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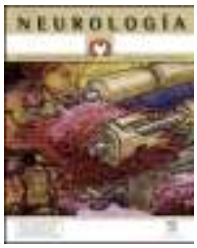

REVIEW ARTICLE

Clinical management departments for the neurosciences☆

J. Matías-Guiu[a,*], R. García-Ramos[a], M. Ramos[a], J. Soto[b]

[a] *Instituto de Neurociencias, Hospital Clínico San Carlos, Universidad Complutense de Madrid, Madrid, Spain*
[b] *Director Gerente del HCSC Instituto de Neurociencias, Hospital Clínico San Carlos, Madrid, Spain*

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Abstract
Introduction: Neuroscience-related clinical management departments (UGC in Spanish) represent a means of organising hospitals to deliver patient-centred care as well as specific clinical and administrative management models.
Development: The authors review the different UGC models in Spain and their implementation processes as well as any functional problems. We pay special attention to departments treating neurological patients.
Conclusions: Neuroscience-related specialties may offer a good framework for the units that they contain. This may be due to the inherent variability and costs associated with neurological patients, the vital level of coordination that must be present between units providing care, and probably to the dynamic nature of the neurosciences as well. Difficulties associated with implementing and gaining acceptance for the new model have limited such UGCs until now.

PALABRAS CLAVE
Gestión clínica;
Neurociencias;
Hospital;
Unidades de gestión clínica;
Atención centrada en el paciente

Unidades de gestión clínica en Neurociencias

Resumen
Introducción: Las unidades de gestión clínica de Neurociencias (UGC) representan una fórmula de organización de los hospitales basadas en la atención centrada en el pacientes y las fórmulas de gestión clínica y administración.
Desarrollo: Los autores revisan la puesta en marcha y los distintos modelos de UGC en España, así como sus problemas de desarrollo, con especial mención a aquellas que tratan al paciente neurológico.

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* Corresponding author.
E-mail addresses: neurol.hcsc@salud.madrid.org (J. Matías-Guiu), inc.Hcsc@Salud.Madrid.Org (J. Soto).

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Conclusiones: Las neurociencias, por la propia variabilidad y el coste del paciente neurológico, por la necesaria coordinación que debe existir en los servicios que lo asisten y, probablemente, por el propio dinamismo que tiene esta área de conocimiento, posiblemente ofrecen un marco conveniente para unidades que los integren. Las dificultades de implantación como de aceptación del nuevo modelo lo han limitado hasta la actualidad.

Introduction

Hospitals have undergone substantial changes since the first half of the 20th century. In those years and in earlier times, their academic and scientific functions may well have taken precedence over all others. The departmental structure in clinical hospitals was an accurate reflection of an organisational structure based on major academic disciplines that primarily focused on diagnosing illness, with patient care and comfort being a secondary concern. The development of medical specialities would later give rise to an administrative system divided into services and sections; even today, the organisation of most clinical hospitals does not differ substantially from the table of contents of a good medical textbook. The emergence of new models of clinical management has paved the way for novel care strategies seeking to understand care quality and operations from the patient's perspective, and how these factors affect staff and costs.[1] The same process has also accentuated the need for good coordination among all care levels.[2]

The proposal to organise clinical management units (CMUs) arose in the late 1990s within the framework of INSALUD (the authority preceding the current Spanish National Health System). This new organisational system for hospitals was promoted by the government itself. José Manuel Romay Beccaría was serving as the Minister of Health when this possibility came to light. These CMUs (known as 'institutes' or UGCs in Spain) were conceived as groups of services and specialties within a single management area. They were structured according to homogeneous care criteria and focused on specific types of pathological processes.[3] The proposal was advanced on the grounds that it would grant greater self-management capacity to these units, which would thus be able to specify the exact resources they would need to carry out their functions. Therefore, these units were the result of what was supposedly a fundamental decentralisation campaign within the hospital; they would remain bound to that hospital by a management contract and exchange the necessary accounting and administrative information.

