



## Prevención de caídas durante la Hospitalización

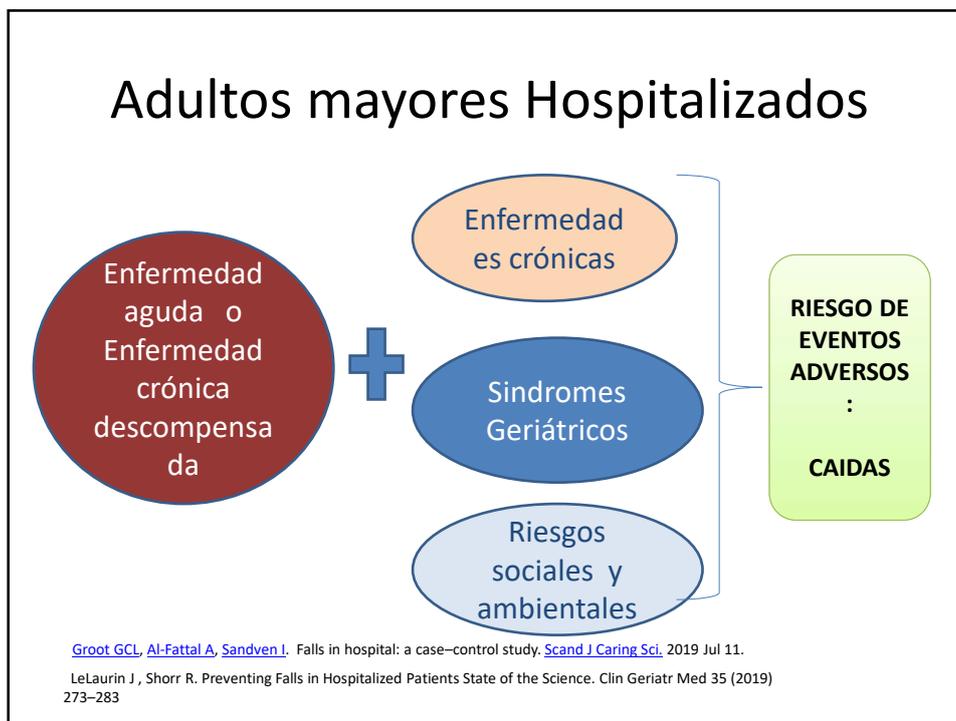
Tania Tello Rodríguez  
Sandra Milena Caicedo Correa ,  
Ronald Leonel Garcia Arias,  
José Ernesto Picado Ovares,  
Everest Barrientos López,  
Lionor Elia Zapata Altamirano,  
Lizabeth González Ávila,  
Maria del Pilar Gamarra Samaniego

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## Objetivos

- Determinar la magnitud del problema
- Valorar la evidencia existente en relación a las estrategias de prevención de caídas en el AM hospitalizado.

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## Introducción

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Entre 700 000 y 1 000 000 de pacientes hospitalizados USA se cae al año.

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Rango de 3.3 a 11.5 caídas por cada 1,000 días de hospitalización

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2% de los pacientes hospitalizados se han caído al menos 1 vez durante su estancia.

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Un tercio de estas caídas se consideran prevenibles.

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La tasa de caídas varía de acuerdo al hospital y a la unidad . En unidades de agudos : 1.3 a 8.9 por 1000 pacientes-día.

LeLaurin J. Preventing Falls in Hospitalized patients state . *Clin Geriatric Med*,2019;35;273-28  
 Dawn Back, Tori Hamilton Kelly, Marty Cangany. AACN No Fall Zone 2013; 2016  
 SEMEG . Manual de manejo de las personas mayores que sufren caídas. De la evidencia científica a la practica clinica. Madrid, 2019

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# Introducción

30% de los pacientes hospitalizados que caen sufren lesiones, 10% son serias

AM que presentaron fractura de cadera durante la hospitalización tienen un gran riesgo de institucionalización y muerte comparado con AM de la comunidad con Fx de cadera.

