9th Annual ESPAnet Conference

Sustainability and transformation

in European Social Policy

Valencia, 8-10 September 2011

Stream 13: Social and health care

Stream convenors: Mª Carmen Alemán (UNED) and Francisco Ródenas
(University of Valencia)

IDENTIFYING ELDERS AT RISK OF HOSPITAL READMISSIONS: A LOCAL STUDY

Stream 13: Social and health care

Doñate-Martínez, A.[1] & Zafra, E.[2]

[1]*ERI-Polibienestar, University of Valencia.*

Edificio Institutos de Investigación c/ Serpis nº29, 2ª planta. 46022 Valencia (Spain)

Phone: +34 963828184

ascension.donate@uv.es

[2]*Head of the Assistance Sociosanitary. Agencia Valenciana de Salud (AVS)*

zafra_edu@gva.es

Abstract:

This paper describes a local study carried out in three Health Departments in Valencia (Spain), aimed to test two risk screening of hospital readmission tools, Probability of Repeated Admission (Pra) and The Community Assessment Risk Screen (CARS). The results show that both instruments performed with a moderate efficiency at the three Departments; showing, specially,better results one of them. This kind of tools is very useful to identify elderly patients at risk to, in this way, avoid and prevent future admissions and relapses.

Key words:

Screening tools – Elderly – Hospital readmission -

Universitat de València - ERI POLIBIENESTAR.
Edificio Institutos-Campus de Tarongers. Calle Serpis, 29. 46022. Valencia.
Phone: (+34) 96.162.54.12– C.I.F. Q4618001-D
Email: espanet2011@uv.es

Page 2 of 9

1. Introduction:

The current sustainability model faces to several sociodemographic problems, as the ageing population or the dependence increase (Garcés et al., 2003). Regarding to a report from Valencian Region the health needs of Valencian elders are increasing exponentially, which are consistent to the need of specialized resources related to chronic diseases (Conselleria de Sanitat, 2007). So, it may be necessary to incorporate innovations related to the health care aimed to face up to the problems that threaten the sustainability of the welfare structures (Garcés, 2000).

In this sense, identifying elderly patients at risk is an important step in preventing relapses or any disease worsening. Thus, nowadays there are many studies with the aim of identifying risk factors of future admissions and readmissions in elderly people (e.g. Jencks et al., 2009; Marcantonio et al., 1999; Mudge et al., 2011). A recent review shows a variety of variables that are potential risk factors, as comorbidities, increasing severity class, increasing age, general poor health, high previous utilization of the healthcare system, and difficulty in getting caregivers or lack of social support (Vest et al., 2010). So, there are a wide range of risk assessment tools are available for detecting elderly patients at high risk for hospitalizations or emergency department encounters (Oeseburg et al., 2009; Shepperd et al., 2009).

The aim of the present study was to test two risk screening of readmission tools, Probability of Repeated Admission (Pra) and The Community Assessment Risk Screen (CARS), in three Valencian Health Departments (Spain).

2. Methodology:

The **target population** of this study was the 65 years or older patients attended by the Valencian Healthcare System in the followings Health Departments (H.D.): Arnau de Vilanova Hospital, Doctor Peset Hospital and Ribera Hospital. In 2008, the number of individual of this target population in the three H.D. above mentioned reached 153.895 (Conselleria de Sanititat, 2009).

Universitat de València - ERI POLIBIENESTAR.
Edificio Institutos-Campus de Tarongers. Calle Serpis, 29. 46022. Valencia.
Phone: (+34) 96.162.54.12– C.I.F. Q4618001-D
Email: espanet2011@uv.es

Page 3 of 9

Patients were screened and recruited from 30 family doctors in six health centers (see Table 1). In these centers, patients whose were seen by the family doctor from the 1st until 31st December 2008 were recruited randomly.

Exclusion criteria for participation were absence of patient data in databases, aged younger than 65 and exitus. In total, we evaluated 500 patients.

Table 1: Summary of health staff's and patients' participants				
	H.D. nº 6	H.D. nº 10	H.D. nº 11	TOTAL
Nº HEALTH CENTRES	2	2	2	6
Nº FAMILY DOCTORS	11	12	7	**30**
Nº PATIENTS	178	162	160	**500**

Hospitalization risk was evaluated through two validated instruments: Probability of Repeated Admission (Pra) and The Community Assessment Risk Screen (CARS).

