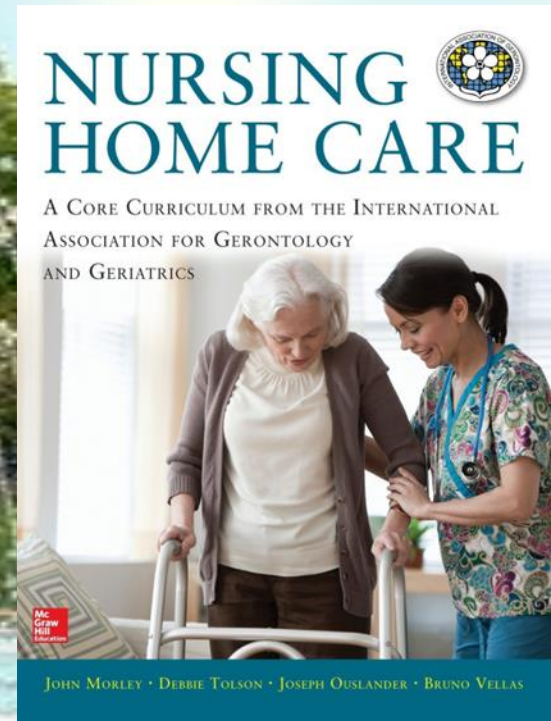


The Nursing Home from past to future



John E Morley



Gateway Geriatric
Education Center



SAINT LOUIS
UNIVERSITY

Saint Louis University
Division of Geriatric Medicine



*Gypsy with a Mandolin,
1874*

Corot , 1873

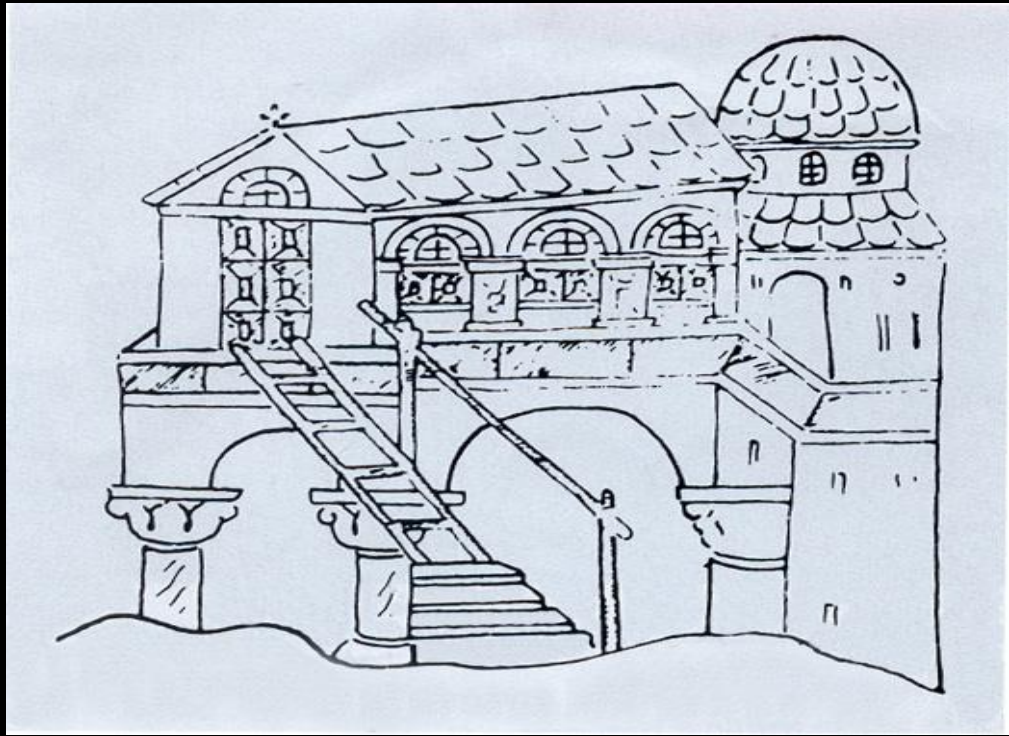
Age 77

“If Providence gives me another two years,
I believe I shall still be able to paint something beautiful.”

Saint Helen

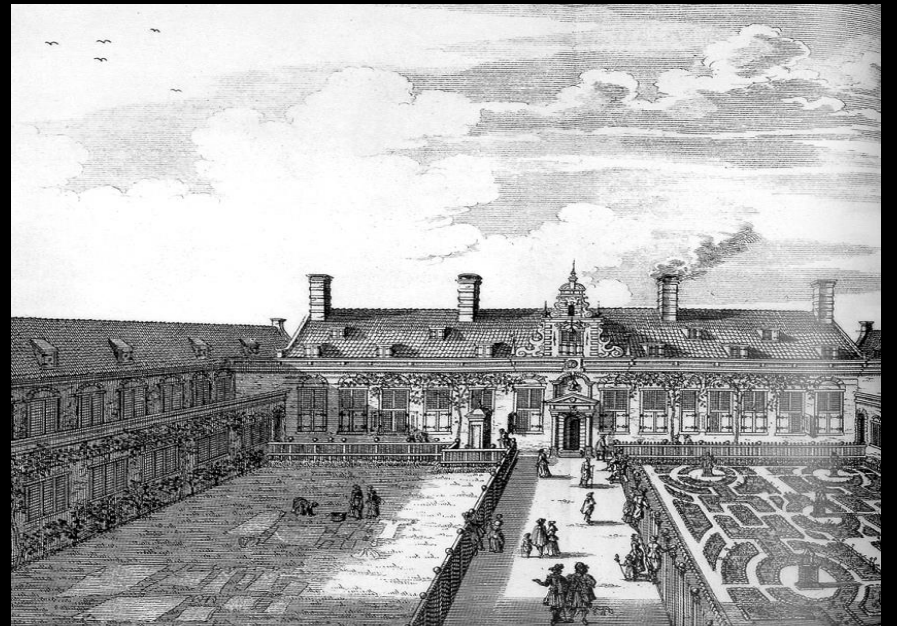


Played an important role in development of nursing homes in the Byzantine Empire



The Armatius Nursing Home in Constantinople (*miniature from the Code Vaticanus Grecus, 1613*)

Poorhouse for
'old men and women'
in Amsterdam
Circa 1650



Leslie LIEBOW

Developed the first Teaching nursing Home in 1967



[J Am Med Dir Assoc.](#) 2015 Mar;16(3):181-4.
An international definition for "nursing home".

