

An Exploratory Evaluation of Multidisciplinary Primary Care Group Practices in Franche-Comté and Bourgogne

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The creation of *maisons de santé pluridisciplinaires*¹, grouping together first-contact medical and paramedical private practitioners providing a multidisciplinary healthcare service, is expanding throughout France. In view of the medical demographics crisis and geographical inequalities in the distribution of healthcare supply, this form of organisation is perceived as a means of ensuring a satisfactory, modern, good quality healthcare service throughout the country whilst improving health professionals' working conditions.

An exploratory evaluation of nine MSPs conducted in the French regions Franche-Comté and Bourgogne confirms that these structures, compared with traditional general medical practice, allows for a better balance between private life and professional practice. The MSPs present further advantages: greater accessibility due to longer opening hours, efficient cooperation between professionals –notably between general practitioners and nurses–, and a more extensive care supply.

Follow-up care for type 2 diabetes patients equally seems of better quality in MSPs despite the heterogeneity of results. At this stage, it is impossible to clearly ascertain whether office-based medical care expenditures have increased or decreased among MSPs patients.

In private practice, group practices are once again on the agenda in France. In effect, healthcare reform projects have recently used the traditional term 'centre de santé'² [Acker, 2007] or introduced the terms 'pôle de santé'³ and 'maison de santé pluridisciplinaire'¹ (MSPs) [Baudier, Jeanmaire, 2009] with a clear focus on extending the skill-mix model by pooling resources. This study focuses on the MSPs in which self-employed medical and paramedical health professionals are united on a single, dedicated site.

Benefitting from political and financial support, multidisciplinary MSPs are expanding throughout the French terri-

tory. Certain structures receive subsidies for investment and/or running costs from a variety of sources such as the European Union, the Government, National Health Insurance or regional financing⁴. More recently the 2008 Social Security Finance bill [PLFSS, 2008] underlined the importance of multidisciplinary MSPs alongside traditional centres de santé and pôles de santé in the experimentation of new modes of remunerating health professionals. This experimentation is ope-

♦ This study was carried through with the active contribution of Magali Coldefy, Vincent Griffond, Nelly Le Guen, Véronique Lucas-Gabrielli, Michel Naiditch and Nicolas Krucien.

1 Copy editor's note: '*Maisons de santé pluridisciplinaires (MSP)*' refers to medical group practices in which medical and paramedical private practitioners provide first-contact multidisciplinary primary care service. This term is used throughout the text for lack of an English equivalent.

2 Copy editor's note: *Centre de santé* refers to outpatient medical care centers staffed with medical and paramedical personnel which provide generalist and specialist care. They are runned by private associations, mutual insurance companies or municipalities.

3 Copy editor's note: *Pôle de santé* refers to an administrative organisation whose task is to coordinate healthcare provision between private practitioners from both the medical and paramedical sectors in a specific geographic zone in the aim of pooling complementary resources, cutting duplicate activities and favouring the shared or common use of facilities and equipment.

4 Copy editor's note: Fond européen pour le développement rural, Fonds d'innovation pour la qualité des soins de ville, Groupement régional de santé publique, etc.

rational in voluntary sites in six French regions (Franche-Comté, Lorraine, Brittany, Rhône-Alpes, Île-de-France and Bourgogne).

MSPs and other forms of group practice are considered as being simultaneously capable to face the future challenges in medical demographics and the evolution in healthcare demands. Given that inequalities in the geographical distribution of private practitioners risk being accentuated by health professionals' demographic and sociological evolutions [Attal-Toubert, Vanderschelden, 2009], group practice is perceived as a means of ensuring adequate healthcare provision throughout the territory whilst at the

same time improving working conditions [Aulagnier *et al.*, 2007] and guaranteeing a quality healthcare service to the population as a whole.

Furthermore, in favouring skill-mix between medical and paramedical professionals, MSPs would adapt healthcare provision – currently oriented towards curative care for acute conditions – to newer forms of healthcare needs which are driven by an increase in long-term diseases. The quality of management of chronic disease patients and the effectiveness of the care delivered would thus be improved within these structures [Bras, Duhamel, Grass, 2006].

Maintaining an exclusive fee-for-service framework, however, leads to fears concerning the potential risk of cost inflation in MSPs through the development of medically unjustifiable

BACKGROUND

This exploratory evaluation of *maisons de santé pluridisciplinaires* was carried out in the Franche-Comté and Bourgogne regions on the initiative of the Cnamts* Directorate of strategy, research and statistics. The project was elaborated and conducted by the Irdes in partnership with the Cnamts*, the regional unions of Health Insurance Funds* in the two regions, the national federation of MSPs, and the regional federations of MSPs in Franche-Comté and Bourgogne. MSP professionals actively contributed to the data collection by filling out individual questionnaires, and participating in collective meetings and individual interviews on each of the sites. The results were presented and discussed on two occasions during the production phase with all the steering committee members in Paris in 2008 and in Franche-Comté and Bourgogne in 2009.

