

A comparative study on cross-border hospital care in the Euregio Meuse–Rhine

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Using data and examples from 3 academic hospitals and 1 general hospital in the Euregio Meuse–Rhine, this paper illustrates the opportunities for and obstacles to cross-border in-patient care in the European Union (EU). It defines 2 concepts of cross-border care, one related to the country of residence of the patient and the other to the country of insurance. A number of possible determinants of cross-border in-patient hospital care in the Euregio are discussed as well as the actual evidence of this type of care in the study hospitals. In a number of cases, the level of cross-border care measured in this region exceeds the average level estimated for the EU. However, it is quite low: a share of the total hospital admissions of patients admitted from a directly neighbouring member state above 1% has been found to be extraordinarily high. On the one hand, a number of factors seem to have encouraged the cross-border in-patient care in this region: short distances between the patients' residences and foreign hospitals, small language differences, lower levels of patient charges in the foreign hospitals, the presence of special knowledge in the foreign hospitals and waiting lists in the domestic hospitals. On the other hand, regulations for cross-border care at the EU level generally constrain this type of care for publicly insured patients; privately insured patients may face less constraints. National rules may even extend the possibilities of cross-border care. The initiation of cooperation between both providers and insurers across borders, at the regional level, may alter the current state of cross-border care in the future.

Key words: cross-border care, hospital care, European Union, regional analysis

Provisions for cross-border care were first introduced to facilitate the mobility of labour within the community but, with the increasing integration of the member states of the European Union (EU), such care may have an even greater relevance. More recently, more pro-active approaches to cross-border care have been considered. Within the Interregional (INTERREG) programme of the EU, which is directed at strengthening the cooperation across borders within the so-called Euregios, projects directed at health care issues have also been set up. The project dealt with here, is intended to identify the complementarities and possibilities for cooperation with respect to the supply of hospital care, medical specialties, nursing care, out-patient care and quality assurance in the Euregio Meuse–Rhine.¹ The Euregio Meuse–Rhine covers provinces in Belgium, Germany and The Netherlands (figure 1). All the academic hospitals and also 1 general hospital (the St Jans hospital) in this region, participated in this INTERREG project. The project hospitals were located in Liège (Belgium), Aachen (Germany), Maastricht (The Netherlands) and Genk (Belgium) respectively. As part of this project, a study was made of the level of cross-border hospital care in this region in 1991 and 1992 and of the factors determining

this level of care. In hospital care, only the in-patient care is considered in this paper.

In general, the documented volume of cross-border care in the EU for which different social security systems had to be coordinated, has been found to be quite small: in 1991, the documented share of expenditure for cross-border care was no more than 0.13% of the total health care expenditure in the EU.² However, 67% of this expenditure was accounted for by in-patient care.³ Using data and examples from the Euregio Meuse–Rhine, this paper illustrates some important opportunities for and obstacles to cross-border in-patient care in the EU.

The level of cross-border in-patient care in a hospital is defined as the number of foreign admissions as a percentage of the total hospital admissions. For cross-border care, 2 concepts are used:

- care delivered in one member state, while the patient is *insured* in a different member state and
- care delivered in one member state, while the patient is *living* in a different member state (table 1).

The first concept of cross-border care is the most interesting to policy makers, as it requires the financing of care across the boundaries of national health systems and, thus, the coordination of different social security systems. However, as data on cross-border in-patient care on the basis of this concept were scarcely available in the project hospitals, the paper adopts a broader perspective and primarily uses the second concept. First, a number of factors that can influence the utilization of cross-border in-patient care are discussed; this includes an investigation of their influence in the study region. Secondly,

