

Research Article

Appropriateness of Referrals Made by Primary Care Professionals to the Hospital Emergency Department by Means of a Descriptive Study

Diaz V¹, Justribo E^{2,3} and Yuguero O^{1,3*}¹Department of Medicine, University of Lleida, Spain²Department of Primary Care Emergency, University of Lleida, Spain³Lleida Biomedical Research Institute Dr. Foundation Pifarre (IRB Lleida), Spain***Corresponding author:** Oriol Yuguero, Department of Medicine, University of Lleida, Spain**Received:** August 11, 2020; **Accepted:** September 10, 2020; **Published:** September 17, 2020**Abstract**

Objective: To determine the appropriateness of referrals made by primary care professionals to the Hospital Emergency Department by means of a descriptive study.

Location: Lleida Health Region.

Participants: Six hundred referral reports were evaluated from three separate periods, excluding pediatric reports.

Main Measurements: Sociodemographic variables were collected from both the professionals and the referred patients. It was assessed whether the referral report was handwritten, if it included medical history, physical examination and diagnostic approach. It also considered whether the reason for referral and the result of the urgent process were included. In addition, it was checked whether the patient visited their primary care physician within 48 hours after discharge.

Results: Of the referrals made by primary care professionals, 85.7% were appropriate. The diagnostic correlation between the primary care professional and the Emergency Department was 73.7%. The main reason for referral was for evaluation at the hospital (92.3%). Of these, 82.8% required urgent complementary tests, the most common being chest radiography (35.5%) and blood analysis (27.8%). Following assessment at the emergency department, patients were predominantly discharged returning home (90.7%).

Conclusion: The level of diagnostic correlation is higher than previously described, and referral reports are appropriate. However, there are some areas for improvement and we believe it is essential to provide more resources to primary care in complementary tests and training in traumatology to increase their resolution capacity.

Keywords: Diagnostic Accuracy; Emergencies; Patient Safety; Primary Care; Quality of Care; Resolution

Introduction

Demand for Hospital Emergency Services (HES) has been increasing in recent years leading to the subsequent overloading of our health system's emergency departments, to the detriment of both the HES themselves and for other care areas [1,2]. According to data from the Spanish Ministry of Health [3], the demand by emergencies at primary care centers (CAP) for 2017 reached 30 million and, specifically in Catalonia [4], 1.8 million.

Attendance at HES was 22.5 per 1,000 inhabitants in 2016 state wide and 3.8 in Catalonia.

While most patients who visit HES do so on their own initiative, the proportion of referrals by Primary Care (PC) physicians is not negligible, whether to conduct a diagnostic test to which the CAP does not have access, or to obtain a diagnosis and/or treatment [5]. Hence the critical role of these professionals to channel emergency demand and optimize the use of HES. In view of the high healthcare

burden borne by HES, we believe it is important to perform a current review of referrals from primary care in our area by correlating the diagnoses of referred patients and those established upon their arrival at the emergency room so as in future, if necessary, to evaluate common protocols and procedures and thus reduce referrals of certain patients.

Recent studies analyzing patient referral between primary care and a hospital in our country date from the beginning of 2000s [6]. Thus, after some 20 years, with changes not only of patients, but also with a generational renewal in the profession, we believe it is important to note whether changes exist not only in the number but also in the appropriateness of referrals.

In the province of Lleida, the Arnau de Vilanova University Hospital (HUAV) is a second level reference hospital for the entire province, where there is a daily average of 266 emergencies [7]. These emergencies, in part, are referred by primary care physicians of the different Basic Health Areas (BHA), Primary Care Emergency Centre

(CUAP) and out-of-hours care centers (PAC) in the La Noguera, Pla d'Urgell and Segarra regions. We therefore approach this study to determine the appropriateness of the referrals made by the primary care professionals of our region to the Hospital Emergency Department.

