

Pathways towards Healthcare Systems with a Chronic Care Focus:

Beyond the Four Walls

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Increasing healthcare expenditure is a matter of concern in many countries, particularly in relation to the underlying drivers of such escalation that include ageing, medical innovation, and changes in the burden of disease, such as the growing prevalence of chronic diseases. Most healthcare systems in developed countries have been designed to 'cure' acute episodes, rather than to 'manage' chronic conditions, and therefore they are not suitably or efficiently organized to respond to the changing needs and preferences of users. Hospitals provide much of that health provision and they are in need of adapting to the needs of the population. New models of chronic care provision have been developed to respond to the changing burden of disease, taking into account the role of hospitals. Further, there is considerable practical experience in several different countries showing their advantages but also the difficulties associated with their implementation. In this paper, we focus on the international experiences in terms of policy changes and pilot studies focused on testing the feasibility of moving towards chronic care models. In particular, we discuss a framework that identifies and analyses key prerequisites to achieving high performing chronic care-based healthcare systems and apply it to various countries and link this proposal with the concept of the *boundaryless* hospital.

1. Introduction

Health expenditures have increased in the last decades in most western economies with different types of health systems. The US has the highest proportion of GDP devoted to health (about 17% in 2012 from 12% in 1990; OECD Health Data 2014). Its health system is mostly private, although the federal programs of Medicare and Medicaid are planned to cover most of people in need of health service provision. A lower proportion of GDP devoted to health is found in countries with social health insurance (SHI) system e.g., The Netherlands. Their scheme is characterized by mandatory insurance with competition in the market of healthcare provision and with incentives for efficiency, although with some concern for risk selection –diminished through the use of risk adjustment reimbursements of different kind. The Netherlands has increased health expenditures from about 7.5% of GDP in 1990 to 11.8% in 2012 (see figure 1). Finally, countries such as the United Kingdom, Australia or Spain have a lower proportion of GDP devoted to health i.e., 9-10% in 2012 from 6-7% in 1990. In those countries, healthcare provision is organized through a National Health System (NHS) mostly free at the point of use (with some variation across countries), although there is room for different levels of participation of private agents in the provision and funding of health services in different countries. For example, Australia has a higher participation of private provision and funding while Spain has a regionalized version of a NHS.

[Figure 1 about here]

No matter how each country's health system organizes provision and financing of health services, or the role of public sector, concern exists about the increasing relative weight of the health sector within the economy (Paolucci, 2010). The health economics literature has pointed to health technology as the main determinant of this increase (Newhouse, 1992; Barbash and Glied, 2010), alongside the ageing population (Paolucci et al., 2014). In this sample of countries (US, The Netherlands, UK, Spain and Australia), life expectancy at birth has increased from 75-78 years in 1990 to about 79-82 years in 2012 (see figure 2). Together with the process of ageing, the average type of patient has evolved and now, the burden of disease shows a greater prevalence of chronic conditions (Mathers and Loncar, 2006; Samb et al., 2010) through an increase in the incidence of cancer (see figure 3).

[Figure 2 about here]

[Figure 3 about here]

The main goal of a health system is to deliver the necessary health services to the population with the highest quality of those services and through an efficient use and allocation of

resources, including hospitals, primary care centers, and other health infrastructures. Because most international health systems were designed some decades ago, when healthcare was focused mostly on acute patients, they were designed to 'cure' acute episodes rather than to 'manage' chronic conditions. However, the care provision for chronic patients is different to the health provision for acute patients. Patients with acute conditions are in need of short-term treatments for a severe injury, an urgent medical condition, or some kind of healthcare in order to recover from a surgery. Differently, patients with chronic conditions suffer their illnesses for a long period of time and most likely they will not be cured. Once the condition appears, it usually increases the health status and worsens the quality of life of the patient (Canadian Ministry of Health and Long-Term Care, 2007).

Nowadays, there is a common agreement about the challenge of adapting health systems to provide efficient care to chronic patients, for whom most healthcare expenditures are concentrated –for example, 78% in the US (Vogeli et al., 2007) or 70% in Spain (Bengoa, 2008). Furthermore, there are a growing proportion of patients living with more than one chronic condition (multi-morbidity) and the response to their needs has been recognized as one of the main challenges for health systems in the 21st century (Jadad et al., 2010). Orueta et al. (2014) find that within the entire population of the Basque Country, a region in Spain with more than 2 million inhabitants, about 24% suffer from more than one chronic disease and concentrate 64% of total health expenditures.

As an answer to this challenge, new models of chronic care provision have been developed taking into account the role of hospitals. Considerable practical experience in different countries shows their advantages and the difficulties associated with their implementation. The two most important are the Chronic Care Model (CCM) (Wagner et al., 1996) and the Kaiser Permanente Pyramid Model (KPPM). The CCM was thought to improve quality of care, levels of satisfaction, and outcomes for chronic patients by looking at the adequate level of interactions between active and informed patients and prepared and proactive health personnel. The KPPM was designed to understand and identify different needs in different groups of patients by their risk levels according to complexity. Besides those models, Ham (2010) developed a framework identifying the ten key characteristics of a high-performing chronic care system. Most of the international experiences are related to the CCM or KPPM families of models, and are focused on improving at least one of the key characteristics outlined by Ham's framework. In recent years, concern on the evolution of the role of hospitals has included a discussion with different innovative proposals pointing to the concept of the *boundaryless* hospital. In this chapter we link both trends. The traditional fragmented type of care is characterized by a clear separation between different health providers. In contrast, a high-performing chronic care system needs to provide integrated care, including hospital, primary, ambulatory or specialist care, and whenever possible, social, community, or home care. Consequently, within this transition towards chronic

care systems, the role of future hospitals needs to change and they should “pull down their walls” and intervene together with primary and community care.