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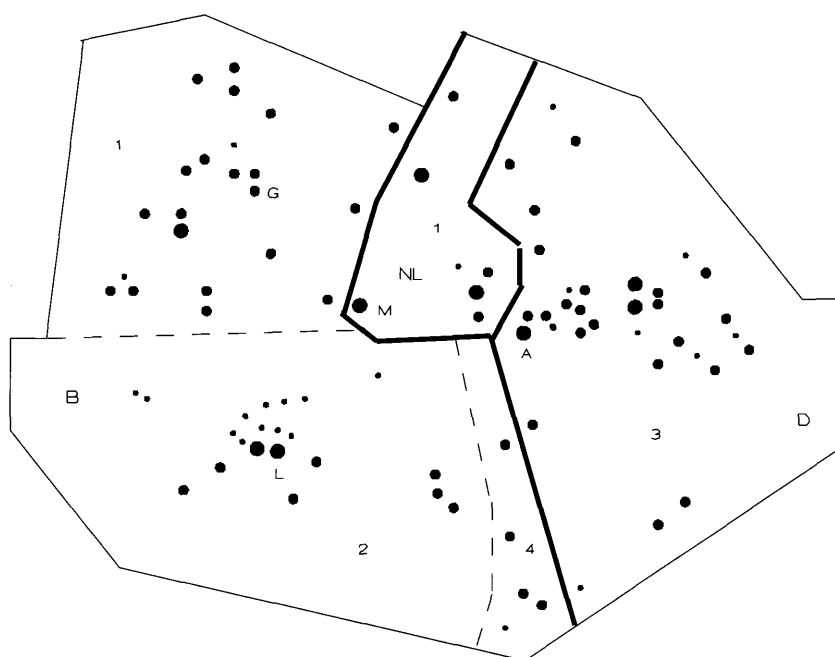


Figure 1 Hospitals and languages in the Euregio Meuse-Rhine.

Based on: Provinciale Raad voor de Volksgezondheid Limburg. Volksgezondheidsverkenningen 1: evaluatie beleid gezondheidszorg 1974-1990 (Health care explorations 1: evaluation of health care policy 1974-1990). Maastricht: Provinciale Raad voor de Volksgezondheid Limburg, 1991.

Legend

A: Academic hospital in Aachen; B: Belgium; D: Germany; G: St Jans hospital in Genk; L: Academic hospital in Liège; M: Academic hospital in Maastricht; NL: The Netherlands; 1: Dutch language; 2: French language; 3: German language; 4: German and French language; ●: <200 hospital beds; ●: 200-500 hospital beds; ●: >500 hospital beds; — : EU member state borders; - - - : Euregio Meuse-Rhine borders; - - - : language borders

the evidence of actual cross-border care is presented and discussed, following the 2 concepts of cross-border care introduced above.

FACTORS WHICH CAN INFLUENCE CROSS-BORDER HOSPITAL CARE AND THEIR EXPECTED EFFECTS IN THE STUDY REGION

A first group of factors which are expected to influence the level of cross-border hospital care are those which have already been shown to determine the utilization of hospital care *within* a country. A second group of factors are those which are expected to be of special relevance when hospital care is utilized *across borders*. Both types will be treated in the following. First a general statement on the determinant will be presented and then the situation in the study region will be specified. All the effects

Table 1 Concepts of cross-border care

Patient	Lives in country A		Lives in country B	
	Receives care in country A	Receives care in country B	Receives care in country A	Receives care in country B
Is insured in country A		1, 2	2	1
Is insured in country B	1	2	1, 2	

1: Cross-border care with coordination of different systems
2: Cross-border care according to country of residence

hypothesized in the Euregio are summarized in *table 2*. A quantification of these effects is beyond the scope of this study; a formal theoretical framework for this regional analysis would be inadequately complex and data constraints would make it impossible to test any such theory. Accordingly, qualitative expectations are formulated and used in the interpretation. Many potential determinants of cross-border utilization are discussed, but the list of determinants is not claimed to be exhaustive. The first group of determinants is discussed below and includes distance, the referral system, the specialties and special knowledge provided, waiting lists, the level of hospital tariffs and patient charges, the reimbursement of hospitals and physicians and population risk profiles.

Distance to hospital

An increase in the travel distance between the hospital and patient's residence is expected to lower hospital utilization⁴⁻⁶ and, thus, the level of cross-border hospital care. If the distance between any hospital and the patient's residence were the only variable determining hospital choice, patients from only a few locations in Belgium would be admitted to the academic hospital in Maastricht (see *figure 1*). In addition, patients from only a few locations in The Netherlands would be admitted to the academic hospital in Aachen. Patients from neither The Netherlands or Germany would be admitted to St Jans hospital in Genk or to the academic hospital in Liège. Finally, patients from German locations would not be admitted to the academic hospital in Maastricht.

