

## From Theory to Reality

### Health Data Management in a Complex System

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**Abstract**— With the recent promulgation of the General Data Protection Regulations (DGPS), data management is becoming a crucial strategic issue in organizations. The quality of data dissemination is of utmost importance in the healthcare environment. Indeed, medical confidentiality is closely linked to the dissemination of personal information inherent in the patient's record. Yet, how can a complex system, composed of multiple multidisciplinary actors (medical, paramedical, administrative, etc.), deal with the potential disclosure of personal data? What steps can be taken to manage this risk? How to ensure legal compliance with medical confidentiality, while ensuring the interoperability of professionals and the quality of care? To answer these questions, a case study was conducted in the Multidisciplinary Care House of Mimizan (France, Landes, New Aquitaine Region). The goal was to investigate the importance of data management for traceability of care. This medical organization is composed of medical and paramedical professionals, but also a relatively large administrative team for such an institution. Nevertheless, it manages to set up, at the initiative of the professionals, both flexible and structured processes, allowing optimal follow-up of patients, while guaranteeing respect for their personal information.

**Keywords**— Health; Data; Patient Records; Quality; Confidential Medical Data; Territory; Organization.

#### I. INTRODUCTION

The management of personal data, with the recent promulgation of the General Data Protection Regulations (GDPR - May 2018), is becoming a crucial and strategic issue for organizations. In the healthcare sector, where respect for medical confidentiality is closely linked to the dissemination of patients' personal records, data have to be managed with great care, in order to limit the risk of unfortunate disclosure or data loss and to tackle their specificity of very sensitive data (privacy challenges).

However, the current French health organization tends to evolve to a collaborative working method. For the past ten years, French health authorities have been witnessing the emergence of some new organizations of health professionals and the exponential growth of groups of (para)medical professionals, attesting the growing complexity of health organizations [1]. This is particularly the case for Multidisciplinary/Multiprofessional Health Houses (MCHs),

with 910 establishments active in France in March 2017, compared to only 240 in 2013 [2]. These establishments are made complex by the number of interacting actors they involve. They also tend to rely on the notion of sharing and circulating data, especially health information about patients. By doing so, they tend to improve patients' health care and health monitoring.

Does this new type of establishment pose some risks for private health data policy? As they are composed of many multidisciplinary actors (medical, paramedical, administrative, etc.), do not they increase the number of possible accidental disclosures or loss of confidential data? Thus, how could legal compliance guarantee medical confidentiality and manage the inherent risks, while ensuring the interoperability of professionals and the quality of care? It seems that the challenge is mainly about the ability of the French health system to increase its level of performance [10].

To answer these questions, a case study was conducted in the Multidisciplinary Care House of Mimizan (MCHM). To do so, an exploratory qualitative approach was conducted via focus groups with the whole team of the institution and via an interview with its two managers. The goal is to establish an inventory of good practices, particularly in terms of data quality management in complex health institutions. The analytical approach presented here is based on the structural level of MCH actions, in which resources (human and material) are mobilized to ensure a good coordination for patients' care and confidential data policy [3]. MCHs are a recent and emergent phenomenon, with heterogeneous ways of working. The goal of this article is to explore one of the biggest and formalized MCH, from an exploratory point of view, in order to understand its organisation and its capacity to be considered as a model for other MCH.

The rest of this article is structured as follows. In Section II, with the overall contextualization of the study. The Section III will present the institution selected for the study, the MCHM, in order to show how it is representative of the new health institutions needed in fragile territory. In Section IV, the article will analyse the quality processes inherent in the management of this institution's data. The Section V will present the specifications of the MCHM. In Section VI, we

provide details on the general lack of use of the national digital health record. We conclude the article in Section VII.

## II. STUDY BACKGROUND

In this section, the study background is explained. The specific context of the current French public health context and policy are also detailed for a better understanding of the study.