Las caídas en los hospitales es uno de los índices de calidad

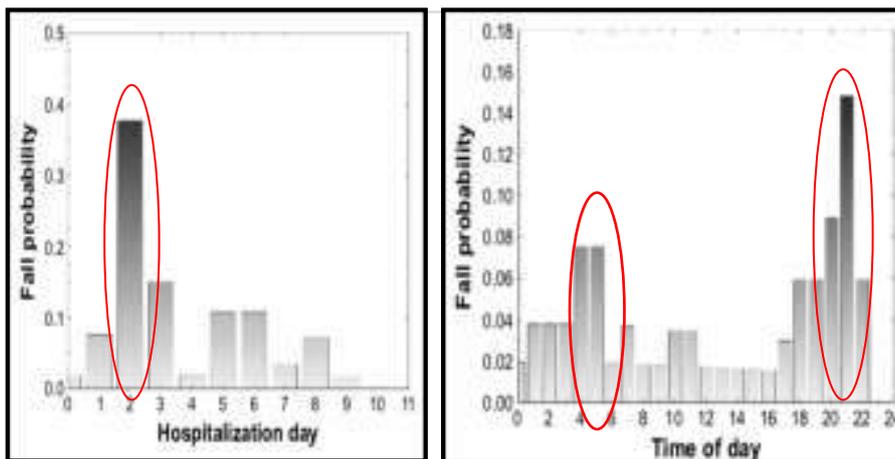
Costos relacionados con las caídas podrían aumentar a \$ 67.7 mil millones para 2020, 6 a 8 días más de estancia hospitalaria

Daño físico, ansiedad, miedo a volver a caerse y pérdida de confianza

Lelaurin J. Preventing Falls in Hospitalized patients state . Clin Geriatric Med,2019;35;273-283  
 Mazu, K. Geriatric falls in the context of a hospital fall prevention program: delirium, low body mass index, and other risk factors. Clinical Interventions in Aging 2016;11 1253–1261

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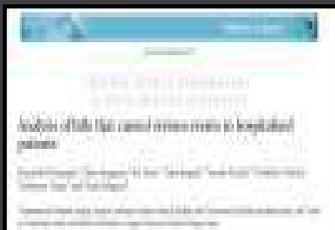
## Probabilidad de caídas según día y hora en AM Hospitalizados



Mazu, K. Geriatric falls in the context of a hospital fall prevention program: delirium, low body mass index, and other risk factors. Clinical Interventions in Aging 2016;11 1253–1261

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¿Dónde ocurren  
las caídas?



**Table 4** Comparison of serious event and non-serious events after fall

Variable	Serious event (n = 36)	Non-serious event (n = 3063)	P
<b>Demographic</b>			
Aged >80 years	8 (22%)	594 (19%)	NS
Female	21 (58%)	1327 (43%)	NS
Psychotropic agent	4 (11%)	69 (22%)	NS
<b>Fall risk score</b>			
Grade 1	7 (19%)	406 (13%)	NS
Grade 2	13 (36%)	1304 (43%)	NS
Grade 3	16 (44%)	1353 (44%)	NS
<b>Location</b>			
Hospital room	23 (64%)	1868 (61%)	NS
Corridor	4 (11%)	460 (15%)	NS
Restroom	5 (14%)	243 (8%)	NS
Bathroom	1 (3%)	122 (4%)	NS
Rehabilitation ward	0 (0%)	92 (3%)	NS
Others	3 (8%)	280 (9%)	NS
<b>Footwear</b>			
Shoes	12 (33%)	1518 (50%)	NS
Slippers	13 (36%)	506 (17%)	<0.01
Others	11 (31%)	1039 (34%)	NS

NS, not significant.

Geriatr Gerontol Int 2017

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- La seguridad es una dimensión esencial de la calidad asistencial

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## ¿Cuáles son los factores de riesgo para caídas en AM Hospitalizados?