3 Throughout the rest of the document, 'multidisciplinary health house' will be referred to as 'health house' or 'MHH'.

SOURCES

Global field of analysis

All the *maisons de santé pluridisciplinaires* (MSPs) opened in Bourgogne and Franche-Comté on January 1st 2008 counting at least one GP/nurse team and a third medical or paramedical profession were analysed: that is to say, 9 MSPs, 105 health professionals of which 32 GPs. Patients with a Preferred Doctor (PD) [See footnote 5 page 4] and who took care in aMSP between January 1st and December 31st 2007 were also investigated. The study of MSPs and their patients' expenditures was based on a detailed qualitative analysis of the structures and their practicing health professionals (structure survey) and was associated with a quantitative evaluation (using National Health Insurance billing data) aimed at comparing MSPs with traditional general medical surgeries established in the vicinity.

The qualitative analysis: a "structure" survey

The qualitative analysis data, concerning solely MSPs was collected by means of 'structure' and 'professional' questionnaires. These questionnaires collected information on the services offered, accessibility, cooperation between professionals, the history of the structure's creation, etc. The qualitative survey was then completed by visits to the MSPs carried out by two interviewers between June and September 2008 and included face-to-face interviews with the health professionals on site. In total, of the 105 professionals practising within the 9 MSPs in the sample, 71 answered the questionnaires.

The quantitative analysis

The quantitative data was used in three levels of analysis: the MSPs, the health professionals and the patients. It involved comparing the socio-demographic and care use characteristics between the 'case study' and 'control sample' populations.

A here/elsewhere comparison

The 'case study' population corresponds to MSPs in Franche-Comté and Bourgogne open on January 1st 2008 and patients whose PD works within one of these MSPs. The 'control sample' population corresponds to the GPs who are not based within one of these MSPs but work within a local control zone specific to each MSP, along with the patients who declared them their PD to Health Insurance. In the absence of information on their mode of practice, the control sample GPs are considered as solo practitioners. These zones constitute 'comparable' local samples of GPs and patients of sufficient size. A local control

zone (LCZ) corresponds to a MSP's area of attractiveness, in other words the districts in which over 10% of medical acts were conducted by the MSP GPs. To these were added the districts in which medical acts delivered to residents represent over 10% of a MSP GP's normal activity. So as to increase the control sample size, borderline districts were equally included.

Sources

The 'quantitative' data was extracted from two of the National Health Insurance Cross-Schemes Information System (Sniiram*) data bases for the year 2007:

- Snir-PS*: data base that takes into account aggregated activity (for all the health insurance schemes) for each health professional in private practice. It enables an analysis by health professional;
- Erasme: data base containing the characteristics of the beneficiary, the date of treatment, acting health professional, prescribing health professional, total expenditures for ambulatory care registered with the statutory health insurance scheme* (SHIS) and local health insurance divisions* (mutual insurance companies who are authorized to act as the SHIS for local civil servants). It enables an analysis by patient.

Final sample

Data extraction concerning the volume of health professionals' activities and their patients' healthcare consumption covers a twelve-month period beginning on January 1st 2007. The 'case study' population (table 1) is composed of 8 out of the 9 initial MSPs because one of them opened in December 2007; overall 32 GPs were in practice on December 31st 2007. 14,169 statutory health insurance scheme* (or a local health insurance division*) beneficiaries consulted a GP in one of the 8 MSPs at least once in 2007 and registered with one of the MSP's GP. The 'control sample' population is made up of 229 GPs and of the 101,764 NHS (or local health insurance division*) beneficiaries who consulted a GP in the control zone in 2007 and whose PD practices in the said control zone.

For the expenditures analysis, the sample is made up of patients having consulted a GP at least once, and are excluded those whose total expenditures and/or general medical expenditures were negative or null. The expenditure analysis is thus carried out on 14,139 'case study' patients and 101,125 'control sample' patients.

Finally, for the analysis of the quality of diabetes patients' care management, the sample was made up of patients having been treated with oral anti-diabetes during the observation period (thus assimilating type 2 diabetes patients), that is 842 'case study' patients and 373 'control sample' patients

activities either to maximise individual revenues, or to balance running costs induced by a multidisciplinary team practice (premises, equipment, time spent exchanging with colleagues).

In this study, we will focus on MSP organisation in two French regions, Franche-Comté and Bourgogne, both actively supporting their development. More precisely, the specificity of nine MSPs is evaluated from the viewpoint of average general medical practice. The health professionals' activity, follow-up care, and care use by MSP patients are compared with those of a local control zone defined for each MSP. Associating qualitative and quantitative analyses (methods insert), this study aims to test a number of hypotheses currently being advanced by answering the following questions: do MSPs offer good care accessibility to beneficiaries of the statutory health insurance and satisfactory working conditions for the professionals? Do they favour the delivery of a more extensive range of care and services and do they provide better quality care? Finally, do they generate higher expenditures?