A nursing home:

Is a facility that provides 24-hour functional support for people who require assistance with ADLs/IADLs and have identified health needs

May or may not be staffed with health care professionals

Provides long-term care and/or rehabilitation as part of hospital avoidance or to facilitate early hospital discharges

Does not function as a hospital ward and is not hospital-based

May play a role in providing palliative and/or hospice care at end of life



Models of Care around the World

• Social 14



• Nurse 14



• Physician 8

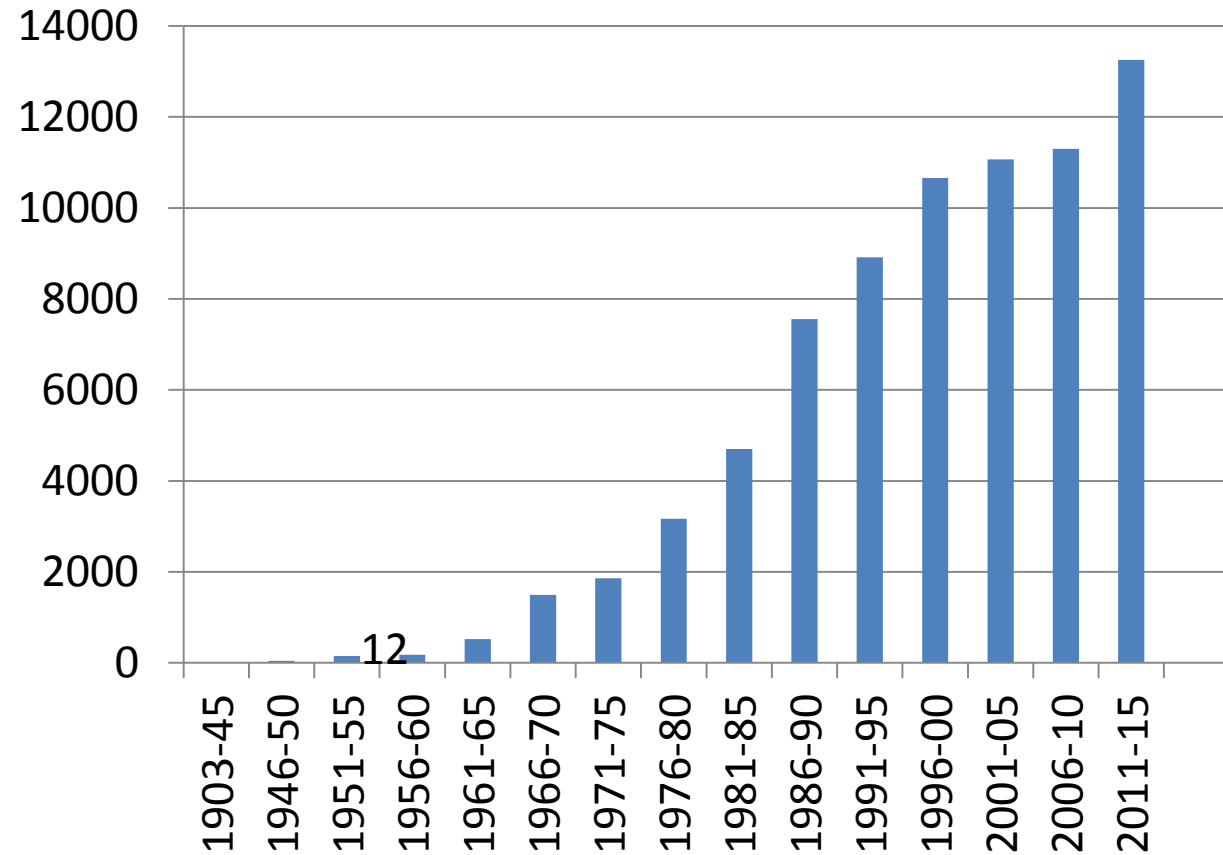


In 6 countries 2 models predominated

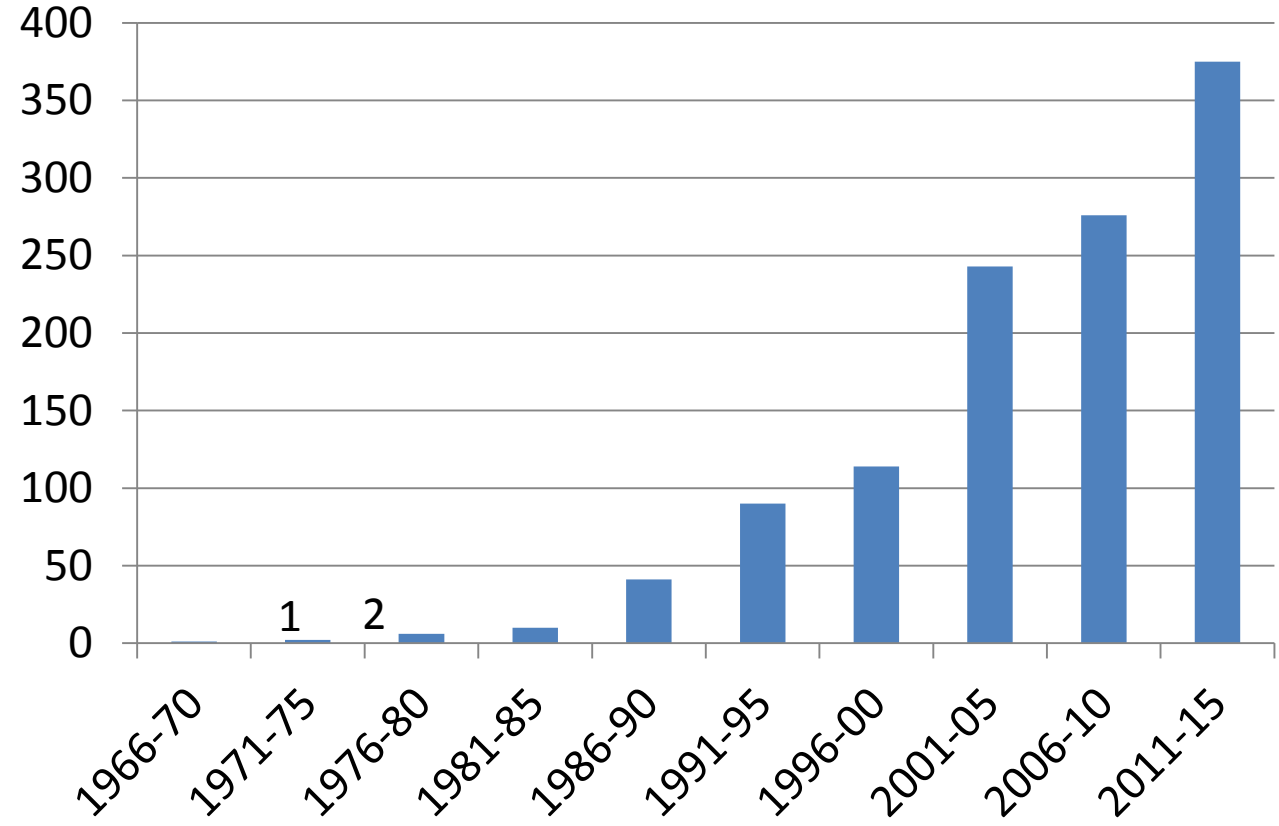
- Resident Assessment Instruments were used in only 35% of countries.
- Physician visits to the nursing home occurred in 37%.
- All but 2 countries used advanced practice nurses.

Nursing Home : Publications

a. Nursing home publications



b. RCT in nursing homes



Major Nursing Home Topics

PubMed in 2015

Rank Topic

1. Dementia
2. Activities
3. Pain
4. Technology
5. Infections
6. Medications
7. Nutrition
8. Falls
9. Cognitive Therapy
10. Anxiety

IAGG Nursing Home Research Priorities

[J Am Med Dir Assoc.](#) 2014 May;15(5):309-12.

