

Healthcare system performance in continuity of care for patients with severe mental illness: a comparison of five European countries

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Abstract

Most healthcare systems struggle to provide continuity of care for people with chronic conditions, such as patients with severe mental illness. In this study, we reviewed how system features in two national health systems (NHS, England and Veneto, Italy) and three regulated-market systems (RMS, Germany, Belgium, and Poland), were likely to affect continuing care delivery and we empirically assessed system performance. 6418 patients recruited from psychiatric hospitals were followed up one year after admission. We collected data on their use of services and contact with professionals

and assessed care continuity using indicators on the gap between hospital discharge and outpatient care, access to services, number of contacts with care professionals, satisfaction with care continuity, and helping alliance. Multivariate regressions were used to control for patients' characteristics. Important differences were found between healthcare systems. NHS countries had more effective longitudinal and cross-sectional care continuity than RMS countries, though Germany had similar results to England. Relational continuity seemed less affected by organisational mechanisms. This study provides straightforward empirical indicators for assessing healthcare system performance in care continuity. Despite systems' complexity, findings suggest that stronger regulation of care provision and financing at a local level should be considered for effective care continuity.

Keywords Continuity of care, Systems analysis, Health planning, Health care reform, Severe mental disorders.

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Background

For several decades, there has been growing concern, in Western countries, about care for long-term and chronic conditions⁽¹⁾. The global burden of disease related to chronic, non-communicable, and mental disorders has increased in recent years, and most diseases in these categories are among the leading causes of years lived with disabilities⁽²⁾. However, healthcare systems have mainly been designed for the delivery of acute care^(3, 4). Mechanisms and procedures for care delivery and financing seldom reward long-term, low-intensity care, collaboration between providers of different levels and nature, an active role in treatment of the patient and the community, self-management skills, and social integration outcomes, all of which are characteristics required for effective chronic care delivery⁽⁵⁾. Mental-health care is one specific field that may require such organisational mechanisms⁽⁶⁾. Since the shift towards deinstitutionalisation that has occurred in most countries, community settings have been given priority for psychiatric care delivery, with hospitals generally being reserved for acute and crisis episodes. With this approach, continuity of care has become one of the key issues in mental-health care provision⁽⁷⁾. Continuity of care, understood as the *"uninterrupted movement of patients among the diverse elements of the service delivery system"*⁽⁸⁾, is a multidimensional concept⁽⁷⁻¹⁴⁾. Among the variety of definitions proposed, however, there is a consensus on three main dimensions. First, cross-sectional continuity of care refers to the capacity of different professionals and services to provide comprehensive care during a single episode. For example, the fragmentation between mental health care and primary care⁽¹⁵⁾, or between mental health and social care, are of particular concerns^(16, 17). Second, longitudinal continuity of care refers to the capacity of professionals and services to provide comprehensive care across care episodes over time, i.e. in the transition between a hospital stay and subsequent outpatient treatment⁽¹⁸⁻²⁴⁾. Third, relational continuity of care refers to the quality of the patient-provider relationship, such as therapeutic alliance and the patient's perception of care continuity^(18, 25, 26).

Assessing the performance of healthcare systems, and more particularly the provision of continuing care delivery, is a challenge. Repeated comparative reviews of healthcare systems have not yet resolved debates about convergence and differentiation across systems, the evolution of healthcare system boundaries, social inequality issues, and the assessment of healthcare system performance^(6, 27). Traditionally, there is a divide between different financing models for health care coverage, i.e. universal, social health, and voluntary insurance. However, this typology has been proven to be insufficiently nuanced to address the multiple forms of mixed models⁽²⁸⁾. Several other typologies have, therefore, been proposed in order to address the multiple forms of mixed models by considering financing, provision, and regulation mechanisms⁽²⁸⁻³²⁾. Despite these models, however, robust assessment of comparative healthcare systems is still needed, as those typology models are often criticised for their weak analytic framework and lack of empirical basis^(32, 33). This raises the question of how to assess the performance of healthcare systems in the delivery of continuity of care. In this paper, we have attempted to address this question.

This study was part of a European-funded research project (COFI) that compared care continuity approaches to mental-health care delivery in Belgium, Germany, Veneto (Italy), Poland, and England⁽³⁴⁾. In the preparation of the data collection and empirical analyses, features of the healthcare systems of these five countries that were likely to affect continuing care delivery were appraised on the basis of reports from international institutions, i.e. the OECD working papers^(35, 36) and the *"Health in Transition"* series of reports from the European Observatory on Health Systems and Policies of the World Health Organisation (WHO)⁽³⁷⁻⁴²⁾. Based on this review, a qualitative matrix was produced summarising the potential effects of these healthcare system features on the organisation and delivery of continuity of care. Then, we used the data collected to empirically assess the systems' performance. Three significant aspects of these key features were examined: (i) health coverage and financing, (ii) health service provision and delivery, and (iii) health policy regulation and governance. The health coverage and financing

aspect includes the predominant mode of payment of primary care, outpatient, and inpatient specialist doctors, as well as the out-of-pocket payments, in particular for doctor visits. The health service provision and delivery aspect includes the public/private mix of health providers, the organisation of group practice, the geographical organisation of care provision, the level of autonomy of users in their choice of providers, and gatekeeping mechanisms. Finally, the policy regulation and governance aspect includes the mode of decentralisation, and the level of authority that has the power to set public health objectives, e.g. continuity of care. The operationalisation of these features in the five countries is summarised in Table 1. The qualitative matrix summarising the potential effect of these features on continuity of care is presented in Table 2. In sum, we argue that NHS countries combine many features that are potentially favourable for continuity of care in terms of health care financing, provision, and regulation. By contrast, RMS countries lack those features, although Poland may perform better than Germany and Belgium in continuity of care delivery due to its mixed model.

Healthcare system features and the operationalisation of continuity of care in five European countries

Health coverage and financing

In Europe, the divide between national health systems (NHS), which are based on universal, automatic coverage funded by taxes on the general population, and regulated-market systems (RMS), which are based on compulsory social health insurance funded by income-related social contributions from the active population, has remained the overarching typology⁽²⁹⁻³¹⁾. Italy and England are archetypes of NHS, while Germany and Belgium are archetypes of RMS⁽³⁶⁾. Poland's healthcare system has been reformed several times since the political and economic transition after 1989. The first wave of decentralisation of the mandatory health insurance scheme to sickness funds, and of the ownership of care facilities to regional and local authorities, was introduced in the 1990s, followed by a trend

towards recentralisation in the 2000s with the establishment of a National Health Fund (*Narodowy Fundusz Zdrowia*, NFZ) in charge of purchasing health care⁽⁴¹⁾. The Polish healthcare system, therefore, despite formally belonging to the RMS group of countries, shares important features with NHS, and can be considered as a mixed NHS and RMS model. For its part, Germany is the European country with the largest proportion of voluntary insurance coverage: about 15% of the population⁽³⁶⁾. This figure, however, is about the wealthiest part of the population, and includes few psychiatric care users. Germany is also the only country in the study where basic coverage may vary according to the patient's choice between several health insurers, which can be sickness funds or private insurers. Health insurers may offer specific care benefits beyond basic coverage, in particular restricted provider networks, or specified health care pathways⁽³⁶⁾. This feature could allow health insurers to provide integrated care contracts for improving cooperation between in- and outpatient clinicians and thus facilitate continuity of care⁽³⁸⁾.

The health coverage mechanism has a major impact on financing schemes, in particular the share of health care expenses payable by households, i.e. out-of-pocket (OOP) payments⁽³⁵⁻⁴³⁾, and the predominant mode of paying doctors. The share of OOP payments that are made for doctors' visits is likely to have a major impact on care continuity, as it may influence patients' choice of providers. When the share of OOP payments varies between different providers, patients are likely to exert their freedom of choice according to prices and value for money, particularly when information about prices and disclosure of effectiveness are easily available⁽³⁶⁾. In NHS countries, e.g. England and Italy, care is generally free at the point of delivery. In RMS countries, however, there are different mechanisms for OOP payments, in particular for doctors' visits. In Poland, OOP payments are almost entirely limited to drugs, and care delivery is generally free, as in NHS countries⁽⁴¹⁾. In Germany, OOP payments for visits to doctors increased four-fold between 2004 and 2014 and represented 36.6% of the total share of OOP payments⁽³⁸⁾, though they only accounted for 1.9% of expenses in inpatient care⁽³⁶⁾. Belgium has

Table 1 Healthcare system features of the five countries and potential effect on care continuity