The referral system
In several but not all EU member states, publicly insured patients need a referral in order to receive hospital care.⁷ Referrals have been shown to be an important decision variable of the doctors in their gatekeeper function towards the utilization of hospital care.⁸ In the context of cross-border care, the absence of an obligatory referral system in a country, is expected, other factors being

equal, to ease access to cross-border hospital care. In order to receive hospital care a publicly insured patient – whether a foreigner or not – needs a referral from a physician in both Germany and The Netherlands. In Belgium, however, such a referral is not required. As a consequence, patients who are publicly insured in the former 2 countries may have an incentive to seek hospital care in Belgium. Patients publicly insured in Belgium, on the other hand, do not have an incentive to seek hospital care in Germany or The Netherlands.

The specialties and special knowledge provided: quality and reputation

A higher level of the specialties provided as well as the special knowledge available in the providing hospital are likely to increase the utilization of hospital care.^{9,10} Thus, information on these factors could be gathered in the study region. Due to the wide availability of most specialties in the hospitals in Belgian Limburg and Dutch South-Limburg and due to the availability of most specialties in the academic hospitals in Aachen and Liège,¹ one would not expect a high level of cross-border in-patient care in the project hospitals. Similarly to these determinants, the utilization of in-patient care can be expected to increase with the reputation of the hospital physicians and the quality of the hospital services.^{11–13} There were indications in the study that special knowledge existed, for example, in Maastricht in the field of cardiology, neurosurgery and paediatrics and in the field of neurosurgery in Genk. However, a general assessment of the quality and reputation in the 4 hospitals was beyond the scope of this study.

Waiting lists

Waiting lists for hospital care may decrease the additional utilization¹⁴ and, consequently, the level of cross-border hospital care. In 1991, in the academic hospital in Maastricht, there were frequently waiting lists of longer than 4 weeks for nearly all specialties. In all the hospitals in Dutch South-Limburg, that is in the Dutch surroundings of Maastricht, there were frequently waiting lists of up to 4 weeks for ophthalmology and plastic surgery. Waiting lists were also found for ear, nose and throat treatment, orthopaedics, rheumatology, surgery and urology. In Belgian Limburg, the western part of the Euregio Meuse–Rhine in figure 1, there was only a waiting list for cardiology in 2 hospitals. The data were insufficient to determine whether the waiting lists concerned out-patient or in-patient care. On the basis of the above data, one would expect that patients living in The Netherlands would seek care in Belgium for specialties such as ear, nose and throat treatment, ophthalmology, plastic surgery, orthopaedics, rheumatology, surgery and urology. One would not expect Belgian patients to seek care in The Netherlands.

The level of hospital tariffs

The general level of hospital tariffs is of primary interest to the payer, who is typically in the study region a third-party financier. While differences in the hospital financing systems make it difficult to compare the hospital tariffs in the Euregio Meuse–Rhine directly, the data indicate higher levels of tariffs in The Netherlands than in Belgium or Germany. An important difference in the financing systems is that the investment costs are a part

Table 2 Summary of effects expected on the level of cross-border in-patient care in project hospitals

	Providing hospital							
	Liège, Belgium		Genk, Belgium		Maastricht, The Netherlands		Aachen, Germany	
	Patient's residence		Patient's residence		Patient's residence		Patient's residence	
	NL	D	NL	D	B	D	B	NL
Factors of relevance in domestic care and in cross-border care								
Distance to hospital	-	-	-	-	+/-	-	+/-	+/-
Referral system	+	+	+	+	-	0	-	0
Specialties provided	0	0	0	0	0	0	0	0
Special knowledge provided	+	+	+	+	+	+	+	+
Waiting lists	+	+	+	+	-	-	na	na
Hospital tariff	+	0	+	+	-	-	0	+
Cost sharing	-	-	-	-	+	+	+	-
Hospital reimbursement	-	-	-	-	+/-	+/-	-	-
Physician reimbursement	+	+	+	+	-	-	+/-	+/-
Risk profiles (% >65 years)	-	0	-	0	+	+	0	-
Factors of special relevance in cross-border care								
EU regulation	-	-	-	-	-	-	-	-
National regulation	0	0	0	0	+	0	+	0
Percentage privately insured	+/-	+/-	+/-	+/-	-	+/-	-	+/-
Language differences	-	-	+	-	+	-	+	-