It is clear that the implementation of clinical management units was limited in 2 areas. First of all, it lacked a specific legal basis. Although Royal Decree 521/87 opened doors and granted permission for more integrative methods, there was no specific legislative support apart from publications issued by the Ministry of Health to establish the format and outline of proposals and approvals.[3] Second of all, these documents provided the framework for a new organisational system whose sole purpose was to implement clinical management procedures, while minimising or overlooking routine aspects of hospital procedure that may have been more important.

The overarching ideology

The ideological basis on which CMUs were implemented is the concept of 'patient-focused care' or 'patient-centred care'.[4–8] This position is an obvious one; hospitals should be organised to meet the needs of the patients being cared for, rather than for those providing care. The philosophy is not a new one, although it was only recently that it received a specific name. The concept of closeness to the patient, which was dominant in the 1980s and led to the formation of a care system made up of health districts, drew from the same argument: the healthcare system must seek out its patients, rather than vice versa.[9] In conclusion, the vision behind the care model at the end of the 20th century was not a new one. According to Asenjo et al., the main purpose of the patient-centred care model was to gain significant improvements in the cost-effectiveness ratio and the quality of services provided to patients[10]; the same could be said of any public service, and not just those offered by the healthcare field. In fact, the Spanish government used the same argument in stating the purpose of this model, as we see in the legislation.[11] However, improving the quality of healthcare is not the exclusive province of a single concept or a specific model of care. Asenjo et al. felt that the practical result of introducing the concept of patient-centred care was 'the need for staff to learn to work in multidisciplinary teams able to adapt to different tasks and guided by the needs of the patients they serve, with a view to continually improving service'.[10] These authors specify that the definition of basic essential activities would have to be established by elaborating clinical guidelines and healthcare protocols or profiles, and by identifying, defining, and managing care processes, understood here to mean the array of related activities that are designed for a specific service.

This ideological concept can be applied in various ways. To cite an example, Abelardo Román, the managing director of Hospital Central de Asturias which uses the patient-centred care model, applies the concept as follows[12]: (*1*) structuring care areas to best meet the needs of both patients and professionals; (*2*) grouping patients according to their common needs and characteristics, which in turn provide the criteria for grouping services so as to form multidisciplinary CMUs; (*3*) measuring, comparing, and improving care quality by using other similar units or

hospitals as benchmarks; (*4*) fostering the use of clinical guidelines: practical instruments designed by doctors themselves which help us achieve better, more homogeneous, and more effective care processes and ensure that proper care standards are maintained; (*5*) decentralising medical and administrative departments as much as would be possible and practical; (*6*) adapting computer systems to healthcare needs (Clinical Management Systems); (*7*) increasing the autonomy, responsibility, and decision-making capacity of clinical units and their staff (clinical management); (*8*) using process reengineering to eliminate or simplify intermediate processes and structures that do not generate benefits; and (*9*) ensuring and improving continuity of care for all types of medical attention.

According to the same author, empirical arguments in favour of CMUs have to do with how hospitals are organised and structured as a result of using patient management categories (PMC).[13,14] PMCs were created in the late 1980s and sparked product lines for the care of specific diseases. The PMC system defined the process spanning admission, hospitalisation, and discharge of the patient. The system acted as an alternative to DRGs for cost calculations, but it could not be developed further since it was not adopted by Medicare. Different services and care units are involved in product lines, meaning that cost calculation within the hospital would be a multidisciplinary activity. Assessing and organising hospital care based on product lines seems compelling at first, but like all hypotheses, it will have to be duly validated. The care processes mentioned by Asenjo et al.[10] are simply groups related to specific product lines.