Rank	Topic
1	Dementia care
2	Psychosocial interventions BPSD
3	Advance care planning
	Improving nutrition
5	Polypharmacy
6	Putting evidence-based care into practice
7	Effect of palliative (end-of-life) care
8	Improving quality of life
9	Maintenance of physical and social function (rehabilitation programs)
10	Reduce hospital admissions (transitions)
11	Meaningful daily activities
12	Lifestyle interventions (exercise) Frailty
14	Staff turnover
15	Treatment withdrawal

Including nursing home residents

- Including nursing home residents in major drug trials
- Trials of medication withdrawal in nursing homes
- Trials of nutrition benefits in multiple nursing homes
- Trials of psychosocial interventions

ALL TRIALS NEED AT LEAST 500 RESIDENTS

the gold standard



MDS 3.0 (2010): A new gold standard



Changes found in the MDS 3.0:

New structured resident interviews to assess **mood, preferences, pain** and **cognition**;

Inclusion of the **Confusion Assessment Method** to screen for delirium;

Revised **psychosis** and **behavior** items;

Revised **balance** and **falls** sections;

Revised **bladder** and **bowel** assessment items;

Revised **pressure ulcer** assessment items;

Revisions to the **nutrition** items;

Resident expectations for **return to the community**;

Changes to race/ethnicity item and language report.

Response rates for the resident interview sections were high: 90% for cognitive, 86% for mood, 85% for preferences, and 87% for pain.

Staff survey responses showed increased satisfaction with clinical relevance, validity and clarity compared with MDS 2.0.

The test version of the MDS 3.0 took 45% less time for facilities to complete.

Enhanced accuracy supports the primary legislative intent that MDS be a tool to improve clinical assessment and supports the **credibility** of programs that rely on MDS.

Improving Long Term Care

Transfer to Acute Hospitals

- 100 unscheduled transfers from 8 NHs to 10 hospitals in LA
- Structured implicit record review by 2 geriatricians
- 36% of ED transfers and 40% of admissions considered inappropriate by both reviewers

Saliba et al JAGS 48:154-163, 2000

Table 2. Results of the Enhanced Care and Coordination Providers

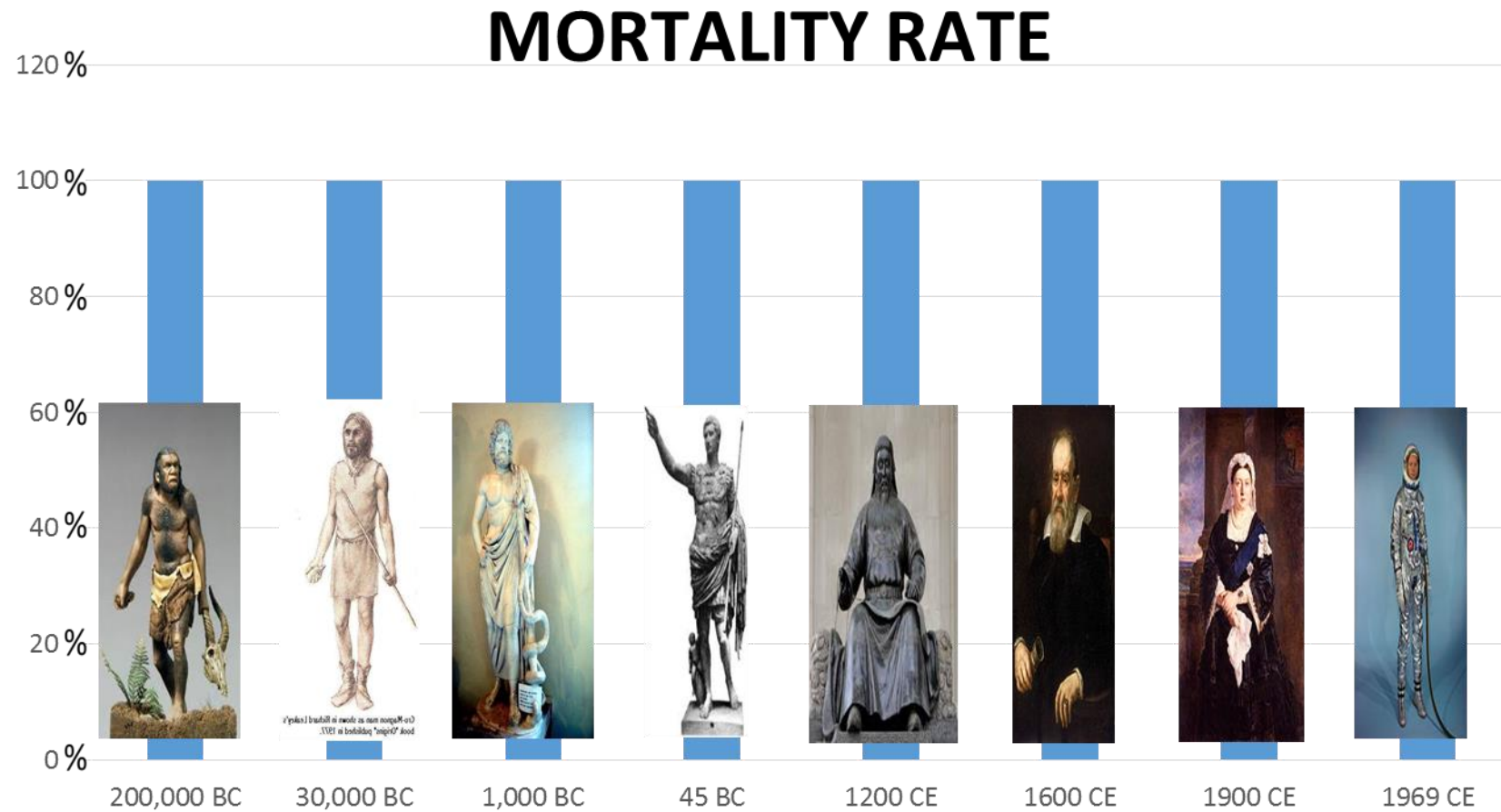
(ED=Emergency Department; NS = nonsignificant; ↓=reduction)

State	MDS Quality Outcomes	All-Cause Hospitalizations	Potentially Avoidable Hospitalizations	All Cause ED	Medicare Expenditure
Alabama	NS	NS	NS	↓	NS
Indiana	NS	↓	↓	NS	NS
Missouri	NS	↓	↓	↓	NS
Nebraska	NS	NS	NS	NS	NS
Nevada	NS	NS	NS	NS	NS
New York	NS	NS	NS	NS	NS
Pennsylvania	NS	↓	↓	NS	↓

Table 3. Quality Measures for USA Nursing Homes

Measure	National Average
Long-Stay Measures	
Percentage with fall and major injury	3.3%
Self-reported moderate to severe pain	7.8%
High risk residents with pressure ulcers	5.7%
Urinary tract infection	4.6%
Catheter in bladder	2.8%
Physical restraints	0.7%
Increase in need for help with daily activities	15.3%
Antipsychotic medication	16.9%
Worsening ability to move independently	18.2%
Lose too much weight	7.0%
Residents with depressive symptoms	5.4%
Receiving antianxiety or hypnotic medication	23.5%
Short-Stay Patients	
Improvement in function	6.3%
Self-reported moderate to severe pain	16.2%
Residents with new or worsening pressure ulcers	1.1%
New antipsychotic medication	2.1%
Claims-Based Measures	
Discharged to community	56.2%
Rehospitalization within 30 days	22.6%
Emergency department visit	12.1%

Historic Human Mortality Rates



Do specific programs enhance outcomes?