### A. Challenging health context

In 2014, the population density of Landes fluctuated between 2 and 45 inhabitants/km<sup>2</sup>, with an aging index among the highest in the region [4]. In 2015, 31.5% of Landes' population was over 60 years of age, a great increase compared to 2011 [5]. According to the Regional Health Authority (RHA), in 2016, the rural population represented more than 50% of the whole Landes population. In addition, this region also has a medical demography and a density of specialists lower than regional and national averages, as well as a small number of health establishments. It also has few alternatives to the nursing homes for old people [4]. Therefore, old people's loss of autonomy is more difficult to manage. According to RHA, 1/3 of liberal general practitioners were over 60 years old in 2017 [6]. This is a very problematic issue: combined with the difficulties of attractiveness of the territory, it becomes more and more difficult to maintain the number of practitioners in this area. The RHA demographic patterns of Landes health care show a highly unfavorable public health context:

- White areas (towns located more than fifty kilometers away from a hospital emergency department), combined with an insufficient number of expert services (radiology, rheumatology, gynecology, allergology, pneumology, dermatology, etc.)
- Medical desertification: unattractive territory for young (para)medical professionals (region's remoteness from large cities, low internet coverage, few cultural offers, etc.). Doctors are struggling to find successors, despite administrative provisions and facilitations offered by health authorities.
- Fragile areas: unequal distribution of health professionals in areas with an imbalance between the number of potential patients and the number of doctors, as well as areas where the advanced age of patients (or the doctor) would require urgent decisions.

Facing these difficulties, some political representatives try to shed some light on the issue of medical deserts: in October 2018, the mayor of a small town called Ychoux proposed to prohibit, by municipal decree, his fellow citizens from falling ill, due to the lack of medical care in its surroundings. The study was conducted in this area for its relevance concerning the challenges France will have to face in the coming years. The main problem in France is getting young medical staff to settle in countryside areas, where living standards are less attractive than urban contexts.

### B. Management of de-materialized health data in a complex system

Personal data, such as medical data, is defined by the French Data Protection Act, called *Loi informatique et liberté*, (paragraph 2, article 2) as an information relating to a person who is physically identified or who can be identified, directly or indirectly, by reference to an identification number or to one or more elements specific to him/her [7]. In addition, in order to make sense, this data must be processed. This process is defined by the same law (paragraph 3, article 2) as a transaction or set of transactions, whatever the process used [7]: collection, recording, organisation, storage, modification, consultation, communication by transmission, etc. Data are also part of an exchange, characterized by the provision to several professionals, such as health staff, who are entitled to know everything about these data. Their goals are to insure the coordination and continuity of patients' medical care [8].

However, the exploitation of personal data remains a sensitive subject. It directly affects the privacy of each individual [9], especially when it comes to medical data. In complex systems, such as MCH, there are several issues related to the management and to the protection of health data. From an organizational point of view, it is essential to set up procedures to secure access to data. Those procedures tend to limit the structural disorders that can affect the confidential standards of data, by establishing, for example, quality indicators. Measurement and management tools in health establishments are essential [10]. In addition, complex systems have a large number of stakeholders, but they do not have the same level of data access authorization. It increases the risks of fraudulent or accidental access to information.

With the multiplication of MCHs, the French health sector must now face a multitude of risks related to data, which require close scrutiny of each elementary activity [1]. These establishments are the result of a clustering of health professionals who, until now, had been working alone. However, using common resources and administrative staff lead professionals to rethink their working methods, while insisting on control and rigour. The various stakeholders in the project have to develop fundamental procedures for collaborative work. This aims at reducing and optimizing work processes [1], while considering the topics of control and quality as the heart of these processes. Professionals, in this new context, must demonstrate that their services are delivered in a secure environment. This environment helps controlling the risks and meet the expectations/requirements of patients [10].

### C. Multidisciplinary health centre: although need for a restructured health policy – from a political point of view

MCHs are a model that catalyzes needs, from health professional, public decision makers and patient care points of view [3]. The creation of this type of institution represents the convergence of three complementary processes, identified by Autès and Dufay [11]:

- Movement initiated by health professionals to gather their activities within MCHs and health centers.
- Reflection of local officials, concerned by the management of health in their districts, involved in logics of prevention, of permanence of care, of first aid and the continuum between outpatient services and hospitals. They also care about offering external and specialized consultations to the people living in areas where there is a shortage of health practitioners;
- Necessary reorganization of the supply of care due, first, to the constraints of modern medicine and pathologies and, second, to the effects induced by the anticipated decline in medical demography.

