



Fall Prevention: Translating Knowledge Into Action

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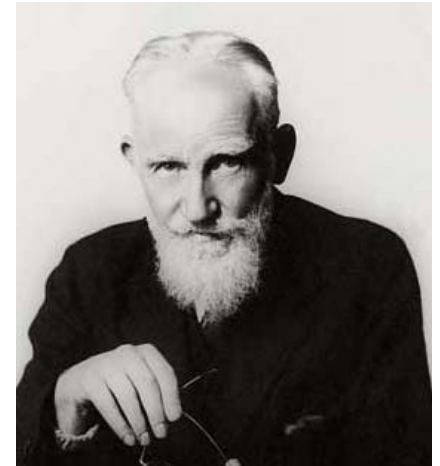
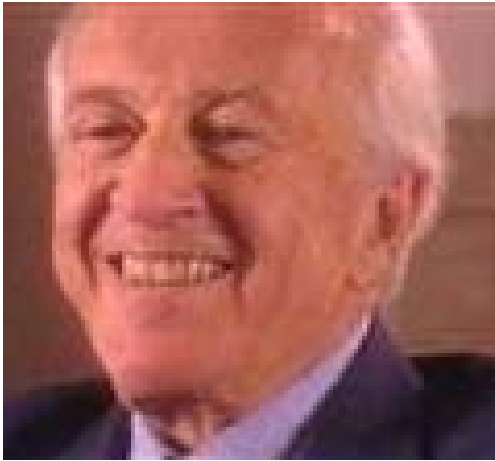


Model-Building: Evidence, Elements & Evaluation

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Famous Fallers



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Fall Incidence in Older Adults

[rate/person/yr] or [rate/bed/yr]

	Home	Hospital	Nsg Home
Any fall	0.3	1.5	1.7
Severe fall	0.03 (10%)	0.3	0.35 (20%)
Fracture	0.01	0.05	0.07
Hip fracture	0.003		0.02

Source: Rubenstein LZ, Josephson KR. Clin Geriatr Med. 2002(May);18(2):141-158

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Falls Mortality

- Accidents: the 5th leading cause of death in older adults
- Deaths from falls: 2/3 of accidental deaths
- 72% of U.S. fall-related deaths occur in the 13% of population age 65+

Source: Rubenstein LZ, Josephson KR. Clin Geriatr Med. 2002(May);18(2):141-158

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Costs of Falls

- 8% of pop \geq 70 visit ERs for falls yearly
- 1/3 of these are hospitalized
- 5.3% of hosp patients \geq 65 are due to falls
- U.S. cost est. 2000 \rightarrow \$20 B. (2020 \rightarrow \$32 B)
- 42% of fallers reduce activity after fall
- 18% restricted activity initiated by falls
- Precipitate NH entry

Source: Rubenstein LZ, Josephson KR. Clin Geriatr Med. 2002(May);18(2):141-158



Risk Factors for Falls: 16 Multivariate Studies

Factor	Signif/All	Mean RR	Range
Weakness	10/11	4.4	1.5 - 10.3
Prior fall	12/13	3.0	1.7 - 7.0
Balance deficit	8/11	2.9	1.6 – 5.4
Gait deficit	10/12	2.9	1.3 – 5.6
Assistive device	8/8	2.6	1.2 – 4.6
Vision deficit	6/12	2.5	1.6 – 3.5
Arthritis	3/7	2.4	1.9 – 2.9
ADL deficit	8/9	2.3	1.5 – 3.1
Depression	3/6	2.2	1.7 – 2.3
Cognitive deficit	4/11	1.8	1.0 – 2.3
Age > 80	5/8	1.7	1.1 – 2.5