Hospital Transfers

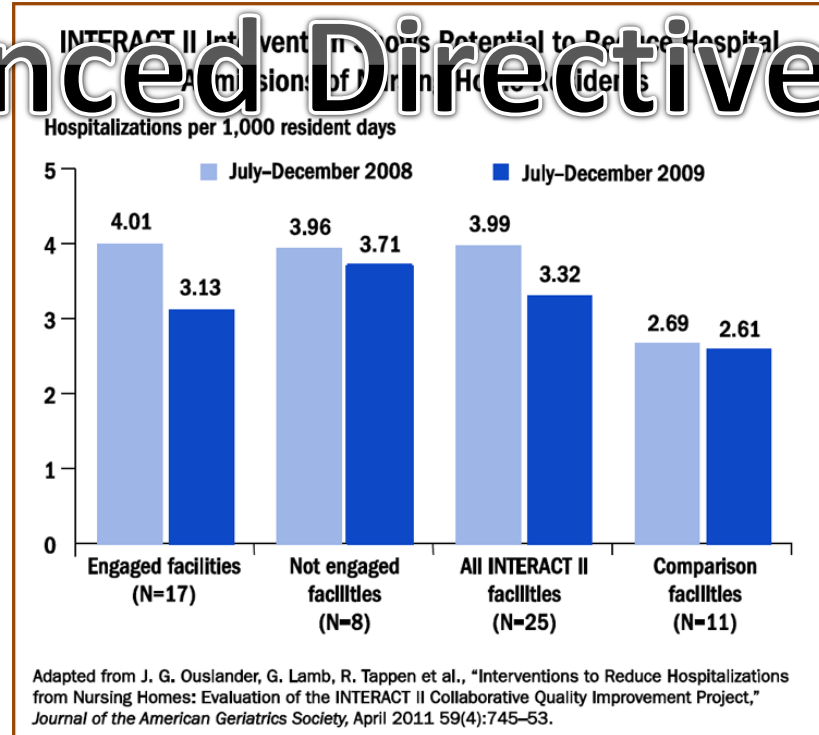
Solution: Advanced Directives

- 1 in 4 patients admitted to a SNF are re-admitted to the hospital within 30 days at a cost of \$4.3 billion

Figure 3: Frequency of Rehospitalization of Short-Stay Nursing Home Residents, by State, 2006



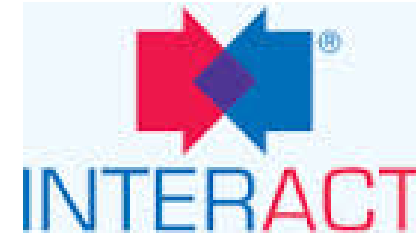
Source: Stuart M. et al. (2010) Medicare SNF Rehospitalizations: Implications for Medicare Payment Reform. Health Affairs.



Adapted from J. G. Ouslander, G. Lamb, R. Tappen et al., "Interventions to Reduce Hospitalizations from Nursing Homes: Evaluation of the INTERACT II Collaborative Quality Improvement Project," *Journal of the American Geriatrics Society*, April 2011. 59(4):745-53.



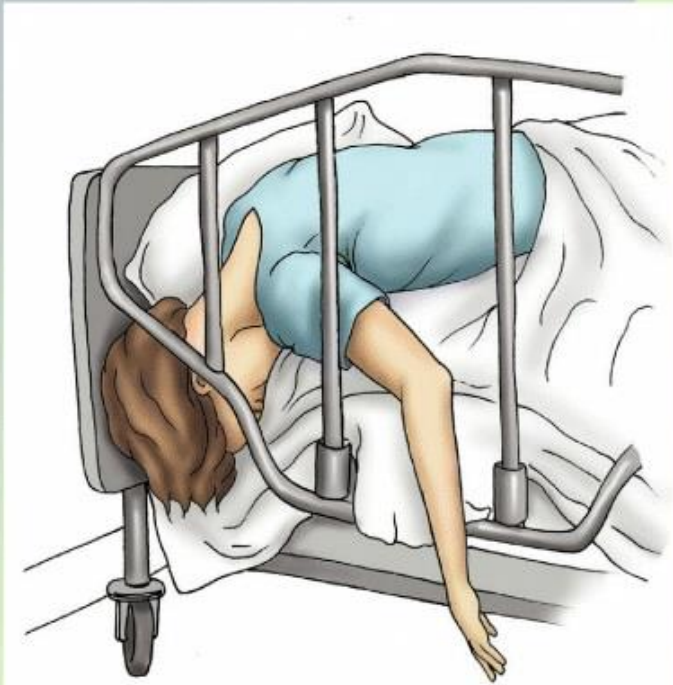
? TELEMEDICINE



**“Bed rest is for
Dead People”**



Restraints?



Bed-frame, rail, and mattress entrapment:
Asphyxiation results from occlusion of the airway by the mattress.