From a territorial point of view, the MCHM aims at meeting the four standards of public health action: 1) maintaining a local offer, 2) guaranteeing equal access to health for all, 3) ensuring continuity of care between the primary care offer and graduated hospital care 4) and, finally, strengthening health prevention policies. For local officials, the issue is to strengthen weakened health districts and care offer [11], by proposing long-term ways-out to solve the current problems. In addition, since MCHs are subjected to accreditation rules, by responding to quality indicators established by public health authorities [10], they contribute to an increased performance of districts' medical management.

### III. METHODOLOGICAL APPROACH

In this section, the sampling and methodological procedures are presented.

#### A. *Why Study the MCHM?*

By definition, MCHs depend on specific contexts. It is important to identify the territory's needs, to take into account the needs of its population and its state of supply. MCHM is considered as representative of this movement of territorial restructuring in the field of health, both in its conditions of implementation and in its daily functioning, structured around the interrelationships between territorial stakeholders [3]. Indeed, despite its recent implementation, it manages to meet the whole public health objectives, both mandatory and optional, imposed by the "RHA Inter-professional Agreement" contract, particularly in terms of shared information systems, which are at the heart of the challenges related to data quality. The dynamic of the creation of the MCHM was, in the first place, launched by health practitioners themselves, in reaction to the progressive desertification of their territory and the challenges it involves [11]. The project of creating the MCHM began in 2004. The district's doctors wanted to cluster their activities in a single establishment, to pool their administrative tasks and to offer a better access to care for their patients. This approach is in line with the observations of some researchers, who state that medical desertification in rural areas has been the main motivation for the mobilization of health professionals [11]. One of the main problems lays in Landes' unattractiveness for doctors. The mere proximity of the beach and the

"sweetness of life" are not enough to attract young professionals willing to settle down. It is necessary to provide health professionals with some attractive and secure professional conditions of practice.

However, the notion of attractiveness of the project is very important here [3]. Offering a young professional an isolated practice in a small town does not have the same appeal as a long-term position in a multidisciplinary institution, in which he or she could be supervised, advised and supported by administrative services, surrounded by colleagues and supported by financial and material resources. Collegiality and plurality of perspectives make the medical practice both more reassuring and richer [11], especially at the beginning of a career. This is the appeal proposed, in general, by MCHs and, in particular, by the case studied in this article, which is one of the biggest and dynamic MCHs in France. Its professionals have been recently asked to present their institution in the next National French Congress of MCH. This type of organizational dynamism is a movement widely desired and claimed by the younger generations of medical and paramedical professionals [11].

Moreover, Landes is the largest region of France, with a mainly rural territory and offers most of the current and forthcoming public health services presented in the contextualisation part of this article. Having such an innovative MCH in this kind of area is an example of how to deal with public health issues in other regions in France, especially concerning the rural ones.

#### B. *Methodological Approach and Sampling*

At the beginning of the survey, the goal was to identify the organizational model and rules implemented by the MCHM's team, specially concerning working processes and data management. To do so, a qualitative approach has been chosen. This method has been selected for its ability to investigate the practices and interpret the results. It considers that the "confrontation with the corpus is a necessary condition for the perception of social practices" [12]. The goal was also to confront the different points of view concerning the organizational processes. The potential divergences and discordances regarding the positions can be highlighted. Does a secretary think the same thing of the establishment than a doctor or paramedical worker? Concerning data privacy management, the heads of the MCHM in charge have been interviewed. They had to explain their choices in terms of data management policy, of coordination put in place and of emergency plans in case of unfortunate disclosure.

Regarding the questions, all the members of the MCHM staff we asked about two common topics. The first was about the daily-work and its organization, both concerning the inner-group and the relationships with the other members of the MCHM (for example: secretary-secretary, secretary-medical, etc.). The goal was to highlight relational and organizational dysfunctions. Secondly, all the staff members were asked about their own professional uses of patients' health records, in terms of access of use and of transmission. The purpose was to identify good and problematic uses.