Similar projects in different contexts

Among the nine MSPs studied, two were created between 1970-1980 (MSPs 1 and 5), initially to facilitate both access to care and quality of the doctor-patient relationship. The other seven were created in the 2000s and are based on a more or less formalised project, written formalisations often being a prerequisite in demands for subsidies for investment or running costs. The aims most frequently advanced by these MSPs are: improving of the quality of care and developing a global, multidisciplinary care provision (7 MSPs/7), improving the regional care supply (6/7) and lastly, improving working conditions (4/7).

Among the more recent MSPs, these project disparities are equally reflected in the way in which these structures were initially financed. Two scenarios predominate: either they are totally financed by the proprietary health professionals (MSPs 2 and 6), or partially or totally

financed by the regional authorities (MSPs 3, 4, 7, 8 and 9). In the first case, the two MSPs concerned are large (table 1), group together a considerable number of health professionals and are situated in a competitive environment in areas of adequate medical density. In the second case, the five MSPs, generally more modest in size, were created to maintain the healthcare provision in their geographical zone by pooling all the local health professionals in a non-competitive environment. Health professionals rent the premises via an association charged with administering the MSP on behalf of the municipalities, the majority received grants for facilities, equipment and initial running costs. In one MSP (MSP 7) situated in a low medical density zone, doctors benefit from a 20% extra fees.

Multidisciplinary MSPs have greater accessibility in terms of opening hours

Accessibility to care was evaluated on the basis of several factors: the total number

T1

Structure and care provision of maisons de santé pluridisciplinaires

MSP location zone	Sample**	Number of patients	Number of patients having declared a Preferred Doctor***	Number of GPs	Number of health professionals other than GPs	Number of nurses	Number of different health professionals	Surface area of MSP	Annual number of days worked		
									in a MSP	per 'MSP' GP	per 'LCZ' GP
Zone 1	MSP	9,636	4,096	9	3	2	3	400 m ²	303	196	-
	LCZ	10,3432	42,148	106	-	-	-	-	-	-	186
Zone 2	MSP	4,813	1,802	4	17	3	10	750 m ²	310	186	-
	LCZ	11,395	4,804	10	-	-	-	-	-	-	205
Zone 3	MSP	1,543	559	2	3	2	3	431 m ²	254	142	-
	LCZ	26,655	12,057	25	-	-	-	-	-	-	194
Zone 4	MSP	2,468	1,183	2	4	2	5	409 m ²	281	206	-
	LCZ	5,281	2,590	6	-	-	-	-	-	-	162
Zone 5	MSP	3,479	1,463	4	6	2	5	330 m ²	307	193	-
	LCZ	8,323	3,469	9	-	-	-	-	-	-	184
Zone 6	MSP	8,165	2,648	6	13	5	5	800 m ²	358	189	-
	LCZ	48,743	23,289	50	-	-	-	-	-	-	183
Zone 7	MSP	1,391	718	2	4	3	3	200 m ²	233	81	-
	LCZ	8,249	3,966	9	-	-	-	-	-	-	164
Zone 8	MSP	3,703	1,700	3	10	2	9	600 m ²	301	222	-
	LCZ	18,943	9,441	14	-	-	-	-	-	-	211
Zone 9	MSP	Data unavailable		5	6	2	4	443 m ²	Data unavailable		
	LCZ			-	-	-	-	-			
All zones combined*	MSP	35,198*	14,169*	32	60	21	11	-	293	177	-
	LCZ	231,021*	101,764*	229	-	-	-	-	-	-	186

* The totals do not include numbers for zone 9. ** MSP: multidisciplinary MSP; LCZ: local control zone.

*** See footnote 5 page 4.

Field: patients affiliated to the statutory health insurance scheme (SHIS) and local health insurance* divisions (mutual insurance companies who are authorized to act as the SHIS for local civil servants).

Study period: from January 1st 2007 to December 31st 2007, except for zone 3 (from March 1st 2007 to February 28th 2008) and zone 7 (from July 1st 2007 to June 30th 2008).

Data: Erasmus 2007-2008, Cnamts. **Exploitation:** Irdes.

T2

Activity of GPs practising in maisons de santé pluridisciplinaires (MSPs) or local control zones