An innovative challenge: Project PRISMA at Hospital Clínic (Barcelona)

Project PRISMA, implemented at Hospital Clínic in Barcelona, provided the model for subsequent clinical management units. This entire university hospital underwent administrative and budgeting decentralisation to take on a CMU-based organisational structure. Despite the relevance of this undertaking known as 'hospital reengineering', we find a surprisingly low number of documents explaining the details of how it was to be carried out. An exception was the Cardiovascular Unit, which emerged as the flagship of the new model. Perhaps the most complete account of the activities carried out at Hospital Clínic is given by the project that won the Pfizer Award for Clinical Management.[10] The Cardiovascular Unit's project was also published in a cardiology journal.[15]

Among other objectives, Corporación Sanitaria Clínic proposed establishing a group to provide health services within a designated area and play a leadership role in the areas of healthcare, teaching, and research. Through a reengineering process, the hospital would consist of a series of different patient-centred CMUs or 'clinical institutes', created as the result of identifying healthcare processes. In addition, it would include a centre with other specialties not forming part of the CMUs, a diagnostic imaging unit, and a laboratory. Within this structure, the emergency department would be held in common. Reengineering was started in 1997 and the new model was launched in 2001 under the directorship of Joan Grau. The rationale behind the reforms was that Hospital Clínic, which until then had been organised conventionally, suffered from severe lack of coordination between different services. The resulting CMUs each had a director, an administrative head, and a head of nursing staff.

The model for implementing CMUs at Hospital Clínic emerged as a reference for the structure and organisation of other Spanish hospitals. It was recognised as such in medical newsletters, despite the lack of published material describing the model. As mentioned before, descriptions were essentially limited to those from the Cardiology Unit, and almost non-existent for other CMUs. Using available documents, it is not easy to ascertain, for example, how the Institute of Neurological Diseases was set up; we cannot even determine if the results of the reengineering process have created major differences with respect to the functioning of conventionally organised hospitals. The editorial piece published by Gutiérrez-Morlote in a cardiology journal rings true: in medicine, applying common sense is more important than following a particular model.[16]

On 13 February 2004, *Diario Médico*, the most important Spanish newspaper on health policy at that time, published a story implying that the model that began in Hospital Clínic had probably led to budget deficits.[17] The article explained that Hospital Clínic was experiencing a major financial crisis that had forced it to cut its 15 CMUs down to 10 in order to streamline its structure and decrease its number of high-level positions. The changes applied at the hospital level included eliminating the general hospital and the Institute of Immunology and Infectious Diseases to constitute instead the Institute of Internal Medicine, Infectious Diseases, Autoimmune Disorders and Dermatology (comprising all of the services described). Similarly, the immunology and microbiology laboratories were fused with the Biomedical Diagnostic Centre. Otorhinolaryngology, Ophthalmology, and Plastic Surgery were absorbed by the Institute for Locomotor Medicine; Endocrinology was added to the Institute for Digestive Disorders. With the elimination of the Unit for Common Resources and Services, the Emergency Department, Surgical Division, and Anaesthesia and Reanimation fell under the direct supervision of the Medical Directorate; this also occurred with the Unit for Assessment, Support, and Prevention (including the pharmacy). Similarly, the Institute for Cardiovascular Diseases was combined with the Institute of Respiratory Medicine and Thoracic Surgery. The Institute of Psychiatry and Psychology was absorbed by the Institute of Nervous System Diseases.

The article included statements by Joan Grau, the hospital director and leader of the reengineering project. His view was that PRISMA had never been fully carried out because the hospital's 49 services had never really disappeared. Grau stated that 'since those who should have cooperated refused to do so —especially the ones who were not picked to head institutes — we opted to wait for them to retire. If I ever had to take on this project again, I would be more forceful and not bother trying to make everyone happy'. The former hospital director also outlined other problems; in daily practice, he discovered that some specialties had to be self-contained, while others were affected by disruptive power struggles. Furthermore, there were major disparities in staffing levels and budgets between institutes.