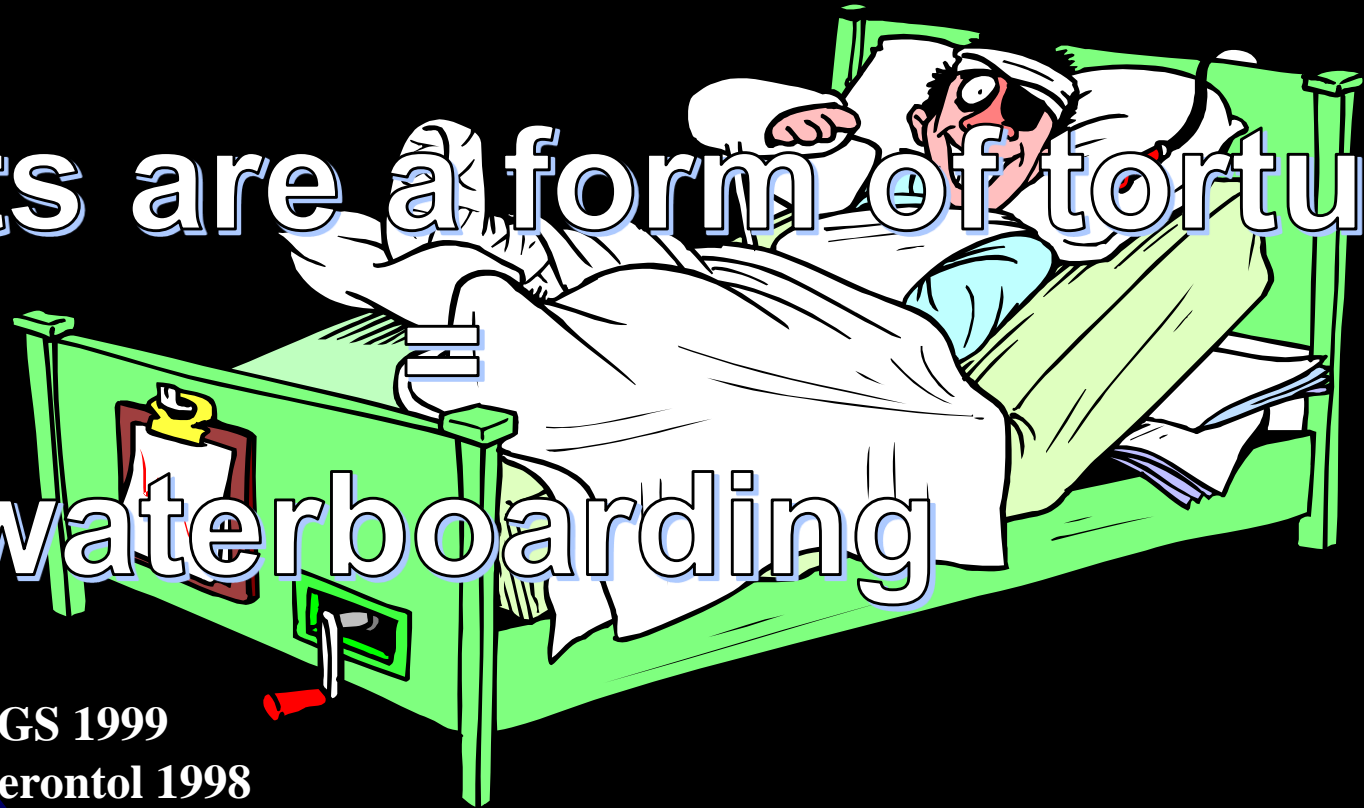
Neufeld RR, et al. JAGS 1999
Capezuti E, et al. J Gerontol 1998
Dunn KS. J Gerontol Nursing 2001
Powell C, et al. Can Med Ass J 1989

Restraints?

- More harm than “protection”

Restraints are a form of torture

waterboarding

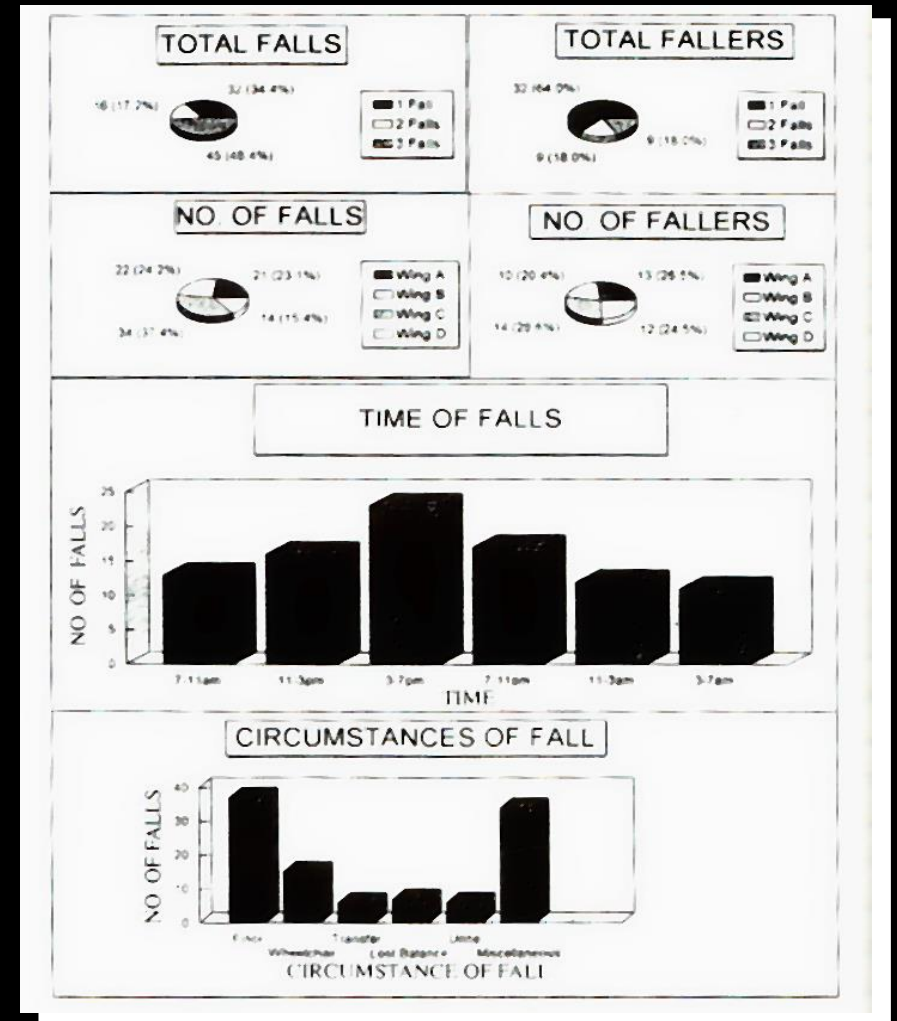
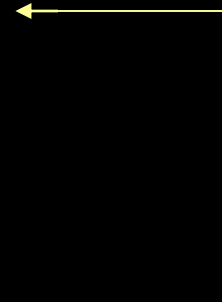


Neufeld RR, et al. JAGS 1999
Capezuti E, et al. J Gerontol 1998
Dunn KS. J Gerontol Nursing 2001
Powell C, et al. Can Med Ass J 1989

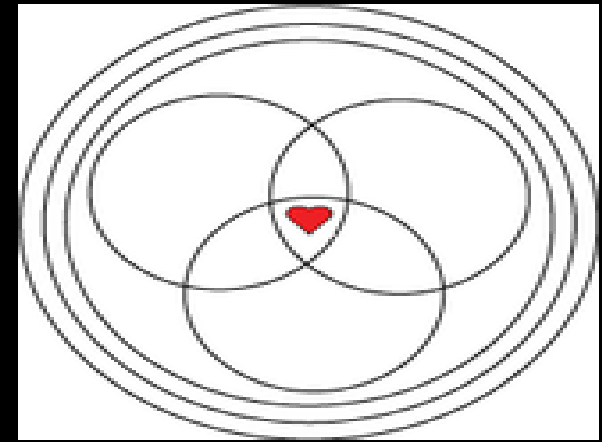
Continuous Quality Improvement



Quality
Correction



Culture Change



- Live Oak Regenerative Community 1970's
 - **crucial role of elderhood**
- Eden Alternative 1991
 - **lush , lively human habitats**
- Wellspring Innovative Solutions 1994
 - **collaboration, staff empowerment and consistent staff assignment**
- Greenhouse 2003
 - **small group housing with residents making decisions**
- Holistic Approach to Transformational Change (HATCh)
 - **circles with residents at center; promoting a place of home**

EDEN ALTERNATIVE

(Founded 1991)

- Cultural Change
- De-institutionalizing culture and environment of nursing homes
- Ownership....enhancing locus of control
- Enlivened environment
 - pets
 - gardens