MSP location zone	Sample*	Average annual number of GP's medical treatments per patient		Average number of patients per GP		Percentage of GPs' treatments carried out in MSPs or LCZs (A+B)	Percentage of acts carried out in an MSP by...	
		Per GP having been declared 'Preferred Doctor'***	per patient having declared a 'Preferred Doctor'	total	Having declared a 'Preferred Doctor'		The patient's 'Preferred Doctor' (A)	Another GP (B)
Zone 1	MSP	3.7	6.1	1,681	455	82	59	23
	LCZ	3.4	6.4	1,245	398	75	-	-
Zone 2	MSP	3.7	5.6	2,077	451	91	48	43
	LCZ	3.8	6.1	1,421	480	83	-	-
Zone 3	MSP	3.7	5.1	1,083	280	92	59	33
	LCZ	3.4	5.6	1,276	482	83	-	-
Zone 4	MSP	4.7	7	1,625	592	89	77	12
	LCZ	4.3	6.1	993	432	83	-	-
Zone 5	MSP	4.2	5.9	1,445	366	91	64	27
	LCZ	3.6	6.4	1,088	385	84	-	-
Zone 6	MSP	4.1	6.7	2,386	441	90	48	42
	LCZ	3.5	5.8	1,205	466	82	-	-
Zone 7	MSP	3.6	4.4	862	359	87	73	14
	LCZ	4.4	5.6	1,147	441	82	-	-
Zone 8	MSP	3.8	5.9	1,577	567	90	75	15
	LCZ	3.3	5.8	1,680	674	80	-	-
Zone 9	MSP	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable
	LCZ	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable
All zones combined**	MSP	-	6.0	1,592	443	88	60	28
	LCZ	-	6.1	1,257	444	79	-	-

* MSP: multidisciplinary MSP; LCZ: local control zone. ** The totals do not include numbers for zone 9.

Field: patients affiliated to the statutory health insurance scheme (SHIS*) and local health insurance divisions (mutual insurance companies who are authorized to act as the SHIS for local civil servants).

from January 1st 2007 to December 31st 2007, except for zone 3 (from March 1st 2007 to February 28th 2008) and zone 7 (from July 1st 2007 to June 30th 2008) from January 1st 2007 to December 31st 2007, except for zone 3 (from March 1st 2007 to February 28th 2008) and zone 7 (from July 1st 2007 to June 30th 2008).

Data: Erasmus 2007-2008, Cnamts. Exploitation: Irdes.

of opening hours and days, the working hours declared by GPs and the annual percentage of days in which GPs provided no medical care (table 1).

MSPs are open all year round, on average 5.5 days per week and 11.5 hours a day. One MSP is open 7/7 throughout the year. This access rate is superior to that recorded for other forms of general medical practice, even if there are few available references on the subject [Aulagnier *et al.*, 2007]. Nevertheless, the estimated number of days open per year (in other words, days during which one of the GPs performs at least ten medical procedures) seems to indicate that MSPs are more accessible. In effect, the estimated annual number of working days for MSPs is always superior to those of control zone surgeries: between 254 and 358 days for the former, and between 162 and 211 for the latter.

This greater accessibility for the patients has not, however, increased MSP GPs' working hours: these declare an average

40 hour working week (a quarter declare working less than 34 hours per week and a quarter over 46 hours) with an additional 6 hours, on average, dedicated to administrative tasks. Contrary to previous survey findings in which GPs in general declared working between 52 and 60 hours per week [Le Fur *et al.*, 2009], MSP GPs clearly work fewer hours declaring, on average and excluding out-of-hour duties, eight half days per week. National Health Insurance data indicates that, on average, these GPs work 9 days less than their counterparts in the local control zone. Furthermore, among MSP GPs, there is considerable variation in the total number of days worked in the year, indicating a choice in working patterns.

The better accessibility of MSPs, coupled with improved working conditions for the professionals, can be explained by the fact that the workload is shared between GPs. Within a MSP, the percentage of procedures conducted by a GP other than the patient's Preferred Doctor⁵ (PD) amounts to 28% on average, and varies

from 12% to 43% according to MSP (table 2). Furthermore, the number of medical procedures per patient practised by GPs (table 2, column 'A+B') is always higher for patients whose preferred GP practices in a MSP than for those who consult in the control zone. In total, three types of MSP can be distinguished: those in which patient pooling is limited (less than 15% of procedures) and patients rarely use medical care delivered outside the MSP (MSPs 4, 7 and 8); those where patient pooling rates are high (from 27 to 43%) and patients rarely use medical care delivered outside the MSP (MSPs 2, 3, 5 and 6); and finally those in between (23%) where patients more frequently use medical care external to the MSP (MSP 1), probably due to a more extensive provision in the area.

5 Copy editor's note: The "Preferred Doctor" (PD) scheme implemented in France in 2004 instituted a care pathway for all patients. In this framework, patients freely choose a GP and acknowledge him/her as the sole point of entry to inpatient or outpatient specialist care (excluding exceptions). PDs are, among other things, responsible for coordinating their patients' specialist care trajectory and keeping patients' medical records.

Heterogeneous professional composition and MSP facilities ...