Material and Methods

This is a retrospective observational study of referral documents (p10) of patients who were referred to our hospital (HUAV Lleida). Two hundred referral documents were randomly selected in each period, September, November and December 2016, obtaining a total sample of 600 documents.

They included referral documents from health centers in Lleida city, from rural areas, from the CUAP and out-of-hours care centers around the health region.

Referrals of patients under 16 years of age were excluded.

Variables

Sociodemographic variables were collected from both the professionals and the patients referred. Furthermore, the professional category of the person who made the referral was collected as was the center from which the referral was made.

Concerning the document itself, we recorded whether it was handwritten, if it included medical history, physical examination and diagnostic approach. We finally assessed whether the reason for referral was recorded in the document (evaluation, treatment or admission). Each referral report was evaluated according to AEP (Appropriateness Evaluation Protocol) standards [8].

We then performed an in-depth review of the report issued by the emergency department associated with the episode, which included the day of the week and time of admission to the emergency room, the assigned triage level, whether urgent complementary tests and/or a visit by a specialist were required, the diagnosis and time of and destination on discharge. We finally checked whether the patient visited their PC physician for a check-up during the first 48 hours after discharge.

Statistical analysis

An anonymized database was set up recording all information on the medical histories reviewed. Numerical data were expressed using mean and standard deviation, or median and interquartile range, according to the distribution of the variable. Categorical variables were expressed using absolute and relative frequencies. Inferential analyses were not considered given the descriptive objectives of the study. Data were processed using the SPSS *ver.* 24 package.

Results

Of the referrals made by primary healthcare professionals, 85.7% were appropriate. The diagnostic correlation between the primary care professional and the emergency department professional was 73.7%.

Referrals from PC were made by medical professionals in 95% of cases, followed by nurses (4.3%) and occasionally by residents (0.7%). There is a predominance of professionals of female gender (64.4%). Referrals came from an urban BHA in 48.2% of cases, while

Table 1: Reason for referral.

Reason for referral	%
Trauma, knocks and wounds	27%
Heart pathology	13.80%
Abdominal pain	9%
Dyspnoea and respiratory pathology	8.20%
Neurological pathology	4.50%
Vascular pathology	4.20%
Ophthalmic pathology	3.50%
Infections	3.50%
ENT pathology	3.20%
Renal colic	2.50%
Acute appendicitis	1.80%
Headache	1.70%
Acute gastroenteritis	1.20%
Biliary disease	0.80%
Others	11.50%

rural BHAs referred only 25.8%. Referrals from other Rural Out-of-hours Care Centers accounted for 21.8% and only 4.8% came from the CUAP. The day of the week when most patients were referred is Thursday (20.5%), and Sunday (9.9%) the day with the least.

Of all patients, 52% (311) were women and 48% (288) men. The mean age was 57.68 years and comorbidity were low, given that the Charlson comorbidity index was 2.5.

Handwritten referrals accounted for 4.5% of all referrals. The patient's medical history was included in 96.2%, and in 89.8% of cases, the patient had undergone a physical examination while in 66.2% referral concluded with a diagnostic approach (Table 1).

The main reason for referral was for hospital evaluation (92.3%), followed by admission (6.5%), and treatment (1%).

The assigned triage level was 0.2% at level I (resuscitation), 7.7% at level II (emergent), 54.8% at level III (urgent), 29% at level IV (less urgent), and 7.8% at level V (non-urgent).

Of these, 82.8% required urgent complementary tests, the most common being chest radiography (35.5%), blood analyses (27.8%), and an ECG in 17.8% of cases.

Following evaluation in the emergency room, destination upon discharge was predominantly to the patient's home (90.7%), followed by hospitalization (6.5%) and home hospitalization (0.3%).

After discharge, 24.2% of patients visited their primary care physician within the first 48 hours for check-up. Having analyzed all referrals, 85.7% fulfilled AEP referral quality standards since 15.8% required 12 hours or more of observation and/or admission, 7.7% were visited by a specialist from outside the ER, and 67.7% required additional tests that could not be performed in the health center. There was no relationship with the gender of the practicing professionals.

