The Quest of Rationality: Standardization in the Delivery of Care

Etienne Minvielle, Claude Sicotte

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Etienne Minvielle
École Polytechnique
CNRS

Claude Sicotte
École des Hautes Études en Santé Publique
University of Montreal

The phenomenon of over-rationality is treated in this article from the perspective of the excessive standardization that can be observed in the management of patient care. In this case, standardization can be applied to execution work by setting operating procedures and rules that allow an action to be taken in a reproducible manner, to the definition of good practices (what Anglo-Saxons call "evidence-based medicine"), and to the introduction of performance standards. A careful analysis of the organization of patient care shows that it is conceived as an alternation of standardization and adaptation when unpredictable or specific work situations require it. As a result, over-rationality is understood as excessive standardization that may prevent usage of adaptation register. We illustrate this phenomenon of over-rationality through the application of standard operating procedures and the use of information technology. We then identify the reasons for this excess and propose in response to assert the recognition of an autonomous actor capable of judging the relevant recourse to the register of standardization and the modalities of its application.

Keywords: rationality, care pathway, information technology, standardization, personalization

INTRODUCTION

Over-rationality can be understood in several ways. We are dealing here with the excessive standardization that can be observed in the management of patient care. Standardization in this case applies to the work of execution by setting operating procedures and rules that allow action to be taken in a reproducible manner, to the definition of good practice (what Anglo-Saxons call "*evidence-based medicine*"), or through the introduction of performance standards (such as an optimal time frame).

Patient management is an activity generally described as complex. Often linked to hospitalization, this type of care is now seen as part of the patient's wider journey, including hospital contacts, but also those relating to home care, community medicine or social assistance when necessary. The organization of the work required to manage this type of patient pathway is currently a major challenge in the healthcare sector. It must enable the improvement of both qualitative performances, i.e. avoiding the occurrence of serious adverse events, and economic performance, by avoiding waste. Within this general framework, the

hospitalization stage remains the stage that has historically been the subject of the most applications and managerial reasoning. It is at this level that the following analysis focuses.

First, we show that this organization of patient care is conceived as an alternation of standardization and adaptation when unpredictable or specific work situations require it.

In a second step, we show that different tools assert over-rationality, understood as a standardization applied in an excessive way, preventing the register of adaptation.

In a third step, we identify the reasons for this excess, and propose in response a more reasoned use of standardization. Only an autonomous actor endowed with the capacity to define the right register of execution, between standardization and adaptation, is capable of avoiding these phenomena of over-rationality.

THE SUPPORT ACTIVITY: BETWEEN ADAPTATION AND STANDARDIZATION

The Attributes of the Patient Care Pathway

It is not familiar to us to problematize patient management as a process that needs to be streamlined. It requires an understanding of the characteristics of this activity and an understanding of how it should be organized. In this approach, the first step is to identify patient management as an organizational production process. In this way, several attributes can be defined, based on the commonly used term "pathway".

Variety

The first of these attributes logically affirms the *variety of* the pathways. The clinical condition presented by the patient appears as a first dimension that determines a variety of pathways. Some patients, because of their clinical picture, have pathways that are considered "*simple*", in the sense that the steps are few and far between - for example, patient reception, diagnostic investigation, diagnosis, start of treatment, discharge. Generally speaking, most surgical and obstetrical activities refer to these pathways. Others draw more "*complex*" pathways, with the diagnostic and therapeutic phases being combined in multiple ways. These so-called "*complex" pathways* generally refer to tables of polypathology and chronicity where therapeutic and diagnostic actions follow one another. This complexity is also increased by updating phenomena. For example, the appearance of a new clinical sign during a treatment may call into question the diagnosis and trigger a new investigation.

Dimensions other than those of the clinic may also be involved in this variety of pathways: the person in a situation of social isolation, with low financial coverage, or presenting other criteria, notably precariousness, may generate very specific organizational needs. Similarly, certain behavioral traits or personal preferences may guide organizational choices. For example, some patients are very demanding of information when others want to hear as little as possible about their disease (Dumez, Minvielle, 2017).

This variety of pathways is thus defined in response to a set of criteria, clinical, but also social and personal. The way in which these criteria are aggregated, potentiated or annihilated is not well known: it is often difficult to define *a priori* all the possible combinatorics, ...and even in some cases, to describe them *a posteriori*...

The recognition of each case also explains how the effort of categorization, once started, can quickly take on gigantic proportions. As an example, it is worth recalling that the hospital payment system is based on a classification of stays, in other words, intra-hospital pathways, according to their pathology and the similarity of resource consumption, into homogeneous groups of stays. From the initial 500 groups, the progression of the system has led in France to the identification of more than 2,800. The categorization here is financial, not organizational. However, the observation remains the same: the effort to categorize the activity has no limits, which conditions the way in which production and organization are reasoned (Moisdon, 2013).