The structures visited are extremely heterogeneous in terms of size, professional composition and equipment levels (table 1). The number of health professionals practising in MSPs varies from 5 to 21. Work presence is equally extremely heterogeneous varying from half a day every two weeks to full-time presence. The GPs, nursing staff and physiotherapists generally work full-time. Depending on the MSP, the number of professions or medical disciplines practiced varies from 3 to 10. In decreasing order, we find nurses and physiotherapists (5 MSPs out of 9), chiropodists (5 out of 9), dieticians (5 out of 9), speech therapists (4 out of 9), psychologists (4 out of 9), dentists (3 out of 9), midwives (2 out of 9), specialists (2 out of 9) and orthoptists (1 out of 9). We count between 2 and 9 GPs and between 2 and 5 registered nurses per MSP (table 1). MSPs are thus clearly multidisciplinary and furthermore, all dispose of a secretarial office.

In terms of facilities, the premises are generally new and accessible to the disabled. MSPs are equipped with advanced information technology systems: medical records are computerised⁶ and shared between all GPs, whereas the other health professionals consult them via the secretarial office. An internal electronic mail system and Internet access is equally available.

... with effective inter-professional cooperation...

Collaboration between health professionals is clearly observable in MSPs, notably between doctors and nurses. This often takes the form of informal exchanges of information (during coffee breaks, meals, directly during consultations or indirectly via the secretarial office, etc.). Only four MSPs declare organising regular inter-professional meetings other than those limited to internal logistics. These informal exchanges allow the GP to obtain infor-

⁶ Except for one MSP in which medical records are shared but on paper..

STATISTICAL METHODS

Analysis of multidisciplinary MSP accessibility and general practitioner working hours

'Structure' survey data and data extracted from the Health Insurance data bases reflecting GP activity (consultations, drug prescriptions, nursing acts, etc.) are analysed by descriptive statistics.

Analysis of patient expenditures and the quality of follow-up care for patients with diabetes

Data extracted from the National Health Insurance data base relative to patients are modelled using multivariate regressions. This method enables us to study whether the quality of follow-up care for diabetes patients and expenditures of patients whose 'preferred GP' or GP practices in a multidisciplinary MSP (MSP) are significantly different than for diabetes patients' whose 'preferred GP' or GP practices in a traditional general practice surgery, independently of observed confusion effects. It consists in isolating effects proper to an MSP, "all things being equal". Two types of model are presented: the first (M1) tests for the existence of a "global MSP effect" all zones combined. The only indicator analysed independently of the confusion effects is "preferred GP practicing in an MSP". The second (M2) tests for the existence of an MSP effect zone by zone, by combining the "preferred GP practicing in an MSP" variable with the indicators "zone 1, zone 2, ..., zone 9". All the combinatory effects (outside confusion effects) are analysed.

Expenditure analysis

- Confusion effects taken into account: age, gender, means-tested complementary health cover (CMU*), MSP location zone, long-term disease (LTD), hospitalisation.
- Multivariate models used:
 - total ambulatory care expenditures and general medical expenditures are analysed by linear regressions of the expenditure logarithm;
 - nursing and drug expenditures are modelled in two phases. The first translates the probability of having had health care at least once using a probit model. The second regresses the consumer's expenditure logarithm. No correlation between the two phases is introduced;
 - results are expressed as marginal effects comparable to the value for the reference individual: a male aged 16, without CMU*, no LTD, no hospitalisation and whose preferred GP practices in the local control zone of the MSP location zone 1.

Evaluation of the quality of follow-up care of diabetic patients

- The French National Authority for Health (HAS) recommends that GPs annually carry out a certain number of complementary technical and biological tests in the framework of follow-up care for their type 2 diabetes patients. Here, the quality of follow-up care is measured according to some of these criteria, notably: at least three doses of glycated haemoglobin, at least one blood lipid test, at least one microalbumin test, at least one electrocardiogram, at least one ophthalmological test. We were able to identify whether or not these tests had been carried out through the medical analysis (internal to the Irdes) of Health Insurance coding of reimbursed products.
- Confusion effects taken into account: age, gender, CMU*, MSP location zone, indicators on the gravity of the diabetes and the intensity of treatment (patient declared or not in LTD for their diabetes, insulin therapy, oral anti-diabetic drugs in monotherapy, bitherapy or tritherapy and over; and risk factor or co-morbidity indicators associated with diabetes (other LTD, treatment with platelet anticoagulants, cardioplipids, thyrodian or other drugs).
- Multivariate models used: the probability of receiving good follow-up care according to the indicator being tested is analysed using the logistic regression method.

mation concerning a patient, and nurses to adapt treatments with the doctor's prior consent. Cooperation between GPs and the other medical or paramedical professionals essentially occurs when needed. The main areas of cooperation declared concern the treatment of patients with diabetes or high blood pressure, follow-up care of open wounds, antivitamin K treatments and dealing with emergencies (patient orientation, placing a drip, ECG, etc.). Four of the MSPs have set up collaborative educational therapy sessions in which two salaried nurses participate in each session. Collaboration with professionals whose

consultations are not refunded by the National Health Insurance or those who intervene on an occasional basis, such as chiropodists or dieticians however, remains limited.