Finally, it is noted that the diagnostic approach stipulated in referrals from PC coincided with the diagnostic approach at the hospital emergency department in 73.7% of cases. There is no

gender relationship either regarding the correlation of the diagnostic approach.

Discussion

The diagnostic correlation of primary care referrals to the emergency department is over 70%. Furthermore, the appropriateness of referrals is above 80%. We believe that these results are positive after years in which primary care resources have been limited by the economic crisis, and health professionals have been instrumental in sustaining the system. Importantly, rural centers refer to hospitals less, and our city's CUAP manages to resolve almost all emergencies attended to, which demonstrates a high level of resolution by these units and the importance they may have in preventing the collapse of hospital emergency departments.

We believe that referrals on Thursdays are due to physicians' desire to try to resolve a medical problem before the weekend, when healthcare resources are scarcer than on weekdays.

There is little up-to-date literature on the diagnostic correlation between PC and HES, but the little there is reveals similar sample and study features and results to ours. The first studies in the 2000s highlighted a high degree of diagnostic correlation between primary and specialized care in 69.3% of cases [9,10].

Lopez et al. [11] found that 15.8% required admission and/or 12 hours of observation, 55.2% received treatment or a visit by a specialist external to the emergency department, and 29% required a test that was not available at the PC, mainly radiological tests [2].

As for referral reports, different authors stress that their quality can be improved despite, in more than half of the cases, presenting a clinical history and a diagnostic approach. In our case, 85% of reports met the quality criteria, while 96% of cases included clinical history and 89.8% an examination. This section is positive since in previous studies examination had only been included in only 32% of cases [12]. Moreno et al. [13] and Prado et al. [14] found that, similarly to our study, the profile of the referred patient was a woman with an average age of 50 years.

Finally, the predominant cause of referral in our study was trauma pathology. This had been described in other studies and could account for 94% of referrals. Hence it is important to promote better training for PC professionals and broader access to complementary tests to optimize resources [10,15].

In the last decade, Tudela et al. [16-18] devote the most studies to the subject of emergencies and diagnostic error, stressing the importance of a good clinical routine. They consider that detailing a good medical history, supplementing it with a physical examination and a diagnostic approach would prevent misdiagnosis and, therefore, a good referral to HES would be made.

It is important to highlight that in more than 30% of cases a diagnostic approach is not included in the referral. We believe this is important because it can facilitate and guide emergency department professionals and, in many cases, better steer additional tests. We believe it is positive that most patients referred have a level of triage above III, indicating reasons of urgency, and that referrals of non-urgent patients are less than 10%.

We believe it is also important to highlight that although 90% of patients referred return home, 67% of cases do so after some additional test that cannot be performed by primary care. Probably, if primary care were provided with greater technical resources, these referrals could be avoided and patient comfort could be improved. Only 24% of patients attend follow-up 48 hours after referral, and it may therefore be positive to systematically establish check-ups for patients who have been referred to an emergency department.

This is the first study that analyses the reasons for referral in our health region, and after years of budget cuts and adjustments in our country. We therefore believe that the information contained is important and highlights the work carried out by health professionals. Our main constraint is the lack of a greater number of referrals, and that perhaps the periods for collecting data could have been longer.

We can conclude that the level of diagnostic correlation is higher than previously described, and referral reports are appropriate. However, there are some areas for improvement and we believe it is essential to provide more resources to primary care for complementary tests and training in traumatology to increase their resolution capacity.

Key Messages

- Referral reports from primary care professionals are appropriate
- The degree of diagnostic correlation between primary care and the emergency department is high
- The performance of additional tests is the main reason for referral.
- Resolution by emergency primary care centres is high
- Most referred patients return home after a complementary test is performed.
- Despite years of budget cuts, primary care resolution and diagnostic correlation have improved.