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Revista Latino-Americana de Enfermagem  
 2018;26:e30116  
 DOI: 10.1590/1518-9732.2017.0381



**RLAE**  
 REVISTA  
 LATINO-AMERICANA  
 DE ENFERMAGEM

Original Article

**Risk factors for fall occurrence in hospitalized adult patients:  
 a case-control study**

Isis Marques Soares<sup>1</sup>  
 Priscilla de Souza Kucharski<sup>2</sup>  
 Débora Figueiredo Rome Junior<sup>3</sup>  
 Andréia de Fátima Lucena<sup>4</sup>  
 Márcia de Aguiar Azeiteiro<sup>5</sup>

**Table 3 - Results of the multivariate logistic regression model with  $p < 0.05$  (n=358), Porto Alegre, RS, Brazil, 2013-2014**

Variables	OR*	CI† (95%)	p-value
Disorientation/confusion	4.25	[1.95 to 9.08]	<0.001
Frequent urination	4.58	[1.98 to 10.87]	0.001
Walking instability	4.94	[2.05 to 11.14]	<0.001
Absence of caregiver	3.57	[0.22 to 6.03]	<0.001
Postoperative period	3.58	[1.26 to 10.04]	0.01
Number of medications administered prior the fall (within 72 hours)†	1.20	[1.04 to 1.38]	0.01

\*Odds ratio. †Confidence Interval. ‡Number of medications - Last dose of the classes: benzodiazepines, opioids, barbiturates, a hypnotic, sedatives, antihypertensives, laxatives, diuretics, antidiarrheals, anticonvulsants, and analgesics administered within the 72 hours.

Marques, I. Risk factors for fall occurrence in hospitalized adult patients: a case-control study. Rev. Latino-Am. Enfermagem 2018;26:e3016

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Original Article

**Risk Factors for Falls in Hospital In-Patients: A Prospective Nested Case Control Study**

Zohra Naeem<sup>1</sup>, Zahra Ghafoor<sup>2</sup>, Mohammad Akif<sup>3</sup>, Nida Yousaf<sup>4</sup>

**Table 4. Patient Care-Related Factors**

Variable	Case No. (%)	Control No. (%)	Adjusted OR	P<1	95% CI	
					Lower	Upper
Depression	27 (14.6)	32 (2.8)	5.98	<0.001	3.44	10.32
Vision problem	38 (20.3)	42 (3.7)	6.91	<0.001	4.22	11.38
Gait disorder	87 (47.0)	140 (12.3)	6.81	<0.001	4.51	9.11
Use of walking stick	71 (40.5)	91 (8.1)	8.47	<0.001	5.65	12.69
Stroke	8 (4.3)	52 (14.6)	0.94	0.884	0.44	2.01
Incontinence	26 (15.1)	40 (3.5)	4.88	<0.001	2.91	8.10
Parkinson disease	3 (1.6)	3 (0.3)	4.98	<0.001	0.70	4.84
Cancer	33 (17.8)	80 (7.0)	2.88	<0.001	1.84	4.44
Diabetic	19 (10.3)	32 (2.8)	3.88	<0.001	1.94	5.58

Abbreviation: OR, odds ratio.  
 \*Based on multilevel logistic regression and adjusted with variables of age, gender, Morse scale score, history of prior fall, and length of stay.

Int J Health Policy Manag 2018, 8(5): 100-106

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## Factores de riesgo asociados a caídas en AM Hospitalizados

**Table 3** Binary regression analysis showing which variables were independently associated with increased and decreased risk of in-hospital falls

	Beta	Standard error	Odds ratio	95% confidence interval	p value
Associated with increased risk of falling					
Mildly dependent	1.388	0.339	3.99	(3.07-4.98)	<0.0001
Anti-epileptic	1.562	0.537	4.89	(1.98-11.10)	0.011
Hypothyroidism	1.309	0.417	3.68	(1.62-8.30)	0.002
Oral hypoglycemic	0.972	0.405	2.64	(1.08-6.45)	0.031
Morse fall score	0.088	0.025	1.09	(1.01-1.12)	0.007

Gringauz et al. Risk of falling among hospitalized patients with high modified Morse scores could be further Stratified BMC Health Services Research (2017) 17:721

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## Impacto de las caídas en AM hospitalizados

- Decline funcional
- Lesiones- Fracturas
- Incrementa tasa de mortalidad
- Incrementa estancia hospitalaria
- Incremento de costos
- Problemas legales

Lelaurin J. Preventing Falls in Hospitalized patients state . Clin Geriatric Med,2019;35;273-283

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- ¿Cómo se realiza el tamizaje a Adultos mayores con riesgo de caídas?