B: Belgium; D: Germany; NL: The Netherlands; +: positive influence; -: negative influence; 0: indeterminate influence; na: not available

of the tariffs in The Netherlands, whereas they are paid for by the government for the most part in Belgium and Germany. *Table 3* shows the costs per day (in the lowest class) for publicly insured patients in the project hospitals in April 1994. It is important to note that the hospitals in Aachen, Liège and Maastricht are academic hospitals, the financing of which differs somewhat from that of general hospitals because of the teaching and research activities. The academic hospital in Maastricht has the highest costs per day for publicly insured patients. This includes investment costs, the cost of drugs and specialist costs. The general hospital in Genk has the lowest costs per day, but this excludes cost of specialists and the cost of drugs as well as a part of the investment costs. In sum, Dutch insurers may be interested in patients seeking hospital care in Belgium or Germany.

The level of patient charges

Of concern to the patient is the level of patient charges. Higher rates are likely to decrease hospital utilization.¹⁵⁻¹⁷ In 1991 patients in Belgium were faced with a co-payment of 235 BF (5.89 ECU) per day, if admitted to a hospital (since 1994 this co-payment has been 1,351 BF on the first day and 351 BF from the second to the eighth day), a co-payment of 25 BF (0.63 ECU) per day for drugs prescribed in the hospital and co-insurance of 25% of the costs of most physician services in the hospital. In Germany, publicly insured patients were faced with a co-payment of 10 DM (5.16 ECU) per day (12 DM a day in 1994) for the first 14 days admitted to the hospital. In both countries there were exemptions or reductions for some groups of insurants. In The Netherlands publicly insured patients are not obliged to pay user charges for in-patient hospital care; privately insured patients may have to pay charges depending on their insurance contract. Current EU regulations foresee that publicly insured patients have to pay user charges according to the rules in the providing country. Accordingly, patients publicly insured in The Netherlands have to pay user charges if admitted to a hospital in Belgium or Germany, while patients publicly insured in Belgium or Germany do not have to pay user charges when receiving in-patient care in The Netherlands. This sets disincentives for Dutch patients to seek such care in Belgium or Germany, while it makes cross-border care in The Netherlands more attractive for publicly insured patients from the latter 2 countries. In addition, publicly insured patients in Belgium may, because of

lower patient charges, have an incentive to seek care in Germany.

Hospital reimbursement systems

Hospital budgeting is the predominant mode of financing in all 3 countries of the study.¹⁸ Budgeting however, which does not account for additional utilization, may constrain the number of admissions¹⁹ – including that of cross-border patients. In Belgium, hospitals are financed under prospective global budgets. In Germany, since 1993 and for a 3 year period, hospitals have faced fixed budgets capped on the basis of the 1992 budget. Some flexibility with respect to the number of patients treated is built into the budget formula only in The Netherlands. Here, the budgets are determined on the basis of the population served, bed and specialist capacity and the production-related component which includes the number of admissions. Thus, the budget determination does not account for cross-border care in any of the 3 countries considered, although in The Netherlands the production components in the budget formula do allow a greater degree of flexibility and, consequently, might represent less of an obstacle to cross-border care.

Physician reimbursement systems

The utilization of hospital care and, then, cross-border care, can be expected to increase, if hospital physicians are paid on a fee for service basis, as compared to a salary basis.^{20,21} In Belgium, hospital specialists are paid on a fee for service basis. In Germany, where hospital physicians are salaried employees, additional payments can only be requested for private patients. In The Netherlands approximately 90% of the medical specialists are self-employed, the remainder being salaried employees. The tariff lists specify reimbursement schedules, which are higher for privately insured patients. Self-employed specialists are then paid on the basis of a mix of capitation and a fee for service payment. In the academic hospital in Maastricht, the specialists are salaried employees. On the basis of this, a lower level of cross-border hospital care could be expected for both publicly and privately insured patients in Maastricht and for publicly insured persons in Aachen, as compared to the level in the Belgian hospitals.