Three days later, Ginés Sanz, the former head of the Cardiovascular Institute and hospital director at that time, also aired his views on the situation in *Diario Médico*.[18] In his words, 'the values on which Project PRISMA was based are still valid, beginning with the need for patient-centred care, but we saw that the project needed optimisation once we put it into practice'. He then explained their conclusion that CMUs would function better with shorter staff lists, even though managing large units was an easier and more efficient task: 'Everything is simpler in a large institute than in a small one', he insisted. Ginés Sanz also highlighted that cost reduction was not the main purpose of the reform project. In the same article, he also responded to Joan Grau's comments[17] about resistance on the part of the department heads: 'yes, there was some friction — all changes bring problems — but considering how we are managing now, remaining calm, offering good explanations, and listening to our staff's concerns, we seem to be creating a cooperative atmosphere'.[18] It is worth noticing that the modifications went against the ideological concept on which the initial reengineering phase was based, that is, process of providing care.[10] Enlarging CMUs decreases the specificity of care, at least according to how care had been defined. On the other hand, the logical extension of this process would be to return to the traditional model, albeit one retaining the appearance of the new model, which was now inevitably being phased out. On 16 July 2004, Ginés Sanz recognised that the reforms were too radical: 'this is a beneficial project, but we do make mistakes, due to inexperience on the part of the hospital, participating staff, and our consultants. These reforms had never been carried out before. A hospital is a very delicate institution and we moved very quickly'. He also acknowledged the rise of the budget deficit: 'it is a known fact that Hospital Clínic's deficit increased between 2000 and 2003, but I do not believe that creating CMUs caused this to happen. The deficit was mostly caused by substantial growth of administrative units, and cost increases also contributed'.[19] Outside observers inevitably noticed a certain level of frustration associated with the results of implementing such a drastically different model. In any case, the goal established by the team designing Project PRISMA — improving quality in at least 10% of the hospital's total volume of activity[20] — was very likely achieved. Although further publications about these reforms have been published since that time,[21–23] none of them, to the best of our knowledge, constitutes an overall analysis of this interesting process. In any case, outside observers would probably rate the endeavour as being positive overall because it made Hospital Clínic the most cutting-edge medical centre in Spain at the time.

Clinical management units in INSALUD

At the same time, several INSALUD medical centres also began converting to a CMU system under the auspices of the government.[24–26] The first 6 CMUs to be formed were the Cardiovascular Institute at Hospital Clínico San Carlos (Madrid), the Heart Institute at Hospital Ramón y Cajal (Madrid), the Cardiovascular Institute at Hospital Clínico (Valladolid), the Cardiovascular Science Institute at Hospital Virgen de la Salud (Toledo), the Oncological Institute at Hospital Virgen de la Arrixaca (Murcia), and the Institute of Digestive Disorders at Hospital Marqués de Valdecilla (Santander). These 6 were immediately followed by the Heart Institute at the former Hospital Juan Canalejo in A Coruña.[27]

The implementation of CMUs in the INSALUD hospitals differed from Project PRISMA at Hospital Clínic in several ways. First of all, PRISMA affected the entire hospital and presented an overall vision of the CMU model, whereas the model applied to INSALUD hospitals affected only those services being reorganised into institutes. The switch to PRISMA was mandatory for all services, whereas reforms were undertaken voluntarily in INSALUD hospitals. The ideological basis of PRISMA was patient-centred care, and while the INSALUD reforms presented the same arguments, their basic rationale was the implementation of a very early form of clinical management procedures. PRISMA represents a hospital reengineering process, whereas the INSALUD reforms constitute a stage in management decentralisation and an approach to resource management. Another interesting initiative at that time, which unfortunately did not catch on, was the development of public health foundations aiming to decentralise medical care. Management procedures were simplified for greater efficiency and teams were brought together to achieve better coordination. Lastly, the institutes and units set up by PRISMA managed nearly 80% of the hospital's budgets,[28] whereas the INSALUD model included a management agreement or contract specifying the relationship between the hospital and the institute.[3]

