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an exploratory research into a program of demands for primary plus health care centers

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*An exploratory research into a program of demands for primary plus health care centers*

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Preface
This report is the result of my master thesis on primary plus health care centers. The primary plus care can be a part of the solution to the rising health costs in the Netherlands by reinforcing the primary care and alleviating the more expensive secondary care. This offers a possibility to control the health costs. Health care centers will be the most probable type of real estate to accommodate primary plus care in an efficient way. I hope this exploratory research into a program of demands for primary plus health care centers will contribute to the application of primary plus care in practice. This report describes the Dutch health care system, current supply of curative health care, the primary plus care and the program of demands for a primary plus care with its implications for stakeholders.

The master thesis is conducted on behalf of obtaining the engineer's degree at Eindhoven University of Technology for the master Real Estate Management and Development. The research has been conducted in close collaboration with Syntrus Achmea Real Estate and Finance in Amsterdam. During the research I have been supervised by dr. Wim Heijs and ir. Stephan Maussen from the University of Technology in Eindhoven and drs. Daan Tettero of Syntrus Achmea Real Estate and Finance. I consider myself fortunate that I had the opportunity to be supervised by this team that supported me from a theoretical perspective by the university and from a practical perspective by Syntrus Achmea Real Estate and Finance. This duality has contributed to the enriching process that I have gone through.

Allow me to take this opportunity to thank a few people. First, I would like to thank my supervisors Stephan Maussen and especially Wim Heijs from the university for their critical look at my work which was very encouraging. Second, my special thanks go to my supervisor Daan Tettero from Syntrus Achmea, who gave me the chance to be a graduate student at Syntrus Achmea, provided me with useful insights and gave me the opportunity to dig deeper into the real estate market for health care. Finally, I would to thank all my family, friends and housemates for all their trust and support they gave me.

All that remains for me is to wish the reader of the report all the knowledge that I have acquired during the research.

Dirk Adriaanse

Amsterdam, January 2017
Summary
I. Introduction and problem definition

The health care market in the Netherlands is constantly evolving. The sector is exposed to several developments like a growing demand for health care, changing legislation, market forces, but mainly rising costs. The health care costs in the Netherlands have risen from 7.5 percent of the Gross Domestic Product (GDP) in 1972 to 14.1 percent in 2015. In other words, an increasing part of the Dutch economy is spent on health care. The estimates for development of the health costs show a continued increase of the costs for the coming decades. The largest debit entry within the total health costs is the curative health care, which was responsible for almost 60 percent of the total costs in 2014. The health care provided by medical specialists occupied by far the largest part of the budget for the curative care with a share of 56 percent. The care delivered by general practitioners and other primary health professionals was responsible for only 7 percent of the budget, while this health care is accountable for approximately 90 percent of the total demand for health care.

Responsibilities in the health care sector need to change to reduce the costs, for example by allocating the hospital care to general practitioners. As a consequence, a new echelon is developing at the interface of the primary and simple secondary care, which is called the ‘primary plus care’. The collaboration between the primary and secondary care provides the possibility to apply specialist care outside the hospital by integrating specialist knowledge in the primary care. There are two perspectives on the primary plus care. Firstly, the primary care is expanded by extramural specialist care, while the general practitioner still functions as a ‘gatekeeper’ to the secondary care. Secondly, the integration of the specialist care in the primary plus care relieves the secondary care.

New partnerships are established to cooperate in the new health care process, for instance between medical specialists and general practitioners. The real estate accommodating the partnerships should support the health care process as optimal as possible. The accommodation requires facilities for all the users involved in the primary plus care, like consulting rooms for medical specialists. The most probable type of real estate to accommodate primary plus health care are health care centers, which already offer a horizontal cooperation between the various primary care professions under the same roof. Therefore, it has the potential to set up a vertical cooperation with the secondary health care. This research investigates the real estate demands of primary plus health care centers and the possible implementations in practice.

The goal of this research based on the reason of the problem is:

*to gain insight in user needs and performances of primary plus health care centers with the aim of developing a functional program of demands for a primary plus health care center.*

The research question to accomplish this goal is:

- **What are the functional demands for a primary plus health care center and to what extent do the demands fit the current supply?**

The sub questions to answer the research questions are:

- What are the current developments in the curative health care?
- What is the current supply of real estate for curative health care?
- What is primary plus health care and who are the participants of primary plus health care?
- What are the functional demands for a primary plus health care center?
- What is the match between the current supply of health care centers and the program of demands for a primary plus health care center?
II. Background

Health care in the Netherlands

All Dutch civilians are legally obliged to take out standard health insurance. In return for the insurance they have the possibility to be treated by health professionals like general practitioners, medical specialists and nurse practitioners. Health care is the whole range of health providers (included auxiliary staff), institutions, resources and activities, directly associated with the preservation and improvement of the well-being. This range comes together in the health care system. The sector can be divided in health care by needs, by place of treatment, by level of treatment and by target groups.

*Health care by needs*

The first way to describe the health care is based on the needs for health care. A person has several needs for health care in his life. These needs are divided into: care during the birth, remain healthy, live with a disease or handicap and care during the end of life. Different forms of health care are linked to the needs: preventive, curative, long-term and palliative care. The preventive care focuses on remaining healthy, the curative care on healing and recovery, the long-term care on living with a disease or handicap and the palliative care on the quality of life and eventually dying.

*Health care by place of treatment*

The second way to describe health care is based on the place of treatment, which can be divided in three different ways. Firstly, there is a distinction between intramural, extramural and semi-mural health care. The distinction is based on the intensity of the care and not directly related to a health institution. The intramural care is provided to people who are hospitalized in an institution, while extramural care is without hospitalization and takes most of the times place in close proximity of the patient. Secondly, a distinction is made based on residential, ambulant and semi-residential care. Residential care means a hospitalization of 24 hours per day, whereas ambulant care has no hospitalization and focuses on patients in their home situation. And thirdly, the health care can be divided into inpatient and outpatient care, in particular concentrating on specialist care. Outpatient care aims at the care of ambulant patients without hospitalization and inpatient care is clinical care for patients that have to lay down on a bed in a health care institution.

*Health care by level of treatment*

The third way to describe the health care is by level of treatment. The aim of this classification is to order the process of the patient through the health care circuit. The intensity of the demand for health care differs for each patient and each time. To answer the demand for health care adequately and efficiently, the health care is structured as a stairway consisting of the primary, secondary and tertiary health care. This stairway is being called the ‘echeloning’ of the health care system. The echeloning is a hierarchical separation of facilities based on specialization and intensity of the health care. The patient has access to the health care system through the echelons, starting at the non-specialized primary health care. From there on, the patient has the possibility to process through the circuit to the high specialized facilities in the secondary and tertiary health care.

*Health care by target group*

The last description of health care is by target group. The health care aims at five target groups: the total population, groups of a certain age and sex, population groups with specific risk factors, disabled people and groups with a certain disease. Care for elderly or mothers with a child are examples of health care for groups of a certain age. Company health care and health care in prisons are examples of care for population groups with risk factors. This manner of dividing health care is not common in the Netherlands.
Developments in the curative health care

The most relevant developments in the curative health care are the rising health costs, ageing of society and the governmental policy. First, the health costs have been rising for decades and this starts to form an increasingly large problem for society. Important causes of the high health costs are the demographic developments, technological developments and evolving society. The largest debit entries in the curative health care sector are the care delivered in hospitals and specialist practices (32 percent) and elderly care (21 percent). These forms of health care have the highest increase in expenses in the last decade. In contrast to the specialist and elderly care, the care provided by general practitioners, dentists and paramedical health professionals are each responsible for only 3 percent of the total expenditure on curative health care.

Second, the ageing of society is characterized by an increase in the share of elderly in the total population. Since 1950 the share of elderly people in the Dutch population has been growing and prognoses show that this will continue until 2040. Moreover, the expenses on health care per capita rise along with the age and a steep increase in the expenses for health can be found from the age of 65. The combination of an ageing population with higher expenses for health care at an older age will result in a continued increase of the health costs.

And third, the governmental policy currently concentrates on limiting the growth of the health costs and substituting the care of medical specialists in the primary health care. The impact of the Zorgverzekeringswet (Health insurance law) introduced in 2006 has mixed results so far. The efficiency, freedom of choice and solidarity of the health care are under pressure due to the rising health costs. Health care professionals are therefore encouraged to substitute health care from hospitals in the primary health care with the aim of improving the quality of care, reducing the referrals, shortening the waiting lists and lower the costs for the patients.

III. Current supply

The total real estate market for health care covered 54.4 million square meters in 2010. Half of the total stock dates back from the period before 1980 and approximately one fifth has a date of construction before the year 2000. The curative sector covered of a total of 27.0 million square meters, with the primary health care as the largest segment. Within the primary health care the vast majority of the real estate (60.3 percent) is covered by buildings with a surface smaller than 2,000 square meters, while this size classification in the secondary and tertiary health care is responsible for just 2.4 percent of the total. A possible reason for this difference could lay in the scale of economies in the health care.

Primary health care

Primary health practices

Four important findings can be distinguished in the supply of primary health practices. First, most of the primary care practices are solo practices, in particular for general practitioners, dentists and physiotherapists. This could be an explanation for the fact that 60.3 percent of the real estate for primary health care has a surface of less than 2,000 square meters. Second, a tendency can be found which shows that primary health professionals of the same professions cooperate more often in the same building. The share of solo practices decreases, for instance of general practitioners, dentists and physiotherapists. Third, the number of health professionals in the primary health care has considerably increased in the past decades. This is particular the case for general practitioners and physiotherapists. Finally, most of the primary health care facilities are concentrated in the urban areas. As a result, the health facilities in the urban areas like Flevoland, Zeeland and the northern parts of the Netherlands are situated on a further distance.
Health care centers

There are two forms of multidisciplinary cooperation in the primary health care: home teams and health care centers. A home team is a structured consultation between general practitioners, neighborhood nurses, social worker and possible other professions. The professions generally operate from their own practice. A health care center is a cooperation between primary health professions in the same building.

The first health care centers in the Netherlands arose in the seventies from an idealistic vision on a neighborhood minded cooperation between a general practitioner and social workers. The centers should provide effective and efficient health care in close proximity to the patients with the result that patients would be referred less to the secondary health care. Researches in the beginning of the eighties revealed positive effects of health care centers. Positive effects were that patients were referred less often to the secondary health care and the duration of the hospitalization was shorter in comparison to practices of general practitioners that were not a part of a health care center. However, the growth of health care centers declined in the nineties because of the maximum on subsidies. The number of health care center started to grow again from the year 2000 to 360 in 2016. This was due to the reintroduction of subsidies by the government, the development of new health care centers by the umbrella organizations and the support of health insurers during the development of new health care centers.

The design of a health care center should give the patients and health professionals a feeling of being at home, while the exterior of the building has an important symbolic function as 'business card' of the cooperation between the various professions. This can be achieved through seven aspects: accordance in the degree of shared use of space, positioning of the professions in the building, accessibility of the work areas, the need for daylight and sight, the need for flexibility, wheelchair accessibility and the interior of the building. The elaboration of the building per area for a health profession is dependent on the number of employees per profession, job responsibilities and the subsequent care activities. Recently built health care center differ considerably in size, which is expressed in the number of registered patients and the floor space. The smallest center has a gross floor space of 820 square meters, 4,500 registered patients and four primary health professions established. The largest center has a gross floor space of 6,000 square meters, 30,000 registered patients, 14 primary health professions and an outpatient department of a hospital.

Secondary health care

The findings in the secondary health care concentrate on the dispersion of the current supply and the increased number of places that offer secondary health care. Simple secondary health care is allocated more often from hospitals to ambulant outpatient accommodations. The number of outpatient hospital departments and independent treatment centers have been increased in the last decades. The specialist care provided at these places is limited to consulting hours, diagnostics, laboratory facilities and simple treatments.

IV. Primary plus care

The primary plus care fades the rigid separation in the health care system between the echelons. The general goal of the primary plus care is to support general practitioners in the treatment of patients by integrating the knowledge of medical specialists in the primary care. This should improve the cooperation between general practitioners and medical specialists and in addition reinforce the gatekeeper role of the general practitioner. The most important reason for the development of the primary plus care is the expected savings in the overall health costs.

This research defines primary plus care as:

“primary care supplemented with health care on the interface of primary health care and simple secondary health care that is financed by the idea of functional fee-for-system”.
The functional fee-for-system means that it is not important ‘who’ is financed for the health care, but ‘what’ is financed regardless the health professional. The most important difference of the primary plus care in comparison to the primary care is the possibility to consult a medical specialist. This is reflected in six different elements of primary plus care.

1. **Advice of medical specialist**

   One of the elements of primary plus care is the personal advice of medical specialists to general practitioners and other primary health professionals. The advice is provided without consulting a patient and is intended to support the health professionals in their daily activities. Examples of advices are the assessment of the results from a diagnostic examination or proposals for the treatment of a disease.

2. **Consultation of medical specialists**

   To make a decent diagnosis of a patient medical specialists require to conduct a consultation. General practitioners will refer patients to a medical specialist in the primary plus care with the aim of receiving an advice for the patient. During the consulting hour the medical specialist will examine the patient, make a diagnosis and draw up a treatment plan. The medical specialist will send an advice to the general practitioner regarding the diagnosis and treatment plan. This advice should enable the general practitioner to either continue with the treatment or refer the patient to the secondary health care if the treatment is too complicated for the general practitioner.

3. **Medical intervention by medical specialists**

   The third element of primary plus care involves small surgery by medical specialists. The surgery can be performed by the medical specialist or by a general practitioner under the supervision of a medical specialist. Examples of treatments covered by the small surgery are sterilization or excisions of a cyst or lump. The surgery roughly requires medical appliances, staff and an operating room.

4. **Primary care residence**

   Primary care residence is a medically necessary short-term residence, where general practitioners provide the medical care with 24-hour supervision in proximity. The care is intended for vulnerable people who are temporarily not able to reside in their own living environment. There is no hospitalization designated for them in a hospital or other health institutions.

5. **Additional diagnostic facilities**

   Additional diagnostic facilities offer primary health professionals the possibility to perform diagnostic examinations in the primary plus care or to send patients for additional diagnostics. Currently, general practitioners in the primary health care have to send a patient to the hospital for a diagnostic examination, like a X-ray or ultrasound. The element of additional diagnostic facilities provides these facilities in a general practitioner practice or health care center. Examples of diagnostic facilities are X-ray machines, ultrasound machines, heart monitors and blood samples examinations.

6. **Treatment of chronically sick**

   The last element of primary plus care is the treatment of chronically sick by general practitioners, practice supporters and other primary health professionals. The care is substituted from the medical specialists in the primary plus care. As a consequence, patients can go to a health care center for the treatment of chronic diseases or follow-up checks instead of to the hospital. Examples of diseases that are eligible for the substitution are pulmonary diseases, diabetics and cardiovascular diseases.

The participants in the primary plus care are both from the primary and secondary health care. Patients visit primary health professionals in the primary plus care and they can be referred to a medical specialist...
within the primary plus care. The benefit for patients is the possibility to visit medical specialists in close proximity without encroaching on the deductibles. General practitioners will keep the coordination over the patient during the process in the primary plus care. The support of medical specialists reinforces the general practitioners’ role as a gatekeeper by enabling them to make better diagnoses, draw up treatment plans with more certainty and perform more treatments than in the primary care. Other primary health professionals will particularly provide primary health care, but they have the possibility to consult a medical specialist. It is expected that the cooperation will be less intensive than for general practitioners. Medical specialists are the new addition to the primary plus care in comparison to the primary care. The support of medical specialists concentrates on three possibilities: the advice to health professionals, the consultation for patients and the performance of medical interventions. Not every medical specialty will apply health care in the primary plus care. The suitability of a specialty depends on three aspects: the required diagnostic facilities, the degree of referrals to the secondary health care and the profile of the medical specialists.

V. Research method

Usual methods to analyze user needs are based on demands and desires of the users. The demands and desires are obtained in interviews by asking the users directly to their preferences regarding the building performances. Building performances describe features of the supply and is supply-driven. This research applies the User needs by Systematic Elaboration (USE) method to determine the demands for a primary plus health care center. The method focuses on a description of the demand side rather than of the supply side. The method originates from the Person-Environment (PE) fit theory, which strives to match the personal and situational variables. Good matches between people and environment result in high performance, high satisfaction and little stress.

and consists of two phases. The first phase analyzes the user needs by describing the process of use in a building based on activities. A user need is a physical or psychological state, or an activity to reach this state, that is fundamental for physiological, social and psychological well-being, associated with the process of use. The second phase couples the performances with the user needs, where a performance is an environmental property, necessary to fulfil a user need. The functional demands are the result of the coupling of a user need with a performance in a location. Finally, the aggregation of the functional demands is the functional program of demands. Figure I shows the relations between the terms regarding the USE method.

The USE method has several advantage over the usual methods. First, the description of user needs based on the process of use results in a set of user needs which are not limited to the familiar needs for the user. This prevents alternative and innovative solutions to be depreciated. Second, the user needs are more stable with the USE method. The changeability of the user needs expressed in goals and activities is lower than the user needs expressed in features of the supply. Third, the user needs are more realistic than with the usual method, because the needs are based on the process of use instead of the desires of the users.
The desires of the users will be expressed as building performances in the supply. Finally, the set of functional demands is more extensive and tailored to the actual use of building. The coupling of the user needs with the performances forms a more comprehensive set of functional demands, that offer solutions for the possible goals and activities of the user.

The research approach consists of four steps. The first step in the analysis is the determination of the possible user groups. The user groups are distinguished on fundamentally different processes of use in a building. Second, the needs of the different user groups are mapped by in-depth interviews. During the interviews the respondents are asked to describe the activities they perform as a health professional or the activities they would like to perform. All activities are combined into a list of user needs. Third, the functional demands are acquired by coupling the user needs with the building performances. The building performances are derived from a questionnaire and by literature study. Finally, the aggregation of the functional demands results in the functional program of demands. The functional program of demands will offer insight into the required demands for a primary plus health care center.

VI. Data collection

The data collection of this research started with the determination of the user groups in the analysis. The user groups included in the research are:

- general practitioners
- physician assistants
- pharmacists
- pharmacist assistants
- posture and movement paramedics
- verbal consultation paramedics
- medical specialists without additional diagnostic facilities
- medical specialists with additional diagnostic facilities

The selected user groups originate from the participants in the primary plus care and should cover the vast majority of the user needs for a primary plus health care center. The following user groups are excluded from this research: patients, dentists, diagnostic examination professionals, remaining primary health professions and non-medical staff. The choice for the analyzed user groups is based on pragmatic reason like the most frequently occurring health professions, willingness to cooperate with the research, the awareness of the possible activities and the planning.

Respondent sample

Two interviews per user group were conducted with a total of 15 interviews covering 7 user groups. The user groups ‘medical specialists without additional diagnostic facilities’ and ‘medical specialists with additional diagnostic facilities’ were combined into one group ‘medical specialists’. It was hard to convince medical specialists to participate in the research and most of the approached medical specialists were unwilling to be interviewed. Only one interview was conducted with a medical specialist. In order to generate the user needs and performances for medical specialists, two additional interviews were conducted with two managers of primary plus care centers. The two interviews per user group showed many similarities, so there seemed to be no need for a third interview per user group. The primary care respondents were employed in primary care practices and the medical specialist worked part-time at a primary plus health care center. The interviews took place in October and November 2016 in a time period of five weeks at the workplaces of the respondents. The average duration of an interview was 50 minutes.
**Procedure**

The procedure of the data collection consisted of three phases. The first phase comprised the collection of the user needs during the interviews. The data collection started by exploring the user needs in the primary care with questions like: Which activities do you perform on a daily basis? and Why do you perform the activity or what is the goal of the activity? The objective of this latter question was to explore the goals behind the activities and through that to discover additional activities related to achieve that goal. This order of questions enabled the respondents to describe as much activities as possible. Thereafter, the respondents were introduced to the primary plus care and all six elements of primary plus care. Subsequently, the procedure was repeated for the user needs in the primary plus care.

The second phase comprised the collection of the building performances. The performances are derived from the respondents and literature. A questionnaire was sent to the respondents with the elaborated user needs after the interviews. The respondents were asked to fill the questionnaire with the desired performances for the user needs in the hypothetical case that the respondents were employed in a primary plus health care center. The performances might describe rooms, furniture, installations, appliances or other characteristics of the building.

And the third phase comprised the coupling of the user needs with the performances into the functional demands. The functional demands were aggregated in a spreadsheet resulting in the functional program of demands for a primary plus health care center. The program of demands described the functional demands based on ten features: user groups, user needs, performances, type of performance, type of room, floor space, corresponding user groups, form of health care, type of health care and remarks. Table I shows an example of a functional demand in the program of demands.

<table>
<thead>
<tr>
<th>User group</th>
<th>User need</th>
<th>Performance</th>
<th>Type of performance</th>
<th>Type of room</th>
<th>Floor space</th>
<th>Corresponding user groups</th>
<th>Form of health care</th>
<th>Type of health care</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>General practitioner</td>
<td>Discuss medical history</td>
<td>Desk, office chair, patient chairs and computer</td>
<td>Furniture</td>
<td>Consulting room</td>
<td>18 m²</td>
<td>GP - MS - PMP - VCP</td>
<td>Primary care</td>
<td>Primary care</td>
<td></td>
</tr>
</tbody>
</table>

**VII. Results**

The results will give an interpretation of the collected data. The full functional program of demands consists of 315 functional demands. Table II shows the distribution of functional demands per user group and per form of health care.

<table>
<thead>
<tr>
<th>Element of primary plus care</th>
<th>Functional demands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional diagnostic facilities</td>
<td>1</td>
</tr>
<tr>
<td>Advice of medical specialist</td>
<td>8</td>
</tr>
<tr>
<td>Consultation of medical specialist</td>
<td>39</td>
</tr>
<tr>
<td>Medical intervention by medical specialist</td>
<td>20</td>
</tr>
<tr>
<td>Primary care residence</td>
<td>7</td>
</tr>
<tr>
<td>Treatment of chronically sick</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>81</strong></td>
</tr>
</tbody>
</table>

Most of the functional demands in a primary plus health care center are attributable to the primary care (234 out of 315). An additional number of 81 functional demands are added to the program of demands for a primary plus health care center. When looking at the 81 functional demands for the primary plus care, it can be said that medical specialists will perform most of the activities. More than half of the
functional demands (45) are attributable to medical specialists. General practitioners are, as expected, the primary health professionals with the most activities in the primary plus care (20 functional demands).

There are some large differences between the elements of primary plus care regarding the number of functional demands. By far the most functional demands (39 out of 81) are attributable to the consultation of medical specialists. This suggests that the consultation of medical specialists is the most demanding element of primary plus care in a health care center. Medical interventions by medical specialists account for 20 functional demands. This number is probably lower than functional demands for the consultation of medical specialists, because not all medical specialties will perform medical interventions in a primary plus health care center.

Interesting sections for stakeholders

The program of demands describes the functional demands by various features. Every feature is assigned vertically to a column in the spreadsheet and the functional demands are shown horizontally in the rows. The columns in the Excel-file are provided with a filter function. The filter function offers the possibility to display specific components of the feature, such as the functional demands for ‘general practitioners’ or the ones that take place in ‘consulting rooms’. So-called ‘sections’ of the program of demands are created by selecting a combination of filters. The sections can be used to analyze the program of demands in greater depth. This enables stakeholders to perform targeted searches. Interesting sections for primary health professionals can be found when the features user groups, type of rooms and type of health care could are combined. This provides insight into the required adaptions to their practices to prepare them for primary plus health care. Interesting sections for designers are a combination of user needs and performances. The needs provide the motivation behind the performances to the designers. And, finally, it might be interesting for developers and investors to filter user groups in combination with a type of health care. In this way, it is possible to compose a program of demands for a health care center with the desired health professions.

Additions to primary health care centers

The program of demands categorizes the functional demands per element of primary plus care. This provides insight into the additional requirements for a primary plus health care center. The elements ‘additional diagnostic facilities’, ‘advice of medical specialists’, ‘primary care residence’ and ‘treatment of chronically sick’ require functional demands that are similar to the primary care. The ‘consultation of medical specialists’ resulted in minimal required functional demands and additional functional demands for medical specialists. The minimal required functional demands describe the standard demands required by medical specialists to conduct a consultation in the primary plus care. The additional functional demands describe the required additions per medical specialty. The ‘medical interventions by medical specialists’ require facilities that are similar to the facilities in an operating room in the primary care. Some medical specialists require a few additional facilities to perform small surgery.

Problems in health care centers

The problems regarding the process of use in the building indicated by the respondents are mainly focused on the primary care rather than on primary plus care. The problems are converted in the program of demands in order to provide a solution. First, general practitioners and posture and movement paramedics indicate that not all consulting rooms are suitable for part-time use. This is reflected in the program of demands by making the performances in consulting rooms applicable to various users. Second, general practitioners and verbal consultation paramedics indicate that they prefer a separate meeting room to conduct meetings. Therefore, the performances in the functional demands for the user need ‘conduct meetings’ are located in a separate meeting room with desks, chairs, beamer and screen. Third, general practitioners experience problems with the noise disturbance in health care centers. This is reflected in the program of demands by a functional demand entailing the user need ‘prevent noise
disturbance’ and the performance ‘separating noisy and quiet places in the building’. And fourth, general practitioners want use video consultation in the future. This problem is translated in the user need: conduct video consultation. The performance coupled with this need is video screen with camera.

**Advice for development of primary plus health care center**

The development of a primary plus health care center can be roughly divided in the renovation of an existing primary health care center and the construction of a new primary plus health care center. There is a transition from renovation to construction depending on the desired program of demands of a health care center. The tipping point indicates the point at which the transition will go from renovation into construction. The tipping point is reached when the capacity of the existing building is insufficient to accommodate the additional activities. This is the case when the health care center offers more than the following elements of primary plus care: advice of medical specialists, treatment of chronically sick and the consultation of dermatology, internal medicine, neurology, orthopedics and spine specialist.

**VIII. Conclusions and recommendations**

This research is conducted with goal of gaining insight in the user needs of a primary plus health care center with the aim of developing real estate demands for a primary plus health care center. An attempt has been made to achieve this goal by answering the research question: What are the functional demands for a primary plus health care center and to what extent do the demands fit the current supply?

**Primary plus care**

The primary plus care fades the rigid separation in the health care system between the echelons. The general goal of the primary plus care is to support general practitioners in the treatment of patients by integrating the knowledge of medical specialists in the primary care. This should improve the cooperation between general practitioners and medical specialists and in addition reinforce the gatekeeper role of the general practitioner. The most important reason for the development of the primary plus care is the expected savings in the overall health costs. This research defines primary plus care as:

"primary care supplemented with health care on the interface of primary health care and simple secondary health care that is financed by the idea of functional fee-for-system”.

The functional fee-for-system means that it is not important ‘who’ is financed for the health care, but ‘what’ is financed regardless the health professional. The most important difference of the primary plus care in comparison to the primary care is the possibility to consult a medical specialist. This is reflected in six different elements of primary plus care: advice of medical specialist, consultation of medical specialists, medical intervention by medical specialists, primary care residence, additional diagnostic facilities and treatment of chronically sick.

**Program of demands**

The full functional program of demands consists of 315 functional demands. Most of the functional demands in a primary plus health care center are attributable to the primary care (232 out of 315). An additional number of 81 functional demands are added to the program of demands for a primary plus health care center. The functional demands for the primary plus care primarily come from medical specialist (45) and general practitioners (20). There are some large differences between the elements of primary plus care regarding the number of functional demands. By far the most functional demands (39 out of 81) are attributable to the consultation of medical specialists. Medical interventions by medical specialist account for 20 functional demands. The program of demands can provide some interesting insights for the stakeholders related to the development of new health care centers. The spreadsheet enables the stakeholders to perform targeted searches using the filter functions in the Excel-file.
The program of demands categorizes the functional demands per element of primary plus care. This provides insight into the additional requirements for a primary plus health care center. The elements additional diagnostic facilities, advice of medical specialists, primary care residence and treatment of chronically sick require functional demands that are similar to the primary care. The consultation of medical specialists resulted in minimal required functional demands and additional functional demands for medical specialists. The minimal required functional demands describe the standard demands required by medical specialists to conduct a consultation in the primary plus care. The additional functional demands describe the required additions per medical specialty. The medical interventions by medical specialists require facilities that are similar to the facilities in an operating room for general practitioners in the primary care. Some medical specialists require a few additional facilities to perform small surgery.

**Match between current supply and program of demands**

Based on the literature study, exploratory interviews for the primary plus care and in-depth interviews for the program of demands it can be concluded that the functional program of demands for a primary plus health care center provides a sound basis for the drafting of a program of demands for a new primary plus health care center. In total, there are 315 functional demands describing a primary plus health care center covering 7 different user groups. The functional demands can be subdivided in primary care and the six elements of primary plus care. This enables stakeholders of a primary plus health care center to draft a program of demand that is adjusted to the desired supply of health care services.

The current supply of curative primary health care is primarily aimed at the provision primary health care. Approximately a quarter of the functional program of demands for a primary plus health care center is attributable to the primary plus care. This can be applied in the existing supply to a certain extent. If the primary plus health care center wants to offer more than the advice of medical specialists, treatment of chronically sick and the consultation of dermatology, internal medicine, neurology, orthopedics and spine specialist, the advice is to construct a new building.

**Recommendations**

The policy recommendations concentrate on health care institutions, designers, developers and investors. The program of demands offers health care institutions and professionals insight in the functional demands per element of primary plus care. The functional demands entail user needs described as activities, which can be used for internal control of health processes and thus better performances. Designers can use the program of demands as a basis for the design of a health care center. The program of demands provides the motivation behind the performances resulting in better design for health care centers adjusted to the needs of the users. Developers can apply the program of demands at an early stage of the development which should increase the chance of a successful realization of the project. Primary plus health care centers are interesting projects for investors due to the expected growing demand.

The interesting proposals for further research are an extension of the user groups, shared use of spaces and relations and positioning in the building of health professions or rooms. These research should result in a more extensive program of demands for primary plus health care centers. The fee-for-system is a possible topic for further research on the financing of the primary plus care.

Finally, the reflection on this research revealed some considerations. First, the lack of studies on the primary plus care caused some delay in the process. Second, the user needs of the respondents will be more adjusted to primary plus health care centers, when the respondents are more up to date of the possibilities and advantages of the primary plus. And third, the functional demands of medical specialists are based on one interview with an Ear Nose Throat specialist and two interviews with managers of primary plus health care centers. Perhaps some more interesting user needs or other information would arise from additional interviews with medical specialists.
Introduction
The first chapter provides an introduction to the research. The chapter starts with the reason for this research with the current developments for curative health care, the primary plus care and the current real estate supply. Subsequently, the problem definition is discussed with the goal and research questions. Thereafter, the chapter consecutively addresses the research plan, demarcation, relevance, Syntrus Achmea and reader’s guide.

