



*QUICK DIAGNOSIS UNIT: AN ALTERNATIVE TO CONVENTIONAL
HOSPITALIZATION. TWO YEARS EXPERIENCE*

AN OBSERVATIONAL DESCRIPTIVE STUDY

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ABBREVIATIONS

AEP	Appropriateness Evaluation Protocol
ABS	Àrea bàsica de salut
ACH	Alternatives to conventional hospitalisation
COPD	Chronic obstructive pulmonary disease
CT	Computed Tomography
ED	Emergencies department
ECG	Electrocardiogram
EMG	Electromyography
FCS	Fibro colonoscopy
FGC	Fibro gastroscopy
FNA	Fine-needle aspiration
GMA	Grupos de morbilidad ajustada
HHU	Home hospitalisation unit
HRU	High resolution unit
IC	Interconsultation
ICS	Institut Català de la Salut
ICO	Institut Català d'Oncologia

IGRA	Interferon-gamma release assays
IIEE	Inferior Extremities
MRI	Magnetic Resonance Imaging
PET	Positron Emission Tomography
PCP	Primary care physician
PHC	Primary health care
PPD	Purified Protein Derivate
QDU	Quick diagnosis unit
RDU	Rapid diagnosis unit
RX	Radiography
Sd	Syndrome
STD	Sexual Transmission Disease
UK	United Kingdom

ABSTRACT

BACKGROUND: In recent years, different care options have been appearing that allow the diagnostic and therapeutic process to be developed in other areas different from conventional hospitalization. In this context is where the Quick Diagnostic Units have emerged, designed to diagnose patients with a potentially serious illness but with a preserved baseline state.

AIMS: Our goal was to describe the functioning of the rapid diagnosis unit during the first two years of its implementation at the *Hospital Doctor Josep Trueta* and to compare the results of the study with the QDUs of other hospitals that have previously published their results.

DESIGN AND METHODS: We realize an Observational Descriptive Longitudinal Retrospective Study evaluating the 226 patients referred to the QDU of *Hospital Doctor Josep Trueta* evaluated between 2017 and 2019. We analysed several variables, including first visit interval, time to diagnosis and final diagnosis.

RESULTS: 161 patients were attended at the QDU during the first two years of implementation. The main reason of referral was Constitutional Syndrome representing the 22.4% of the patients, followed by imaging test alterations. The average number of days it took to perform all the tests was 18.3 days. The most frequent diagnoses were cancer (20.5%; mainly lymphoma and colon cancer) infection (15.5%), gastrointestinal disorders (13.6%) and systemic diseases (11.8%). The mean time to diagnosis was of 44.4 days (± 48) and a 28-day median. On the other hand, 61 patients were rejected for being attended at the QDU since most of them (58.5%) were suitable for an external consultation by a conventional specialist.

CONCLUSION: Quick Diagnosis Units represent a useful model for the diagnostic study of patients with potentially severe diseases in patients with a preserve baseline. We believe that in our unit the time until the tests are performed and the final diagnosis, which depends directly on the first, should be reduced. By giving more priority to the different diagnostic tests, especially imaging tests, we would be able to reach the final diagnosis much sooner. It would be interesting to carry out other studies to continue strengthening this alternative to conventional hospitalization such as randomized study designs involving comparisons between controls and patients attended at the QDU.

KEYWORDS: quick diagnosis, hospitalization, quick diagnosis unit, outpatient care.

1. INTRODUCCION

1.1. ALTERNATIVES TO CONVENTIONAL HOSPITALIZATION

Over the last few decades, the entire care process that revolves around the patient has been revolutionized by technological advances that have made an almost unmanageable range of tests available for diagnosis as well as multiple lines of treatment. Thus, in recent years the term "person-centred medicine" has been coined, in which new forms of medical care are focused on the patient and not on where the service is provided (1).

It is an objective fact that hospitals are suffering from an excessive demand for care, whether due to the increase in life expectancy that is translated into an aging population and therefore the chronification of diseases that used to be fatal, or due to such advances in diagnostic and therapeutic processes that often require specialized means. Moreover, as medicine continues to advance, we can assume that this need for care will continue to increase (2)

Within this context, from the 1990s onwards, alternatives to conventional hospitalization (ACH) (3) began to appear, evolving clinical health care as had already occurred in surgical specialties where major outpatient surgery came into play. As in the case of major outpatient surgery, the benefits are clear: shorter recovery time, fewer surgical complications and lower costs (4). In the same way, these new ACHs have been gaining weight in the different hospitals because of the benefit they bring to the patient, being a clear example of the person-centred medicine mentioned above. In this way, hospitalization has become one more tool, but not the only one in the diagnostic and therapeutic process; so that it is considered more of a support instrument to be used only when strictly necessary and for the shortest possible time (5).

The ACHs are of special importance in the internal medicine service, as they continue to be an essential part of both regional and high-tech hospitals. Internists are trained under the premise that no disease, sign or symptom is beyond their responsibility and competence; therefore, their participation is included in most healthcare challenges. The internist is decisive in favouring health care that is centred on the global needs of the person and is capable of remaining a reference in front of specific or new illnesses (6). Furthermore, the increasing increase of multipathology due to the ageing of society has made the internist the specialist who, together with the family doctor, usually treats these patients (7).

Within the AHCs in the internal medicine services we find (3):

- **Home hospitalization units (HHU):** the first in Spain was created in Madrid in 1981. It is a healthcare alternative capable of providing patients with the medical and nursing care characteristic of a hospital. The medical or nursing visit is made daily and coordinated with the family. In order to admit a patient to a home hospitalization program, it is necessary to comply with certain requirements, which are listed in Table 1. Examples of medical conditions requiring attention in HHU are pneumonia, acute gastroenteritis, urinary tract or soft tissue infections, controlled infections requiring prolonged antibiotic treatment (endocarditis, osteomyelitis...), bronchial asthma, exacerbations of chronic obstructive pulmonary disease (COPD), deep vein thrombosis or complications arising from cancer treatment, among others (8). It should be noted the transitory nature of HD; it has a limited duration as the circumstance of discharge occurs, whether because of improvement, exits, re-admission to hospital or transfer to the primary care service. In Catalonia all ICS hospitals except Hospital Doctor Josep Trueta carry out home hospitalisation activity (9).

Table 1: Inclusion criteria in home hospitalization (9)

1. Wilfulness: acceptance by patient and family (informed consent)
2. Social: existence of a main caregiver and accessible telephone. It is necessary that a person, family member or not, is capable of collaborating with the health team in the care required by the patient, once he/she is at home. This main caregiver is not only in charge of the basic tasks such as cleaning and feeding, but will also sometimes collaborate closely with the health team in technical tasks that require some training and learning. To facilitate communication and availability of the health team in the event of any doubt, unforeseen event or emergency at home, it is necessary to have an accessible telephone line.
3. Geographical: geographical area in which adequate care is guaranteed, limited for each unit, usually through a 30 minute time frame.
4. Medical: that require frequent clinical and/or analytical controls, complex cures, intravenous treatments, artificial nutrition, oxygen therapy, aerosol therapy, rehabilitation treatment, etc.; in short, complex diagnostic and/or therapeutic procedures until, their definitive stabilization.

- Consultations for diagnostic orientation or high resolution unit (HRU):** it is understood as that outpatient care process where the diagnosis along with its respective therapeutic plan is defined in a single day. There are specialties that can be more benefit and trained to carry out this process in a time so restricted: those who have the possibility of obtaining a diagnosis and treatment in the same day such as the dermatology or ophthalmology. Then there are others such as cardiology and pneumology that if they have a good organization and management can also benefit. In Figure 1 we see a diagram of how it would work.