The second questions asked for some more specific topics. The goal was to have a better understanding of each specific staff members (medical doctor, paramedical, administrative, etc.), to point out the benefits and the limits of their new work, management and organizational processes since they entered the MCHM. Four focus groups took place in December 2018, with the four specific staff members. Then, interviews were conducted in January 2018, with the head of the administrative staff and the heads of the MCHM. They all were realized in the MCHM, in the meeting room. The goal was to make the people feel comfortable and to prevent conversations from being heard by the patients or the other staffs' members. This approach seemed relevant, as it helped people to speak freely.

TABLE I. DISTRIBUTION OF THE INTERVIEWED SAMPLE

Criteria	Distribution	Number	%
<b>Gender</b>	Male	14	51,9
	Female	13	48,1
<b>Age</b>	25-35	6	22,2
	35-45	7	25,9
	45-55	8	29,7
	55-65	6	22,2
<b>Professional activity</b>	Medical doctors	11	40,7
	Paramedical staff	8	29,7
	Administrative staff	5	18,5
	Executive of administrative staff	1	3,7
	Executive of the MCHM (also doctors)	2	7,4

### C. Health Records Management in the Multidisciplinary Care House of Mimizan

The MCHM brings together three main crews: doctors (8 + 2 regular substitutes + 1 trainee), paramedics (3 nurses and their collaborators, 2 physiotherapists, 2 podiatrists, 1 psycho-motor therapists, 1 dietician) and administrative staff (5 secretaries, only working for doctors, managed by an executive). Including trainee doctors and nursing staff, the sample is composed of thirty individuals involved in the daily operations of the MCHM. They are all subjected to the institution's collective agreement, in which respect for medical confidentiality is clearly enshrined. Data is managed and stored on a specific medical database software, Weda [19], which is also used by the surrounding external collaborators (pharmacies, specialists, hospitals, etc.). The choice to use the same software aims at facilitating the medical and administrative aspects concerning the caring continuum. Each member of the MCHM has secure access provided by the software. These codes are not stored on the

institution's digital devices, in order to limit the risk in case of theft or hacking.

However, not all MCHM members have the same level of access to patients' records. Doctors, as well as their secretaries, have full access to all the information concerning: files, auxiliary session schedules, secure messaging, etc. This is justified by the need for doctor/doctor and doctor/secretary interoperability, for the smooth functioning of the MCHM and good patient care. At the request of a patient or a staff member, restrictions may be applied to limit secretaries' or doctors' access to some records. All patients were asked about this sharing consent.

Then come the paramedics, with a diffusion specific to each specialty. Their access is conditioned by the needs of their activity. A physiotherapist, for example, will have access to the patient's x-rays and related prescriptions; a nurse will have access to history, specialist contacts, blood test results or vaccines, depending on needs. These professionals do not have access to the content of visits, letters, prescriptions, unless some specific case discussed with the doctor. The accreditation of external professionals is aligned with the system applied within the institution, according to the needs of the patient, the activity or the specialty. Collaborative patient follow-up is governed by Multi-Professional Consultation Meetings (MPCMs), planned or impromptu, attended by all the professionals involved in the presented case. Each meeting is documented, stored via Weda and only accessible to the concerned professionals. Doctors and secretaries meet weekly to monitor performance and improve organizational quality processes. The doctors interviewed also associate these meetings with team management (trust, accountability, etc.), to ensure cohesion among all workers and to involve them in the administration of the MCHM.

### IV. ANALYSIS OF DATA MANAGEMENT PROCESSES

This section is dedicated to the analysis of MCHM data management concerning patients' records. Thanks to the study, the main protagonists of this type of management tasks have been identified, such as the governance of the establishment, from a managerial point of view.