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## Evaluación del Riesgo de caídas



Los instrumentos han demostrado aceptable sensibilidad y especificidad, pero los valores predictivos van a depender del tipo de estudio, población y lugar.



Se requiere una evaluación periódica tanto al ingreso y durante la estancia



Son pocos los instrumentos validados en adultos mayores.

Matarese M, Ivziku D, Bartolozzi F, Piredda M, De Marinis MG. Systematic review of fall risk screening tools for older patients in acute hospitals. J Adv Nurs. 2014  
 Dominic M, Florence K, Ge L, Hepworth A. The validity of three fall risk screening tools in an acute geriatric inpatient population. Australasian Journal on Ageing. 2016

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Aranda-Gallardo et al. BMC Health Services Research 2013, 13:122  
<http://www.biomedcentral.com/1473-2963/13/122>



RESEARCH ARTICLE
Open Access

## Instruments for assessing the risk of falls in acute hospitalized patients: a systematic review and meta-analysis

Marta Aranda-Gallardo<sup>1\*</sup>, Jose M Morales-Asencio<sup>2</sup>, Jose C Canca-Sanchez<sup>3</sup>, Silvia Barrero-Sojo<sup>4</sup>,  
Claudia Perez-Jimenez<sup>5</sup>, Angeles Morales-Fernandez<sup>1</sup>, Margarita Enriquez de Luna-Rodriguez<sup>6</sup>,  
Ana B Moya-Suarez<sup>1</sup> and Ana M Mora-Banderas<sup>7</sup>

- 14 estudios seleccionados
- El metaanálisis fue ejecutado con la escala MFS, STRATIFY y Hendrich II Fall Risk Model
- STRATIFY : Mayor validez diagnóstica con un DOR 7.64 (4.86 - 12.00).  
(DOR: OR diagnóstica)

Aranda-Gallardo et al. BMC Health Services Research 2013, 13:122

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RESEARCH ARTICLE  
**Instruments for assessing the risk of falls in acute hospitalized patients: a systematic review and meta-analysis**

**Table 5 Summary of the results of the meta-analysis**

	STRATIFY	MFS	Handich
Sensitivity (95% CI)	0.800 (0.724 – 0.863)	0.755 (0.698 – 0.800)	0.628 (0.540 – 0.702)
Specificity (95% CI)	0.675 (0.638 – 0.693)	0.677 (0.629 – 0.695)	0.640 (0.630 – 0.631)
LH+ (95% CI)	3.467 (2.047 – 3.973)	2.014 (1.800 – 2.250)	1.791 (1.500 – 2.142)
LH- (95% CI)	0.337 (0.224 – 0.507)	0.401 (0.324 – 0.490)	0.347 (0.307 – 0.382)
DOR (95% CI)	7.640 (4.862 – 12.007)	3.068 (3.747 – 6.867)	3.562 (2.107 – 5.364)

Results of sensitivity, specificity, LH+, LH- and DOR of the fall risk assessment tools with which conducted meta-analysis.

