

# Functional status and social support network as risk factors for hospital readmission in Heart Failure

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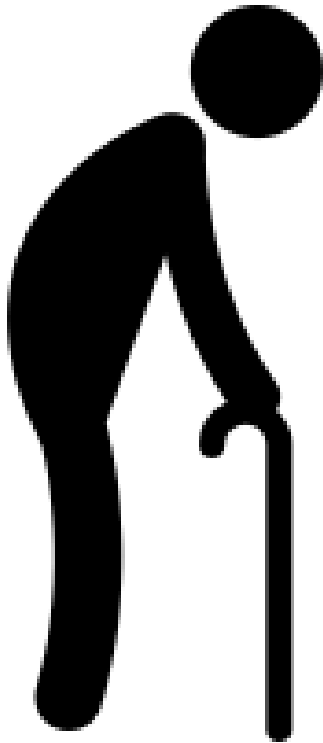


# CONFLICT OF INTEREST DISCLOSURE

I have no potential conflict of interest to report.

- ✓ Hospital readmission in chronic heart failure (CHF) is a quality indicator of health care.
- ✓ Despite medical and therapeutic advances to improve patient outcomes, unplanned readmission rates continue to remain high in CHF.
- ✓ Sociodemographic factors that supplant the power of medical action, are sometimes neglected in assessing the risk of readmission.








## Objective

Examine the impact of demographic characteristics,  
functional status and social support network on  
hospital readmissions for CHF

# Methods

- Retrospective study of total admissions at an Internal Medicine Department of a Portuguese hospital, with the main diagnosis of CHF
- Data was obtained through the SClinico system and processed by SPSS 24.0<sup>®</sup> software.

Demographic Characterization	Functional Status	Social and Hospital Support Network	Hospital Readmission
Gender	Katz Index of Independence in Activities of Daily Living	 Type of residence (own or family home/ nursing home)	Hospitalizations with the same diagnosis in the following 12 months
Age		 Type of support (family/ institutional / none)	
		 Destination after discharge (with or without referral for external consultation)	




# Katz Index of Independence in Activities of Daily Living

<b>ACTIVITIES</b> POINTS (1 OR 0)	<b>INDEPENDENCE:</b> (1 POINT) NO supervision, direction or personal assistance	<b>DEPENDENCE:</b> (0 POINTS) WITH supervision, direction, personal assistance or total care
<b>BATHING</b>  POINTS: _____	<b>(1 POINT)</b> Bathes self completely or needs help in bathing only a single part of the body such as the back, genital area or disabled extremity.	<b>(0 POINTS)</b> Needs help with bathing more than one part of the body, getting in or out of the tub or shower. Requires total bathing.
<b>DRESSING</b>  POINTS: _____	<b>(1 POINT)</b> Gets clothes from closets and drawers and puts on clothes and outer garments complete with fasteners. May have help tying shoes.	<b>(0 POINTS)</b> Needs help with dressing self or needs to be completely dressed.
<b>TOILETING</b>  POINTS: _____	<b>(1 POINT)</b> Goes to toilet, gets on and off, arranges clothes, cleans genital area without help.	<b>(0 POINTS)</b> Needs help transferring to the toilet, cleaning self or uses bedpan or commode.
<b>TRANSFERRING</b>  POINTS: _____	<b>(1 POINT)</b> Moves in and out of bed or chair unassisted. Mechanical transferring aides are acceptable.	<b>(0 POINTS)</b> Needs help in moving from bed to chair or requires a complete transfer.
<b>CONTINENCE</b>  POINTS: _____	<b>(1 POINT)</b> Exercises complete self control over urination and defecation.	<b>(0 POINTS)</b> Is partially or totally incontinent of bowel or bladder.
<b>FEEDING</b>  POINTS: _____	<b>(1 POINT)</b> Gets food from plate into mouth without help. Preparation of food may be done by another person.	<b>(0 POINTS)</b> Needs partial or total help with feeding or requires parenteral feeding.