Belgium	
Type of health coverage and health care financing	
Basic coverage system	Compulsory social insurance within a common social insurance scheme
Predominant mode of payment of doctors	FFS for primary, outpatient specialist, and hospital doctors
Out-of-pocket (OOP) payments for doctor visits	Up to 39% of the total OOP payments, different prices may apply for doctors of the same specialty, little information on prices available to patients
Health service provision and delivery	
Public/private mix of health providers	Mostly for-profit (outpatient doctors) or not-for-profit publicly funded private providers
Predominance of group practice delivery	Solo practice is predominant, group practices exist
Single/multiple providers in a geographical area	Multiple, competing providers
Level of autonomy of users in choice of providers	Extensive (incentives for registering with a GP)
Gatekeeping	No
Policy regulation and governance	
Mode of decentralisation	Delegation to non-governmental organisations with corporate mechanisms for setting prices and tariffs
Level of authority with power to set public health objectives	National and regional
Germany	
Type of health coverage and health care financing	
Basic coverage system	Compulsory social insurance with multiple, competing health insurers
Predominant mode of payment of doctors	FFS for primary care and outpatient doctors, salary for hospital doctors
Out-of-pocket (OOP) payments for doctor visits	Up to 10% of the total OOP payments, prices are fixed for each specialty, information on prices is available to patients
Health service provision and delivery	
Public/private mix of health providers	Mostly for-profit (outpatient doctors) or not-for-profit publicly funded private providers
Predominance of group practice delivery	Solo practice is predominant
Single/multiple providers in a geographical area	Multiple, competing providers
Level of autonomy of users in choice of providers	Extensive, although health insurers may offer regulation with specific care packages, and hospitals serve specific areas in psychiatry
Gatekeeping	No, although health insurers may offer regulation with specific care packages
Policy regulation and governance	
Mode of decentralisation	Delegation to health insurers and providers with corporate mechanisms for provision and financing
Level of authority with power to set public health objectives	Mainly national
Poland	
Type of health coverage and health care financing	
Basic coverage system	Compulsory social insurance within a common social insurance scheme
Predominant mode of payment of doctors	Capitation for primary care doctors, FFS for private, outpatient specialists, salary for doctors in public centres
Out-of-pocket (OOP) payments for doctor visits	Limited amount of OOP payments, and only 7% of the total OOP payments are for doctor visits
Health service provision and delivery	
Public/private mix of health providers	Predominantly private providers in primary care, balance of public and private outpatient specialists, mostly public hospitals
Predominance of group practice delivery	Solo practice for private providers, group practice in public clinics

Table 1 (*continued*) Healthcare system features of the five countries and potential effect on care continuity

Single/multiple providers in a geographical area	Multiple providers
Level of autonomy of users in choice of providers	Extensive, although registration with a GP is required, and hospitals serve specific areas in psychiatry
Gatekeeping	Yes, but not in psychiatry
Policy regulation and governance	
Mode of decentralisation	Delegation to the collective health insurance and providers with corporatist mechanisms for resource allocation and financing
Level of authority with power to set public health objectives	National, regional, and local
Veneto (Italy)	
Type of health coverage and health care financing	
Basic coverage system	Automatic
Predominant mode of payment of doctors	Capitation for primary care doctors, salary in in- and outpatient centres
Out-of-pocket (OOP) payments for doctor visits	No, care free at point of delivery
Health service provision and delivery	
Public/private mix of health providers	Doctors in public centres and public hospitals
Predominance of group practice delivery	Group practice is predominant
Single/multiple providers in a geographical area	Single provider in a delimited geographical area
Level of autonomy of users in choice of providers	Limited, registration with a GP is required, the choice of outpatient specialists and hospitals is free within a catchment area
Gatekeeping	Not in psychiatry
Policy regulation and governance	
Mode of decentralisation	Devolution to regional agencies
Level of authority with power to set public health objectives	Regional, with a strong commitment to health and social care integration
England	
Type of health coverage and health care financing	
Basic coverage system	Automatic
Predominant mode of payment of doctors	Mix of capitation, FFS and salary for primary care doctors, salary in in- and outpatient centres
Out-of-pocket (OOP) payments for doctor visits	No, care free at point of delivery
Health service provision and delivery	
Public/private mix of health providers	Private primary care doctors contracted by public authorities, outpatient specialists and inpatient care in public centres
Predominance of group practice delivery	Group practice is predominant
Single/multiple providers in a geographical area	Single provider in a delimited geographical area, though different providers for different care levels
Level of autonomy of users in choice of providers	Limited, registration with a GP is required, the choice of outpatient specialists and hospitals is free within a catchment area
Gatekeeping	Yes
Policy regulation and governance	
Mode of decentralisation	Devolution to local agencies
Level of authority with power to set public health objectives	National guidelines and targets with large autonomy for implementation

the highest share of OOP payments: patients are charged between 25% and 40% of the cost of visits to doctor's^(36, 40), and the OOP payment share for inpatient care is estimated at 18%. The OOP payment share may also vary between providers at the same care level. Hence, Belgium is the country where OOP payments have the

greatest potential influence on a patient's choice of clinician.

The basic health coverage mechanism also has an impact on the predominant mode of paying primary care, outpatient specialist, and inpatient doctors. Modes of payment such as fee-for-service (FFS), capitation, and salary have all been

criticised for their specific impacts on healthcare delivery⁽⁴⁴⁾. Although FFS is likely to favour continuity of care with one single clinician⁽⁴⁵⁾, it has generally been thought to discourage low-intensity care and referrals to specialists^(46, 47). By contrast, capitation would discourage doctors from performing specialised interventions and would be an incentive to over-refer patients to specialist care^(44, 46, 47). FFS tends to be the predominant mode of payment of primary care and outpatient specialist doctors in RMS countries, i.e. Belgium and Germany, where care at those levels is also predominantly delivered by private providers. In addition, FFS is also the predominant mode of payment of inpatient doctors in Belgium, while inpatient doctors in Germany are mainly salaried. In NHS countries (England and Italy), doctors are predominantly salaried in secondary and inpatient care, and capitation is the predominant mode of payment in primary care, though NHS England has introduced a mixture of modes of payment (FFS, capitation, and salary) for independent contractors, who represent 87% of GPs⁽³⁶⁾. In these respects, the Polish system is also mixed. On the one hand, capitation is the main mode of payment of primary care doctors and salary is the main mode of payment of doctors in inpatient settings, as in NHS countries. On the other hand, about 50% of outpatient specialists are self-employed or employed by private providers and are paid on a FFS basis, while the other half are employed by public providers and are salaried, even if the number of public medical practices has decreased over time since 2000⁽⁴¹⁾.

Health service provision and delivery

The provision of mental health care services in the five countries sometimes varies considerably in terms of both quantity and nature. Although there are similarities in the service types found in the different countries, their internal organisation, conditions of access, and distribution over each country's territory are highly variable. While Italy closed down all its psychiatric hospitals in 1978⁽⁴⁸⁾ and the number of psychiatric beds has been dramatically reduced in the UK over recent decades⁽³⁷⁾, Germany and Belgium still had high numbers of psychiatric beds available in psychiatric hospitals, despite reform policies^(49, 50).

According to the OECD, the number of psychiatric beds in 2019 ranged from 9 per 100,000 inhabitants in Italy to 136 in Belgium⁽⁵¹⁾. According to the WHO Mental Health Atlas, the number of mental health professionals ranged from 56 per 100,000 inhabitants in Italy to 317 in the UK. That represents about 6 psychiatrists, 23 mental health nurses, and 4 psychologists per 100,000 inhabitants in Italy, but 18 psychiatrists, 112 nurses, and 9 psychologists per 100,000 inhabitants in the UK⁽⁵²⁾.

Key provision features that are likely to affect delivery of care continuity are the public/private mix of health providers, the regulation of competition between health care providers within a specific geographical area, and the level of autonomy users have in choosing providers. Publicly owned or publicly-organised care providers might be better adapted to chronic care delivery and continuity of care than private providers⁽³⁶⁾. Indeed, private providers and clinicians tend to have greater management autonomy and to be less receptive to regulation by public authorities than public actors⁽³⁰⁾. In addition, public-based care delivery and extensive regulatory powers in the hands of public authorities tend to facilitate group practices, whereas private providers, particularly for-profit ones, tend to favour solo practices^(35, 53). The public/private mix of primary care and outpatient specialist providers is largely dominated by private practitioners in RMS countries, i.e. Germany and Belgium. In Poland, primary and outpatient specialist care are provided in both public and private facilities contracted by the NFZ⁽³⁶⁾. By contrast, primary and outpatient specialist care are delivered in public centres in Italy. In England, where outpatient specialist care is also delivered in public centres, primary care is mainly provided by private, independent contractors (as mentioned earlier) whose care service is purchased by the public authorities. As for inpatient care, it is mainly provided in public hospitals in NHS countries: more than 80% of acute care beds in Italy and the UK are situated in public hospitals, and the same applies to Poland. In those countries, primary and outpatient secondary care are provided in group practices and clinics. By contrast, in Germany and Belgium, 50% to 66% of acute care beds belong to for-profit or not-for-profit private hospitals⁽³⁶⁾. In

those countries, private providers predominantly deliver care in solo practices.