Population risk profiles

The percentage of the elderly is taken as a simple indicator of the population risk profile. A higher percentage of elderly people for a given number of population is likely

to increase hospital admissions²² and, consequently, cross-border care. For pragmatic purposes, the analysis of population risk profiles had to be restricted to the percentage of the population above 65 years at the national level. In 1991, this percentage was above the EU average in Germany

Table 3 Hospital tariffs for publicly insured patients in the project hospitals (data April 1994)

Providing hospital	Liège, Belgium	Genk, Belgium	Maastricht, The Netherlands	Aachen, Germany
Costs per day	10,314.00 BF 258.98 ECU	7,764.00 BF 194.44 ECU	837.02 NLG 384.84 ECU	535.13 DM ^a 276.12 ECU
Specialist costs included	No	No	Yes	Yes
Costs of drugs included	No	No	Yes	Yes
Investment costs included	30%	30%	Yes	No

a: General daily rate

(14.7 and 15.3% respectively; OECD Health Data File 1995). In Belgium this percentage was nearly equal to the EU average (14.8%). For the last 10 years The Netherlands has had a much lower proportion (12.9% in 1991), but faces a steeply rising trend. Just focusing on the percentage of the population over 65 years, one would expect relatively more patients living in Belgium or Germany to utilize hospital care in Maastricht, while relatively fewer patients living in The Netherlands would utilize hospital care in Belgium or Germany.

Following the discussion of factors which are also relevant in domestic hospital utilization, the next 4 factors belong to those which may specifically determine the utilization of cross-border hospital care. They comprise regulation at the EU level and at the national level, the percentage of those privately insured and language differences.

Regulation at the EU level

The more restrictive regulations of cross-border care are, either at the EU or the national level, the more cross-border care can be expected to decrease as compared to a free choice situation.² The current EU rules for financing cross-border care apply to publicly insured persons and are based on EU decrees 1408/71 and 574/72. There are 3 main categories of access to cross-border care:

- cross-border workers may freely choose on which side of the border to seek care, independent of the country of insurance or residence (form E106),
- emergency care necessary during short stays in another member state (form E111) and
- care pre-authorized by the domestic insurer (E112).

Both in the country where the patient is insured and in the country where the patient seeks care, the health care service concerned should be a part of the public health insurance package. In practice, health care is also delivered if the service is not part of the public insurance package in the country where the patient is insured, but is in the country where the patient seeks care or the service is considered convenient for the patient.²³ In principle, the financing of cross-border health care follows the rules of the providing country, using the same payment units and prices as for patients insured in that country. The processing of claims is implemented through a local financier. Finally, the claims are exchanged by the national coordinating organizations of the sick funds in Brussels. As the current EU rules for publicly insured patients allow for cross-border care only in special situations, one would generally not expect a high level of cross-border care delivered to these patients in the project hospitals. In addition, due to the procedures which have to be followed in cases of cross-border care for publicly insured persons, this care is expected to involve high transaction costs.

Regulation at the national level

Despite the EU regulations, the member states enjoy considerable discretion with respect to who is eligible to receive cross-border care.²⁴ Some additional national legislation is pertinent here. In particular, it should be

noted that in Belgium, residents within 15 km of the border are allowed to receive care from a provider that is located less than 25 km from that border. However, the costs of a normal delivery are not reimbursed if it took place in a foreign hospital.

Percentage of inhabitants privately insured

As the current EU regulations only apply to publicly insured persons, it is expected that privately insured persons will have more possibilities to opt for cross-border care. The number of privately insured persons may thus be positively correlated with cross-border care. In Belgium, however, the inhabitants are generally publicly insured for hospital care. In The Netherlands the inhabitants are also generally publicly insured for additional in-patient hospital care after one year. For other in-patient hospital care, approximately 66% of the Dutch inhabitants are publicly insured, while approximately 33% of the Dutch population rely on voluntary private insurance. In Germany only approximately 10% of the population rely on voluntary private insurance for all health care risks. Belgian patients are thus expected to have the lowest share in cross-border care with respect to this determinant.