#### A. Data Ethics and Dissemination Quality

An organization can be defined as a set of recurring transactional programs that constitute transactional flows. They are driven by a set of conventions and rules in a given context [13]. For its proper functioning, given the complexity of its transactions, it is essential to give access to the right information, at the right time, to make a selective transmission of users, in order to fight against misinformation, over-abundance and deviant uses [9]. The principle of data management is based on the ability of actors to select information and analyze it, in such a way that it is only disseminated to its legitimate recipients. The interest of this approach is twofold. On the one hand, it allows a smooth organization of sharing actions, making the institutional processes efficient. On the other hand, it makes it possible to limit the risks linked to the poor dissemination of data, thus guaranteeing respect for confidential medical records.

The ethical processing of information seems to be the starting point of the MCHM's data management strategy. Béranger defines it as a mechanism for the interpretation of data, by a person or an organization, that will lead to give a specific meaning to data [9]. By giving attention to information, by analyzing it, the heads of MCHM tend to give meaning and value to data, as well as to determine the logistics of action to be applied: censorship, global dissemination, limited dissemination, etc. In the medical sector, it is fundamental to establish a reflection on personal health data through an ethical prism "in order to [remove] doubt and control uncertainties" [9] and to manage the risks inherent in the nature of patients' records. It leads to speak of the non-maleficence nature of the MCHM's information strategy: access to data is examined according to the profile and nature of the user [9]. Data sharing is conditioned by the profile of the information receiver, ranging from full sharing to very limited access, depending on activity and needs. This improves the security, confidentiality and protection of such data [9], as well as the performance of the information management system. By analyzing the data, determining the conditions for sharing and clearly identifying the receivers, the quality of access to patients' personal data is guaranteed.

#### *B. Informational Lean Management: no Unnecessary Information*

The data processing method leads us to analyze the notion of lean in quality management. Lean School is defined as "the search for process optimization by chasing down everything that is inappropriate or superfluous" guaranteeing "performance by eliminating waste" [1]. This method is usually applied to inventory management (0 stock), document management (0 paper), or logistics (0 unnecessary transport, 0 waiting, etc.). This can be relied to information management, in order to analyze the transaction rationalization activities [13].

Indeed, the info-ethical treatment as previously mentioned tends towards a very low entropy, i.e. a degree of almost nil disorder [9]. A system in which information is transmitted without analysis increases the level of confusion, as well as the slowness of decision-making and the risks of accidental dissemination of personal records. On the contrary, in a complex system such as the MCHM, the implementation of a hierarchy in information management (doctors analyse and choose the criteria before disseminating information) makes the actions of all team members easier and more fluid, by sending them only the data that will be useful to them in the exercise of their activity. This is a kind of lean management, applied to information management. This data dissemination method tends towards the goal of "0 useless information", in order to guarantee both respect for medical confidentiality (0 information poorly disseminated), the quality of patient care (0 information missing) and the fluidity of actions (0 dysfunction linked to poor information dissemination). This information management method seems to be perfectly adapted to the performance requirements of MCHM's missions, while benefiting the daily tasks (administrative and patient care).

## V. ORGANIZATIONAL PROCESSES: GUARANTEEING THE QUALITY OF DATA MANAGEMENT

In this section, the organizational processes observed during the survey will be discussed, which refers to data and patients' records management.

### *A. The Human Relations Theory as a Leading Light*

In the MCHM, the mobilization of the whole staff tends to improve the processes' efficiency [1]. The MCHM's management method is based on the involvement of all teams in improving the life of the institution: meetings, taking into account opinions, professional development, empowerment, etc. This method seems to be similar to the collaborative processes set up within the MCHM, although the institution does not claim any particular managerial method: unexpected discussions, weekly team meetings, festive group cohesion events, etc. This team management aims at analyzing defects and dysfunctions, and then seeking solutions [1]. This tends to improve the overall functioning of the establishment, where, according to Zacklad, all persons involved in the transaction are in the position of (co-)director, (co-)beneficiary, (co-)recipient (principal) and (co-)recipient [13]. Emphasis is placed on freedom of speech, professional responsibilities, skills of each individual and, above all, the necessary trust between employees, which is considered essential by all MCHM staff.