Aranda-Gallardo et al. BMC Health Services Research 2013, 13:122

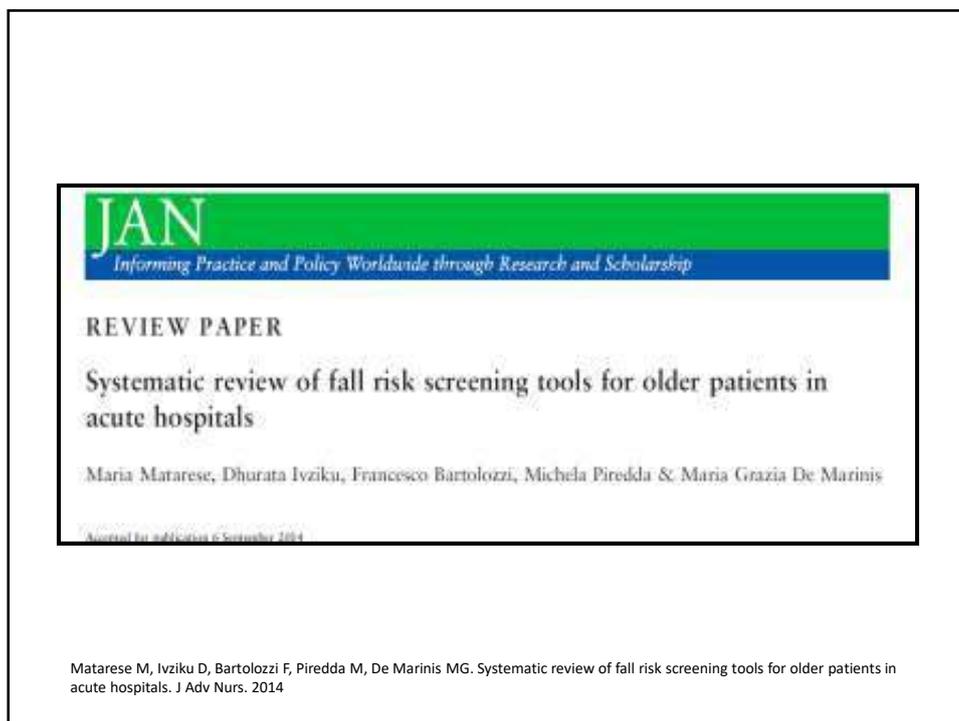
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## Evaluación del Riesgo de caídas

- El National Institute for Health and Care Excellence Guidelines, aconseja que todas las personas mayores de 65 años hospitalizadas deben de considerarse con alto riesgo de caídas

LeLaurin J, Shorr R. Preventing Falls in Hospitalized Patients State of the Science. Clin Geriatr Med 35 (2019) 273–283

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### Sensibilidad, Especificidad ,Rendimiento

- Los instrumentos no demostraron alto valor predictivo para identificar AM en riesgo de caídas

Table 2. Sensitivity, specificity and Youden index estimated by random effect model analysis.

Fall risk scale	Sensitivity (95% CI)	Specificity (95% CI)	Youden index (95% CI)
Hendrich II	0.92 (0.88-0.97)	0.37 (0.33-0.41)	0.29 (0.26-0.32)
STRATIFY	0.63 (0.54-0.69)	0.71 (0.67-0.75)	0.34 (0.28-0.35)

Matarese M, Ivziku D, Bartolozzi F, Piredda M, De Marinis MG. Systematic review of fall risk screening tools for older patients in acute hospitals. J Adv Nurs. 2014

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**Inpatient Fall Prevention Programs as a Patient Safety Strategy A Systematic Review**  
Wong et al. Journal of General Internal Medicine • March 2013

- 19 estudios
  - 4 fueron metaanálisis
  - 2005-1012 : Pub Med

Component	Studies Including This Component, n
Patient education	11
Bedside risk sign	10
Staff education	9
Alert wristband	7
Footwear	7
Review after fall	7
Toileting schedules	7
Medication review	6
Environment modification	5
Movement alarms	5
Bedrail review	4
Exercise	4
Hip protectors	3
Urine screening	2
Velcro, belt, or cuff restraint	1

Inpatient Fall Prevention Programs as a Patient Safety Strategy . Ann Internal Med. March 2013 Volume 158 • Number 5

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**Table 1. Fall Interventions: Components and Implementation Strategies**

