Chapter 1. Introduction

The aim of this thesis is to investigate how healthcare purchasing organisations can contribute to achieving better chain-wide care delivery and outcomes. In the three studies presented, we illustrate what drives, enables or limits healthcare purchasers, how their behaviour may change over time and what purchasing means for society and for the patients themselves. The unit of analysis is the relationship between purchasing organisations such as health insurers and governmental bodies and providers such as hospitals or general practitioners (GPs). The purchasing of medication or medical devices by care providers does not form part of this thesis. This introduction first explains why there is often significant room for improvements in chronic care delivery and illustrates the important role of financial agreements and incentives therein. Subsequently, we discuss what tools healthcare purchasers actually possess to manage chronic care delivery. We highlight the main challenges related to healthcare purchasing and explain why researching this topic is vital for improving healthcare. The introduction concludes with our research framework and an outline of each study.

1.1 Motivation for this study

Healthcare purchasing organisations (in short: purchasers) are expected to drive better chronic care delivery in terms of quality, access and costs. Given the increasing health expenditure in most countries, improving health outcomes and resource allocation is becoming more urgent. Furthermore, ageing populations and the increasing range of treatment options boosts the number of patients who require treatment from multiple providers along a care chain. Hence, purchasers are finding themselves in a pre-eminent role with growing responsibilities as the orchestrator of chronic care delivery that is anchored in how the local health system is organised and regulated (Anell, Glenngard et al. 2012, Enthoven, van de Ven 2007, Marshall, Holti et al. 2018).

Typically, a healthcare purchaser will make agreements with providers on the planned volumes, prices and requirements of care services for a given period. Through this arrangement, health insurers or governmental bodies inevitably influence the available resources of primary and secondary care providers and possibly also their way of treating patients (Figueras, Robinson et al. 2005). As illustrated in figure 1, purchasers thus have an important position in chronic care chains since the choices and agreements made with one provider will likely affect other providers in the care chain. This calls for a chain-wide, holistic approach by purchasers, which, interestingly, is currently not the approach adopted as purchasers tend to contract providers individually (Klasa, Greer et al. 2018). As argued by Klasa et al. (2018), healthcare purchasing needs to be based on the strategic aim of improving the population's health.

Besides this lack of a chain-wide approach, scholars, practitioners and policymakers involved in healthcare purchasing frequently report tensions between purchasers and providers (Hughes, Allen et al. 2013, Maarse, Jeurissen et al. 2016). Although the goal of improving long-term health outcomes and reducing costs is generally accepted, the short-term goals of purchasers are not aligned. Purchasers, it seems, appear reluctant to invest in preventive care or care-chain innovation as this increases the demands on the already limited annual healthcare budgets. Although research has reported on a vast range of relational, contractual, regulatory and financial purchasing approaches, purchasers in different healthcare systems seem to struggle to develop strategies that achieve significant improvements in care delivery (Klasa, Greer et al. 2018, Maarse, Jeurissen et al. 2016, Sheaff, Chambers et al. 2013, Thomson, Busse et al. 2013).

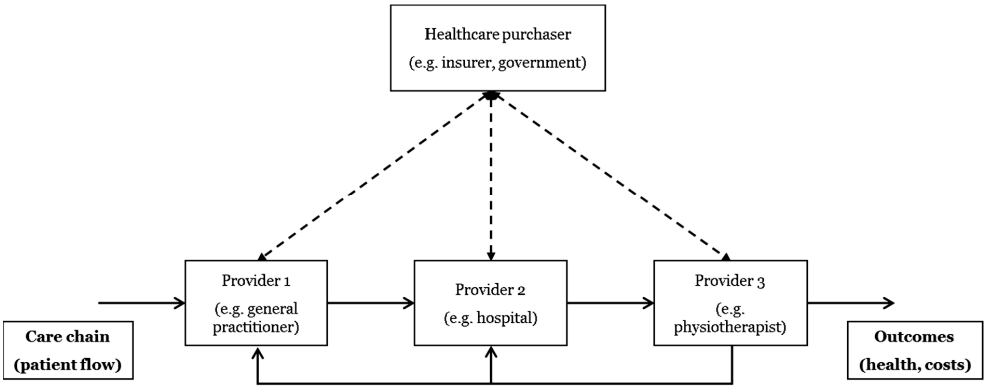

Figure 1. Simplified illustration of a healthcare chain and the purchaser's position therein.

The healthcare purchasing literature largely describes how health policy and regulations provides healthcare purchasers with different sets of purchasing tools, such as selective contracting, payment schemes and quality measurement tools (Klasa, Greer et al. 2018, Thomson, Busse et al. 2013, Van de Ven, Beck et al. 2013). As is illustrated in the within- and between-country variations seen in applying these tools, purchasers can have significant freedom in how they manage their providers. However, it is less clear why purchasers develop a particular strategy. There are, for example, signals of rather formal and at times tense purchaser-provider negotiations in the Netherlands and in Germany, but less so in the English system (Hughes, Allen et al. 2013, Maarse, Jeurissen et al. 2016, Sheaff, Chambers et al. 2013). The lack of understanding on what shapes healthcare purchasers' strategies and behaviour and why it seems so hard to develop a more chain-wide 'orchestrating' type of purchasing role forms the background to this dissertation.