... and an extensive range of medical care in multidisciplinary MSPs

MSPs often offer a wider range of medical care than the traditional general practice surgery: technical procedures such as stitching open

wounds, minor surgery, complex dressings, plaster casts and other immobilisations, or even the insertion of contraceptive devices are carried out. In a MSP, patients are able to consult another GP than their PD without any loss of information. In effect, the

informal exchanges and the shared medical records provide the necessary information to ensure continuity of care. The majority of MSPs organise public health actions: educational therapy sessions, consultations for screening risk factors, preventive actions (home safety (preventing falls), vaccination sessions for the population as a whole).

not distinguish themselves from the control sample surgeries.

Patients' use of general medical services and office-based care expenditures: variable impact of multidisciplinary MSPs

DEFINITION

An **odds ratio** (OR) expresses the effect of a variable (for example the fact of being treated by a GP in a maison de santé pluridisciplinaire (MSP) in relation to a reference situation (the fact of being treated by a GP in a local control zone (LCZ)) on the probability of receiving good follow-up care against the probability of the contrary.

$$OR = \frac{\frac{p_1}{1-p_1}}{\frac{p_0}{1-p_0}} \Leftrightarrow \frac{p_1}{1-p_1} \Leftrightarrow \frac{p_0}{1-p_0} \Rightarrow OR = \frac{p_1}{1-p_1} \cdot \frac{1-p_0}{p_0}$$

With p being the probability of receiving good follow-up care, '1' the fact of being treated by a GP in a MSP, and '0' the fact of being treated by a GP in a local control zone (LCZ). An OR > 1 means that the effect of this variable is positive on the probability of receiving good follow-up care.

Finally, a specific analysis carried out among type 2 diabetes patients demonstrates that overall, they benefit from better follow-up care management when their PD practices in a MSP than those with a GP in a control zone. This is the case for three of the six follow-up criteria, including the frequency of blood tests for the measurement of HbA1c (glycated hemoglobin) levels (with an OR=1.6; table 3). These results however remain extremely variable from one MSP to the next. In effect, the model that tests the impact of receiving follow-up care in a MSP in each of the tested sites indicates that for regular HbA1c screening, follow-up care is better for patients in MSPs 1, 2 and 8 and less satisfactory in MSP 5. The other MSPs do

The average annual number of PDs' medical procedures per patient varies between 3.6 and 4.7 for MSPs and between 3.3 and 4.4 for control sample surgeries (table 2). The average annual number of general practice treatments reimbursed varies between 4.4 and 7 for patients whose PD works in a MSP, and between 5.6 and 6.4 for control sample patients. The multivariate analysis (table 4) reveals that among beneficiaries of the statutory health insurance, total expenditures and general medicine expenditures are 2% higher for patients whose PD works in a MSP than for those in the control sample. Although minimal in terms of percentage, this discrepancy veils highly contrasted

T3 Effects of maisons de santé pluridisciplinaires (MSPs) on the quality of follow-up care for type 2 diabetes patients

	HbA1c	Cardiology	Creatininemy	Microalbumin test	Blood lipid test	Ophtalmology
Model 1: global 'MSP' effect test						
Odds ratios						
MSP vs LCZ ^a	1,616***	1,565***	1,637***	1,121	1,055	1,115
Model quality						
Pseudo-r ²	7%	8%	6%	8%	4%	3%
Concordant pairs	61%	65%	64%	61%	60%	58%
Model 2: 'MSP' effect test by site location zone						
Odds ratios						
Zone 1: MSP vs LCZ	1,494**	1,655**	2,674***	1,464*	1,137	1,089
Zone 2: MSP vs LCZ	2,482***	0,891	3,203***	0,853	1,043	1,121
Zone 3: MSP vs LCZ	0,986	0,224	2,463	0,384	0,943	0,963
Zone 4: MSP vs LCZ	0,898	1,515	1,242	0,202***	0,316***	0,954
Zone 5: MSP vs LCZ	0,323***	1,402	1,431	0,248**	1,303	0,727
Zone 6: MSP vs LCZ	1,432	2,046**	0,703	0,859	1,342	1,791**
Zone 7: MSP vs LCZ	1,292	2,238*	0,968	0,459*	1,011	1,141
Zone 8: MSP vs LCZ	4,085***	1,920**	2,790**	3,258***	1,458	1,041
Zone 9: MSP vs LCZ	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable
Model quality						
Pseudo-r ²	7%	8%	6%	9%	5%	3%
Concordant pairs	62%	65%	63%	62%	61%	59%

^a multidisciplinary MSP vs local control zone.

Field: patients with type 2 diabetes having declared a Preferred Doctor1 practising in a multidisciplinary MSP (MSP) or a local control (LCZ), that is, 842 'case study' patients and 6,373 'control zone' patients for the year 2007.

Thresholds of significance: * 5%, ** 1%, *** 0.1%.

Reading guide: An OR > 1 means that, all things being equal, a patient with type 2 diabetes whose Preferred Doctor1 practices in a MSP has more chance of receiving better follow-up care than a patient whose Preferred Doctor practices in a local control zone (LCZ).