The remainder of this paper is organized as follows: section 2 describes how current health systems organize healthcare provision. Our main focus of attention is the role of hospitals, their activity and their size, and the concerns raised with the current trend in the burden of disease. Section 3 presents the main chronic care models and the framework provided by Ham. We show how those models improve not only the efficiency in the provision but also its quality within the pathway towards a high-performing chronic care system, and define, as one of their dimensions, the concept of the *boundaryless* hospital. Section 4 presents a summary of international experiences in dealing with the challenge of chronicity and the integration of health and social services. We organize our review of international experiences by health systems, attending to the different level of private sector provision and the consequences of their financial incentives. Here, we discuss the central role that hospitals might play in the future. Finally, section 5 provides our conclusion.

2. Current provision of healthcare in hospitals

One of the first definitions of a hospital was provided by the World Health Organization (1957), which considered that a hospital was “an integral part of a social and medical organization, the function of which is to provide for the population complete health care, both curative and preventive, and whose outpatient services reach out to the family in its home environment; the hospital is also a centre for the training of health workers and for bio-social research”. Therefore, it is a healthcare institution that provides medical, diagnostic and specialized treatment to in-patients of different kind with its health personnel (nurses, doctors, surgeon, etc.) and health technology equipment.

Nonetheless, the hospital has experienced a continuous increase in the types of activities and services during the last century (Lega and DePietro, 2005) and that is a matter of concern because a) it constitutes one of the main structures in the provision of healthcare and b) it is one of the main determinants of their health expenditures. Here, we look at the current provision of healthcare in hospitals in the set of countries representing different health systems by looking at key indicators: such as their number of discharges, the number of beds and their average length of stay, with data obtained from the OECD Health Statistics (2014). At the same time, we evaluate whether that provision is evolving according to the burden of disease towards chronic conditions given the goal of efficient allocation of resources. It is important to note that healthcare provision and the mission of hospitals cannot be described with just one of those indicators. It is the analysis of all of them together that helps explain the functioning of hospitals and their role within the entire health system, taking into account the different participation

between public and private sectors in the healthcare provision and funding under different systems, or their focus on the global aims of efficiency and equity.

2.1 Hospital Discharges and Size of Hospitals

Hospital discharges represent the formal release of a patient from a hospital after a procedure or course of treatment (OECD Health Statistics, 2014). They occur when a patient leaves hospital after the termination of the treatment, when the patient leaves the hospital against medical advice, when transferred to another healthcare institution (but not when transferred to a different department within the same institution), or when the patient dies. Countries with different types of health systems present different trends in the number of discharges (figure 4). The Netherlands, with a social health insurance system, increased the number of hospital discharges by 24% from 2000 to 2011. Australia, representing a National Health System but with high participation of private provision and funding in hospitals had a moderate increase of 5% in hospital discharges from 2006 to 2011. However, Spain and the United Kingdom, both with National Health Systems and with a very important proportion of public provision and public participation of hospitals behaved differently in the same period. In Spain, the number of hospital discharges decreased by 7% from 2000 and 2011 while in the United Kingdom, the number remained stable. Besides these trends, the levels are noteworthy. In Australia and The UK, the number of discharges is greater than in Spain or The Netherlands.

[Figure 4 about here]

The evolution in the number of discharges is related to other indicators such as the size of the hospital given by its number of beds, or to the average length of stay that patients spend in the hospital. The evolution of number of beds is important because it provides information on how different health systems are modifying the capacity of hospitals. Recently, there has been a decrease in the number of acute beds in hospitals in countries with a National Health System: in Australia, the number of acute beds in hospitals per 100,000 individuals was of 3.6 in year 2000 decreasing to 3.4 (about 6%) in 2011. However, in countries with a greater participation of the public sector within a NHS, this trend has been more pronounced. Thus, in Spain in the same years, it decreased from 2.8 to 2.3 (about 17%) and in the UK, it fell from 3.2 to 2.4 (about 25%). The Netherlands, with a social health insurance system, again behaves differently and shows an increase in the number of acute beds in hospitals per 100,000 individuals from 3 in 2000 to 3,3 in 2011 (about 9.3%).

2.2 Average Length of Stay

The average length of stay is another important dimension in evaluating the health provision performed in hospitals. Given that our challenge is to adapt to the burden of disease we focus our attention on the difference between the length of stay of all inpatient stays in all hospitals, and the average length of stay of chronic patients. Figure 5a depicts the evolution of the length

of stay for all inpatient stays and figure 5b the length of stay specific for cancer patients. In Australia, the length of stay for all inpatients decreased by 8% from 2000 to 2011; while taking into account only cancer patients, the length of stays decreased by 9.2% in the same period. The same decreasing trend occurs in the length of stay of other chronic conditions (22.7% in endocrine, nutritional and metabolic diseases; 12.3% in diseases of the circulatory system; 8.2% in diseases of the respiratory system). Therefore, we can infer that a shorter inpatient stay in chronic patients explains the decrease in average length of stay for all inpatients. The United States exhibited a falling trend in the length of stay from 2000 to 2011. In the case of all inpatients stays, it decreased by 10.3%, and for chronic patients the decrease was even smaller (3.5% in cancer; 15.6% in endocrine, nutritional and metabolic diseases; 2.1% in diseases of the circulatory system).

The trend in the length of stay in The Netherlands, Spain or the UK is decreasing but is more pronounced than in the case of Australia or the US. Although data is incomplete, the trend in length of stays for all inpatient stays in The Netherlands decreased by 16.3% from 2000 to 2006. For cancer patients it decreased by 32.7% from 2000 to 2010; and for other chronic conditions, from 2000 to 2012, the decrease was also more pronounced (45.7% in endocrine, nutritional and metabolic diseases; 41.8% in diseases of the circulatory system; 28.9% in diseases of the respiratory system). In Spain, the decrease in the length of stay for all inpatient stays was of 15.6% from 2000 to 2012, and as in the case of The Netherlands, it was more pronounced than in Australia for chronic patients (25.5% in cancer; 37.9% in endocrine, nutritional and metabolic diseases; 21.5% in diseases of the circulatory system; 17.9% in diseases of the respiratory system). With respect to the United Kingdom, the length of stay for all inpatients decreased by 32.8% from 2000 to 2012 while for chronic patients, from 2000 to 2011 that decrease is more moderate (4.6% in cancer; 21.8% in endocrine, nutritional and metabolic diseases; 11.4% in diseases of the circulatory system) showing a slightly increase of 4.2% in the case of diseases of the respiratory system.