1.1 Reason

The health care market in the Netherlands is constantly evolving. The sector is exposed to several developments like a growing demand for health care, changing legislation, market forces, but mainly rising costs. Responsibilities in the health care sector need to change to reduce the costs, for example by allocating the hospital care to general practitioners. As a consequence, new partnerships are established to cooperate in the new health care process, for instance between medical specialists and general practitioners. The real estate accommodating the partnerships should support the health care process as optimal as possible. This research investigates the real estate demands of health care centers and the possible implementations in practice.

1.1.1 Developments

The Netherlands has been a leader for years in the field of health care in Europe. According to the report of the Euro Health Consumer Index, the Dutch health care system was considered to be the best of Europe in 2014 (Health Consumer Powerhouse, 2015). The performance is the result of a broad selection of health care insurers, the co-determination of patients in the process and the high accessibility of health care. The health costs in the Netherlands, however, are rather high. The collective expenditure for health care have risen from 7.5 percent of the Gross Domestic Product (GDP) in 1972 to 14.1 percent in 2015 (Ewijk, Horst & Besseling, 2013; CBS, 2016). In other words, an increasing part of the governmental expenses is spend on health care. This means that there is less budget for other governmental departments. A study of CBS (2015) showed that in 2014 the Netherlands, together with Germany and France, spent the highest percentage of the GDP (11.1 percent) on health care in Europe, according to the international definition of health costs (Strien & Bhageloe-Datadin, 2015). The international number for health costs as a percentage of the GDP is lower than the Dutch number for the reason that large parts of the long-term care is not covered in the international number. In the Netherlands the main part (9.7 percent) of the 11.1 percent of the GDP is financed by the government from public resources, while this is considerably lower in Germany (8.4 percent) and France (8.6 percent). Worldwide, the United States of America was the only country in 2014 that spent a higher percentage of the GDP on health care (16.4 percent). However, the amount financed by the government from public resources (7.9 percent of the GDP) was quite average for a prosperous country. Hence, the Netherlands spend a large amount of the collective expenses on health care and this amounts continues to increase.

The largest debit entry within the total health costs in the Netherlands is the curative care, which was responsible for almost 60 percent of the total costs in 2014 (Strien & Bhageloe-Datadin, 2015). The curative care is concerned with the healing of those who are in need of health care with activities like medical care, rehabilitation and the short-term nursing and treatment (Londen & Vos, 2001). The health care system in the Netherlands can be divided in primary, secondary and tertiary care, which is called the echeloning (Gezondheidsraad, 2014). The primary care is directly accessible for general health care and is delivered by health professionals like general practitioners, psychologists, physiotherapists, dentists and obstetricians. The secondary care is accessible after a reference by a primary health professional and is concerned with specialist care. This includes outpatient care, mental health care and specialized youth care. The high specialist care is provided in the tertiary care in institutions for top clinical care (Gijsen, Oostrom & Schellevis, 2013). The curative care comes under the Health care insurance law (‘Zorgverzekeringswet’) since 2006 and all Dutch citizens have the right to a primary health care package due to this law (VWS, 2016). The specialist care occupied by far the largest part of the budget for the curative care with a share of 56 percent, followed by the pharmaceutical care (12 percent) and mental
health care (10 percent). The care delivered by general practitioners and other primary health professionals was only responsible for 7 percent of the budget (Strien & Bhageloe-Data din, 2015). At the same time, the general practitioner care is accountable for 90 percent of all the demand for health care, as quantified by the Dutch institute for research in health care (NIVEL) (Wiegers et al., 2011). In conclusion, the curative health care, particularly the specialist health care, is responsible for a largest amount of the health care costs in the Netherlands.

Another cause of the high health costs is the ageing of society. The Dutch population has been ageing since halfway the last century and this will continue in the coming decades. The ageing of society is characterized by an increase of the share of elderly people in the total population (Dam et al., 2013). A forecast of the Central Statistics Office (CBS) shows that the share of people aged over 65 will increase from 16 percent in 2013 to 25 percent in 2040 (Duin & Garssen, 2011). This results in an increase of 1.2 million elderly people to a total of 4.6 million. Moreover, the life expectancy is expected to rise in the coming decades (Stoeldraijer, Duin & Janssen, 2012). These two developments together are called the 'double' ageing of society (Doehkie et al., 2014). The health care costs per person rise together with the age, which results in relatively high health costs for elderly (Strien & Bhageloe-Data din, 2015). The combination of a rising share of elderly people in the Netherlands with the higher costs for health care at a older age results in a rise of the total costs. The costs for the health care of elderly people are primarily attributable to the long-term care, which is concerned with the nursing of chronically sick people. This includes health care activities like nursing, support and treatment (Londen & Vos, 2001).

The Dutch governmental policy should to guide the health care system. The government attempts to control the total health costs and at the same time guarantee the quality of the health care. An important governmental decision to control the costs is the encouragement of 'substitution' of health care. Substitution is "the replacement of an (share of) existing facility for an (share of) other facility whereas the original function must remain with a similar patient population" (Bakker et al., 2013, p.9). The most applied form is the substitution of the specialist secondary care in the general primary care (Rutte & Samson, 2012). The goal of the substitution policy is to prevent the usage of expensive secondary care and to reduce the costs for specialist care in the curative sector. The primary and secondary health professionals will cooperate outside the secondary care institutions, like hospitals. As a result, primary health professionals will provide a wider range of treatments due to the support of medical specialists. The substitution of care can be encouraged by the use of new technologies or professionals that function as a mediator between the primary and secondary care (De Friesland, 2014). New collaborations will arise where the general primary care together with various medical specialist provide health care under the same roof.

The developments will trigger a modification in providing health care. Primary health professionals will provide new treatments and some of these treatments will be the result of the new cooperation, like specialist care outside hospitals in close proximity to the patients home. In the future it could be possible to temporarily stay over in a local health care center for vulnerable people or after a treatment in a hospital. It is therefore important to identify the new health care activities in order to analyze the real estate demands in a health care center.

1.1.2 Primary plus care

In the previously described developments it becomes clear that the rigid separation of the echeloning is diminishing. A new echelon is developing at the interface of the primary and simple secondary care, which is called the 'primary plus care' (Vervloet et al., 2015). The collaboration between the primary and secondary care provides the possibility of specialist care outside the hospital due to the integration in the primary care. There are two perspectives on the primary plus care. Firstly, the primary care is expanded by extramural specialist care, while the general practitioner still functions as a 'gatekeeper' to the secondary care. Secondly, the integration of the specialist care in the primary plus care relieves the secondary care (Pop, 2015).
The new step in the echeloning results in a new allocation of health care activities. Medical specialists provide care outside the hospital and primary care givers have the possibility to treat more diseases with the support of medical specialists. The NIVEL has done research in 2013 on the allocation of care from the secondary care in the primary care. The care most suitable for the allocation was the treatment of light psychical or emotional complaints, small surgery and dermatological care (Bakker et al., 2013). The primary plus care does not only concentrate on taking over treatments of the secondary care, it offers possibilities for integrated care as well, like primary care residence. Patients can stay over at primary care residence after a treatment in the hospital or elderly can temporary stay after an accident. An intramural hospitalization can be prevented with the general practitioners bed and patients can recover from their treatment in an extramural environment closer to their home (De Friesland, 2014). The expenses for a night in a primary care institution like a general practitioner are most probably lower than in a secondary care institution like a hospital. Other possibilities of integrated care provision in the primary plus care are consults of medical specialists, specialist nursing and a small operating room.

### 1.1.3 Current real estate supply

The accommodation for the primary plus care should support the health care process as optimal as possible. This will require facilities for primary and secondary health professionals. Primary health professionals will require facilities to cooperate with, for example, medical specialists. And secondary health professional perhaps require examination or operating rooms to provide health care. In order to keep the costs of the health care down, the primary plus care will most probably be located outside hospitals. It is therefore important to get a clear understanding of the current real estate supply of primary care.

The types of real estate of primary care can be divided into practices, general practice centers and health care centers. A practice houses one specific discipline of the primary care, like general practitioners, physiotherapists, dentists or pharmacists. There is no cooperation of multiple primary care disciplines in a practice. Thus, it will be nearly impossible to apply integrated primary plus care in practices. The same applies to the general practice centers, where general practitioner care is provided after office hours (NIVEL, 2015).

According to the definition of CBS, a health care center provides “health care delivered by an institution or partnership without an overnight stay, where various primary care disciplines provide care, such as general practitioners, social worker, neighborhood nurses, physiotherapists and pharmacists” (CBS, 2016). Horizontal cooperation takes place between the various primary care disciplines under the same roof. For that reason, a health care center is a good example of cooperation in the health care sector. The cooperation currently concentrates on the primary care, while it has to potential to set up cooperation with the secondary care. The question arises as to which demands does a health care center needs to meet to house the future health care activities of the primary plus care? To answer this, a research is needed to the real estate demands for health care centers.

### 1.2 Goal and research questions

Due to the rising health costs there has been a quest to bring down the costs. One of the possible ways is by integrating the specialist care with the primary care in the primary plus care. In this way the costs of the more expensive secondary care are reduced. The integrated care can take place in a primary plus care center where both primary and secondary care is provided. The real estate should support the health care activities as optimal as possible. This research concentrates on the user needs and real estate demands of primary plus care centers.

The goal of this research based on the reason of the problem is:

*to gain insight in user needs and performances of primary plus health care centers with the aim of developing a functional program of demands for a primary plus health care center.*
The research question to accomplish this goal is:

- What are the functional demands for a primary plus health care center and to what extent do the demands fit the current supply?

The sub questions to answer the research questions are:

- What are the current developments in the curative health care?
- What is the current supply of real estate for curative health care?
- What is primary plus health care and who are the participants of primary plus health care?
- What are the functional demands for a primary plus health care center?
- What is the match between the current supply of health care centers and the program of demands for a primary plus health care center?

1.3 Research plan

To be able to answer the research question it is necessary to work systematically. Various research methods are used to collect information. In this paragraph the research plan is discussed, which is depicted in figure 1.
The research starts with a research to the background on the problem by the means of a literature research. The research on the background concentrates on the one hand on the Dutch health care system and the developments in the curative health care and on the other hand on the current supply of real estate for the curative health care. The mapping of the current supply of real estate will create more insight in the possibilities of integrating the primary and secondary care. In this manner, a broad background knowledge is developed for the research, which can subsequently be used to go into more depth in the problem.

The primary plus care is a relatively new development in the Dutch health care sector. Therefore, it is important to define the primary plus care precisely in order to apply the correct concept to the health care centers. The integration of the primary and secondary care creates a new process in the primary plus care. By defining the primary plus care based on the process it will be possible to discover who will be the users. The user needs will be established with the User needs by Systematic Elaboration (USE) method developed at the University of Technology Eindhoven (Heijs, 2007). This method identifies the user needs based on the usage process. The user needs will be used to draw the real estate demands for health care centers. The data will be gathered with the use of literature research and in-depth interviews with the future users.

The real estate demands arise from a combination of the demand for and supply of primary plus care centers. The USE method offers a way to draw the real estate demands by combining the user needs of all the future users with the building performances that are necessary to meet the user needs. The building performances will be drawn by interviews with users and designers. The real estate demands are combined in a spatial program of demands of a primary plus care center. The spatial program functions as a guideline to uncover the extent of the match of the current supply and the future demand. This match can be useful for developing a program of demands for a health care center.

1.4 Demarcation

The health care market in the Netherlands has a unique system and therefore the research is demarcated to the Dutch health care. The health sector can be divided in the curative and long-term health care (Boot, 2013). The research will focus in particular on the curative health care. The long-term care is not included in the data collection, because this type of health care is usually not offered in health care centers. The literature study on the background of the problem will describe the full health care sector, but concentrates on the curative care. Health care centers are the most probable form of real estate to accommodate the primary plus care. The data collection will be limited to the (future) users of health care centers in order to explore the user needs based on the process of use. Designers, developers, investors and contractors are thus excluded from the data collection.

1.5 Relevance

The scientific relevance of this research primarily concentrates on the new knowledge that is acquired on the primary plus care. The primary plus care is a recent development in the Dutch health care sector and little scientific research has been done on this subject so far. This research attempts to clarify the primary plus care in general and to give insight in the supply and demand for primary plus health care centers. Moreover, the program of demands will entail user needs coupled with performances. The user needs provide the motivation for the performances, which is currently not often the case in program of demands. This should lead to better designs and building are better tailored to the needs of the users.

The societal relevance of the research concentrates on the possibility to apply the program of demands for a health care center in practice. The main reason for the development of the primary plus care is the high health costs in the Netherlands. The care can provide a solution to control the budgets. In order to successfully implement the concept, knowledge is needed on the real estate demands. This research gives
an insight into the applicability of the primary plus care in health care centers to, for instance, health care organizations, developers and designers.

1.6 Syntrus Achmea

The research has been conducted in close cooperation with Syntrus Achmea Real Estate and Finance. Syntrus Achmea is an investment manager specializing in real estate and mortgage investment for institutional investors. With assets under management of more than EUR 16 billion, Syntrus Achmea is the largest real estate and mortgage manager in the Netherlands. The focus is on achieving stable income returns and long-term capital appreciation by value-enhancement strategies through active asset management. The company has a development department for several real estate markets including health care. Developed projects for health care are, for example, health care centers, dwellings for elderly or other people with a need for health care and accommodations for intramural health care. Syntrus Achmea is interested in the development of primary plus care and the opportunities for health care centers. Therefore, the cooperation was established for this research.

1.7 Reader’s guide

This first chapter has given an introduction to research. The chapter started with the reason for the research with the current developments for curative health care, the primary plus care and the current real estate supply. Subsequently, the problem definition is discussed with the goal, research questions and research plan.

The second chapter covers the background of the research. The goal of this chapter is to gather background knowledge in order to interpret the research. The chapter starts with an explanation of the health care sector in the Netherlands. The chapter ends with the most relevant developments for the curative care are discussed: regarding the rising health costs, the ageing of society and the governmental policy.

The third chapter covers the current supply of the primary and secondary health care. First, the general real estate market for health care is discussed with a definition and floor spaces. Second, the primary care is determined with an emphasis on health care centers. And the chapter ends with the secondary health care.

The fourth chapter explains the primary plus care in more detail based on a definition, the health process, the users and the financing. The goal of this chapter is to provide background information for developing a program of demands for a primary plus health care center.

The fifth chapter provides insight in the used research method with definitions of the terms, concepts and procedure. The used method differs from usual user needs analysis method, so the advantages are briefly discussed.

The sixth chapter This chapter discusses the data collection and the results of the research. First, the selected user groups are determined. The data collection covers the respondent sample and the procedure for the data collection. Subsequently, the results give an interpretation of the data by addressing the conspicuous user needs, lay-out of program of demands, overall results, interesting sections for stakeholders, additions to primary plus care, problems indicated by the respondents and differences for the primary health care. The chapter ends with an advice for the development of a new primary plus health care centers.

The seventh chapter draws the conclusions of the report by providing an answer to the research questions. The chapter subsequently covers the recommendations divided in policy recommendations, proposals for further research and a reflection on the research. The report ends with the literature list and the appendices.
Background
The second chapter covers the background of the research. The goal of this chapter is to gather knowledge in order to interpret the research. The chapter starts with an explanation of the health care sector in the Netherlands. The health care is divided into four different categories: based on needs, place of treatment, level of treatment and target groups. Subsequently, the most relevant developments for the curative care are discussed: regarding the rising health costs, the ageing of society and the governmental policy.

2.1 Health care in the Netherlands

All Dutch civilians are legally obliged to take out standard health insurance. In return for the insurance they have the possibility to be treated by health professionals like general practitioners, medical specialists and nurse practitioners. Health care is “the whole range of health providers (included auxiliary staff), institutions, resources and activities, directly associated with the preservation and improvement of the well-being and/or independence and reducing, stopping, compensating and preventing the shortage of it” (Berg et al., 2014, p.16). This range comes together in the health care system. The Dutch government has the task to guarantee the public interests with the aim of offering access to health care for all Dutch citizens. Moreover, the government has to monitor the affordability of the health care for the society (Berg et al., 2014). A distinction for health care based on Gijssen, Post and Verheij (2013) is used in this research to explain the health care system in more detail. The sector is divided in health care by needs, by place of treatment, by level of treatment and by target groups.

2.1.1 Health care by needs

The first way to describe the health care is based on the needs for health care. A person has several health care needs in his life. These needs are divided by Gijssen et al. (2013) into: care during the birth, remain healthy, live with a disease or handicap and care during the end of life. Different forms of health care are linked to the needs: preventive, curative, long-term and palliative care. The preventive care focuses on remaining healthy, the curative care on healing and recovery, the long-term care on living with a disease or handicap and the palliative care on the quality of life and eventually dying. There is no clear distinction between the different forms of health care. It is possible that a certain type of health care activity comes under multiple forms, like for instance: parts of the mental care are both curative and long-term care. The four different forms of health care will be discussed in this paragraph.

2.1.1.1 Preventive care

Preventive care has the goal to prevent people from becoming ill or to detect diseases as early on as possible. This can be accomplished by advancing a healthy lifestyle and protecting the health of the population (Post et al., 2013). National and local governments, health professionals, well-being organizations and other parties cooperate in the preventive care (Berg et al., 2014). Only 2.5 percent of the total spending on health care was occupied by the preventive care in 2014 (CBS, 2015a). That is just a small fraction of the Dutch health care system. The main target group of preventive care is patients who need extra protection or have a higher risk of catching a disease due to a certain life style. In accordance with Meijer and Hamburg-van Reenen (2011), there are four different preventive care activities based on the stage of the disease. First, the universal prevention focuses on actively advancing and protecting the health of the healthy population. Second, the selective prevention attempts to prevent illness of people with one or more risk factors (determinants) for a specific disease. Third, the indicated prevention faces starting complaints to prevent them from aggravating into a disease. Finally, the goal of health care related prevention consists of preventing an existing disease from leading to complications, disabilities, a lower quality of life or even death.

Preventive care activities occur in all the health care sectors, according to Post et al. (2013). In the hospital, for example, there are departments consulting in stop smoking and preventing cardiovascular diseases. Employees in the home care provide preventive health care by signaling risks in the field of nutrition intake, medicine usage or loneliness. Prevention is an important pillar in the dental care with activities like periodic checks, preventive interventions and advices for self-care. General practitioners are
considered to be the first and most suitable health professionals in providing preventive care to his patients. Individual preventive care is one of the core tasks of the general practitioner due to the close relation between the general practitioner and the patient. Drenthen and Busch (2011) mention that the practice of general practitioners is an important setting for preventive care because of the low threshold and the continuity of contacts with patients.

2.1.1.2 Curative care

People have a need for health care when they have become ill or have health problems. The curative care deals with the healing of care-dependent patients aiming at recovery. The care consists of medical care, rehabilitation and the associated nursing and treatment. Most of the time, the care is delivered in hospitals, practices or health care centers (Londen & Vos, 2001). Forms of health care are for instance general practitioner care, dental care, physiotherapy, pharmaceutical care, ambulance care and hospital care. With a share of 58 percent in 2014 the curative care is the largest sector in the Dutch health care system (Berg et al., 2014).

A distinction can be made within the curative care between acute and non-acute care. Acute care is “all care that cannot wait for the next possibility on working days to consult a general practitioner or other health professional” (NPCF, 2006, p.5). A person has a need for acute care when there is a chance for health damage or death, but also in the case of severe pain, serious discomfort or anxiousness. In the majority of the cases the patients will use an ambulance service, the emergency room of a hospital (ER), general practice service or a general practitioner for treatment of acute care (Berg et al., 2014). The non-acute care is the regular curative care that is less urgent and the patient is able to wait for the next possibility to consult a health professional.

The curative care has been covered by the 'Zorgverzekeringswet' (Health insurance law) since 2006. The Zorgverzekeringswet is enacted by the government with the purpose of setting the public conditions for the system (VWS, 2016). Although the Dutch citizens are legally obliged to take out standard health insurance, they are free in choosing their own insurer. The insurers, in turn, are legally obliged to accept every citizen for an insurance irrespective of their health conditions. The price of the offered insurance policy should be the same for every insured person irrespective of their health conditions, age and background. The health insurers have a duty of care causing them to guarantee that the care in the insurance policy is available to all their insured policy-holders. The health professionals, insurers and insured policy-holders come together in the health care market with the government in a supervisory role. The market with the interrelationships is depicted in figure 2.

![Figure 2: Schematic view of Dutch health care system (edited to Berg et al., 2014)](image-url)
The market forces in the health care system are regulated by the government. Holtkamp (2013) describes the market forces as a way to stimulate the match between the supply and demand in the health care market. The aim of the market forces is to offer more freedom of choice, an improved price-quality ratio and more and improved products for users. The goal of the system is to balance the patients, insurers and health professionals with the use of market forces (Zwart, 2014). Three different markets have arisen between the involved parties: the health insurance market, the health purchasing market and the health provision market.

1. Health insurance market

The obligatory insurances for Dutch citizens created a competition for policy-holders. Health insurers compete for policy-holders on the health insurance market based on the price and content of their insurance policies. Policy-holders have annually the chance to change their policy or insurer. There is a possibility for policy-holders to insure themselves with a supplementary insurance for health care that is not covered by the basic insurance. The content of the basic insurance is set up by the Ministry of Health, Welfare and Sport with the advice of Zorginstituut Nederland. Health insurers are not able to compose their basic policy. They do have the possibility to compose the content of the supplementary insurances and set the prices of the policies (Zoutenbier, Douven & Bijlsma, 2015). Health insurers separately conclude contracts with health professionals resulting in differences in the content of their policies.

2. Health purchasing market

The contracts concluded between health professionals and insurers created the health purchasing market. Health insurers act as an intermediary agent between the insured policy-holders and health professionals in the Dutch health care market, as can been seen in figure 2. Health insurers buy as an intermediary agent health care services from health professional for their insured policy-holders. The contracts guarantee the access to health care for the insured policy-holders (Zoutenbier et al., 2015). As long as the insured policy-holders are not limited in the supply of health care, the insurers have the possibility to be selective in contracting health professionals. The contracts contain agreements of the quality, volume and price of the health provision (Ruwaard et al., 2014). The negotiations on the content of the contracts should lead to beneficial policies for the insurers. Insurers do not have to conclude a contract with all health professionals. In the conditions of the insurance policy can be incorporated that the care of non-contracted health professionals is just partly compensated. This should stimulate the health professionals to compete based on price and quality (Berg et al., 2014).

3. Health provision market

Health professionals and policy-holders/patients come together in the health provision market. Patients who have a need for health care can visit a health professional on the health provision market. A patient is reasonably free in the choice for a health professional, but the insurance policies have a slight influence on the choice. This is the result of the contracts concluded by the insurers. It is possible that patients choose less frequent for a non-contracted health professionals, because the care is just partly compensated. If patients make a deliberate choice for a health professional by traveling a further distance for care with a higher quality, then competition should be increased in the health provision (Varkevisser, Polman & Geest, 2006). Given the intermediary role of the insurer covering the costs of treatments, there are less market forces in the health provision market.

Financing of curative care

The costs of curative care are being financed by all the policy-holders. The revenues for the curative health care can be divided into two separate kinds of funding, according to the Ministry of Health, Welfare and Sport (VWS, 2016). The first funding is an insurance premium paid by all the policy-holders older than 18 years. This premium per policy-holder was on average € 1,200 per year in 2016. Aside from the premium, the policy-holders pay an obligatory deductible which was € 385,- in 2016. The costs for the insurance of
children up until 18 years are financed by the government from the public resources. The second funding is an income-dependent contribution by the employers. This funding is similar in order of magnitude as the yearly premium paid by policy-holders. The income-dependent contribution by employers and the governmental contribution for the insurance of children up until 18 years are deposited in the Zorgverzekeringsfonds (Health insurance fund).

Health insurers are obligated to accept all citizens irrespective of their health conditions. As a consequence, it is possible for an insurer that the composition of the policy-holders has a high risk profile. The accessibility of the health care could be endangered when insurers charge high premiums for policy-holders with a high risk profile, like elderly or chronically ill people. The premium, however, is equal for everybody, irrespective of their health conditions, age or background. The risk equalization financially compensates insurers with an unfavorable risk profile. The insurers receive an annual contribution out of the Zorgverzekeringsfonds for the risk equalization based on the composition of the policy-holders (VWS, 2007).

2.1.1.3 Long-term care

The long-term care concentrates on the nursing of chronically ill people. The nursing takes place in for example nursing homes, institutions for disabled people or at home. Health care activities belonging to the long-term care are nursing, caring, supporting and accompanying carried (Londen & Vos, 2001). Since 1 January 2015, the long-term care is not covered by the Algemene Wet Bijzondere Zorg or AWBZ (General Law of Special Health care) anymore and has been transferred into three laws: Wet Langdurige Zorg, Wet Maatschappelijke Ondersteuning and Jeugd Wet.

Wet Langdurige Zorg

The Wet Langdurige Zorg or Wlz (Law long-term care) replaces the AWBZ for the largest part. The care covered by the Wlz concentrates on vulnerable patients who need permanent supervision or 24-hour care in close proximity, like elderly with dementia, people with severe mental or physical disabilities and people with long-term psychiatric diseases (VWS, 2016). The eligibility criteria for long-term care are expressed in an indication given by the Centrum Indicatiestelling Zorg (CIZ). The indications show the level of care-dependence of a patient. The care is delivered in health care institutions or by home care services. The long-term care is split up in three compartments elderly care, mental care and disabled care.

First, elderly care focuses on elderly with one or more chronic diseases and is divided in home care, caring home care and nursing home care, according to Boot (2013). Home care is provided in the home situation of the elderly with care activities like, physical hygiene, nursing activities, administering medicines or ergotherapy. The care is provided by neighborhood health professionals, nurses and therapists. Nursing and caring homes provide health care for elderly in institutions. The caring homes offer a supporting living environment for care-dependent elderly. The elderly live independently in an self-contained apartment or an apartment bounded to a health institution, with the possibility to access health care 24 hours per day. The most intensive form of elderly care is the care provided in nursing homes and concentrates on the patients who are not able to live independently because of their care-dependence. The elderly live in nursing homes that offer nursing, medical, paramedical and psychosocial care provided by medical specialists, nurse practitioners and therapists.

Second, the mental health care (Geestelijke Gezondheids Zorg or GGZ) offers help to people with mental disorders or severe psychosocial problems. The GGZ is characterized by the application of medical and social health care provided by psychiatrists, psychotherapists, psychologists, gerontologists, pedagogues and social workers. General tasks and interventions of the GGZ are coping with diseases, limiting the consequences of diseases, preventing decline and counseling. Moreover, help is offered to deal with the limitations of diseases and to reintegrate in society in social and general functioning. A distinction can be made within the GGZ according to Boot (2013) based on the place of treatment. The first type of GGZ is in the home situation where patients live independently and have contact with psychiatrist in a practice or
institution. The second form of GGZ is for patients for whom care in a home situation is insufficient and hospitalization in an institution is not necessary yet. Examples of these health care facilities are psychiatric part time treatments or a protected living environment. The third form is for patients with a 24 hours care-dependence concerning treatment and nursing. The care can be provided in a department or clinic of a psychiatric or general hospital.

Third, disabled care is the care for patients with a physical or mental disability. Boot (2013) describes disability as “a handicap of a person as a consequence of a disorder or impairment, that limits or prohibits the regular way of living of the one concerned” (p.281). Examples of physical disabilities are motorial, sensible, organ or speak disabilities. Mental disabled have a mental limitation due to a cognitive deficiency that creates a struggle to fully function in society.

The long-term health care is financed by the Fund long-term care managed by the Zorginstituut. The fund is filled by a legal national insurance paid by the citizens through income-dependent premium. The level of the premium is based on a fixed percentage of the income. This was 9.65 percent in 2016 over an amount of maximum €33,589 (VWS, 2016). Aside from the income-dependent premium, the fund is financed by deductibles from the users of the long-term care, again income-dependent. In case of a fund shortage, the government complements the fund from public resources.

**Wet Maatschappelijke Ondersteuning**

Since the introduction of the new Wet Maatschappelijke Ondersteuning or Wmo (Law societal support) in 2015, municipalities bear more responsibilities in the support of people who struggle to participate in society, are not self-sufficient or have a need for a protected living environment or day care (VWS, 2016). The law is intended for people with a physical, mental or psychological limitation, disabled people and elderly. The purpose of the law is to stimulate these people in participating in society and enable them to live independently as long as possible. The tasks of the municipality cover a wide range of care activities and should offer an individual approach for every care-dependent person. Examples of care activities are counseling, help in household, support by an informal caregiver, day care for people who were victim of domestic violence, societal day care or a financial support for people with high health care costs.

Another possibility of care financed by the Law societal support is an adaption to a house which should support people with a physical, mental or psychological limitation. The aim of the adaption is to create a living environment in which the person is able to live independently for a longer period. The adaptions can differ from a brace assemble on the wall in the toilet or shower to a fully extension of the house (Rijksoverheid, 2016).

The law is financed by the Municipality fund provided by the government. The municipalities are free to spend the financial resources on health care, as long as the care supports people who struggle to participate in society. Aside from the fund, the users of the care pay a deductible for the care they provide.

**Jeugd Wet**

Municipalities also bear the responsibility for the support, help and care of youth and their family. The health care is intended for children and families who face problems with growing up, education, psychological behavior and disorders. The responsibility has been with the municipality since the introduction of the Jeugd Wet (Youth Law) in 2015. The tasks for the municipality vary from general prevention to specialized voluntary or compulsory care. The costs of the care are financed by the national government to the municipalities.

### 2.1.1.4 Palliative care

Palliative care is the care associated with the need for care at the end of the life of a patient who suffers incurable illness. The care runs from disease aimed palliation until the aftercare of family and friends of
the deceased patient. Disease aimed palliation concentrates on the prolonging of life and the preventing of symptoms of the disease. The care will emphasize more on the alleviating of the symptoms and the improvement of the quality of life, if it becomes clear that the death of the patient comes closer due to the continuation of the disease (Berg et al., 2014). Most of the time, the care is covered by the curative and long-term care and is part of the regular health care. Providers of the care are general practitioners, nurses and medical specialists in for example elderly or palliative care.