See footnote 5 page 4.

Data: Erasmus 2007-2008, Cnamts. **Exploitation:** Irdes.

situations and could represent considerable sums if all GPs practiced in a MSP.

In effect, the multivariate analysis, carried out for each of the nine geographical zones, shows that consulting a PD in a MSP has an impact on patients' expenditures which varies from one MSP to another. For patients with a PD in MSPs 4 and 6, total expenditures and general medicine expenditures are, all things being equal, higher than those in the control sample (respectively from +9% and +11%; +7% and +25%). For patients with a PD in MSP 7, total expenditures and general medicine expenditures are lower than those in the control group

(respectively -8% and -20%). Similarly, for MSP 8 patients, total expenditure is lower (-6%) and for MSP 1 patients, general medicine expenditures are equally inferior (-4%).

Beyond total expenditures or general medicine expenditures, MSPs have a more homogeneous impact on nursing and pharmacy expenditures. All things being equal, having a PD in a MSP reduces pharmacy and nursing expenditures (-5% and -8%). Despite situations that vary from one MSP to the next, they have a more homogeneous impact on these expenditure items: on the one hand, in MSPs 1, 2, 5,

7 and 8, patients' pharmacy expenditures are inferior to those with a preferred GP in a control zone (from -6% to -21%) and for patients in MSPs 1, 4, 7 and 8, nursing expenditures are lower than control zone patients (from -17 % to -29%); finally in MSP 6, pharmacy and nursing expenditures are higher (+17% and +26%).

* * *

MSPs offer the population increased access to healthcare. They equally appear to satisfy GPs' current expectations by permitting them to increase the number of

T4

Effects of maisons de santé pluridisciplinaires (MSPs) on insured patients' total expenditures, general medicine expenditures, nursing and pharmacy

	Total ambulatory care expenditures	General medicine expenditures	Nursing care expenditures		Pharmacy expenditures	
	Analysis of consumers' expenditures	Analysis of consumers' expenditures	Analysis of care use	Analysis of consumers' expenditures	Analysis of care use	Analysis of consumers' expenditures
Model 1: test of global 'MSP' effect						
Marginal effects						
MSP vs LCZ ^a	2.0%*	2.2%**	9.0 pts***	-7.5%***	0.02 pt	-5%***
Reference ^b	377.0€	312.2€	36.2%	1,215.7€	98.8%	450.7€
Model type						
N	115,203	115,203	115,203	43,341	115,203	112,999
r ²	40%	26%	-	28%	-	42%
Pseudo-r ²	-	-	14%	-	8%	-
Model 2: test of 'MSP' effect by site location zone						
Marginal effect						
Zone 1: MSP vs LCZ	0.7%	-4.0%***	-2.2 pts**	-16.6%***	-0.1 pts	-5.5%**
Zone 2: MSP vs LCZ	4.2%	-3.7%	-4.4 pts**	-3.3%	0.2 pts	-17.0%***
Zone 3: MSP vs LCZ	2.3%	-1.1%	23.8 pts***	-18.0%	0.5 pts	4.8%
Zone 4: MSP vs LCZ	9.3%**	6.5%*	5.5 pts**	-29.0%***	-0.3 pts	-4.8%
Zone 5: MSP vs LCZ	-3.5%	1.8%	2.0 pts	1.9%	-0.3 pts	-20.9%***
Zone 6: MSP vs LCZ	10.7%***	25.5%***	27.8 pts***	26.1%***	0.4 pts*	16.5%***
Zone 7: MSP vs LCZ	-7.9%*	-20.0%***	5.7 pts**	-28.5%***	-1.1 pts*	-18.0%***
Zone 8: MSP vs LCZ	-5.5%*	0.0%	22.5 pts***	-18.2%***	-0.2 pts	-7.1%*
Zone 9: MSP vs LCZ	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable
Reference ^b	377.0€	311.9€	36.1%	1,213.6€	98.8%	450.7€
Model type						
N	115,203	115,203	115,203	43,341	115,203	112,999
r ²	40%	27%	-	28%	-	42%
Pseudo-r ²	-	-	15%	-	8%	-

^a Multidisciplinary MSP vs local control zone.

^b Average expenditure or probability of reference individual using care (statistical methods insert).

Field: type 2 diabetes patients having declared a Preferred Doctor1 practicing in a multidisciplinary MSP (MSP) or in a local control zone (LCZ), that is 842 'case study' patients and 6,373 'control zone' patients.

Thresholds of significance: * 5%, ** 1%, *** 0.1 %.