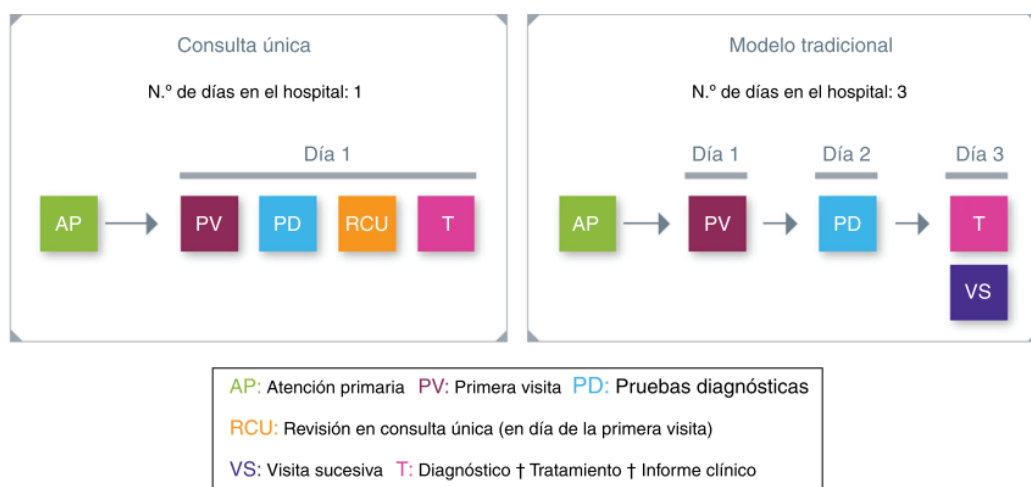


Figure 1: Scheme of operation of a system of unique or high resolution consultation compared to traditional consultation (5)

Basically, the patient is visited by a doctor on the first visit who will request the relevant complementary tests available on the same day and will be visited again with the results by the same doctor. The complementary explorations that are candidates for this modality are tests that do not require preparation and can be performed in a single act. They are also requested on a preferential basis so that they are available as soon as possible. Finally, the patient is discharged from the consultation, referred to a specialist or cited for a subsequent visit (5) (10).

- Quick Diagnostic Units (QDUs):** HRU are not always possible since, as explained, only certain tests, specialties and hospitals are designed to accommodate diagnosis in a single day. This is how QDUs appear for patients in whom the diagnostic process cannot be delayed because behind the symptoms or signs presented there may be a serious pathology. Patients can have the same diagnostic resources as if they were

hospitalized without reducing the quality of care. It is essential that there is an agreement with the specialties that will perform the diagnostic tests, which may be clinical analysis, radiodiagnosis, gastroenterology, etc., so that the entire diagnostic process can be performed as soon as possible. It is also essential that the patient has a general condition and a family or social support that allows him to move easily and without inconvenience to the hospital (11).

- **Day hospitals:** where hospital care is only for a few hours a day (12). They are a consequence of the need for assistance. Initially they arose because of the antineoplastic chemotherapy treatments used in oncology and haematology specialties, since carrying out the treatment without the need to admit the patient presented clear benefits: keeping the patient in his or her usual environment, avoiding the complications derived from prolonged hospitalization and reducing the costs of hospitalization. The model was soon extended to serious psychiatric diseases with a social component, using them to reduce the time of admission and as a step prior to discharge. Today there are day hospitals for almost any specialty, for global specialties or for specific diseases. The Hospital Josep Trueta, for example, has the Diabetes, Endocrinology, and Nutrition Unit Day Hospital, the Medical-Surgical Day Hospital, the Pain Unit, and the chronic heart and respiratory failure programmes; as well as the Haemato-Oncology Day Hospital run by the ICO (13).
- **Short stay units:** they are intended to stabilize patients with acute events of low diagnostic complexity and few therapeutic requirements. They are patients who need an admission of more than 24 hours but should not exceed more than 3-5 days (depending on the center) (3)(14). Most of the patients treated in this unit are patients with a chronic disease already properly diagnosed and requiring admission for an acute treatment. They are also often used as units to speed up hospital emergencies by admitting patients who are expected to be discharged in less than 72 hours and who require minimal complementary tests, most of which have already been carried out in the emergency department.
- **Units for care processes:** these are designed for patients with different chronic diseases that will present exacerbations and that during these they can decompensate from another of their diseases. Moreover, after the exacerbation it is likely that the patient could be in a situation with more dependence or with a more complicated

therapeutic regime. For this reason these units are designed to be formed by interdisciplinary teams: primary care - hospital care - social health care. The professionals who best fit into this care model would be family doctors and the internist, in short, each would do their usual work but in a coordinated way and with a joint purpose (15).

All these alternatives are being consolidated in the health system as opposed to conventional hospitalization. All this allows us to assess how many of the hospital admissions that occur could be inadequate given the wide range of possibilities available (2).

Most studies evaluating the adequacy of hospitalizations apply the Appropriateness Evaluation Protocol (AEP) (16) published by Boston University (1981), and conclude that inappropriate hospitalizations are often caused by organizational problems of the hospital itself (17). For example, in Spain the Juan Ramón Jiménez Hospital in Huelva carried out a study to evaluate the suitability of the internal medicine service and concluded that 15.3% of admissions did not meet any suitability criteria and from this percentage the 66.6%, and so the main reason for the unsuitability of the admission, was to speed up the outpatient study (18).

This makes us think that an inadequate hospitalization besides obviously increasing the health cost can affect the patient who could receive unnecessary explorations or treatments. It would be important to determine whether the days the patient remains in the hospital are justified or could be replaced by one of the alternatives mentioned or even without any of them, controlling the pathology or symptoms from the primary care service, without compromising the quality of care, on the contrary, benefiting from such a decision (19).

1.2. QUICK DIAGNOSIS UNITS

Once the different alternatives to conventional hospitalization have been presented, and the importance of adjusting hospital admissions to avoid unnecessary hospitalization has been highlighted, which could be avoided without reducing the quality of care and providing the patient with a more suitable environment and a clear benefit; the work focuses on the Rapid Diagnosis Units (RDU) also known as Quick Diagnosis Units (QDU), briefly mentioned in the previous section, which we will now explain in detail.

1.2.1. HISTORICAL BACKGROUND

In 1996 the concept of QDU was first used in the literature (20); the Queen Elizabeth Hospital in Birmingham, UK, published an opinion article in the Lancet which for the first time described the concept, functioning and benefits of quick-and-early diagnosis unit . In this case, different from the model that has subsequently been followed in Spain, it was focused on patients with suspected cancer (haematuria, testicular mass, skin lesions...) referred from primary care.

Kendall et al define the QDU as a concept with four components (21):

1. A hospital unit with specialized physicians from different areas
2. A patient selection by primary-care doctors (however, they explain that in the reality of the hospital unit there are also patients referred by other specialists).
3. Support staff for the medical team (nurses) and clinical organization (administrator and reception staff)
4. And a patient assessment in a one-stop visit to the unit within 2 weeks from the referral.

The important part of the running of these initial units is that they were not run by internists, they were formed by different specialists related to oncological pathologies: urologists, due to the high prevalence of haematuria and testicular swellings, breast surgeons, for all the breast lumps, and a lot more. Consequently, patients were evaluated by specialists according to the suspected diagnosis and then tests were made. In fact, in the theoretical concept of the QDU, it's suggested that three or four rooms with endoscopes would have to be located near the unit or even integrated into it to make the explorations as quick as possible.

The fact of a "one-stop visit" makes us think more of the high-resolution consultation we discussed earlier, although this term and concept had not yet been defined.