This research has the potential to contribute to better health policies and purchasing strategies aimed at tackling the burden of chronic diseases and rising healthcare costs. We do so by first investigating how a healthcare system's characteristics drive different purchasing strategies. Second, we investigate how the different pressures exerted by the stakeholders that surround the purchaser drive different institutional logics within the purchaser. Third, we address whether and how a purchaser-supported coaching intervention can contribute to improving chronic care delivery in practice.

The next section first explains the importance of an appropriate division of tasks and collaboration between care providers. We discuss chronic care chain management in general and further highlight the challenges by illustrating Chronic Obstructive Pulmonary Disease (COPD) care management. Following this, we introduce the topic

of healthcare purchasing, its central role in achieving better chronic care delivery and the tools that purchasers have to manage care delivery.

1.2 Scientific foundation

1.2.1 Chronic care chain management

Chronic care delivery can be seen as a chain or network of care providers who are all involved in the delivery of different parts of a patient's treatment. A care pathway of a patient usually starts with symptoms and subsequently a first care consultation. After that one or more diagnostic procedures may follow which hopefully gives more certainty about the cause(s) of the symptoms. Patients with a chronic disease require continuous treatment through medicine, consultations and other procedures. Also, regular diagnostics are usually needed to monitor disease status. During all these care steps, a patient will meet and be referred to care providers from different disciplines such as GPs, hospital specialists and nurses, physiotherapists, community nurses and so on. Particularly for chronically ill patients, the way care chains are organised highly affects care outcomes in terms of quality and costs (Davy, Bleasel et al. 2015, Wagner, Austin et al. 2001). Although the organisation of care chains is usually established in national care guidelines and protocols, how care is delivered in practice varies (Nolte, Knai et al. 2014, Nolte, McKee 2008, Seys, Bruyneel, Decramer et al. 2017). Before moving to the key role of healthcare purchasers in managing chronic care chains, it is important to understand what we know about organising care for chronically ill patients.

From the perspective of care providers, we can distinguish task division and collaboration between providers as the main aspects of organising chronic care delivery. Concerning task division, a local pathway should be clear for providers, showing how patients enter the pathway, what treatment and diagnostics they receive, when they are referred to another provider and when they are referred back. Several studies have shown preconditions and opportunities for the improvement of such pathways. On an organisational level, it is known to be important to make agreements about expertise, tasks, responsibilities, scheduling and referrals (McKone□Sweet, Hamilton et al. 2005, Minkman, Ahaus et al. 2009, Van Houdt, Heyrman et al. 2013, Wagner, Austin et al. 2001). On an operational level, a structure should be provided within and between organisations to be able to exchange diagnostic, treatment and referral information, often by means of information and communication technology. Such structure supports providing the right care at the right place.

In terms of collaboration, care providers need to comply to the agreed information exchange so that the best care can be provided to the patient. Especially important for achieving better care outcomes is the extent to which different care professionals know each other, can reach each other and communicate in practice to improve patient treatment (Minkman, Ahaus et al. 2009). Also, more structured ways of collaboration between providers have been studied and are known to benefit care outcomes: regular inter-professional consultations, inter-disciplinary meetings and shared treatment plans (Minkman, Ahaus et al. 2009, Van Houdt, Heyrman et al. 2013).

Research on Integrated care (Kodner, 2009, Ouwens, Wollersheim et al. 2005), the Chronic Care Model (Bodenheimer, Wagner et al. 2002, Wagner, Austin et al. 2001), care pathways (Campbell, Hotchkiss et al. 1998, Van Houdt, Heyrman et al. 2013) or otherwise defined have established organisational preconditions which contribute to better chronic care delivery and outcomes. A public system is needed that supports chronic care delivery, for example, public health services and the availability of community and social care nurses (Bodenheimer, Wagner et al. 2002, Wagner, Austin et al. 2001). Providers themselves need to be in place and have the goals and leaders which support developing care delivery from a single provider towards a patient and health-focused perspective (Bodenheimer, Wagner et al. 2002, Kodner, Spreeuwenberg 2002). Concerning education and jobs, training care professionals to fulfil case management tasks improves continuity and coordination of care (Bodenheimer, Wagner et al. 2002, Ouwens, Wollersheim et al. 2005, Wagner, Austin et al. 2001). Furthermore, guidelines and procedures need to be in place to establish each party's responsibilities and to coordinate collaboration (Bodenheimer, Wagner et al. 2002, Campbell, Hotchkiss et al. 1998, Ouwens, Wollersheim et al. 2005, Wagner, Austin et al. 2001). Finally, system support is essential in terms of information technology, but also the presence of diagnostic devices and treatment materials (Bodenheimer, Wagner et al. 2002, Campbell, Hotchkiss et al. 1998, Minkman, Ahaus et al. 2009, Wagner, Austin et al. 2001). To achieve the above conditions, financing of care should reward providers and patients to pursue better health within the available resources (Bodenheimer, Wagner et al. 2002, Porter, Kaplan 2016). Often, however, financial incentives between providers are not aligned. For example, shifting services from one place to the other will lead to higher revenues for one care provider but comes at the expense of the other.