Unpredictability

A second attribute comes from the degree of *unpredictability* involved in the course of the pathways. In addition to the variety of trajectories, the unpredictability of their development is also partly

unpredictable. These two dimensions, variety and unpredictability, are closely linked. Admittedly, in certain cases, a "*simple*" trajectory, which includes a small number of stages, can be rich in uncertainty and therefore problematic, and, conversely, a "*complex" trajectory* can unfold in a way that is very close to the forecasting strategy. However, there is nevertheless a certain logic in associating the increase in the number of stages with the frequency of unforeseen events.

The essential point is above all that at any moment, a changeover can occur, from a controlled pathway to one that is rich in unexpected events. This changeover may be due to the characteristics of the patient, starting with an unexpected clinical evolution, or to the variability of therapeutic responses, but also to environmental factors (for example, the appearance of a sudden epidemic), or to organizational dysfunctions (such as the lack of communication between two doctors leading to unnecessary hospitalization). In all cases, this unpredictability makes it impossible to have *a* perfect *a priori* knowledge of the trajectory (Strauss, 1992). Of course, the doctor quickly has information at his disposal at the time of treating the patient: the initial assessment identifies the seriousness of the case, additional examinations are immediately scheduled, and the main lines of the design are also quickly specified by the hospital staff or in the GP's office. However, there is no guarantee that the arrangement between the different phases of the pathway will not influence the initial design.

Duration, From a "Beginning" to an "End"

The pathway also has "*a beginning and an end".* It is the third attribute to recognize these temporal stops. Christophe Midler (Milder, 1993) considers that many productive processes are like projects where the objective is to do the best in the piece of history that is between a beginning and an end. A story where nothing is totally reproducible and where time does not catch up. This observation is transferable to the case of the journey insofar as the actors are regularly encouraged to act within time constraints.

In the present case, while some introduce a nuance, by including certain preventive actions, or even welfare actions, the "beginning" generally corresponds to the patient's first contact with the health care system, doctors, establishment, etc.

With regard to the "end", the definition is often more problematic. One way to define it is to relate it to the clinical episode. In this case, the pathway is referred to as a care or health pathway. The distinction between "care" and "health" depends on the scope of the actions considered. With the care pathway are considered the corresponding clinical actions. In addition to the health care pathway, there is a whole series of actions that contribute to a positive state of health, such as pain management, nutritional aspects, psychological support and even preventive issues. While in both meanings, the time limit in most cases remains easy to define and superimposable, it can become more difficult to consider in chronic diseases and poly-pathological contexts. In these cases, certain actions may prove useful at a distance, or be part of a continuous follow-up over several years, if we consider the so-called health pathway. For example, in a cerebrovascular accident, an illness which contains a part of chronicity, rehabilitation can be judged at 6 months, 1 year, or even more. If, on the other hand, the consideration of a successful professional and social reintegration is taken into account, the "end" of the health path may prove even more difficult to define. By linking the "end" to the resumption of a normal life, the question arises as to what lies behind this normality. Vocational reintegration is an illustration of this: the pathway stops when a professional activity has been resumed. But in certain cases of a degraded social context, the notion of "success" can become particularly ambiguous, and the time limit more difficult to establish. There is therefore a permanent trade-off between the precision of these goals and the ambition of the objective in question.

Between these two options, the health path is currently being increasingly adopted, as it seems to orient the objective of the productive system in an ambitious way, while keeping it operational.

Patient's Signature

The fourth and last attribute of the pathway is to inscribe the *signature of the* patient, the latter being a fully-fledged actor of its progress. This feature is obviously to be nuanced according to each case. Patients operated on in the operating room are in conditions less conducive to being proactive than patients followed for internal medicine issues. But the general idea is the same: that of recognizing the patient as a co-producer

of his or her own progress. In this perspective, the patient is no longer simply the entity of the pathway, but also an actor at the service of the organization of the pathway.

Eliot Freidson (Freidson, 1984) defines five forms of doctor-patient relationship:

- the active doctor/passive patient model where the immobile patient is "*totally subject to the doctor's activity*". This is the case of surgical intervention;
- the "*doctor-patient cooperation guidance*" model where the patient is willing to collaborate with the doctor who retains the most active role. This is the model classically privileged in the traditional doctor-patient relationship;
- the model of mutual participation encountered in certain chronic pathologies where the initiative in the interaction is shared between the doctor and the patient. This is the case of shared medical decisions on therapeutic strategy;
- the model where the patient is the guide and the doctor cooperates;
- the model where the patient is active and the doctor passive.

These last two models, which are more rarely encountered in practice, are nevertheless a reality. For example, the chronically ill patient is led to play the role of a participant in his or her own journey during the negotiations that he or she enters into with the nursing staff over the duration of hospital care, for example. Also, the patient is invited to be faithful to the treatment and to change behaviors (e.g., physical exercise) to regain his or her health. Access to new information technologies also allows them to consider new forms of self-management of their health.