As Doucet points out, it is essential that the direction of quality action be collegial. This makes it possible [in particular] to respect responsibilities and involve departments [1]. As a large number of individuals have access to the institution's health data, the use of this collaborative and collegial approach is essential to the MCHM. The increase in performance can only be achieved through the collaboration with the departments involved in this approach. By soliciting and valuing all staff members, the MCHM ensures fine relationship management, but also encourages professionalism and accountability of each individual. They also do so by regularly reminding them of the need for secrecy and rigour (formally and informally), especially concerning the performance of their daily tasks relating to patient health records. Transactional relationships lead to overcome formal/informal oppositions by insisting on their complementarity [3].

### *B. Leadership: Team, Quality and Performance Management*

This managerial approach is in line with the objective of promoting confidentiality and trust with producers and suppliers of information, thus contributing to the control of risks and deviations of data [9]. However, for MCHM staff management to be effective, it must also deal with some leadership issues. Leadership and management of the institution must be provided by a person of influence who, thanks to his or her managerial skills is able to guarantee, effective cooperation and coordination, based on mutual trust [3]. The notions of cooperation and trust seem to be interdependent key resources for the management of complex systems. Cooperation relies on a clear commitment of each member of the group and is strengthened by trust and

by the working contract [14]. In a complex system, each member of the team contributes to the success of the institution goals, so it is important for all team members to be aware of the values their work involves, such as secrecy, efficiency, empathy, etc. [15] It is up to the leader to make the team understand these fundamental values defended by the institution, from which ethics rules of behaviour flow. To do so, in the MCHM, many meetings are held, with the whole staff or with some subgroups (doctors-doctors, doctors-secretaries, etc.). Managing does not mean dominating. It is rather knowing how to talk to teams and how to get them to work towards a common goal [16]. Even if some members sometimes complain about the high number of meetings, they seem essential for the good management of the institution. Those meetings allow the team to have some feedback on the work and outline all technical or relational issues. It helps the manager to resolve the disagreements before they worsen and help the team to work with fluency [16].

The operational management of the MCHM is based on the involvement of the two doctors, whom will here be called P. and T. The influence they have is based on their legitimacy within the team, gained through their seniority, their involvement in the project and their ability to organize the run of the institution. The team trusts in them. Trust is built over time and in the relationships. It is a capital that the two doctors accumulated through years [15]. They are well known by all the team members, sometimes for more than twenty years. They are also known for their emotional competencies [16], that combines feeling with objective cooperation skills. The long-term trust of the team gives P. et T. the ability to engage and influence each member of the group, which helps the team to solve complex issues [17] and aim for an outstanding performance of their work. P. and T. are complementary, both in terms of relational aspects and in the conduct of data establishment and management. However, for a good cohabitation, the roles must be clear and non-antagonistic [1]. The risk associated is the disappearance of authority representatives. The smooth running of the institution must be based on the clear identification of authority figures, to which the staff can refer. The figure of authority also allows to the control of practices, beyond the “self-control” by the operator himself, in which skills and responsibilities are assumed by himself/herself [1], but not objectified by an external point of view. Each member is a part of the system and they have to work toward the same goal for the institution to reach its goals and insure the quality of care [16].

However, this verification dimension, in order to ensure the quality of the tasks performed, is quite crucial when it comes to such sensitive data as those referred to in this article: respect for medical confidentiality, quality of transmission of information, management of the risks of records leakage, etc. Taking leadership within the MCHM then seems to represent an additional element in the performance of strategies to protect patient medical records. The leaders act here as an element of internal data protection control, which compliance must be assessed and objectified externally by a notational Data Protection Officer [1]. This

perspective can also be considered by taking as a model the Zacklad cooperative transaction logic reading grid, framework for analysing action and practice at the *meso* level [13].

## VI. GENERAL LACK OF USE OF THE NATIONAL DIGITAL HEALTH RECORD

The MCHM tends to present organizational processes in accordance with public health requirements, while following effective procedures for the management of patients' personal records. It should, however, be noted that the national digital health folder (*Dossier Medical Partagé - DMP*) is not integrated into any of the care management approaches within this institution. The study case tends to reveal an attitude of rejection of this instrument by MCHM staff members. They themselves state that this folder “is not designed for medical practice”, although they admit the promising nature of such a tool.