The case of COPD, which is a central topic in this thesis, further illustrates challenges and opportunities to improve chronic care delivery.

1.2.2 The case of COPD

Care for patients with COPD exemplifies the importance of a well-organised care chain. COPD can be characterized as a progressive development of airflow limitation, which in western countries is often caused by cigarette smoking (Barnes 2004, Barnes, Burney et al. 2015). Other risk factors are air pollution, poor diet and occupational exposure (Barnes 2004). Patients with COPD typically suffer from respiratory distress which causes dyspnoea, coughing, increase mucus secretion, fatigue and reduced muscular strength. As COPD severity progresses, lung exacerbations, or 'lung attacks', may frequently occur which give patients the feeling of choking, often requiring hospitalisation, oxygen therapy and mechanical ventilation (Halpin 2019, Hurst, Vestbo et al. 2010). It is estimated that more than 300 million people suffer from COPD worldwide, of which 2-4 million die annually (Burney, Patel et al. 2015, Gibson, Loddenkemper et al. 2013, López□Campos, Tan et al. 2016, Soriano, Abajobir et al. 2017). In financial terms it is forecasted that in Europe, treating COPD patients costs €47.3 billion, making up 6% of total healthcare budgets (López□Campos, Tan et al. 2016).

The pathophysiology of COPD generally encompasses two aspects, namely the destruction of airway tissue (emphysema) and inflammation of the small airways (bronchiolitis) (Halpin 2019, Hogg, Chu et al. 2004). Both phenomena cause a reduction of capacity and elasticity of the lungs, hence impairing alveolar emptying and lung deflation, thereby trapping (CO_2-high) gas in the alveoli and resulting in hyperinflation (Barnes 2004). The inflammation of the lungs furthermore leads to narrowing of the airways, severe cough and excess mucus production. As tissue breakdown and inflammation increase over time, symptoms of couching, respiratory distress and fatigue worsen. These symptoms, however, can strongly vary between individuals as some patients already show much respiratory distress while lung capacity is still relatively high (Barnes, Burney et al. 2015). Other patients appear to have fewer symptoms even though spirometry testing shows low lung capacity. Since 2001, the Global Initiative for Chronic Obstructive Lung Disease (GOLD) was formed to provide consensus on the diagnosis, management and prevention of COPD (Halpin 2019). Diagnosis of COPD should be based on symptoms, medical history and spirometry. The severity of COPD can be classified in GOLD level I to IV, with IV being the most severe in terms of airflow limitation. More recently a combined COPD assessment has been proposed, which is based on the patient's symptoms, exacerbation history and presence of comorbidities. In this classification, the distinguished levels are GOLD A – D (Halpin 2019).

One can distinguish pharmacologic and behaviour-related treatments for COPD. Pharmacologic treatment of COPD is predominantly symptomatic with long- and

short-acting bronchodilators mostly using inhaler devices (Halpin 2019, Witek, Johnson et al. 2007). Furthermore, oral systemic or inhalation-based corticosteroids can be used to reduce inflammation, particularly during periods of worsening symptoms (Halpin 2019). In recent years, combination inhalers are increasingly being used, which may be more effective than either bronchodilators or corticosteroids alone (Barnes, Burney et al. 2015). Antibiotic therapy is frequently necessary as patients with COPD are susceptible to airway infections. Behavioural aspects related to diet and physical exercise have been proven to improve the physical status and muscle strength which contributes to oxygen uptake and thereby reduces symptoms (McCarthy, Casey et al. 2015). Important in COPD is also the psychosocial aspect of the disease. A low social-economic status often goes along with a poor lifestyle which, through cigarette smoking, is a risk for developing COPD (Hurd, Lenfant 2007, Stevenson 2007). Moreover, poor lifestyle and disease literacy increase the tempo of disease progression (Hurd, Lenfant 2007). When COPD symptoms occur, this may be accompanied by anxiety and stress which worsens symptoms and increases psychosocial problems (Hurd, Lenfant 2007). Hence, psychosocial care provided by mental health professionals and social workers is an important aspect of COPD treatment.