[Figure 5a about here]

[Figure 5b about here]

The decrease in the length of stay is significantly greater in The Netherlands, Spain or the UK relative to Australia or the US might be explained because Australia and the US had with lowest average length of stay for all inpatients throughout the time period (6.3 and 5.8 in Australia; 6.8 and 6.1 in the US; 10.7 and 7.3 in the UK; 9 and 7.7 in Spain in 2000 and 2011 respectively; and 12.9 in 2000 and 10.8 in 2006 in The Netherlands). Hence, it might be more difficult to accomplish further reductions.

It is worth noting that the US has a private health system in which there is no equity in the access to healthcare and there are strong risk selection incentives. At the same time, the Australian NHS is characterized by a high proportion of private providers and funds. The Netherlands, with a social health insurance system with private provision, showed in year 2000 a length of stay for most conditions greater than other country. Though, it has shown the greatest decrease in recent years and now presents a length of stay lower for most conditions than that of the UK or Spain. At the same time, The Netherlands and Australia (there is no data from the US) show an increase in the number of hospital discharges while the UK maintains the same level and Spain has shown a slight decrease. Finally, it is in the UK and in Spain where the number of acute beds in hospitals per 100,000 individuals is lowest.

The fact that countries such as the UK or Spain have a lower proportion of acute beds, or a decreasing number of hospital discharges might be explained by the importance given to their primary and ambulatory care provision - one of the strengths of their system. However, the Netherlands has decreased the average length of stay for chronic patients to levels lower than those of the UK or Spain, and is getting closer to the length of stay in the US or Australia. Therefore, the current role of hospitals in the provision of healthcare depends on the health systems, as they present a different mix of utilization with respect to other health providers such as ambulatory, outpatient, home or social care. Those differences might be explained by financial incentives in the provision and the way in which health providers in general and hospitals in particular are reimbursed.

The role of hospitals in the provision of care is changing due to the need to adapt to the burden of disease and to provide efficient care to chronic patients. However, the numbers we have presented (with data until 2012) show that further reforms are needed. In the UK or Spain, the length of stay for chronic patients is still high and has decreased much less than in The Netherlands. At the same time, countries as Australia, The Netherlands or the US do not utilize as much primary care as the UK or Spain. Therefore, the efficient provision to chronic patients is not achieved and there remains a path to transit towards a better mix of utilization of hospitals and other health providers. Recommendations for following the right path can be found in different models and frameworks for chronic care provision.

3. Chronic care models and the role of hospitals

In spite of the increasing concern over chronic care and its associated concentration of healthcare expenditures, health planning and provision in most international health systems is still focused on the treatment and cure for acute patients instead of caring for chronic patients. Moreover, we have not observed dramatic changes in the way in which hospitals are utilized. As

a consequence, there is an urgent challenge for international health systems to adapt and provide efficient care to chronic patients. The two most important models of chronic care provision developed for this goal are the CCM and the KPPM.

The CCM (Wagner et al., 1996) and the family of models that followed as the Expanded Chronic Care Model (Barr et al., 2003) provide a guide to improve quality of care, levels of satisfaction and outcomes. Their method is to look for adequate level of interactions between active and informed patients and prepared and proactive health personnel. The main model was thought to improve the quality of provision through interventions on four areas in the health system and clinical practice: self-management support, delivery system design, decision support and clinical information systems. The Expanded version of the model added 'community' as another level of action, thus including population health promotion interventions as public health prevention and chronic disease management programs: "re-orienting health services involves encouraging those in the healthcare sector to move beyond the provision of clinical and curative services to an expanded mandate that supports individuals and communities in a more holistic way" (Barr et al., 2003). There is a clear link therefore in the CCM and the Expanded CCM between health systems and social and political and economic systems. Hence, under this model, the goal of the healthcare sector is to repair the health status of patients and to create the conditions for a healthier society advocating for the promotion of health in the environment.

The integration of healthcare, key in the CCM, provides a central role to the clinical practice at primary care. It differs from the traditional model of provision, which is characterized by the fragmentation of care with a clear separation between care provided to patients at hospitals and specialist care, and primary care. In the extended version, it includes the search for the optimal mix of interventions for chronic patients including treatment and preventive care. As a consequence, the CCM states intervention is required simultaneously across delivery system redesign, patient self-management support, decision support, clinical information systems, community linkages, and health system organization. Bengoa (2008) illustrates how within the transition towards a chronic care model, health interventions often work on the essential elements separately. Coleman et al. (2009) reviews and evaluates the different experiences of health interventions following the CCM and they find that even if the results are not definitive, there is a general improvement in the quality of care to chronic patients. Furthermore, following the evidence from observational studies, when those interventions are meant to change across different elements of the model simultaneously, the combined effect improves with respect to that of isolated interventions (Bodenheimer et al., 2002).

The KPPM was designed in the US to understand and identify different needs in different groups of patients. In this set up, patients are considered as the first provider of health care through health promotion, prevention and self-management activities when they are healthy enough. This model looks for a greater importance of primary care together with the community

interventions, modifying the role of hospitals and other health providers. The main idea is to classify individuals into risk levels according to their complexity. The model would add more formal healthcare provision the more complex the patient is, so that any unnecessary utilization of specialist care, hospital admissions, or any other formal healthcare provision are minimized (García-Goñi et al., 2012). The basis of this model is to understand the concentration of health expenditures and health utilization by risk groups, and identify the most complex patients in order to provide the most efficient mix of health services for them. The KPPM allows for the use of predictive modeling to promote preventive interventions and hence, reducing healthcare utilization (Panattoni et al., 2011). In that way, risk stratification identifies patients at high risk or with expected high expenditures, being most of them patients with (many times several) chronic conditions. For those patients identified as high risk, the model provides intensive healthcare management.