The public/private mix of care providers also affects the potential for multiple providers to compete within a geographical area and the level of autonomy users have in choosing providers⁽⁴³⁾. While public regulation of market competition between providers within a specific geographical area is a mechanism for cost containment⁽⁵⁴⁾, organising levels of care with one or multiple non-competing or competing providers is also a key influence on continuity of care. In NHS countries, services tend to be organised with one single provider or one single purchaser in a specific geographical area. That is the case in Italy, where there is no purchaser-provider split, with the Aziende Sanitarie Locali (ASL). ASLs are, moreover, responsible for both primary and secondary care. In England, care is organised for delimited geographical area by Clinical Commissioning Groups (CCGs), as the single purchaser, and Care Trusts, as the single provider, though primary and secondary care are not always organised by the same provider. By contrast, multiple, independent, competing providers provide care in Belgium and Germany. In these respects, too, the situation of Poland is intermediate, as multiple providers, both public and private, may compete within a single territory, although they are contracted by the NFZ as the sole purchaser⁽⁴¹⁾.

These features also affect how much freedom the patient has to choose health providers, services, and clinicians. One example of restriction of competition and access to care providers is gatekeeping, i.e. the role of primary care providers in authorising access to specialised care. Gatekeeping influences service utilisation, healthcare costs, and patient satisfaction⁽⁵⁵⁾. It has also been criticised, however, in terms of relational care continuity, for neglecting patients' choices, and for dividing the healthcare system into care levels. RMS countries generally have no gatekeeping mechanism. However, Poland has adopted gatekeeping for accessing several medical specialties but not for psychiatric care⁽⁴¹⁾. In Belgium and Germany, though the choice of primary care physician is free, several mechanisms exist that can incentivise people to register with a specific doctor. For example, in Belgium, OOP payments are lower for patients who are

registered with a GP. As a result, more than 90% of Belgians declare that they have a regular GP⁽⁵⁶⁾, and about half the population is actually registered⁽⁵⁷⁾. In Germany, some health insurers provide financial incentives for registration, and specific providers can be appointed by the insurance company⁽³⁶⁾. However, these Belgian and German registration mechanisms do not prevent patients from visiting several GPs during the same care episode at the regular price. Poland adopted a more restrictive system: the choice of primary care provider is free, but registration with a GP is required and only a limited number of changes can be made per year⁽⁴¹⁾. In addition, Poland also limits access to secondary outpatient and inpatient psychiatric care to geographical catchment areas. This is also the case with access to inpatient psychiatric care in Germany. In addition, some health insurers may offer extra benefits to those using specific providers, which is the case with integrated-care contracts. This does not, however, restrict the choice of secondary care provider. It is worth noting that Belgium is the only RMS country in this study where fees may differ between clinicians in a specific category, and thus affect the choice of providers.

In NHS countries, though the choice of GP is also free, it is restricted by several mechanisms. Firstly, care is organised on a geographical basis: local providers organise care within a delimited catchment area and, with a few exceptions, patients are assigned to access care within the area they live in. Secondly, some form of registration with a GP is compulsory. In Italy, ASLs provide lists of eligible GPs, who have a limited caseload of about 1,500 patients. Patients are required to register with an available GP. In England, one generally has to register with one group practice within the area of residence, though it is usual to have visits involving different practitioners within the centre, except for people with long-term conditions (such as SMI patients) who may manage to have one single GP. In both countries, registration is not a tight restriction and it is easy to change without giving a reason^(37, 39). Unlike in RMS countries, however, registration can impede access to different primary care providers during a single care episode. As with secondary care, the choice of outpatient specialists and hospitals is restricted to the catchment area. Some exceptions

may exist: for instance, in England, mechanisms have been established to avoid waiting lists, and patients can choose a hospital outside their catchment area for specific needs, with the agreement of their GP. In both countries, people can be admitted to any psychiatric ward in the country when they are not in their own geographical area, though a referral to a ward in their area of residence will be planned as soon as possible. As mentioned before, the choice of outpatient specialist and hospital is also restricted by gatekeeping mechanisms between primary and secondary care in England. In Italy, however, GPs do not play a gatekeeping role in access to psychiatric care.

Health policy regulation and governance

The power of health policy regulation is a key element for continuing care delivery. Indeed, continuing care delivery for long-term conditions is above all a public health objective^(36, 43). The extent of the public authorities' regulatory power is related to the level of involvement of care providers in governance at the local level and the definition of health policy objectives. In particular, decentralisation has been a key mechanism for addressing the need to respond effectively to local contexts⁽⁵⁸⁾. In England and Italy, responsibility for decision-making about the financing and provision of services is largely devolved to lower authority levels, i.e. regional or local government. Although local authorities have a certain degree of responsibility and independence, regulatory powers remain with public authorities⁽⁵⁹⁾. Italy has a NHS model that is organised by regions. Regions have exclusive authority over execution-level planning and delivery of health care, and over resource allocation beyond the basic health benefit package (*Livelli essenziali di assistenza*, LEA)⁽³⁹⁾. In particular, the region of Veneto has developed a specific commitment towards integrating health and social care⁽⁴²⁾. In England, care purchasing and resource allocation have been devolved to CCGs, whereas responsibility for decision-making about financing is at the national level^(36, 37). By contrast, RMS countries tend to delegate responsibilities to quasi-public, non-governmental organisations, with national or regional authorities retaining some indirect

control⁽⁵⁹⁾. Hence, delegation introduces a substantial level of corporatism on the part of health providers, clinicians, and sickness funds or health insurers defending their own interests^(35, 43, 60). In particular, sickness funds and professional representatives play a role in negotiating financing mechanisms and resource allocation. In Belgium, the financing and provision of health care are shaped at the national level, as is the allocation of resources to hospitals⁽⁴⁰⁾. Care provision and planning, however, have mostly been devolved to regional authorities, and sickness funds, which represent providers and payers' interests, have a determining influence. Germany's healthcare system is organised by regions. *Länder* have authority in many areas, but their regulatory powers are weakened by various interest groups, i.e. payers (sickness funds) and providers (e.g. social health insurers, physicians, and hospitals), which play a determining role in negotiating and executing most provision and financing decisions⁽³⁸⁾. In Poland, responsibility for decision-making about provision and financing is shared between public authorities of the local, regional, and national levels. The NFZ and individual providers have limited responsibility for care provision, though they have responsibilities for resource allocation and financing^(36, 41). In these respects, as in others, Poland's system is therefore a mixed NHS and RMS model.

The qualitative matrix summarising the potential effect of these healthcare system features on the organisation and delivery of continuity of care is presented in Table 2. In the second part of this study, we attempted to assess these system effects using empirical data.

Methods

Within the "Comparing policy, framework, structure, effectiveness, and cost-effectiveness of functional and integrated systems of mental health care" (COFI) study⁽³⁴⁾, 7302 patients hospitalised in psychiatric care were recruited in 2014–2015 in 57 hospital wards across the five participating countries. The main inclusion criteria were: being at least 18 years old, having a confirmed diagnosis of psychotic disorder (F20–29 according to the ICD-10 classification),

Table 2 Matrix summarising the expected effects of healthcare system features on continuity of care delivery

System feature	RMS Countries			NHS Countries	
	Belgium	Germany	Poland	Veneto (Italy)	England (UK)
Type of health coverage and health care financing					
Basic coverage system	0	-	0	+	+
Predominant mode of payment of doctors	--	-	0	++	+
Out-of-pocket (OOP) payments for doctor visits	--	-	+	++	++
Health service provision and delivery					
Public/private mix of health providers	--	--	+	++	+
Predominance of group practice delivery	-	--	0	++	++
Single/multiple providers in a geographical area	--	--	--	++	+
Level of autonomy of users in choice of providers	--	-	-	+	+
Gatekeeping	--	-	-	-	+
Policy regulation and governance					
Mode of decentralisation	-	-	-	+	++
Level of authority with power to set public health objectives	+	-	0	++	+

+ + indicates a strong potential effect favouring continuity of care

+ indicates a potential effect favouring continuity of care

0 indicates a neutral effect

- indicates a potential effect hampering continuity of care

-- indicates a strong potential effect hampering continuity of care

affective disorder (F30–39), or anxiety and somatoform disorder (F40–49), being hospitalised in a psychiatric inpatient unit, and being able to provide written, informed consent to participate in the study. Information on 6418 of these patients was retrieved at follow-up one year after admission to hospital. A set of socio-demographic, socio-economic, and clinical data was collected using either clinical records or phone and face-to-face interviews. In addition, 2178 of the 6418 patients were included in a sub-sample for which a larger set of data was collected using phone and face-to-face interviews. Ethical approval was obtained in all five participating countries. The full protocol of the study has been published elsewhere⁽³⁴⁾.