### 2.1.2 Health care by place of treatment

The second way to describe health care is based on the place of treatment. According to Boot and Knapen (2005) health care based on the place of treatment is divided in three different ways. Firstly, there is a distinction between intramural, extramural and semi-mural health care. The distinction is based on the intensity of the care and is not directly related to a health institution. Intramural care is provided to people who are hospitalized in an institution and stay over for a period longer than 24 hours (Thesaurus, 2016a). The care takes place in health care institutions like hospitals, nursing homes and institutions for people with a mental disability. On the contrary, extramural care is without hospitalization and takes most of the times place in the close proximity of the patient (Thesaurus, 2016b). Examples of extramural health accommodations are health care centers, general practitioner practices and outpatient hospital departments. Semi-mural care can be found between the intramural and extramural care. The care concentrates on those for whom extramural care is insufficient and intramural care is not necessary (Thesaurus, 2016c). All temporary living facilities, crisis centers, day care centers and institutions for part time treatments are covered by the semi-mural care. Secondly, health care by place of treatment is divided based on a distinction of residential, ambulant and semi-residential care. Residential care means a hospitalization of 24 hours per day, whereas ambulant care has no hospitalization. Ambulant care focuses on patients in their home situation, like home care and general practitioner care. Semi-residential care means a temporary hospitalization in an institution or neighboring dwelling. Thirdly, the health care can be divided into inpatient and outpatient care, mainly concentrating on specialist care. Outpatient care aims at the care of ambulant patients without hospitalization. The care is delivered in facilities close to the patient, but not at the home situation of the patient. Inpatient care is clinical care for patients that have to lay down on a bed in a health care institution like hospitals.

### 2.1.3 Health care by level of treatment

The third way to describe the health care is based on the level of treatment. The aim of this classification is to order the process of the patient through the health care circuit. The intensity of the demand for health care differs for each patient and each time. To answer the demand for health care adequately and efficiently, the health care is structured as a stairway consisting of the primary, secondary and tertiary health care. This stairway is being called the ‘echeloning’ of the health care system (Gezondheidsraad, 2014). The echeloning is described by Boot and Knapen (2005) as hierarchical with a strict separation of facilities based on specialization and intensity of the health care. The patient has access to the health care system through the echelons, starting at the non-specialized primary health care. From there on, the patient has the possibility to process through the circuit to the high specialized facilities in the secondary and tertiary health care. The facilities in the echelons are adapted to the changing demand for health care following the health care process.

**Primary health care**

The general, communal care is delivered in the primary health care. Primary health care is directly accessible and ambulatory, which means that the care is outpatient and in close proximity of the patient. Primary health care is provided by several groups of professions, according to Boot (2013). The professions are categorized in: general practitioners, dentists, pharmacists, obstetricians, psychologists, paramedics, assisting professions and home care services. Although the professions all have their own organization, there is a strong cooperation between the professions. An example of this cooperation can
be found in health care centers where disciplines like general practitioners, neighborhood nurses, social workers, physiotherapists and pharmacists cooperate multidisciplinary.

General practitioners are commonly the first point of call for patients in the primary health care. For this reason general practitioners are being called the ‘gatekeepers’ of the health care. The medical competences of general practitioners concentrate on recognizing and treating common diseases. Acute health care, however, is delivered by ambulance or emergency care. The common health care process starts most of the cases at the general practitioner, who focuses likewise on prevention and long-term care. In the majority of the instances, the general practitioner is able to provide the health care himself or one of the assistants. If this is not the case and there are doubts concerning the diagnosis and treatment, the general practitioner will refer the patient to another discipline in the primary health care or cases to the secondary health care. Furthermore, all primary health professionals are accessible without a reference, secondary health professionals, on the contrary, are only accessible with a reference.

Secondary health care

Secondary health care contains medical specialist care accessible by a reference of a health professional from either the primary or secondary health care. Facilities of secondary health care are generally located on a further distance than primary health facilities due to the concentration of specialist knowledge and facilities. Secondary health care concentrates on both curative and long-term care.

The curative care takes most of the times place in hospitals where care facilities are concentrated for the purpose of research, treatment and nursing (Boot, 2013). The hospital care is divided by Blank and Wats (2009) in low and high complex care. Low complex care consists of predominately simple treatments with a short stay in the hospital, which do not draw upon extremely specialized knowledge or infrastructure. Low complex care covers treatments with a high volume like cataract surgery or orthopedic surgery to hips and knees. High complex care concerns surgery or treatments that appeal to a large amount of medical technology, medical infrastructure and extremely specialized knowledge. It consists of a limited number of treatments or surgery per year, like organ transplant or cancer treatments.

Long-term care activities in the secondary health care concern nursing, societal and pedagogic care (Boot, 2013). Nursing care relates to observation, support, nursing and personal care. Societal care heads for the procurement of housing, nutrition and clothes, and the provision of employment, education and cultural activities. Pedagogic care focuses on education of disabled.

Tertiary health care

Tertiary health care covers the top specialist care characterized by high specialist care for patient who have no other possibility to be referred to (‘last resort’). The care relates to patients with extremely rare diseases, high complex illnesses or treatments, like oncologic surgery and cardiologic surgery. The care takes place in Academic Medical Centers (‘UMC’). Aside from the treatment of patients, the UMCs provide education, scientific research and development of new medical technologies (NFU, 2015).

2.1.4 Health care by target group

The last description of health care is by target group. According to Gijssen et al. (2013) health care aims at five target groups: the total population, groups of a certain age and sex, population groups with specific risk factors, disabled people and groups with a certain disease. Care for elderly and mothers with a child are examples of health care for groups of a certain age. Company health care and health care in prisons are examples of care for population groups with risk factors. Health care facilities or accommodations can be arranged for a specific target group as well, like children hospitals, women health care centers or maternity wards. However, this manner of dividing health care is not common in the Netherlands (Boot and Knapen, 2005).
2.2 Developments in the curative health care

2.2.1 Health costs

The health costs in the Netherlands have been increasing for decades and start to form an ever-enlarging problem for the society. Figures from CBS (2016) show that EUR 46.5 billion was spent on health care and well-being in 2000 in the Netherlands. This comes down to an annual amount of EUR 2,556 per capita. Since then, the health costs have continuously been rising and are more than doubled. In 2015, the health costs amounted EUR 95.3 billion in total, that is EUR 5,628 per capita per year. The health costs can also be measured in relation to the national economy. The health costs are expressed as a percentage of the Gross Domestic Product (GDP). In that way, it becomes transparent which share of the goods and services produced in the Netherlands is spent on health care. The share of the GDP spent on health care was 10.4 percent in 2000 and has risen to 14.1 in 2015 (CBS, 2016)).

There are several causes for the increase in health costs. First, the demographic developments create an increase in demand for health care (VWS, 2012; Ewijk et al., 2013; CPB, 2016). The demographic developments concentrate in particular on the ageing of society. The ageing of society will be discussed in more detail in the next paragraph. Second, more new treatments are possible due to technological progress in the medical sector. However, the new treatments are expensive to perform with higher health costs as a consequence (Ewijk et al., 2013; Berg et al., 2014). Another cause for the increase in health costs is the developing society with augmented prosperity (VWS, 2012; Ewijk et al., 2013). People use health care more often and more quickly, because they have more financial resources to spend on care.

The health costs will continue to rise in the coming decades, however, the question is in what pace this will happen? The Economic Policy Analysis (CPB) drew prognoses for the health costs in 2011 for the years 2020 and 2040 with various scenarios (Horst, Erp & Jong, 2011). The historic development and four scenarios for the future development of the health costs are depicted in figure 3.

![Figure 3: Development and prognoses of health costs (CBS, 2016; Horst et al., 2011)](image-url)
All four of the prognoses from CPB show a steep increase of the total health costs. The first scenario (red line in figure 3) is based on a continuation of the historic development of the health costs. The growth of the costs in the period from 1981 to 2010 is extrapolated to the year 2040. The health costs will rise to 22.0 percent of the GDP in 2040 due to an increase in life expectancy combined with higher costs for health care. Most of the growth is the result of an increased use of long-term care. The second scenario (green line in figure 3) forecasts the smallest increase in health costs to 19.1 percent of the GDP in 2040 under the impression that the same health care can be delivered at a lower price. The assumption in this scenario is that the price development of health care will be limited by technology developments reducing the costs for labor and an active price policy of the government. The third scenario (purple line in figure 3) is based on the assumption that people will use more health care, because health care is considered to be a luxurious product. According to CPB, this means that the demand for health care will for example increase with more than 1.0 percent when the income rise with 1.0 percent. Other explanations for the increase in volume are the extended medical possibilities and decreased informal care by family. The health costs will rise to 25.0 percent of the GDP in 2040. The fourth scenario (orange line in figure 3) has the highest increase in health costs in the future because of a rise in demand for health care due to an increase in life expectancy. The share of health costs will be 30.8 percent of the GDP in 2040. As a consequence, 45 percent of the average income will be spend on health care.

The expenditure on health care and well-being is categorized by CBS (2016c) in three different debit entries. The medical and long-term care were by far the largest debit entry in 2015 with an amount of EUR 82.4 billion (86.5 percent of the total). Well-being, youth care and children day care (10.0 percent) and management and policy organizations (3.5 percent) have a considerably lower share in the total health costs. Figure 4 shows the expenditure on health of the most important health care providers in the medical and long-term care since 1998. The graphs of hospital with specialist care and elderly care show a steep increase in expenses. The graphs of the expenditure on mental care and disabled care show an increase as well, however the shares of the total health costs are more limited. The expenditure on dental care, general practitioner care and paramedical care are just slightly increased.

The distribution of the expenditure on medical and long-term care is represented in figure 5. The expenditure on hospital care with specialist care has the largest share with 32 percent in 2015. The total expenses on hospital care amounted EUR 26.1 billion in 2015 (CBS, 2016c). General practitioners, dentists and paramedical health professionals are the other providers of curative care and they each are responsible for only 3 percent of the total expenditure on medical and long-term care.
The total expenditure of EUR 95.3 billion was financed in six different ways in 2015 (CBS, 2016). The payments on account of the legally obliged health insurance included the deductibles are the largest source of financing with an amount of EUR 43.9 billion (46.1 percent of the total). The Fund long-term care is financed by the income related premiums and the deductibles from the users of the long-term care. The fund financed EUR 19.7 billion of the total expenditure (20.1 percent). The payments of the national government, provinces and municipalities amounted EUR 17.8 billion (18.7 percent). The remaining sources of financing (15.1 percent) are the payments for additional insurances (EUR 4.3 billion), deductibles for non-insured health care (EUR 8.1 billion) and payments from other sources of financing like companies, institutions or foreign organizations (1.5 billion).

### 2.2.2 Ageing of society

The Dutch population have been ageing since the middle of the last century and this development will continue in the coming decades. The ageing of society is characterized by an increase in the share of elderly people in the total population (Dam et al., 2013). Since 1950 the share of elderly people in the Dutch population have considerably been growing, as show in figure 6. The share of elderly from 65 to 80 years old had been doubled from 6.7 percent in 1950 to 14.3 percent in 2015. The share of elderly aged over 80 years grew from 1.0 percent in 1950 to 4.3 percent in 2015. This represents a total increase of 2.2 million elderly aged over 65 years. A forecast of CBS (2016) shows that the share of elderly aged over 65 years will continue to rise to 26.5 percent of the total population in 2040. This will result in a growth of approximately 900,000 elderly in the age group of 65 to 80 years and aged over 80 years. The total share of elderly will approximately remain the same from 2040.
The most important causes of the ageing of society can be found at the falling birth rates and an increased life expectancy. The ageing of society has been intensified since 2010 because the baby-boom generation born in the period between 1945 and 1965 has reached the age of 65 or will reach the age of 65 in the years after 2010 (Beets, 2011). The postwar baby boom continued until the end of the sixties with high birth rates. The birth rate (the average number of children per women) has declined considerably since the seventies because of a combination of individualization, secularization, an increased labor participation of women and the introduction of the birth control pill (Fokkeman & Dykstra, 2007). As a result, less children were born and the share of elderly rose.

The second cause of the ageing of society is the rising average life expectancy in the Netherlands, according to the figures of CBS (2016). The life expectancy has risen for men from 75.54 years in 2000 to 79.66 years in 2015 and for women from 80.58 years in 2000 to 83.04 years in 2015. A forecast of CBS even shows that the life expectancy will continue to rise to 86.48 years for men and 90.31 years for women in the year 2060. These two developments together creates an increasing group of elderly with a higher life expectancy, which is called the ‘double’ ageing of society. The expenses for health care per capita rise along with the age of the person. In addition, a steep increase in the expenses for health can be found from the age of 65 years, demonstrated in studies of the RIVM in 2011 (Panhuis-Plasmans & Poos, 2013). The differences in the average expenses on health care per capita organized by age is represented in figure 7. The combination of an increasing share of elderly and the high health costs, are a cause of the rising health costs in the Netherlands.

Most of the elderly want to live independently as long as possible in their dwelling, even if the demand for health care rises (VROM, 2010). The extramuralization of overall care needs (‘zorgzwaartepakket’) has led to the displacement of some of the long-term care from the nursing homes to the personal homes of the patients. As a consequence, elderly with a small overall care need are only entitled to provide care at their own ambulant home instead of a nursing home (Veldhuijzen, 2012). Elderly are only eligible for a nursing home or an apartment connected to a health institution, when they cannot live by themselves due to a acutely impaired health situation or the absence of family in the direct living environment (Angelini & Laferrière, 2010; VROM; 2010). The degree of independence declines along with the age with the result of a decreasing radius and an increasing independence of facilities in the close proximity of the dwelling (Dam et al., 2013). The independence of the elderly can be improved by matching the facilities in the neighborhood to the needs of the elderly. This is possible by the development of health facilities easily accessible for elderly, like primary care facilities (VROM, 2010).
2.2.3 Governmental policy

In the eighties and nineties the national government conducted a policy to control the health costs. The control of health costs, however, created a lack of stimuli to be effective and innovative in the health care and the financing. In 1987 the Commission Dekker gave advice to the government to make the health care market oriented and to adopt a system with a national health insurance. At the end of the nineties the government tried to make the health care more efficient by regulating the competition. After a series of reforms the Zorgverzekeringswet (Health insurance law) came into force in 2006. The goal of the reforms was to increase the efficiency, to improve the freedom of choice and the strengthen the solidarity (Ven en Schut, 2008).

The impact of the Zorgverzekeringswet introduced in 2006 has mixed results so far. Because the health costs have not declined since the introduction of the Zorgverzekeringswet, the question remains whether the efficiency of the health care has increased. Budgetary frameworks are deployed per sector of health providers which contain restrictions for the growth of turnover (Maarse, Jeurissen & Ruwaard, 2015). In addition, there is still discussion whether the freedom of choice has been improved since the introduction of the law. The policy of health insurers to be selective in the supply of health professionals limits the policy-holders in their choice for a health professional. It is perhaps possible that the policy-holders have to travel a further distance to receive health care because of the selection policy of the insurers. Finally, the solidarity in the health care is under pressure due to a few of elements of competition in the market. Examples are the fallible risk equalization, the usage of additional insurances for market segmentation by insurers and the collective discounts, of which people think they have to be compensated by policy-holders without collective discounts (Maarse et al., 2015).

In 2013 Minister Schippers has made arrangements with hospitals, medical specialists, independent treatment centers, GGZ and general practitioners to reduce the growth in health costs (VWS, 2013). The government attempts to improve the functionality and quality of the health care by allocating care from the medical specialist to the general practitioners. The arrangements contain measures for all the health care sectors to bring back the annual growth rate of the turnover to 1.5 percent in 2014 and 1.0 percent in 2015 to 2017. The turnover of general practitioners is allowed to produce an additional growth of 1.0 percent in 2014 and 1.5 percent in 2015 to 2017, if they demonstrably absorb care from the secondary health care and prohibit patients to be hospitalized in the more expensive secondary health care. This should be accomplished by concentrating high complex care in hospitals, while allocating the low complex care in close proximity of the patient. As a result, health care will be substituted from the secondary health care in the primary health care, so simple specialist care will be provided by medical specialists and general practitioners and in health care centers (VWS, 2013).

A structure memorandum of 1974 already referred to the substitution of care from the secondary health care in the primary health care. The goal was to prohibit patients to be hospitalized in a higher echelon and to provide health facilities as close as possible to the patient (Bakker et al., 2013). The last few years this policy emerges in the plans of the government again to reduce the health costs. By displacing health care it is possible to profit in the field of quality of care, reduce the referrals, shorten the waiting lists and lower the costs for the patients (Bailey, Black & Wilkin, 1994; Bond et al., 2000; Bowling & Bond, 2001; Gruen et al., 2006; Hoof et al., 2016). The government expects an active role of the health insurers with the organization of substituting care by conducting agreements with primary health professionals. However, the health insurers state that the degree of organization and scale of economies of the primary health care need to be of sufficient size to start the substitution, according to studies by KPMG/Plexus (2015). There are agreements conducted for the substitution of Ear, Nose and Throat (‘KNO’) care, dermatology, cardiovascular risk management (‘CVRM’), diabetes mellitus, asthma, musculoskeletal system, practice support for mental health care and care for vulnerable elderly.
2.3 Summary

The Dutch health care system can be summarized in four different classifications. First, the health care is divided by needs, where the health care is expressed in several needs for health care in a person’s life. A distinction is made between preventive, curative, long-term and palliative care. The second way to classify the health care is by place of treatment. The distinction is based on the intensity of the care, the period of the hospitalization and the clinical facilities. The third classification is by level of treatment to order the process through the health care system. The system has a stairway structure consisting of primary, secondary and tertiary health care in order to provide health care with different intensity and complexity. The general and common health care is provide in the primary health care. The secondary health care contains the specialist care which is solely accessible with a referral from the primary health care or a specialist from the secondary health care. The tertiary health care consists of top specialist care characterized by high specialist care for patient who have no other possibility to be referred to. The last classification of health care is by target group aimed at five target groups: the total population, groups of a certain age and sex, population groups with specific risk factors, disabled people and groups with a certain disease.

The most relevant developments in the curative health care are the rising health costs, ageing of society and the governmental policy. The health costs have been rising for decades and this start to form an increasingly larger problem for society. Important causes of the high health costs are the demographic developments, technological developments and the evolving society. The largest debit entry in the health care sector is the care delivered in hospitals and specialist practices. Moreover, the expenses on hospital and elderly care have the highest increase. However, general practitioners, dentists and paramedical health professionals are the remaining providers of curative care and they are each responsible for only 3 percent of the total expenditure on health care. The ageing of society is characterized by an increase in the share of elderly in the total population. The expenses on health care per capita rises along with the age and, on top of that, a steep increase in the expenses for health can be found from the age of 65 years. The combination of an increasing share of elderly and the high health costs, are a cause of the rising health costs in the Netherlands. The governmental policy concentrates on limiting the growth of the health costs and displacing the care of medical specialists to the primary health care. By displacing health care from the hospital to the primary health care it should be possible to improve the quality of care, reduce the referrals, shorten the waiting lists and lower the costs for the patients.
3

Current supply of curative health care
This chapter covers the current supply of the primary and secondary health care. First, the general real estate market for health care is discussed with a definition and floor spaces. Subsequently, per group of curative health professionals the users, organization and real estate is addressed. The primary care is discussed in detail with an emphasis on health care centers. The chapter ends with the relevant supply of secondary health care.

3.1 Current supply

The developments in the health care sector have consequences for the real estate of the health care institutions. This paragraph discusses the different types of real estate in the health care market in the Netherlands. First, the general real estate market for health care is briefly discussed.

Real estate market for health care

Currently, a univocal definition for the real estate market for health care is missing, unlike the traditional real estate market like offices, dwellings and retail (Oostvoorn, 2014; Gijp, 2014; Veuger, 2015). For this reason, the real estate market for health care is described by dividing the market into several segments, according to Oostvorn (2014). The division of the market is depicted in figure 8. Initially, the real estate market for health care is split up in the curative and long-term sector. The real estate for the long-term sector accommodates the long-term care activities as described in chapter 2. The long-term sector is segmented in extramural real estate with a living environment for target groups who have a frequent need for care and intramural real estate with a protected living environment for target groups who have a need for continuous care. The real estate of the curative sector has a segmentation in primary, secondary and tertiary health care. The real estate of primary health care facilities consists of primary care practices and health care centers, the secondary health care consists of hospitals, outpatient departments and independent treatment centers, and the tertiary health care consists of academic hospitals. Defining the real estate for health care in these segments creates no overlapping with other real estate markets in accordance with Ooostvorn (2014). This research is limited to the primary and secondary real estate in the curative sector (indicated in dark blue in figure 8), especially the health care centers.

The total real estate market for health care covered 54.4 million square meters in 2010, show figures of the Economic Institution for the construction of Buildings (EIB) (Elp & Konings, 2015). Half of the total stock dates back from the period before 1980 and approximately one fifth has a date of construction before the year 2000. The curative sector covered a total of 27.0 million square meters and is divided by the EIB in the primary health care, the secondary and tertiary, and the private clinics. Table 1 shows the relative distribution of the square meters in the curative sector in the year 2010. Out of the table can be

Figure B: Division of real estate market for health care in segments (edited to Oostvorn, 2014)
drawn that the largest segment in the curative sector is the real estate in the primary health care with a floor space of 16.2 million square meters. The secondary and tertiary health care have a surface of 10.2 million square meters. Within the primary health care the vast majority of the real estate (60.3 percent) is covered by buildings with a surface smaller than 2,000 square meters, while this size classification in the secondary and tertiary health care is responsible for just 2.4 percent of the total. A possible reason for this difference could lay in the scale of economies in the health care. The care activities in the secondary and tertiary care are on a much larger scale than in the primary health care due to the aggregation of care with larger buildings as a result.

Table 1: Relative distribution of the square meters in the curative sector in 2010 (edited to Elp & Konings, 2014)

<table>
<thead>
<tr>
<th></th>
<th>Share</th>
<th></th>
<th></th>
<th>Total (1,000,000 m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 2,000 m²</td>
<td>2,000 - 100,000 m²</td>
<td>&gt; 100,000 m²</td>
<td></td>
</tr>
<tr>
<td>Primary health care</td>
<td>60.3%</td>
<td>39.0%</td>
<td>0.7%</td>
<td>16.2</td>
</tr>
<tr>
<td>Secondary and tertiary health care</td>
<td>2.4%</td>
<td>61.7%</td>
<td>35.9%</td>
<td>10.2</td>
</tr>
<tr>
<td>Private clinics</td>
<td>7.6%</td>
<td>54.7%</td>
<td>37.7%</td>
<td>0.7</td>
</tr>
</tbody>
</table>

3.2 Primary health care

In order to map the current supply of curative health care facilities, this research will go into more detail per group of health professionals regarding the users, organization and real estate. A distinction is made in the primary health care between the following health professions: general practitioners, dentists, pharmacists and paramedics. Per group of health professionals the users, organization and real estate is discussed. The users are the various participants per primary health profession, like health care professionals, supporting medical staff, patients and other staff. The organization discussed the dispersion of the health facilities and the different types of practices or real estate. And the real estate addresses the functional features of the practices and the other real estate.

3.2.1 General practitioners

The general practitioner is generally the first point of contact when patients have a need for health care. For that reason, general practitioners play a central role in the primary health care. In 2000 there were 7,769 practitioners active in the Netherlands and since then this number has risen to 9,418 general practitioners in 2015, show figures from the registration of general practitioners by the NIVEL (Hassel, Kasteleijn & Kenens, 2016). General practitioners are categorized in independent established general practitioners, general practitioners employed by a general practitioner (‘HIDHA’) and regular substitutes. HIDHAs are employed by independent established general practitioners and provide health care for a period of at least six months in a practice. The regular substitutes are independent enterprising doctors and they work part-time in a practice. Moreover, the general practitioners are supported by staff like physician assistants and practice supporters. Health care technical and administrative activities can be delegated to the supporting staff (Noordman, Verheij & Verhaak, 2008). The practice supporters are nurse practitioners with a higher professional education who provide health care to patients with a chronic illness (Boot, 2013). The nurse practitioners are segmented in mental health care and somatization.

Looking at the patients of general practitioners, it stands out that elderly have considerably more consultations of a general practitioner than young people, as can be seen in the registration of 433 general practitioners in 2014 by the NIVEL (Prins et al, 2015). Children in the age of 5 to 17 years visit a general practitioner on average 2.2 times per year. In contrast with elderly in the age of 75 to 84 years, who visit a general practitioner 8.7 times per year. Elderly aged over 85 even visit a general practitioner 12.5 times per year. Table 2 shows the differences in visits to a general practitioner per year per age group in 2014.
Table 2: Number of visits to a general practitioner per age group in 2014 (Prins et al., 2015)

<table>
<thead>
<tr>
<th>Age group</th>
<th>0 to 4 years</th>
<th>5 to 17 years</th>
<th>18 to 44 years</th>
<th>45 to 64 years</th>
<th>65 to 74 years</th>
<th>75 to 84 years</th>
<th>85 years and older</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of visits to a general practitioner per year</td>
<td>3.2</td>
<td>2.2</td>
<td>3.3</td>
<td>4.2</td>
<td>5.8</td>
<td>8.7</td>
<td>12.5</td>
<td>4.2</td>
</tr>
</tbody>
</table>

The general practitioners are distributed over 5,054 practices across the Netherlands. It is possible that several practices are registered at the same address resulting in a total of 3,877 practice locations. The practices are categorized by the NIVEL based on the number of general practitioners that the practice counts (Hassel et al., 2016). There are three different types of practices: solo practices (one general practitioner), duo practice (two general practitioners) and group practices (three or more general practitioners). In 2015 the distribution of the types of practices was: 40.6 percent a solo practice, 40.1 percent a duo practice and 19.3 percent a group practice. Despite the fact that 40.6 percent of the practices is a solo practice, just 21.5 percent of the general practitioners were active in a solo practice. On the contrary, 38.6 percent of the general practitioners are active in a group practice, while just 19.4 percent of the practices is a group practice. The share of general practitioners active in a solo practice has been almost halved since 1980 (72.0 percent) (Boot, 2013).

The average distance from an address to the nearest practice of a general practitioner is 1.0 kilometer in the Netherlands (CBS, 2016). According to RIVM (2016a) a rule of thumb applies for a general practitioner to be accessible within 15 minutes. Figure 9 shows the locations of general practitioners practices and the travel times to the nearest practice in 2012, depicted on a map of the Netherlands. The longest travel times can be found in the three northern provinces (Friesland, Groningen and Drenthe), large parts of Flevoland and the south of Zeeland.

Figure 9: Travel time to the nearest practice of a general practitioner in 2012 (RIVM, 2016a)

The functional features of the real estate of general practitioners is mainly examined by the National General practitioners Association (‘LHV’). In 1985 a practice consisted only a consulting room for the doctor, a counter as a front office and a small laboratory. Over the years a number of spaces have been added to the practice, like a universal consulting room for practice supporters, a back office and an extra
consulting room. The waiting room, storage rooms and toilets were not included in the researches of the LHV. The total surface of a practice has increased from 80.0 square meter in 1985 to 128.0 square meters in 2012. The specifications of the spaces in a practice are mapped by Waarden and Empel (2015). The consulting room has examination area to examine the physical state of the patient or to perform small medical interventions. The examination area can be separated by a door, closet or curtain. The net floor space lies between 19 and 24 square meters. The treatment room should be accessible by a mobile stretcher in order to move a patient to the treatment bed. The net floor space of a treatment room is approximately 14 square meters. The universal consulting room for practice supporters complies with the same demands for a normal consulting room, but also provides room to have a conversation with at least three persons. The room has a floor space of 18 square meters and is suitable for a supporting general practitioner. The laboratory (9 square meters) accommodates the activities for examination, sterilization of instruments, treatment of patient and processing of results.

### 3.2.2 Other primary health professions

Besides the general practitioner, there is a number of other disciplines in the primary health care. This paragraph concentrates on the most relevant other health professionals in the primary health care.

#### Dentists

The dentist provides dental health care covering the oral health. According to Boot (2013) the oral health concentrates on the quality of speaking, chewing, laughing and kissing, whereas not only the use is an aspect, but the esthetics as well. The dentist has, like the general practitioner, a role as a gatekeeper in the dental care and is responsible for the process of care by referring patients to other dental health professionals. The supporting staff for the dentist consists of dental assistants, dental hygienists and prevention assistants. These health professionals provide preventive care to patients who have easily treatable complaints. If the patient need complex dental care, the dentist will refer the patient to an oral specialist like an oral surgeon or orthodontist.

According to the Royal Dutch Society for enhancement of Dental care (‘KNMT’) there were 12,895 health professionals active in the dental care in 2015. Belonging to these health professionals are dentists, orthodontists, oral surgeons, dental hygienists and denturists. The precise number of dental practices is not known, however, the KNMT estimates the number of practices approximately at 5,100 in 2015. Of these practices was 58 percent a practice with one dentist, 29 percent a practice with one dentist supported by one or more dental professionals, 8 percent a practice with two or more dentists and 5 percent a practice with two or more dentists supported by one or more dental professionals. A development can be observed where the share of solo practices with one dentists is decreasing from 76 percent in 1997 to 58 percent in 2015.

The KNMT has drawn a document in 2012 concerning the real estate of dentists with specifications of the rooms in a practice. The following rooms were part of a dental practice: entrance, waiting room, counter, treatment room, X-ray room, installation room, sterilization room, staff room and storage room. The treatment room is seen as the heart of the practice and has preferably a floor space of 15 to 20 square meters with a minimal width of 3 meters. In the practice there should be at least one small X-ray machine in one of the treatment rooms and possibly a large X-ray machine in a separate X-ray room. The number of treatment rooms in a practice is depending on the number of active dentist. The facilities like the X-ray room and sterilization room are shared by the dentists.

#### Pharmacists

Medication can be prescribed by various health professionals, for instance general practitioners, medical specialists, dentists and obstetricians. The medication is covered by the pharmaceutical care, provided by pharmacies like hospital pharmacies, public pharmacies and pharmaceutical general practitioners (Boot, 2013). The hospital pharmacies provide the medication for hospitalized patients. The public pharmacies
Current supply of curative health care

and the pharmaceutical general practitioners provide the regular extramural medication for patients. The Netherlands has 1,979 public pharmacies and approximately 400 pharmaceutical general practitioners in 2014 (RIVM, 2015). Of all the public pharmacies 32.0 percent was in ownership of a chain, 44.9 percent was a franchise affiliated to a chain or formula and the other 23.0 percent was an independent pharmacy. In total there were 26,701 health professionals active in the public pharmacies (Griens et al., 2015). This comes down to 13.5 employees per pharmacy. The health professionals can be categorized in pharmacists, pharmacists assistants and supporting staff.

The number of prescriptions per patient of a pharmacy differs per age group in the Netherlands (Hek et al., 2015). Public pharmacies procured more than five times as often medication to people aged over 75 years old (81.7 prescriptions per year) as to the average patient (14.9 prescriptions per year). This number lies for persons with an age up to 40 years on average between 2.7 and 4.4 prescriptions per year.

The dispersion of pharmacies per municipality is show in maps of figure 10. Most of the public pharmacies are located in the urban areas. In 34 of the 403 municipalities in the Netherlands there is no public pharmacy present. These municipalities are located in the north part of the Netherlands, in the area between the rivers and in the province Zeeland. As a substitute for the public pharmacies most of the times a pharmaceutical general practitioner is present in the areas without a public pharmacy. As a result, the pharmaceutical general practitioners are established in the more rural areas.