The KPPM is based on the promotion of healthcare coordination towards functionally integrated healthcare teams, including doctors of primary and secondary care, nurses, pharmacist and other health personnel working with the same budget and within multi-speciality centers (Ham, 2006). The aim is to empower patients so as to maximize self-care, self-management and choice, given the information available through their medical records. Different primary care trusts have applied the model, mostly in the UK and the US, and have found positive effects on the integration of services and reducing hospital admissions by providing for example, integrated primary care with the collaboration of GPs and nurses (Ham, 2006).

The pathways towards chronic care systems have been explored in the literature. Ham (2010) developed a framework identifying the ten key characteristics of a high-performing chronic care system (see box 1); being those supporting patients to self-manage their conditions, including the help by informal care-givers; adopting population-management approaches such as the stratification of people with long term conditions according to risk and the provision of commensurate support; integrating care to facilitate primary care access to specialist advice and support; and coordinating care effectively. Ham's framework provides a guideline to policy makers in which it specifies which are the strategies that would improve the quality of care for chronic patients. Although it does not address simultaneously important issues such as integration or coordination of care and reforms of funding systems (Campillo-Artero, 2012), it provides a useful scenario to check what is needed under different health systems, taking into account not only the ten characteristics but also the environmental and cultural context.

Box 1. Ten characteristics of a high-performing chronic care system

- (1) Ensuring universal coverage
- (2) Provision of care that is free at the point of use
- (3) Delivery system should focus on the prevention of ill health
- (4) Priority is given to patients to self-manage their conditions with support from carers and families
- (5) Priority is given to primary healthcare
- (6) Population management is emphasized through the use of tools to stratify people with chronic diseases according to their risk and offering support commensurate with this risk
- (7) Care should be integrated to enable primary healthcare teams to access specialist advice and support when needed
- (8) The need to exploit the potential benefits of information technology in improving chronic care
- (9) Care is effectively coordinated
- (10) Link these nine characteristics into a coherent whole as part of a strategic approach to change

Source: Ham (2010)

García-Goñi et al. (2012) applied Ham's model to Spain and analyzed how well those characteristics were present within the Spanish NHS. They found that most of the ten characteristics for a high-performing chronic care system were present, at least to some extent. However, some of them were still in the early stages of development or being applied only in limited regions or clinical contexts. For instance, García-Goñi et al. (2012) found that there was a considerable margin for improvement in the coordination of care in primary care for patients with complex clinical and social needs.

Many of the international experiences in the search for efficiency in the provision to chronic patients follow variations of the two models for instance, in the UK (Ham, 2010) or Canada (College of Family Physicians of Canada, 2009; Vachon et al., 2013). Two common and central features of the KPPM and the CCM, that are also present in the set of high-performing chronic care system characteristics exposed by Ham (2010) and enhanced by Busse et al. (2010), are the integration of care and the promotion of primary and ambulatory care in coordination with specialists. Those are highly dependent on the evolution in the role and the type of health services that are provided at hospitals and how they are related to other health providers. For example, both the CCM and the KPPM propose, in different ways, to decrease the inappropriate use of hospitals by increasing the utilization of ambulatory care, or nursing and residential care when appropriate. As a consequence, the integration of care should take into account health providers (hospital, primary or ambulatory care) and whenever possible, social care, home care and community care with multidisciplinary teams capable to deliver care to the most complex patients, who often suffer from several chronic conditions (multimorbidity patients). In other words, thanks to the available technology and to the risk stratification, the limit of hospitals are not visible any longer and integrated care from a multidisciplinary team could (and should) be provided in different places more efficiently instead of at the physical hospital. As Robertson et al. (2014) proposed, the evolution of hospital activities should involve specialists in "looking

beyond the four walls of their hospital to work as part of a multidisciplinary team and develop services that address the needs of their local population at each stage of their journey from home to hospital”, becoming as a consequence educators that advise and support other primary and community health workers to improve the diagnosis and treatment to patients at the community level.

In our understanding, this is what Braithwaite et al. (1994) were defining as the *boundaryless hospital*, consisting of “a core facility comprising only the most acute services, intensive care, operating theatres and an accident and emergency unit, with all other services and units linked by information technology to each other and to the core facility” (Braithwaite et al., 1995). Therefore, the concept of *boundaryless* hospital is linked strongly to the process of integration of care recommended in the chronic care models (figure 6). This is in direct opposition to the fragmented care approaches, with full separation of hospital care and ambulatory and primary care that is still present in most of international health systems.

4. International experiences on chronic care and the evolution of hospitals

The development of the CCM and the KPPM in the 1990s allows us to accumulate enough international experiences in the transition towards chronic care systems to infer some trends specific to different types of health systems. Here, we review some of those experiences ordered from higher to lower presence of private healthcare provision, paying attention to how much weight they place to financial incentives within the implementation of those strategies.

Both chronic care models were developed and first implemented in the US, within a private health system. The main evaluation for their health intervention programs is positive as shown in Coleman et al. (2009) or Panattoni et al. (2011) for the CCM or the KPPM respectively, although results are inconclusive and there is still room for improvement. The basis of the implementation of the chronic care models in the US is the full financial responsibility of the healthcare service provision by the provider, given the existing relationship between provider and insurer - even in the case of federal programs such as Medicare or Medicaid. As a consequence, the promotion of integrated care or the existence of multidisciplinary care teams is understood in the search for the efficient provision to the insured population. The Program of All-inclusive Care for the Elderly (PACE) (inserted in Medicare and Medicaid Programs), whose origin started back in the early 1970s in California, is an example of integrated care experience in the US. Its aim was to delay or avoid institutionalization of the elderly by providing appropriate daily health and social care (Calciori and Illinca, 2011). Currently, it has expanded to 31 States. Providers have full financial risk and are responsible for the provision of delivering all the integrated healthcare and social services to their insured, and their care teams include physicians, nurse practitioners, clinic nurses, social workers, occupational therapists, dietitians,

health workers and recreational therapists. At the same time, the importance of economic incentives is recognized in the reimbursement scheme for hospitals, estimated through an improved risk adjustment formula, reformed in 2007 through the use of Medicare Severity DRGs assigned to each inpatient stay. The objective is to get a better adequate reimbursement for actual costs, given the level of severity of the patient and to avoid or diminish incentives for risk selection (Bienkowska-Gibbs, 2013).