Looking at the complexity and variability of the COPD mechanisms and symptoms it logically follows that each patient may have his or her specific needs and wishes of care. Various caregivers are therefore usually involved in care delivery like GPs, hospital pulmonologists, general and specialized nurses, psychologists, social workers, home caregivers and physiotherapists. Good coordination of tasks and responsibilities is vital so that patients receive necessary care, but also for an efficient allocation of time and resources. Moreover, communication and collaboration between providers are needed so that each caregiver is aware of the patient's treatment and status so that continuity of care is assured. In the past decades, many studies have shown the promising effects of coaching and case management of patients with COPD (Bourbeau, Collet et al. 2006, Ouwens, Wollersheim et al. 2005, Von Korff, Gruman et al. 1997). Education and coaching can help patients in disease coping by improving knowledge on symptoms, understanding how and when to use medication and healthy behaviour (Halpin 2019, Seys, Bruyneel, Decramer et al. 2017). Also, case managers can function as a care chain coordinator which leads to better alignment between care providers. Case management and coaching have been shown to potentially improve patient's quality of life and reduce hospitalisations caused by exacerbations (Bourbeau, Collet et al. 2006, Lenferink, Brusse□Keizer et al. 2017, Zwerink, Brusse□Keizer et al. 2014).

In short, due to the complex nature of COPD and the multiple involved care providers, it remains challenging to achieve better task division and collaboration along the care chain. Healthcare purchasers may contribute to this challenge in their

role as contractor and payer of healthcare services. Chapters 2 and 3 of this thesis study why purchasers choose between the different available financial and non-financial tools to orchestrate chronic care chains. Below we will first explain how different payment schemes limit or enable coordination.

1.2.3 Coordinating and financing chronic care delivery

The way care providers are paid for their services has a major influence on care delivery. Several economists, but also medical researchers have studied the incentives that go along with different payment systems (Flodgren, Eccles et al. 2011, Gaynor, Ho et al. 2014). Care providers can be seen as agents who act on behalf of citizens in general and care payers specifically. These agents have an information advantage because of their specialized education and their sensitive relationship with patients in which privacy is key. Due to this special status, payers of care need to trust that care providers will act in the best possible interest of patients and society. Nevertheless, like every human being care providers make rational or irrational choices based on the different circumstances they are faced. In the case of payment systems, providers will understandably weigh different treatment options based on the expected outcomes and required time and cost investments. Logically, besides, guidelines and individual professional judgement, financial incentives influence provider decision-making when treating patients.

In most healthcare systems, current payment schemes do not stimulate providers to pursue better task division or collaboration (Nolte, McKee 2008, Porter, Kaplan 2016, Wagner, Austin et al. 2001). Often, different providers are contracted separately which does not incentivize for example shifting tasks to other providers or reducing preventable care services through quality improvement. Also, payment is usually on a fee-for-service basis which may drive up service delivery and does not always reward cost-efficient treatment choices. To resolve this problem, several studies have proposed contract types aimed at incentivizing improvement. Examples are: pay-for-performance (Eijkenaar 2013), shared savings (McWilliams, Chernew et al. 2015), or bundled payment (Porter, Kaplan 2016). Although use of innovative payment schemes is known to be important for managing care delivery along care chains, designing such contracts has proven difficult and may have unintended effects (Douven, McGuire et al. 2015). We will next discuss the most predominant payment schemes and their advantages and disadvantages.

A traditional way of financing care delivery is through lump-sum budgets. In this way, hospitals, for example, receive an annual payment from a health insurer or government for a pre-defined number of care services. Such a budget may be determined by the number of citizens in a specific area or registered at a clinic, called

capitation. Budget payment provides continuity for care providers and hence their patients. A downside is that a budget, often combined with salary payment of provider employees, does not incentivize improvement of efficiency and can even lead to high waiting times (Barnum, Kutzin et al. 1995, Gosden, Forland et al. 2000, Quast, Sappington et al. 2008).

Fee-for-service is another common payment system, where providers and sometimes individual care professionals receive payment based on the number of delivered services. Mostly this type of payment is implemented to encourage providers to deliver sufficient services which can reduce waiting time (Barnum, Kutzin et al. 1995, Gosden, Forland et al. 2000). Also, fee-for-service contracts may increase transparency on the number of services delivered and the associated costs. Most modern healthcare systems use Diagnosis Related Groups (DRGs) combined with fee-for-service payment. In the last decades, fee-for-service has been increasingly criticized as it has been shown to cause supplier-induced demand which drives up volumes of services and thereby health expenses (Evans 1974, Nassiri, Rochaix 2006).

As a response to the downsides of fee-for-service, several countries have experimented with pay-for-performance in which providers and payers agree on tariffs and possibly bonuses or penalties related to performance targets (Eijkenaar, Emmert et al. 2013, Flodgren, Eccles et al. 2011, Scott, Sivey et al. 2011). Pay-for-performance should incentivise quality improvement while also efficiently allocating resources (Eijkenaar, Emmert et al. 2013). Nevertheless, pay-for-performance usually goes along with discussion about how to measure outcomes, and particularly quality of care (Eijkenaar 2013). Due to the imperfection of quality measures, it is often reported that pay-for-performance goes along with gaming or 'teaching to the test' and leads to high transaction and administrative costs. Furthermore, providers have an incentive for risk selection as less severely ill patients require lower costs while they gain higher income (Eijkenaar, Emmert et al. 2013, Kristensen, Meacock et al. 2014). Finally, it remains ambiguous whether pay-for-performance actually leads to better care outcomes at all (Kristensen, Meacock et al. 2014). A variant of pay-for-performance is a so-called shared savings agreement that emphasizes more the goal of saving costs while maintaining or improving quality outcomes. Several regions in the United States and Germany have experimented with this type of payment, showing promising results, yet also with an incentive for risk selection (Hildebrandt, Hermann et al. 2010, McWilliams, Chernew et al. 2015).