Language differences

Naturally, language differences are expected to create an obstacle to seeking or receiving care across borders. *Figure 1* shows the distribution of official languages spoken in the Euregio Meuse–Rhine. It can be expected that patients from many Belgian locations will have no language problems if they are admitted to the academic hospital in Maastricht nor from certain other locations in being admitted to the academic hospital in Aachen. In addition, patients living in The Netherlands will have no difficulty if admitted to St Jans hospital in Genk. These patients may, however, face problems when admitted to the hospitals in Liège or Aachen. Finally, patients living in Germany may have language problems if they are admitted to a hospital in Genk, Liège or Maastricht. It is important to note, however, that the region has many local dialects. Generally and particularly in the Dutch/German case, the dialects have many elements in common. Therefore, the official languages as shown in *figure 1* only indicate whether or not it will be difficult for a patient to receive care in a foreign hospital.

All the hypothesized effects are displayed in *table 2*. Clearly, no single qualitative hypothesis can be drawn by either aggregating all the effects expected per hospital in total or per hospital and catchment area. The impact of the individual determinants also varies between the 8 cross-border flows studied in the 4 hospitals, with the exception of EU regulations which apply to all in the same way by definition. As a minimum overall expectation it can, however, be hypothesized that the existence of both negative and positive incentives for cross-border care in all cases is unlikely to lead to a particularly high volume of this type of care in the project hospitals.

EVIDENCE OF CROSS-BORDER CARE

Data on cross-border in-patient care have been collected from 3 academic hospitals and 1 general hospital in the study region for the years 1991 and 1992 (see the upper part of *table 4* for some general information). Most data with respect to cross-border care were not immediately available in these hospitals, but had to be specially extracted from the hospital files. In all the project hospitals, data were available with respect to the level of cross-border care on the basis of the patient's country of residence. Only in the academic hospital in Maastricht and in St Jans hospital in Genk were data available on the basis of the patient's country of insurance. The latter 2 hospitals could also provide some information with respect to the specialties visited most frequently in the case of cross-border hospital care.

Table 4 summarizes the cross-border in-patient care on the basis of the patient's country of residence for all 4 hospitals. It was not possible to receive all the data from all the countries, but the evidence so far shows considerable variation in the level of this care between the study hospitals.

The academic hospital in Aachen

In 1992 345 admissions (0.86% of the total admissions) to the academic hospital in Aachen were patients living in The Netherlands. In the same year 423 admissions (1.06% of the total admissions) were patients living in Belgium. The academic hospital in Aachen has a bed capacity approximately twice as big as the other 2 academic hospitals.

The academic hospital in Liège

The numbers of admissions to the academic hospital in Liège, both for patients living in Germany and for patients living in The Netherlands, were very small in 1991 and 1992 (varying from 0.00 to 0.02% of the total admissions).

The academic hospital in Maastricht

In the academic hospital in Maastricht, 49 admissions (0.26% of the total admissions) in 1991 were patients

living in Germany. In the same year 336 admissions (1.78% of the total admissions) were patients living in Belgium. In 1992 this number of admissions was 340 (1.70% of the total admissions). The specialties used most frequently by patients living in Belgium were paediatrics, cardiology, neurosurgery, neurology (1992 only) and urology (1992 only). Among the patients living in Belgium, most came from the Meuse-Rhine region (318 in 1991 and 314 in 1992). They particularly came from Lanaken (82 in 1991 and 83 in 1992), a place in which many Dutch nationals live. A majority of the patients living in Belgium and admitted to the academic hospital in Maastricht were cross-border workers, that is they were employed and insured in The Netherlands. If the patient's country of insurance is used as the criterion for cross-border care, instead of the patient's country of residence, only approximately 0.71% of the total admissions in 1991 and only approximately 0.62% of the total admissions in 1992 to the academic hospital in Maastricht can be considered as cross-border in-patient care delivered to patients who were both living and being insured in Belgium.

St Jans hospital in Genk

In St Jans hospital in Genk, there were no admissions of patients living in Germany. However, 42 admissions (0.19% of the total admissions) in 1991 and 59 admissions (0.25% of the total admissions) in 1992 were patients living in The Netherlands. The specialties used most frequently by patients living in The Netherlands were orthopaedics, neurosurgery and ophthalmology. Among these patients most were of Dutch nationality (32 in 1991 and 54 in 1992) and came from the Dutch part of the Meuse-Rhine region (29 in 1991 and 41 in 1992). They particularly came from Maastricht (6 in 1991 and 14 in 1992). Approximately half of the Dutch patients living in The Netherlands were cross-border workers, that is they were employed and insured in Belgium, but this share dropped by half in the second study year. Again, if not the patient's country of residence but the patient's country of insurance is used as the criterion for cross-border care,