Pra tool: The Pra is a tool used in research and clinical practice to predict rehospitalization more than once within four years in elderly people (Boult et al., 1993). This instrument includes 8 factors found to be the strongest predictors of future hospitalization: age, gender, global self-reported health, history of diabetes or coronary heart disease, previous physician visits or previous hospitalizations in the previous year, and caregiver availability (Boult et al., 1993, 1995). A Pra score of 0.5 is interpreted as a 50% chance the patient will be hospitalized in the future. So, patients with a Pra score of 0.5 or higher are regarded as being at high risk, those with a score between 0.36 and 0.49 as moderate risk and those with score smaller than 0.35 are regarded as low risk of being readmitted.

CARS instrument: The CARS includes 3 factors to predict future hospitalizations: preexisting chronic diseases (heart disease, diabetes, myocardial infarction, stroke, chronic obstructive pulmonary disease -COPD- or cancer), the number of prescription medications and hospitalizations or emergency department use in the preceding 6 to 12 months (Shelton et al., 2000). A total score is derived by summing the points of each question, with a possible range

of 0 to 9. So, patients with a total score of 4 or higher are classified in the high risk group, and those with a smaller score than 4 are classified in the low risk group.

The *variables* from the instruments were collected through two databases from the Valencian Healthcare System: SIA-Abucasis and CMBD, with respect to 2008.

Data collection was performed jointly with health staff (doctors, nurses and social workers) at the health centers and hospitals. To fill out two items from Pra questionnaire (global self-reported health and caregiver availability) it was necessary to contact by phone with every patient to obtain that information about 2008. Once the information was collected, we removed any kind of identification information; preserving only the SIP number (Population Information System) as reference number to access to the patient medical and admission histories.

Finally, we carried out a search of hospital admissions of each patient in 2009 through CMBD database.

Statistical analysis was performed using SPSS 17. software. The analyses were, mainly, the followings:

- Descriptive analyses.
- Pearson correlation coefficients and Pearson Chi-square.
- Operating characteristics.

3. Results:

Five hundred and four hundred thirty-two subjects with complete CARS and Pra data, respectively, were used for this analysis. Mean age of the entire sample was 74,76 years (± 6,54) and 58% were women. The demographic characteristics of the patients at the time of the family doctor visit are shown in Table 2.

Table 2. Demographic characteristics of the sample			
	H.D. nº 6 n= 178	H.D. nº 10 n= 162	H.D. nº 11 n= 160

Age	Gender	Male	Mean ± SD	74,62 ± 6,94	73,89 ± 6,16	74,30 ± 6,55
		Female	Mean ± SD	75,08 ± 5,89	75,96 ± 6,85	74,55 ± 6,74
	TOTAL		Mean ± SD	74,71 ± 6,4	75,12 ± 6,64	74,45 ± 6,65

The correlation between Pra and CARS scores was significantly associated among themselves at the three H.S. (H.S. nº 6: $r=0.36$; H.S. nº 10: $r=0.53$; H.S. nº 11: $r=0.49$; $p<0.001$ in all cases).

In Table 3 it is shown the relationship between Pra and CARS risk categories from future admissions suffered by our patients' sample.

Table 3: Relation risk categories – admissions in 2009				
	Pra		CARS	
	χ	p	χ	p
H.D. nº 6	0.25	0.11	1.46	0.23
H.D. nº 10	21.66	<0.001	22.50	<0.001
H.D. nº 11	6.21	<0.05	2.55	0.11

Table 4 shows the sensitivity and specificity of the two instruments.

Table 4. Operating characteristics						
	H.D. nº 6 n= 178		H.D. nº 10 n= 162		H.D. nº 11 n= 160	
	Pra	CARS	Pra	CARS	Pra	CARS
Sensitivity	0.50	0.53	0.71	0.72	0.41	0.64
Specificity	0.80	0.62	0.86	0.76	0.77	0.52

4. Discussion:

This study tested Pra and CARS risk screen tools in an elderly sample from three Valencian Health Departments. The most important results indicate that the instruments performed with a moderate efficiency at the three Departments.

Specially, we found general better results in one of the three Departments with regard to the other two. The Health Department nº 10 showed the following results: higher correlation between both Pra and CARS tools, a significant association between Pra and CARS risk categories from the future readmission dependent variable, and better operating characteristics.