The first QDU in Spain started working in 1996 in the *Hospital General de Granollers*, they published an article on 2004 analysing retrospectively all patients attended in the unit for five years (1997-2001).

In 1997, the unit also began to operate at the *Hospital Clínico Universitario de Valladolid*, publishing the results of the first two years of activity in 2006; they named the consult *Consulta de Atención Inmediata en Medicina Interna (CAIMI)* (2).

With the exception of the QDU in Granollers, it was not until 2005-2006 that the QDUs began to be implemented in Catalonia (22): *Hospital Clínic de Barcelona*, *Hospital Universitari de Bellvitge*, *Hospital San Camil*, which subsequently published their experience in descriptive observational studies in 2009, 2008 and 2017 respectively.

Over the last years more hospitals from all the rest of Spain have been added to the list, where we stand out for the interest of our study the QDU of the *Hospital Universitari Doctor Josep Trueta*. Figure 2 shows a timeline of hospitals that have introduced the QDU and have published articles describing its operation and assessing its effectiveness.

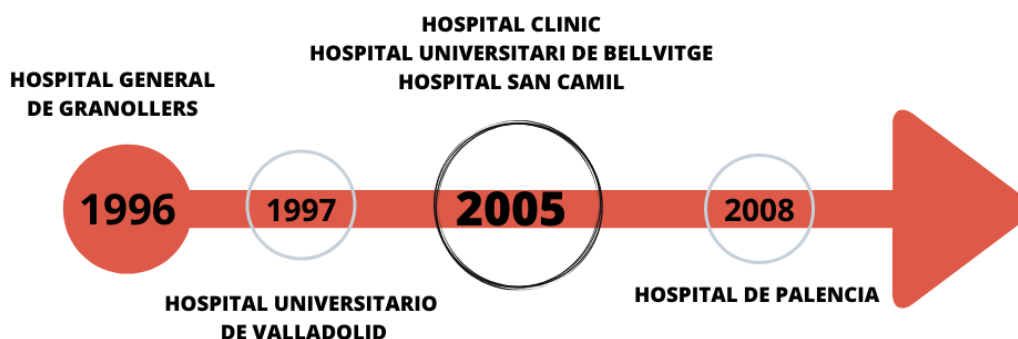


Figure 2: Timeline showing the chronology of the beginning of QDU in hospitals that have published articles describing them.

To our knowledge, no reports of this health care innovation, other than those of the UK and Spanish QDUs, have been published (23). There is only a work from the Department of Hematology–Oncology and the Department of Internal Medicine of the John H. Stroger Hospital of Cook County, Chicago, Illinois, in 2014 (24) that makes a systematic review of the QDU. They choose 13 studies for a full-text review, out of which 5 were selected for detailed review; four of them have been mentioned above (Bosch et al (25), Capell et al (11), Rubio-Rivas et al (26), Franco-Hidalgo et al (27)) and the other one has not been include on the bibliography use for this work because was a specific pneumology QDU. These data demonstrate the important role played by the QDU in Spain, which has been a pioneer in this type of healthcare development.

1.2.2. GENERAL CHARACTERISTICS

Unlike the unit in Birmingham, QDUs in Spain are directed by internal medicine specialists or “internists”. Patients with specific symptoms, such as breast or testicular masses, are referred to, and evaluated directly, by the appropriate medical specialist.

Most hospitals that describe their QDUs coincide in their organization: an outpatient clinic where patients are referred from primary care, emergency department (ED) or other hospital environment such as an outpatient clinic of a different specialty. The consultation is run by an internal medicine specialist and supported by a nurse and an administrative assistant. Depending on the hospital, it operates from one to five working days during the week.

The main objectives of internist-led QDUs are to make an early diagnosis in a patient with a basal state preserved to allow a quick but ambulatory study, form a set of symptoms, signs or alterations in tests that could indicate a potentially severe pathology in which time until diagnosis is essential, such as a cancer; and to avoid hospital-related morbidity, unnecessary health costs and hospitalizations which can also increase patient satisfaction and comfort (2). The good working of these units (27) leads to a better coordination between primary care physicians (PCP) and the specialists, and overall a decrease in the number hospitalizations, especially the inappropriate ones. These QDU objectives are summarized on Table 2 (20).

Achieving them requires that a number of requirements are fulfilled by the units to operate correctly, which are summarized in Table 3.

Table 2: Objectives of a quick diagnosis unit (20)

Objectives of a quick diagnosis unit
<ul style="list-style-type: none">• To diagnose potentially severe diseases early• To avoid unnecessary hospitalisation• To avoid hospital morbidity• To reduce health costs• To improve patient satisfaction• To allow patients and their families to continue occupational and personal life• To reduce emergency department workload• To free up hospital beds

Table 3: Requirements for correct functioning of a quick diagnosis unit QDU (20)

Requirements for correct functioning of a quick diagnosis unit (QDU)
<ul style="list-style-type: none"> • The patient’s first visit to the QDU should take place as soon as possible after referral. • QDU patients should have preferential access to complementary diagnostic tests. • Referrals to QDUs should be restricted to patients with suspected severe disease. • Patients must be well enough to attend the QDU as often as necessary for diagnostic tests. • Patients and family must accept the QDU diagnostic model.

Although many patients can benefit from this model of care, we must not forget that there may be cases in which hospitalization is strictly necessary and being treated at the QDU would only delay what it already needed, so it is essential that patients should be able to come to the hospital several times either for visits or for diagnostic tests.

Subsidiary care procedures on these devices are not unlimited, and usually have been previously agreed upon with the primary healthcare and/or other medical specialties. The article by Franco Hidalgo et al, propose a list shown in Table 4 highlighting most of the subsidiary processes to be addressed in the QDU (27).

Table 4: Subsidiary study processes for the QDU (27)

Subsidiary study processes for the rapid diagnostic unit		
Involvement of the general status	Abdominal or visceromegaly masses	Alterations in chest radiology
Sustained fever	Icteric syndrome or acute hypertransaminasemia	Suspected neoplasm or pulmonary tuberculosis
Edema of non-affiliated cause	Ascites	Subacute neurological deficit
Persistent lymph nodes	Dysphagia	Transient cerebral ischemia
Severe hydroelectrolytic disturbances	Abdominal pain of uncertain origin	New-onset headache
Severe high blood pressure	Chronic Diarrheal Syndrome	Initial epileptic crisis
Chest pain	Pleural effusion	Acute arthritis
Heart failure	Dyspnea of uncertain origin	Suspected vasculitis

The operation of the unit is based on a first visit where the period from referral by the primary healthcare (PHC) physician or ED to the visit (which we would call the *first visit interval*) will be as short as possible; followed by preferential arrangement of diagnostic investigations and the coordination of these. Subsequently, successive visits will be made until a diagnosis is reached (11) (28). Most of the hospitals have at their disposal a short stay unit for the observation of the patient during a few hours after an invasive exploration.

Not all hospitals work in the same way, but an interesting feature that Bosch et al. show us of how they work at the *Hospital Clínic de Barcelona* (28), is that in order to have as complete an anamnesis and physical examination as soon as possible from the first visit, patients will be given mainly blood and urine analysis and chest X-rays if needed, during the first appointment. These examinations may even be requested by the PHC physician in order to assess the result during that first visit.

During the following QDU visits, patients' outcome is evaluated and results of diagnostic tests are checked over. Further examinations are performed according to the results of previous ones or the clinical course of the disease. Studies agree on a similar number of visits per patient ranging from 1 to 3 most of the time and the final referral site may be back under the control of the PCP or require follow-up in regular consultations by the same internist or other medical specialty; then there are some that due to the circumstances of the pathology, the patient or both requires a hospitalization.

