. The representative also recently provided us with an open invitation for a visit to City-Labs if wished for in the future by the clients. Upon contacting them afterwards for further information sources on their projects, no response was given except for an invitation for a conference call with the client. They therefore provided us with their contact

information which is included in the contact list (Networking 1, personal communication, 14 May, 2019).

Figure 13 (right): Poster presentation by City-Labs and their partners on their developed services.

2. The Facilitation of Administration through the EGTC

After having looked at the opportunities and barriers of the Project and such legal entity apart, it seems important to highlight the links that can be made in practice. As written implicitly above, EGTC enable to regroup the whole CB activity of the Center into one which facilitates its communication and marketing. On a political level, it can be alongside promoted by EGTS EMR that comprises all CB activity of the region which would help its recognition, development and increase its political support. Besides, this structure could also help to overcome the obstacles regarding the differences in the national implementation of EU law as for example in terms of reimbursement of care.

2.1 The use of a unique instrument for reimbursement of healthcare

We saw that national systems differ in term of reimbursement of care which hinders the free movement to provide services. IZOM was a appropriate solution that got put down by public authorities. However, a similar project is being developed again within the EMR which shows its potential (Interview 4, personal communication, 11 April 2019). Such opportunity was considered in Liechtenstein and Switzerland without imposing either a harmonization of all national rules (which is likely not feasible). Following the Treaty of 19 December 1996 regarding Direct Insurance and Insurance Intermediation between these two states, it suffices for the insurance companies to be implemented in any of the states to be able sell insurance



contracts in the other state. The Financial Market Authority Liechtenstein (FMA) needs to provide to the Swiss supervisory authority (Swiss Financial Market Supervisory Authority (FINMA)) certain information such as the insurer's solvency margin, the insurance lines that are authorized to write and the type and nature of the risks that are proposed to be covered (Toenz, Gautschi, Furrer and Winkler, 2017). Another opportunity would be to use the EHIC as uniform instrument that each European citizen has to enable access to CBHC.

Conclusion & Recommendations

To conclude, the Center has several opportunities and barriers to address. Before taking actual actions, five core elements are recommended to be present (European Observatory on Health Systems and Policies, 2013). This report helped to support some of them. First, there must be a clear objective and local need for CBC to function well, answer the demand of patients and be supported by external actors. This was expressed by the professionals we had contact with. Regarding the functioning, we lacked real data but the theoretical model should give some instructions. Secondly, as such a project requires time, effort, and taking a risk, and therefore its representatives must be committed individuals. Thirdly, the different partners should share interests and fourthly, it needs support from external actors without which the Center could not even be created. To gain the needed political support, it is important to highlight the added value of the Center for each of the partners and actors. Lastly, the Center should be based on a suitable governance structure. EGTC seems to be a good start but its implications need to be explored furthermore.

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Personal communications

Interview 1. 3.4.2019. Pediatric surgeon.

Interview 2. 10.4.2019. Hospital.

Interview 3. 10.4.2019. Patient organization.

Interview 4. 11.4.2019. EMR specialist.

Interview 5. 17.4.2019. Pediatric surgeon.

Interview 6. 10.5.2019. Regional political stakeholder.

Networking 1. 14.5.2019. City-Labs representative.

Client meeting 1. (1st meeting W. van Gemert, L. Kortese). 4.2.2019.

Client meeting 2. (Midterm W. van Gemert, L. Kortese). 28.3.2019.