The four attributes of the care pathway, variability, variety, duration, and involvement of the patient, when taken together, allow us to give a precise meaning to the pathway as a productive process. They all contribute in their own way to its singularity. By crossing them, all kinds of pathways can be defined, linked to the variety of the patient's characteristics, of course, but also to the degree of unpredictability that occurs during the process, or to the more or less proactive nature of the patient's involvement. This multiplicity of singular cases also suggests the difficulty of ensuring their simultaneous control, because the sum of the pathways is not the addition of identical factors as in an approach based on flows of homogeneous cases. It depends on the contingency of each case. Moreover, this multiplicity is only increasing over the years: the number of patients to be treated is increasing, sending the idea of the artisan doctor back to a glorious past. The production undertaken can thus be described as a production of singular journeys, but to be assumed from now on behaviors on a large scale (Minvielle, 1996). The quest for rationality, and therefore standardization, emerges from this search for personalized mass production.

The Dilemma of Productive Activity

A form of tension intuitively emerges from the objective thus defined. On the one hand, singularity leads to the inescapable observation that each patient is unique, and potentially requires adapted care. On the other hand, the need to respond to the growing need for care refers to a large-scale production that tends to standardize. It is a question of producing the appropriate areas of activity in a sufficiently rapid and economical manner by means of standardization.

It is then indispensable to better grasp the content of this activity centered on the contradiction between recognition of singularity and the search for mass production, to see how the contradiction is real or apparent. This is the second stage of characterization.

The degree of antagonism between the consideration of singularity and the necessary standardization linked to the constraints of *"mass" production* appears to differ significantly according to the type of productive activities: some call for a standardized design, because it is easily reproducible in identical form, while others, on the contrary, call for the singularity of each case to be respected as closely as possible. In an effort at synthesis, Joseph Lampel and Henry Mintzberg (Lampel, Mintzberg, 1996) proposed a typology of productive processes where singularity and standardization are situated as the extremes of the same continuum, as summarized in the table below.

TABLE 1
THE DIFFERENT FORMS OF RELATIONSHIPS BETWEEN SINGULARITY AND STANDARDIZATION

	Pure standardization	Segmented standardization	Standardized singularity	Singularity by production lines	Total Singularity
Objectives	Standardization throughout the process	More choice for beneficiaries, but no influence on the process	Singularized assembly	Singular manufacturing	Beneficiaries' preferences are paramount in the design of the process
Industrial examples	Ford T	Types of cereals Villa of landscaped allotment	Ikea Kitchen	Personalize a cake birthday party	Architect's residence
Healthcare examples	Logistic circuit (Hospital laundry)	Single room	Cancer diagnosis in one day	Chemotherapy bag	Complex surgery

(Adapted from Lampell and Mintzberg, 1996)

The proposed framework thus makes it possible to introduce certain nuances into productive activities related to the patient's pathway. These can range from "*pure standardization*" (certain logistical circuits such as laundry) to "*total singularity*" (the paths of complex surgeries). Between these extreme cases, nuances, can be observed : a "*standardized singularity*" (it is the way of assembling the stages of the pathway that is personalized, as in the case of so-called "*one-day*" diagnoses in oncology where the samples, imaging tests, diagnosis based on the results of a multidisciplinary consultation meeting, and the announcement to the patient, are assembled in a way that is specific to each patient during the same day); a "*segmented standardization*" (the possibility of choosing additional services such as a single room, or aesthetic care, in addition to the production of the elements that make up the pathway itself); and a "*singularity of the production lines*" (for example, the chemotherapy bags, but also the menus).

Taking into account the singularity of the pathway could be even more detailed by taking into account other criteria, social and personal, in addition to the clinical criteria mentioned here, and thus lead to claiming a palette of additional nuances. But already at this stage, the analysis allows us to show the possible variants of singularization and standardization of the activity according to the productive processes concerned.

On the scale of a pathway taken as a whole, the approach appears somewhat different. Indeed the assembly between productive operations (sterilization circuit, lunch menu, etc.) introduces an additional degree of singularization, so that the totally determined programming is illusory. For these reasons, "*pure standardization*" does not in fact refer to any activity relating to a type of pathway, even for the most mastered pathway such as the management of a simple surgery such as appendectomy. Singularity is an intrinsic characteristic of each pathway.

All in All, an Organizational Principle That Combines Standardization and Adaptation

It is this combination of standardization and adaptation that characterizes the organizational orientation of patient management. Rather than leaning towards one or the other, it is this capacity to respond in the most standardized way possible, and to adapt to the variability and contingency of a case, when necessary, that appears to be the major challenge.