Reading guide (model 1): the 9 point marginal effect ('nursing care expenditures, analysis of care use' column, line 'MSP vs LCZ') means that, all things being equal (statistical methods insert), the probability that a patient whose Preferred Doctor1 practices in a multidisciplinary MSP consumes at least one nursing care is 9 points higher than that for a patient whose Preferred Doctor practices in the local control zone. This effect has significance at 0.1%. The -7.5% marginal effect ('Nursing care expenditures, analysis of consumers' expenditures' column, line 'MSP vs LCZ') means that nursing care expenditures of a patient whose Preferred Doctor practices in a multidisciplinary MSP are 7.5% lower than for a patient whose preferred GP practices in the local control zone (reference situation). This effect has significance at 0.1%.

Reading guide (model 2): the -2.2 point marginal effect ('nursing care expenditures, analysis of care use' column, line 'Zone 1') means that, all things being equal, the probability that a patient whose Preferred Doctor1 practices in a multidisciplinary MSP in zone 1 consumes at least once nursing care is 2.2 points lower than that for a patient whose Preferred Doctor practices in the local control zone 1.

The -16.6 % marginal effect ('nursing care expenditures, analysis of consumers' expenditures' column, line 'zone 1') means that, all things being equal, nursing care expenditures for a patient whose Preferred Doctor practices in a multidisciplinary MSP in zone 1 are 16.6% lower than those for a patient whose Preferred Doctor practices in the local control zone 1.

Data: Erasmus 2007-2008, Cnamts. **Exploitation:** Irdes.

non-working days whilst maintaining an equivalent activity level, no doubt through working longer days. If an adequate number of MSPs are set up throughout the country, this type of organisation could contribute to the more equitable distribution of healthcare services throughout the French territory whilst maintaining health professionals in areas with a low medical density. The pooling of patients between MSP GPs and the sharing of medical records guarantees, a priori, the continuity of patient care.

The overall impact in terms of expenditure and quality does not, however, emerge conclusively since factors of this nature are specific to each MSP. In terms of expenditures for patients covered by the mandatory health insurance scheme, it is impossible to categorically conclude that MSP care is either cheaper or more expensive. Similarly, the impact of MSPs in terms of improving the quality of care, broached via the case of type 2 diabetes patients, remains heterogeneous even if results seem to play in favour of the MSPs.

This lack of homogeneity in the findings is linked on the one hand to the limited size of the MSP sample and on the other, to the fact that certain important determinants regarding care use, expenditures, or the quality of care, were not taken into account in our analyses either from the GP angle (age, gender, qualification...) or the patient angle (notably morbidity).

The highest or lowest expenditures do not appear to be related either to the number of GPs, MSP surface areas, the number or diversity of professionals present on site (table 1), the rate of patient pooling, or patient loyalty. Expenditure variability should thus be explored with additional structural, organisational but also financial characteristics taken into account for each MSP and its members. The impact on the use of emergency services and hospital facilities, as well as the resulting expenditures should also be investigated and analysed.

The MSPs studied here are for the most part recent and more or less subsidised at levels that were not possible to outline in detail. Given that the incomes of health professionals practising in MSPs are largely

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determined by the acts delivered, it is not surprising to note a moderate development of formalised collaboration, or the use of information technology (IT) systems essentially and solely oriented towards the sharing of medical files.

A gain in efficiency implies a greater investment on the part of these structures, both in organizational terms (a more extensive use of the IT system, the formalisation of collective procedures and notably inter-professional cooperation),

and also the development of additional activities such as educational therapy. At present, these functions only emerge on the occasion of publicly-funded programmes shared between MSPs or external partners. In view of this, experimentations with new systems of remuneration complementary to or in partial replacement of the fee-for-service system will permit, within *pôles de santé*, MSPs and *centres de santé*, to test the hypothesis of higher efficiency in collective structure remunerations. ♦

GLOSSARY

- [CMU] **Universal health coverage**: Couverture maladie universelle (CMU)
- [Cnamts] **French National Health Insurance Fund for Salaried Workers**: Caisse nationale d'Assurance maladie des travailleurs salariés (Cnamts)
- [HAS] **French National Authority for Health**: Haute autorité de santé (HAS)
- [MSP] **Maison de santé pluridisciplinaire (Multidisciplinary Primary Care Group Practices in General Medicine)**
- [Snir-PS] **National Cross-Schemes Information System for Health Professionals**: Système national d'information inter-régimes des professionnels de santé (Snir-PS)
- [Sniram] **National Health Insurance Cross-Schemes Information System**: Système national d'information inter-régimes de l'Assurance maladie
- **Fund for Quality Insurance of Office-Based Care**: Fonds d'aide à la qualité des soins de ville (FAQSV)
- **Local control zone (LCZ)**: zone locale témoin (ZLT)
- **Local health insurance division (mutual insurance company mutual insurance companies who are authorized to act as the SHIS for local civil servants)**: sections locales mutualistes (SLM)
- **Preferred GP**: généraliste déclaré « médecin traitant » par le patient
- **Regional union of Health Insurance Fund**: Union régionale des caisses d'assurance maladie (Urcam)
- **Social Security Finance bill**: [PLFSS] Projet de loi de financement de la Sécurité sociale
- **Statutory health insurance scheme**: régime général

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