William Thomas



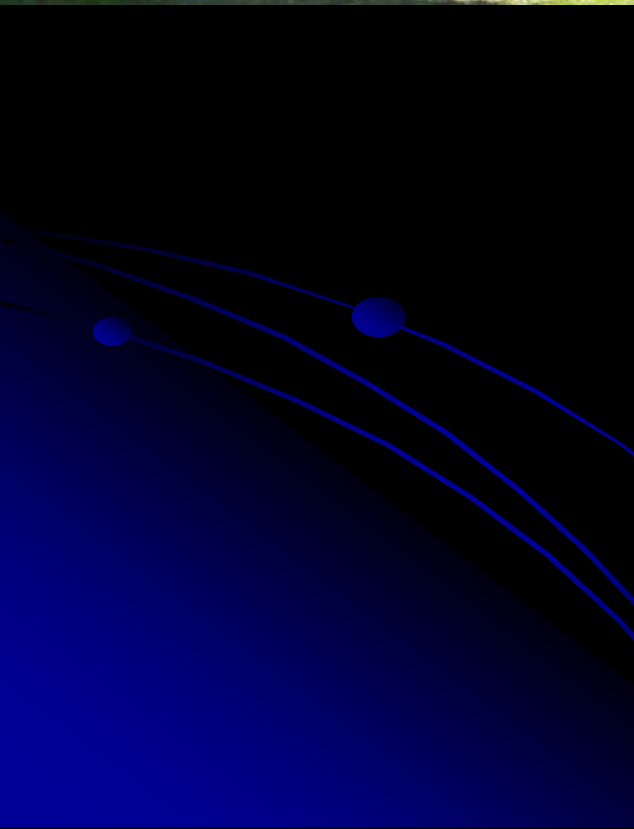
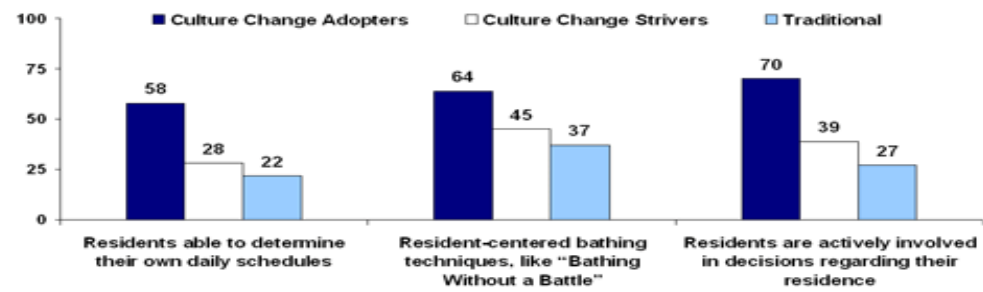


Figure ES-2. Residents' Ability to Determine Daily Schedules and Make Decisions Varies Widely Between Culture Change Adopters and Traditional Nursing Homes

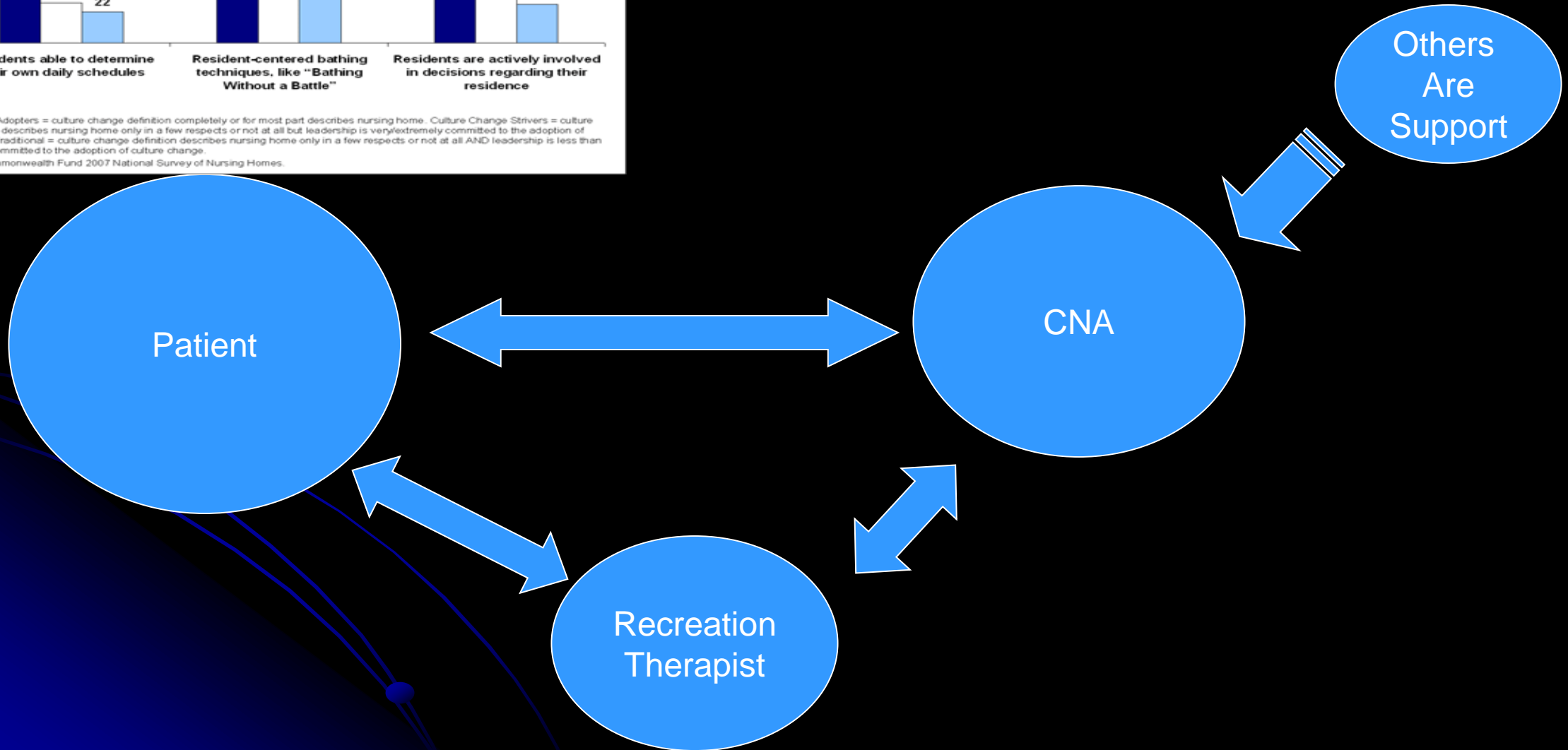
Percent of nursing homes indicating they are currently implementing:



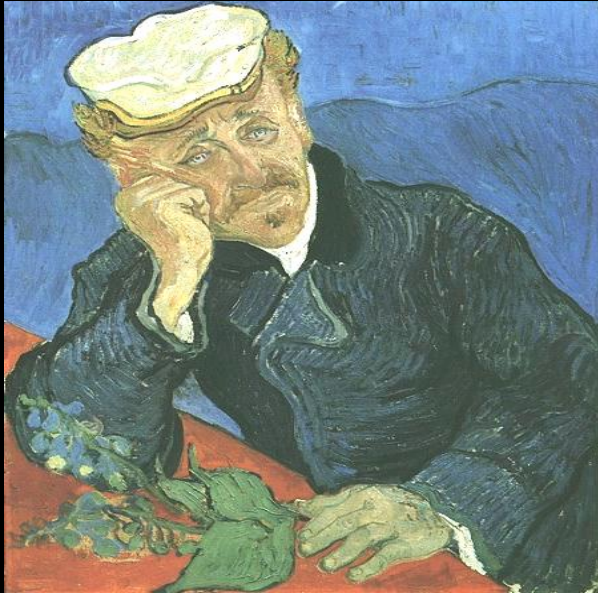
Culture Change Adopters = culture change definition completely or for most part describes nursing home. Culture Change Strivers = culture change definition describes nursing home only in a few respects or not at all but leadership is very/extremely committed to the adoption of culture change. Traditional = culture change definition describes nursing home only in a few respects or not at all AND leadership is less than very/extremely committed to the adoption of culture change.