On the one hand, it is a question of determining organizational forms that guarantee economies of scale in the processing of repetitive activities through standardization. On the other hand, it is a question of respecting the contingency that the need for adaptation entails, thus disrupting previous schemes.

The general principle is based on this ability to judge the balance between adaptation and standardization. In the case of the pathway, this capacity for arbitration depends mainly on human judgment. Insofar as the organization is mainly carried out by professionals in the field, the capacity corresponds in fact to an attitude that the actor in the field has to favor the search for the advantages associated with the standardized scheme while retaining the initiative to adapt to the personal particularities of the patient. In other words, it is on the basis of this actor's capacity for permanent judgment in defining the appropriate register that the organization of the program can be envisaged.

TWO CASES OF EXPRESSION OF OVER-RATIONALITY

To illustrate this risk of over-rationality associated with the desire for standardization in patient care, we would like to introduce two examples, "*protocol*" and information technology. In both cases, we identify uses that may reflect this over-rationality.

First Case: The "Protocol"

“Protocol" is a general term frequently used in the health care world. It represents at the same time procedures applied to different work situations, rules of good clinical practice, conduct to be followed in case of emergency. We use it in the specific case of the activity of dispensing medication. This activity is collective, involving several actors. Through this example, the objective can be stated quite simply as "*the actual taking of the medicine by the patient*". Distributing the right drug, to the right patient, at the right time is the process that leads to this result. To achieve this, different steps are necessary. Each step has its own set of working rules based on a protocol. Through this example, it is possible to see the difference between seeking compliance with a set of rules and achieving the result.

The case of drug dispensing

In most large institutions, the supply of medicines is not provided directly by the pharmacy, but through floor dispensers permanently managed by a pharmacy assistant. The prescription is made during the doctor's visit in the morning using an individual named prescription. This prescription in the form of a card in the file is established for 24 hours. This card is consulted by the nurse, who can thus be informed of the dispensing times, and then by the pharmacy assistant. The pharmacy assistant normally has all the forms available around 2 p.m. She or he can then prepare the dispensing cart, which has one drawer per patient. Each drawer is filled from the stock in the upstairs pharmacy, and each drawer is filled with the medication corresponding to the prescription of the patient concerned for the next 24 hours. On Fridays, this preparation is done for three days, with the dispensing assistant not being present on weekends. However, the nurses have the key to the pharmacy unit and can therefore go and get medicines in case of a change of prescription, or an urgent need outside the dispensing staff's working hours. Once the cart is prepared, it is brought to the wing itself, where the nurses can then distribute it to the patients.

In this case, a new system was introduced, the "protocol". It consists of preparing a pill box for each patient in the ward with several boxes, each of which corresponds to one hour of medication intake: 8am, 12pm, 4pm, 10pm. The nurses fill each of the boxes of the pill box with the corresponding medicines taken from the cart. Around 4:00 p.m., the nurses place the pillbox in the patient's room and the patient has his or her treatment for the next 24 hours. The pillbox is picked up the next day around 12:00 noon to be refilled.

This unique dispensing system does not prevent nurses from coming into rooms at the appropriate time to advise patients to take their medications. It is also at this time that they note on the temperature sheet

posted in the room that the medication has actually been taken by checking a box and indicating the dose. At the same time, they record on the chart the treatments given to the patient.

This process represents the expected course of medication dispensing from the protocol. In practice, there may be deviations from this reference which may lead to misinterpretations.

Firstly, it happens for various reasons that the medication is not present in the cart: out of stock, taking the medication present in the cart for an urgent case and not replaced, changing the prescription at the last second. In this case, the nurse and the nurse's assistant will try to retrieve the missing medication as a matter of urgency. During this phase, of course, the important thing is that the patient gets the medication in question on time. There is no longer any question of going through the cart. However, it often happens that the completeness or incompleteness of the cart is evaluated by the management, or even by external evaluation procedures. The judgement is naturally made with reference to an ideal filling of the cart, which in these cases is not verified.

In the same way, the actual taking of the medication by the patient raises the question of the use given to the temperature wall chart displayed in the patient's room. Theoretically, nurses should record on this sheet, as the day progresses, the medications that the patient has received and ingested. The purpose of this writing is twofold: firstly, it allows the doctor to have a synthetic view of the drug treatment given to the patient; secondly, it provides proof that the patient has actually taken the drug.

It is this last point that is sometimes problematic because nurses sometimes anticipate what will happen over the next 24 hours by filling out the wall chart every morning with all the medications taken during the day. In this way, they create information on the execution of actions that have not yet taken place. Most often, nurses fill out the wall chart after giving the patient the medication, but there may be a difference between giving the medication and the patient actually ingesting it. The medication may fall off the tablet during daily room cleaning, the patient may lose it, or the patient may voluntarily avoid taking it.

The effective ingestion of the medication by the patient is an objective that requires vigilance. Ensuring its reality is not always possible by checking compliance with the rules of the protocol, and may require additional actions.