![Figure 10: Dispersion of public pharmacies (left) and pharmaceutical general practitioners (right) in 2014 (RIVM, 2015)](image)

The most important spaces in the public pharmacies are the waiting space, counters, storage room for the medication and the expedition space, where the medication is prepared. The rooms are supported by a consulting room, pharmacists room, administration room, staff room, preparation room, overnight delivery and the storage room for cleaning (Waarden en Empel, 2015). Based on the size of the pharmacies the number of supporting rooms is determined.

**Paramedical care**

The paramedical care consists of primary health professions like for instance physiotherapists, remedial therapists, speech and language therapists, dieticians, skin therapists and audiologists. This research has divided the professions in two categories in order to go into more detail. The first group of health professionals are the physiotherapists and remedial therapists, and the second group are the other professions. This distinction is created based on the required space to provide the health care. There is a large difference in the required space between the two groups, but within the group the space requirements are rather equal. The users, organization and real estate of the physiotherapists will be
discussed in more detail, because this profession is the largest in the paramedical health care, shown by figures of NIVEL (Hassel & Kenens, 2013). For the other paramedical professions only the real estate specifications are discussed.

**Physiotherapists**

The number of extramural physiotherapists has increased considerably in the last decades. In 1993 there were 10,482 physiotherapists active and this number rose to 13,254 physiotherapists in 2003 (Kenens & Hingstman, 2004). In 2012 there were 17,802 physiotherapists active extramurally of which 45.9 percent was owner of a practice and 54.1 percent employed by another physiotherapist. The physiotherapists were spread over 4,770 practices in 2012 and since 2005 this number has been stable. However, an increase can be found in the number of group practices with five or more physiotherapists. In 2005 there were 1,000 practices with five or more physiotherapists (20.9 percent of the total) and this number has risen to 1,505 practices in 2012 (31.6 percent). The average number of physiotherapist per practice is hereby increased from 3.1 in 2005 to 3.9 in 2012. Figure 11 shows the dispersion of the physiotherapist practices in a map of the Netherlands in combination with the travel time to the nearest practice. The figure reveals some large regional differences, comparable to the differences in the travel time to the nearest general practitioner. In particular the northern part of the Netherlands, large parts of Flevoland and Zeeland have a travel time of more than 10 minutes to the nearest physiotherapist. Most of the therapists are located in the urban areas.

![Figure 11: Travel time to nearest physiotherapist in 2012 (RIVM, 2016)]](image)

The health professions physiotherapy and remedial therapy show quite some similarities regarding the provision of care and the use of a building, because both professions concentrate on the human musculoskeletal system. The required space is similar for both professions and net floor space is larger than other primary health professions. The physiotherapists and remedial therapists need space to examine the patient and to perform treatment. The activities take place in a treatment and consulting room of approximately 18 square meters and a practice space of minimal 50 square meters. Other spaces in the practices are entrance, waiting room, dressing room with showers and toilets, administration room, pantry and storage room (Waarden & Empel, 2015).

**Other paramedical professions**

The other paramedical professions cover the audiologists, dieticians, occupational therapists, skin therapists, speech and language therapists, optometrists, orthoptists, podiatrists, psychologist,
obstetrician and nurse practitioners. The real estate facilities of these health professions show many similarities because the care activities focus primarily on conversations with the patient, however, every profession has its own specific activities. The universal treatment room, as described by Waarden and Empel (2015), is comparable to the extra treatment room in a general practitioner practice and should be suitable for most of the other paramedical professions. The room with a floor space of 18 square meters has a consulting area and a treatment area and can be shared by multiple paramedics.

3.2.3 Health care centers

Many health professions cooperate in the primary health care (CBZ, 2005; Hopman, Batenburg & Bakker, 2009; Boot, 2013). The multidisciplinary cooperation in the primary health care has two different forms of cooperation, according to Boot (2013). The first form is a home team which is a structured consultation between general practitioners, neighborhood nurses, social worker and possible other professions. The professions generally operate from their own practice. The second form of cooperation arises when primary health professions cooperate in the same building, most of the times called a ‘health care center’. The term ‘health care center’ is not a protected title in the Netherlands, so there are several definitions and types of health care centers. Besides health care centers, the terms ‘primary health centers’ or ‘medical centers’ are used as well.

Historic development

The first health care centers in the Netherlands arose in the seventies from an idealistic vision on a neighborhood minded cooperation between a general practitioner and social workers (Ros, Hutten & Groenewegen, 1996). A health care center was defined at that time as “a cooperation with at least one general practitioner, one neighborhood nurse and one social worker under the same roof” (Hopman et al., 2009, p.25). The government thought that health care center were the answer to a modern and integrated primary health care. The centers should provide effective and efficient health care in close proximity to the patients with the result that patients would be less referred to the secondary health care (Batenburg & Eyck, 2011). The health care centers were financially supported by the government in the seventies and eighties in order to overcome the investment expenditure and risks during the starting phase. New neighborhoods were developed in this period to respond to the rising demand for dwellings. As a consequence of these developments the number of health care centers rose quickly to 120 in 1983 (Batenburg & Eyck, 2011). Most of the health care centers were developed in new cities, like Almere, and other big cities in the Netherlands.

Researches in the beginning of the eighties revealed positive effects of health care centers. Positive effects were that patients were referred less often to the secondary health care and the duration of the hospitalization was shorter in comparison to practices of general practitioners that were not a part of a health care center (Peters & Wijkel, 1984). The additional costs for a health care center, like subsidies and possible shortages in the organization, were compensated by the savings as a result of the reduction in secondary health care (Peters, 1984). However, due to economic decline and savings in health care the government decided to put a maximum on the number of subsidies for health care centers in 1987 (Baterburg & Eyck, 2011).

The growth of health care centers declined in the nineties because of the maximum on subsidies. A research of NIVEL calculated the number of health care centers in 1992 at 161 (Hingstman & Hoekstra, 1998). The research registered health care centers based on the received subsidy. The definition for a health care center was: “a cooperation managed by an institution, that provides integrated primary health care from a shared accommodation by at least two general practitioners, two neighborhood nurses, one social worker and if possible other primary health professions” (Batenburg & Kalf, 2010). The research also revealed some characteristics of health care centers in 1992. First, just 3.4 percent of all the general practitioners practices were established in a health care center and 8.8 percent of all the general practitioners were employed in a health care center. Second, an estimation of 1 million patients were
registered in a health care center. That is equivalent to approximately 7 percent of the population at that time. Third, most of the health care centers were located in the ‘Randstad’ in newly built neighborhoods and grow points close to the big cities. Finally, on average there were 7 different primary health professions in a health care center. Most of the time that were general practitioners, physiotherapists, dieticians, pharmacists, social workers, obstetricians and psychologists.

At the end of the nineties the number of health care centers decreased slightly to 148 in 1997. This decline was according to NIVEL the result of the aggregation of health care centers in umbrella organizations in big cities like Amsterdam and Almere. The umbrella organizations merged the organization of regional health care centers by bundling functions like management, human resources and ICT. The bundling of the functions created scales of economies, while the health care centers maintained large amounts of autonomy. Moreover, the posting of neighborhood nurses came under pressure after a large-scale reorganization in the home care services (Hopman et al., 2009). The neighborhood nurse had an important role in health care centers at that time. The three standard primary health professions in 1997 were general practitioners, neighborhood nurses and social workers. They were complemented the most in the 148 health care centers in 1997 by physiotherapists (87.2 percent), dieticians (76.4 percent), patient nursing (67.6 percent), obstetricians (67.6 percent) and pharmacists (54.1 percent). The term ‘health care center’ was no generally accepted term, so general practitioners used the term for their practices even though there was no cooperation with other primary health professions. ‘Primary health center’ and ‘medical center’ were no assurance at that time for cooperation of multiple primary health professionals under the same roof (Hopman et al., 2009).

The number of health care center started to grow again in the period between 2000 and 2006 because of the reintroduction of subsidies by the government, the development of new health care centers by the umbrella organizations and the support of health insurers during the development of new health care centers. However, in 2006, parallel with the introduction of the Health insurance law, the subsidies for the startup financing came to an end. A new financing mechanism was introduced for the primary health care which ensured that the cooperation in primary health care is financed by the health insurers through the module of 'Integrated Primary Health care' (Batenburg & Kalf, 2010). The integrated primary health collaborations have to be fully financed through the Law of Market organization Health care (‘WMG’). Health insurers could from that moment on buy an integrated package of primary health care. Furthermore, the prices of health care were not regulated by the government anymore. The integrated supply of primary health care was contracted in health care programs and health supply plans (Batenburg & Kalf, 2010). Since 2007 the number of health care centers is registered by CBS. The definition for health care centers concentrates on health care “without overnight facilities provided by an institution or partnership where various health professions are active like general practitioners, social workers and neighborhood nurses and in most of the times physiotherapists and pharmacists” (CBS, 2016b). Het number of health care centers have increased based on the registration of CBS from 265 in 2007 to 360 in 2016.

**Organization**

Health care centers accommodates multiple primary health professions. The organization of the health professionals concentrates on multidisciplinary teams that cooperate in health care programs or integrated care. This means that multiple primary health professions provide an integrated treatment of chronic diseases or group of patients. The organization of a health care center depends, according to Waarden and Empel (2015), on several aspects: the goal, supply of health care, health professions, the size of the professions, the intensity of cooperation, management structure, cooperation with external professionals, the legal form of the organization and the financial plan.

The core activities for the organization of a health care center are dividing the tasks efficiently to achieve a shared goal and coordinating the performance of these tasks (Waarden & Empel, 2015). The cooperation between the professions should be reinforced by adjusting the tasks and activities to one another.
Agreements have to be made about the shared issues regarding the shared facilities, facility management, internal communication and coordination. The management structure and legal form of the organization should support these aspects in order to determine the responsibilities and liabilities. Most of the health care centers at the moment have a foundation as a legal form with a supervisory board (Waarden & Empel, 2015).

**Real estate**

A health care center accommodates multiple health professions that all have their own demands regarding the real estate facilities. Hoogdalem, Voordt & Wegen (1985) have done research on the program of demands and design of health care centers. According to this research the design should give the patients and health professionals a feeling of being at home, while the exterior of the building has an important symbolic function as ‘business card’ of the cooperation between the various professions. This can be achieved through seven aspects: accordance in the degree of shared use of space, positioning of the professions in the building, accessibility of the work areas, the need for daylight and sight, the need for flexibility, wheelchair accessibility and the interior of the building. There are hundreds of possibilities to implement these aspects.

The elaboration of the building per area for a health profession is according to Hoogdalem et al. (1985) dependent on the number of employees per profession, job responsibilities and the subsequent care activities. Per health professions the number of rooms, the floor space measurements and the relation of the rooms is listed. Hoogdalem et al. (1985) divides a health care center in the following areas: assistant zone, general practitioners, neighborhood nurses and consultation office, physiotherapy, social workers, other disciplines, waiting, meeting, management and interns. The research compared the floor spaces of 50 different health care centers in the Netherlands. The health care centers had a gross floor space of at least 271 square meters, maximum 2,976 square meters and on average 976 square meters.

The ‘Manual construction of a health care center’ by the National General practitioners Association (‘LHV’) from 2015 describes the principles of developing of a health care center (Waarden & Empel, 2015). The main layout of a health care center in the manual is comparable to the research of Hoogdalem et al. (1985). The manual discusses a few health care center built in the period between 2011 and 2014. These health care centers give a reasonably good overview of the current health care centers. The health care centers differ considerably in size, which is expressed in the number of registered patients and the floor space. The smallest center has a gross floor space of 820 square meters, 4,500 registered patients and four primary health professions established. The largest center has a gross floor space of 6,000 square meters, 30,000 registered patients and 14 primary health professions and even an outpatient department of a hospital.

### 3.3 Secondary health care

The secondary health care is often an aggregation of specialist care. The accommodations of specialist care have larger floor spaces than the primary health care due to this aggregation. In this paragraph the real estate of the secondary health care is discussed briefly in order to get an insight in the hospitals, outpatient departments and private clinics.

#### 3.3.1 Hospitals

Hospitals are generally seen as the most important type of real estate for the secondary health care. The care facilities in a hospital are aggregated with the objective of concentrating the treatment of patients, academic research and nursing. The dispersion and concentration of hospital care aims at improving the quality and functionality of the care (NVZ, 2016). The concentration of highly complex care in hospitals should lead to high quality health care. The dispersion of chronic, acute and elective care over general hospitals should provide the necessary health care in close proximity to the patient. In 2015 there were 81
general hospital organizations and 8 Academic Medical Centers (‘UMC’) dispersed over 129 hospital locations (RIVM, 2016).

Figures of the Dutch Hospital Data (DHD) show that there were in total 262,530 people employed in all the hospitals in 2014, of which 14,776 were medical specialists (DHD, 2016). The number of specialists has annually risen with 2.6 percent since 2010. On average there were 120 specialists employed in the general hospitals and 602 specialists in the academic hospitals. The capacity of a hospital can be determined based on the number of hospital beds. In 2014 there were 42,344 beds in all the Dutch hospitals, which on average came down to 418 beds for general hospitals and 951 beds for an academic hospital.

### 3.3.2 Outpatient departments

An outpatient department is an accommodation of a hospital on another location than the main building, where patients can come for ambulant care like a consultation of a small medical treatment. An outpatient department has as objective to offer secondary health care close to the living environment of the patient and thus increase the catchment area of a hospital. The number of outpatient departments has risen considerably from 37 in 2005 to 129 in 2015 (Sonneveld & Heida, 2014; RIVM, 2016). Hospitals try to compete with other hospitals for patients on the basis of the catchment area by developing an outpatient department on the edge of the catchment area. Research of Sonneveld and Heida (2014) shows that the turnover of hospitals with an outpatient department grows faster that the turnover of hospitals without outpatient departments.

According to Boot (2013) large differences can be found in the function of an outpatient department. The most simple form provides consulting hours for medical specialists. A couple of additional facilities can be added to the consulting hours, like diagnostic facilities for visual diagnostics, delivery point for a laboratory or a treatment room for simple medical treatments.

### 3.3.3 Private clinics

Private clinics, like independent treatment centers (‘ZBC’) or private clinics, offer medical specialist care outside of hospitals (DHD, 2016). The specialist care concentrates on simple and elective treatments that do not require hospitalization. In practice the private clinics focus on non-clinic care that has the possibility to be treated quickly and has a high volume, like inguinal hernia, varicose veins or the treatments of the specializations orthopedics, ophthalmology and dermatology.

An independent treatment center is a cooperation of at least two medical specialist, that offers insured health care (DHD, 2016). Based on the Law Admission Health care institutions (‘WTZi’) an independent treatment center is admitted to the market when it does not have profits and it has a transparent board structure and operational management. In 1998 the first independent treatment centers arose in the Netherlands and since then the number has risen up to 288 in 2012 (NZa, 2012). However, the number of independent treatment centers with at least one contract with an insurer has decreased in recent years to 231 in 2015 (NZa, 2015). The reason for the decrease is according to NZa the result of reduced possibilities for financing due to transformations of the legislation in the market.

Other forms of private medical specialist care is offered in private clinics (DHD, 2016). Examples of this care are plastic surgery and laser eye surgery. In order to provide health care the private clinics do not have to be approved by the WTZi and in most cases the care in the private clinics is not covered by the insurances. The treatments are not only performed by specialists, but also by general practitioners, nurse practitioners and physiotherapists. The number of private clinics in the Netherlands has been circulating around 100 since 2010 (NZa, 2015).
3.4 Summary

A number of findings can be drawn about the real estate market for health care in the Netherlands. Four important findings can be distinguished in the supply of primary health care. First, most of the primary care practices are solo practices, in particular for general practitioners, dentists and physiotherapists. This could be an explanation for the fact that 60.3 percent of the real estate for primary health care has a surface of less than 2,000 square meters. Second, a tendency can be found which shows that primary health professionals of the same professions cooperate more often in the same building. The share of solo practices decreases, for instance of general practitioners, dentists and physiotherapists. Third, the number of health professionals in the primary health care has considerably increased in the past decades. This is particular the case for general practitioners and physiotherapists. Finally, most of the primary health care facilities are concentrated in the urban areas. As a result, the health facilities in the urban areas like Flevoland, Zeeland and the northern parts of the Netherlands are situated on a further distance.

The findings in the secondary health care mainly concentrate on the dispersion of current supply and the increased number of places that offer secondary health care. Simple secondary health care is displaced more often from hospitals to ambulant outpatient accommodations. The number of outpatient hospital departments and independent treatment centers have for example been increased in the last decades. The specialist care provided at these places is limited to consulting hours, diagnostics, laboratory facilities and simple treatments. The real estate of the secondary health care is generally located in the urban areas.

Finally, the various users of the current supply in the primary and secondary health care can be identified. Four different user groups can be identified in the primary health care. The first group are the primary health professionals, who mainly provide the general primary health care. The group covers for example general practitioners, dentists, pharmacists and physiotherapists. The second group are supporting medical staff who supports the health professionals with the provision of health care, like physician assistants, dentists assistants and pharmacists assistants. The third group of users is the non-medical staff, who are concerned with the administrative and management activities. The fourth group in the primary health care are the patients with a need for health care. The last relevant user group comes from the secondary health care: medical specialists. Specialist will provide simple care in the primary plus care, while the general practitioner keeps control over the patient.
4
Primary plus care
The primary plus care is explained in more detail in this chapter based on a definition, the health process, the users and the financing. The goal of this chapter is to provide background information for developing a program of demands for a primary plus health care center. Therefore, the reason of the development is discussed and the current situation regarding the participants, process and the various elements of primary plus care. The chapter ends with some insights about the real estate for primary plus care.

The primary plus care is developing in the Dutch health care sector. In order to establish the real estate demands for a health care center information is needed on the primary plus care. In this chapter the primary plus care is discussed based on a literature study and interviews. It became clear during the literature study that some additional interviews are needed to further clarify the primary plus care. For that reason four exploratory interviews are held with professionals and researchers, who are concerned with the implementation and effects of the primary plus care. The goal of the interviews is to verify the consulted literature and to complete the literature with new information. The interviews are segmented in three subjects. The first subject regards the primary health care with questions about responsibilities, the process, forms of health care, activities and the appropriate medical specialties. The second subject covers primary plus health care centers with questions about the position that the health care centers will take, the collaborations in the centers, the catchment area and the locations. The final subjects discusses the management and organization of the health care centers with questions about the possible type of organization, the initiative for development and the financing and ownership of the building.

The interviews are held with an operational manager of primary health organization Zorg In Ontwikkeling (ZIO), a manager of health insurer De Friesland Zorgverzekeringen, a program manager of the cooperation for primary health organizations InEen and a researcher of Maastricht University. These respondents are chosen for the interviews because of their close relation to the primary plus care. Primary health organization ZIO is a participant in the pioneer site ‘Blauwe zorg’ in the Limburg and health insurer De Friesland is a participant in the pioneer site ‘Friesland Voorop’. In total the government has initiated nine pioneer sites with the objective of improving the health care by means of population management (Drewes et al., 2014). InEen is a cooperation of primary health organizations that aims to reinforce the primary health organizations through a common organization. Maastricht University carries out research into the effects of the primary plus care in the pioneer sites. The interviews took place between 8 and 17 August 2016 at the offices of the interviewed and length of the interview was approximately 50 minutes. The interviews were recorded and subsequently transcribed. The interviews can be found in appendix I up to IV.

4.1 Primary plus care

The primary plus care is a broad concept and reasonably unknown under patients. The goal of the introduction of primary plus care is to improve the cooperation between general practitioners and medical specialists and to reinforce the gate keepers role of general practitioners. General practitioners are supported in the treatment of patients by integrating specialist knowledge in the primary care and prohibit unnecessary hospitalization in the secondary health care (Hoof et al., 2016). This should result in lower health costs for the whole sector. The primary plus sector will be described in this research based on a definition.

Definition

Not many definitions regarding primary plus care are provided in the literature. The few definitions available describe the primary plus care as care on the interface of the primary and secondary health care (NZa, 2012; Rhiijn, Spreeuwenberg & Ruwaard, 2013; Talstra & Kousemaeker, 2015). This research considers the primary plus care as a supplement to the primary health care, whereas the primary care is incorporated in the primary plus care. The definition by Vervloet et al. (2015) is applied in this research to describe the supplement of care to the primary care, because this definition emphasizes on the way of financing. The interviews with the manager of De Friesland and the researcher of Maastricht University
revealed that the financing of health care is determining whether it is primary, primary plus or secondary care. For that reason, this research considers primary plus care as primary care complemented by:

“health care on the interface of primary health care and simple secondary health care, that can be provided by health professionals from both primary and secondary health care, and that is financed by the idea of functional fee-for-system” (Vervloet et al., 2015, p.70).

The functional fee-for-system means that the health professional receives a fee for the provided health care based on the performance and not based on the profession that provides the performance (NZa, 2009). This implies that it is not important ‘who’ receives a fee, but for ‘what’ a health professional receives a fee. The costs of a specific treatment with the functional fee-for-system are equal for a general practitioner and a medical specialist. The functional fee-for-system aims to reduce the health costs by establishing a fixed price for treatments (Croonen, 2010). The main health provider of the patient will receive the total amount for the treatment and will subsequently pay other health professionals for their contributions in case of integrated multidisciplinary treatments. General practitioners will be frequently the main health provider in the primary care due to their role as a gatekeeper.

The financing of the primary plus care plays an important part in reducing the costs in comparison to the secondary health care, based on the held interviews. The provision and thus the financing of the primary and secondary health care are separated. However, in the primary plus care both primary and secondary care is provided, but the aim is to finance the health care through the primary care as much as possible. The manager of De Friesland indicates in the interview that this would result in a financial benefit for both the health insurer and the patient. For instance, the costs of a consultation from a medical specialist are lower in the primary plus care than in the secondary care. This results in reduced health costs for the insurer. The financial benefit for the patient concentrates on the fact that the costs for health care in the primary care is not part of the deductibles. This means that the patient has the possibility to visit a medical specialist without encroaching on the deductibles. For this reason, outpatient hospital departments and independent treatment centers with medical specialist are not part of the primary plus care. These forms of health care concern displaced hospital care and there is no integration of specialist care in the primary care.

4.2 **Reason**

The primary plus care is mainly developed to respond to the rising health costs in the Netherlands. As described in chapter 2, the health costs have been rising for decades. Hospital care and elderly care are the main drivers for the rise. In view of the fact that the Dutch population will continue to age in the coming decades, the health costs will not reduce quickly. Subsequently, the government has the intention to control the health costs. Arrangements have been made by the Ministry of Health, Welfare and Sport with all the health care sectors to reduce the annual growth rate of the turnovers. To accomplish this, health care will be displaced from the secondary to the primary care. This includes in particular simple care with a high volume. In this manner it is possible to improve the quality of care, reduce the number of referrals, shorten the waiting lists and reduce the health costs for patients by displacing care activities from the hospital to the primary health care. The primary plus care is developed on the interface of the primary and secondary health care with the possibility to incorporate the full primary health care.

4.3 **Current situation**

At this moment the primary plus care can be primarily found in the pioneer sites initiated by the government. In 2013 the government indicated nine regions spread over the countries as pioneer sites to experiment with primary plus care, as can be found in the monitor from the RIVM (Drewes et al., 2014). The pioneer sites concentrate on the supply of health care based on population management. The goal of the pioneer sites is to improve the general health of the regional population, the quality of care and simultaneously to control the health costs. The primary plus care is mainly aimed at the support and
consultation of medical specialists to general practitioners. The activities take place in general practitioner practices or health care centers. This paragraph covers the current situation concerning primary plus care by discussing the participants, process and elements of primary plus care in more detail.

4.3.1 Participants

The participants in the primary plus care are both from the primary and secondary health care. During the exploratory interviews the participant groups of primary plus care were determined.

Patients

Patients with a need for health care have the possibility to go to the primary plus health care. The health care focuses on the curative health care. The patients will be visiting health care centers for short-term consultations and treatments. Health care center aim to provide care in close proximity to the patient by merging various health professions. The addition of simple secondary care extends the supply of health care. As a result, patients can go to a health care center for a wide range health care and the need to visit a hospital is expected to reduce.

General practitioners

General practitioners will keep the coordination over the patient during the process in the primary plus care. The role as a gatekeeper is reinforced with the support of medical specialists, which enables general practitioners to make better diagnoses and to perform more treatments. Various types of support are provided, including for example advising on diagnoses, the assessment of results from diagnostic examination and proposals for possible treatments. Moreover, in the practices the general practitioner is supported by medical and non-medical staff, like physician assistants or practice supporters.

Other primary health professionals

The other primary health professions that provide health care in the primary plus care are for instance physiotherapists, dieticians, obstetricians and pharmacists. In the interviews is reflected that all the current primary health professions will provide health care in the primary plus care. As a consequence, all the primary health professions have the possibility to cooperate with a medical specialist in the primary plus care. Collaborations between a physiotherapist and an orthopedist, between a dietician and internist and between a dentists and an oral surgeon are examples of the cooperation.

Medical specialists

Medical specialists are new participants to the primary plus care in comparison to the primary care. The support of medical specialists concentrates on three possibilities. First, the medical specialists can advise a general practitioner in person when the general practitioner is doubtful about a diagnosis or treatment. Second, the medical specialist can provide consultation to patients that are referred by a general practitioner. Third, the medical specialists perform small surgery in the primary plus care. In order to keep the costs down, the medical specialists will perform the care activities with as less supporting staff as possible.

Not every medical specialty will provide health care in the primary plus care. The suitability of a specialty depends on three aspects, as reflected in the interviews with the researcher of Maastricht University, manager of De Friesland and operational manager of ZIO. The first aspect of the suitability is the required diagnostic facilities. Medical specialists normally conduct consultations in hospitals where all the possible medical appliances and other facilities are available. The facilities in health care centers will be less extensive to cut costs. These facilities differ per medical specialty to conduct consultations in the primary plus care. An internist for example requires almost no diagnostic facilities for the first consultation, while
a cardiologist or orthopedist can give a consultation after a diagnostic examination of the patient like a cardiogram or X-ray (Hoof et al., 2016).

The second aspect of the suitability is the degree of referrals to the secondary health care. This is the percentage of patients that is referred to the secondary health care after a consultation of a medical specialist in the primary plus care. Possible reasons for the referral of a patient can be that the treatment is too complicated for the facilities in the primary plus care or additional diagnostic examinations are required which are not available in the primary plus care. A high degree of referral might indicate that it could be beneficial to directly refer the patients to the secondary health care instead of first to the primary plus care. Maastricht University has done research on the degree of referrals of five specialties in two pioneer sites in Limburg (Hoof et al., 2016). After a consultation of an internist in the primary plus care just 1.2 percent of the patients were referred to the secondary health care. This percentage was considerably higher for the specialties orthopedics with 42.9 percent and dermatology with 31.4 percent. On average over the five specialties the degree of referral was 21.9 percent. There are no strict boundaries to determine the suitability based on the degree of referrals.

The last aspect of the suitability is the profile of the medical specialist in the primary plus care. The research of Maastricht University also revealed that the attitude of the medical specialist should be in line with the substitution model. This means that the general practitioner is the main treatment provider in the health process, so the medical specialist does not use the primary plus health care to refer patients to the secondary health care.

### 4.3.2 Process

As mentioned before, primary plus care is a replacement of the primary care by incorporating the primary care and adding simple secondary care. This is reflected in the health process, which is more extensive than the process of the primary care. Figure 12 shows the health processes schematically of both the primary and primary plus care. The diagrams have been discussed during the interviews.

![Figure 12: Health processes of primary and primary plus care](image-url)
Generally, there is a rigid separation of the primary and secondary care. In the primary health process a patient is treated by a general practitioner or another health professional as long as the treatment is not too complicated. When the demand for health care becomes complex, the patient is referred to the secondary care for diagnosis and treatment.

The main difference with the primary plus health process is that general practitioners have the possibility to consult a medical specialist within the primary plus care. This can take place by medical specialists providing advice in person, consultation hours or small surgery. The general practitioner will stay the main treatment provider and the medical specialist consults the general practitioner regarding diagnosis and treatment of the patient. This allows general practitioners to provide more treatments in the primary plus care without referring patients to the secondary health care. Besides the consultation of medical specialists, the general practitioners have the possibility to perform additional diagnostic examination in the primary plus care resulting in faster and better diagnoses. If the treatment of the patient is too complex for a general practitioner, the patient will still be referred to the secondary health care. After a treatment in the secondary health care, patients have the possibility to visit a medical specialist in the primary plus care for a check-up. Examples are the treatment of chronically sick or a check after a cerebrovascular accident.

4.3.3 Elements of primary plus care

The definition of primary plus care still is broad term. Six elements of primary plus care are distinguished in this research based on literature and the exploratory interviews. The elements describe the additional activities in the primary plus care health care.

1. Advice of medical specialists

One of the elements of primary plus care is the advice of medical specialists to general practitioners and other primary health professionals in person. The advice is provided without consulting a patient and is intended to support the health professionals in their daily activities. Examples of advices are the assessment of the results from a diagnostic examination or proposals for the treatment of a disease. This offers general practitioners and other primary health professionals the possibility to consult a medical specialist when they are doubtful about a diagnosis or treatment. The exchange of knowledge can take place in the building by face-to-face meetings.

2. Consultation of medical specialists

The consultation of medical specialists is necessary to make a decent diagnosis of a patient. General practitioners will refer patients to a medical specialist in the primary plus care with the aim of receiving an advice for the patient. During the consulting hour the medical specialist will examine the patient and based on this make a diagnose and draw up a treatment plan. The medical specialist will send an advice to the general practitioner regarding the diagnosis and treatment plan. This advice should enable the general practitioner to either continue with the treatment or refer the patient to the secondary health care if the treatment is too complicated for the general practitioner.

Another possibility for the consultation of a medical specialist is the combined consulting hour. General practitioners have the opportunity to examine and discuss a patient with a medical specialist during a combined consulting hour (Hoof et al., 2016). The medical specialist discusses the combined consult afterwards with the general practitioner. An advantage of this is the knowledge exchange between two health professionals (Seesing, Haalboom & Geerse, 2015).

3. Medical intervention by medical specialists

The third element of primary plus care involves small surgery by medical specialists. Simple secondary care treatments are substituted in the primary plus care. The surgery can be performed by the medical
specialist or by a general practitioner under the supervision of a medical specialist. Examples of treatments covered by the small surgery are sterilization or excisions of cyst or lump. The surgery requires medical appliances, staff and an operating room. These facilities are expensive, so not all surgery is eligible for the primary plus care. Certain economies of scale are required in order to do the investments in the facilities.