Other innovative payment schemes are bundled and population payment. With bundled payment, agreements are made for a series of activities that are related to each other for a particular disease, treatment or patient group (Porter, Kaplan 2016, Steenhuis, Struijs et al. 2019). In The Netherlands, bundled payment is common for

several chronic diseases. Here, primary care groups are made responsible for contracting and coordinating chronic care bundles, while several independent providers deliver care (Busse, Stahl 2014, de Bakker, Struijs et al. 2012). Although it appears hard to verify improvement in terms of quality of care, studies show that bundled payment facilitates better coordination and collaboration (de Bakker, Struijs et al. 2012, Struijs, Baan 2011). A downside of bundled payment is the organisational complexity and subsequent administrative costs. Population payment addresses the latter issues as it aims at paying services for a group of patients, or inhabitants of a certain region (James, Poulsen 2016). Population payment resembles capitation and budget payment but transcends the boundaries of individual organisations. This should reduce complexity and give providers more freedom to organise care delivery in line with regional circumstances. Nevertheless, like budget payment, it is argued to not give enough incentives for achieving cost-efficient care delivery (Porter, Kaplan 2016).

In short, healthcare purchasers have multiple ways to contract and pay for care services and it is important to weigh the advantages and disadvantages for each different option (summarized in table 1). In practice, blends of payments may even be applied to give incentives for better care outcomes (McGuire 2011, Scott, Sivey et al. 2011). Nevertheless, agreeing on a particular contract is not an easy process and, more importantly, does not automatically lead to the desired outcomes. In the next section, we shed further light on the often complicated relationship between healthcare purchasers and providers and we discuss what - financial and non-financial - tools purchasers have to manage these relationships.

Table 1. Overview of different payment systems for healthcare

Type	**Advantages**	**Disadvantages**
Budget payment and capitation	Little transaction costs, continuity of income	Drives inefficiency, risk of increasing waiting times
Fee-for-service	Reduces waiting times, increases transparency	Drives up volumes, disincentive for collaboration
Pay-for-performance	Stimulates quality improvement	Risk of teaching to the test, risk selection, high transaction/ registration costs
Shared savings	Incentive for efficiency, innovation	Stimulates risk selection, under care, no financial risk provider
Bundled payment	Stimulates collaboration, better task division	Complex to incorporate all stakeholders, risk of high transaction/registration costs, requires cost and outcome transparency
Population payment	Stimulates collaboration, better task division, less complex than bundled payment	Difficult to incorporate all stakeholders

1.2.4 The purchaser-provider split

Healthcare purchasing essentially concerns the allocation of the limited budgets available for delivering healthcare services (Figueras, Robinson et al. 2005). Traditionally, in most countries, it is the government who distributes budgets among hospitals, GPs, social care and other providers. In practice the ministry of health oversees the healthcare system, while separate governmental bodies are responsible for budget allocation, establishing volume caps, setting and controlling quality standards and establishing service tariffs. A healthcare purchasing system where the government has the most prominent responsibility is called the Beveridge system, named after British economist William Beveridge. In 1942 he proposed setting up national welfare insurance which was the starting point of the later initiation of the British National Health Service in 1948 (Abel□Smith 1992). Other examples of Beveridge systems are New Zealand, Italy (nationally funded) or Norway and Sweden (regionally funded).

Healthcare systems where health insurers or sickness funds are responsible for healthcare purchasing are called Bismarck systems, named after the Prussian counsellor (Busse, Reinhard, Figueras et al. 2007, Taylor 1967). Traditionally, the Bismarck system involves private, not-for-profit sickness funds who collect and control resources through member fees. The multiple sickness funds are often associated with geographical regions or labour associations (World Health Organization 2000). Germany still has such a system with a bit more than 100 sickness funds nationally (Busse, Reinhard, Blümel et al. 2017). The United States is a well-known example of a system highly shaped by (often) for-profit health insurers (Rice, Rosenau et al. 2013). Here citizens can opt for voluntary health insurance, often associated with their employer. These health insurers have much freedom in which care providers they contract, which medical services are covered and at what costs. In 2006, the Netherlands made a shift from a sickness fund towards a health insurance system (Kroneman, Boerma et al. 2016). Different than the United States, however, is that health insurance is obligatory and tariffs, fees, coverage packages are strictly regulated by the government.