Countries with a social health insurance system are characterized for public financing but private provision under a regulated competition model. Their experiences in the pathway towards chronic care systems are defined by the financial responsibility of healthcare provision by providers and the reimbursement scheme e.g., USA. For instance, both in Germany and in The Netherlands, risk adjustment is used. In The Netherlands, the risk adjustment scheme is more sophisticated, consisting of a bundled payment (Struijs and Baan, 2011) to provide incentives for efficiency of care integration through finding a mix of health services, provided at a lower cost with the use of primary care and nurses and a lower utilization of specialist or hospital care. There has been an implementation of different disease management programs – diabetes, COPD or cardiovascular risk (de Bakker et al., 2012)–, with coverage defined by the national disease-specific health care standards, but with prices negotiated individually between insurers and care groups to spur competition (Llano, 2013). In addition, there has been a promotion of integrated care initiatives with the creation of multidisciplinary care groups in primary care that have obtained positive evaluations, but with inconclusive results (Kruis et al., 2013). In Germany, the implementation of integrated care programs such as the *Gesundes Kinzigtal* Integrated Care Initiative, including health care, social care, or preventive actions (Hildebrant et al., 2010), and the evaluation of the different disease management and integrated care programs has been positive, although the health system is still fragmented (Schlette et al., 2009). Specifically with respect to the reimbursement scheme for hospitals, as in the US, The Netherlands reformed the formula in 2012, with the use of the diagnosed-based codes in order to adjust to actual hospital costs better and avoid duplication of treatments (Nucciarelli and Ivanovic, 2013). The trend in those countries is to promote provider competition and to attract patients with improved quality of care and more holistic treatments and patient-centered strategies (Amelung et al., 2012; Nucciarelli and Ivanovic, 2012). For hospitals, the bundled payment in The Netherlands might derive in the future merger of general hospitals, in which most of the reimbursement is obtained through increased volume of non-specialized activity with more small, specialized hospitals attracting specific patients.

There are multiple experiences of implementation of chronic care programs in countries with a NHS. Australia, characterized by a high presence of private provision and funding, launched the Practice Incentive Program (PIP) in 1998, with economic incentives to GPs focused on disease management activities for patients with diabetes or asthma (Medicare Australia, 2007). A second program (Chronic Disease Management program (CDM) -The Australian Institute for

Primary Care, 2008) followed in 2005 and focused on patients with chronic conditions and complex needs, comprised of a multidisciplinary team. Other programs in Australia, as the GP Mental Health Care Program, in 2006, aimed to promote early intervention and prevention, as a integrated care strategy including GPs, psychiatrists, psychologists and other allied health professionals” (The Australian Institute for Primary Care, 2008). Evaluation of those programs is positive, but the health system seems to remain fragmented (Davies et al., 2009) and the concern about the future of the health system and its funding is shown in Paolucci and McRae (2012) or in The Productivity Commission Report (2011).

Other countries with an NHS place a lower weight on their chronic care interventions to financial incentives, without the full responsibility of providers. For example, in the UK, the Quality and Outcomes Framework, launched in 2004, consisted of disease management programs for specific patients and also included preventive actions. This program includes an annual reward as a financial incentive for GPs based on their results in clinical practice (Health and Social Care Information Centre, 2014). The NHS and Social Care Model, launched in 2005, are focused on long term care patients and integrate healthcare and social care provision. In Scotland, there is a further program for chronic patients that promotes the integration of primary care, social care, or local networks (Partnership for Health, NHS Scotland, 2003). The integration of health and social care and disease management programs for specific chronic patients are present in different programs implemented in Canada, including multidisciplinary teams (CHOICE Program in Alberta, launched in 1996; PRISMA Program in Quebec, launched in 1997; or the Mental Health Strategy). In Spain, a number of strategies have been implemented within different regional health services promoting the integration of healthcare providers for the entire population of an area, as the Bidasoa Integrated Health Organization or the Baix Empordà Integrated Health Service putting together primary care, specialist care, and hospital care. Other programs in Spain have focused on multi-morbidity patients, based on the creation of multidisciplinary teams with an increasing role given to nurses, and disease management programs for patients with specific conditions promoting educational and informational courses for patients encouraging their empowerment in prevention and lowering their need of healthcare utilization (Nuño-Solinis et al., 2012). Finally, with respect to the integration of healthcare and social care, the Spanish Parliament passed the Law of Dependence in 2006, enforced in 2007, that granted new rights to patients with long term care needs as personal assistance (Guillén and Comas 2012). However, at the moment, not all levels of need are funded and most beneficiaries receive allowances for the use of family informal care (OECD 2011). Further, in Italy, there are experiences of integrated care with multidisciplinary teams as the Patients Diagnostic Therapeutic Pathways Program, launched in 2007, or different disease management programs as the Raffaello, Abruzzo or Michelangelo programs for specific conditions. From the point of view of population-based integrated care of primary and specialist and hospital care, some examples of programs in Italy are the Expanded CCM in Tuscany, launched in 2008, or the Leonardo program, launched in 2007 in Puglia. Most

of the programs implemented in the UK, Spain, Canada or Italy do not include financial incentives for health providers and the focus is placed more on their universality and equity in the access.

Hence, any modern evaluation of chronic care programs in countries with a NHS seems positive. The NHS (2014) considered that there had been an improvement in the care to some chronic patients as cancer or cardiac, although still with variable quality. In Canada, Vedel et al. (2010) examine different programs on integrating hospital, nursing, home or social care and conclude that the healthcare system is becoming better integrated. García-Goñi et al. (2012) evaluates the current situation of the Spanish National Health System following the Ham's framework and finds that, even if the situation in terms of integration of care is improving, there is still room to improve. This is mainly because the health system is still quite fragmented, and that fragmentation is even greater when considering the extant social system. The trends shown in the chronic care experiences in NHS countries show an increasing concern for the importance of prevention and public health programs, a better coordination between family doctors and hospitals, physical and mental health, or health and social care (NHS, 2014; García-Goñi et al., 2012).