Source: The Commonwealth Fund 2007 National Survey of Nursing Homes.

Keys to Culture Change

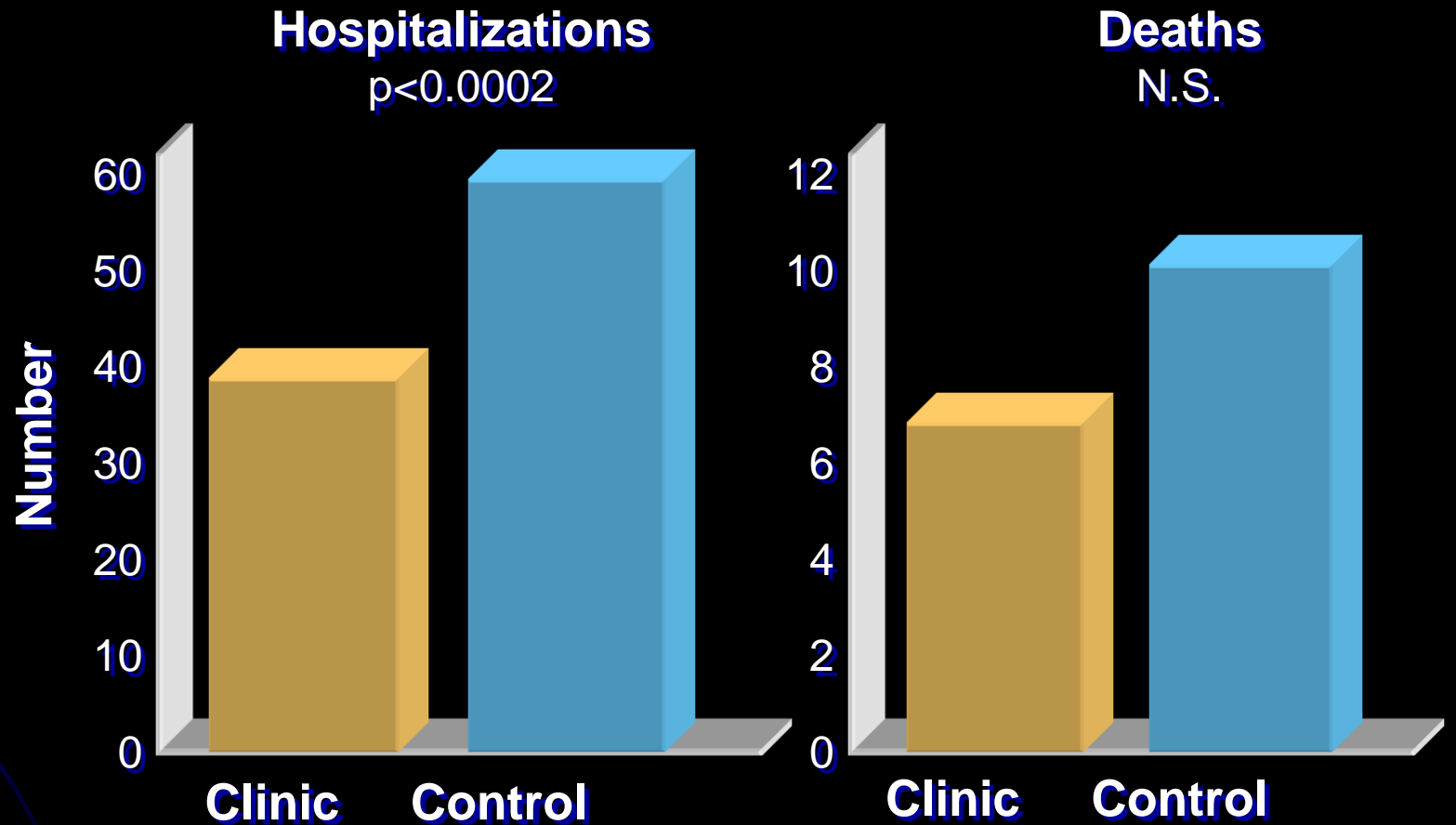


The Polypharmacy Conundrum



Effect of Medication Reduction

Meds reduced from 13.1 to 8.2



Pharmacy Committee

- Pharmacist, DON, Medical director, Administrator

- Meet monthly

Review 2 to 4 charts

Over 15 meds

Inappropriate meds

Multiple falls

Weight loss

Failure of physician to respond to pharmacist

Antipsychotics no diagnosis

PHYSICIAN DRUG UTILIZATION

Physician	A	B	C	D	E
M/Pt	12.2	6.8	15.4	7.6	8.2
PRN/Pt	5.1	2.2	3.8	2.7	3.1
%APsy	38	16	33	12	24
%Anx	25	8	7	15	32
%Sed	45	4	6	8	0

Approach to Drug Reduction

1. What is the target problem being treated?
2. Is the drug necessary?
3. Are nonpharmacologic therapies available?
4. Is this the lowest practical dose?
5. Could discontinuing therapy with a medicine help reduce symptoms?
6. Does this drug have adverse effects that are more likely to occur in an older patient?
7. Is this the most cost-effective choice?
8. By what criteria, and at what time, will the effects of therapy be assessed?