The results of the first units implemented in the hospitals we mentioned above, leave no doubt about their effectiveness and efficiency, nor about the degree of satisfaction they generate among patients and professionals (11) (20) (26) (27).

In Table 5 we can see the characteristics and activity of the QDUs that have published their performance results.

Table 5: Comparative data of the different rapid diagnostic units (27)

	Granollers	Bellvitge	HC. Palencia	H. Clínic (29)
	(n = 2.748)	(n = 1.132)	(n = 167)	(n = 1.000)
Period	1997 - 2001	2005 - 2007	2008 (6 months)	2008 - 2010
Age (years)	56,5	54,3	60	60
Sex (♂)	54%	50%	56%	44,70%
Index successive/first	1,77	-	1,3	2,23
Mean delay before first visit (days)	4,9	<7	1,4	2,1 - 3,9
Mean time to diagnosis (days)	5,7	9	8	9,2
Origin of referral				
Primary care	28,60%	26%	70,70%	55,10%
Emergency department	64%	71%	21,60%	47,10%
Outpatient department	6,40%	3%	7,80%	-
Reason for consultation				
Constitutional symptoms	11%	-	22,70%	23,10%
Anaemia	6%	-	13,20%	27,50%
GI symptoms	12%	-	7,80%	11,80%
Febrile syndrome	4,60%	-	5,40%	12,20%
Swollen glands	4,70%	-	7,20%	10,60%
Requirement of hospitalization	7%	10%	6,60%	2%
Diagnosis of neoplasia	14,70%	18%	18,60%	18,80%

We emphasize that the time to diagnosis in all hospitals is less than 10 days, which would be an essential indicator of the quality care of the model.

In addition to all this data, in several of the hospitals the patient's satisfaction with the whole process is analysed. For example, at Palencia Hospital, at the end of the process, patients answer a satisfaction questionnaire consisting of 24 questions about the whole care process (11); at Granollers Hospital a phone survey was made to a random group of patients who had been treated at the unit (27). In both cases the percentage of patients with very high overall satisfaction was very high, assuming 97 and 95% respectively. In fact, in the Granollers Hospital the 80% of the patients would prefer the assistance model offered by the UDR to

conventional hospital inputs; the remaining 20% were indifferent to the use of either type of care.

We believe that the high percentage of satisfaction would also be related to the short waiting time until the diagnosis as indicated in Table 5; since a substantial and little considered part of the suffering that the patients experience is precisely in relation to the waiting times.

Finally, it should be noted that there are already two studies that do not focus on analysing the QDU as a whole, but they select specific symptoms or pathologies such as severe anaemia (30), prolonged fever of unknown origin (23), unintentional weight loss (31) (32) or cancer, and they analyse patients who present them by describing the final diagnoses, the time until diagnosis, or even they compare them with patients in the same condition but who have been hospitalized. All this would imply a more detailed examination of the units that have already described and analysed their general functioning in order to continue trying to achieve the healthcare alternative that will benefit the patient in a broader and more complete way.

1.2.3. HOSPITAL DOCTOR JOSEP TRUETA QDU

The QDU at the *Hospital Doctor Josep Trueta* consists of an outpatient clinic where 2 doctors attend two afternoons a week for 2 hours. There is also an administrative assistant who is in charge of scheduling visits and tests as a matter of priority, as required by the patient.

The referral of each patient is assessed by the Internal Medicine service where it is accepted or rejected.

When a diagnosis is reached or a potentially serious pathology is excluded, the care process at the QDU ends and the patient is referred to a specialist outpatient clinic or returns to primary care.

2. STUDY JUSTIFICATION

Increasingly, we are opting for a health care system where the patient is in the centre and he is able to have at his disposal different care models in order to be attended in the way that best suits his social and individual situation. Furthermore, the complications derived from hospitalization, especially for older patients (33), which in some cases can lead to an *iatrogenic cascade*, are notable. This term refers to the serial development of multiple medical complications that can be set in motion by a seemingly innocuous first event (34).

Within this framework, the different alternatives to conventional hospitalization gain importance, where we highlight the Rapid Diagnostic Unit to establish the diagnosis of potentially severe pathologies in the minimum time possible without the need for hospitalization and without losing quality care.

As these units have been set up in different Spanish hospitals, various descriptive observational studies have been published analysing the ways in which some of them work. Bearing in mind that this model is a pioneer in Spain and the United Kingdom, due to the absence of published works in the literature on the subject, and that the last published article analysing their whole QDU is from 2008, as the following published articles analyse specific symptoms or pathologies (we highlight the most recent one from 2019 from Hospital San Camil which analyses weight loss of unknown origin in a QDU(31)), we believe that it is very important that more units explain their experience in implementing this care model in order to reinforce its use and expand it to more hospitals not only in Spain but also in the rest of Europe and the world. In addition, we will see what its limitations are and what aspects need to be strengthened in order to provide the best and most profitable service.

In view of this situation, we believe it is important to describe and analyze the QDU of the *Hospital Universitari Doctor Josep Trueta*, which has been operating since the end of 2017, as this hospital offers care to a potential population of approximately 800,000 people and is also the reference center for 7 Basic Health Areas. In this way it will be possible to see if it is really an effective and efficient alternative to hospitalization and to determine which are the most important pathologies to be treated in these units, if there is really a good coordination with the primary care services, if the time until the diagnosis is optimal, in conclusion, to determine the functioning of the unit two years after its implementation to detect its strengths and weaknesses and to compare it with the different units to see how to improve it.

3. HYPOTHESIS

The rapid diagnostic unit allows the diagnosis of potentially severe diseases on an outpatient basis in patients with a preserved baseline condition, in a shorter time than a conventional outpatient study and avoiding the possible adverse effects of hospitalization.

4. OBJECTIVES

Primary objective:

The aim of the study is to describe the functioning of the rapid diagnosis unit during the first two years of its implementation at the *Hospital Doctor Josep Trueta* in order to evaluate the healthcare model as an alternative to conventional hospitalization.

Secondary objective:

To compare the results of the study with the QDUs of other hospitals that have previously published their results, in order to see if there are aspects that could be improved to achieve the maximum benefit of the unit.

5. METHODOLOGY

5.1. STUDY DESIGN

This is an observational, descriptive, longitudinal and retrospective study to evaluate the functioning of the Quick Diagnosis Unit during its first two years of implementation.

5.2. STUDY POPULATION

The target population was all the patients referred to the QDU of the *Hospital Universitari de Girona Doctor Josep Trueta* for presenting potentially severe alterations, signs or symptoms.

The *Gerència Territorial de Girona* has the management of the specialized attention and of the primary attention of the ICS in the Sanitary Region of Girona. Specialized care is developed in the different facilities available with the *Hospital Universitari de Girona Doctor Josep Trueta* as the main hospital in collaboration with the *Hospital Santa Caterina* of Salt and the *Centre d'Especialitats Güell*.

Hospital Dr. Josep Trueta has 364 beds. In 2018, he discharged 19,597 patients, attended 209,344 outpatient visits and 73,709 emergencies in the ED (35).

The health areas (ABS) that belong to the QDU of this hospital are the following (36):

- ABS Banyoles
- ABS Celrà
- ABS Girona 1, 2, 3 and 4
- ABS Sarrià de Ter

5.3. STUDY SAMPLE

The study sample consists of 226 patients referred from primary care, emergency care or other hospital settings as outpatients from June 2017, when the unit was implemented, until June 2019 when the study began. Of the patients referred, 65 were rejected because they did not meet rapid diagnostic criteria when the request for referral was assessed by the head of the rapid diagnostic consultation.