Source: Rubenstein LZ, Josephson KR. Clin Geriatr Med. 2002(May);18(2):141-158

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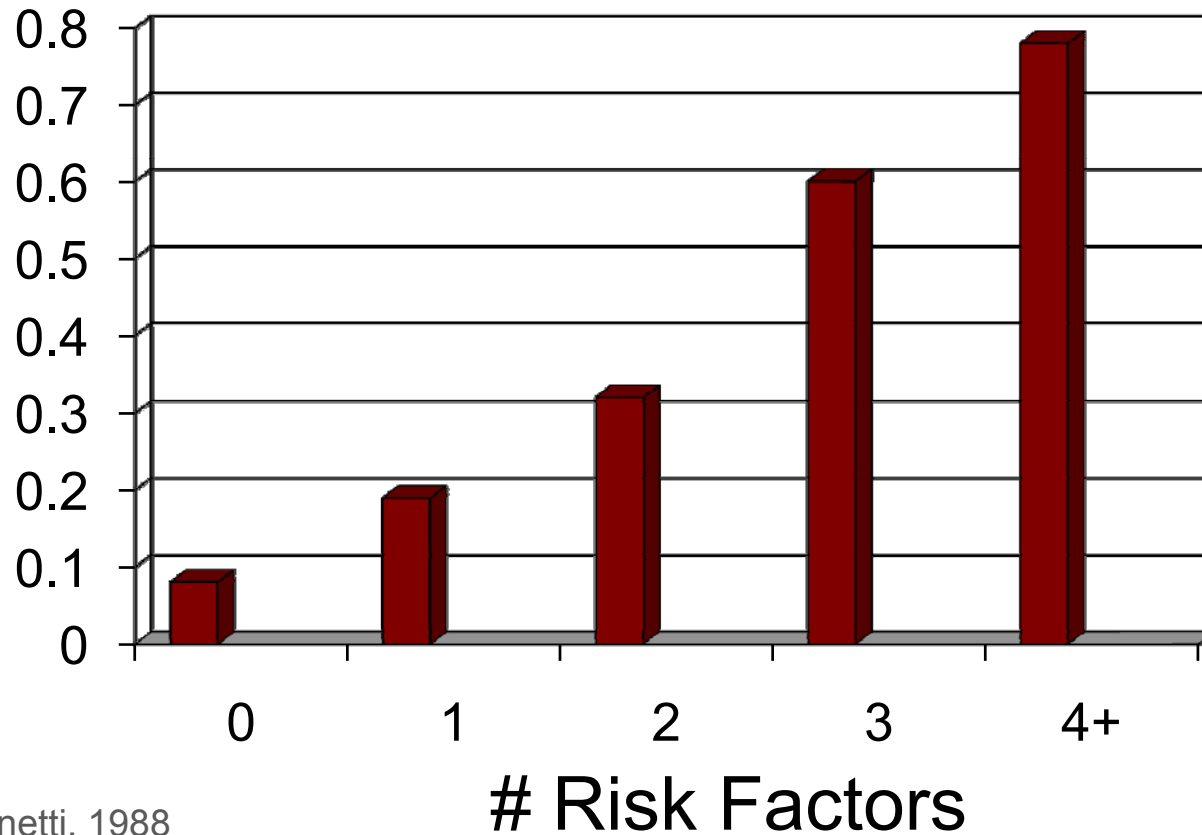
Drugs & Falls: Meta-Analysis

- Psychotropics, any: 1.73 (1.52-1.97)
 - Neuroleptics: 1.50 (1.25-1.79)
 - Sedative/hypnotics: 1.54 (1.40-1.70)
 - Antidepressants: 1.66 (1.40-1.95)
 - Benzodiazepines: 1.48 (1.23-1.77)
- Diuretics: 1.08 (1.02-1.16)
- Anti-arrhythmics (Ia) : 1.59 (1.02-2.48)
- Digoxin: 1.22 (1.05-1.42)

Source: Leipzig RM, Cumming RG, Tinetti ME. J Am Geriatr Soc. 1999(Jan);47(1):40-50