Some interesting proposals for the improvement of the integration of care from NHS countries are to allow the combination of multidisciplinary groups in what has been named in the UK "the Multispecialty Community Provider" (NHS, 2014), to strengthen primary care with a better use of nurse practitioners, the information system, and the collaboration between primary and secondary care (Vedel et al., 2010), or the introduction of medical home as a patient-centered medical care setting (The College of Family Physicians of Canada, 2009). With respect to the development of future hospitals, there are also some suggestions linked to the integration of care that point to the concept of the *boundaryless* hospital. For example, the Future Hospital Commission (2013), established in 2012 by the Royal College of Physicians, proposed that "care should come to patients and be coordinated around their medical and support needs". They propose to change the structure of the hospital and add three new components: the Medical Division (multidisciplinary team to focus on complex patients with multi-morbidities), the Acute Care Hub (designed for patients with expected length of stay lower than two days, and others with intensive care needs), and the Clinical Coordination Center (coordinating the activities at the hospital site and by the Medical Division, including medical teams working into the community).

5. Conclusion

In the last decades, healthcare expenditure has increased and is expected to keep increasing in the future, given the cost of health technology, the process of ageing in the population and the

evolution in the burden of disease towards chronic conditions. There are three main types of health systems: private health system, social health insurance system, and national health system. They differ in the way in which health financing, planning and provision are organized. However, the main goal for all of them is to deliver care to the population with the highest feasible quality through the efficient allocation of resources, including the utilization mix of hospitals, primary care centers, and other health infrastructures. As a consequence, international health systems should provide care to chronic patients efficiently. Conversely, as hospitals were designed to 'cure' acute episodes rather than to 'manage' chronic conditions, many are not suitably or efficiently organized to respond to the changing needs and preferences of users. This is what we find when we look at the evolution in the role of hospitals in countries with different health systems. The role of hospitals is in transition: countries with strong financial pressure for private providers present low or highly decreasing length of stay in their search for the efficient use of hospitals including risk adjustment strategies. If risk selection incentives are solved, that is a good sign, as chronic care needs a lower rate of utilization of inpatient stays. At the same time, relative hospital discharges are increasing for countries with financial pressure, while remaining stable or decreasing in countries such as the UK or Spain, who have a lower proportion of acute beds. That might be explained by the greater importance placed upon primary and ambulatory care provision in countries without financial pressure in hospital provision. Also, this is a good sign of participation of other types of provision, less costly, than hospitals. Consequently, with or without financial pressure, the role of hospitals under different health systems does not seem to be efficient as far as the treatment of chronic patients is concerned.

New models of chronic care provision have been developed to respond to this challenge. The two most important ones are the CCM and the KPPM. In this paper, we review their most important characteristics and also the framework provided by Ham (2010), identifying the ten key characteristics of a high-performing chronic care system. The most important feature that is common to the three of them is the **integration of care**: including hospital, primary, ambulatory or specialist care, and whenever possible, social, community, or home care. In order to do that, the creation of multidisciplinary teams is essential. Moreover, these must stretch beyond the four walls of the traditional hospital and act to re-define integrated healthcare. That integration of care is opposite to the traditional fragmented type of care, with clear separation between health providers, that is still present in most international health systems. In fact, the recommendation on the transition towards a chronic care system points to a radical change in the role that hospitals should perform. This defines the concept of the *boundaryless* hospital: hospitals should pull down their walls and work in multidisciplinary teams addressing the real needs of their patients in terms of healthcare, but also providing education, advise and support to other primary and community health workers in order to improve the diagnosis and treatment at the community level.

Since the late 1990s, several countries have launched chronic care programs. The evaluation of them is generally positive, no matter what type of health system or what level of financial pressure in health providers. Increases in the quality of healthcare provision to chronic patients has followed. However, evaluations present inconclusive results in terms of the efficiency in the allocation of resources. They infer that there is still room for improvement in the integration of healthcare services. In countries with financial pressure, risk adjusted reimbursement schemes are focused on integrated care, so as to maximize incentives for efficiency in the mix of utilization of providers. This might derive in mergers of general and specialized hospitals. In NHS countries, the discussion has focused on the re-structure of hospitals to provide efficient care through different multidisciplinary units to complex (multi-morbidity) patients, patients with acute health or intensive care needs, and a good coordination for care provided inside or outside the hospital walls. There is still a path to walk, in the transition towards the creation of the *boundaryless* hospital.