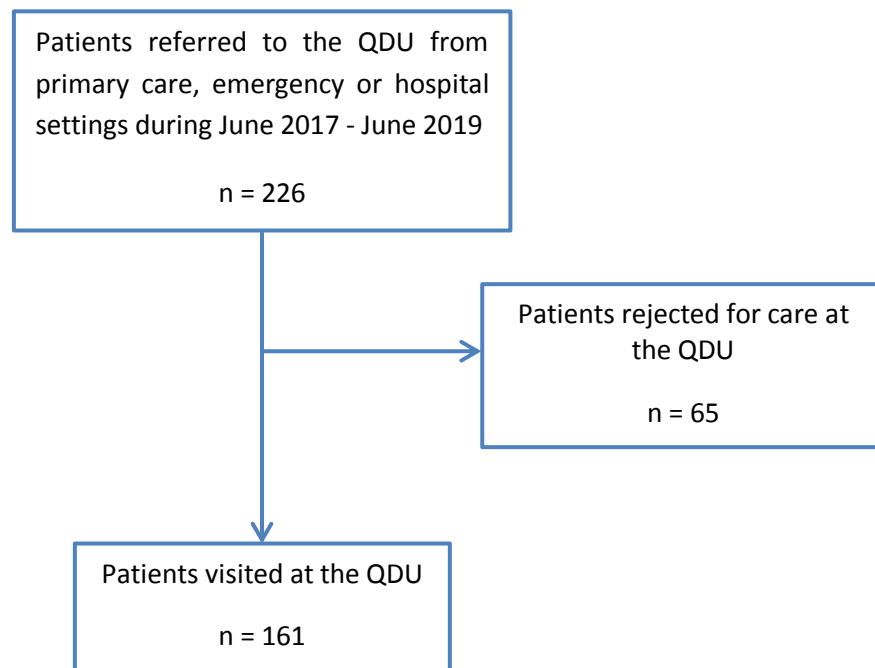


Figure 3: Study flowchart

5.4. VARIABLES

- **Age**

Data was recorded as a number corresponding to the age of the patients during the period they were attended in the QDU.

- **Gender**

Data was categorized as man or woman.

- **First visit interval**

Defined as the number of days from referral (by the PCP, emergency department or other hospital settings) to the first visit at the QDU.

- **Referral source**

Data was grouped in 3 categories: primary healthcare, emergency department or other hospital settings where specialist outpatient consultation was included.

- **Referral reason**

Data was categorised in 12 different groups:

- Constitutional Syndrome (Sd) defined as the association of anorexia, weight loss and asthenia (37): due to the importance of this syndrome, if a patient presented it accompanied by another symptom (such as abdominal pain), it was included directly within Constitutional Sd, obviating the other alteration.
- Incomplete Constitutional Syndrome when they present only 2 of the 3 above categories
- Isolated weight loss
- Fever defined as more than 37,7°C axillary measured
- Adenopathy's defined as a swollen lymph node in any lymphatic region
- Analytical alterations
- Medical test alterations such as TC scan, RMN, ultrasound...
- Skin disorders
- Pain
- Lump
- Arthritis or arthralgia's
- Others: in which are included conditions that only some of the patients presented.

- **Constitutional Syndrome at the first visit**

Given that this is one of the most common causes of referral, this variable is analyzed individually to see if these patients have really been well referred and present the 3 conditions that define the syndrome. This variable is categorized into 3 different groups:

- YES: when the patient presents Constitutional Sd. regardless of the reason for referral
- Not derived by Constitutional Sd.
- NO: when the patient is referred by Constitutional Sd. but in the first visit at the QDU does not present the three categories: anorexia, asthenia and weight loss so it cannot be considered as such.

- **Diagnostic tests**

This variable is composed of all the tests performed on the patient during the period he is treated at the QDU. There are a series of procedures where we only look at whether the test has been performed and they are categorized in a dichotomous way YES or NO, these are:

- Blood tests: this variable is the only one in which we also note the number of tests performed.
- Urinalysis: where the urine sediment is also included
- Fecal occult blood
- Culture: including any type of culture performed on the patient, be it sputum, feces, urine, etc.
- PPD or IGRA
- Lumbar puncture
- Electrocardiogram (ECG)

The remaining tests carried out, apart from establishing whether the patient has been tested, also categorized as YES or NO; a new variable is established defined as the **Time interval for carrying out the procedure** measured in days, in order to establish how long it has taken to carry out the procedure from the time of the request to the time of carrying it out. The diagnostic tests where this time is analyzed are:

- X-ray
- Mammography
- CT
- Bone Gammagraphy
- Ultrasound
- MRI
- PET-TC
- Fibro gastro/colonoscopy (FGC-FCS)
- Bronchoscopy
- Biopsy
- Fine-needle aspiration (FNA)
- Spirometry
- Electromyography (EMG)
- Mediastinoscopy

- Interconsultation (IC) with another specialist that although is not strictly speaking a test, we have considered it as such.

- **Comorbidity index**

Defined according to the adjusted morbidity groups (GMA) where the variable is numerical ranging from 1 to 4, the first being the lowest comorbidity and the last the highest.

- **Final diagnosis**

This variable is defined in 15 groups where the diagnoses are grouped according to the different medical specialties.

- **Time until diagnosis**

This variable was recorded as the number of days from the first visit until the last one in the QDU.

- **Diagnosis during the rapid diagnostic process**

Data was collected as a dichotomous variable defined by YES or NO

- **Total number of visits**

Data was recorded as a numerical variable with the exact number of visits in the practice.

- **Éxitus in the following 12 months of being discharged from the unit**

Data was divided into 3 groups: YES, NO or it has not yet been 12 months.

The following variables were analyzed for patients rejected for not meeting the criteria for QDU adequacy:

- **Age**

Data was recorded as a number corresponding to the age of the patients in the moment they were rejected to be attended in the QDU.

- **Destination after rejection**

Data was divided into 3 groups where patients were attended after the rejection: primary healthcare, outpatient specialist consult or hospitalization.

- **Specialty of destination**

Data was divided into 3 groups: Internal Medicine, Other specialty or not referred to specialist.

- **Hospitalization for the next 6 months after rejection**

Data was collected as a dichotomous variable defined by YES or NO

- **Exitus at 12 of rejection in the unit**

Data was divided into 3 groups: YES, NO or it has not yet been 12 months.

5.5. STATISTICAL ANALYSIS

All statistical analyses were performed using SPSS version 20.0 (SPSS Inc, Chicago, Illinois). Descriptive statistical methods were used to describe the quantitative variables including: mean, median, standard deviation and range. Frequencies (n) and percentages for each category were used to describe categorical variables.

6. ETHICAL ASPECTS

This study was carried out according to the ethical principles that dictate the Declaration of Helsinki (64th General Assembly of the Medical Association World Cup, Brazil, October 2013). The procedures set forth in this study were designed to ensure that the investigator complies with the International Conference on Harmonization (ICH) Good Clinical Practice (GCP) guidelines (CPMP/ICH/135/95) and applicable legal and administrative requirements.

The study was also submitted to the *Comité de Ética de Investigación Clínica (CEIC) de l'Hospital Universitari Doctor Josep Trueta*, who accepted it in order to allow the development of the study.

Content, of the database remained encrypted and the patient's identities confidential. All data have been treated without identification information.

7. RESULTS

7.1. QUICK DIAGNOSIS UNIT

Between June 2017 and June 2019, 161 patients with a mean age of 59.5 years (SD=19, range 72) were visited at the QDU; 53.4% were men and 46.6% women. According to the source of referral, 47.8% came from primary care, 31.7% from the emergency department and 20.5% from other hospital facilities.

The interval of the first visit (time between the date of referral and the first visit) was an average of 6 days.