Disclosure

Ethics

This study was approved by the Clinical Research Ethics Committee (CEIC) of the IRBLleida the 18th of December of 2018 with reference 13/2018.

Funding

The study was funded by departmental resources.

References

1. Lopez C, Cerrada E, Olalla J, Menéndez J, Bouzas E. Adequacy of referrals from primary care to the hospital emergency service in area 9 of madrid. *Emergencias*. 2005; 17: 215-219.
2. Pérez A, López J, Dierssen T, Villa M, Raba S, Del Río J. Analysis of hospital referrals from a Primary Care emergency service during one year. *SEMERGEN*. 2007; 33: 341-348.
3. Spanish Ministry of Health, Consumer Affairs and Social Welfare. Emergencies attended in hospitals of the National Health System (SNS), frequentation per 1,000 inhabitants and percentage of admitted emergencies out of the total of emergencies attended by autonomous community. MSCBS.
4. Spanish Ministry of Health, Consumer Affairs and Social Welfare. Urgent

- activity in Primary Care of the National Health System (NHS), attended emergencies and annual attendance at health centers, clinics and homes by type of professional, according to autonomous community. MSCBS.
5. Mollar J, Vara M, Meneu R, Roselló M, Ripoll P. Referrals from primary care to hospital emergencies in department 7 of Valencia. *FML*. 2010; 14: 1-6.
 6. Torné E, Guarga A, Torras MG, Pozuelo A, Pasarin M, Borrell C. Analysis of the demand in the emergency services of Barcelona. *Primary care*. 2003; 32: 423-424.
 7. ICS Arnau de Vilanova University Hospital. Emergencies, Care activity. *ICS*.
 8. Gertman PM, Restuccia JD. The Appropriateness Evaluation Protocol: a technique for assessing unnecessary days of hospital care. *Med Care*. 1981; 19: 855-871.
 9. Rodríguez G, Villar I. Diagnostic agreement between primary care and specialized care after emergency consultation. *Primary care*. 2000; 25: 292-296.
 10. Aranaz JM, Martínez R, Rodrigo V, Gómez F, Antón P. Appropriateness of the demand of clinical attention at emergency departments. *Med Clin (Barc)*. 2004; 123: 615-618.
 11. Bouzas E, López C, Cerrada E, Olalla J, Menéndez JL. Adequacy of referrals from primary care to the hospital emergency service in Area 9 of Madrid. *Emergencies*. 2005; 17: 215-219.
 12. Rodríguez FJ, Chacón J, Esteban M, Valles N, López F, Sánchez A. Reasons for consultation between primary care and the second level. *Primary care*. 2005; 36:137-143.
 13. Moreno F, Casals JL, Sánchez JM, Rivera R, Vázquez MA. Inter-consultation document: evaluation of the quality of communication between Primary and Specialized Care. *SEMERGEN*. 2008;34(5):218-23.
 14. De Prado L, García L, Rodríguez F, Otero A. Evaluation of the derived demand in primary care. *Primary care*. 2005;35(3):146-51.
 15. Prieto L. Analysis of referrals to the second level from an urban health center. *Primary care*. 2004; 33.
 16. Tudela P, Mòdol JM, Veny A, Tor J, Bonet M, Rego MJ. Study of the diagnostic concordance between the emergency medical area and the hospitalization area in a general hospital. *Med Clin (Barc)*. 2002; 119: 531-533.
 17. Tudela P, Mòdol JM, Rego MJ, Bonet M, Vilaseca B, Tor J. Diagnosis mistake in the emergency room: relation to main symptom at admission, reasons and clinical implications. *Med Clin (Barc)*. 2005; 125: 366-370.
 18. Tudela P, Carreres A, Ballester M. Diagnostic errors in emergency departments. *Med Clin (Barc)* 2017; 149: 170-175.