Table 4 Admissions to project hospitals: the total admissions and cross-border care admissions according to country of residence

Providing hospital	Liège, Belgium		Genk, Belgium		Maastricht, The Netherlands		Aachen, Germany	
Number of beds 1991-1992	720		470		690		1,470	
Total admissions								
1991	21,301		21,947		18,925		38,564	
1992	20,829		23,833		20,029		39,989	
Patient's residence	NL	D	NL	D	B	D	B	NL
Admissions by country of residence								
1991	5	3	42	0	336	49	na	na
1992	4	0	59	0	340	na	423	345
Per cent admissions by country of residence								
1991	0.02	0.01	0.19	0.00	1.78	0.26	na	na
1992	0.02	0.00	0.25	0.00	1.70	na	1.06	0.86

B: Belgium; D: Germany; NL: The Netherlands
na: not available

only 0.07% of the total admissions in 1991 and only 0.18% of the total admissions in 1992 in St Jans hospital can be considered as cross-border in-patient care delivered to patients who were Dutch nationals and both living and insured in The Netherlands. However, this involved little coordination between the different social security systems, since almost all the cross-border patients who were insured in The Netherlands were privately and not publicly insured.

DISCUSSION

Within the Euregio Meuse–Rhine a considerable variation in the level of cross-border care has been found. For further discussion, a three-stage classification is suggested for cross-border care in this region: at a low level, cross-border care cases account for 0.00–0.09% of the total hospital admissions, at an intermediate level they account for 0.10–0.99% of the total hospital admissions and at a high level they account for 1% or more of the total hospital admissions. These 3 classes allow a more detailed discussion of the various factors that influence the level of cross-border care in the 4 project hospitals and their respective 8 catchment areas for this type of care.

An example of a low level of cross-border care is the academic hospital in Liège, which had between 0.00 and 0.02% of the total admissions in the study years. This low level can be related to the following factors which have been discussed as determinants of cross-border care.

- The larger distance between this hospital and the insurants' residences, as compared to the distance between the insurants' residences and domestic hospitals.
- Large differences between the official languages of the providers in question and the insurants living across the border.
- The higher level of patient charges implemented in this hospital, as compared to the charges made in the insurants' domestic hospitals.
- The lack of less restrictive national regulation concerning German and Dutch patients seeking cross-border care in Belgium.

The impact of these factors could not be overcome by the potentially positive influences of a lack of a referral requirement, special knowledge provided, shorter waiting lists and fee for service reimbursement of physicians.

The cross-border care flows at the intermediate level comprise patients living in The Netherlands and admitted to the academic hospital in Aachen, patients living in The Netherlands and admitted to St Jans hospital in Genk and patients living in Germany and admitted to the academic hospital in Maastricht. These too, could be explained on the basis of the same combination of factors mentioned above. However, for each flow and hospital in question, one of these factors was different, as compared to the situation in the academic hospital in Liège. These differences were as follows.

- For the academic hospital in Aachen, the shorter distance between this hospital and the residences of several insurants living in The Netherlands.

- For St Jans hospital in Genk, the lack of serious differences between the official language of the providers and insurants living in The Netherlands.

- For the academic hospital in Maastricht, the lower level of patient charges implemented in this hospital, as compared to the charges the insurants living and admitted to a hospital in Germany are required to pay.

Concerning the high level of cross-border care, 2 groups can be identified which belong to this category: patients living in Belgium and admitted to the academic hospital in Aachen and patients living in Belgium and admitted to the academic hospital in Maastricht. Again the same combination of factors seems to explain the relatively high level of cross-border care. As compared to the situation for the academic hospital in Liège, however, these factors played a different role.

- The frequently shorter distance between the hospital in question and the insurants' residences, as compared to the distance between the insurants' residences and the domestic hospitals.
- The lack of serious differences between the official language of the providers in question and the insurants' residences in question.
- The lower level of patient charges implemented in the hospital in question, as compared to the charges made in the insurants' domestic hospitals.
- The presence of less restrictive national regulations for cross-border care in Belgium as compared to the EU regulations (as a consequence, both the EU regulations and the low share of privately insured persons are less important factors for the number of Belgians utilizing cross-border hospital care).