The different reasons for consultation and the number of patients who were referred by each of them are summarized in Table 6. In Table 7 we see the reasons for referral included in *Others* as they were only presented by one patient in the whole sample.

We highlight that the main reason for referral is the Constitutional Syndrome like in other studies; for this reason we analyzed it more in depth to see if the patients had been referred well, noting whether in the first visit they presented or referred having presented the 3 components: anorexia, asthenia and weight loss.

Table 6: Referral reasons

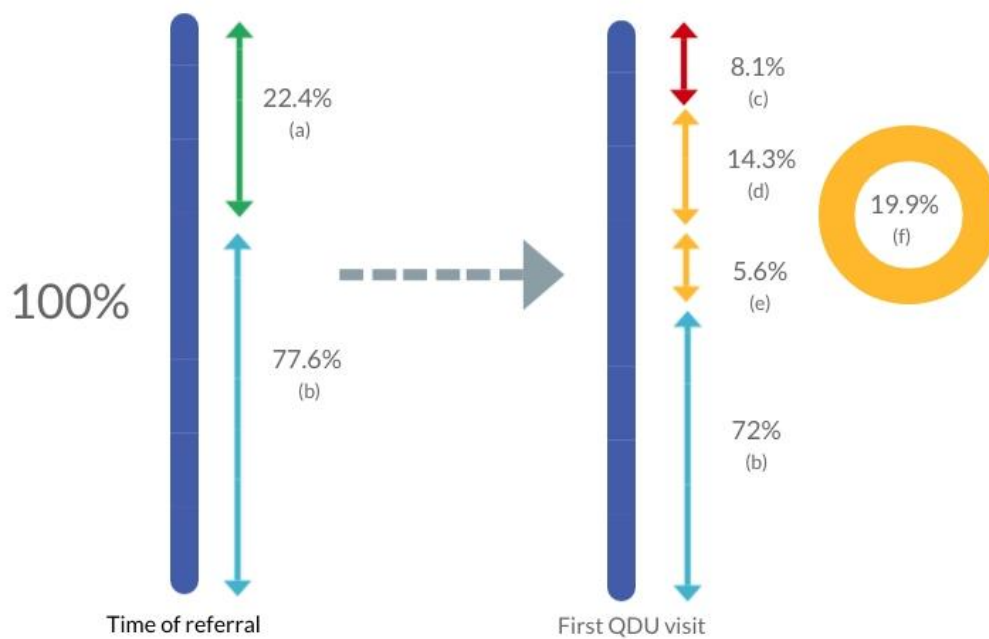
Referral reason	%
Constitutional Syndrome	22,4
Medical test alterations	19,9
Adenopathy's	9,3
Pain	9,3
Analytical alterations	8,1
Fever	7,5
Skin disorders	5,6
Arthritis or arthralgia's	4,3
Lump	3,1
Incomplete Constitutional Syndrome	1,9
Isolated weight loss	1,9
Others	6,8

Table 7: Other referral reasons

Other referral reasons
Febricula
Not thermometer fever
Muscle ramps
Bilateral edema of the IIEE
Parathyroid hypertrophy
Vomiting and trembling
Suspicion of STD
Ascites
Diarrhoea
General discomfort

Of the 22.4% of patients referred by Constitutional Sd. 14.35% actually presented it, since at the time of referral they were experiencing or had experienced all 3 symptoms together. However, 8.1% were mistakenly referred as they did not present the three necessary conditions. Of the patients who attended the consultation for another reason than the Constitutional Sd. 5.6% had actually suffered from it and at the time of referral it had not been detected.

Therefore, 19.9% of the patients presented Constitutional Sd., a situation that is essential to detect since approximately 25% could present a neoplasm (37). In our sample of patients with Constitutional Sd. 40.6% eventually suffered from cancer; an even higher percentage than this. Figure 4 shows a schematic view of the presence of Constitutional Sd. at the time of referral compared with the real percentage.



- (a): patients referred for Constitutional Sd.
- (b): patients without Constitutional Sd.
- (c): patients incorrectly referred by Constitutional Sd. as they did not have the three necessary conditions
- (d): patients correctly referred by Constitutional Sd.
- (e): patients with Constitutional Sd. but not detected at the time of referral
- (f): real percentage of patients with constitutional Sd.

Figure 4: Constitutional Syndrome

The diagnostic tests together with the number and percentage of patients who underwent them are represented in Table 8. There were tests that were requested at the QDU

but were already performed at the referral destination, for example on patients who had to be hospitalized. These tests are not included in the table because they are not performed in the rapid diagnostic process.

The number of days it took to do each test was also analyzed, since there is an agreement with the different specialties that perform the test so that there is a priority with these patients and they are done as soon as possible. All times are also reflected in Table 8.

Table 8: Diagnosis test realized during the process of rapid diagnosis

Diagnosis test realized	N	(%)	Media de días hasta realización de la prueba
Blood test	132	(82.6%)	-
Radiography	33	(20.5%)	18 (±14)
CT	31	(19.3%)	17 (±20)
Biopsy	27	(16.7%)	13 (±11)
Echography	21	(13%)	20 (±18)
Urinalysis	20	(12.4%)	-
IC	17	(10.6%)	38 (±36)
FGS/FCS	16	(9.9%)	20 (±10)
MRI	12	(7.5%)	14 (±12)
Gammagraphy	10	(6.2%)	17 (±13)
PPD/IGRA	9	(5.6%)	-
Culture	8	(5%)	-
SOF	8	(5%)	-
Spirometry	7	(4.3%)	35 (±30)
EMG	7	(4.3%)	23 (±29)
Mammography	5	(3.1%)	16 (±19)
PET/CT	5	(3.1%)	22 (±10)
Bronchoscopy	4	(2.5%)	17 (±9)
FNA	3	(1.9%)	6 (±2)
Lumbar punction	2	(1.2%)	-
ECG	1	(0.6%)	-
Mediastinoscopy	1	(0.6%)	49

As we observed in Table 8 no test except for the FNA was performed in less than 10 days. Leaving aside the Interconsultation with another specialist, which is not a test as such, and Mediastinoscopy, which was only performed on one patient, we underline two aspects:

- The tests that took the longest, ranging from more to fewer days, were spirometry, at an average of 35 days, EMG, at 23 days, PET/CT, at 22 days (it is important to note that this procedure is not available at our center and patients have to travel to Barcelona to perform it) and finally FGC/FCS and ultrasound, both of which took 20 days.
- The average number of days it took to perform all the tests was 18.3 days (± 6.6)

The FNA is the test that took the fewest days to be done but it is not representative since it was only realized for 3 people. Of the tests that were performed on more than 20 patients: X-ray, CT scan, Echo and biopsy, the average time it took to perform the tests was 13 to 20 days.