The process of creating institutes was stopped by a ministry reshuffle; subsequently, the reassignment of healthcare services to the autonomous community level left such initiatives up to Spain's autonomous communities. Developments have been varied,[29] with some reforms providing the appearance of CMUs rather than their actual structure. The gradual implementation of clinical management procedures in most hospitals is a process that has obscured the salient features of some institutes, whereas others were shut down to create other organisational schemas.[30]

Difficulties in the development of clinical management units

The implementation of CMUs revealed a number of problems that curtailed the results anticipated by those designing the reforms. Examples of these difficulties are listed below:

1. Resistance by department heads.[17] This was one of the drawbacks cited for PRISMA, under which implementing institutes was mandatory; in contrast, the option was voluntary for hospitals in the INSALUD framework. The suddenness of the changes demanded by PRISMA probably contributed to departmental resistance.[19]
2. The leadership question. The qualities that determine the best director of an institute may have nothing to do with his or her scientific credentials, but candidates with exclusively administrative profiles are not recommendable either.
3. Lack of independence.[31] Although the process of creating institutes was based on decentralisation, many institutes

never achieved the level of autonomy that was mentioned in the late 1990s. In 2004, Enrique Asín, the director of the Cardiology Institute at Hospital Ramón y Cajal, inquired whether institutes had been devised to combat the lack of motivation and tremendous caseloads that burden healthcare workers, and which constitute the greatest challenges for managers. The result of forming institutes would be involving doctors in healthcare resource management and providing patient care by integrating processes. According to Asín, the desired results had not been achieved despite everyone's efforts; even though healthcare quality had improved substantially, the level of motivation among doctors remained extremely low. 'What we hoped for at the start of the process did not come to pass because our self-management capabilities were quite limited. If we are to improve in this area, we must be given more freedom to act, by means of structural changes providing professionals with monetary and professional incentives'.

4. Difficulties stemming from combining services.[18] Even when services are related to one another, it does not mean they can be combined easily. In fact, most CMUs are created around single specialties or by creating groups with a dominant specialty, as is often done with cardiology. It is far more difficult to combine services of similar sizes that have never had to work together.
5. Resistance by managerial units to any transfer of management duties.[32] Luis Rodríguez-Padial, a former department head who directed the Institute of Cardiovascular Diseases at Hospital Virgen de la Salud (Toledo), wrote in 2004, 'if institutes are ever to be fully functional, managers have to be able to come to terms with a certain loss of power whereas doctors must show that they are efficient and able to assume responsibilities. Those of us who headed clinical management units in their early years suffered backlash from many of our colleagues before being hobbled by our institutions'.
6. Coexistence with the traditional model.[33] Juan Comas, the director of the Paediatric Heart Institute at Hospital Doce de Octubre, stated that one of the problems with the new management methods was how to make them compatible with traditional models. In Comas' words, 'belonging to an institute gives us more financial autonomy, but it is unrealistic considering the larger structure housing us. We have come up against problems arising from the relationship between the new management and our traditional organisational framework'.
7. Failure of doctors and other staff to perceive the benefits of the institute model, which was one of the setbacks for the implementation of that model.[32]

A 2004 article written by one of the authors[1] enumerated the advantages of the institute model, which essentially revolve around its recognition of the patient as providing the fundamental purpose of the hospital. 'Coordinating the resources used in providing care to homogeneous groups of patients seems to be an obvious decision. Medical specialties are not trades or static blocks of knowledge; rather, they exist as a way of recognising a type of training and technical skills that must be taken into account for planning purposes. Designing a system in which the specialists who treat the same patients coordinate with one another to avoid repeating procedures, promote dialogue, save time, and reduce consumption of resources, all while fostering concerted responses, seems very sensible. If this system is also placed within an organised structure based on goals that can be evaluated, and if stakeholders have the information they need to make decisions, the system is workable'. The author also pointed out some of the model's weak points related to matters of leadership, frictions and a poor history of cooperation between different specialties, problems faced by the patient in accessing different specialties, and the lack of apparent rewards for the efforts invested by individual doctors.[1]