Fall Incidence ↑ as Risk Factors ↑

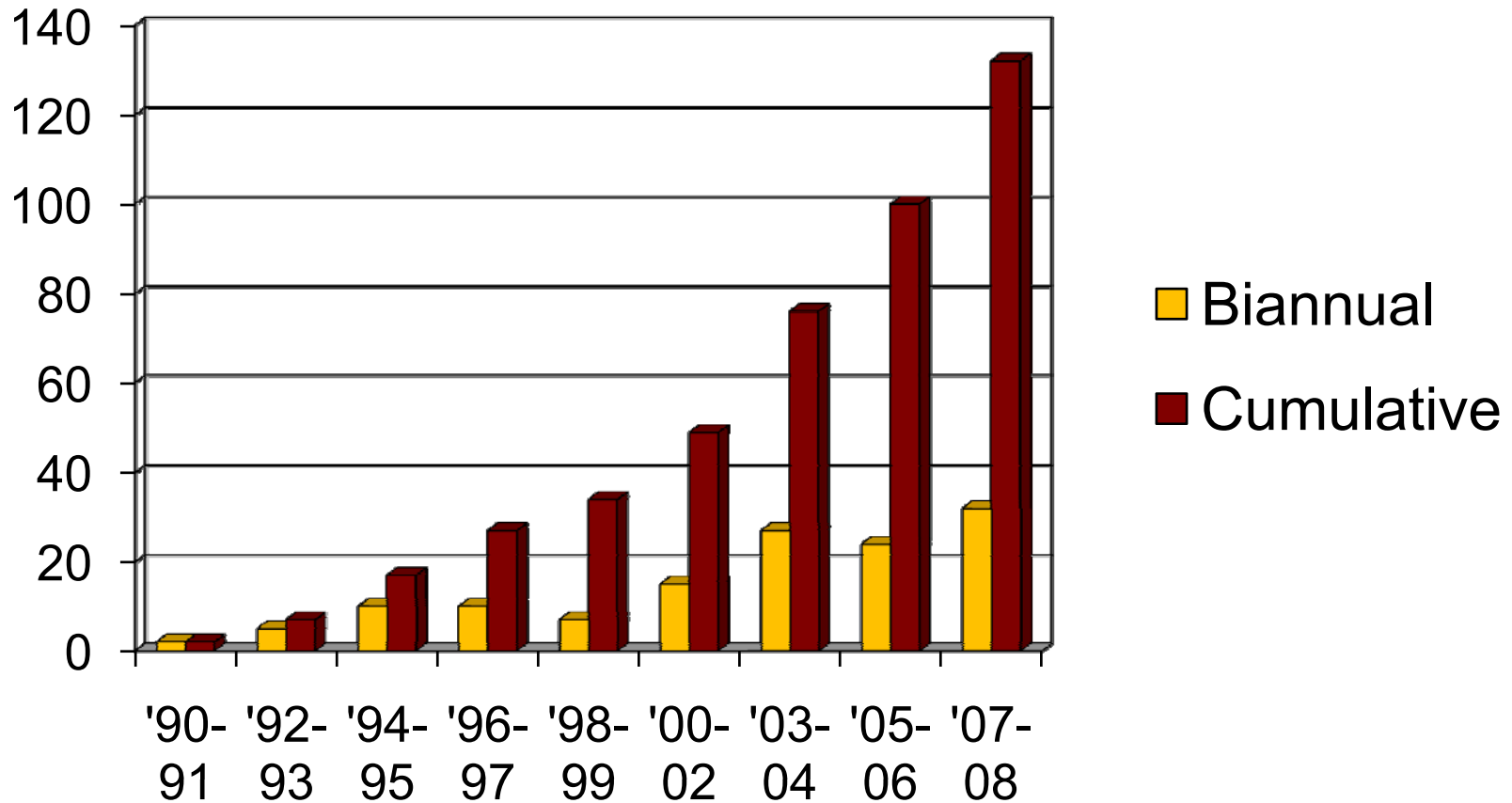


Source: Tinetti, 1988

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Fall Prevention: Growth of RCTs