Measurements of cross-sectional, longitudinal, and relational continuity of care were based on the operationalisation proposed by the "Experiences of Continuity of Care and Health and Social Outcomes" (ECHO) study⁽⁶¹⁻⁶³⁾. For the purpose of the study, a common typology of 20 service types was developed prior to data collection and applied similarly in each country (see Table 3). The typology was an adapted version of the Client Service Receipt Inventory⁽⁶⁴⁾. The typology included mental-

health and physical-health inpatient and outpatient services, including office-based doctors and psychotherapists, specialised care and emergency departments. It also included non-medical services such as social care, accommodation services, and self-help. Although the specific organisation of these service types may vary across countries, some form is systematically found in all five countries. Researchers agreed on the classification of services before the empirical data collection began. The interviewers who collected the data were trained in the use of the typology.

Longitudinal continuity of care was assessed using three measurements on the main study sample: the average gap (in weeks) between hospital discharge and the first subsequent contact with an outpatient clinician, the proportion of patients who had a gap of two months or more, and the non-medical input spread, i.e. the proportion of patients who had contact with non-medical services during the follow-up period. Cross-sectional continuity of care was assessed using two measurements on the main sample, and two on the subsample. At the main sample level, we assessed the proportion of patients who had access to supported living

during the follow-up period, and the average number of service types used. At the subsample level, we measured the number of different professions met and the number of different psychiatrists met. Finally, relational continuity of care was assessed using three measurements at the subsample level. First, patients were asked to assess whether the period between hospital discharge and subsequent outpatient contact was too long, too short, or just right. This variable was dichotomised, i.e. the assessment was determined to be adequate or not. Second, a score for satisfaction with continuity of care was calculated using eight items of the Verona Service Satisfaction Scale (VSSS)⁽⁶⁵⁾ that address patient-professional relationships. The items are five-point Likert scales, and thus the score of satisfaction with continuity of care ranged from 8 (very low satisfaction) to 40 (very high satisfaction). Third, helping alliance was measured using the Helping Alliance Scale – Client Version (HAS)⁽⁶⁶⁾. The scale includes five items, which are scored from 0 (worst) to 10 (best), and thus returns a total score ranging from 0 to 50. Items are rated by the patient. Items addressed several topics: the patient's satisfaction with the treatment received, the patient's feelings of being understood or criticised by the clinician, the level of involvement of the clinician in the treatment, and the level of the patient's trust in the clinician.

Table 3 The twenty types of services used across the five participating countries in the study

1. Psychiatric acute inpatient unit
2. Psychiatric long-term inpatient unit
3. Forensic psychiatric facility
4. Psychotherapy inpatient service
5. Physical health inpatient unit
6. Inpatient addiction and substance use service
7. Long-term day facility
8. Psychiatric community/outpatient service
9. Outpatient addiction and substance use service
10. Office-based outpatient general practitioner
11. Office-based outpatient psychiatrist
12. Office-based outpatient specialist medical care
13. Office-based outpatient psychotherapist/psychologist
14. Social care service
15. Self-help group
16. Home treatment
17. A&E / Emergency department
18. 24h-staffed accommodation
19. Less than 24h-staffed accommodation
20. Unstaffed accommodation

Adapted from the CSSRI-EU⁽⁶⁴⁾.

In addition, the set of data included basic socio-demographics, diagnoses at baseline, severity of symptoms, and level of social integration. The severity of symptoms was measured using the Clinical Global Impressions (CGI) scale⁽⁶⁷⁾, which returns a score ranging from 1 ("normal") to 7 ("extremely ill"). Social integration was measured using the SIX index⁽⁶⁸⁾, which covers four areas of social integration (employment, accommodation, family, and friendship) and returns a score ranging from 0 (very poor social integration) to 6 (very good social integration).

All the measurements of continuity of care were included in multivariate regressions controlling for patients' individual characteristics at index admission, i.e. gender, age, primary diagnosis of psychotic disorder (F2), primary diagnosis of mood disorder (F3), primary diagnosis of anxiety and somatoform disorder (F4), severity of disorders (CGI), and social integration (SIX). Logistic regressions were used for binary variables, and Poisson regressions for continuous variables. Additionally, to account for the potential clustering effect of recruitment at hospital level, robust standard errors were computed using the White sandwich method. All statistical operations were performed using SAS 3.4 for Scientific Linux.

Results

Patients' individual characteristics in the main sample and subsample are presented in Table 4.

All the measurements of longitudinal, cross-sectional, and relational continuity of care differed significantly between countries (see Table 5). The average gap between hospital discharge and subsequent outpatient contact ranged from 3.1 weeks in England to 7.1 weeks in Belgium. Only 4% of the patients had a gap longer than two months in Veneto, while the proportion reached 15% in Belgium and 21% in Poland. Between 19% (Belgium) and 33% (Veneto) of the patients accessed non-medical services. Regarding cross-sectional care continuity, only 5% of patients had access to supported living in Belgium, compared to 28% of patients in Veneto, and the average number of service types used ranged from 3 in Belgium to 5 in Veneto. Belgium, however, had better scores in

Table 4 Characteristics of the sample of followed-up patients per country, COFI Study, 2014-2016, N=6418 (main sample) and N=2178 (subsample)

	Belgium	Germany	Veneto (Italy)	Poland	England (UK)	Total
Main sample (N)	743	734	1107	1146	2688	6418
Age, mean (std)	43.3 (14.1)	42.1 (15.0)	47.1 (14.1)	42.7 (14.7)	40.6 (13.5)	42.6 (14.2)
Gender male, N (%)	311 (41.8)	376 (51.2)	540 (48.8)	550 (48.0)	1572 (58.5)	3349 (52.2)
Primary diagnosis F2, N (%)	226 (30.4)	230 (31.3)	419 (37.9)	627 (54.7)	1151 (42.8)	2653 (41.3)
Primary diagnosis F3, N (%)	452 (60.8)	471 (64.2)	536 (48.5)	340 (29.7)	1355 (50.4)	3154 (49.2)
Primary diagnosis F4, N (%)	140 (18.8)	194 (26.4)	156 (14.1)	208 (18.2)	424 (15.8)	1122 (17.5)
Severity of symptoms (CGI, /7), mean (std)	3.16 (0.94)	4.79 (0.86)	4.54 (0.77)	4.28 (1.03)	4.43 (1.32)	4.33 (1.17)
Social integration (SIX, /6), mean (std)	3.56 (1.30)	3.75 (1.35)	3.88 (1.26)	4.06 (1.24)	3.36 (1.44)	3.65 (1.38)
Subsample (N)	270	382	370	422	734	2178
Age, mean (std)	40.8 (12.1)	39.6 (13.1)	43.3 (11.5)	40.8 (12.9)	40.9 (12.1)	41.1 (12.4)
Gender male, N (%)	115 (42.6)	187 (49.0)	189 (51.1)	210 (49.8)	411 (56.0)	1112 (51.1)
Primary diagnosis F2, N (%)	89 (33.0)	106 (27.8)	149 (40.3)	182 (43.1)	307 (41.8)	833 (38.3)
Primary diagnosis F3, N (%)	146 (54.1)	262 (68.6)	170 (46.0)	150 (35.6)	391 (53.3)	1119 (51.4)
Primary diagnosis F4, N (%)	72 (26.7)	111 (29.1)	55 (14.9)	102 (24.2)	95 (12.9)	435 (20.0)
Severity of symptoms (CGI, /7), mean (std)	3.17 (1.00)	4.79 (0.88)	4.53 (0.76)	4.20 (1.06)	4.61 (1.19)	4.39 (1.13)
Social integration (SIX, /6), mean (std)	3.66 (1.27)	4.07 (1.29)	4.05 (1.28)	4.27 (1.27)	4.61 (1.19)	3.88 (1.36)

measurements on the subsample: patients had access to 3.5 different professions on average, and to a limited number (1.6) of different psychiatrists. The highest number of different professions was 3.9 in England. By contrast, the lowest average number of professions was found in Poland (2.3) and Germany (2.6), where patients

also had the highest number of different psychiatrists (3.1). Regarding relational continuity of care, Veneto also had some of the highest scores, while RMS countries had mixed results. Most patients in Belgium (63%) were satisfied with the length of time between hospital discharge and subsequent outpatient contact,

Table 5 Measures of continuity of care per country, COFI study, 2014-2017, main sample (N=6418), and subsample (N=2178)