“In case of emergency, the DMP becomes counterproductive. Of course, all the information about the patient is included, but it is not sorted or classified. It is up to us to find the right information and, in emergency situations, we have something more important to do than sorting information” says E., one of the MCHM doctors. They also confess that they are disturbed by the additional and time-consuming actions required to update the patients' DMP, since this platform does not provide any automatic downloading add-ons for the software they use. It seems that the DMP system is in contradiction with the practices of MCHM professionals, with regard to their quality management processes. This notion is closely linked to the need for procedural rationality of the care action, namely an “orientation of the activity”. In this orientation, the action is justified by taking into account the way in which the tools contribute to performance. It is partly defined by the quality of the realization process [13]. Doctors highlight a logic “inherent in our relationship with objects and our environment, which we judge according to their adaptation to our expectations and needs” [1]. Applying this to Doucet reasoning, it would seem that doctors judge the use of the DMP in terms of its field operability and its ability to meet the needs imposed by their profession.

However, according to their statements, data's quality processing on the DMP is incompatible with their needs. Charlotte Maday, in her article [14], uses the image of deep-sea fishing: throwing a net on the ocean floor, collecting information indiscriminately and presenting it to users. This image seems to be applicable to doctors' feeling towards the DMP. By presenting the “raw” data, the system is not in line with their requirements for efficient data management. It does not fit their ethical approaches or the “informational lean”, the main data management strategies used within the MCHM. More broadly, DMP raises the need for co-production concerning innovation and the necessary collaboration between producers and users to guarantee the quality of a product or a service. Bringing together the documents and data, for process governance, requires mastering the notion of a system but, above all, acting in a spirit of active collaboration [14]. The main issues related to

the DMP concern its digital features, ethical uses of data and the ability of professionals from various trades to collaborate on the same project. It represents a question to investigate, specially concerning the conception and the interoperability of various medical software. The goal is to ensure the performance of software and improve the quality of care.

## VII. CONCLUSION

The sharing procedures introduced at the MCHM raise questions about risk assessment. In this institution, different informational and managerial strategies were put in place to secure the exchange of personal data. However, during the investigation, it seemed that the process of quality of care evaluation and “information crisis” management protocols (accidental or fraudulent disclosure, for example) were relatively minor. Since its launch, the institution does not seem to have been confronted with a crisis of this type. Its youth and its efficient management can explain this situation. Emergency protocols to resolve this type of situation are non-existent in the MCHM. It is problematical, as this implementation is one of the most important principles of evaluating the quality of care in France, since the publication of the law of 31 July 1991 [10].

In the field of health, apparently minor errors or failures can have vital consequences [1] or endanger a health care institution and its staff. The management of the quality approach of such an institution cannot be done without a risk management component, nor a more global and formalized evaluation aspect. The measurement principles are inseparable from the principle of quality management [10]. It, therefore, seems necessary to study this institution in greater depth in order to explore more obscure aspects of its management and to consider a global quality approach, in order to find criteria encouraging its external recognition, particularly in the management of personal data.

It would also be interesting to study the management of the MCHM through the notion of emotional intelligence. Quality and data management rely to some rational perspectives. However, the others aspects of the institution depend on human and emotional aspects. The price for the lack of emotional intelligence can end up compromising the existence of the institution [16]. The study highlights some minor problems, especially concerning a doctor, who sometimes awkwardly criticizes his colleagues (doctors and secretaries). Until now, it has been resolved with discretion and fluency. However, this kind of criticism precedes the loss of trust in a team work [16]. The MCHM does not seem to be prepared for this kind of situation. Investigating emotional intelligence as a key resource could insure the stability and the fluency of the MCHM team.

It would also be interesting to investigate, on a larger scale, other MCHs, in order to compare the results of this study with other territorial and technical contexts. The objective is also to consider the development of a single working model for all MCHs, specially concerning data privacy management. As each MCH has its own specifications (socioeconomical context, number of the staff members, equipment, competences, etc.) would it be possible and relevant to propose a single model to all of them?

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