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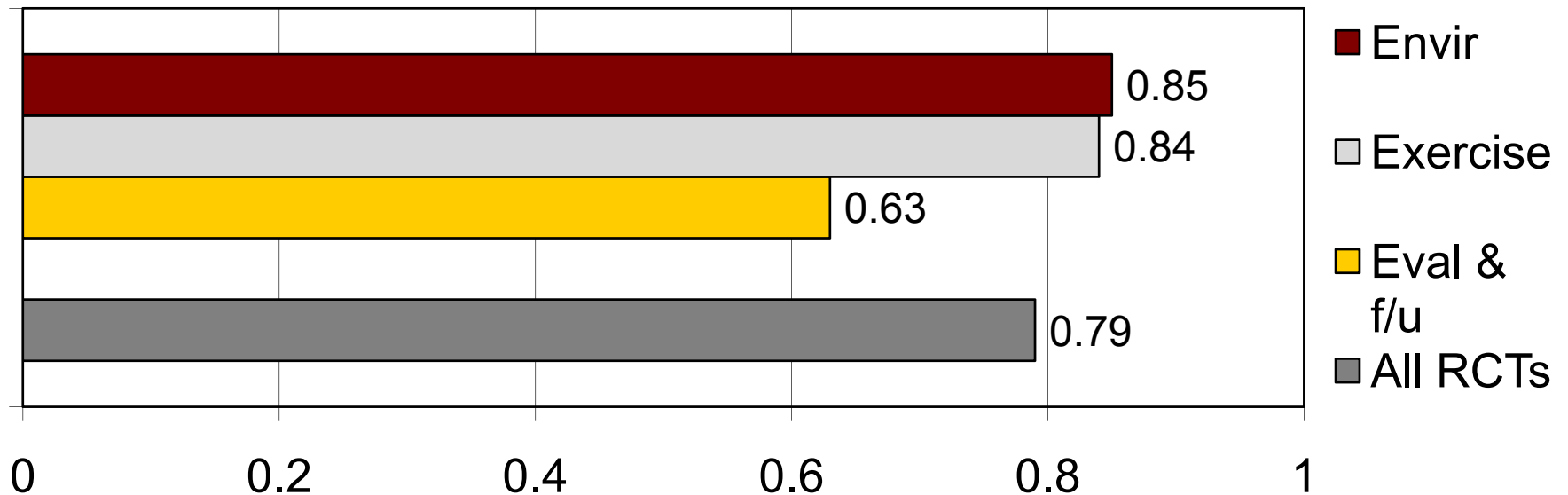
Fall Prevention Tools

- Assessment (preventive & post-fall)
- Exercise & rehabilitation programs
- Environmental modifications
- Devices
- Nursing interventions
- Combined interventions



Fall Prevention Trials: RAND-CMS Meta-Analysis

- Lit Review (1980-2002): 830 pubs, 41 RCTs
- Pooled reduction in fall rates (intervention vs. control)



Source: Chang et al, Br Med J 328:680-7, 2004



Since the 2004 Meta-Analysis

What's New?

- > 35 new published RCTs
- New studies of existing models:
 - Risk assessment + intervention (8), Exercise (14), Multi-factorial (8), Hip protectors (3)
- New interventions
 - Visual modifications, Vit D + Ca⁺⁺, Footwear, Vibration
- Multi-factorial interventions seem best
 - RF assessment + abatement, exercise, environ mod
 - Organized, consistent, population-based programs