In figure 5 we see the interval of days that the tests took to be carried out; pointing out that the largest number of them took 16-20 days:

- **<10 days:** 1 test, the FNA
- **10 -15 days:** 2 tests, Biopsy and MRI
- **16-20 days:** 6 tests, CT, RX, Gammagraphy, Mammography, Bronchoscopy and FGS/FCS
- **>20 days:** 4 test, ECO, Spirometry, EMG, PET/CT

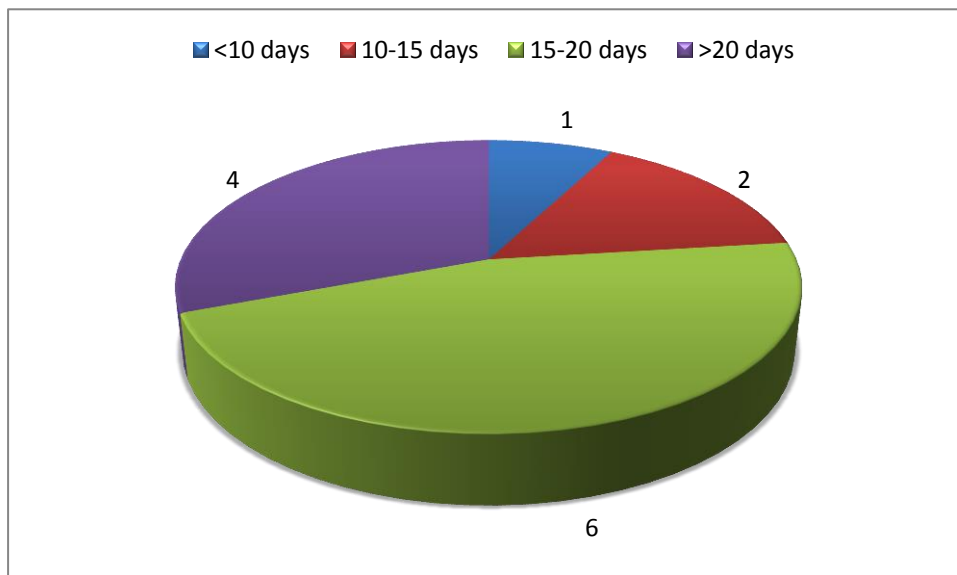


Figure 5: Range of days that the tests took to be performed

The blood test is by far the most performed one assuming a percentage of almost 83% of the patients. We have not detained in categorizing the items studied in the analysis since each patient was tested for different things depending on the suspected pathology. A considerable percentage of the patients who did not have an analyses during the time they were attended at the unit, was because they had already had one done previously in a recent period of time.

The number of blood analyses performed on each patient was from one, in most of the patients (72.9%), to four, that were only performed on 2 patients meaning 1.5%. Therefore, the average number of analyses performed on the patients was 1.33 (± 0.6).

The main diagnoses are shown in Table 9. The most frequent diagnosis was cancer in 33 patients representing the 20.5% of all patients. The different types of neoplasia are shown in Table 10. Then, in order of frequency, we find the infections that represent 15.5% of the patients where we find from benign viral processes, which are the vast majority, to cases of Malaria and Tuberculosis. This is followed by gastrointestinal disorders, where it stands out the high incidence of gastritis due to *Helicobacter Pylori*, and systemic or autoimmune diseases.

Table 9: Final diagnosis

Disorders	N	%
Neoplasia	33	20,5
Infection	25	15,5
Gastrointestinal disorders	22	13,6
Systemic or autoimmune diseases	19	11,8
Musculoskeletal diseases	7	4,3
Neurological disorders	6	3,7
Cardiac disorders	6	3,7
Deficits disorders	5	3,1
Psychiatric disorders	4	2,5
Drug reaction	4	2,5
Anaemia of unknown origin	2	1,2
Rheumatology	2	1,2
Breathing disorders	5	3,1
Other diagnostics	15	9,3
Undiagnosed or without disease	6	3,7

Table 10: Types of Neoplasia

Neoplasia	N	%
Lymphoma	6	18,2
Colon	4	12,1
Gastric	3	9,1
Prostate	3	9,1
Pulmonary	3	9,1
Breast	2	6,1
Multiple Myeloma	2	6,1
Renal	2	6,1
Extrahepatic cholangiocarcinoma	1	3,0
Hepatic	1	3,0
Melanoma	1	3,0
Ovarian	1	3,0
Paraganglioma extradrenalis	1	3,0
Peritoneal	1	3,0
Pleomorphic liposarcoma	1	3,0
Sd de Meigs	1	3,0

As to whether the definitive diagnosis was reached while the patient was in the unit, we find the following scenarios:

- 55.9% of patients were diagnosed at the QDU
- 13% of patients had to be hospitalized because the severity of the process or their baseline condition did not allow them to continue on an outpatient basis
- 31.1%, once potentially serious pathology that could compromise life was ruled out, the final diagnosis was reached in the outpatient clinic of the specialist in question; thus in these patients the final diagnosis was not reached in the unit.

Therefore according to the final destination we have that:

- 13% of the patients were hospitalized.
- 24.2% of the patients were referred to primary care to be treated by their usual PCP.
- 62.1% of the patients were referred to external consultations for both internal medicine and other specialties according to the diagnostic orientation.

In one of the patients the diagnostic process was not completed due to loss of contact with the patient.

Regarding the level of comorbidity measured with the GMA, we find that the highest percentage of patients present a GMA of 4 (32.9%), followed by the GMA of 2 (30.4%), then the GMA 3 (24.8%) and finally the GMA of 1 (11.8%).

Patients made between one and six visits to the QDU; most of them, representing 46%, needed 2 visits. In Table 11 we see the number and percentage of patients corresponding to the number of visits they made to the unit, noting that 92.5% of patients made 1 to 3 visits.

Table 11: Number of visits at the QDU

Number of visits	N	%
1	40	24,8
2	74	46,1
3	35	21,7
4	9	5,6
5	2	1,2
6	1	0,6

The average number of days patients spent in the unit was 36.2 days (± 44); and, of those who obtained the diagnosis during their stay in the unit, the average number of days until diagnosis was 44.4 days (± 48); due to this high dispersion of the number of days the median was calculated with a result of a 28-day median.

It is also analyzed if there has been any *éxitus* in the following 12 months after discharge from the unit. Excluding 42 patients who were discharged less than a year ago and 2 patients who lost contact due to sociopathy, we observe that 14 patients have been *éxitus* during the 12 months following their attendance at the QDU, representing the 12.2%.

7.2. PATIENTS REJECTED FORM THE QDU

During the period from 2017 to 2019, 65 patients were rejected for assistance at the QDU because they did not meet the unit's suitability criteria. The average age of rejected patients was 55 years (± 21), which is slightly lower than that of patients accepted into the unit.

When they were not accepted to the unit, they were referred directly to the specialist's outpatient department, hospitalized if the severity of the process was not a suitable for the QDU but directly for hospitalization, or simply considered that it was not necessary to evaluate them by a specialist and that the primary care physician could provide adequate care for the patient's disorder. The number of patients referred to each is reflected in Table 11.

Table 12: Destination of rejected patients

Destination	N	%	Specialty	%
Primary attention	19	29,2	Intern Medicine	60
Standard outpatient consultation	38	58,5	Others	10.8
Hospitalization	8	12,3	Family medicine	29.2

Regarding the destination specialty, either in outpatient or inpatient care, 60% of patients were attended by the internal medicine service or 11% were attended by another specialty.

After rejection in the unit, 25% of the patients required hospitalization in the following 6 months, and there were a total of 5 patients who were *éxitus* in the following 12 months representing the 11.1%, taking into account that in 17 patients a year has not yet passed and in 3 it is unknown due to lack of follow-up.

8. DISCUSSION

We are at a time when there is a consensus to seek new formulas to replace hospitalization and thus minimize the negative consequences of this. In this sense, a hospital admission for a patient with a preserved basal situation could harm him with elements such as the risk of iatrogeny, nosocomial infection or the confusional syndrome; besides influencing his social-family environment and his comfort. Also could be detrimental to patients who really need hospitalization at a particular time and who might find the whole service collapsed.

For many years, to quickly diagnose patients because they might have a potentially serious illness, there was only the possibility of hospitalization. This situation was not the cause of an attitude that health professionals have wanted to impose, but rather the consequence of the lack of flexibility of conventional outpatient consultations as they have been conceived until now; since in this country's public health system, delays in outpatient diagnostic tests made a diagnosis outside conventional hospitalization unfeasible.