↑  
 6 = patient independent  
  
 0 = patient totally dependent

# Methods

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# Results

336 admissions for CHF

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1-year Rehospitalization Rate 49,7%

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61,3% ♀ vs 38,7% ♂

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Age (avg±sd) 77.4 ± 11 years

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1-year Mortality Rate 16.8%



# Results

Demographic Characterization	Functional Status	Social and Hospital Support Network
<p><i>No statistically significant relation with hospital readmission</i></p>	<p>Katz Index of Independence in Activities of Daily Living</p>	<p> Type of residence (own or family home/ nursing home)</p>
		<p> Type of support (family/relatives/none)</p>
		<p> Destination after discharge (with or without referral for external consultation)</p>

- ✓ **Functional status** has a statistically significant relation with hospital readmission ( $X^2 (4) = 32.3, p \leq 0.05$ ): **low score was associated with more readmissions**
- ✓ Contrary to expectations, the referral for **external consultation** was associated with **more readmissions** (OR= 2.47, [1.55 – 3.94], IC 95%).

# Discussion

Several studies have identified predictors associated with an increased likelihood of readmission for exacerbation of CHF symptoms:

- ✓ advanced age
- ✓ prior hospital admission
- ✓ length of hospital stay
- ✓ severity of illness
- ✓ other medical comorbidities

Tsuchihashi et al. Medical and socioenvironmental predictors of hospital readmission in patients with congestive heart failure. American Heart Journal. Volume 142, Number 4. October 2001  
Vinson JM, Rich MW, Sperry JC, et al. Early readmission of elderly patients with congestive heart failure. J Am Geriatr Soc 1990;38: 1290-5  
Krumholz HM, Parent EM, Tu N, et al. Readmission after hospitalization for congestive heart failure among Medicare beneficiaries. Arch Intern Med 1997;157:99-104.  
Chin MH, Goldman L. Correlates of early hospital readmission or death in patients with congestive heart failure. Am J Cardiol 1997; 79:1640-4.  
Rich MW, Beckham V, Wittenberg C, et al. A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. N Engl J Med 1995;333:1190-5  
Berkman B, Dumas S, Gastfriend J, et al. Predicting hospital readmission of elderly cardiac patients. Health Soc Work 1987;12:221-8

# Discussion

- ✓ Socioenvironmental factors are poorly documented in medical records, so that their importance may likely be underestimated.
- ✓ Collecting information on behavior, physical limitations and frailty and socio-economic data for CHF patients has significant value in predicting the risk of readmissions and may lead to more effective and targeted interventions.

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# Discussion

- ✓ Poor follow-up is a strong predictor for CHF readmission.
- ✓ Regular visit to clinics can improve the compliance of CHF patients.

Although this study demonstrated that

referral for **external consultation** was associated with a higher risk of **readmissions ...**

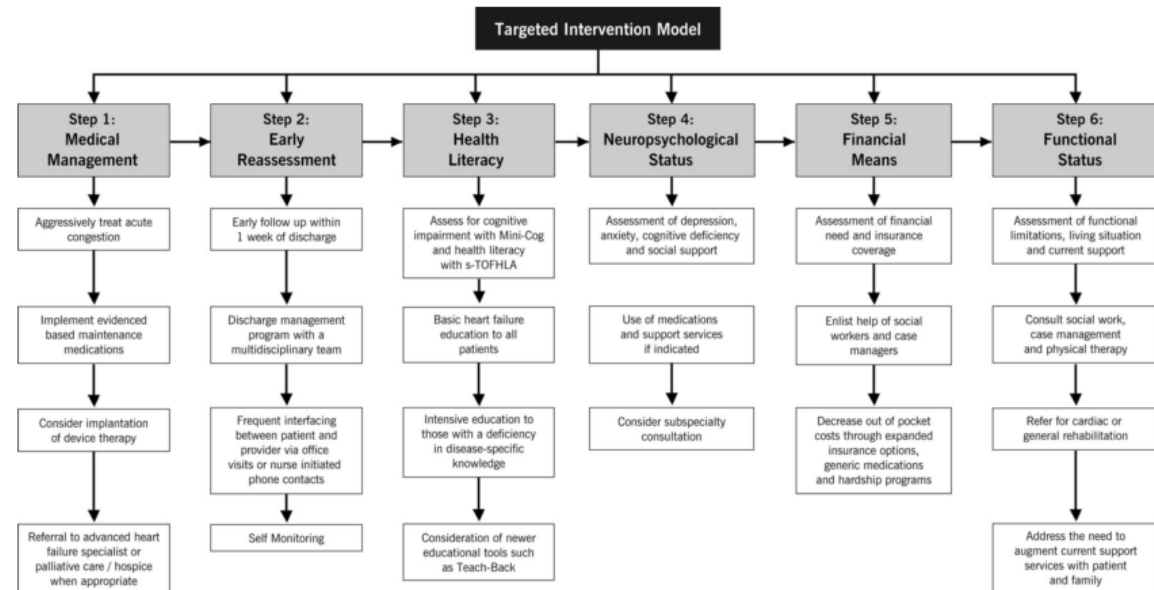
Patients referred to external consultation tend to have more comorbidities,  
which increase the risk of exacerbation and hospital readmission.