Measurement	Belgium	Germany	Veneto (Italy)	Poland	England (UK)	Test	P Value
	Mean (Std) or %	Mean (Std) or %	Mean (Std) or %	Mean (Std) or %	Mean (Std) or %		
Longitudinal continuity (Main sample)							
Gap (in weeks)	7.14 (13.62)	3.18 (5.53)	3.83 (10.18)	6.35 (8.80)	3.08 (10.23)	32.95 ^b	<0.001
Gap of 2 months + (%)	15	9	4	21	7	248.90 ^a	<0.001
Non-medical spread (%)	19	31	33	32	25	66.52 ^a	<0.001
Cross-sectional continuity (Main sample)							
Supported living (%)	5	19	28	12	21	199.57 ^a	<0.001
No. service types (/20)	3.04 (2.17)	4.56 (3.87)	4.96 (4.20)	4.18 (3.41)	4.33 (2.47)	43.29 ^b	<0.001
Cross-sectional continuity (Subsample)							
No. Professions	3.51 (1.31)	2.62 (1.28)	3.06 (0.79)	2.34 (1.15)	3.88 (1.32)	130.64 ^b	<0.001
No. Psychiatrists	1.57 (1.25)	3.13 (1.65)	1.86 (0.83)	2.19 (1.69)	2.23 (1.72)	50.62 ^b	<0.001
Relational continuity (Subsample)							
Patient's positive assessment of gap (%)	63	81	86	81	77	48.60 ^a	<0.001
Satisfaction with CoC (/40)	27.95 (6.30)	22.99 (6.31)	28.40 (7.37)	22.81 (6.85)	26.07 (7.78)	51.50 ^b	<0.001
Helping Alliance (/50)	32.57 (7.89)	39.84 (8.40)	38.99 (9.72)	39.77 (10.74)	34.01 (12.67)	39.40 ^b	<0.001

^a χ^2 test, ^b F test

whereas up to 77% of patients in England and 86% in Italy were satisfied with the length of the wait. Satisfaction with continuity of care was high in Veneto (28.4/40) and in Belgium (27.9/40), while the lowest scores were found in Poland and Germany (around 23/40 in both countries). By contrast, these countries scored highest in the assessment of helping alliance (around 40/50), while Belgium scored lowest (32.5/50).

The odds ratios and risk ratios from the multivariate regressions, controlling for patients' characteristics and taking the clustering effect of recruitment sites into account, are presented in Table 6. When comparing NHS and RMS countries, the controlled results confirmed that NHS countries significantly outperformed RMS countries in addressing the gap between hospital discharge and outpatient treatment, in providing access to supported living and to a larger number of professional types, and in patient satisfaction with continuity of care. Regarding helping alliance, however, NHS countries' performances were significantly worse. These global results masked variations between countries. Regarding longitudinal continuity, while patients in Belgium and Poland were likely to wait twice as long between hospital discharge and subsequent outpatient contact as patients in England, and the proportion of patients who waited longer than

two months was likely to be two (Belgium) to four (Poland) times greater, there was no significant difference between Germany and England. Patients in Belgium also had the lowest likelihood of accessing non-medical services, though it did not differ significantly from England. However, patients in Germany, Poland, and Veneto had a higher chance of accessing non-medical services than patients in England. In terms of cross-sectional continuity, patients in Belgium were less likely to access supported living, less likely to access different service types, and less likely to access different professions than patients in England. However, this was not the case in Germany. By contrast, patients in Veneto were almost twice as likely to access supported living as patients in England, though patients in Veneto were less likely to access different types of professionals than patients in England. Patients were also less likely to meet different psychiatrists in Belgium, but more likely to do so in Germany. Having contact with different psychiatrists is, however, less favourable for cross-sectional continuity of care. Finally, regarding relational continuity of care, patients in Belgium were almost half as likely to be satisfied with the length of time between hospital discharge and outpatient care as patients in England, while patients in Veneto were almost twice as likely to be satisfied. Satisfaction with care continuity was likely to be

Table 6 Multivariate regressions of continuity of care indicators and healthcare systems, COFI study, 2014–2017, main sample (N=6418), and subsample (n=2178)

Measurement (REF = England; N=2688, n=734)	Belgium (N=743, n=270)	Germany (N=734, n=382)	Veneto (Italy) (N=1107, n=370)	Poland (N=1146, n=422)	RMS (REF = NHS)
	OR/RR (95% CI)	OR/RR (95% CI)	OR/RR (95% CI)	OR/RR (95% CI)	OR/RR (95% CI)
Main sample					
Longitudinal continuity					
Gap (in weeks) ^a	2.28 (1.63–3.18)***	1.10 (0.83–1.45)	1.30 (0.79–2.13)	2.22 (1.62–3.03)***	1.71 (1.27–2.29)***
Gap of 2 months + ^b	2.18 (1.45–3.29)**	1.30 (0.88–1.92)	0.52 (0.27–1.01)	3.95 (2.41–6.49)***	2.95 (1.83–4.76)***
Non-medical spread ^b	0.73 (0.47–1.15)	1.43 (0.71–2.84)	1.57 (0.97–2.53)	1.48 (0.87–2.52)	1.08 (0.73–1.60)
Cross-sectional continuity					
Supported living ^b	0.24 (0.16–0.36)***	1.11 (0.60–2.03)	1.98 (1.23–3.19)*	0.65 (0.31–1.37)	0.54 (0.33–0.88)*
No. service types ^a	0.71 (0.64–0.80)***	1.05 (0.83–1.34)	1.16 (0.99–1.36)	0.98 (0.78–1.23)	0.90 (0.77–1.04)

Table 6 (*Continued*) Multivariate regressions of continuity of care indicators and healthcare systems, COFI study, 2014–2017, main sample (N=6418), and subsample (n=2178)

Measurement (REF = England; N=2688, n=734)	Belgium (N=743, n=270)	Germany (N=734, n=382)	Veneto (Italy) (N=1107, n=370)	Poland (N=1146, n=422)	RMS (REF = NHS)
	OR/RR (95% CI)	OR/RR (95% CI)	OR/RR (95% CI)	OR/RR (95% CI)	OR/RR (95% CI)
Subsample					
Cross-sectional continuity					
No. Professions ^a	0.90 (0.85–0.97)	0.68 (0.48–0.95)*	0.79 (0.73–0.86)***	0.61 (0.55–0.67)***	0.76 (0.64–0.90)**
No. Psychiatrists ^a	0.71 (0.62–0.81)***	1.42 (1.19–1.70)***	0.83 (0.67–1.02)	0.97 (0.84–1.14)	1.18 (0.98–1.42)
Relational continuity					
Patient's positive assessment of gap ^b	0.58 (0.43–0.78)*	1.26 (0.82–1.96)	1.81 (1.31–2.50)***	1.24 (0.88–1.75)	0.94 (0.72–1.23)
Satisfaction with CoC ^a	1.08 (1.03–1.13)***	0.89 (0.80–0.99)*	1.09 (1.04–1.14)***	0.88 (0.83–0.93)***	0.90 (0.84–0.97)**
Helping Alliance ^a	0.96 (0.92–1.01)	1.17 (1.12–1.22)***	1.14 (1.10–1.19)***	1.17 (1.13–1.21)***	1.07 (1.03–1.12)**

N=main sample, n=subsample

* p<0.05, ** p<0.01, *** p<0.001

^a Poisson regression (RR), ^b Logistic regression (OR)

Multivariate regressions controlled for: gender; age; primary diagnosis of psychotic (F2), mood (F3), and anxiety and somatoform (F4) disorder; severity of disorder (CGI score); social integration (SIX score) at index admission; and accounted for clustering at hospital level.

higher in Veneto and Belgium than in England, but lower in Poland and Germany than in England, and helping alliance assessment was likely to be higher in all countries, except Belgium, than in England.

Discussion

Interpretation of findings

After examining the healthcare system features of the five systems included in this study and before empirical assessment, we expected NHS countries (England and the region of Veneto, Italy), which combined more features that favour continuity of care delivery, to perform better than RMS countries, Belgium and Germany in particular. We expected Poland, which shares several mechanisms with NHS countries, such as a single purchaser of care activities, payment by capitation of primary care doctors, a limited amount of OOP payments for doctors' visits, and the importance of public health providers, to have an intermediate level of performance. Indicators of continuity of care revealed major differences

between healthcare systems. NHS countries, particularly Veneto, were actually more effective than RMS countries on most indicators of longitudinal and cross-sectional care continuity, with the exception of the spread of non-medical service access. The performance of NHS countries in regard to relational continuity was less clear: NHS countries performed better in satisfaction with continuity of care but less well in helping alliance, and the assessment of the gap between hospital discharge and subsequent outpatient contact did not differ significantly between systems. However, an examination of the results at the country level showed more nuanced trends. On the one hand, Germany, despite being an archetype of RMS, performed similarly to England in longitudinal and cross-sectional continuity of care at a service level. Germany, however, performed worse in contact with different professions, which was lower, and with different psychiatrists, which was higher. On the other hand, Poland's performance was low in longitudinal and cross-sectional care continuity.