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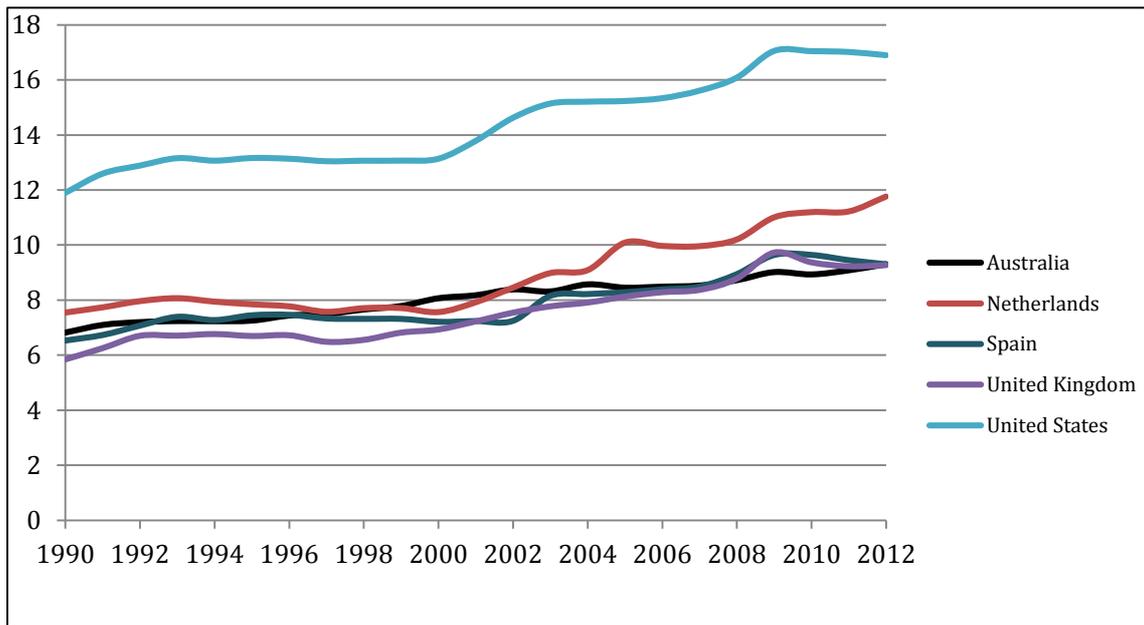
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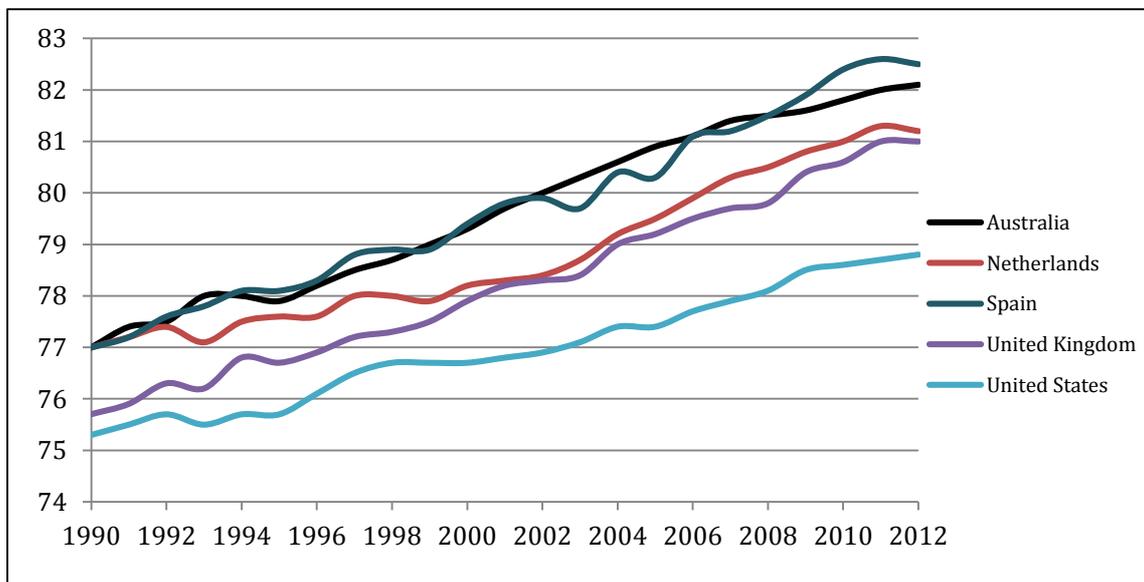
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Figure 1: Health expenditures as a proportion of GDP. 1990-2012.



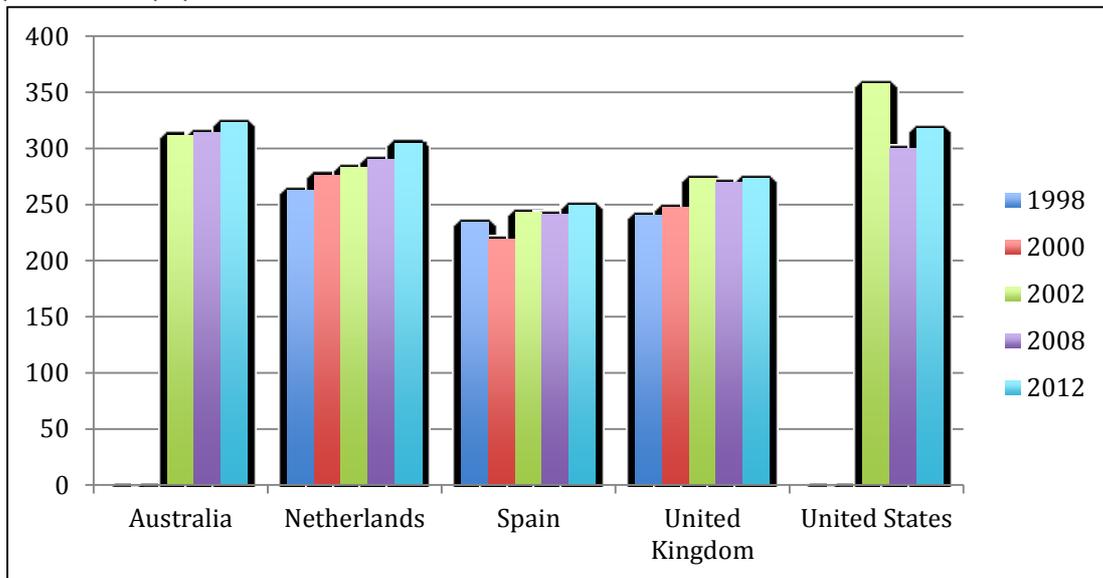
Source: OECD Health Data (2014).

Figure 2: Life expectancy in a selected group of developed countries. 1990-2012.