It is often debated whether a government- or market-based healthcare purchasing system is better to realize the best care outcomes for the lowest costs. An advantage of Beveridge systems is that it usually provides more continuity in health expenditure and gives more financial and medical solidarity and equity of care (World Health Organization 2000). On the downside it may provide a less flexible and decisive system, causing waiting times and slowing down innovation (Brekke, Siciliani et al. 2008, Folland, Goodman et al. 2013). Looking at Bismarckian systems, insurers or sickness funds may have more incentives to assure access to the best possible care for

their beneficiaries (Gaynor, Ho et al. 2014, World Health Organization 2000). Yet, competition between sickness funds or health insurers reduces their power towards large care providers which challenges strategic purchasing (Maarse, Jeurissen et al. 2016). Also, government stewardship through health policies and financing is likely to be complicated when needing to manage multiple third-party purchasers instead of one governmental purchaser (Figueras, Robinson et al. 2005). Last, although having high care quality, private purchasing systems tend to have higher overall healthcare spending (OECD 2019). Despite these insights, a debate remains about what type of healthcare system is best for achieving better healthcare delivery. An important goal of this thesis is to contribute to this debate with a specific focus on healthcare purchasing. In chapter 2 we aim to get a better understanding of what healthcare system characteristics drive or limit healthcare purchasers when pursuing improvement of care for patients with chronic diseases.

1.2.5 Strategic purchasing

According to the World Health Organisation (WHO), "Strategic purchasing involves a continuous search for the best ways to maximize health system performance by deciding which interventions should be purchased, how, and from whom" (World Health Organization 2000). In most countries, however, healthcare purchasing cannot be considered as 'strategic' (Klasa, Greer et al. 2018). Irrespective of the type of healthcare system, purchasers have little attention for preventive care and population health needs and are only limitedly involved in contracting care from a chain-wide, patient-centred perspective (Klasa, Greer et al. 2018, Porter, Kaplan 2016). Given the discussed pitfalls in chronic care delivery, this raises the question of why purchasers do not respond to this opportunity. Although research has given some insights into how, for example, regulation enables or limits healthcare purchasers in fulfilling their tasks, numerous questions remain (Klasa, Greer et al. 2018, Thomson, Busse et al. 2013, Van de Ven, Beck et al. 2013).

Previous research has identified circumstances that determine if and how healthcare purchasers drive improvement. In countries with private health insurers or sickness funds, the extent to which competition between purchasers takes place influences their purchasing approach (Sheaff, Chambers et al. 2013, Thomson, Busse et al. 2013). In case of little competition, purchasers may have no incentive to contain costs or find innovative solutions for better care delivery. Conversely, high competition reduces the purchaser's market position which worsens their bargaining position towards care providers (Sheaff, Chambers et al. 2013). Other regulations known important for purchasing are whether or not purchasers can selectively contract care providers and patient freedom to choose their provider (Thomson, Busse et al. 2013).

In the Netherlands, there has been much debate about the latter topics (Maarse, Jeurissen et al. 2016). On the one hand, selective contracting and patient choice may stimulate providers to improve quality and lower costs. On the other hand, selective contracting may force patients to switch providers and thus threatens the continuity of care and meeting the needs of individual patients (Bes, Curfs et al. 2017). Also, high patient choice challenges care coordination, especially for chronically ill patients (Reibling, Wendt 2012). A final important topic for healthcare purchasers is the extent in which there is transparency in quality, costs and outcomes of care (Figueras, Robinson et al. 2005, Thomson, Busse et al. 2013, Van de Ven, Beck et al. 2013, Velasco-Garrido, Borowitz et al. 2005). To manage care delivery along the care chain and negotiate with care providers, purchasers need to have access to information on how care is delivered, what the level of quality is and what the associated costs are.

Regulations and contextual circumstances thus determine if and how healthcare purchasers perform strategic purchasing. Nevertheless, as observed by Thomson et al. (2013), purchasing tools and regulation in different countries are various. Interestingly, they state that, for example, "insurers in the Netherlands have access to a wider range of tools but do not always use them". In other words, healthcare purchasers' behaviour cannot be solely understood by the tools they obtain from government regulation.

There are various other, more subtle means by which purchasers manage their care chain. Sheaf et al. (2015) for example found that clinical commissioning groups (CCGs) in England show six 'media of power' to achieve better care delivery in terms of costs and quality. These media are managerial performance of commissioning (specifying services, procuring providers, monitoring provider performance), a negotiated order with providers (social arrangements of interactions between stakeholders), discursive control (evidence basing and ideological persuasion), resource dependency (including financial incentives), provider competition and juridical controls (law, regulation, contracts). The study explains that through these media of power, CCGs apply various types of purchasing practices and that providers reacted to this in different ways. For example, in some situations threatening to remove resources by withdrawing a contract led to an agreement with a provider, while in other situations it led to conflict. It was shown that involving medical professionals in making agreements about the provision of care prevented such conflicts. When so-called 'micro-commissioning', purchaser managers become narrowly involved in how providers organise and deliver care. This mechanism highly relies on the closeness of the relationship between the purchaser and providers and the willingness of parties to collaborate (Sheaff, Charles et al. 2015). Other studies similarly show that, through building a trustworthy, long-term relationship with providers, purchasers can contribute to achieving care chain