Management-oriented clinical management units

Even though the efficacy of the early CMUs was not validated, the new model continued to spread in the early 21st century. From a hypothesis, it had been transformed into a near theory; the press mentioned the new management strategy and argued that it constituted a step forward for hospital care, while many doctors also provided theoretical arguments supporting the reforms on numerous occasions. The increasing availability of master's degrees and other courses in healthcare management (sometimes led by professionals with more institutional than clinical experience) supported that hypothesis and helped foster the idea that CMUs were the way of the future for hospital management. These programmes probably led many institutions, especially subsidised private centres, to promote the new model. For example, municipal public health authorities in Barcelona, including IMAS (Instituto Municipal de Asistencia Sanitaria),[34] the institution managing Hospital del Mar and Hospital de la Esperanza, organised 4 clinical management institutes beginning in 2002. These institutes specialised in ophthalmology, psychiatry, geriatric medicine, and community healthcare; each one was active in care, training, and research. While they did not constitute independent legal entities, they were authorised to hire interim personnel for specific programmes and invest in technology, among other functions. Together, they would manage a budget of 24.04 million euros out of the IMAS total, which amounted to 144.24 million euros. Institutes were required to present a 3-year business plan; their investments, salaries, medical and non-medical supplies, drugs, and repair and maintenance costs would be covered by a yearly budget that the directors would draw up with IMAS according to their yearly objectives. They would also have to report their accounting and progress at the end of each fiscal year.[35] Hospital Central de Asturias also developed an institute-based clinical management model.[36] These units were made up of doctors from one or more services who adopted the model voluntarily. Each unit signed a contract programme with the management unit responsible for it; under the terms of this contract, the unit was then assigned materials, a budget, and staff members. According to a press release, the model differs from the one used by INSALUD because its purpose was to 'bring together all doctors active in diagnosis and treatment in a specific area so as to promote continuity of care, shorten waiting times, and improve overall care

quality'.[36] Many other centres, especially subsidised institutions and foundations, followed this strategy for organising new CMUs.[28,30,37,38]

Traditional structures adopt measures from clinical management units; autonomous communities renew their commitment to the model

The concept of 'clinical management', understood as a list of actions undertaken to reduce variability, has become a mandatory standard in healthcare, although it does not necessarily require changes in hospital organisation. Since it is possible to apply the model without constituting a CMU, interest in creating those units seems to have faded in recent years. In contrast, the decentralisation project by which the healthcare system was transferred to Spain's autonomous communities meant that many regional health ministries became more involved in hospital management. The medical press, which had been instrumental in promoting the model at the turn of the 21st century, went silent on that subject until the beginning of the following decade. The renewed interest in the model at that time was probably a response to the economic crisis. Nevertheless, many of the formulas evolving from CMUs, such as contract programmes or the tendency to cluster different specialities within a single administrative area, are being adapted to the traditional model without the autonomous management enjoyed by those units and institutes. One of the main obstacles to analysing the various changes is that little information is forthcoming about hospitals' different approaches, even in their annual reports.

As we pointed out, some regional health ministries have once again adopted the new model with a view to promoting doctors' involvement in hospital management, strengthening continuity of care, and improving workflow organisation. Asturias saw a legislative change with Decree 667/2009 of 14 July, which regulates the structure and function of clinical management units and areas and defines the same in Article 2 of that law. This model is interesting because it actually establishes a road map for implementing CMUs with increasing levels of complexity and autonomy.[39] The concept of CMUs as the end product of a process, and not the goal achieved by breaking with the traditional system, was a lesson learned from the PRISMA programme. Similar approaches were used, for example, in Castile-Leon.[40] Unfortunately, the debate is still active, especially in medical press, although the Spanish Society of Medical Directors is concentrating its efforts on shaping the model to fit with available evidence.[41] The debate has even been launched from exclusively political viewpoints; for example; a union recently accused CMUs as being a means of covering up privatisation initiatives.[42]