Author (Year)	Intervention Components	Implementation Strategy	Outcomes	Notes
Argy et al. <sup>27</sup> (2013)	<ul style="list-style-type: none"> <li>• Fall risk assessment</li> <li>• Staff education</li> <li>• Patient education</li> <li>• Environmental modifications</li> <li>• Fall risk signs</li> <li>• Clothing modification</li> <li>• Medication review</li> <li>• Low-rise beds</li> </ul>	• Staff education	Significantly decreased fall frequency with the control group	Medical residents, nurses, patients, patients
Baker et al. <sup>17</sup> (2009)	<ul style="list-style-type: none"> <li>• Fall risk assessment</li> <li>• Staff education</li> <li>• Fall risk signs</li> <li>• Assistance with walking</li> <li>• Urinary catheters</li> <li>• Assistance with toileting</li> <li>• Medication review</li> <li>• Low-rise beds</li> </ul>	• Staff education	Significantly decreased fall frequency with the control group	Medical residents, nursing students, nurses
Chen et al. <sup>28</sup> (2011)	<ul style="list-style-type: none"> <li>• Fall risk assessment</li> <li>• Patient education</li> <li>• Fall risk signs</li> <li>• Assistance with walking</li> <li>• Assistance with toileting</li> <li>• Medication review</li> </ul>	• Continuous quality improvement	Significantly decreased fall frequency with the control group	Medical residents, nurses, patients
Fraser et al. <sup>29</sup> (2017)	<ul style="list-style-type: none"> <li>• Fall risk assessment</li> <li>• Staff education</li> <li>• Medication review</li> <li>• Fall risk signs</li> <li>• Assistance with walking</li> <li>• Assistance with toileting</li> <li>• Urinary catheters</li> <li>• Medication review</li> </ul>	<ul style="list-style-type: none"> <li>• Leadership support</li> <li>• Multidisciplinary team</li> <li>• Success tools</li> </ul>	Significantly decreased fall frequency with the control group	Medical residents, medical students, nursing students
Hendrickson et al. <sup>21</sup> (2014)	<ul style="list-style-type: none"> <li>• Fall risk assessment</li> <li>• Fall risk signs</li> <li>• Patient education</li> <li>• Assistance with walking</li> <li>• Low-rise beds</li> <li>• Medication review</li> <li>• Urinary catheters</li> <li>• Assistance with toileting</li> </ul>	• Staff education	Significantly decreased fall frequency with the control group	Medical residents, nurses
Reid et al. <sup>24</sup> (2009)	<ul style="list-style-type: none"> <li>• Fall risk assessment</li> <li>• Environmental modifications</li> <li>• Fall risk signs</li> <li>• Staff education</li> <li>• Patient education</li> <li>• Medication review</li> <li>• Assistance with walking</li> <li>• Assistance with toileting</li> <li>• Medication review</li> <li>• Low-rise beds</li> </ul>	• Staff education	Significantly decreased fall frequency	Medical residents, patients
Tipton et al. <sup>30</sup> (2014)	<ul style="list-style-type: none"> <li>• Fall risk assessment</li> <li>• Urinary catheters</li> <li>• Staff education</li> <li>• Patient education</li> <li>• Assistance with walking</li> <li>• Assistance with toileting</li> <li>• Medication review</li> <li>• Low-rise beds</li> <li>• Environmental modifications</li> <li>• Fall risk signs</li> <li>• Patient education</li> <li>• Assistance with walking</li> <li>• Assistance with toileting</li> <li>• Medication review</li> <li>• Low-rise beds</li> </ul>	<ul style="list-style-type: none"> <li>• Staff education</li> <li>• Implementation audit</li> <li>• Leadership support</li> </ul>	Significantly decreased fall frequency with the control group	Medical residents, nursing students, medical students, nursing students, patients
Whitney et al. <sup>31</sup> (2011)	<ul style="list-style-type: none"> <li>• Fall risk assessment</li> <li>• Patient education</li> <li>• Staff education</li> <li>• Urinary catheters</li> <li>• Assistance with walking</li> <li>• Assistance with toileting</li> <li>• Medication review</li> <li>• Low-rise beds</li> </ul>	<ul style="list-style-type: none"> <li>• Staff education</li> <li>• Leadership support</li> <li>• Multidisciplinary fall committee</li> </ul>	Significantly decreased fall frequency with the control group	Medical residents, nursing students, medical students, nursing students, patients

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**Cochrane Library**  
Cochrane Database of Systematic Reviews

**Interventions for preventing falls in older people in care facilities and hospitals (Review)**

Cameron ID, Dyer SM, Panagoda CE, Murray GR, Hill KD, Cumming RG, Kerse N

Cameron ID, Dyer SM, Panagoda CE, Murray GR, Hill KD, Cumming RG, Kerse N. Interventions for preventing falls in older people in care facilities and hospitals. Cochrane Database of Systematic Reviews 2018, Issue 9.