# Discussion

- ✓ Information about patient-reported functional limitations, behavioral variables and socio-economic background may also play an important role in predicting the risk of readmission in heart failure patients.
- ✓ In this context, were proposed **models to evaluate the overall social risk** of the patient.

## Hospital readmission in heart failure, a novel analysis of a longstanding problem

Brett W. Sperry · George Ruiz · Samer S. Najjar



- ✓ A comprehensive **patient-centered model** that is organized into six categories: quality of medical management, early reassessment, health literacy, neuro- psychological status, financial means and functional status.
- ✓ By screening for deficiencies in each of these categories, providers and hospital systems can use resources more efficiently to make targeted interventions to improve health outcomes.

RESEARCH ARTICLE

## Joint Impact of Clinical and Behavioral Variables on the Risk of Unplanned Readmission and Death after a Heart Failure Hospitalization

Badri Padhukasahasram<sup>1\*</sup>, Chandan K. Reddy<sup>2</sup>, Yan Li<sup>2</sup>, David E. Lanfear<sup>1</sup>

**1** Center for health policy and health services research, Henry Ford Health System, Detroit, Michigan, United States of America, **2** Department of Computer Science, Wayne State University, Detroit, Michigan, United States of America

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- ✓ **Joint Model** predicts the risk of rehospitalization in CHF using models that integrate clinical characteristics with patient-reported functional limitations, behavioral and socio-economic characteristics.

# Discussion

**Interventions** should be performed for patients and for family members during hospitalization and later.

The effectiveness of such interventions has been supported by the reduction of readmission, prolong survival and improve quality of life in patients with CHF.



Padhukasahasram B, Reddy CK, Li Y, Lanfear DE (2015) Joint Impact of Clinical and Behavioral Variables on the Risk of Unplanned Readmission and Death after a Heart Failure Hospitalization. PLoS ONE 10(6): e0129553

Tsuchihashi et al. Medical and socioenvironmental predictors of hospital readmission in patients with congestive heart failure. American Heart Journal 2001 Volume 142, Number 4

Stewart S, Marley JE, Horowitz JD. Effects of a multidisciplinary, home-based intervention on unplanned readmissions and survival among patients with chronic congestive heart failure: a randomised controlled study. Lancet 1999;354:1077-83



# Discussion

## Interventions

- ✓ Provide adequate patient and family support
  - ✓ patient and caretakers/ family **medical education**
- ✓ Establish na early and regular **follow-up**
- ✓ **Home-based** interventions
  - ✓ in the form of phone calls and home visits
  - ✓ telemonitoring and home weight monitoring



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## Limitations

- ✓ Absence of stratification according to NYHA Functional Classification
- ✓ Absence of stratification according to the LVEF and classification in HF with preserved, mid-range and reduced ejection fraction

## Conclusions

- ✓ Functional status appears to be a major risk factor for hospital readmission in CHF.
- ✓ Recognition of patients' sociodemographic disadvantages allows better continuity of care after discharge.
- ✓ A management system that coordinates care in the hospital, outpatient, and home settings reduces the morbidity and mortality.
- ✓ Future research is needed to define a valid and reproducible sociodemographic risk model for hospital readmission in CHF.



# Thank you for your attention

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