4. Primary care residence

Another element of the primary plus care is the primary care residence. This is, according to Remmerswaal et al. (2016), a medically necessary short-term residence, where general practitioners provide the medical care with 24-hour supervision in proximity. The care is intended for vulnerable people who are temporarily not able to reside in their own living environment. There is no hospitalization designated for them in a hospital or other health institutions. The primary care residence was financed in 2015 and 2016 by the Law long-term care. This means that the care is only financed for patients with an indication for long-term care. Starting from January 2017 the financing of the primary care residence will be transferred to the Health insurance Law (Wildt & Rütte, 2016). As a result, the primary care residence is accessible for everybody with an insurance policy. In this way, a social safety net is created for vulnerable people living independently in their own home.

5. Additional diagnostic facilities

Additional diagnostic facilities offer health professionals the possibility to perform diagnostic examinations in the primary plus care or to send patients for additional diagnostics. A general practitioner in the primary health care needs to send a patient to the hospital for a diagnostic examination, like a X-ray or ultrasound. The element of additional diagnostic facilities provides these facilities in a general practitioner practice or health care center. Examples of diagnostic facilities are X-ray machines, ultrasound machines, heart monitors and blood samples examinations. General practitioners will be able to determine diagnoses faster and with a greater degree of certainty, mentioned in the interviews with the manager of De Friesland and researcher of Maastricht University.

A certain economy of scale is necessary to make the investments profitable for the appliances involving high costs. This also applies for the facilities for the small surgery in the primary plus care. Hospitals can facilitate the diagnostic examinations in the primary plus care by renting a space and performing the examinations. The examination costs, however, are part of the secondary health care. This will affect the deductibles and results in costs for the patient. The question arises if this still is a form of primary plus care, because the financing of the care does not go by the general practitioner. The costs of an examination in the primary plus care are most of the time lower than in the secondary care due price agreements. Besides, it results in time reduction and thus higher quality for patients. Based on these arguments primary care residence is interpreted as primary plus care in this research.

6. Treatment of chronically sick

The last element of primary plus care is the treatment of chronically sick by general practitioners, practice supporters and other primary health professionals. The care is substituted from the medical specialists in the primary plus care. As a consequence, patients can go to a health care center for the treatment of chronic diseases or follow-up checks instead of to the hospital. Examples of diseases that are eligible for the substitution are pulmonary diseases, diabetics and cardiovascular diseases.

4.4 Real estate

The primary plus care in the pioneer site is accommodated primarily in health care centers and in some cases in general practitioner practices, shown in the monitor of the RIVM (Drewes et al., 2014). The care provided in general practitioner practices mainly concentrate on the consultancy of medical specialist to general practitioners and consulting hour of medical specialists. The medical specialist use the existing
facilities to provide health care. The primary plus health care centers are often developed by an organization. In the organization participate both primary and secondary health care institutions. The organizational form frequently are a joint venture between general practitioners organizations and a hospital, like ZIO in Maastricht. However, the organization can also be solely in the hands of a general practitioner organization, long-term health organization or hospital.

The size of a primary plus health care center can be expressed in the number of registered patients. The program manager of InEen indicated in the interview that the catchment area of a primary plus health care center should be between 10,000 and 15,000 patients. The accommodation still has a human dimension and does not become a small hospital. However, the health care center require a certain economy of scale to make a sufficient return on the investment and to be interested for medical specialist to provide health care. The pioneer sites for primary plus care are located in urban areas. During the interviews it became clear that catchment area in cities is larger with more possible patients. According to the research of Maastricht University have international studies shown that primary plus care has developed itself more in the rural areas. However, this is not the case in the Netherlands. The international studies also showed that the travel time for medical specialists is an important factor for the location of the primary plus care due to the costs.

4.5 Summary
The primary plus care fades the rigid separation in the health care system between the echelons. The general goal of the primary plus care is to support general practitioners in the treatment of patients by integrating the knowledge of medical specialists in the primary care. This should improve the cooperation between general practitioners and medical specialists and in addition reinforce the gatekeeper role of the general practitioner. The most important reason for the development of the primary plus care are the expected savings in the overall health costs. The health costs should be reduced due to the prevention of unnecessary referrals to the secondary health care.

This research defines primary plus care as “primary care supplemented with health care on the interface of primary health care and simple secondary health care that is financed by the idea of functional fee-for-system”. This means that it is not important ‘who’ is financed for the health care, but ‘what’ is financed regardless the health professional. The most important difference of the primary plus care in comparison to the primary care is that there is a possibility to consult a medical specialist. This is reflected in six different elements of primary plus care: consultancy of medical specialist to general practitioners, consulting hour of medical specialists, small surgery by medical specialists, primary care residence, additional diagnostic facilities and treatment of chronically ill.

The participants in the primary plus care are both from the primary and secondary health care. Patients visit primary health professionals in the primary plus care and they can be referred to a medical specialist within the primary plus care. The benefit for patients is the possibility to visit medical specialists in close proximity without encroaching on the deductibles. General practitioners will keep the coordination over the patient during the process in the primary plus care. The support of medical specialists reinforces the general practitioners’ role as a gatekeeper by enabling them to make better diagnoses, draw up treatment plans with more certainty and perform more treatments than in the primary care. Other primary health professionals will primarily provide primary health care, but they have the possibility to consult a medical specialist too. It is expected that the cooperation will be less intensive than for general practitioners. Medical specialists are the new addition to the primary plus care in comparison to the primary care. The support of medical specialists concentrates on three possibilities: the advice to health professionals, the consultation for patients and the performance of medical interventions. Not every medical specialty is suitable to apply in the primary plus care. The suitability of a specialty depends on three aspects: the required diagnostic facilities, the degree of referrals to the secondary health care and the profile of the medical specialists.
5
Research method
The research method is explained in the fifth chapter of this report by defining the used terms, concepts and procedure. The used method differs from usual user needs analysis method. For that reason, both of the methods are clarified and the advantages of the USE method over the usual methods are given.

The primary plus care has recently been developed in the Dutch health care sector. As a consequence, not much research has explored the demand for real estate in the primary plus care. Research is required on the demands of the users in order to accommodate the health care process as optimal as possible. This chapter discusses the method that is used to analyze the demands.

5.1 Method

The features of a health care center should be in line with the needs of the users. There are several methods to determine the user needs. The methods are based on different foundations with varying principles. This paragraph discusses two different methods that can be used to analyze the user needs. First, the regular method is explained that analyzes the user needs based on demands and preferences. The second method analyzes the user needs based on the process of use.

5.1.1 User needs based on demands and desires

The usual method to determine user needs is based on demands and desires of the users. The demands and desires are obtained in interviews by asking the users directly to their preferences regarding the building performances. Building performances describe features of the supply and is supply-driven. The method has a number of disadvantages, according to Heijs (2007).

First, users will only describe familiar features of buildings when they express their demands and desires. Moreover, users are only partially aware of what they want and they are not aware of alternative features of buildings, which will result in incomplete list of functional demands. This could limit the opportunities for designers to come up with innovative solutions. Second, the supply is evolving due to for example technological developments. These developments change the possibilities to meet the demands and desires of users, like conducting a consultation with the use of a video connection. However, if the users are not aware of the possibilities, they will not name these features. Third, users might be tempted to require unrealistic demands and desires. This could result in disappointments when not all their demands and desires will be fulfilled in the design. A general practitioner could for example demand a consulting room of 30 square meters with a separate office to do administration, while this is not realistic. Finally, the description of demands and desires as environmental attributes creates a creative barrier for designers. The solutions for the design are provided by the users without involving the designers. The design process can be seen as completing a check list.

5.1.2 User needs based on the process of use

The analysis method for user needs based on process of use emphasizes on the description of the demand side. The User needs by Systematic Elaboration (USE) method developed at the University of Technology Eindhoven is based on the process of use (Heijs, 2007). The method originates from the Person-Environment (PE) fit theory, which strives to match the personal and situational variables (Muchinsky & Monahan, 1987). The ‘person-environment congruence’ indicates the degree of fit or match between two sets of variables in producing positive (or negative) outcomes. Pervin (1968) proposed that good matches between people and environment result in high performance, high satisfaction and little stress.

The USE method comprises two phases, that first determine the user needs by describing the processes of use and subsequently match the supply features with the needs. The goal of the method is to strive for the best possible fit between the demand and supply as a whole. The USE method applies new definitions in comparison to the usual method to determine a program of demands.
Definitions

In order to avoid that the demand and supply side describe the same dimension, it is important to apply clear definitions. The definitions aim to map the user needs based on the process of use. First, the demand side is defined by expressing the user needs.

This research applies the same definition for ‘user needs’ as the USE method:

“a physical or psychological state, or an activity to reach this state, that is fundamental for physiological, social and psychological well-being, associated with the process of use” (Heijs, 2007, p.4).

The goals and activities in this research are derived from the processes of use of the future users in a primary plus health care center. Examples of goals and activities are ‘the need for safety or privacy’, ‘examine patients’, ‘treat patients’, or ‘do administration’.

Second, the demand side expresses the real estate in building performances. The demand should be the counterpart of the supply, so that the demand describes the user needs and the supply describes the building characteristics. The real estate requires certain building performances in order to fulfil the user needs. The definition for a building performance is derived from the USE method and is as follows:

“an environmental property, necessary to fulfil a user need” (Heijs, 2007, p. 4).

A building performance has a certain level of aggregation and a solution space. The level of aggregation indicates the amount of specification. A low level of aggregation means that the performance has a high level of details. An example of a performance with a low level of aggregation is ‘an inwards opening door with blinded glass, a wide handle and a lock’, conversely, a performance with a high level of aggregation, like ‘an access to a room’. The solution space indicates the degree of design freedom. This determines to what extent the designer has the freedom to come up with solutions to fulfil the user needs. A large solution space indicates that the designer has more autonomy in finding a solution for the user needs, while a small solution space limits the degree of freedom for a designer. An example of a performance with a large solution space is ‘lighting’ and with a small solution space ‘LED spotlight made by Philips’.

Third, the definition for functional demands brings the demand and supply together by linking the user needs with the building performances. A functional demand is defined as:

“a coupling of a user need with a performance (in a location)” (Heijs, 2007).

The coupling helps a designer to understand why a building has to meet certain performances. An example can be that a building has to have a rough floor in order to guarantee the physical safety of the users. Moreover, the coupling offers a possibility to evaluate the building performances based on the relevance and necessity, because the functional demands include a motivation for the performance.

Finally, the functional program of demands is defined. The functional demands are combined for the whole building. Many different users with various needs will be located in a health care center. The functional demands of all the users with a fundamentally different process of use will be merged in the functional program of demands. The definition for the functional program of demands is:

“aggregation of functional demands” (Heijs, 2007).

The functional program of demands is part of the full program of demands, which also contains for example the technical details, phasing and financing.
Figure 13 shows the terms in a schematic representation. On the one hand, the user needs represent the demand, on the other hand, the building performances represent the supply. These two come together in the functional demands. The functional demands are combined in the functional program of demands. Ultimately, the functional program of demands will be compared to the current supply of real estate.

![Figure 13: Relations between the terms regarding the USE method](image)

**Advantages of USE method**

The advantages of the USE method in comparison to the usual method concentrates primarily on the difference in describing the user needs. First, the description of user needs based on the process of use results in a set of user needs which are not limited to the familiar needs for the user. This prevents alternative and innovative solutions to be depreciated. The designer knows the motives behind the functional demands due to the systematical coupling of performances to needs. The interpretation of needs will create less difficulties with ultimately a better design. Second, the user needs are more stable with the USE method. The usual method is subject to future changes like technological developments. The changeability of the user needs expressed in goals and activities is lower than the user needs expressed in features of the supply. The process of use generally remains the same over a longer period. Third, the user needs are more realistic than with the usual method, because the needs are based on the process of use instead of the desires of the users. The desires of the users will be expressed as building performances in the supply. Finally, the set of functional demands is more extensive, more complete and better tailored to the actual use of building. The aggregation of goals and activities of the users with the USE method is smaller and more organized than the supply features with the usual method. The coupling of the user needs with the performances forms a more comprehensive set of functional demands, that offer solutions for the possible goals and activities of the user. Moreover, the coupling offers a motive for each performance which should lead to a better design of the building.

**5.2 Research approach**

This research applies the USE method to develop a functional program of demands for a primary plus health care center. A number of steps will be followed to achieve this goal. This paragraph discusses the steps of the research approach.

1. **User groups**

First, an analysis is conducted on the user needs of all the future users in a primary plus health care center. The first step in the analysis is the determination of the possible user groups. The user groups are distinguished on fundamentally different processes of use in a building. This means that the user group performs different activities or requires special facilities. The choice to combine or differentiate user groups is based on rational and pragmatic reasons.
2. User needs

Subsequently, the needs of the different user groups are mapped by in-depth interviews. The goal of the interviews is to acquire a set of concrete functional needs for every user group, that is as comprehensive as possible. The needs are expressed in goals or activities, corresponding to the definitions as described above. The interviews primarily focus on the functional aspects of the well-being in relation to the processes of use in a health care center.

During the interviews the respondents are asked to describe the activities they perform as a health professional or the activities they would like to perform. All activities are combined into a list of user needs. Examples of activities are ‘perform physical examination’, ‘discuss medical history’ or ‘prescribe medication’. For each activity the respondent is asked why the activities is performed or what the goal is the respondent wants to achieve. The intention of this question is to find out the goals behind the activities. Examples of goals are ‘discuss medical history’ or ‘examine patient’. The goals are used to find additional activities related to that goal. This should result in a comprehensive set of user needs. The respondents are then asked if they experience any problems during their daily activities. Thereafter, the respondent is requested to describe the activities that occur not on a daily basis, but they should be performed adequately. This procedure will first concentrate on the primary care and will be repeated subsequently for the primary plus care. In the case of the primary plus situation, the respondents are requested to image as if they were employed in a primary plus health care center. The user needs in the primary plus are mapped per element of primary plus care.

If the user needs are incomplete or unclear during the interviews, the user needs will be elaborated by asking the respondents to concretize user needs. The concretion of the user needs will take place by splitting up the unclear needs in multiple needs and reforming needs in more concrete activities. Finally, the list of user needs is completed with user needs derived from a literature study.

3. Functional demands

The third part of the data collection aims at the development of functional demands by coupling the user needs with the building performances. The building performances are derived from a questionnaire and by literature study. A questionnaire will be sent to the respondents after the interview. The questionnaire contains all the goals and activities of the respondent. The respondent is asked to indicate the desired building performances per goal or activity in the hypothetical situation of a primary plus health care center. The performances might describes rooms, furniture, installations, appliances, floor space or layout. A user need generally corresponds with multiple building performances. The performances are completed with performances derived from literature. All the building performances are coupled with the user needs into the functional demands.

4. Functional program of demands

The functional program of demands is the aggregation of the functional demands for all the user groups. The program of demands will describe the functional demands based on various features. The functional demands are individually checked for corresponding, conflicting or reinforcing demands. Corresponding demands fulfil multiple user needs at once, like a space where the health professional can both examine and treat a patient. On the contrary, conflicting demands meet contradictory needs, like a smooth floor for the cleaning and a rough floor for the guarantee of safety. Reinforcing demand strengthen user needs by combining demands, like part-time use of a room resulting in saved space.

5.3 Summary

This research applies the User needs by Systematic Elaboration (USE) method to determine the demands for a primary plus health care center. The method emphasizes on a description of the demand side rather than on the supply side and consists of two phases. The first phase analyzes the user needs by describing
the process of use in a building based on activities. A user need is a physical or psychological state, or an activity to reach this state, that is fundamental for physiological, social and psychological well-being, associated with the process of use. The second phase couples the performances with the user needs, where a performance is an environmental property, necessary to fulfil a user need. The functional demands are the result of the coupling of a user need with a performance in a location. Finally, the aggregation of the functional demands is the functional program of demands.

Usual methods to analyze user needs are based on demands and desires of the users. The demands and desires are obtained in interviews by asking the users directly to their preferences regarding the building performances. Building performances describe features of the supply and is supply-driven. The USE method has several advantage over the usual methods. First, the description of user needs based on the process of use results in a set of user needs which are not limited to the familiar needs for the user. This prevents alternative and innovative solutions to be depreciated. Second, the user needs are more stable with the USE method. The changeability of the user needs expressed in goals and activities is lower than the user needs expressed in features of the supply. Third, the user needs are more realistic than with the usual method, because the needs are based on the process of use instead of the desires of the users. The desires of the users will be expressed as building performances in the supply. Finally, the set of functional demands is more extensive and tailored to the actual use of building. The coupling of the user needs with the performances forms a more comprehensive set of functional demands, that offer solutions for all the possible goals and activities of the user.

The research approach consists of four steps. The first step in the analysis is the determination of the possible user groups. The user groups are distinguished on fundamentally different processes of use in a building. Second, the needs of the different user groups are mapped by in-depth interviews. During the interviews the respondents are asked to describe the activities they perform as a health professional or the activities they would like to perform. All activities are combined into a list of user needs. Third, the functional demands are acquired by coupling the user needs with the building performances. The building performances are derived from a questionnaire and by literature study. Finally, the aggregation of the functional demands results in the functional program of demands. The functional program of demands will offer insight in required demands for a primary plus health care center.
6 Data collection and results
This chapter discusses the data collection and the results of the research. First, the selected user groups are determined. The user groups excluded from the research are briefly discussed too. The data collection covers the respondent sample and the procedure for the data collection. The procedure describes how the data is collected. Subsequently, the results give an interpretation of the data by addressing the conspicuous user needs, lay-out of program of demands, overall results, interesting sections for stakeholders, additions to primary plus care, problems indicated by the respondents and differences for the primary health care. The chapter ends with an advice for the development of a new primary plus health care centers.

Primary plus health care centers should offer the most optimal environment for all users. Primary and secondary health professionals will cooperate in the same building. This cooperation is currently uncommon in the Netherlands. It is therefore necessary to map the needs of all the future users. This chapter discusses the results of the user needs analysis based on the USE method. First, the selected user groups for the analysis are determined. The participants of chapter 4 ‘Primary plus health care’ serve as main groups for the differentiation in user groups. Subsequently, the conditions for the data collection are discussed covering the organization, respondent sample and planning of the interviews. The interviews and data collection will result in functional demands for a primary health care center. The functional demands are aggregated in a functional program of demands. The results discussed in this chapter will concentrate on the findings of the functional program of demands. The findings are used to compare primary health care centers with primary plus health care centers and to give an advice for the development of a new primary plus health care center.

### 6.1 User groups

This paragraph draws a distinction between the selected user groups for the research and the user groups excluded from the research. The selected user groups originate from the participants in the primary plus care, as discussed in chapter 4. The USE method differentiates user groups based on fundamental differences in the process of use in the building. Every user group is assumed to have a unique process of use in a health care center resulting in a unique set of demands. The groups are combined or differentiated based on rational and pragmatic reasons which corresponds with the USE method. The arguments why the other user groups are excluded from the research are briefly discussed afterwards.

#### 6.1.1 User groups in analysis

- **General practitioners**

  General practitioners are the main health professionals, who provide health care and manage the general practitioner practice. The provision of health care covers the diagnosis, consultation and treatment of patients. The diagnosis of a patient by a general practitioner requires an examination of the patient with facilities like an examination room and medical tools. The treatment of patients takes place in a treatment room where the general practitioner has access to a treatment bed and medical tools. The explanation of the diagnosis, results and the treatment to the patient are communicated in the consulting room. The general practitioner therefore has a unique process of use in a health care center.

- **Physician assistants**

  General practitioners are supported in their activities by physician assistants. The physician assistant takes over patients for treatment after the diagnosis of a general practitioner. Looking at the process of use in the building, the tasks of the physician assistant differ from those of the general practitioner due to the emphasis on the treatment of patients and support for the general practitioner with administrative activities and simple diagnostic examinations. This requires other facilities than a general practitioner.
Pharmacists provide pharmaceutical health care. The activities of pharmacists concentrate on the daily management of a pharmacy, which also has a retail function besides the provision of health care. Most of the time, pharmacist assistants will supply the medication to patients and pharmacists support them in their activities. Pharmacists do not diagnose or examine patients, thus there is no need for an examination room, for example. Pharmacists give advice to health professionals and patients on medication for treatments. Hence, the activities of pharmacists cover management in an office, supporting the assistants and providing information.

Pharmacist assistants are responsible for the primary process in a pharmacy. They restock the medication, prepare prescriptions, have contact with patients and supply the medication to the patients. During these activities the pharmacist assistant is supported by the pharmacist. For this reason the process of use in the building is different than the pharmacists or other assisting staff.

The ‘posture and movement paramedics’ cover the physiotherapists and remedial therapists aiming at the human musculoskeletal system. Diagnosis and treatment of patients is therefore associated with exercises that require space. The posture and movement paramedics require considerably more space than other health professions, who are able to conduct diagnoses in smaller spaces. Therefore, the process of use in the building is different in comparison to the other health professions.

Language and speech therapists, dieticians and psychologists are combined in the user group ‘verbal consultation paramedics’ in the analysis. The reason for this combination is the expectation that the health professions require similar spaces. These health professionals do not use additional facilities to diagnose or treat patients. The main activities concerning the process of use in the building concentrate on talking to patients. A dietician will perhaps use a scale to diagnose the conditions of the patient, but this research assumes that this will not have an influence on the process of use in the building.

Medical specialists will be the new addition to primary plus health care centers in comparison to the primary health centers. The activities performed by medical specialists in the primary plus care will not be similar to the activities in the secondary health care. The medical specialists will limit their activities to simple secondary health care with the consultation of patients and small surgery as main activities. Some medical specialties are able to consult a patient without additional diagnostics facilities. This will result in a different process of use in the building in comparison to the other users. Examples of medical specialties covered by this user group are internal medicine, neurology and rheumatology.

Some medical specialists require additional diagnostic facilities to conduct a consultation. Without the facilities, these medical specialists are not able to diagnose or treat a patient. The medical specialists who require additional diagnostic facilities will be combined in a separate user group due to a different process of use. Examples of medical specialties covered by this user group are cardiologists, gynecologists and Ear Nose Throat (ENT) doctors.
6.1.2 User groups outside of research scope

Not all participants of the primary plus care, as described in chapter 4, will be part of the analysis. The choice for the analyzed user groups is based on pragmatic reason like the most frequently occurring health professions, willingness to cooperate with the research, the awareness of the possible activities and the planning. The following groups are excluded from this research.

- **Patients**

The goal of a health care center is to provide health care to patients. It would make sense if the user needs of patients are analyzed in this research. However, patients perform very little activities during the stay in a health care center and most of them are the result of activities performed by a health professional. Hence, if all the activities of the health professionals are mapped, than they should contain practically all the activities of patients too. In addition, if patients would be one user group, it will be hard to map the activities on a general level. This is because the activities of a patient strongly depend on the health profession, besides the awareness of the possible activities is low.

Primary care residence offers patients the possibility to reside in the primary plus care. However, it is expected that the primary care residence will not be integrated in a health care center due to the extent of the facilities. The activities will concentrate on the nursing of patients with related facilities such as patient rooms, treatment rooms, rooms for daily activities, kitchens, staff rooms and dining rooms. It is more likely that the primary care residence will be accommodated in a separate building. As a result, this research will only partially incorporate the primary care residence as an element of primary plus care with an emphasis on the consequences for health care centers.

- **Dentists**

Although dental care is an important element in the primary health care, the cooperation with other primary health professions is limited. The cooperation is primarily with health professionals in the dental care and therefore dentists have no strong connection with health care centers. It is expected that dentists will almost make no use of the additional facilities in the primary plus care. Besides, the dentists who were approached for the analysis, were all unwilling to cooperate.

- **Diagnostic examination professionals**

Additional diagnostic facilities is one of the elements of primary plus care, as described in chapter 4. However, there are many different diagnostic appliances to examine patients, for example X-ray machines, ultrasound machines, blood analyzers, blood pressure monitors and pulmonary function machines. The professionals who operate the appliances are usually specialized in specific examination. Every health care center will have a custom need for diagnostic examinations. The wide range of examinations makes it hard to come up with a general list of user needs for this user group. For this reason, the diagnostic examination professionals are excluded from this research.

- **Other primary health professions**

Several other primary health professions are not included in the analysis, like audiologists, occupational therapists, skin therapists, optometrists, orthoptists, podiatrists, obstetrician and nurse practitioners. These professions are rarely one of the main health professions in a health care center. Like dental care, these professions are expected to make almost no use of the additional facilities in the primary plus care either.

- **Non-medical support staff**

The non-medical support staff covers for example the housekeepers, management, human resources, receptionists and administrative personnel. It is expected that the activities of these professions
concerning the process of use in the building will not be affected by a transition from primary to primary plus care. This research aims to disclose the differences in real estate between a primary and a primary plus health care center. Given this fact and considering the limited time, this user group is excluded from the analysis.

6.2 Data collection

The functional demands arise from the coupling of user needs with building performances. The user needs are acquired by in-depth interviews with the user groups. The goal of the interviews is to obtain a comprehensive set of functional needs for all the user groups. The performances are acquired by questionnaires and literature. This paragraph describes the data collection by discussing the respondent sample and the procedure to collect the data.

6.2.1 Respondent sample

Two interviews per user group were conducted with a total of 15 interviews covering 7 user groups. The user groups ‘medical specialists without additional diagnostic facilities’ and ‘medical specialists with additional diagnostic facilities’ were combined into one group ‘medical specialists’. The respondents for the interviews were approached based on personal network (n=6), the network of Syntrus Achmea (n=3), local primary care practices in Utrecht (n=3) and pioneer sites for primary plus care (n=3). Two general practitioners, two physician assistants, a position and movement paramedic and a verbal consultation paramedic were acquired by personal network. A pharmacist, a pharmacist assistant and a verbal consultation paramedic were acquired by the network of Syntrus Achmea. The other primary health professionals were acquired by visiting local primary care practices in Utrecht and asking the health professionals if they were willing to participate in the research.

It was hard to convince medical specialists to participate in the research and most of the approached medical specialists were unwilling to be interviewed. Only one interview was conducted with a medical specialist. In order to generate the user needs and performances for medical specialists, two additional interviews were conducted with two managers of primary plus care centers. In the interviews the managers confirmed that the activities of medical specialists in the primary plus care, as described by the medical specialist, are similar for all the medical specialties suitable for the primary plus care. Subsequently, the managers described the required performances for the user needs of various medical specialties. The medical specialist and managers were acquired by contacting two pioneer sites for primary plus care.

The two interviews per user group showed many similarities, so there seemed to be no need for a third interview per user group. The primary care respondents were employed in primary care practices and the medical specialist worked part-time at a primary plus health care center. The interviews took place in October and November 2016 in a time period of five weeks at the workplaces of the respondents. The average duration of an interview was 50 minutes. The responses of the interviewees were directly documented on a laptop during the interview. Table 3 shows the user groups with the respondent sample and the characteristics of the respondents.
6.2.2 Procedure

In preparation for the interviews an interview guide was developed as a guideline (appendix V). The interview guide contained a diagram of the research plan, a description of user needs and performances, an introduction to primary plus care, a description of the elements of primary plus care and the questions. The interview guide was used for each interview to structurally explain the research and ask the questions.

Interviews

During the interview, the respondents were first introduced to the research and the goal of the interview. The data collection started by exploring the user needs in the primary care. The first question was: which activities do you perform on a daily basis? The respondents were advised to start at the beginning of the day and to proceed through the day. The respondents were also requested to concentrate on the activities that are important for the process of use in a building. For every activity the respondents were asked: why do you perform the activity or what is the goal of the activity? The objective of this question was to explore the goals behind the activities and through that to discover additional activities related to achieve that goal. This order of questions enabled the respondents to describe as much activities as possible. After
mentioning all the daily activities the respondents were asked, if there are any special activities that do not occur on a daily basis. When the respondents were finished mentioning all the goals and activities, the list of goals and activities was checked together with the respondent by asking: are we not forgetting any activities? Subsequently, per goal or activity the respondent was asked: are there any problems related to the building that occur when achieving the goal or performing the activity? This question was intended to explore problems that needed to be taken into account in the program of demands. Finally, the data collection on user needs in the primary care was finished with the question: are we not forgetting something?

The procedure was repeated for the user needs in the primary plus care. The respondents were first introduced to the primary plus care and all six elements of primary plus care were explained to the respondent. Subsequently, the respondent was asked per element of primary plus care: which additional activities do you expect to perform in a primary plus health care center? And: what are the goals of the additional activities? The respondents were slightly helped by suggesting some possible activities they could perform in a primary plus health care center. Again, the list of goals and activities was checked with the question: are we not forgetting any activities? When the list of activities was done, the respondent was asked whether he or she expects to face any problems in the future in the primary plus care, for example: bigger rooms in case of combined consultations. The interview was concluded with the question: are we not forgetting something?

If the user needs were unclear or incomplete during the interview, the respondents were requested to elaborate the user needs. The elaboration took place by splitting up and specifying the initial responses of the respondent. Inaccurate responses were split up into multiple user needs, for example: ‘get patient’ became ‘go to patient in waiting room’ and ‘guide patient to consulting room’. Unclear response were combined in one user need, for example: ‘conduct meetings with assistants’, ‘conduct meetings with general practitioners’ and ‘conduct meetings with other health professionals’ were combined in ‘conduct meetings’. The final responses of the interviewees were directly documented in an Excel-file on a laptop. The first column in the Excel-file consisted of the goals. Activities related to the goals were documented in the columns behind every goal.

Normally, the list of user needs is completed with user needs derived from literature. However, no user needs were found during the literature study that describe user needs as activities of health professionals. Table 4 shows examples of elaborated user needs for a general practitioner.

Table 4: Example of elaborated user needs for a general practitioner

<table>
<thead>
<tr>
<th>General practitioner</th>
<th>Primary health care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities</td>
<td></td>
</tr>
<tr>
<td>Check e-mail</td>
<td></td>
</tr>
<tr>
<td>Guide patients through building</td>
<td>Go to patient in waiting room</td>
</tr>
<tr>
<td>Examine patient</td>
<td>Discuss medical history</td>
</tr>
<tr>
<td>Draw diagnosis</td>
<td>Evaluate examination</td>
</tr>
<tr>
<td>Discuss results with patient</td>
<td>Explain treatment plan to patient</td>
</tr>
<tr>
<td>Prescribe medication</td>
<td>Prescribe medication on computer</td>
</tr>
</tbody>
</table>

Performances

The functional demands are composed by adding performances to the needs. The performances are derived from the respondents and literature. A questionnaire was sent to the respondents with the elaborated user needs after the interviews. The respondents were asked to fill the questionnaire with the
desired performances for the user needs in the hypothetical case that the respondents were employed in a primary plus health care center. Table 5 shows an example of a questionnaire that was sent to a respondent. 'Discuss medical history', 'conduct meetings' and 'store documents' are examples of user needs. To help the respondents, the questionnaire entailed some pre-filled performances like desk, chairs and computer. Underneath the pre-filled performances was space for the respondents to describe additional performances. The performances might describe rooms, furniture, installations, appliances or other characteristics of the building.