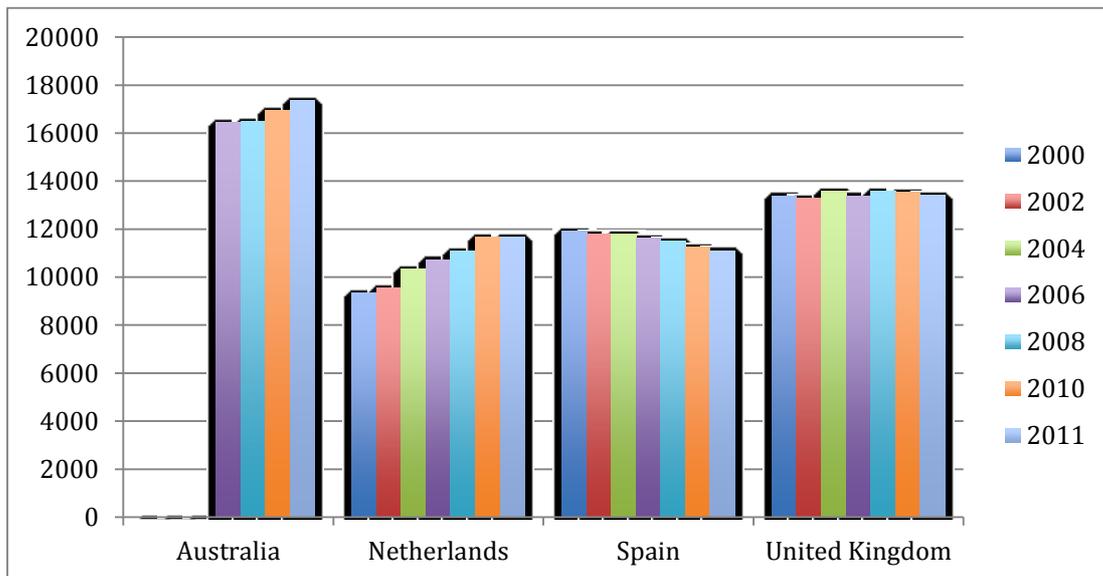
Source: OECD Health Data (2014).

Figure 3: Evolution of morbidity measured through incidence of cancer (malignant neoplasm) per 100,000 population



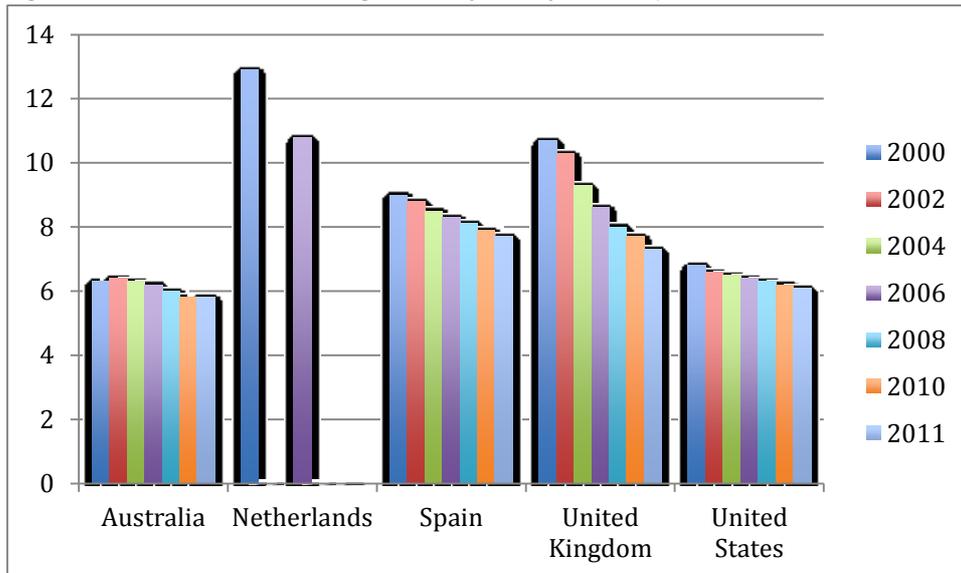
Source: OECD Health Data (2014).

Figure 4: Inpatient care discharges (all hospitals) per 100,000 population. 2000-2011.



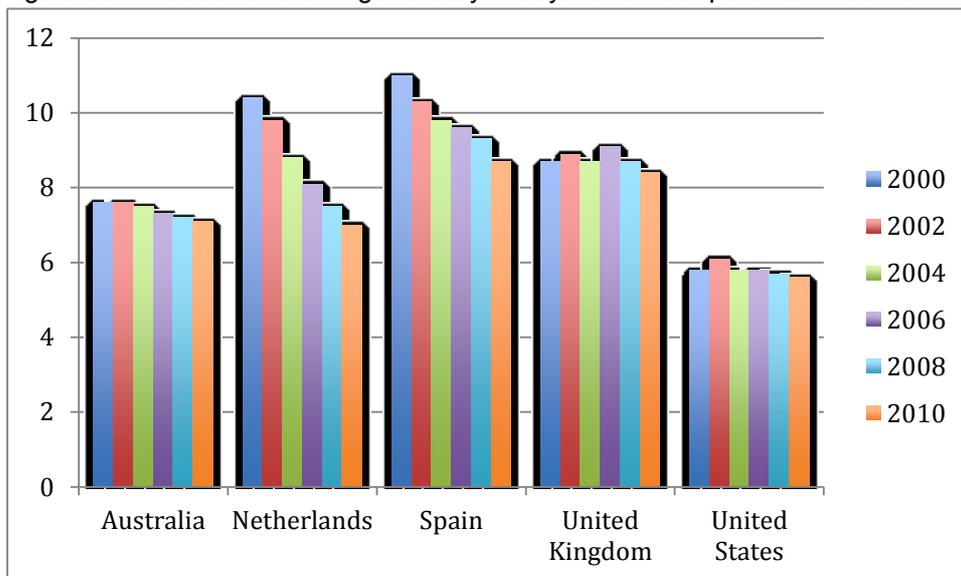
Source: OECD Health Data (2014).

Figure 5a: Evolution of the length of stay in days for all patients. 2000-2012.



Source: OECD Health Data (2014).

Figure 5b: Evolution of the length of stay in days for cancer patients. 2000-2012.



Source: OECD Health Data (2014).

Figure 6: Integration of care in the different Chronic Care Models and the concept of boundaryless hospital