This case is illustrative of an attitude often encountered in the hospital world. Compliance with the rule, in excessive use, can lead to inappropriate care, out of step with the desired result.

Second Case: Information Technology

To illustrate the risk of over-rationality associated with the desire for standardization in patient care, we now turn to the role of information technology in the management of care pathways. The sharing of clinical information between professionals and points of service along a care or health care pathway is essential to the coordination of activities in order to ensure comprehensive, continuous and quality care. The use of digital clinical information systems, replacing traditional paper-based systems, is laying the foundation for new organizational rationalities. The objective is to mobilize the capabilities of digital technology - programming of automatic data processing by computer - to standardize pathways while preserving their singularity - programming of personalization rules according to particular patient characteristics - in order to adapt to the individual needs of each patient.

The Case of Information Technology: Digital Clinical Information Systems

Again, let's take the case of prescribing medications in the hospital and look at the management of clinical information needed to coordinate a patient's medication intake. In the initial stage, the physician makes

a diagnosis and prescribes the required medications to the patient. In the traditional paper chart format, the physician records the prescription in the patient's chart. This information then becomes the source for coordinating the subsequent activities of all professionals. The information must be sought, interpreted, entered and noted in the context of various activities such as updating the nursing care plan; requesting medications from the pharmacy; updating the "medication" record in the pharmacy information system; preparing and delivering medications and their dosage to the care unit; making adjustments to the daily schedule of the nursing staff; and closing the circuit in noting each medication consumption in the patient record - for traceability purposes and to inform the attending physician.

In a paper-based environment, the administrative burden of this process of exchanging information between several people belonging to different trades (doctor - pharmacist - nurse) is high. Yet it is a relatively simple process for transferring standardized information between different information systems. However, the process is costly in terms of human professional time and is sensitive to delays and errors (particularly associated with multiple copies of the same information in different information systems). Quality of care and patient safety may also be compromised as a result of just-in-time clinical information management that is vulnerable to errors (IOM, 1999; IOM, 2001).

The use of digital technology, such as computerized patient records (CPR), offers a response that can streamline the management of clinical information. The general principle is to mobilize the computer's computing capabilities to facilitate the capture of clinical information and its sharing among professionals, while reducing the routine burden on professionals to copy clinical information. It is also possible to use the analytical capabilities of computers to verify the quality of medical decisions and to initiate alerts in the event of problematic deviations. The digital device then ensures standardization of practices. From this perspective, the potential for rationalization of an CPR is high (Sicotte et al., 2016). It can become a means of automatically coordinating care activities. The digital patient information can be activated by the software, which can then supplement human action in order to perform routine tasks (e.g., following a new medical prescription entered in the CPR, updating the nursing care plan, issuing a pharmacy request, updating the medication record in the pharmacy system, etc.). It is thus possible to automate some of the information management activities by eliminating the need for human intervention. All in all, such use of the CPR can help to ensure the coordination of patient pathways. The CPR is then used as a software tool to support collaborative work (Minvielle et al., 2010). Similar efforts to streamline medication use are being made in primary care (Motulsky et al., 2013; Motulsky et al., 2015). This vision of the use of digital tools stems from a certain industrialization of the organization of care. It introduces a new rationality into clinical work, a computer rationality based on the use of computer algorithms to rationalize work. However, to be fully effective, such devices require highly sophisticated algorithms. These algorithms must provide a computer rationality that controls the complexity of the work and thus provides acceptable standardization solutions. If these algorithms are partial or poorly designed, then they remain an example of excessive use of rules, and thus of inadequate over-rationalization of work.
From this perspective, it should be noted that CPR is not yet a fully mature system. CPRs, which are available on the market, vary in their performance in overcoming the complexity of the organization of care. From the point of view of the professionals who are invited to use them, CPRs are often perceived as unsatisfactory systems (Béjean et al., 2015). They are therefore seen as deficient and unsuitable over-rationalization devices.

In this respect, it must be understood that a CPR requires a very high degree of precision in the definition of standardization rules in order to automate patient management. In the current context, clinical information systems are autonomous information systems operating in silos. Their use relies on the strong involvement of professionals in each business, who process the information and adapt it to their respective systems. This traditional sectoral use creates buffer moments where information is reinterpreted in the light of different contingencies. A CPR is a different system of cooperative work. It aims to automate the sharing of information between professionals. The algorithms for rationalizing

patient management in a CPR therefore face very great standardization challenges in order to meet the information needs of all professionals. In this regard, it is interesting to note the work of Ammenwerth (Ammenerth et al., 2000), which identified several types of standardization necessary for a mature CPR. Seven different types of standardization are required and each is complex to achieve in itself. Indeed, this standardization lies at the heart of clinical activity. In summary, a digital tool such as the PGD is based on (a) technical standardization (technical interoperability between different computer systems (laboratory, pharmacy, admissions, etc.); (b) access standardization (unique identifier and password for each user); (c) standardization of software interfaces for uniform presentation of clinical information; (d) communication standardization (between different professions); (e) standardization of clinical data; (f) functional standardization (at the level of care activities); and, (g) standardization of workflows (care pathways, i.e. between different care structures).