Table 5: Example of performance questionnaire

<table>
<thead>
<tr>
<th>Discuss medical history</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desk, chairs and computer</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conduct meetings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desk and chairs</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Store documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabinets</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

In total, 10 of the 15 respondents returned a completed questionnaire. The respondents who returned a questionnaire are indicated in table 3 with 'X' in the column 'Performances'. The respondents checked the pre-filled performances, completed them and filled in missing performances. However, the respondents indicated that they found it difficult to generate new performances. As a result, the share of performances derived from respondents was rather low. The performances for medical specialists were almost completely derived from the questionnaires of the two managers in primary plus health care centers. The two managers were aware of the performances for the medical specialties that provided health care in their primary plus health care center. In this way, it seemed not necessary to conduct more interviews with medical specialists and the performances for multiple medical specialists were derived at the same time.

The performances were completed with performances from literature of Waarden & Empel (2015). This is a manual for constructing a health care center developed by the National General practitioners Association ('LHV'). The manual provides guidelines regarding the required rooms, appliances and furniture for various primary care professions in a health care center.

6.3 Results

The results will give an interpretation of the collected data. First, the most conspicuous user needs will be discussed. This is based on individual needs from the interviews which were not expected or deviate from the rest before they were coupled to performances. Second, the layout of the program of demands is clarified. The program of demands is processed in a spreadsheet, which will be clarified for the content
and the possibilities of its use. Subsequently, the results of the program of demands are discussed in five categories: overall results, interesting sections, additions to primary plus health care centers, problems in health care centers and differences for primary care. The overall results describe the distribution of functional demands in the program of demands. The interesting sections provide insights for the stakeholders related to the development of new health care centers. The additions to primary plus health care centers describe the required functional demands per element of primary plus care. The problems in health care center discuss the current and expected problems in primary plus health care centers. And finally, the results will address the differences for the primary plus care in a primary plus health care center.

6.3.1 Conspicuous user needs

First, the exchange of knowledge with a medical specialist is a new user need for primary health professions in the primary plus care. General practitioners, physician assistants, posture and movement paramedics and verbal consultation paramedics all indicate that they would like to exchange knowledge with medical specialists. Examples of user needs concerning the exchange of knowledge are: ‘attend consultation’, ‘perform small surgery under supervision’, ‘discuss diagnostic results’, ‘preserve surgical skills’ and ‘combine consultation’. These user needs are less pronounced in the primary care. In this way, medical specialists provide a quality impulse to health care centers by offering a possibility to primary health professionals to learn from medical specialists and to preserve medical skills under supervision of medical specialists. This should lead to health care with a higher quality and less referrals to the secondary health care. However, it is questionable whether medical specialists have time for the desired knowledge exchange due to the limited time and resources.

Second, the other user needs for primary health professionals (except for general practitioners) are similar in the primary plus care as in the primary care. The user needs describe similar activities, like ‘advice on medication’, ‘conduct meetings’, ‘assist at surgery’ or ‘draw up treatment plan’. The health professionals indicate that they will be able to make better diagnoses or draw up treatment plans with more certainty in the primary plus care, but this does not result in new user needs. The new user needs for general practitioners are for example ‘manage residence team’, ‘perform small surgery under supervision’ or ‘specialize in a medical subject’.

And third, the medical specialist indicated during the interview that he thinks the advice of medical specialists as an element of primary plus care will not occur in practice without an examination of the patient. Medical specialists need to examine patients before they can give an advice to other primary health professionals. The main difference between the advice of medical specialists and the consultation of medical specialists, as elements of primary plus care, is that the consultation of medical specialists consists of an examination of patient on which the medical specialist bases an advice for other primary health professionals. Therefore, it is unlikely that the advice of medical specialists will be applied as an element of primary plus care in a health care center.

6.3.2 Layout of the program of demands

All functional demands are combined into a functional program of demands in an Excel-file (on the CD-ROM in appendix VI). The functional demands are described by various features. Every feature is assigned vertically to a column in the spreadsheet and the functional demands are shown horizontally in the rows. The columns in the Excel-file are provided with a filter function. The filter function offers the possibility to display specific components of the feature, such as the functional demands for ‘general practitioners’ or the ones that take place in ‘consulting rooms’. The following features are used in the program of demands:

- **User groups** indicate the health professionals for who the functional demand applies to. This feature can be used to filter the functional demands of a specific user group or a combination of user groups.
- **User needs** describe the elaborated user needs derived from the interviews and complemented by literature. User needs are the motivation behind the performances and therefore necessary to include in the program of demands. This feature is particularly useful to filter the functional demands for a specific user need or a combination of user needs.

- **Performances** specifies the desired building performances for the user needs. One user need can correspond with multiple performances. Every combination of a user need with a performance is translated into a functional demand. Moreover, one performance can meet multiple user needs. The filter function for performance offers insights in functional demands with the same performance for different user needs.

- **Type of performance** categorizes the performances into five different types: appliances, furniture, installation, layout and room. This feature is added to determine the type of performance and to be able to filter on a specific type of performance.

- **Type of room** suggests the space where the performance should be located, for example consulting room, operating room, examination room or kitchen. This feature indicates the required rooms per user group.

- **Floor space** describes the size of the rooms in square meters. The floor spaces are mainly derived from Waarden and Empel (2015).

- **Corresponding user groups** shows the user groups with exactly the same functional demand. This means that at least two user groups have a functional demand with the same components. The column describes the combination of user groups in abbreviations: general practitioners (GP), medical specialist (MS), pharmacist (PH), pharmacist assistant (PHA), physician assistant (PA), posture and movement paramedic (PMP) and verbal consultation paramedic (VCP).

- **Form of health care** indicates whether the functional demand applies to the primary care or primary plus care. This feature easily filters the functional demands of primary care and primary plus care.

- **Type of health care** describes the element of primary plus care: additional diagnostic facilities, advice of medical specialist, consultation of medical specialist, medical intervention by medical specialist, primary care residence and treatment of chronically sick. In the case of primary care the feature indicates ‘primary care’. The functional demands can be filtered per element of primary plus care using this feature.

- **Remarks** are added to a functional demand when there are any special remarks.

Table 6 shows an example of a functional demand of a general practitioner regarding the user need ‘discuss medical history’. The coupled performance for this need is a desk, office chair, patient chairs and computer. The type of this performances is categorized as furniture. The suggested location for the user need and performances is a consulting room with a floor space of 18 square meters. The user groups with exactly the same functional demand are: medical specialists (MS), posture and movement paramedics (PMP) and verbal consultation paramedics (VCP). The functional demand is part of the primary care and therefore the type of health care is primary care as well.

Table 6: Example of functional demand from program of demands

<table>
<thead>
<tr>
<th>User group</th>
<th>User need</th>
<th>Performance</th>
<th>Type of performance</th>
<th>Type of room</th>
<th>Floor space</th>
<th>Corresponding user groups</th>
<th>Form of health care</th>
<th>Type of health care</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>General practitioner</td>
<td>Discuss medical history</td>
<td>Desk, office chair, patient chairs and computer</td>
<td>Furniture</td>
<td>Consulting room</td>
<td>18 m²</td>
<td>GP - MS - PMP - VCP</td>
<td>Primary care</td>
<td>Primary care</td>
<td></td>
</tr>
</tbody>
</table>
The filter function in the first cell of every column offers the possibility to display a targeted search in the Excel-file. Every feature can be filtered for all the possible components in the column. For example, the type of performances can be filtered for: appliances, furniture, installation, layout, room or a combination of these components. If the filter is for instance selected for ‘furniture’, the program of demands will only show the functional demands applicable to furniture. Another example is to display the functional demands for a specific type of health care, like ‘additional diagnostics’ or ‘consultation of medical specialists’.

So-called ‘sections’ of the program of demands are created by selecting a combination of filters. The sections can be used to analyze the program of demands in greater depth. This is, for example, useful to display the functional demands of a specific user group at a particular type of room for a form of health care, like the functional demands for dermatologists in an examination room for the primary plus care. This enables involved stakeholders to experiment with the program of demands by themselves and see the results adapted to their interests.

### 6.3.3 Overall results

The overall results describe the distribution of the functional demands. The full functional program of demands consists of 315 functional demands (Appendix VII). Table 7 shows the distribution of functional demands per user group and per form of health care.

#### Table 7: Distribution of functional demands in program of demands

<table>
<thead>
<tr>
<th>User group</th>
<th>Functional demands in primary care</th>
<th>Functional demands in primary plus care</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>General practitioners</td>
<td>42</td>
<td>20</td>
<td>62</td>
</tr>
<tr>
<td>Physician assistants</td>
<td>49</td>
<td>5</td>
<td>54</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>42</td>
<td>5</td>
<td>47</td>
</tr>
<tr>
<td>Pharmacist assistants</td>
<td>42</td>
<td>0</td>
<td>42</td>
</tr>
<tr>
<td>Posture and movement paramedics</td>
<td>34</td>
<td>3</td>
<td>37</td>
</tr>
<tr>
<td>Verbal consultation paramedics</td>
<td>25</td>
<td>3</td>
<td>28</td>
</tr>
<tr>
<td>Medical specialists</td>
<td>0</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>234</strong></td>
<td><strong>81</strong></td>
<td><strong>315</strong></td>
</tr>
</tbody>
</table>

Most of the functional demands in a primary plus health care center are attributable to the primary care (234 out of 315). An additional number of 81 functional demands are added to the program of demands for the primary plus care. When looking at the 81 functional demands for the primary plus care, it can be said that medical specialists will perform most of the activities. More than half of the functional demands (45) are attributable to medical specialists. General practitioners are, as expected, the primary health professionals with the most activities in the primary plus care (20 functional demands). The other professions with some functional demands are pharmacists, physician assistants, posture and movement paramedics and verbal consultation paramedics.

There are some large differences between the elements of primary plus care regarding the number of functional demands, as shown in table 8 on the next page. By far the most functional demands (39 out of 81) are attributable to the consultation of medical specialists. This suggests that the consultation of medical specialists is the most demanding element of primary plus care in a health care center. Medical interventions by medical specialists account for 20 functional demands. This number is probably lower than functional demands for the consultation of medical specialists, because not all medical specialties will perform medical interventions in a primary plus health care center. The other elements account for the remaining 22 functional demands. However, it should be noted that the main user groups for additional diagnostic facilities and primary care residence are not incorporated in this research.
Table 8: Distribution of functional demands per element of primary plus care

<table>
<thead>
<tr>
<th>Element of primary plus care</th>
<th>Functional demands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional diagnostic facilities</td>
<td>1</td>
</tr>
<tr>
<td>Advice of medical specialist</td>
<td>8</td>
</tr>
<tr>
<td>Consultation of medical specialist</td>
<td>39</td>
</tr>
<tr>
<td>Medical intervention by medical specialist</td>
<td>20</td>
</tr>
<tr>
<td>Primary care residence</td>
<td>7</td>
</tr>
<tr>
<td>Treatment of chronically sick</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>81</strong></td>
</tr>
</tbody>
</table>

6.3.4 Interesting sections for stakeholders

The program of demands can provide some interesting insights for the stakeholders related to the development of new health care centers. The Excel-file enables the stakeholders to perform targeted searches, as discussed in the layout of the program of demands. This paragraph describes the interesting sections for stakeholders in the program of demands.

*Primary health professionals*

The program of demands can be interesting for primary health professionals to explore the functional demands for a specific user group and to see the differences in the primary plus care. The filter for user groups enables the health professional to display the functional demands of a certain health profession. Within the user group it might be interesting to filter for a specific type of room, to see which functional demands apply for that room. Moreover, the health professionals can see the additional functional demands per element of primary plus care. This enables them to adapt their practices to prepare for primary plus health care. Thus, interesting features to filter for primary health professionals are: user groups, type of rooms and type of health care.

*Designers*

The program of demand is primarily interesting for designers due to the coupling of user needs with performances. The needs provide the motivation behind the performances to the designers. It might therefore be interesting for designers to filter for a specific user need or performance in combination with a form of health. This enables designers, for example, to see the functional demands to ‘examine patients’ in the primary plus care. In addition, the filter for corresponding user groups offers the possibility to display the functional demands that apply for multiple user groups. This can be useful in combination with the type of room. The design of the rooms can be adapted to the needs of multiple users in order to apply part-time use.

*Developers and investors*

Developers and investors aim to develop and exploit a health care center that will meet the user needs in the future. The primary plus care is an upcoming development in the Netherlands, so the program of demands provides insight in the requirements for future health care centers. It might be interesting for developers and investors to filter user groups in combination with a type of health care. In this way, it is possible to compose a program of demands for a health care center with the desired health professions. For example, the functional demands for general practitioners, physician assistants, posture and movement paramedics and medical specialists offering primary care, the consultation of medical specialists and the treatment of chronically sick.
6.3.5 Additions to primary plus health care centers

The program of demands categorizes the functional demands per element of primary plus care. This provides insight into the additional requirements for a primary plus health care center. This paragraph specifies the additions to a health care center per element of primary plus care.

1. Additional diagnostic facilities

There is only one functional demand regarding the additional diagnostic facilities, as mentioned in the overall results. The functional demand entails the user need ‘train to perform diagnostic examination’ for physician assistants with a laboratory as a coupled performance. The reason for the low number of functional demands is probably because the research did not include diagnostic examination professionals as a user group. This user group is expected to perform the most activities in this element of primary plus care. The other user groups that were included in the research did not indicate any new needs or performances related to this element of primary plus care.

2. Advice of medical specialist

The advice of medical specialists accounts for 8 functional demands in the program of demands. The user groups involved in this element of primary plus care are: general practitioners, medical specialists, pharmacists, posture and movement paramedics and verbal consultation paramedics. The user needs in the functional demands describe primarily needs for the exchange of knowledge, like ‘confirm diagnosis’, ‘discuss diagnostic results’, ‘exchange knowledge’ and ‘conduct meetings’. The performances coupled with the needs are all performances which normally would be available in a primary health care center, for example a consulting room with desk, office chair, patient chair and computer or a meeting room with desks and chairs. The advice of medical specialists could easily be applied in the facilities of primary health professionals.

3. Consultation of medical specialists

The consultation of medical specialists is the element of primary plus health care with the most functional demands. The functional demands apply to the user groups: general practitioners, medical specialists, physician assistants and posture and movement paramedics. Medical specialists account for 34 of the 39 functional demands. The demands for medical specialists can be roughly split into two categories: minimal required functional demands and additional functional demands.

The minimal required functional demands describe the standard demands required by medical specialists to conduct a consultation in the primary plus care. The standard demands for medical specialists are comparable to the facilities in a consulting-/examination room for general practitioners. A consulting area with desk, office chair, patient chairs, computer and printer enables medical specialists to meet the user needs: discuss medical history, diagnose patients, draw up treatment plan, explain diagnosis and treatment plan, and prescribe medication. To examine patients a medical specialist requires performances like a treatment bed, mobile chair, medical cart, examination light and pantry. Table 9 on the next page shows the minimal required functional demands for medical specialists to conduct consultations.

The performances described by the minimal required functional demands should normally be available in a primary health care center with a large general practitioner practice. The consulting and examination room do not require exceptional performances for medical specialists to conduct consultations. As long as the capacity of the health care center is sufficient, it is possible to apply the consultation of medical specialists in the regular primary care facilities.
### Table 9: Minimal required functional demands for medical specialists to conduct consultations

<table>
<thead>
<tr>
<th>User need</th>
<th>Performance</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask assistant to clean examination materials</td>
<td>Autoclave and sealing machine</td>
<td>Laboratory</td>
</tr>
<tr>
<td>Diagnose patient</td>
<td>Desk, office chair, patient chairs and computer</td>
<td>Consulting room</td>
</tr>
<tr>
<td>Discuss medical history</td>
<td>Desk, office chair, patient chairs and computer</td>
<td>Consulting room</td>
</tr>
<tr>
<td>Draw up treatment plan</td>
<td>Desk, office chair, patient chairs and computer</td>
<td>Consulting room</td>
</tr>
<tr>
<td>Examine patient</td>
<td>Medical cart, examination light, scale, yardstick and blood pressure monitor</td>
<td>Examination room</td>
</tr>
<tr>
<td>Examine patient</td>
<td>Pantry with sink, water tap, soap dispenser, towel dispenser, cabinets and mirror</td>
<td>Examination room</td>
</tr>
<tr>
<td>Examine patient</td>
<td>Treatment bed, mobile chair, desk, computer, office chair, patient chair and recycle bin</td>
<td>Examination room</td>
</tr>
<tr>
<td>Explain diagnosis and treatment plan</td>
<td>Desk, office chair, patient chairs and computer</td>
<td>Consulting room</td>
</tr>
<tr>
<td>Go to consulting room with patient</td>
<td>Corridors with minimal width of 1200mm</td>
<td>Corridors</td>
</tr>
<tr>
<td>Go to patient in waiting room</td>
<td>Children’s play area, chairs, table and television accessible by wheelchair</td>
<td>Waiting room</td>
</tr>
<tr>
<td>Prepare diagnostic facilities</td>
<td>Medical cart, examination light, scale, yardstick and blood pressure monitor</td>
<td>Examination room</td>
</tr>
<tr>
<td>Prepare for consultation</td>
<td>Desk, office chair, computer and printer</td>
<td>Consulting room</td>
</tr>
<tr>
<td>Prescribe medication</td>
<td>Desk, office chair, patient chairs and computer</td>
<td>Consulting room</td>
</tr>
<tr>
<td>Read patient’s document</td>
<td>Desk, office chair and computer</td>
<td>Consulting room</td>
</tr>
<tr>
<td>Send evaluation to general practitioner</td>
<td>Desk, office chair, patient chairs and computer</td>
<td>Consulting room</td>
</tr>
<tr>
<td>Switch on computer</td>
<td>Computer</td>
<td>Consulting room</td>
</tr>
</tbody>
</table>

The additional functional demands for medical specialists to conduct consultations differ per medical specialty. The differences all apply to the user need ‘examine patient’. Some medical specialties require no additional facilities to examine patients and some need medical appliances like an ultrasound machine or a scale for babies. Table 10 shows the functional demands per analyzed medical specialty to examine patients.

The findings can be summarized as follows. First, the internists, neurologists, orthopedists, rheumatologists and spine specialists are able to examine patients in primary plus health care centers without additional facilities. The minimal required demands fulfill the user needs for these medical specialties. This means that these medical specialties are able to conduct consultations in primary care facilities. Second, cardiologists require five additional rooms to able to conduct a decent consultation: intake room, ultrasound room, laboratory, physical exercise room and dressing room. In these rooms the conditions of the heart are measured and monitored. A health care center needs some extensive additions to accommodate cardiologists, which will most probably lead to the construction of a new building. Third, gynecologists and urologists need a separate examination room with an ultrasound machine to examine the conditions of the patient. The performances are usually not available in the primary care and the additional examination room with an ultrasound machine are reasonably expensive to apply in the primary care. This means that the consultation of urologists and gynecologists will require some new facilities. And fourth, dermatologists, ENT specialists, ophthalmologists and pediatricians require additional diagnostic facilities in the examination room, like UV-lighting, ENT workstation, ophthalmological meter or a scale for babies. These performances can be applied in examination rooms of existing primary care facilities. However, the medical appliances for ophthalmologists and ENT specialist are reasonably expensive too and take up quite some space in the room. Thus, to apply the consultation for these medical specialties will probably require new facilities.
Table 10: Additional functional demands for medical specialists to conduct consultations

<table>
<thead>
<tr>
<th>Specialist</th>
<th>User need</th>
<th>Performances</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spine specialist</td>
<td>Examine patient</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Internist</td>
<td>Examine patient</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Neurologist</td>
<td>Examine patient</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Orthopedist</td>
<td>Examine patient</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rheumatologist</td>
<td>Examine patient</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cardiologist</td>
<td>Examine patient</td>
<td>ECG machine, treatment bed, desk, office chair, computer, yardstick and blood pressure monitor</td>
<td>Intake room</td>
</tr>
<tr>
<td></td>
<td>Examine patient</td>
<td>Ultrasound machine, treatment bed, desk, office chair, computer and window blinds</td>
<td>Ultrasound room</td>
</tr>
<tr>
<td></td>
<td>Examine patient</td>
<td>Hydro extractor and analyzer</td>
<td>Laboratory</td>
</tr>
<tr>
<td></td>
<td>Examine patient</td>
<td>Exercise bicycle, crash cart, desk, office chair and computer</td>
<td>Physical exercise room</td>
</tr>
<tr>
<td>Dermatologist</td>
<td>Examine patient</td>
<td>Shower, sink with water tap, chair and coat rack</td>
<td>Dressing room</td>
</tr>
<tr>
<td>ENT specialist</td>
<td>Examine patient</td>
<td>ENT workstation</td>
<td>Examination room</td>
</tr>
<tr>
<td>Gynecologist</td>
<td>Examine patient</td>
<td>Ultrasound machine, gynecological chair and examination chair</td>
<td>Examination room</td>
</tr>
<tr>
<td></td>
<td>Examine patient</td>
<td>Chair, coat rack and recycle bin</td>
<td>Dressing room</td>
</tr>
<tr>
<td>Ophthalmologist</td>
<td>Examine patient</td>
<td>Eye measuring machine, ophthalmology meter, window blinds and projector</td>
<td>Examination room</td>
</tr>
<tr>
<td>Pediatricians</td>
<td>Examine patient</td>
<td>Scale for babies, children blood pressure monitor, pillow, play area, ear thermometer and mobile autoscope</td>
<td>Examination room</td>
</tr>
<tr>
<td>Urologist</td>
<td>Examine patient</td>
<td>Ultrasound machine and examination chair</td>
<td>Examination room</td>
</tr>
<tr>
<td></td>
<td>Examine patient</td>
<td>Toilet, sink with water tap and flow meter</td>
<td>Toilet</td>
</tr>
</tbody>
</table>

The functional demands for general practitioners, physician assistants and posture and movement paramedics describe user needs and performances which will not have an impact on a health care center. The user needs are attend consultation, exchange knowledge and conduct combined consultation. The performances for these user needs are consulting rooms with desk, office chair, patient chairs and computer. These performances are already incorporated in the usual facilities for primary health professionals.

4. Medical interventions by medical specialists

The additions to health care centers for medical interventions by medical specialists concentrate on the treatment of patients after the consultation of a medical specialist. The treatments are performed by general practitioners and medical specialists and they are assisted by physician assistants. The goal of primary plus care is not to substitute complex treatments or interventions from hospitals in health care centers, but to perform simple treatments that can be performed without expensive medical appliances.

Medical specialists only have one user need: ‘perform surgery’. The performances coupled to this need are comparable to the facilities in an operating room for general practitioners in the primary care: a treatment bed, mobile chair, surgical light, medical cart, consulting area and pantry. Table 10 shows the minimal required functional demands for medical specialists to perform small surgery.

The performances should normally be available in a primary health care center with a large general practitioner practice. It is expected that large general practitioner practices in health care centers have an equipped operating room that meets the minimal functional demands for medical specialists.
Table 11: Minimal required functional demands for medical specialists to perform small surgery

<table>
<thead>
<tr>
<th>User needs</th>
<th>Performance</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform small surgery</td>
<td>Medical cart and surgical lighting</td>
<td>Operating room</td>
</tr>
<tr>
<td>Perform small surgery</td>
<td>Pantry with sink, water tap, soap dispenser, towel dispenser, cabinets and mirror</td>
<td>Operating room</td>
</tr>
<tr>
<td>Perform small surgery</td>
<td>Treatment bed, mobile chair, desk, computer, office chair and patient chair</td>
<td>Operating room</td>
</tr>
<tr>
<td>Perform small surgery</td>
<td>Chair, coat rack and recycle bin</td>
<td>Dressing room</td>
</tr>
</tbody>
</table>

However, dermatologists, Ear Nose and Throat specialists and surgeons require some additional facilities to perform surgery. The additional performances for these medical specialties are medical appliances like diathermy, suction machines and drainage. This means that for these medical specialties the facilities of a general practitioners practices will not be sufficient to perform small surgery.

General practitioners have four user needs: perform small surgery under supervision of medical specialist, preserve surgical skills, specialize in topic and exchange knowledge. The performances coupled to these user needs are similar to the performances for medical specialists, because the general practitioner will perform the activities in the presence of a medical specialist. In addition, these performances are usually included in the functional demands for general practitioners in the primary care. The same applies to physician assistants for the user needs: assist at surgery performed by medical specialist and exchange knowledge.

5. Primary care residence

There are only 7 functional demands describing the primary care residence. The demands apply to general practitioners, medical specialists, pharmacists, posture and movement paramedics and verbal consultation paramedics. The user needs concentrate on the support of the primary care residence, like ‘manage residence team’, ‘support nurses’, ‘provide medication’ and ‘draw up treatment plan’. The performances coupled to the user needs are either located in a simple consulting room or at the primary care residence. This means that the functional demands will not have an impact on the facilities for primary health professionals in a health care center.

6. Treatment of chronically sick

The treatment of chronically sick is already partly incorporated in the primary care and this will be extended in the primary plus care in order to reduce the number of patients in the secondary care. The functional demands for the treatment of chronically sick are similar in the primary care with user needs like ‘conduct meeting’, ‘conduct consultation’ and ‘advice on medication’. As a result, the activities can take place in the usual facilities for primary health professionals. This means that the treatment of chronically sick will not demand additional facilities in health care centers.

6.3.6 Problems in health care centers

The problems indicated by the respondents are mainly focused on the primary care rather than on primary plus care. The problems are converted in the program of demands in order to provide a solution.

First, general practitioners and posture and movement paramedics indicate that not all consulting rooms are suitable for part-time use. They want to have consulting rooms which can be used by various health professionals. This problem is reflected in the program of demands by making the performances in consulting rooms applicable to various users. The consulting rooms meet the minimal demands for a universal treatment room, as described by Waarden & Empel (2015). The room is suitable for shared use, where health professionals are able to work on a part-time basis. The demands for a universal treatment
room contain a consulting area with a floor space of at least 18 square meters, desk, office chair and patient chairs and a treatment area with a treatment dressing corner, examination lighting and pantry.

Second, general practitioners and verbal consultation paramedics indicate that they prefer a separate meeting room to conduct meetings. Meetings are often held in the staff rooms which are frequently too small for the number of people participating in the meeting. Besides, other health professionals are not able to use the staff room during meetings. Therefore, the performances in the functional demands for the user need ‘conduct meetings’ are located in a separate meeting room with desks, chairs, beamer and screen. The room is for example also suitable for being used as a staff room during the lunch or breaks.

Third, general practitioners experience problems with the noise disturbance in health care centers. The privacy of patients and possibility to work at quiet workplaces should be taken into account when designing the building. This is reflected in the program of demands by a functional demand entailing the user need ‘prevent noise disturbance’ and the performance ‘separating noisy and quiet places in the building’. The performance concerns the layout of the building.

And fourth, general practitioners want to make use of video consultation in the future. This development enables health professionals to conduct a consultation with patients by the means of a video conversation. This problem is translated in the user need: conduct video consultation. The performance coupled with this need is: video screen with camera.

### 6.3.7 Differences for the primary care

The primary plus care is an addition to the primary care with the objective to support the primary health professionals. The support of primary health professionals should enable them to perform more health care activities resulting in less referrals to the secondary care. This paragraph describes the differences for primary health professionals in a primary plus health care center in comparison to the regular primary care.

One of the differences for primary health professionals is the support in making a diagnosis, drawing up a treatment plan and treating patients. The support comes from medical specialists by confirming diagnoses, discussing diagnostic results, combining consultations, discussing alarming patients and perform small surgery under supervision of medical specialists. This enables health professionals to diagnose patients with a higher certainty and thus perform treatments themselves instead of referring patients to medical specialists. These activities do not result in new performances.

Another difference is the possibility to exchange knowledge with medical specialists. The presence of medical specialists in health care centers enables the primary health professionals to learn from the expertise of the medical specialists. Combining consultations is an example of knowledge exchange where the primary health professionals examine patients together with a medical specialist and afterwards the results are discussed.

### 6.4 Advice for development of primary plus health care center

The results show the functional demands, problems and differences for users of a primary plus health care center. But to what extent can the results be used for the development of a primary plus health care center? Based on the additional requirements, it is possible to determine whether a current primary health care center is able to provide primary plus health care or a new health care center has to be developed. Some functional demands can be applied with no or small adjustments to a primary health care center, while other functional demands require a new construction.

The development of a primary plus health care center can be roughly divided in the renovation of an existing primary health care center and the construction of a new primary plus health care center. There is a transition from renovation to construction depending on the desired program of demands of a health
care center. The tipping point indicates the point at which the transition will go from renovation into
construction. Based on the functional program of demands the exact tipping point cannot be defined. The
following determinants can be taken into account when defining the tipping point: the desired disciplines,
number of rooms, number of health professionals, appliances, current state of building, renovation
possibilities on the location, supply of other health facilities in neighborhood and cooperation with the
secondary health care. This paragraph gives an global advice for the renovation or construction of a
primary plus health care center.

Renovation

The current supply of primary health care has opportunities to apply primary plus care. A renovation
applies small adjustments to the building to make it suitable for primary plus care. Where possible,
existing facilities should be used in order to avoid high renovation costs. The primary plus care aims at
providing health care with minimal costs for the accommodation.

The advice of medical specialists and treatment of chronically sick are elements of primary plus care that
are suitable to apply in primary health care centers or large practitioner practices. These two elements do
not require additional performances to meet the user needs as described in the program of demands. The
user needs are similar to those of the primary health professionals. As a result, no adjustments to the
building are required and the existing facilities can be used.

The consultation of medical specialists can be applied to a certain extent in current health care centers.
Medical specialists require similar performances as general practitioners to conduct consultations.
Perhaps some small adjustments might be necessary to the consulting and examination rooms to meet the
standard of medical specialists. However, not all medical specialties will be able to conduct consultations
in the large general practitioner practice or primary health care center. The following medical specialties
could conduct consultations: dermatology, internal medicine, neurology, orthopedics and spine specialist.
These medical specialties require no additional diagnostic facilities and are able to conduct consultations
in a consulting-/examination room with the minimal required demands. If the medical specialists will use
existing facilities, the occupation of rooms needs to be sufficient.

Construction

The construction of a new primary plus health care center will take place if the capacity of the current
facilities of a health care center are inadequate to accommodate the additional activities. It is expected
that the capacity will be inadequate when a health care center will provide more than the following
elements of primary plus care: the advice of medical specialists, treatment of chronically sick and the
consultation of dermatologists, internists, neurologists, orthopedists and spine specialists. This means
that the consultation of cardiologists, ENT specialists, gynecologists, ophthalmologists, pediatricians and
urologists, medical interventions by medical specialists, additional diagnostic facilities and primary care
residence will require the construction of a new health care center.