This study was carried out following the same methodology and procedure at the three participating Departments, so the difference found at one of them should be due to own special characteristics and features. It would be interesting to study in depth the possible variables and/or matters (better health care, triage at urgency services, specialized care, prevention or intervention programs, etc.) at the Health Department nº 10 that have contributed to obtain more efficient results identifying patients at risk of future readmissions. In this way, it would be possible to spread those good practices to the others Departments from the Valencian Healthcare System.

Although this is a local study, its results suggest that risk screening tools, as Pra and CARS, should be a focus of interest for the Health Ministries, as thanks to their application many patients at risk could be identified and, even more, referred to specialized programs and protocols for avoiding and preventing hospital admissions and relapses.

5. Aknowledgements:

6. References:

Universitat de València - ERI POLIBIENESTAR.
Edificio Institutos-Campus de Tarongers. Calle Serpis, 29. 46022. Valencia.
Phone: (+34) 96.162.54.12– C.I.F. Q4618001-D
Email: espanet2011@uv.es

Page 7 of 9

Boult, C., Dowd, B., McCaffrey, D., Boult, L., Hernandez, R., & Krulewitch, H. (1993). Screening elders for risk of hospital admission. *Journal of the American Geriatrics Society, 41*(8), 811-817.

Boult, C., Pacala, J. T., & Boult, L. B. (1995). Targeting elders for geriatric evaluation and management: Reliability, validity, and practicality of a questionnaire. *Aging (Milan, Italy), 7*(3), 159-164.

Conselleria de Sanitat (2007). Plan integral de atención sanitaria a las personas mayores y a los enfermos crónicos en la Comunitat Valenciana. Available at: http://www.imsersomayores.csic.es/documentos/documentos/valencia-plan-01a.pdf

Conselleria de Sanitat (2009). Informe del Sistema de Información Poblacional de la Comunidad Valenciana. Available at: http://www.san.gva.es/docs/InformeNov09EstudioNoEmp08.pdf

Garcés, J. (2000). *La nueva sostenibilidad social*. Ariel, Barcelona.

Garcés, J.; Ródenas, F. & Sanjosé V. (2003). Amenazas al sistema de bienestar español en los inicios del tercer milenio. *Revista del Ministerio de trabajo y Asuntos Sociales, 45*: 153-165.

Jencks, S. F., Williams, M. V., & Coleman, E. A. (2009). Rehospitalizations among patients in the medicare fee-for-service program. *The New England Journal of Medicine, 360*(14), 1418-1428.

Marcantonio, E. R., McKean, S., Goldfinger, M., Kleefield, S., Yurkofsky, M., & Brennan, T. A. (1999). Factors associated with unplanned hospital readmission among patients 65 years of age and older in a medicare managed care plan. *The American Journal of Medicine, 107*(1), 13-17.

Mudge, A. M., Kasper, K., Clair, A., Redfern, H., Bell, J. J., Barras, M. A., et al. (2011). Recurrent readmissions in medical patients: A prospective study. *Journal of Hospital Medicine : An Official Publication of the Society of Hospital Medicine, 6*(2), 61-67.

Oeseburg, B., Wynia, K., Middel, B., & Reijneveld, S. A. (2009). Effects of case management for frail older people or those with chronic illness: A systematic review. *Nursing Research, 58*(3), 201-210.

Shelton, P., Sager, M. A., & Schraeder, C. (2000). The community assessment risk screen (CARS): Identifying elderly persons at risk for hospitalization or emergency department visit. *The American Journal of Managed Care, 6*(8), 925-933.

Shepperd, S., Doll, H., Angus, R. M., Clarke, M. J., Iliffe, S., Kalra, L., et al. (2009). Avoiding hospital admission through provision of hospital care at home: A systematic review and

Universitat de València - ERI POLIBIENESTAR.
Edificio Institutos-Campus de Tarongers. Calle Serpis, 29. 46022. Valencia.
Phone: (+34) 96.162.54.12– C.I.F. Q4618001-D
Email: espanet2011@uv.es

Page 8 of 9

meta-analysis of individual patient data. *CMAJ : Canadian Medical Association Journal = Journal De l'Association Medicale Canadienne, 180*(2), 175-182.

Vest, J. R., Gamm, L. D., Oxford, B. A., Gonzalez, M. I., & Slawson, K. M. (2010). Determinants of preventable readmissions in the united states: A systematic review. *Implementation Science : IS, 5*, 88.