In Summary

Insofar as the actor has the need to temporarily compose standardization to meet a need for adaptation, it expresses a limit in the face of a completely rationalized organizational model where the set of rules would be set down in formal procedures applicable to the letter is obvious if the preceding reasoning is taken into account. Faced with the unforeseen, and the need for synchronization related to the care activity, action goes beyond this simple register. Not accepting this flexibility in defining strategy, action, or evaluation leads to counterproductive situations.

Inappropriate Uses

Thus, it is not insignificant to note conservative attitudes that do not perceive the need to change the register because of a defined therapeutic strategy without the capacity for modification.

For example, one patient reported the following anecdote:

> *"I am insulin-dependent diabetic, I need to receive both slow and rapid insulin, my dose of rapid is 8 units. Since I have been in this rest and convalescent home, I have been eating extremely little. My body needs much less insulin. When I asked what my insulin dose was, I was told 8 units as usual. Isn't that too much? I asked. No, that's the protocol. On several occasions in the morning I was found in a state of hypoglycemia, a sign of coma. When I asked for the rapid insulin to be lowered, I was told: You can't go against the protocol. We had to wait 4 days for the doctor to issue a written order of change for this famous protocol".*

Here we fall into the bureaucratic excess of the mechanistic organization where the pre-established work procedures are strictly applied.

This first consequence of over-rationality in the use of standardization, in this case the application of protocol rules, can mask a second, more subtle one. In order to understand it, it is necessary to start from the observation that, even in cases where "*conformity to the rule*" is justified[ii], use can nevertheless introduce unexpected deviations from the desired behavior. For example, in the definition of the items of the surgical checklist, which aims to verify key points during the surgical procedure, one item concerns the joint validation of the prescription of post-operative antibiotics by the surgeon and the anaesthetist. This item is considered as a safety rule against infectious risks. Nevertheless, the application of the rule may prove problematic because the physical encounter between the surgeon and the anesthetist is not so obvious to ensure (Fourcade et al., 2012). In some cases, it is at a specific point in time that the anesthetist meets the surgeon in the operating room. In other cases, a common meeting place is defined. Finally, a third party, such as a nurse anesthetist, may be the intermediary. There are in fact a variety of situations to consider to be sure that this rule can be applied. Some people call for a "*do-list*" to be drawn up under these conditions, which specifies the work rule very precisely, as it is considered important in terms of safety.

The example shows that in order to control uses that are disconnected from the principle of compliance with the rule, the description of the rule must be extremely precise in terms of the role of each person in

order to avoid any ambiguity. The problem is that not all rules can lend themselves to such a precise exercise. Only a few rules relating to risky situations lend themselves to it, such as those in the checklist. Given the characteristics of the activity, the number of different actions to be performed and the forms of intermingling, it is unrealistic to envisage a meticulous analytical coding effort at the extreme of all tasks. An element of implicitness is mandatory in most cases, and therefore presupposes knowing how to apply the rule. It is one of the facets of the actor's capacity to know how to establish this declination judiciously in order to adopt virtuous use. And it is here that over-rationality can introduce a second negative consequence. For preventing the autonomy of the actor in the use of the rule can lead to counter-productive effects. When the degree of prescription becomes too precise, it compromises the overall reliability of the organization, in particular through the discrepancy between the prescribed work and the actual context, if an unforeseen event forces one to turn away from the rule. To compensate for this, the actors are forced to carry out more or less extensive corrective work in order to maintain the main lines of the organization. This work paradoxically requires more of the cognitive capacities of the actors than in the case where an incompleteness of the rule is admitted, because not only are they forced to reject it to avoid the risk of an incident, but they must also simultaneously design better adapted rules. A certain paradox therefore appears. In compliance with the rule, a gap exists between the prescription and actual use. This gap can be reduced by a precise description of the rule in order to avoid disconnecting usage from the expected prescription, as in the case of the checklist. But by doing so, the risk of over-rationality exists. Indeed, a description that is too precise can limit the adaptability of the rule's use, even though it can be useful in many cases.

The Risk of Forgetting to Adapt to Hazards

In the same way, proposing rationalization in terms of "*tight workflow*", "*just-in-time",* by limiting stocks of resources, or time reserves, is a mistake if the process(es) are not all standardized. In a random context, these reserves play a buffer regulating role to mitigate the impact and thus avoid waste. Similarly, apparent inefficiencies are interpreted differently. For example, the surgeon, the anesthesiologist and the supervisor, despite all their good will, cannot respect the tight flow of scheduled interventions when an emergency arrives in the operating room or in a department. This results in overruns of the planned program, often considered as a malfunction, when they simply reflect the complexity of a system that cannot respond instantaneously to unforeseen events.