The scale of the elements determines the program of demands for the building. The elements can be
applied on a small scale, like the consultation of a few non-demanding medical specialties or simple
additional diagnostic facilities like taking blood samples and urine analysis. An extension of a building will
be sufficient to accommodate small scale activities. If the primary plus care will be applied on a large scale,
it is advisable to construct a new building. For example, the consultation of cardiologists requires 6 rooms
and medical appliances and the medical intervention of surgeons requires an equipped operating room. It
is expected that the primary plus care will require a certain scale to make the health care profitable. As a
result, the construction of a new primary plus health care center will be the best option in most cases.
6.5 Summary

The user needs were collected from in-depth interviews with 15 respondents covering 7 user groups: general practitioners, physician assistants, pharmacists, pharmacist assistants, posture and movement paramedics, verbal consultation paramedics and medical specialists. The interviews took place in October and November in a time period of five weeks at the workplaces of the respondents with an average duration of 50 minutes. The performances were derived from questionnaires and literature. In total, 10 of the 15 respondents returned a completed questionnaire with the desired performances for their user needs. The performances were completed with performances from literature. The performances were coupled with the user needs resulting in the functional demands. All functional demands were combined in the functional program of demands. The spreadsheet of the program of demands described the functional demands based on 10 features: user group, user needs, performances, type of performance, type of room, floor space, corresponding user groups, form of health care, type of health care and remarks.

The full functional program of demands consists of 315 functional demands. Most of the functional demands in a primary plus health care center are attributable to the primary care (232 out of 315). An additional number of 81 functional demands are added to the program of demands for a primary plus health care center. The functional demands for the primary plus care primarily come from medical specialist (45) and general practitioners (20). There are some large differences between the elements of primary plus care regarding the number of functional demands. By far the most functional demands (39 out of 81) are attributable to the consultation of medical specialists. Medical interventions by medical specialist account for 20 functional demands. The program of demands can provide some interesting insights for the stakeholders related to the development of new health care centers. The spreadsheet enables the stakeholders to perform targeted searches using the filter functions in the Excel-file.

The program of demands categorizes the functional demands per element of primary plus care. This provides insight into the additional requirements for a primary plus health care center. The elements additional diagnostic facilities, advice of medical specialists, primary care residence and treatment of chronically sick require functional demands that are similar to the primary care. The consultation of medical specialists resulted in minimal required functional demands and additional functional demands for medical specialists. The minimal required functional demands describe the standard demands required by medical specialists to conduct a consultation in the primary plus care. The additional functional demands describe the required additions per medical specialty. The medical interventions by medical specialists require facilities that are similar to the facilities in an operating room for general practitioners in the primary care. Some medical specialists require a few additional facilities to perform small surgery.

The development of a primary plus health care center can be roughly divided in the renovation of an existing primary health care center and the construction of a new primary plus health care center. There is a transition from renovation to construction depending on the desired program of demands of a health care center. The tipping point indicates the point at which the transition will go from renovation into construction. The tipping point is reached when the capacity of the existing building is insufficient to accommodate the additional activities. This is the case when the health care center offers more than the advice of medical specialists, treatment of chronically sick and the consultation of dermatology, internal medicine, neurology, orthopedics and spine specialist.
Conclusions and recommendations
The seventh chapter draws the conclusions of the report by providing answers to the research questions. The chapter subsequently covers the recommendations divided in policy recommendations, proposals for further research and a reflection on the research.

7.1 Conclusions

The goal of this research is to gain an insight in the user needs and performances of a primary plus health care center with the aim of developing a functional program of demands for a primary plus health care center. The research question to accomplish this goal is: What are the functional demands for a primary plus health care center and to what extent do the demands fit the current supply? The research question will be answered based on the following sub questions:

1. What are the current developments in the curative health care?
2. What is the current supply of real estate for curative health care?
3. What is primary plus health care and who are the participants of primary plus health care?
4. What are the functional demands for a primary plus health care center?
5. What is the match between the current supply of health care centers and the program of demands for a primary plus health care center?

7.1.1 Current developments

The most relevant developments in the curative health care are the rising health costs, ageing of society and the governmental policy. First, the health costs have been rising for decades and this starts to form an increasingly large problem for society. Important causes of the high health costs are the demographic developments, technological developments and evolving society. The largest debit entries in the curative health care sector are the care delivered in hospitals and specialist practices (32 percent) and elderly care (21 percent). These forms of health care have the highest increase in expenses in the last decade. In contrast to the specialist and elderly care, the care provided by general practitioners, dentists and paramedical health professionals are each responsible for only 3 percent of the total expenditure on curative health care. Second, the ageing of society is characterized by an increase in the share of elderly in the total population. Since 1950 the share of elderly people in the Dutch population has been growing and prognoses show that this will continue until 2040. Moreover, the expenses on health care per capita rise along with the age and a steep increase in the expenses for health can be found from the age of 65. The combination of an ageing population with higher expenses for health care at an older age result in a continuation of the increase of the health costs. And third, the governmental policy currently concentrates on limiting the growth of the health costs and substituting the care of medical specialists in the primary health care. The impact of the Zorgverzekeringswet (Health insurance law) introduced in 2006 has mixed results so far. The efficiency, freedom of choice and solidarity of the health care are under pressure due to the rising health costs. Health care professionals are therefore encouraged to substitute health care from hospitals in the primary health care with the aim of improving the quality of care, reducing the referrals, shortening the waiting lists and lower the costs for the patients.

7.1.2 Current supply

The primary health care is the largest segment in the curative supply with a total floor space of 16.2 million square meters. Within the primary health care the vast majority of the real estate (60.3 percent) is covered by buildings with a surface smaller than 2,000 square meters. Four findings can be distinguished in the supply of primary health care. First, most of the primary care practices are solo practices, in particular practices for general practitioners, dentists and physiotherapists. This could be an explanation for the fact that 60.3 percent of the real estate for primary health care has a surface of less than 2,000 square meters. Second, a tendency can be found which shows that primary health professionals of the
same professions cooperate more often in the same building. The share of solo practices decreases, for instance of general practitioners, dentists and physiotherapists. Third, the number of health professionals in the primary health care has considerably increased in the past decades. This is particular the case for general practitioners and physiotherapists. And finally, most of the primary health care facilities are concentrated in urban areas.

Primary health care centers offer health care without overnight facilities provided by an institution or partnership where various health professions are active, like general practitioners, social workers and neighborhood nurses and in most of the times physiotherapists and pharmacists. The number of health care centers has increased from 265 in 2007 to 360 in 2016. The health care centers discussed in chapter 3 give a reasonably good overview of the current health care centers. The health care centers differ considerably in size, which is expressed in the number of registered patients and the floor space. The smallest center has a gross floor space of 820 square meters, 4,500 registered patients and four primary health professions established. The largest center has a gross floor space of 6,000 square meters, 30,000 registered patients, 14 primary health professions and even an outpatient department of a hospital.

### 7.1.3 Primary plus care

The conclusions on the primary plus care are based on a literature study and four exploratory interviews with professionals and researchers, who are concerned with the implementation and effects of the primary plus care. The primary plus care fades the rigid separation in the health care system between the echelons. The general goal of the primary plus care is to support general practitioners in the treatment of patients by integrating the knowledge of medical specialists in the primary care. This should improve the cooperation between general practitioners and medical specialists and in addition reinforce the gatekeeper role of the general practitioner. The most important reason for the development of the primary plus care is the expected savings in the overall health costs. This research defines primary plus care as:

"primary care supplemented with health care on the interface of primary health care and simple secondary health care that is financed by the idea of functional fee-for-system".

The functional fee-for-system means that it is not important ‘who’ is financed for the health care, but ‘what’ is financed regardless the health professional. The most important difference of the primary plus care in comparison to the primary care is the possibility to consult a medical specialist. This is reflected in six different elements of primary plus care: advice of medical specialist, consultation for patients and medical intervention by medical specialists, primary care residence, additional diagnostic facilities and treatment of chronically sick.

The participants in the primary plus care are both from the primary and secondary health care. Patients visit primary health professionals in the primary plus care and they can be referred to a medical specialist within the primary plus care. The benefit for patients is the possibility to visit medical specialists in close proximity without encroaching on the deductibles. General practitioners will keep the coordination over the patient during the process in the primary plus care. The support of medical specialists reinforces the general practitioners’ role as a gatekeeper by enabling them to make better diagnoses, draw up treatment plans with more certainty and perform more treatments than in the primary care. Other primary health professionals will primarily provide primary health care, but they have the possibility to consult a medical specialist too. It is expected that the cooperation will be less intensive than for general practitioners. Medical specialists are the new addition to the primary plus care in comparison to the primary care. The support of medical specialists concentrates on three possibilities: the advice to health professionals, the consultation for patients and the performance of medical interventions. Not every medical specialty is suitable to apply in the primary plus care. The suitability of a specialty depends on three aspects: the required diagnostic facilities, the degree of referrals to the secondary health care and the profile of the medical specialists.
7.1.4 Functional demands

The functional demands are the coupling of a user need with a performance, according to the User needs by Systematic Elaboration method. First, the user needs are obtained by in-depth interviews with 15 respondents. Second, the performances are derived from literature and 10 completed questionnaires. Subsequently, the user needs and performances are coupled in the functional demands in the program of demands.

The full program of demands for a primary plus health care center consists of 315 functional demands. Most of the functional demands in a primary plus health care center are attributable to the primary care (234 out of 315). An additional number of 81 functional demands are added to the program of demands for the primary plus care. More than half of the functional demands for primary plus care (45) are attributable to medical specialists. General practitioners are, as expected, the primary health professionals with the most functional demands (20) in the primary plus care. There are some large differences between the elements of primary plus care regarding the number of functional demands. By far the most functional demands (39 out of 81) are attributable to the consultation of medical specialists. This suggests that the consultation of medical specialists is the most demanding element of primary plus care in a health care center. Medical interventions by medical specialists account for 20 functional demands. This number is lower than functional demands for the consultation of medical specialists, probably because not all medical specialties are suitable to perform medical interventions in a primary plus health care center. The other elements account for the remaining 22 functional demands. The program of demands offers an insight in the additions to primary plus health care centers per element of primary plus care.

1. Additional diagnostic facilities

According to the program of demands, there is only one functional demand required to apply additional diagnostic facilities. The functional demand is aimed at training physician assistants in performing diagnostic examinations. It seems that the additional diagnostic facilities can be easily applied in a health care center as an element of primary plus care. However, diagnostic examination professionals were excluded from the research resulting in missing functional demands. Nevertheless, the analyzed user groups indicated that they do not require additions to a health care center to apply additional diagnostic facilities.

2. Advice of medical specialist

The advice of medical specialists requires no additions to a health care center based on the 8 functional demands. The user needs in the functional demands describe primarily needs for the exchange of knowledge, like ‘confirm diagnosis’, ‘discuss diagnostic results’, ‘exchange knowledge’ and ‘conduct meetings’. The performances coupled to the needs are facilities which normally would be available in a primary health care center, for example a consulting room with desk, office chair, patient chair and computer or a meeting room with desks and chairs. Although the advice of medical specialists as an element of primary plus care requires no additions to a health care center, the medical specialists indicated during the interview that it is very unlikely for medical specialists to provide an advice without consulting a patient first.

3. Consultation of medical specialists

The consultation of medical specialists is the element of primary plus health care that requires the most additions to a health care center. The functional demands apply to the user groups: medical specialists, general practitioners, physician assistants and posture and movement paramedics. Medical specialists require minimal performances to be able to conduct a consultation in the primary plus care. These performances are comparable to the facilities in a consulting-/examination room for general practitioners in the primary care. The additional performances for medical specialists to conduct consultations differ per medical specialty. The differences all apply to the user need ‘examine patient’. Some medical
specialties require no additional facilities to examine patients and some need additional examinations rooms and medical appliances, like an ultrasound machine or a scale for babies. Back specialists, dermatologists, internists, neurologists, orthopedists and rheumatologists are able to conduct consultation without (almost) no additional facilities, in contrast to cardiologists, ENT specialists, gynecologists, ophthalmologists, pediatricians and urologists. The functional demands for general practitioners, physician assistants and posture and movement paramedics describe user needs and performances which will not have an impact on a health care center.

4. **Medical interventions by medical specialists**

The additions to health care centers for medical interventions by medical specialists concentrate on the treatment of patients after the consultation of a medical specialist. The treatments are performed by general practitioners and medical specialists. To be able to perform small surgery medical specialists require some minimal functional demands. The performances coupled to these demands are comparable to the facilities in an operating room for general practitioners in the primary care. Dermatologists, Ear Nose and Throat specialists and surgeons require facilities in addition to the minimal functional demands to perform small surgery. The additional performances for these medical specialties are medical appliances like diathermy, suction machines and drainage. The functional demands for general practitioners describe performances similar to the performances for medical specialists, because the general practitioner will perform the health care activities in the presence of a medical specialist.

5. **Primary care residence**

The primary care residence will not require any additional facilities for the analyzed user groups. The functional demands for general practitioners, medical specialists, pharmacists, posture and movement paramedics and verbal consultation paramedics describe user needs for the support of the primary care residence. Examples of user needs are: ‘manage residence team’, ‘support nurses’, ‘provide medication’ and ‘draw up treatment plan’. The required performances to meet the user needs are either located in a simple consulting room or at the primary care residence.

6. **Treatment of chronically sick**

The treatment of chronically sick is already partly incorporated in the primary care. The primary plus care will increase the number of treatments for chronically sick in health care centers. The user needs and performances in the functional demands are similar to the primary care. As a result, the activities can take place in the usual facilities for primary health professionals.

7.1.5 **Match between current supply and program of demands**

The match between the current supply of health care centers and the program of demands for a primary plus health care center is based on the literature study and the distribution of functional demands in the program of demands. The full program of demands for a primary plus health care center consists of 315 functional demands, of which 234 are attributable to the primary care and 81 to the primary plus care. The functional demands for the primary care are similar to the description of the current supply, as mentioned in the literature study. The mismatch between the current supply of health care centers and the program of demands for a primary plus health care center comes from the 81 functional demands for primary plus care. The differences are primarily due to the required facilities for the consultation of medical specialists and medical interventions by medical specialists.

The development of a primary plus health care center can be roughly divided in the renovation of an existing primary health care center and the construction of a new primary plus health care center. The transition between renovation and construction depends on the desired program of demands for the health care center. The supply of health care in a health care center determines the program of demand. The advice of medical specialists, treatment of chronically sick and the consultation of some medical
specialties are suitable to apply in existing primary health care centers of large general practitioners practices, as long as the capacity of the building and occupation of the rooms allows it. Additional diagnostic facilities, consultation of medical specialists, medical interventions by medical specialists and primary care residence are all elements of primary plus care that require a new construction. The scale of the elements determines the program of demands for the building.

7.2 Recommendations

This paragraph discusses the recommendations for the policies of the related stakeholders of a primary plus health care center, a reflection on the research and proposals for further research.

7.2.1 Policy recommendations

Health care institutions

A primary plus health care center accommodates primary and secondary health professionals. Most of the time, this will result in a cooperation between primary health care institutions and a hospital. The health care center should support the cooperation between the health care institutions as optimal as possible. This research offers them an insight in the possible elements of primary plus care and the related functional demands in a health care center. The results are based on the user needs derived from health care professionals in the primary and secondary health care. The application of the program of demands in a health care center offers the primary health professionals a possibility to exchange knowledge with the medical specialists and thus provide better health care. Hospitals have the possibility to substitute health care from the secondary health care in the primary plus health care and thus alleviate the pressure on the hospitals.

In addition, the user needs described as activities can be used by the health care institutions to check and perhaps adapt their own health care processes. The institutions or health professionals can prepare themselves for the primary plus care and apply adjustments to the organization. This should lead to better health procedures and thus better performances.

Designers

Designers can use the program of demands as a basis for the design of a health care center. The program of demand is primarily interesting for designers due to the coupling of user needs with performances. The program of demands provides the motivation behind the performances to the designer resulting in health care centers that are better adjusted to the needs of the users. The building performances can be new and innovative solutions to the user needs. The needs are less variable than the building performances. The health professionals in health care centers operate increasingly on a part-time basis. Therefore, the need for flexible and communal spaces grows and the designer could incorporate this in the designs.

Developers

The rise in demand of health care and the increase of the scale in the sector are market-oriented developments that result in opportunities for developers. It is expected that the number of primary plus health care centers will rise. This research offers developers an insight in the developments in the curative health care. The program of demands offers developers a possibility to apply the knowledge of the design in an early stage of the development. As a result, the chance of a successful realization of the project is higher when the user needs are incorporated at an early stage.

Investors

The real estate market for health care is an emerging market for investors due to developments like the deregulation of the government. Primary plus health care centers become interesting opportunities to invest in. First, the health care centers are more futureproof by substituting simple secondary care in the
primary plus care. This results in a more complete supply of health care and health care centers are more embedded in the neighborhoods. Second, the increasing scale of health care makes health care centers interesting investments due to the investment volume. The prospects of a growing demand for health care and the ageing of society will probably have a positive effect on health care centers.

**7.2.2 Proposals for further research**

The completion of this research immediately evokes proposals for further research. The following researches could be interesting to conduct as a follow-up to this research.

*Extension of user groups*

A new research with a more user groups could provide useful information for the primary plus care. The addition of patients, primary care residence staff and diagnostic examination professionals could gain more insight in the elements of primary care residence and additional diagnostic facilities.

*Shared use of spaces*

The shared use of spaces is something that drew attention during the research. A health care center provides opportunities for health professionals to share spaces in the same building resulting in reduced use of space. Communal spaces like staff rooms, waiting rooms, receptions or meeting rooms are suitable for shared use. However, consulting rooms, examination rooms and operating rooms can be used by multiple professions as well. A new research could focus on the user needs regarding shared use of spaces.

*Relations and positioning in building of health professions or rooms*

This research was aimed at the functional demands for a primary plus health care center without paying attention to the relations in the building between the health professions or rooms. It might be interesting to conduct a research on these relations. This would gain insight in the positions of the health professions and different rooms in the health care center.

*Fee-for-system*

The primary plus care is based on the fee-for-system, which means that the health professional receives a fee for the provided health care based on the performance and not based on the profession that provides the performance. As a result, the general practitioner will receive in most case the payment for the treatment of a patient, because the general practitioner will be the main health provider. Medical specialists will be paid by general practitioners for their provided health services. A further research can be done if this is the best financing system for the primary plus care.

**7.2.3 Reflection on research**

In general, the research went well and resulted in an extensive list of functional demands for a primary plus health care center. The program of demands consists of performances coupled to the user needs, which is not common for the curative health care market. Besides, most of the researches on primary plus care are focused on the organization and effects of primary plus care rather than on the demands for real estate. Nevertheless, some remarks can be made on the research due to limited time resources.

First, the lack of studies on the primary plus care caused some delay in the process. Four exploratory interviews were conducted with professionals and researchers in order to provide a description of the primary plus care. Besides, the primary plus care is still developing, resulting in various definitions and applications. Therefore, the research has a broad scope covering many elements of primary plus care.

Second, the user needs of the respondents will be more adjusted to primary plus health care centers, when the respondents are more up to date of the possibilities and advantages of the primary plus care. In
particular, the primary health respondents were all employed in primary health practices and most of them had no experience with primary plus care. The explanation of primary plus care during the interviews provided them with some information, but perhaps they were still not fully able to image the hypothetical situation where they had to describe their needs in a primary plus health care center.

And third, the functional demands of medical specialists are based on one interview with an Ear Nose Throat specialist and two interviews with managers of primary plus health care centers. Perhaps some more interesting user needs or other information would arise from additional interviews with medical specialists. However, the medical specialists were unwilling to participate in the research so a cooperation with for example a hospital could have resulted in more interviews with medical specialists.
8

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9.1 Appendix I: Exploratory interview ZIO

Operational manager at Zorg In Ontwikkeling (ZIO), Maastricht

Date: 8 August 2016

Algemeen

1. Wie zal de regie voeren in het anderhalvelijns zorgproces?
ZIO is een huisartsenorganisatie en stelt zich breder op om ook overige eerstelijns disciplines te bedienen, zoals fysiotherapeuten, diëtisten en apotheekers. Voor de anderhalvelijns zorg is er een joint venture opgericht met het ziekenhuis UMC Maastricht. De joint venture stuit de ‘stadspoli’ aan waar er anderhalvelijns zorg geleverd wordt. Er is eerst een concept ontwikkeld waarbij de medisch specialist als consultant wordt ingezet in een huisartsenpraktijk om de zorg zoveel mogelijk in de eerste lijn te behouden. Bij een aantal praktijken in de regio is dit onderzocht en daar is uit gebleken dat er in de huisartsenpraktijken veel gebruik van de specialisten gemaakt wordt. Slechts 25 procent van de patiënten die een consult hadden van een specialist werden doorverwezen naar de tweede lijn. Overige huisartsen in de buurt waren echter minder geneigd om patiënten naar de huisartsenpraktijk te sturen waar de medisch specialist werd ingezet. Deze aanpak is gezamenlijk opgezet vanuit ZIO en het ziekenhuis.

In de behandelrelatie zal de huisarts de hoofdbehandelaar blijven en de huisarts zal waar nodig de medisch specialist inschakelen voor een consultatie. Dit concept is nog steeds in ontwikkeling. Kleine behandelingen door een specialist komen ook steeds meer voor.

2. Als u kijkt naar het proces van de anderhalve lijn in bijlage 1 (volgende pagina), in hoeverre zal dit overeenkomen met de toekomstige situatie? Wat zijn eventuele aanpassingen op het proces?
De pijl van medisch specialist in de tweede lijn terug naar de medisch specialist in de eerste lijn zal nu niet zo snel plaats vinden. Het zou kunnen dat het op termijn mogelijk zal zijn om in de anderhalvelijns zorg terecht te kunnen voor een nacontrole. Op dit moment wordt de medisch specialist voornamelijk gebruikt om aanvullende consultatie voor de huisartsen en nog niet als zelfstandig opererend zorgverlener. Hierdoor staat de anderhalve lijn wat dichter bij de huisarts dan bij het ziekenhuis.

3. Welke nieuwe zorgactiviteiten zullen er plaats vinden in de anderhalvelijns zorg ten opzichte van de huidige eerstelijns zorg?
Op dit moment richten de extra zorgactiviteiten zich voornamelijk op het geven van advies van een medisch specialist aan een huisarts. Hierdoor is het voor een huisarts mogelijk om meer behandelingen uit te voeren doordat hij gesteund wordt door een advies van een specialist. Huisartsenbedden worden nog niet toegepast door ZIO, maar in bijvoorbeeld herstelklinieken is dit wel het geval. Patiënten kunnen hier tijdelijk uitzieken, als ze niet naar het ziekenhuis hoeven en niet in een verpleeghuis terecht kunnen.

4. Welke disciplines van de eerstelijns gezondheidszorg zullen niet geschikt zijn voor de anderhalve lijn?
De anderhalvelijns zorg is in bijvoorbeeld een gezondheidscentrum is meer een aanvulling op de eerstelijns zorg dan dat er eerstelijns disciplines niet geschikt voor zijn. De medisch specialisten worden als consultants gebruikt om advies te geven aan met name de huisartsen. Het is niet zo dat er dan overige eerstelijns disciplines niet geschikt zijn voor de anderhalvelijns zorg.

5. Welke disciplines van de tweedelijns gezondheidszorg zullen wel geschikt zijn voor de anderhalve lijn?
Eigenlijk zijn er vrijwel alle disciplines geschikt om consulten te geven in de anderhalvelijns zorg op een paar disciplines na zoals chirurgische disciplines, radiologie en spoedeisende zorg. Bij deze disciplines is het wat lastiger omdat voor een consult vaak gebruik gemaakt moet worden van medische apparatuur. Er zijn wel al aanvullende diagnostische mogelijkheden in de stadspoli’s van ZIO zoals echoapparatuur en een speciale kamer voor oogheelkunde.
6. **Wie zullen er gaan samenwerken in anderhalvelijns gezondheidscentra die dat voorheen nog niet of minder deden? En wat zal die samenwerking inhouden?**

Het zal voornamelijk bij de huisarts en medisch specialist blijven, maar een samenwerking tussen bijvoorbeeld orthoped en fysiotherapeut is ook goed mogelijk.

7. **Hoeveel verschillende disciplines zullen er ongeveer samenwerken in een anderhalvelijns gezondheidscentrum?**

Het is lastig om iets over te kunnen zeggen over het aantal disciplines in een gezondheidscentrum. Het is belangrijk om de vraag en het aanbod op elkaar af te stemmen. Er zal dus voldoende vraag moeten zijn naar een specialist om het interessant te maken om die erbij te betrekken, maar daarnaast is het ook nodig om het aanbod breed genoeg te houden zodat het voor de patiënten interessant is om een specialist te bezoeken in de anderhalve lijn. Een risico hiervan kan zijn dat een specialist aanwezig is terwijl er geen patiënten zijn.

8. **Wat zal het verzorgingsgebied worden van een anderhalvelijns gezondheidscentrum worden? (aantal ingeschreven patiënten)**

De bezetting is bij het verzorgingsgebied van belang. Zo zijn de beide stadspoli’s van ZIO niet fulltime bezet door een specialist. Het concept is nog in ontwikkeling om te kijken hoe vaak de specialist aanwezig moet zijn in de stadspoli. Afgelopen jaar zijn er ongeveer 5000 consulten gegeven door specialisten en dit aantal zou sterk moeten kunnen groeien.

9. **Waar zullen anderhalvelijns gezondheidscentra het meest opkomen? Stedelijke of landelijke gebieden?**

Er zal niet veel verschil zijn of de anderhalvelijns zorg opkomt in de stedelijke of landelijke gebieden. Maastricht is een redelijk landelijk gebied met een overzichtelijk speelveld wat betreft de zorgorganisaties. Hierdoor is het mogelijk om de anderhalve lijn te ontwikkelen. In stedelijke gebieden waar er bijvoorbeeld meerdere ziekenhuizen en huisartsenorganisaties zijn, zal het lastiger zijn om hier een samenwerking op te zetten. In een stad is de afzetmarkt groter dan in kleinere dorpen, waardoor er meer patiënten aangesloten kunnen worden aan de zorg.

**Organisatie**

10. **Welke organisatievormen zijn er mogelijk voor de anderhalvelijns zorg en welke organisatievorm zal uiteindelijk leidend worden? (allemaal zelfstandige zorgverleners, één zorgorganisatie/bedrijf waar alle disciplines binnen zullen vallen, of een tussenvorm?)**

Bij ZIO ligt de organisatie in handen van een joint venture tussen de huisartsenorganisatie en het ziekenhuis. De werknemers in de stadspoli zijn in loondienst van de joint venture. Een andere mogelijkheden zijn dat een ziekenhuis zelf de stap zet om de anderhalvelijns zorg op te zetten of het komt vanuit de huisartsen. Deze mogelijkheden zorg wel voor een concurrentiemodel terwijl je eigenlijk naar een gezamenlijk belang zou moeten toewerken om de zorg toekomst bestendig te maken. Het wordt complex wanneer er meerdere ziekenhuizen en huisartsenorganisaties in één gebied opereren. Het scenario waarbij de omzet van het ziekenhuis blijft groeien is onrealistisch en niet toekomst bestendig. Het UMC in Maastricht wil zich meer profileren als academisch ziekenhuis waarbij de perifere zorg bijvoorbeeld naar de anderhalve lijn zou kunnen.

11. **Wie neemt initiatief voor samenwerking van eerste en tweede lijn in anderhalvelijns centrum?**

Vaak komt het initiatief van huisartsen. Maar het is ook zeker mogelijk dat ziekenhuizen hier het voortouw gaan nemen. Het zorglandschap is aan het schuiven, waar ziekenhuizen samen met de huisartsen op zullen moeten reageren.

12. **Wie zal het pand van het gezondheidscentrum financieren?**

Tegenwoordig zijn er veel beleggers geïnteresseerd in zorgvastgoed, maar een gezondheidscentrum lijkt nog een redelijk risicovolle investering. De huisartsenzorg is makkelijker om te financieren. Zelf investeren door zorgverleners gebeurt vrijwel niet meer en de investeringen die gemoeid zijn in de anderhalvelijns zorg zijn erg groot.
13. Wie zal de eigenaar worden van het pand?
ZIO heeft de panden van de stadspoli’s zelf in eigendom. Dit komt door de wat langere geschiedenis van financieren van zorgvastgoed aan huisartsen. Zij hadden behoefte aan ondersteuning bij de ontwikkeling van het vastgoed. Als gevolg hiervan heeft de organisatie een aantal praktijken en locaties in bezit gekregen, waar vanuit de stadspoli’s zijn ontstaan. In de toekomst zullen de panden waarschijnlijk vooral in eigendom zijn van vastgoedbedrijven, zoals beleggers.
9.2 Appendix II: Exploratory interview InEen

Program manager of the cooperation for primary health organizations InEen, Utrecht

Date: 17 August 2016

Algemeen

1. **Wie zal de regie voeren in het anderhalvelijns zorgproces?**

   Er zijn uiteenlopende definities van anderhalvelijns zorg, dus het is lastig om daar antwoord op te geven. De sterke scheiding tussen eerste en tweede lijn is al aan het vervangen, maar deze zal in de toekomst vrijwel verdwijnen. Dit zal komen door de ontwikkeling waarbij de patiënt steeds meer de regie over het zorgproces in handen krijgt. De kans is groot dat de patiënt in de toekomst zijn zelf zorg organiseert, waarbij er veel gebruik gemaakt zal worden van zelfmonitoring door middel van eHealth. Op deze manier kan een patiënt zichzelf monitoren en aan de hand daarvan een diagnose laten stellen. Het is hierdoor minder noodzakelijk voor een patiënt om een zorgverlener te bezoeken. De patiënt zal in de toekomst steeds meer gebruik gaan maken van flexibele netwerk zorg.

2. **Als u kijkt naar het proces van de anderhalve lijn in bijlage 1 (volgende pagina), in hoeverre zal dit overeenkomen met de toekomstige situatie? Wat zijn eventuele aanpassingen op het proces?**

   Door de vervaging van de echelons in de gezondheidszorg zal de patiënt steeds meer zelf kiezen hoe de zorg geleverd zal worden. Het eigen risico van een patiënt zal hierbij steeds vaker een rol spelen. Het proces behandelt voornamelijk acute zorgvragen waarbij een patiënt behoefte heeft aan een snelle behandeling. Steeds meer zorg is gericht op langdurige zorg van chronische ziekten. Door middel van self-monitoring zal het voor patiënten mogelijk worden om zelf meer betrokken te worden in het proces. Aan de hand van de monitoring kan er door het gebruik van big data in een vroeger stadium een ziekte worden gediagnosticeerd. De preventieve gezondheidszorg zal in de toekomst steeds belangrijker worden en hier zullen de huisartsen op moeten inspelen.