improvement (Ashton, Cumming et al. 2004, Hughes, Allen et al. 2013, Porter, Mays et al. 2013). This is in line with what management and supply chain literature call relational governance which may reduce transaction costs and contribute to innovation and change (Dyer, Singh 1998, Gulati, Nickerson 2008, Sako 1992). At the same time, it is known that building such relationships is challenging as often conflicts and lack of trust are reported as a result of misaligned goals and power struggles between parties (Hughes, Allen et al. 2013, Maarse, Jeurissen et al. 2016). Hence, relationships between purchasers and providers often remain formal, based on contracts and focused on short-term financial goals as we, for example, see in the Netherlands (Maarse, Jeurissen et al. 2016). Although such relationships based on contractual governance may have benefits as well, they may go along with gaming behaviour to circumvent formal agreements (Cao, Lumineau 2015, Villena, Revilla et al. 2011).

We conclude that with regulatory tools, contracts, but also through other mechanisms, purchasers pursue the improvement of care chains. As illustrated, within and between countries, purchasing organisations develop their specific purchasing strategy and relationships with care providers and other stakeholders. Still, we recognise that why purchasers choose particular tools in specific circumstances remains unclear and cannot be solely explained by distinguishing market- or government-based purchasing systems. How the purchaser's challenging position in the care chain explains their purchasing approach remains limitedly understood. A premise of this thesis is that we acknowledge that purchasers are embedded in a complex network of patients, providers and regulatory agencies who each have their interests, goals and responsibilities in chronic care delivery. In this thesis we, therefore, aim to explain if and how a purchaser takes an orchestrator's purchasing approach by studying the pressures exerted by the different stakeholders. Herewith we contribute to further understanding what drives the healthcare purchaser's strategies and actions.

1.3 Research objectives and thesis outline

Improving task division and collaboration between chronic care providers can contribute significantly to reducing the increasing burden of chronic diseases. This is a challenging goal that requires the right guidelines, support systems, leadership, people and financial incentives. Healthcare purchasers have an important role and responsibility in pursuing this goal of better chronic care delivery and, through this, improved health and reduced costs. However, this is not straightforward and we need to recognise that there is only limited understanding of what shapes a purchaser's strategies and actions when managing chronic care chains. This thesis contributes to this challenging issue through a set of studies. In Chapter 2, we first set out to

determine *how characteristics of a healthcare system influence a purchaser's strategies and actions when pursuing chain-wide improvements*. In the second step, we acknowledge that healthcare purchasers are in a difficult position in a care chain that includes a range of stakeholders with various demands, interests and goals. Studying the pressures exerted by these stakeholders should help to understand the struggles a purchaser has in trying to adopt a strategic or orchestrating approach to purchasing, as seems to be expected by policymakers and society. Chapter 3 investigates *how stakeholder pressures explain a purchaser's strategies and actions when pursuing chain-wide improvements*. Finally, an important issue is to clarify how the purchaser's involvement in improving chronic care delivery affects care outcomes and costs in practice. Chapter 4 presents a health and economic evaluation of a purchaser-supported coaching intervention that investigated w*hether it is feasible to implement home-coaching for re-hospitalised COPD patients and how their disease-related symptoms and behaviour develop over time.*

Figure 2 presents a schematic overview of the three studies in this thesis and positions each study within the discussed scientific domains. As shown, we start from a broad health policy perspective before focussing in on the care chain level and, finally, on a specific example of trying to improve COPD care delivery in practice.

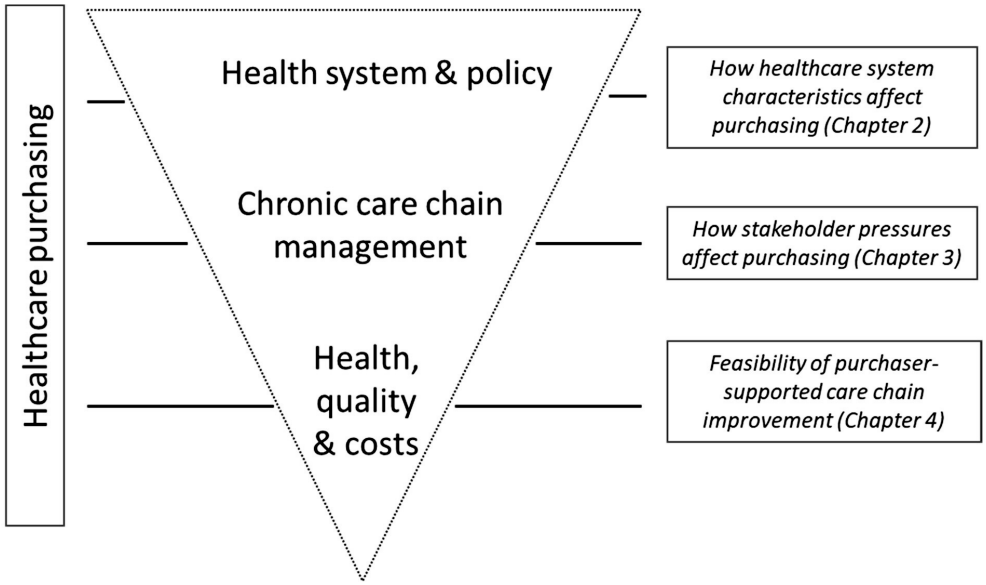

Figure 2. Overview of the research setting and positioning of the different chapters of this thesis