The Risk Associated With Evidence-Based Medicine

The idea of a minimum of prediction or playing on the speed of execution of certain tasks is not foreign to certain forms of activity, as has been said. Two factors, however, prevent *evidence-based medicine* (EBM) from becoming a general principle in the organization of pathways. Firstly, the dissociation between the design and execution phases is hardly compatible with the characteristics of pathway production that have been described. Medical design is established close to implementation, and the actors in the implementation process themselves shape the evolution of this design. It is therefore not possible to establish a sequencing between these times. Secondly, the tangle of work generated by the simultaneous progress of the different stages, and the need to react to unforeseen events, are too great a constraint for us to systematically define a *"one best way"* in the way we organize ourselves as conveyed by EBM (Minvelle, 2000). As Dominique Tonneau puts it, *"optimizing modeling can only be used as a means of mobilizing thinking, and not to arrive at a revealed truth. Above all, each refinement of the model should ask itself about the ratio of the cost of the refinement to the interest of the envisaged use"* (Tonneau, 1994, page 94).

To sum up, only a few very sensitive areas, particularly in terms of security, refer to the register of strict compliance with rules that would be defined a *priori* as part of a standardization register.

However, the judgment on the standardizability of components of the activity of the pathway is a permanent source of ambiguity. Certain productive activities lend themselves easily to this, such as logistics circuits. However, ambiguity is evident at the scale of the pathway as a whole. Because at this level, the organization developed inevitably involves a certain amount of adaptation. It is expressed in the reaction to the unexpected, in the variety of assemblies required, or in the organizational consideration of patient

involvement. Questions of synchronization and the occurrence of contingencies inevitably disrupt the linear nature of the sequence.

The Risk Associated With the Standardization Entrusted to Information Technologies

The case of information technology shows the ambivalence of these tools in the quest for rationality. On the one hand, the case reveals that digital clinical information systems can be effective in standardization, but mainly in the case of routine tasks. On the other hand, their efficiency in the case of complex tasks still remains a colossal challenge. These technologies introduce such innovative transformations that they must be considered as breakthrough technologies. The challenges to the development of new models of individual and cooperative work organization are so high that we must anticipate and give ourselves time to develop and experiment with them (Sicotte et al., 2017). Today, companies in the new digital economy are considered to have revolutionized entire industry sectors, such as Amazon's success in retail. However, it is important to keep in mind that these transformations have been evolutionary and have taken place over several years. Given the complexity of patient care, caution and patience are required in the quest for rationality. Otherwise, the standardization efforts entrusted to digital tools will be disappointing and will be rightly perceived as over-rationality in medical work.

It appears from these examples that the risk of over-rationality can be expressed in many ways. Other examples, particularly when evaluating the results of the clinical activity, an exercise often associated with a compliance deviation, could usefully supplement the demonstration. But the main challenge is to show that the risk of over-rationality is not related to the tools, "protocol" or information technology, but to the use made of them. It is a use exclusively oriented towards respect for the rule, and the recognition of a linear and controllable activity that can lead to an erroneous attitude. The lack of recognition of a form of adaptation can in various cases be detrimental to the performance of the care.

As we will see now, the triggers that can lead to these attitudes of over-rationality are important. They help to understand the solutions needed to recognize an autonomous actor.

RECOGNIZE AN AUTONOMOUS ACTOR

The two cases presented help to understand the reasons for this possible over-rationality in the use of the tools. If the "protocol" appears to be an established tool that introduces a social desirability of standardization, a point that we will develop, the use of information technology introduces for its part a risk of over-rationality due to a lack of control over dissemination. The reason in this case stems more from a poor anticipation of its successive developments than from any real deliberate action.

Reasons for Over-rationality

Numerous judgments are often made to validate the hypothesis of a complete standardization of the clinical activity. For example, a recent study by the *Mayo Clinic* (Cook et al., 2014) on cardiac surgery activity states that approximately 2/3 of patient pathways are "*simple*" and easily standardized, while 1/3 are considered complex and beyond the scope of a "*standardized*" organizational response. However, we have shown in the first part of this article that at the scale of a pathway, it is impossible to consider a pure and perfect standardization of the activity. The path remains a singular entity that presupposes accepting a certain form of adaptation.

A Shared Social Desirability

These judgements seem to refer more to a general appreciation guided by a desire for greater mastery and control than to the characteristics of the activity itself. In fact, different actors may be led to converge towards this same desire for standardization.

For the manager, assigning a pre-established standard to a collective activity, which must be complied with, is an easy way to evaluate the performance of the people under his or her control. It helps to ensure that collectives are "*working",* and to monitor their diligence in executing a request.