A detailed interpretation of findings at a country level therefor requires caution. In all likelihood,

healthcare system features affect the delivery of cross-sectional and longitudinal care continuity. When looking at the several features summarised in Table 1, however, there is no clear feature across healthcare systems that might be linked to better performance in care continuity. The only potentially determining feature is the competition between providers for the same level of care within a determined geographical area. Indeed, though multiple providers can compete in RMS countries, health insurers have the capacity to play a role in regulating the access to care providers in Germany^(36, 38), a kind of regulation that is a feature of NHS systems. This role seems limited, however, in the context of psychiatric care delivery. Further research is therefore required to evaluate the effects of this characteristic. Interestingly, access to supported living seemed to be negatively associated with a country's average length of stay of the index admission in hospitals. In another part of the study, which has been published elsewhere, we found that Belgium had the highest average length of stay (mean = 55.1 days, median = 24 days), while Veneto had the shortest (mean = 17.9 days, median = 14 days). The median length of stay in Germany, Poland, and England respectively was 29, 26, and 25 days⁽⁶⁹⁾. In this study, only 5% of the patients in Belgium declared that they had access to supported living compared to 28% of patients in Veneto, values for Germany, Poland, and England being 19, 12, and 21% respectively. It seems, therefore, that within a specific healthcare system, access to supported living services has to be balanced with the resort to hospitalisation. This may also mean that the measure of supported living was a relevant indicator of longitudinal continuity of care in the ECHO study, which was carried out in the UK^(61, 63, 70), but might not be as relevant in other healthcare systems with less restrictive guidelines for resorting to hospitalisation.

The impact of healthcare systems on the relational dimension of care continuity seems to be more complex. On the one hand, relational continuity of care introduces a form of subjective assessment of care delivery from the patient's point of view, which is driven by his/her experience and generally limited to his/her own system^(26, 71, 72). For example, satisfaction with the length of time between hospital discharge and

subsequent outpatient care is probably determined by what is considered normal within the system, and does not seem to be related to the actual average length of the gap⁽⁷³⁾. Most (81%) Polish patients were satisfied with an average period of 6.4 weeks, while only 77% of the English patients were satisfied with an average period of 3.1 weeks. On the other hand, relational continuity is also affected by the individual practices of professionals and is, consequently less impacted by organisational mechanisms: helping alliance was significantly higher in Germany, Veneto, and Poland than in England, despite major organisational differences.

Strengths and limitations

To our knowledge, this is the first time that the performance of healthcare systems in the delivery of continuity of care has been assessed empirically across different systems, with validated and consistent measurements, using a large sample of patients. The assessment of the features of the five healthcare systems and their potential effects on care continuity was also performed *ex ante* and reported to the research commissioner in 2015, before the start of the data collection and analysis. Analyses of care continuity indicators were consistent with our theoretical expectations. Hence, this study addresses the lack of an empirical basis for assessing the performance of healthcare systems in terms of the delivery of continuity of care for chronic and complex disorders.

We cannot rule out, however, the possibility that our findings might be partly influenced by the mode of data collection. Indeed, in the main sample of patients, data on contact with services and on the length of time between contacts was mainly obtained via clinical records in the NHS countries, and via face-to-face or phone interviews with patients in the other countries. The accuracy of the information obtained probably differs according to which of these two methods was used. With the latter method, we relied on patients' memories, and patients may tend to overestimate the time delay between contacts. Medical records may, however, include planned contact that did not actually occur. This limitation may have shortened the measurement

of the period between hospital discharge and subsequent outpatient care in the NHS countries.

In other respects, the study does not provide a direct assessment of the several healthcare system features that were examined, nor does it provide explanations of the mechanisms that affect the effective delivery of continuity of care. The study must be considered from a systemic perspective, with the different features bundled together and influencing each other. The measurements used, i.e. the indicators of continuity of care, were operationalised from the ECHO study⁽⁶¹⁻⁶³⁾. That study examined in detail the components of continuity of care, with quantitative and qualitative assessment, from the points of view of both care professionals and patients and considering objective and subjective dimensions of continuity of care. These measurements, accordingly, are robust in the context of continuity of care in mental health in the UK, where the study was conducted. Therefore, one could argue that these measurements might not be as robust in an international context or in other health care fields. Within our study, not all measurements suggested by the ECHO study were considered. In particular, some measurements could not be applied outside the UK, such as the designation of a care coordinator and the sharing of documentation about a care plan with the patient, as these interventions are not systematically carried out in all five countries. In addition, we had to replace measurements of relational care continuity with similar indicators that were available in our dataset, e.g. the patient's assessment of the gap between hospital and outpatient care, the items related to continuity of care in the Verona Service Satisfaction Scale, and the helping alliance scale. Other studies conducted within the ECHO framework also omitted some measurements because they were not available^(61, 62). In order to assess how these measurements were related to each other, we calculated the paired correlation coefficients between the indicators used. Most of the indicators were significantly correlated with each other, although the effect sizes were generally very low, except for obvious correlations, e.g. the length of the gap between hospital discharge and outpatient care and the proportion of patients who had a gap longer than two months. Such associations were found within dimensions of

continuity of care and between some measurements of the longitudinal and cross-sectional continuity measurements, e.g. between the number of professions and the access to non-medical services ($r=0.30, p<0.0001$). However, no association was found between the measurements of longitudinal/cross-sectional continuity and those of relational continuity. This finding strengthens our interpretation suggesting that the impact of healthcare systems on relational care continuity is rather complex.

Regarding the claim that the field of mental health care is distinctive and might not be representative of the performance of healthcare systems in other areas of continuity of care delivery⁽⁶⁾, it is true that the measurements used were indeed developed in mental health care. Most of them, however, can be adapted to other health contexts. For example, the non-medical input spread is relevant to most chronic diseases, whose social consequences are sometimes disregarded. Similarly, the numbers of services types and professions met, and satisfaction with continuity of care and helping alliance are relevant in other contexts. The measurement of a gap between two services or providers could be considered for other clinicians than most relevant in psychiatry, e.g. the gap in the contact between the GP and specialist doctors or social care professionals. Obviously, the number of different psychiatrists is not relevant in other health contexts, although they could be replaced by other key-professionals, e.g. the number of geriatricians for frail older people. The access to supported living may not be as relevant for all chronic conditions, but may be for those that affect socially deprived populations. Additional features, not available to the present study, could also be considered, e.g. the formalisation of collaboration or the availability and use of shared information systems.

Conclusions

Healthcare systems were not initially designed to address chronic care delivery, but their specific features have an impact on chronic care delivery and effectiveness. This impact should be considered when planning health care reforms, even though the relationship between mechanisms for provisioning, regulating, and financing health care provision and continuity of

care remains a complex one to disentangle. Our findings suggest that mechanisms for health care provision, regulation, and financing could be considered specifically for chronic care or for mental health care delivery. For example, Germany has delimited catchment areas for inpatient psychiatric care, although these geographic delimitations do not apply to other specialties. Similarly, GPs do not play a gatekeeping role in access to psychiatric care in Poland or Italy, though this mechanism may apply to other specialties.

It also seems that there is room for improvement, not only in system's individual performances, but in all systems. The complexity of the mutual influence of features in a particular system, however, suggests that decision-makers should be cautious when importing a mechanism that appears to have been effective elsewhere. For example, Poland and Belgium are currently considering and implementing reforms tending towards more territorial responsibility and local governance of service provision, and may introduce some forms of capitation for paying primary care doctors^(49, 74). At the same time, England is allowing more flexibility in terms of territorial responsibility, in order to address long waiting times in some medical specialisations⁽⁵⁵⁾. It is not clear whether these mechanisms could be effective in a different, global healthcare system. Nonetheless, for effective chronic care delivery, stronger powers in terms of regulating and financing care provision at a local policy level should be considered. The study provides relatively straightforward measurements that could be easily obtained in other countries or in other health care fields that address chronic disorders. Some of the indicators of continuity of care, in particular those relating to cross-sectional and longitudinal continuity of care, could easily be included in routine outcome measuring systems. This study, therefore, opens up new avenues for research into healthcare systems' performance in chronic care delivery.