The most important factors determining the level of cross-border in-patient care in the project hospitals seem to be distance to the hospital, language differences, cost sharing and regulations for cross-border care, both at the EU level or at the national level. Yet this does not preclude some relevance of the other factors discussed. Concerning the presence of special knowledge, patients living in Belgium have been shown to attend most frequently the units of cardiology, neurosurgery, paediatrics, neurology (1992 only) and urology (1992 only) in the academic hospital in Maastricht. The specialties in St Jans hospital visited most frequently by patients living in The Netherlands were neurosurgery, ophthalmology and orthopaedics. This also brings waiting lists into the picture, because this constraint existed in Dutch South-Limburg, but not in Belgian Limburg for the last 2 specialties. Finally, looking at the Dutch patients at St Jans hospital by insurance type, the only hospital for which such data were available, the evidence here would seem to support the hypothesis that private insurance is a factor likely to be more positively related with cross-border care. A last aspect concerning cross-border care according to the patient's residence is the utilization of this type of care by cross-border workers. As shown in the previous section, this patient category formed a significant part of the cross-border patients in Maastricht and had some varying relevance in Genk.

Another point is cross-border care according to the country where the patient is insured. Detailed data from the hospitals in Genk and Maastricht show that in this case, the level of cross-border in-patient care was considerably lower than when referring to the country of residence. For this concept of cross-border care, it is also possible to compare the figures found with an estimate of the average level of cross-border in-patient care in the EU. The latter is based upon that care for which claims have been made. Approximately 67% of the expenditure claimed for cross-border care relates to in-patient care.³ It is then assumed that the share of cross-border hospital admissions equals its share in cross-border in-patient expenditures, that is the patients involved are average costly patients. Then, 67% of the 0.13% share of the cross-border care in the total EU health care expenditure,² which is 0.09%, will indicate both the EU average of cross-border in-patient care expenditure and hospital admissions. Accordingly, the levels of cross-border admissions found in Genk exceeded the estimated EU average, but only in 1992, whereas the levels found in Maastricht do so in both years and to a great extent.

CONCLUSION

This paper investigated cross-border care in a study setting of 4 hospitals in the Euregio Meuse–Rhine. The study was made possible by participation by these hospitals in a cooperation project. The study setting provided ample opportunity for investigating a wide range of factors that can contribute to cross-border health care and also allowed the collection of data on many determinants of cross-border in-patient care as well as on the level of this care rendered by the main regional providers.

A number of factors seem to be of primary relevance for the level of cross-border care in this region: short distance to the providing hospital, small language differences, differentials in the level of patient charges, the availability of special knowledge in the providing hospital, differentials in waiting lists and special national regulations. Most of these factors have also been shown to determine the domestic utilization of hospital care. In general, the levels of cross-border care exceed to some extent the estimates of the average EU levels, but they are both low in absolute terms and in terms of their share in the total admissions: a 1% threshold is not even reached when one follows the concept based on the country of patients' insurance, whereas it is passed in some instances when one follows the wider concept based on the country of the patients' residence. General EU regulations restrict the amount of cross-border care for publicly insured patients, but there is a potential for cross-border care in the region which can be indicated by some subgroups. Cross-border workers who have a free choice of care on both sides of the border display higher utilization rates, the publicly insured benefited from generous national regulations in the border areas and privately insured patients were also found to make use of care across the borders more frequently under certain circumstances.

On the side of providers and insurers the challenges of a more integrated Euregio have been recognized. The hospital cooperation project underlying this study is being followed up by more efforts in the area of cooperation and exchange. This may eventually improve the information basis on the care available across borders, which in turn may lower transaction costs and may ease the management of waiting lists. Of course, cooperation between hospitals will not change structural issues such as the difficult coordination of diverging financing and insurance systems. Yet health insurers from all 3 member states in the region have also started similar cooperation efforts.²⁴ This again may improve the information basis – such as about the special knowledge available and cost issues across the border – and, thus, reduce transaction costs. The search for the mutual benefits between EU health care systems has just begun. In our study area, the Euregio Meuse–Rhine, initiatives for better cooperation, including cross-border care, are emerging from interests at the regional level rather than from a new vision on cross-border care at the national or at the EU level.

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