3. **Welke vormen van anderhalvelijns zorg zijn er mogelijk?**

   Een groot onderdeel van de anderhalvelijns zorg is de substitutie van tweedelijns gezondheidszorg in de eerste lijn. De eerste lijn is dichter bij de patiënt en de huisarts wordt ondersteund door een medisch specialist. Dit kan plaatsvinden door gecombineerde spreekuren van huisartsen met medisch specialisten.

4. **Welke nieuwe zorgactiviteiten zullen er plaats vinden in de anderhalvelijns zorg ten opzichte van de huidige eerstelijns zorg?**

   Huisartsen kunnen meer behandelingen uitvoeren door de ondersteuning van praktijkondersteuners en medisch specialisten. De huisarts blijft wel de verantwoordelijkheid houden over de patiënt en voert controle over de zorg uit.

5. **Welke disciplines van de eerstelijns gezondheidszorg zullen niet geschikt zijn voor de anderhalve lijn?**

   In principe zijn alle eerstelijns disciplines geschikt om samen te werken met de tweede lijn in de anderhalve lijn.

6. **Welke disciplines van de tweedelijns gezondheidszorg zullen wel geschikt zijn voor de anderhalve lijn?**

   Alle disciplines kunnen in de anderhalve lijn ingezet worden, zolang er maar een juiste afstemming is in de samenwerking. Het moet om de patiënt heen georganiseerd worden. Met de opkomst van eHealth zal de patiënt meer mogelijkheden hebben om zorg af te nemen.

Gezondheidscentra

7. **Zal een anderhalvelijns gezondheidscentrum zich alleen richten op de zorg van het snijvlak van de eerste en tweede lijn? Of zullen de overige eerstelijns gezondheidszorg ook worden toegevoegd? (Zie bijlage 2)**
De anderhalve lijn moet vooral gezien worden als een verrijking van de eerste lijn door een aanvulling van de tweede lijn. De aanvulling zal zich voornamelijk richten op standaard zorg uit de tweede lijn met een groot volume. De complexe zorg zal in de tweede lijn blijven.

8. Wie zullen er gaan samenwerken in anderhalvelijns gezondheidscentra die dat voorheen nog niet of minder deden? En wat zal die samenwerking inhouden?

De samenwerking zal zich niet slechts beperken tot de huisarts met een medisch specialist. Zo is het ook mogelijk dat een fysiotherapeut zal samenwerken met een orthopede, of een diëtist met een gastroenteroloog, of een psycholoog met een psychiater. Het gaat hier dan om directe samenwerking, die niet via een huisarts loopt.

9. Hoeveel disciplines zullen er samenwerken in een anderhalvelijns centrum? En wie bepaalt dat?

Het is erg afhankelijk van de bevolkingsopbouw in de omgeving van het gezondheidscentrum. De context bepaalt de zorgvraag. Een patiënt vindt het prettig om zo veel mogelijk disciplines bij elkaar te hebben. Dit zal makkelijker te organiseren zijn in een dorp dan in een stad. Het blijft uiteindelijk een private samenwerking tussen de eerste en tweede lijn en het aantal disciplines dat zal samenwerken zal door de markt bepaald worden. In beperkte mate zal een zorgverzekeraar ook nog invloed kunnen uitoefenen op het aanbod van een gezondheidscentrum.

10. Wat zal het verzorgingsgebied worden van een anderhalvelijns gezondheidscentrum worden? (aantal ingeschreven patiënten)

Het is belangrijk om een menselijk maat te houden in een gezondheidscentrum en daardoor niet te grote centra op te richten. Het verzorgingsgebied zal ongeveer komen te liggen tussen de 10.000 en de 15.000 ingeschreven patiënten. Dit komt neer op ongeveer 5 tot 7,5 fte huisartsen.

11. Waar zullen anderhalvelijns gezondheidscentra het meest opkomen? Stedelijke of landelijke gebieden?

Het zal lastig worden om gezondheidscentra op te zetten in krimpregio’s vanwege het teruglopend aantal inwoners. Het is uiteindelijk wel van belang dat er voldoende afzetmarkt is voor de gezondheidscentra. Voor de landelijke gebieden zijn er creatieve oplossingen nodig om ervoor te zorgen dat zij voldoende zorg hebben van een hoge kwaliteit.

Organisatie

12. Welke organisatievormen zijn er mogelijk voor de anderhalvelijns zorg en welke organisatievorm zal uiteindelijk leidend worden? (allemaal zelfstandige zorgverleners, één zorgorganisatie/bedrijf waar alle disciplines binnen zullen vallen, of een tussenvorm?)

Gezondheidscentra werden vroeger vooral geleid door stichtingen waar de zorgverleners in loondienst waren. Dit komt steeds minder vaak voor. De zorgverleners zullen zich wel moeten organiseren in een maatschap om ervoor te zorgen dat zaken zoals management, organisatie en het medisch beleid centraal gefaciliteerd wordt.

13. Wie neemt initiatief voor samenwerking van eerste en tweede lijn in anderhalvelijns centrum?

Het initiatief kan vanuit verschillende kanten komen. Het is mogelijk dat dit georganiseerd wordt vanuit de eerste lijn die samenwerkingen aan zullen gaan met medisch specialisten. De ziekenhuizen uit de tweede lijn kunnen ook het initiatief nemen door partnerschappen op te zetten met huisartsenorganisaties. Als derde is het ook mogelijk voor patiënten om de zorg te gaan organiseren. Hiervoor kunnen burgers bijvoorbeeld een zorgcorporatie opzetten waarmee de burgers zorgarrangementen afnemen van zorgverleners. Op die manier is het voor de burgers mogelijk om de juiste zorg te krijgen in de buurt.

14. Wie zal het pand van het gezondheidscentrum financieren en wie wordt eigenaar?

De financiering en eigendom van het pand zullen niet overal hetzelfde zijn. Dit kan gebeuren door de zorgverleners, een externe financier of een combinatie van beide. Maar het beeld van een gezondheidscentrum waar elke discipline zijn eigen kamertje heeft, zal gaan verdwijnen in de toekomst. Door de intensieve investering voor een beleger aangezien de investering zal snel over enkele tientallen jaren zullen gaan. De ziekenhuizen zullen ook moeten gaan krimpen en zich meer gaan concentreren op topklinische zorg.
9.3 Appendix III: Exploratory interview De Friesland Zorgverzekeringen

Manager of Health Insurer De Friesland Zorgverzekeringen, Leeuwarden

Date: 16 August 2016

Algemeen

1. Wie zal de regie voeren in het anderhalvelijns zorgproces?
De huisarts zal de regie blijven voeren. Als de huisarts constateert dat er een gebrek is aan kennis, zal de huisarts naar zich toe trekken door middel van een collega-huisarts of een medisch specialist.

2. Als u kijkt naar het proces van de anderhalve lijn in bijlage 1 (volgende pagina), in hoeverre zal dit overeenkomen met de toekomstige situatie? Wat zijn eventuele aanpassingen op het proces?
Het model klopt aardig met de werkelijkheid. Idealiter wil je de patiënt zo kort mogelijk in de tweede lijn hebben. Het NHG heeft het ‘stepped care’-model ontwikkeld dat een viertal fases beschrijft. Hier is fase 1 de reguliere huisartsenzorg, fase 2 de gespecialiseerd huisartsenzorg of huisartsenzorg met een extra deskundigheid, fase 3 de super specialisatie van huisarts in aanwezigheid van medisch specialist en fase 4 de medisch specialist in de eerste lijn.

3. Welke vormen van anderhalvelijns zorg zijn er mogelijk?
Het gaat om de laag complexe tweedelijns zorg die in de eerste lijn plaats vindt. Het is vooral de ondersteuning van huisartsen door medisch specialisten in de eerste lijn. De anderhalvelijns zorg kan zich op verschillende manieren uiten. Zo kan het blijven bij een consult van een medisch specialist aan een huisarts, maar het zou ook mogelijk kunnen zijn dat een medisch specialist een verrichting uitvoert in de anderhalve lijn onder de verantwoordelijkheid van de huisarts.

Daar waar de (medische-) verantwoordelijkheid ligt, bepaalt uiteindelijk of sprake is van nulde-, eerste-, tweede-, derde lijns zorg, of anderhalvelijns zorg valt. Het is anderhalvelijns zorg als de huisarts de regie voert over het zorgproces en de verantwoordelijkheid heeft over de patiënt. Een gemeenschappelijke poli van huisartsen en het ziekenhuis en een buitenpolikliniek van het ziekenhuis valt niet onder de definitie van anderhalvelijns zorg. Een gemeenschappelijke poli is meer een vorm van multidisciplinaire zorg, vaak als ‘carrousel’ benoemd of een ‘one stop visit’ en een buitenpolikliniek valt onder tweedelijns zorg die op een andere plek wordt aangeboden.

De Friesland Zorgverzekering hanteert vier verschillende modules binnen anderhalvelijns zorg: meekijkconsult, kleine chirurgische verrichtingen, kwetsbare ouderen en behandeling van chronische ziekten en de huisartsbedden.

4. Welke nieuwe zorgactiviteiten zullen er plaats vinden in de anderhalvelijns zorg ten opzichte van de huidige eerstelijns zorg?
Huisartsen kunnen nu verantwoordelijkheid dragen en eventueel behandelingen uitvoeren, doordat zij ondersteund worden door kennis en kunde van de medisch specialist. Het laten uitvoeren van medische verrichtingen in de anderhalve lijn heeft financiële voordelen voor een zorgverzekeraar, omdat de kosten van een behandeling in de anderhalve lijn lager zijn dan in het ziekenhuis. Daarnaast is het voor de patiënt ook lucratief omdat een behandeling in de anderhalve lijn geen aanspraak zal doen op het eigen risico. Hierdoor is het voor een patiënt mogelijk om een medisch specialist te zien of zelfs behandeld te worden door een specialist, zonder dat zijn eigen risico aangesproken zal worden.

5. Welke disciplines van de eerstelijns gezondheidszorg zullen niet geschikt zijn voor de anderhalve lijn?
Om de expertise van de tweede lijn te benutten zal er een arts uit de eerste lijn aan te pas moeten komen. Dit komt omdat niet alle zorgverleners uit de eerste lijn bevoegd zijn om door te verwijzen naar de tweede lijn. Dus voor de samenwerking met de tweede lijn zijn de disciplines uit de eerste lijn geschikt die mogen doorverwijzen naar de tweede lijn.

6. Welke disciplines van de tweedelijns gezondheidszorg zullen wel geschikt zijn voor de anderhalve lijn?
In principe zijn bijna alle disciplines geschikt om in de anderhalve lijn in te zetten, maar bepalen de ziekte en de daarbij behorende behandeling in hoeverre de inzet van een medisch specialist in de anderhalve lijn mogelijk is. De diagnostiek en monitoring van patiënten zou prima kunnen in de anderhalve lijn. Chirurgische disciplines kunnen kleine verrichtingen uitvoeren in de anderhalve lijn. Als de ingrepen te complex worden, zal de zorg zich verplaatsen naar de tweede lijn.

**Gezondheidscentra**

7. **Zal een anderhalvelijns gezondheidscentrum zich alleen richten op de zorg van het snijvlak van de eerste en tweede lijn? Of zullen de overige eerstelijns gezondheidszorg ook worden toegevoegd? (Zie bijlage 2)**

Model 2, waarbij de anderhalvelijns zorg een onderdeel is van de eerste lijn, is het best passend voor de anderhalvelijns zorg. Uit dit model lijkt naar voren te komen dat de eerste lijn verantwoordelijk blijft over het zorgproces maar dat de kennis uit de tweede lijn aan de eerste lijn wordt toegevoegd.

8. **Wie zullen er gaan samenwerken in anderhalvelijns gezondheidscentra die dat voorheen nog niet of minder deden? En wat zal die samenwerking inhouden?**

Voornamelijk de huisarts met specialist. Er heerst toch een soort hiërarchie in de eerste lijn waarbij de huisarts als poortwachter fungeert. Hierdoor zullen de samenwerkingen zich voornamelijk op de huisarts richten. De specialist en huisarts zullen meer gelijkwaardig worden in de hiërarchie, terwijl de regie bij de huisarts zal blijven.

9. **Hoeveel disciplines zullen er samenwerken in een anderhalvelijns centrum? En wie bepaalt dat?**

In principe zou daar geen maximum op moeten zitten. Alles is mogelijk, maar het is wel afhankelijk van de demografische opbouw en kenmerken, incidentie en prevalentie, van de bevolking.

De anderhalvelijns zorg wordt geregeld via contracten met huisartsen. De huisartsen kunnen beslissen om op een gegeven moment een samenwerking aan te gaan met een medisch specialist, als zij merken dat ze behoefte hebben aan extra kennis op een bepaald gebied. De zorgverzekeraar contracteert in dat geval via de huisarts, die dan zelf kan bepalen op welke wijze er wordt samengewerkt met een medisch specialist. Op die manier kan de huisarts inspelen op de zorgvraag van de omgeving waar de huisarts functioneert. De samenwerking met de ene specialist zal intensiever zijn dan met de andere specialist. Zo kan het zijn dat de ene specialist wekelijks een spreekuur heeft in de praktijk, terwijl de andere specialist slechts één keer per maand komt. De zorg binnen de anderhalve lijn moet wel voldoende concurreren met zorg binnen de tweede lijn, bijvoorbeeld ten aanzien van de wachttijd voor een eerste bezoek. Het voordeel voor een patiënt is dat er geen aanspraak wordt gedaan op zijn eigen risico, als hij naar een specialist gaat in de anderhalve lijn. Dus als de zorgvraag niet acuut is en binnen de Treeknorm blijft, zou het interessant kunnen zijn om de specialist te bezoeken in de anderhalve lijn ondanks de langere wachttijd.

10. **Wat zal het verzorgingsgebied worden van een anderhalvelijns gezondheidscentrum worden?**

(aantal ingeschreven patiënten)

Een anderhalvelijns centrum zal ongeveer een verzorgingsgebied moeten hebben van 100.000 inwoners wil het een mate van rendabel kunnen zijn. Dit is cijfermatig berekend voor de provincie Friesland.

11. **Waar zullen anderhalvelijns gezondheidscentra het meest opkomen? Stedelijke of landelijke gebieden?**

Lastig om te beantwoorden. De zorg zou in principe overal plaats moeten kunnen vinden. De centra zullen wel voldoende afzetmarkt nodig hebben en die lijkt sneller te vinden in stedelijke gebieden. In de stedelijke gebieden zal er ook meer concurrentie optreden doordat er op meerdere plekken zorg aangeboden wordt. Vraag is wat dit doet ten aanzien van beschikbaarheid en instandhoudingskosten voor de diverse aanbieders.

**Organisatie**

12. **Welke organisatievormen zijn er mogelijk voor de anderhalvelijns zorg en welke organisatievorm zal uiteindelijk leidend worden? (allemaal zelfstandige zorgverleners, één zorgorganisatie/bedrijf waar alle disciplines binnen zullen vallen, of een tussenvorm?)**

Voor de zorgverzekeraar is het van belang dat de contracteerbare partij een huisarts is. Het is wel verstandig voor huisartsen om zich te verenigen en zich te laten ondersteunen door een faciliterende
Organisatie. Zodat zij zich niet met het management bezig hoeven houden en zich kunnen richten op de zorg. De organisatie kan opgezet worden door verschillende zorgaanbieders, zoals bijvoorbeeld een ziekenhuis of een langdurige zorgaanbieder. De verantwoordelijkheid voor de zorg ligt dan bij de organisatie van huisartsen, die vervolgens zorg zouden kunnen uitbesteden aan specialisten in een gezondheidscentrum.

13. Wie neemt initiatief voor samenwerking van eerste en tweede lijn in anderhalvelijns centrum?

14. Wie zal het pand van het gezondheidscentrum financieren en wie wordt eigenaar?
Er zal gezocht worden naar externe financiers voor de ontwikkeling van het pand. De financiering van de zorgverleners om de huur van het pand te betalen gebeurt ook gedeeltelijk via de zorgverzekering.

Huisartsen zijn gemiddeld risicomijdend. Voorkeur bestaat bij hen het pand te huren en geen investeringen te doen in het pand. Dus het eigendom zal voornamelijk in handen zijn van externe partijen.
Appendix IV: Exploratory interview UMC Maastricht

Researcher at UMC Maastricht, Maastricht

Date: 22 August 2016

Algemeen

1. **Wie zal de regie voeren in het anderhalvelijns zorgproces?**
De huisarts blijft verantwoordelijk voor de patiënt en zal ook de regie voeren over het proces. Het blijft wel een samenwerking tussen de eerste en tweede lijn, dus de besluiten moeten wel gezamenlijk besloten worden.

2. **Als u kijkt naar het proces van de anderhalf lijn in bijlage 1 (volgende pagina), in hoeverre zal dit overeenkomen met de toekomstige situatie? Wat zijn eventuele aanpassingen op het proces?**
Op dit moment spitst de anderhalvelijns zorg zich nog met name toe op consulten van medisch specialisten aan de huisartsen. De anderhalve lijn zou ook erg geschikt zijn om behandeling van chronische zorg op zich te nemen. Patiënten zouden voor raad en raad terecht kunnen in de anderhalve lijn in plaats van de tweede lijn. Voorheen konden patiënten ook al direct naar een overige eerstelijns discipline zonder doorverwijzing van een huisarts. Verder klopt het model aardig voor acute zorgproblemen.

3. **Welke vormen van anderhalvelijns zorg zijn er mogelijk?**
De financiering zal bepalen of het anderhalvelijns zorg is of niet. Als de financiering via de eerste lijn gaat, kan er gesproken worden over anderhalvelijns zorg. Als de financiering via de tweede lijn gaat, dan is het eigenlijk verplaatste tweedelijns zorg. Een buitenpolikliniek van een ziekenhuis is eigenlijk geen anderhalvelijns zorg en het gaat dan over verplaatste tweedelijns zorg. Er is samenwerking nodig tussen de eerste en tweede lijn. Het gaat in de anderhalvelijns zorg voornamelijk om het advies vragen aan een medisch specialist wat betreft diagnostiek en behandeling. Het kan zijn dat de specialist naar een huisartsenpraktijk of een gezondheidscentrum gaat om een consult te geven. Huisartsen waren wel bang voor het verwijzing naar een specialist en een gebouw van een andere huisarts. Om te voorkomen dat de specialist veel moet reizen is er in Maastricht voor gekozen om een stadspoli op te zetten. Daarnaast is chronische zorg ook erg geschikt om plaats te vinden in de anderhalvelijns zorg.

4. **Welke nieuwe zorgactiviteiten zullen er plaats vinden in de anderhalvelijns zorg ten opzichte van de huidige eerstelijns zorg?**

5. **Welke disciplines van de eerstelijns gezondheidszorg zullen niet geschikt zijn voor de anderhalve lijn?**
Ja, alle disciplines zijn in principe geschikt om samen te werken met de tweede lijn.

6. **Welke disciplines van de tweedelijns gezondheidszorg zullen wel geschikt zijn voor de anderhalve lijn?**
In principe zijn alle tweedelijns disciplines geschikt voor de anderhalve lijn. De complexiteit van de zorgvraag kan bepalen of er een eventuele behandeling in de anderhalve lijn mogelijk is. Wat wel naar voren komt uit de verwijzingscijfers, is dat er grote verschillen zijn tussen de tweedelijnsdisciplines. Zo wordt er bij de ene discipline veel minder doorverwezen naar de tweede lijn na een consult in de anderhalve lijn dan bij een andere discipline. De vraag is dan hoe efficiënt het dan is om een bepaalde discipline met een hoog doorverwijsgehalte in de anderhalve lijn te plaatsen. De faciliteiten zijn ook bepalend om te kijken of een discipline geschikt is voor de anderhalve lijn.
Enerzijds kan er gekeken worden naar de geschiktheid van een discipline op basis van de benodigde diagnostische apparatuur en anderzijds aan de hand van het opschalingsniveau voor de tweede lijn.
**Gezondheidscentra**

7. *Zal een anderhalvelijns gezondheidscentrum zich alleen richten op de zorg van het snijvlak van de eerste en tweede lijn? Of zullen de overige eerstelijns gezondheidszorg ook worden toegevoegd? (Zie bijlage 2)*

Het model drie lijkt het meest op de anderhalvelijns zorg. Het gaat om gedeelte van de tweedelijns zorg die ook in de eerstelijns zorg zou kunnen plaatsvinden. Dus de laag complexe, niet-acute zorg.

8. *Wie zullen er gaan samenwerken in anderhalvelijns gezondheidscentra die dat voorheen nog niet of minder deden? En wat zal die samenwerking inhouden?*

De huisartsen, GGZ heeft ook eerste en tweedelijns zorg en ouderenzorg. De digitale zorg is ook sterk in opkomst waardoor er meer mogelijkheden voor huisartsen komen om te communiceren met tweedelijns zorgverleners. Door middel van een videoverbinding zou een huisarts samen met de patiënt een advies kunnen vragen aan een specialist. Binnen de dermatologie is bijvoorbeeld een app ontwikkeld waar er een diagnose gesteld kan worden door middel van foto’s. Patiënten kunnen digitaal ook al vragen aan een huisarts stellen. Een mogelijk gevolg kan zijn dat huisartsen minder patiënten ontvangen in een praktijk, maar meer onlineconsulten zullen geven.

9. *Hoeveel disciplines zullen er samenwerken in een anderhalvelijns centrum? En wie bepaalt dat?*  
Is lastig in te schatten. Aan de hand van de samenwerking tussen de eerste en tweede lijn kan er beslist worden welke disciplines ingezet zullen worden in de anderhalve lijn. Huisartsen zullen ook een sterke invloed uitoefenen op de tweedelijns disciplines. Mogelijk ook een zorgverzekeraar.

10. *Wat zal het verzorgingsgebied worden van een anderhalvelijns gezondheidscentrum worden? (aantal ingeschreven patiënten)*  
Een verzorgingsgebied van een gezondheidscentrum zal groter zijn dan van een solopraktijk van een huisarts maar zal gebonden blijven aan het aantal huisartsen dat werkzaam is in het gezondheidscentrum.

11. *Waar zullen anderhalvelijns gezondheidscentra het meest opkomen? Stedelijke of landelijke gebieden?*  
In het buitenland zie je het meer opkomen op het platteland. In steden of grote dorpen waar ziekenhuizen zullen verdwijnen zal het misschien wel interessant kunnen zijn om anderhalvelijns gezondheidscentra op te richten. Het is ook belangrijk om rekening te houden met de reistijd van specialisten bij de positionering van het anderhalvelijns gezondheidscentrum, blijkt uit internationale studies.

**Organisatie**

12. *Welke organisatievormen zijn er mogelijk voor de anderhalvelijns zorg en welke organisatievorm zal uiteindelijk leidend worden? (allemvaal zelfstandige zorgverleners, één zorgorganisatie/bedrijf waar alle disciplines binnen zullen vallen, of een tussenvorm?)*  
De huisarts zelf is al een soort van bedrijf geworden met verschillende werknemers in dienst. Het kan zijn dat maatschappijen van medisch specialisten samenwerkingen op zullen zetten met gezondheidscentra. Zorggroep regelt vaak ook veel (joint venture). Samenwerking met ZZP-specialisten

13. *Wie neemt initiatief voor samenwerking van eerste en tweede lijn in anderhalvelijns centrum?*  
Met name de eerste lijn.

14. *Wie zal het pand van het gezondheidscentrum financieren en wie wordt eigenaar?*  
Lastig om hier iets over te zeggen. Het zal afhankelijk van de situatie en hoe de financiële situatie van de zorggroep.

15. *Hoe denkt u dat in de toekomst een gezondheidscentrum eruit zal zien?*  
De organisatie van het centrum zal wel bepalend zijn voor de indeling van een centrum. Als het gaat om een grote organisatie zou het mogelijk kunnen zijn om de werkplekken te delen, maar mocht het centrum bestaan uit verschillende kleine organisaties dan is dat misschien lastiger.
9.5 Appendix V: Interview guide

The interview guide will be used as a manual during the interviews. The goal of the interviews is to map the needs of users in a primary plus health care center based on the process of use. The user needs will subsequently be used to draw up a program of demands. To achieve this goal, in-depth interviews will be conducted with the following 8 user groups:

- General practitioner
- Physician assistants
- Pharmacists
- Pharmacist assistants
- Posture and movement paramedics
- Verbal consultation paramedics
- Medical specialists without additional diagnostic facilities
- Medical specialists with additional diagnostic facilities

The interviews will be conducted verbally and the expected time duration of the interviews is 60 minutes.

Research goal

The goal of the research is to draw up a program of demands for a primary plus health care center based on functional demands. The functional demands are acquired by matching the user needs (demand) with the required building performances (supply). The research plan is schematically depicted in figure 1.

\[ \text{Demand} \rightarrow \text{Functional demands} \rightarrow \text{Functional program of demands} \]

\[ \text{Supply} \rightarrow \text{Building performances} \]

Figure 2: Research plan

User needs and building performances

The user needs are mapped by describing the users’ goals and activities using the User needs by Systematic Elaboration (USE) method, developed at the University of Technology in Eindhoven. According to the method, the user needs are features of the demand side instead of the supply side. A user need is defined as follows:

“a physical or psychological state, or an activity to reach this state, that is fundamental for physiological, social and psychological well-being, associated with the process of use” (Heijs, 2007, p.4).

Examples of goals or activities are the need for safety or privacy, the possibility to examine or treat patients, or doing administrative activities. The result of the interviews should be a list with all possible goals and activities as user needs. The required building performances will subsequently be coupled to these user needs resulting in the functional demands. The building performances express the supply side and are defined as follows:

“an environmental property, necessary to fulfil a user need” (Heijs, 2007, p. 4).
A building performance has a certain level of aggregation and a solution space. The level of aggregation indicates the amount of specification. The solution space indicates the degree of design freedom.

**Introduction primary plus care**

The primary plus care is a recently emerged form of health care in the Netherlands. To ensure the interviewees are aware of the definition and elements of primary plus care, this paragraph provides an introduction to the primary plus health care. The reason for the development of primary plus care can be found in the rising health costs in the Netherlands. Health care professionals are therefore encouraged to displace health care from hospitals to the primary health care with the aim of improving the quality of care, reducing the referrals, shortening the waiting lists and lower the costs for the patients. This research defines primary plus care as follows:

“primary care supplemented with health care on the interface of primary health care and simple secondary health care that is financed by the idea of functional fee-for-system”.

The functional fee-for-system means that it is not important ‘who’ is financed for the health care, but ‘what’ is financed regardless the health professional. The most important difference of the primary plus care in comparison to the primary care is that there is a possibility to consult a medical specialist. This is reflected in six different elements of primary plus care:

1. **Advice of medical specialists**

   One of the elements of primary plus care is the advice of medical specialists to general practitioners in person. This offers general practitioners the possibility to consult a medical specialist when they are doubtful about a diagnosis or treatment. The exchange of knowledge can take place in the building by a face-to-face meeting.

2. **Consultation of medical specialists**

   Most of the time, a medical specialist needs to see the patient in order to diagnose. Therefore, general practitioners will refer patients to a medical specialist in the primary plus care, who will conduct consulting hours. During the consulting hour the medical specialist will diagnose the patient and formulate a treatment plan. The medical specialist will send an advice to the general practitioner regarding the diagnosis and treatment plan. With this advice the general practitioner is able to continue with the treatment or refer the patient to the secondary health care if the treatment is too complicated for the general practitioner.

   Another possibility of a consulting hour of a specialist is the combined consulting hour. General practitioners have the possibility to examine and discuss a patient with a medical specialist during a combined consulting hour (Hoof et al., 2016). The medical specialist discusses the combined consult afterwards with the general practitioner. A major advantage of this is the knowledge exchange between two health professionals (Seesing, Haalboom & Geerse, 2015).

3. **Medical interventions by medical specialists**

   The third element of primary plus care involves small surgery by medical specialists. Simple secondary care treatments are substituted in the primary plus care. The surgery can be performed by the medical specialist or by a general practitioner under the supervision of a medical specialist. Examples of treatments covered by the small surgery are sterilization or excisions of cyst or lump. The surgery requires medical appliances, staff and an operating room. These facilities are expensive, so not all surgery is eligible for the primary plus care. Certain economies of scale are required in order to do the investments in the facilities.
4. **Primary care residence**

Another element of the primary plus care is the primary care residence. This is, according to Remmerswaal et al. (2016), a medically necessary short-term residence, where general practitioners provide the medical care with 24-hour supervision in proximity. The care is intended for vulnerable people who are temporarily not able to reside in their own living environment. There is no hospitalization designated for them in a hospital or other health institutions. The primary care residence was financed in 2015 and 2016 by the Law long-term care. This means that the care is only financed for patients with an indication for long-term care. Starting from January 2017 the financing of the primary care residence will be transferred to the Health insurance Law (Wildt & Rütte, 2016). As a result, the primary care residence is accessible for everybody with an insurance policy. In this way, a social safety net is created for vulnerable people living independently in their own home.

5. **Additional diagnostic facilities**

Additional diagnostic facilities offer health professionals the possibility to perform diagnostic examinations in the primary plus care or to send patients for additional diagnostics. A general practitioner in the primary health care needs to send a patient to the hospital for a diagnostic examination, like a X-ray or ultrasound. The element of additional diagnostic facilities provides these facilities in a general practitioner practice or health care center. Examples of diagnostic facilities are X-ray machines, ultrasound machines, heart monitors and blood samples examinations. General practitioners will be able to determine diagnoses faster and with a greater degree of certainty, mentioned in the interviews with the manager of De Friesland and researcher of Maastricht University.

6. **Treatment of chronically ill**

The last element of primary plus care is the treatment of chronically ill by general practitioners, practice supporters and other primary health professionals. The care is substituted from the medical specialists in the primary plus care. As a consequence, patients can go to a health care center for parts of the treatment or follow-up checks instead of to the hospital. Examples of diseases that are eligible for the substitution are pulmonary diseases, diabetics and cardiovascular diseases.

**Questions**

First, the questions have to be answered based on the primary care situation without primary plus facilities. Subsequently, the questions will answered again based on the hypothetical situation where the respondent would provide care in a primary plus health care center. During the answering of the questions, the respondent should concentrate on activities concerning the process of use in the building instead of the health care specific activities.

1. Which activities do you perform on a daily basis? It is best to start in the morning and to indicate all possible activities.
2. For each activity: why do you perform the activity or what is the goal of the activity? And for each goal: are there more activities related to achieve the goal?
3. Which special activities do you perform, that rarely take place but are still important for your operations?
4. Are we not forgetting any activities?
5. Per activity on the list: Do you face any problems when performing the activities that are associated with the building? Or do you expect to face any problems in the future?
6. Are we not forgetting anything?
9.6 Appendix VI: Functional program of demands CD-ROM
9.7 Appendix VII: Functional program of demands spreadsheet
<table>
<thead>
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<th>Type of procedure</th>
<th>Application</th>
<th>Equipment</th>
<th>Type of specialty</th>
<th>Notes</th>
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