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References

1. Coleman K, Austin BT, Brach C, Wagner EH. Evidence On The Chronic Care Model In The New Millennium. *Health Affairs*. 2009;**28**(1):75-85. doi: 10.1377/hlthaff.28.1.75
2. Vos T, Barber RM, Bell B, Bertozzi-Villa A, Biryukov S, Bolliger I, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. **386**(9995):743-800. doi: 10.1016/S0140-6736(15)60692-4
3. Wagner EH, Austin BT, Davis C, Hindmarsh M, Schaefer J, Bonomi A. Improving Chronic Illness Care: Translating Evidence Into Action. *Health Affairs*. 2001;**20**(6):64-78. doi: 10.1377/hlthaff.20.6.64
4. Wagner EH, Austin BT, Michael VK. Organizing Care for Patients with Chronic Illness. *The Milbank Quarterly*. 1996;**74**(4):511-44. doi: 10.2307/3350391
5. Davy C, Bleasel J, Liu H, Tchan M, Ponniah S, Brown A. Effectiveness of chronic care models: opportunities for improving healthcare practice and health outcomes: a systematic review. *BMC Health Services Research*. 2015;**15**(1):194. doi: 10.1186/s12913-015-0854-8
6. Mechanic D, Rochefort DA. Comparative Medical Systems. *Annual Review of Sociology*. 1996;**22**(1):239-70. doi: 10.1146/annurev.soc.22.1.239
7. Burns T, Catty J, White S, Clement S, Ellis G, Jones IR, et al. Continuity of care in mental health: Understanding and measuring a complex phenomenon. *Psychological Medicine*. 2009;**39**(2):313-23. doi: 10.1017/S0033291708003747
8. Bachrach LL. Continuity of care for chronic mental patients: A conceptual analysis. *American Journal of Psychiatry*. 1981;**138**(11):1449-56. doi: 10.1176/ajp.138.11.1449
9. Adair CE, McDougall GM, Beckie A, Joyce A, Mitton C, Wild CT, et al. History and measurement of continuity of care in mental health services and evidence of its role in outcomes. *Psychiatric Services*. 2003;**54**(10):1351-6. doi: 10.1176/appi.ps.54.10.1351
10. Crawford M, Jonge E, Freeman G, Weaver T. Providing continuity of care for people with severe mental illness. *Social Psychiatry and Psychiatric Epidemiology*. 2004;**39**(4):265-72. doi: 10.1007/s00127-004-0732-x

11. Fontanella C, Guada J, Phillips G, Ranbom L, Fortney J. Individual and Contextual-Level Factors Associated with Continuity of Care for Adults with Schizophrenia. *Administration and Policy in Mental Health and Mental Health Services Research*. 2014;**41**(5):572-87. doi: 10.1007/s10488-013-0500-x
12. Haggerty JL, Reid RJ, Freeman GK, Starfield BH, Adair CE, McKendry R. Continuity of care: A multidisciplinary review. *British Medical Journal*. 2003;**327**(7425):1219-21. doi: 10.1136/bmj.327.7425.1219
13. Johnson S, Prosser D, Bindman J, Szmukler G. Continuity of care for the severely mentally ill: Concepts and measures. *Social Psychiatry and Psychiatric Epidemiology*. 1997;**32**(3):137-42. doi: 10.1007/BF00794612
14. Weaver N, Coffey M, Hewitt J. Concepts, Models and Measurement of Continuity of Care in Mental Health Services: A Systematic Appraisal of the Literature. *Journal of Psychiatric and Mental Health Nursing*. 2017;**24**(6):431-50. doi: 10.1111/jpm.12387
15. Druss BG, Goldman HH. Integrating Health and Mental Health Services: A Past and Future History. [published online ahead of print April 25 2018] *American Journal of Psychiatry*. 2018. doi: 10.1176/appi.ps.2018.18020169
16. Glasby J, Dickinson H. Greater than the sum of our parts? Emerging lessons for UK health and social care. *International Journal of Integrated Care*. 2008; **8**(3), None. doi: 10.5334/ijic.246
17. Hengartner MP, Passalacqua S, Andreae A, Rössler W, von Wyl A. The role of perceived social support after psychiatric hospitalisation: Post hoc analysis of a randomised controlled trial testing the effectiveness of a transitional intervention. *International Journal of Social Psychiatry*. 2017;**63**(4):297-306. doi: 10.1177/0020764017700664
18. Adair CE, McDougall GM, Mitton CR, Joyce AS, Wild TC, Gordon A, et al. Continuity of care and health outcomes among persons with severe mental illness. *Psychiatric Services*. 2005;**56**(9):1061-9. doi: 10.1176/appi.ps.56.9.1061
19. Belling R, Whittock M, McLaren S, Burns T, Catty J, Jones I, et al. Achieving Continuity of Care: Facilitators and Barriers in Community Mental Health Teams. *Implementation Science*. 2011;**6**(1):1-7. doi: 10.1186/1748-5908-6-23
20. Boyer CA, McAlpine DD, Pottick KJ, Olfson M. Identifying risk factors and key strategies in linkage to outpatient psychiatric care. *American Journal of Psychiatry*. 2000;**157**(10):1592-8. doi: 10.1176/appi.ajp.157.10.1592
21. Freeman T, Peck E. Evaluating partnerships: A case study of integrated specialist mental health services. *Health and Social Care in the Community*. 2006;**14**(5):408-17. doi: 10.1111/j.1365-2524.2006.00658.x
22. Hoertel N, Limosin F, Leleu H. Poor longitudinal continuity of care is associated with an increased mortality rate among patients with mental disorders: Results from the French National Health Insurance Reimbursement Database. *European Psychiatry*. 2014;**29**(6):358-64. doi: 10.1016/j.eurpsy.2013.12.001
23. Omer S, Priebe S, Giacco D. Continuity across inpatient and outpatient mental health care or specialisation of teams? A systematic review. *European Psychiatry*. 2014;**30**(2):258-70. doi: 10.1016/j.eurpsy.2014.08.002
24. Shaffer SL, Hutchison SL, Ayers AM, Goldberg RW, Herman D, Duch DA, et al. Brief Critical Time Intervention to Reduce Psychiatric Rehospitalization. *Psychiatric Services*. 2015;**66**(11):1155-61. doi: 10.1176/appi.ps.201400362
25. Jones IR, Ahmed N, Catty J, McLaren S, Rose D, Wykes T, et al. Illness careers and continuity of care in mental health services: A qualitative study of service users and carers. *Social Science and Medicine*. 2009;**69**(4):632-9. doi: 10.1016/j.socscimed.2009.06.015
26. Sanatinia R, Cowan V, Barnicot K, Zalewska K, Shiers D, Cooper SJ, et al. Loss of relational continuity of care in schizophrenia: associations with patient satisfaction and quality of care. *British Journal of Psychiatry Open*. 2016;**2**(5):318-22. doi: 10.1192/bjpo.bp.116.003186
27. Beckfield J, Olafsdottir S, Sosnaud B. Healthcare Systems in Comparative Perspective: Classification, Convergence, Institutions, Inequalities, and Five Missed Turns. *Annual Review of Sociology*. 2013;**39**(1):127-46. doi: 10.1146/annurev-soc-071312-145609
28. Toth F. Classification of healthcare systems: Can we go further? *Health Policy*. 2016;**120**(5):535-43. doi: 10.1016/j.healthpol.2016.03.011
29. Böhm K, Schmid A, Götze R, Landwehr C, Rothgang H. Five types of OECD healthcare systems: Empirical results of a deductive classification. *Health Policy*. 2013;**113**(3):258-69. doi: 10.1016/j.healthpol.2013.09.003