Fall Prevention Strategies

COMMUNITY

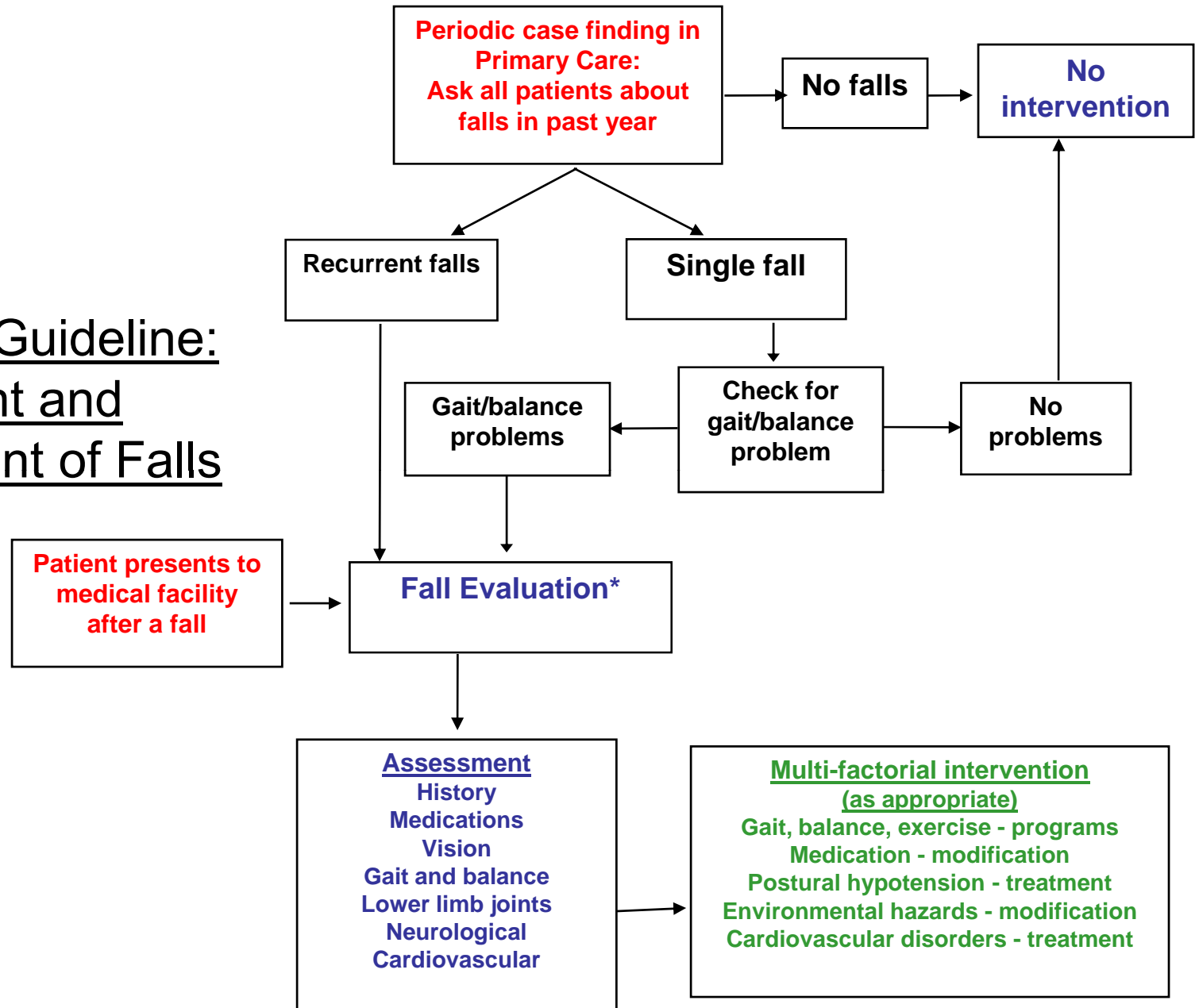
- Ask about falls
- Risk-factor screen & intervention
- Post-fall assessment
- Exercise program (strength, balance)
- Environmental inspection & modification

INSTITUTION

- Organized program
- Risk-factor screen
- Post-fall assessment
- Nurse awareness
- Targeted interventions (e.g., hip pads, sitter, low bed, bed alarms, monitors, prompted toileting)



AGS/BGS Guideline: Assessment and Management of Falls





Developing & Testing “Gold Standard” Model Programs



- Increasing Stability Through Evaluation and Practice (InSTEP)
- 3 Key Components:
 - Medical-Risk Assessment & Recommendations
 - Physical Activity Program
 - Home-Risk Assessment & Modification
- Intensity: high, medium & low (2 each)
- Motivation discussion groups (1 at each intensity)
- Focusing on older adults with moderate to high fall risk