Conversely, it is also a simple way of reporting on the activity for those working in the field. In a sector where the demand for accountability has been steadily increasing in recent years (Schilte, Minvielle, 2008), an evaluation based on a report to the standard is an interesting and easy to implement response.

For the actors involved in the activity of patient care, medical doctors and health professionals, the need to carry out joint action under time constraints may also lead them to desire a system of actions based on rules. For at some point, it is necessary to stop exploring the various possible options for action. The context thus obliges them to tick crosses in a list of exams, to fill out appointment forms, etc. Under these conditions, if the strict application of procedures leads to dissatisfaction because the professional would like to be able to introduce nuances into his action, it saves time, while guaranteeing a certain consistency. All this can lead to a feeling of control. The interest can also be seen in the mental load borne by these same actors in the care of patients. An action guided by compliance with the rule within the framework of a standardized approach is conceived as a kind of resting place for the mind which allows the work to be framed. Respect can be the hallmark of an organization that knows how to adapt, because these two facets of standardization and adaptation are not antinomic. Contrary to a popular belief that associates professionals with a quest for perpetual autonomy, recourse to standardization can often be a "refuge" value.

Finally, the development of expertise can find in the definition of references of good practices, standards capable of consecrating a coherent system. *Evidence-based medicine*, and to a lesser extent, evidence-based *management,* draw their strength from this ability to simply define expertise and allow an evaluation based on real practices.

Standardization therefore constitutes an important component in the organization of the pathway, which, even if it can be guided by judgments that are more or less appropriate in its application, has powerful triggers. We speak of social desirability to qualify the attitudes that tend to move towards standardization with these risks of over-rationality, but it must be clearly seen that this desirability is also motivated by strong social pressures: to be accountable, to intensify activity, and to limit the impact of the psychological wear and tear that can result from it, to demonstrate control over the activity of the work collectives under one's responsibility, and in general to establish control over production.

Towards Another Approach?

We now come to the last point. What can be done to reduce this risk of over-rationality in the use of the standardization registry?

Such a question forces us to ask ourselves another one, as simple as it is daunting: is it possible to define a form of work organization in the case of patient pathways? The development of rational approaches usually seeks to define general categories, and to rely on an activity that is somewhat predictable. Here, adapting to take into account the singularity of each patient increases the difficulties of programming and framing. The necessary reactivity and multiple adjustments also limit an orderly design of the action. In this context, some may consider any effort at rationalization to be illusory.

These limitations have already been addressed in other sectors. Christophe Midler (Milder, 1993) evokes these limits in relation to a sector that is much more concerned by rationalization approaches than health, the automobile. He formulates the hypothesis that "*these limits certainly exist if one puts behind these words the traditional rationalist vision, that of a Taylor for example. Perhaps not if one adopts a different vision of what a method or model is; a vision in which uncertainty, randomness and cooperation do not intervene as residual factors but as crucial variables to be integrated".* (Midler, 1993, p 53). If the organization of pathways marks an intensity in the questions posed, many production systems are in fact confronted with a similar combinatorial approach made up of criteria of speed, variability and variety. And it emerges that the rationalizing aim remains conceivable insofar as the attributes of variety and unpredictability are integrated into the equation.

Finding forms of organization adapted to the pathway means accepting to integrate in the reflection the productive characteristics described. The term "*navigator system*" used by the Anglo-Saxons to express the systems of organization of pathways is a good symbol of this orientation. The patient benefits from the help of professionals in order to "*navigate*" between different health services and structures.

Such an orientation, as we have seen, does not, however, banish a linear and stable conception of the organization. For even if it has its limits, it retains some relevance. Linear and stable areas of activity lend themselves to standardization in the case of pathway organization. The real challenge is to identify the activities that correspond to them. If the actor is also expected to show initiative, even in the use of the rule, he acquires a certain autonomy in the performance of his work. The approach of the autonomous actor is then different: the actor possesses managerial skills to deal with the variety of work situations, and their unpredictability, seeks to coordinate with others (an essential point in the case of the patient's journey, which implies a link between activities often carried out independently of each other). It is also part of a collective that is guided by health outcome or efficiency objectives. All these elements constitute a vision to be developed in a world that is not necessarily prepared (Minvielle, 2018). The risks of over-rationality linked to a desire for standardization are therefore probably not about to be extinguished.

ENDNOTES

1. The term "organization" in the context of this article should be understood as the organization of work necessary to cope with the activity of caring for the sick, and not as an organization such as a health care institution.
2. Through the expression "*work rule*", no form is intended to be excluded: whether it is written or oral, in the form of cards, or codified within a more sophisticated system as in the case of an operating schedule or a procedure, the rule is characterized by its stability and objectification in the organizational schemes put in place.

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