Chapter 2: Healthcare system characteristics and purchasers' strategies and actions
In Chapter 2, we present a multiple case study conducted in England, Sweden and the Netherlands which investigates how healthcare system characteristics shape purchasers' strategies and actions. Although it is known that the tools available, rules and policies may vary between healthcare systems, there is a limited understanding of why purchasers choose a particular strategy. For example, some purchasers adopt a highly formal, short-term approach while others pursue collaboration and long-term health improvements for the citizens. In each country, we selected one region where policymakers had given purchasers increased freedom in an attempt to stimulate new approaches in care delivery. We thought that, if anywhere, it would be in these regions that purchasers would use their available freedom to pursue chain-wide improvements in care delivery. In each of the three regions, we conducted interviews with employees of purchasing bodies and care providers to establish the key characteristics of the healthcare system that determine how purchasers manage the multiple providers involved in chronic care delivery. The analysis revealed a variety of purchasers' strategies and actions in terms of their goals, plans and intended or emergent actions. Linking these strategies and actions to the healthcare systems' characteristics provided explanatory patterns. The findings of this study can help policymakers take account of how different policies and regulations determine whether or not purchasers fulfil their orchestrating role.

Chapter 3: Drivers of a purchaser's institutional logic
In addition to health policies and regulations that are likely to affect healthcare purchasers' strategies and actions, we recognise that purchasers are embedded in a network of stakeholders who all have different goals and interests. This chapter focuses on the difficult position of the healthcare purchaser in this network as we try to understand how pressures exerted by the various stakeholders affect the purchaser's institutional logic. We chose the theoretical lens of institutional logics to clarify what drives the emergence of a new logic, the orchestrator's logic, that fits with the goal of strategic purchasing. We then wanted to understand if and why there might be a relapse to the more traditional and dominant bookkeeper's logic within the purchasing organisation. In this case study, we collected interview and observational data that enabled us to longitudinally follow a purchaser–provider collaboration aimed at improving COPD care. Here, we had the unique opportunity to study a situation where a major health insurer in the north of the Netherlands had started to take a more active role in improving chronic care delivery in their region. The insurer pursued this goal by setting up several projects in which it collaborated closely with providers and made financial agreements that supported its goals. The longitudinal study gave us a rich insight into the emergence of an orchestrator's logic, but also the persistence of the

default bookkeeper's logic. We related these logics to the various stakeholder pressures exerted by providers, patients and the government. Through this, we were able to establish mechanisms that explain why the purchaser fell back into the bookkeeper's logic and also show how stakeholders, regulations and also the purchaser itself can facilitate orchestrating behaviour.

Chapter 4: Feasibility of intensive out-of-hospital coaching for frequently hospitalised COPD patients

The final core chapter presents an evaluation of the outcomes of a COPD coaching project that played an important role in the previous chapter's study. As a result of the insurer's collaboration with regional providers, this project constituted the main improvement initiative that was established to reduce hospitalisations due to COPD complications. The insurer agreed to finance 14 pulmonology nurses, based in four hospitals, who would coach patients in their own homes after hospitalisation. The main aim was to strengthen the patients' own health management abilities, improve the professional and informal care network, stimulate physiotherapy treatment, improve knowledge on symptom recognition and medication use and provide safety and support. Patients were to receive six months of intensive home coaching and follow-up calls during the first year after a period in hospital. The evaluation was based on reimbursement data to determine the number and costs of readmittances to hospital, and also other chain-wide care service costs such as ambulance services, GP consultations and physiotherapy. Further data were obtained from questionnaires regarding symptoms, functional status, mental health, nutritional status and motivation and disease-management awareness, filled in by patients. Through this study, we aimed to assess whether, indeed, patients with severe COPD and frequent hospitalisations could improve their disease management abilities. Subsequently, we tried to explain which behavioural elements are key to improving self-reported symptoms, care use and costs. Through this project, we were able to illustrate how a healthcare purchaser can take an orchestrating role in practice, by steering through the provision of support, financial incentives, data, knowledge and sound relationships.

Chapter 5: General Discussion

In the closing chapter, Chapter 5, we pull together the findings from the three studies and discuss the contributions to healthcare policy and purchasing literature. Further, we will provide and discuss recommendations on how healthcare policy makers can support care chain improvement through purchasing and what this may imply in practice.