The specific situation of the Institutes of Neuroscience

While creating single-specialty institutes or those with a dominant speciality such as cardiology is already a complex task, organising an institute with different competing specialties is far more difficult. Such is the case of Spain's neuroscience CMUs. There is very little written information about the creation of these institutes in Barcelona, Málaga, or Valencia, but the process was certainly not easy. The more recent interhospital CMUs in Andalusia also posed challenges. Medical care for nervous system diseases has expanded significantly, which has also resulted in an increased caseload. Furthermore, neurological and neurosurgical diseases entail costly social health repercussions which, as with topics in mental health care, may have to be addressed outside of the hospital environment. Lastly, when expensive medical and surgical treatments are indicated, the neuroscience CMU will require excellent financial management, and finding doctors able to fill this role is not easy. Years ago, with the above in mind, the Spanish Society of Neurology created its 'Neurologists of the Future' programme to provide this type of training for tomorrow's directors in the field. In light of this situation, integrating services with marked differences due to historical or temporary reasons is not easy, and accessibility and leadership problems will make the task even more complex.[1] Spain's oldest neuroscience institute, except for the one developed as part of Project PRISMA, belongs to Hospital Clínico San Carlos.[43]

This CMU took shape as part of INSALUD's decentralisation initiative, as we mentioned before; its first director was Dr Varela de Seijas. Comprising the neurology, neurosurgery, and neurophysiology services, and coordinating with other related areas, the institute had its own statutes and a compartmentalised structure in committees and subcommittees, but relatively little autonomy. This Neuroscience Institute, supported by the Administrative Unit, was reorganised in 2005 to simplify its structure and expand its role within the hospital. The institute had a steering committee designated by the different services, and 2 levels of competencies: those pertaining to the institute itself (financial management, teaching, research, coordination) and others pertaining to the services, such as direct management of healthcare resources and a road map. The latter were supported by cohesion programmes that strive to achieve joint healthcare management in the long term. The underlying idea was that if a hospital unit is to be efficient, its staff members must feel like part of a team; no one, whether neurologist, nurse, nursing assistant, or administrator, can go from belonging to a service to belonging to an institute in a single day. The road map aims to promote cohesion between professionals, regardless of their specialty, by focusing on the patients that provide their common ground. This returns to the original ideology behind CMUs: patient-centred care.

Conclusions

The main criticism of the implementation and launch of CMUs in Spain is that while these units have defended clinical management and established models for auditing and accreditation, the debate surrounding them has been more visible in the press than in medical journals. Models that affect patient care should be validated, and hospital

structure should also be assessed based on evidence.[44–46] We cannot simply accept a model because we believe it works.

Common sense suggests that CMUs may be the best model for hospital organisation in the new century because it draws on lessons learnt from companies. Nevertheless, CMU formats must be well-defined and not function merely as a way of hiding traditional healthcare structures that have been modified only cosmetically. We should also point out that even private healthcare institutions, which naturally have a greater affinity with the business world, have not yet adopted this model for large hospitals.

Considering the variety among neurological patients and their high cost of care, the coordination required between services that treat them, and probably also the dynamic nature of the neurosciences, this field of study is likely to provide a good framework for constituting integrated units. What has been achieved up to now in Hospital Clínic, Hospital Clínico San Carlos, and other hospitals belonging to the former INSALUD system, not to mention other interesting experiences and initiatives carried out in Spain's autonomous communities, constitutes a wealth of experience and evidence that can now be analysed. This will allow us to establish the basic indications and recommendations for launching the model in other centres; in our opinion, this process should be initiated in stages according to a road map, rather than by implementing an entirely new structure.

Conflicts of interest

The authors have no conflicts of interest to declare.

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