30. Moran M. Understanding the Welfare State: The Case of Health Care. *British Journal of Politics and International Relations*. 2000;**2**(2):135-60. doi: 10.1111/1467-856x.00031
31. Wendt C. Mapping European healthcare systems: a comparative analysis of financing, service provision and access to healthcare. *Journal of European Social Policy*. 2009;**19**(5):432-45. doi: 10.1177/0958928709344247
32. Wendt C, Frisina L, Rothgang H. Healthcare System Types: A Conceptual Framework for Comparison. *Social Policy & Administration*. 2009;**43**(1):70-90. doi: 10.1111/j.1467-9515.2008.00647.x
33. Papanicolas I, Kringos D, Klazinga NS, Smith PC. Health system performance comparison: New directions in research and policy. *Health Policy*. 2013;**112**(1):1-3. doi: 10.1016/j.healthpol.2013.07.018
34. Giacco D, Bird VJ, McCrone P, Lorant V, Nicaise P, Pfennig A, et al. Specialised teams or personal continuity across inpatient and outpatient mental healthcare? Study protocol for a natural experiment. *BMJ Open*. 2015;**5**(11). doi: 10.1136/bmjopen-2015-008996
35. Hofmarcher MM, Oxley H, Rusticelli E. *Improved Health System Performance through better Care Coordination*. Paris: Organisation for Economic Co-operation and Development; 2007. doi:10.1787/246446201766. Accessed April 14, 2018.
36. Paris V, Devaux M, Wei L. *Health Systems Institutional Characteristics: A Survey of 29 OECD Countries*. Paris: Organisation for Economic Co-operation and Development; 2010. doi: 10.1787/5kmfxq9qbnr-en. Accessed June 10, 2015.
37. Boyle S. United Kingdom (England): Health system review. *Health Systems in Transition*. 2011;**13**(1):1-486.
38. Busse R, Blümel M. Germany: Health system review. *Health Systems in Transition*. 2014;**16**(2):1-301.
39. Ferré F, Giulio de Belvis A, Valerio L, Longhi S, Lazzari A, Fattore G, et al. Italy health system review. *Health Systems in Transition*. 2014;**16**(4):1-172.
40. Gerkens S, Merkur S. Belgium: Health system review. *Health Systems in Transition*. 2010;**12**(5):1-266.
41. Sagan A, Panteli D, Borkowski W, Dmowski M, Domanski F, Czyzewski M, et al. Poland health system review. *Health Systems in Transition*. 2011;**13**(8):1-193
42. Toniolo F, Bonin M, Aggio A, Bonesso P, Cella M, Mazzucco S, et al. Veneto Region, Italy. Health system review. *Health Systems in Transition*. 2012;**14**(1):1-138.
43. Joumard I, Hoeller P, André C, Nicq C. *Health Care Systems: Efficiency and Policy Settings*. Paris: Organisation for Economic Co-operation and Development; 2010. doi: 10.1787/9789264094901-en. Accessed June 10, 2015.
44. Robinson JC. Theory and Practice in the Design of Physician Payment Incentives. *The Milbank Quarterly*. 2001;**79**(2):149-77. doi: 10.1111/1468-0009.00202
45. Gosden T, Forland F, Kristiansen I, Sutton M, Leese B, Giuffrida A, et al. Capitation, salary, fee-for-service and mixed systems of payment: effects on the behaviour of primary care physicians. *Cochrane Database of Systematic Reviews*. 2000;**3**. doi: 10.1002/14651858.CD002215.
46. Allard M, Jelovac I, Léger PT. Treatment and referral decisions under different physician payment mechanisms. *Journal of Health Economics*. 2011;**30**(5):880-93. doi: 10.1016/j.jhealeco.2011.05.016
47. Shen J, Andersen R, Brook R, Kominski G, Albert PS, Wenger N. The effects of payment method on clinical decision-making: Physician responses to clinical scenarios. *Medical Care*. 2004;**42**(3):297-302. doi: 10.1097/01.mlr.0000114918.50088.1c
48. Burti L. Italian psychiatric reform 20 plus years after. *Acta Psychiatrica Scandinavica*. 2001;**104**:41-6.48. doi: 10.1034/j.1600-0447.2001.1040s2041.x
49. Nicaise P, Dubois V, Lorant V. Mental health care delivery system reform in Belgium: The challenge of achieving deinstitutionalisation whilst addressing fragmentation of care at the same time. *Health Policy*. 2014;**115**(2):120-7. doi: 10.1016/j.healthpol.2014.02.007
50. Salize HJ, Rossler W, Becker T. Mental health care in Germany - Current state and trends. *European Archives of Psychiatry and Clinical Neuroscience*. 2007;**257**(2):92-103. doi: 10.1007/s00406-006-0696-9
51. OECD. *OECD Health data*. Paris: OECD;2019. <https://data.oecd.org/health.html>. Accessed October 4, 2019.
52. WHO. *Mental Health Atlas 2017 country profiles* [Internet]. Geneva: WHO;2017. https://www.who.int/mental_health/evidence/atlas/profiles-2017/en/. Accessed October 4, 2019.
53. Schlesinger M, Gray BH. How nonprofits matter in American medicine, and what to do about it. *Health Affairs*. 2006;**25**(4):w287-w303. doi: 10.1377/hlthaff.25.w287
54. Stadhouders N, Koolman X, Tanke M, Maarse H, Jeurissen P. Policy options to contain healthcare costs:

- a review and classification. *Health Policy*. 2016;**120**(5):486-94. doi: 10.1016/j.healthpol.2016.03.007
55. Greenfield G, Foley K, Majeed A. Rethinking primary care's gatekeeper role. *British Medical Journal*. 2016;**354**. doi: 10.1136/bmj.i4803
56. Health IoP. *Health Interview Survey (interactive)*. Brussels: Sciensano;2013. <https://hisia.wiv-isp.be/SitePages/Home.aspx>. Accessed October 13, 2014.
57. KCE. *Performance of the Belgian Health System. Report 2012*. Brussels: KCE; 2013. https://kce.fgov.be/sites/default/files/atoms/files/KCE_196B_performance_syste_m_sante_belge_0.pdf. Accessed October 13, 2014.
58. Ciccone DK, Vian T, Maurer L, Bradley EH. Linking governance mechanisms to health outcomes: A review of the literature in low- and middle-income countries. *Social Science and Medicine*. 2014;**117**(0):86-95. doi: 10.1016/j.socscimed.2014.07.010
59. Rechel B, Thompson S, van Ginneken E. *Health Systems in Transition, Template for authors*. Copenhagen: World Health Organisation Europe; 2010. <http://www.healthobservatory.eu/>. Accessed April 5, 2018.
60. Mossialos E, Dixon A, Figueras J, Kutzin J. *Funding health care: options for Europe*. European Observatory of Health Care Systems, editor. Buckingham: Open University Press; 2002. https://www.who.int/health_financing/documents/cov-europe_funding_options/en/. Accessed June 10, 2015.
61. Puntis SR, Rugkåsa J, Burns T. The association between continuity of care and readmission to hospital in patients with severe psychosis. *Social Psychiatry and Psychiatric Epidemiology*. 2016;**51**(12):1633-43. doi: 10.1007/s00127-016-1287-3
62. Puntis SR, Rugkåsa J, Burns T. Associations between compulsory community treatment and continuity of care in a three year follow-up of the Oxford Community Treatment Order Trial (OCTET) cohort. *BMC Psychiatry*. 2017;**17**(1):151. doi: 10.1186/s12888-017-1319-x
63. Burns T, Catty J, Clement S, Harvey K, Rees Jones I, McLaren S, et al. *Experiences of continuity of care and health and social outcomes: the ECHO study*. London: NCCSDO. 2007.
64. Chisholm D, Knapp MR, Knudsen HC, Amaddeo F, Gaité L, van WB. Client Socio-Demographic and Service Receipt Inventory--European Version: development of an instrument for international research. EPSILON Study 5. European Psychiatric Services: Inputs Linked to Outcome Domains and Needs. *British Journal of Psychiatry*. 2000;**177**(S39):s28-s33. doi: 10.1192/bjp.177.39.s28
65. Ruggeri M, Dall'Agnola R, Agostini C, Bisoffi G. Acceptability, sensitivity and content validity of the VECS and VSSS in measuring expectations and satisfaction in psychiatric patients and their relatives. *Social Psychiatry and Psychiatric Epidemiology*. 1994;**29**(6):265-76. doi: 10.1007/bf00802049
66. Priebe S, Gruyters T. The Role of the Helping Alliance in Psychiatric Community Care: A Prospective Study. *Journal of Nervous and Mental Disease*. 1993;**181**(9):552-7. doi: 10.1097/00005053-199309000-00004
67. Guy W. *ECDEU assessment manual for psychopharmacology: revised, 1976*. Rockville, MD: US Department of Health, Education, and Welfare. Public Health Service. 1976:218-22.
68. Priebe S, Watzke S, Hansson L, Burns T. Objective social outcomes index (SIX): A method to summarise objective indicators of social outcomes in mental health care. *Acta Psychiatrica Scandinavica*. 2008;**118**(1):57-63. doi: 10.1111/j.1600-0447.2008.01217.x
69. Dimitri G, Giacco D, Bauer M, Bird VJ, Greenberg L, Lasalvia A, et al. Predictors of length of stay in psychiatric inpatient units: Does their effect vary across countries? *European Psychiatry*. 2018;**48**:6-12. doi: 10.1016/j.eurpsy.2017.11.001
70. Puntis S, Rugkåsa J, Forrest A, Mitchell A, Burns T. Associations Between Continuity of Care and Patient Outcomes in Mental Health Care: A Systematic Review. *Psychiatric Services*. 2014;**66**(4):354-63. doi: 10.1176/appi.ps.201400178
71. Ruggeri M, Lasalvia A, Salvi G, Cristofalo D, Bonetto C, Tansella M. Applications and usefulness of routine measurement of patients' satisfaction with community-based mental health care. *Acta Psychiatrica Scandinavica*. 2007;**116**(s437):53-65. doi: 10.1111/j.1600-0447.2007.01093.x
72. Ruggeri M, Tansella M. To what extent do mental health services meet patients' needs and provide satisfactory care? *Current Opinion in Psychiatry*. 2002;**15**(2):193-9. doi: 10.1097/00001504-200203000-00012
73. Bird V, Miglietta E, Giacco D, Bauer M, Greenberg L, Lorant V, et al. Factors associated with satisfaction of inpatient psychiatric care: a cross country comparison. [published online ahead of print

January 30 2019] *Psychological Medicine*. 2019. doi:
10.1017/S0033291719000011

74. Lorant V, Grard A, Nicaise P. Implementing a
Nation-Wide Mental Health Care Reform: An Analysis

of Stakeholders' Priorities. *Community Mental Health
Journal*. 2015;**52**(3):343-52. doi: 10.1007/s10597-015-
9932-y