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### Interventions for preventing falls in older people in care facilities and hospitals (Review)

- Estudios randomizados controlados a Agosto 2017
- 95 estudios: 138,164 participants; 24 (97,790 participants) en hospitales
- Edad promedio hospiti: 78 años, 52% mujeres
- Calidad de la evidencia:
  - La mayoría de los ensayos tenían un alto riesgo de sesgo, falta de cegamiento
  - Calidad de la evidencia fueron bajas o muy bajas
 Outcome: Tasa de caídas, Nro de personas que se caen.

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### Interventions for preventing falls in older people in care facilities and hospitals (Review)

- 2 estudios de 215 participantes se evaluaron el efecto de la fisioterapia adicional (ejercicios supervisados, **se encontró una disminución del riesgo de caerse, RR: 0.36, 95%, CI 0.14 - 0.93 (83 participantes)**).
- En dos estudios con 28 649 participantes se evaluó el **efecto de los sensores de alarma** de cama y sillas en hospitales sobre la tasa de caídas, **no encontrándose significancia** ; RaR 0.60, IC 95% (0.27 - 1.34); de la misma manera para el riesgo de caerse RR 0.93, IC 95% (0.38 - 2.24).

Cameron ID, Dyer SM, Panagoda CE, Murray GR, Hill KD, Cumming RG, Kerse N.  
Interventions for preventing falls in older people in care facilities and hospitals.  
Cochrane Database of Systematic Reviews 2018, Issue 9.

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## Interventions for preventing falls in older people in care facilities and hospitals (Review)

- Referente a las **Intervenciones multifactoriales en hospitales** se observó **una reducción de la tasa de caídas** ( 5 estudios;  $I^2 = 52\%$ ). de RaR 0.80, 95% CI 0.64 - 1.01 (44,664 participantes)
  - un **análisis de subgrupo de 3747 participantes (2 estudios;  $I^2 = 0\%$ )**; sugirió que la **reducción puede ser mayor en una unidad de subagudos (RaR 0.67, 95% CI 0.54 - 0.83; baja calidad de evidencia)**.
- Es incierto el efecto de **intervenciones multifactoriales sobre el riesgo de caerse** ( 39,889 participantes, 3 studios;  $I^2 = 0\%$ ); RR 0.82, 95% CI 0.62 - 1.09 ( muy baja calidad de evidencia)

Cameron ID, Dyer SM, Panagoda CE, Murray GR, Hill KD, Cumming RG, Kerse N. Interventions for preventing falls in older people in care facilities and hospitals. Cochrane Database of Systematic Reviews 2018, Issue 9.

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## CONCLUSIONES

- **Las caídas en el hospital son un problema clínico frecuente, legal y está asociado a morbilidad, mayor estancia hospitalaria e incrementos de costos.**
- **Existen diversos instrumentos para determinar el riesgo de caídas pero no tienen un buen rendimiento dx**
- **El juicio clínico es muy importante para detectar riesgo de caídas**
- **Al intervenir con programas en prevención ejm Delirium y otros factores subyacentes también se disminuirá la incidencia de caídas durante la hospitalización.**
- **Los estudios de prevención de caídas solos o multifactoriales son de baja evidencia**

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## RECOMENDACIONES

- **Registro de caídas en AM Hospitalizados**
- **Los servicios de salud tienen que adaptarse a las necesidades de las personas adultas mayores**
- **Todo adulto mayor de 65 años debe ser considerado como alto riesgo para caídas**
- **Sensibilizar al personal de salud**
- **Evitar hospitalizaciones innecesarias**

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