From this situation was born the idea of visiting in ambulatory regime to this type of patients that need an early diagnosis, in some occasions with the definitive one of cancer that, possibly, is the diagnosis that by importance and social repercussion more it urges. In this context two years ago the rapid diagnostic unit of the *Hospital Doctor Josep Trueta* was created.

Returning to the first definition of a QDU given by Kendall et al. our unit is run by internists, it does not have a nurse who is exclusively dedicated to the unit; but the definition emphasizes that the first visit has to be in a maximum of two weeks after the referral, and so our first visit interval was 6 days on average, so it complies perfectly.

Comparing with the units of the other hospitals that have published their experience (11) (39) (26) we see that the source of referral and the reasons are similar, detracting from, the importance of the Constitutional Sd. However, in other QDUs anaemia as a reason for referral represents a significant percentage and in ours we do not find a specific category of anaemia. This is due to the fact that the study of anaemia is carried out in primary care, and in our study, if it arrives at the unit, it will be included within the cause directly: deficit, gastrointestinal disorder, etc. or in analytical alterations.

Focusing on Constitutional Sd., which is very important to detect and correctly refer because of the high percentage of neoplasms it entails; only 8.1% were badly referred because

they did not suffer from it, and 5.6% were not detected at the time of referral. Therefore, we conclude that the importance of correct referral is being given to this syndrome, except for a small percentage, in the different referral sources especially in primary care.

As for the final diagnosis, we find similar categories to those of other studies (11) (20) (27) (38) with variable percentages, noting cancer as the main diagnosis in 20.5% of patients . It could be interesting to note that the highest percentage would be lymphomas, since according to the OMS the most prevalent type of neoplasm at the world level is pulmonary and in our sample the percentage of this type is much lower. This is explained because in our hospital lung, prostate, colon and breast cancers have their own rapid diagnostic units with specific referral criteria so in fact, this type of neoplasm should not reach our unit but theirs.

On the other hand, we find lymphoma as the first neoplasm because it has a non-specific clinic, much less focal than in other cancers, which could simulate an infection or other pathology; that is why it is a good candidate to reach the unit.

It is interesting to note, with respect to the comorbidity of the patients attended in the unit that the GMA with the highest percentage of patients is 4; but nevertheless the average age is 59.5 years. Therefore, the profile of patients attended at the unit is young patients with considerable comorbidity.

We emphasize how the figure of the internist is the central element for the operation of the unit, both for being the maximum responsible for the care process of the patient during the diagnostic evolution, and for selecting the ideal candidates to be visited in it. However, it is also necessary to note, as a key point, having a good organization, so that the different diagnostic tests can be performed with well-defined priority criteria. In the units of other hospitals that have not been able to have the tests available in a reasonable time, there has been a lack of success with QDU as a care alternative (2).

In our unit most of the tests have taken between 15 and 20 days to be performed or informed; sometimes the test is performed quickly but it takes a long time to be informed so the result is not available either. Except for the Hospital of Valladolid which points out that the time to perform the tests was long and that is why the QDU did not work, the other studies do not tell us how long each of the tests took to be performed so we cannot compare. We emphasize that it is an aspect to improve to shorten the time it takes to perform and report the different tests because we believe that should not take more than 2 weeks; otherwise it also takes a long time to reach the final diagnosis.

If we compare the days until the diagnosis of the QDU at the Hospital Josep Trueta with those of other hospitals such as those we saw in Table 1 we see that in our case there is a very significant difference of many days. The average time to diagnosis at Trueta Hospital was more than a month; on the contrary, in the other units the time to diagnosis is less than a week; especially the Hospital de Palencia where the average time is 1.4 days (27).

We believe that if the tests take too long, the diagnosis will be delayed, so if it gets better, the final diagnosis will be reached sooner.

On the other hand, it is surprising that the time until the first visit is similar to the time of diagnosis. In addition we conceptually understand that the rapid diagnostic process is faster than that of the conventional outpatient consultation but not equal to or faster than that of hospital stay.

The other big difference with other hospital units that influences the time until diagnosis is that at the *Hospital Doctor Josep Trueta* the unit is in operation 2 afternoons a week, while in the other units it is operating 5 days a week from 5 to 7 hours each day. In this respect, we consider that this would influence the speed of diagnosis. However, we feel that the fact that the other units have been in operation for many years (the oldest is at Granollers Hospital, 23 years, and all the units mentioned above, which were implemented in 2005, have been in operation for 15 years) has meant that they can be improved and organized to attend patients every working day; the *Hospital Doctor Josep Trueta* unit has only been in operation for 2 years, so its entire infrastructure and organization will be improved over the next few years.

The percentage of *éxitus* after one year has not been studied in any study so we cannot compare it.

As far as rejected patients are concerned, it is surprising that a quarter after six months have been hospitalized, so it would be interesting to study whether the cause of admission is the same as that for which the patient was rejected in the unit.

10. FUTURE PRESPECTIVES

In order to achieve the maximum effectiveness of the unit, we believe the following aspects could be improved:

- Defining specific referral criteria for the unit so that PCPs and emergency physicians or other specialties, refer to patients properly without banal processes getting in the way of the unit.
- Shorten the time taken to perform diagnostic tests, especially imaging tests, to ensure that the entire diagnostic process is faster. For the optimal functioning of the unit, the ideal would be to maintain the interval of the first visit, which is already less than 3 weeks, that the time to report a diagnostic test is 1 week, maximum 2 and that the final diagnosis is reached or serious pathology is discarded for a referral to a specialist in a maximum time of one month.

Once this descriptive work is done, it would be interesting to carry out other studies to continue strengthening this alternative to conventional hospitalization:

- An analysis of cost minimization as done by Bosch et al, where they compare the costs of the QDU with those of a potential conventional hospitalization; in this way the cost-effectiveness of the unit is evaluated.
- As it has been done in other centers (25), a series of patients treated at the QDU can be compared with others of similar characteristics hospitalized, in order to compare the times to diagnosis, tests and procedures performed and thus verify the effectiveness of the QDU.
- It is also interesting to check the level of patient satisfaction in the unit as it is a good indicator of the quality of care. As other hospitals have already done (11) (40) By using a survey or a phone call, it is possible to evaluate how the patient has perceived the care process.

- Finally, once the QDU has been consolidated as an effective alternative, it would be important to analyse whether it has prognostic implications as would be expected with an early established diagnosis.

11. LIMITATIONS OF THE STUDY

The main limitations are those of a retrospective study with the consequent loss of contact in some of the patients, a possible lack of information and that the data had not been collected to be analyzed in a study so that in some cases it has been difficult to find the value of some of the variables analyzed. In addition, the clinical histories were reviewed by a single observer. A double evaluation would minimize possible criteria bias

12. CONCLUSIONS

As in all published studies, we confirmed the viability of the rapid diagnostic unit as an alternative to hospitalizing patients with a preserved baseline situation and a suspicion of major illness.

At the *Hospital Doctor Josep Trueta* the development and implementation of the unit is considerably recent and therefore the descriptive analysis carried out during its first two years allows us to identify the weak points in order to continue improving and refining the entire rapid diagnosis process.

Another objective of the study was to compare our unit with those of other hospitals. In this sense, the values of the variables: first visit interval, reasons for consultation and final diagnosis are equivalent to those of the other units.

We believe that the time until the tests are performed and the final diagnosis, which depends directly on the first, should be reduced. By giving more priority to the different diagnostic tests, especially imaging tests, we would be able to reach the final diagnosis much sooner.

We hope that as the unit grows and takes hold these weaker organizational points will be corrected and the care model will be consolidated as an effective alternative to conventional hospitalization.

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