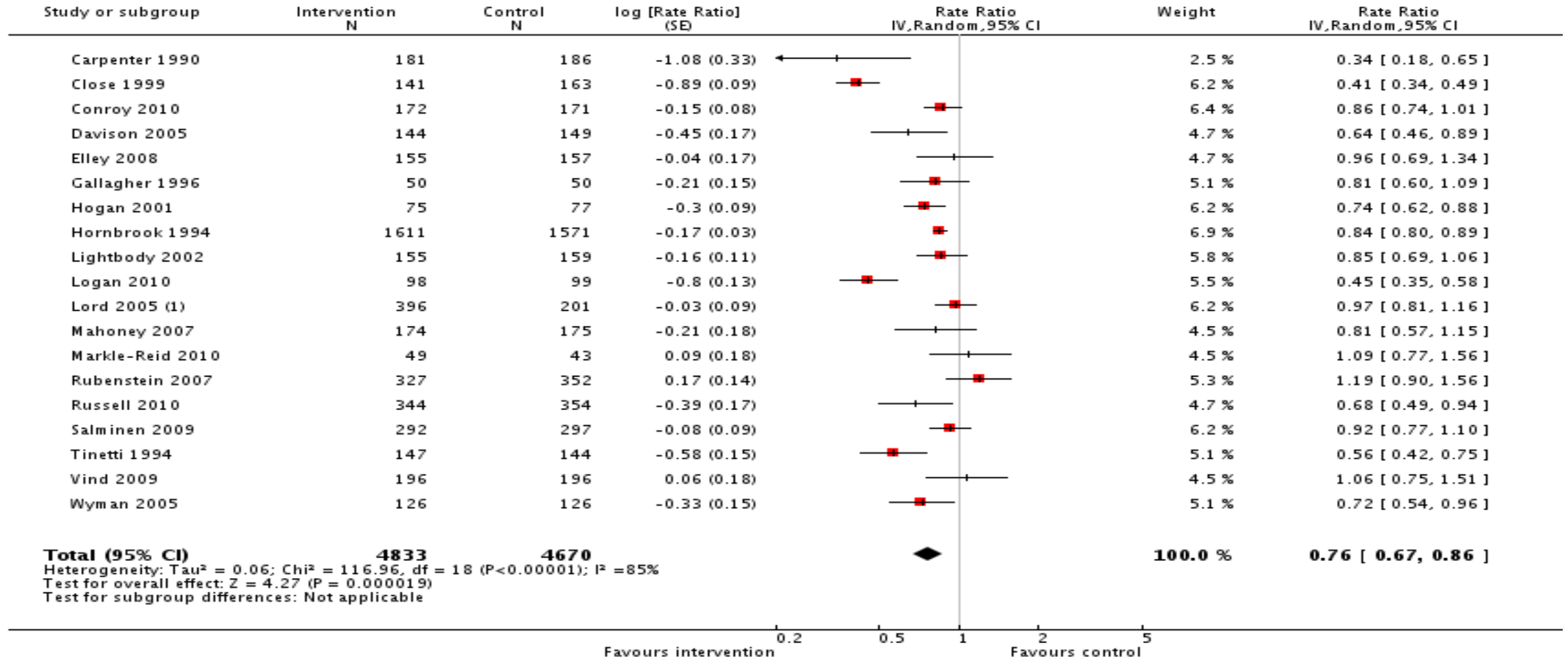
Elementary,
My Dear Homes





Falls :Multifactorial Intervention

Review: Interventions for preventing falls in older people living in the community
 Comparison: 22 Multifactorial intervention vs control
 Outcome: 1 Rate of falls



(1) Extensive + minimal intervention groups combined vs control



SYNCOPE

ORTHOSTATIC HYPOTENSION

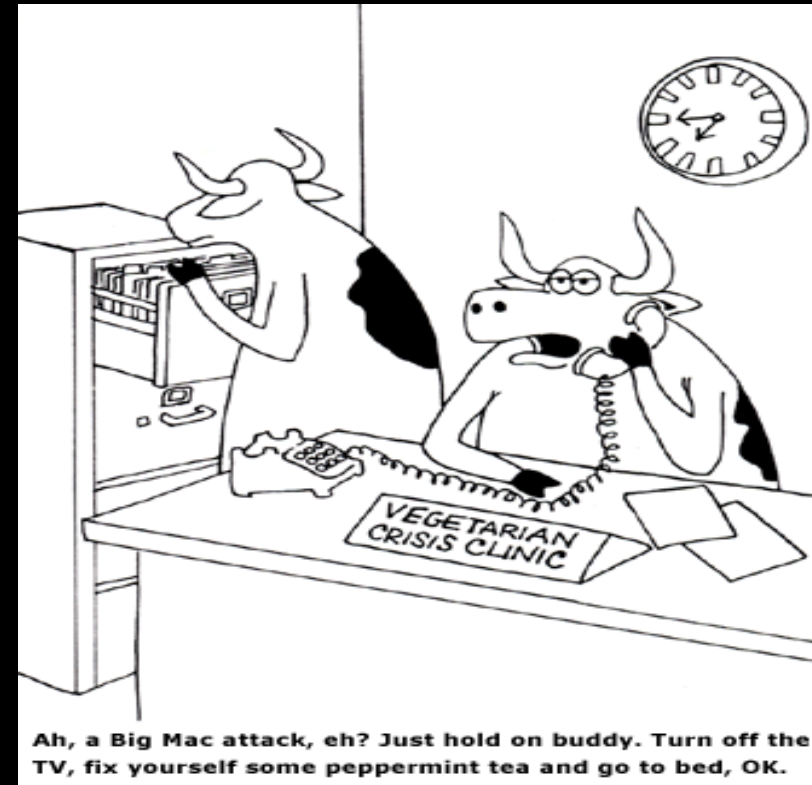




POSTPRANDIAL HYPOTENSION ("BIG MAC ATTACK")

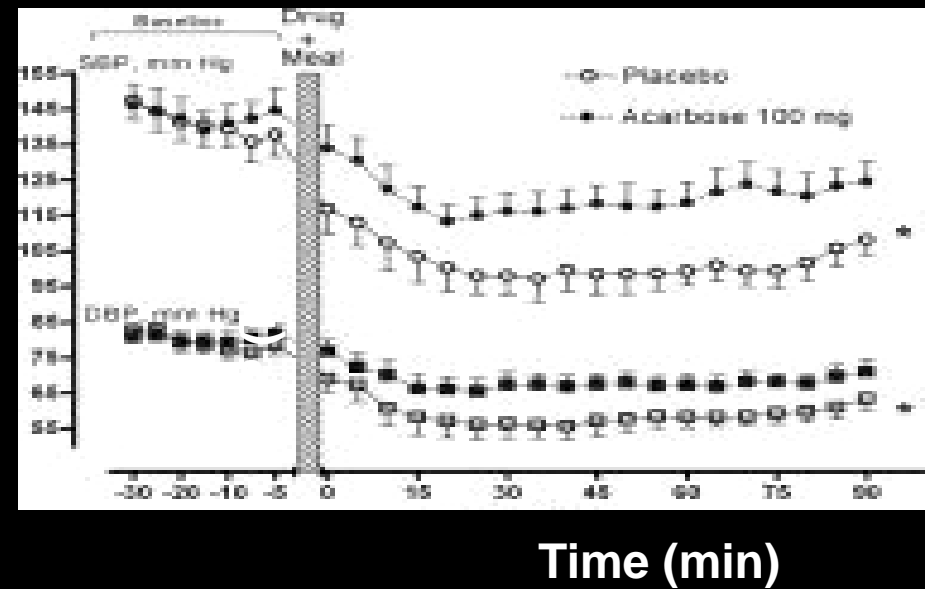


- **VARIABLE**
- **MORE COMMON IN AM**
- **PREVALENCE 26%**
- **falls**
 - syncope**
 - stroke**
 - myocardial infarction**
 - death**
- **STIMULATED BY**
 - CARBOHYDRATE**
- **DUE TO CGRP RELEASE**



α -glucosidase inhibitors may attenuate postprandial hypotension

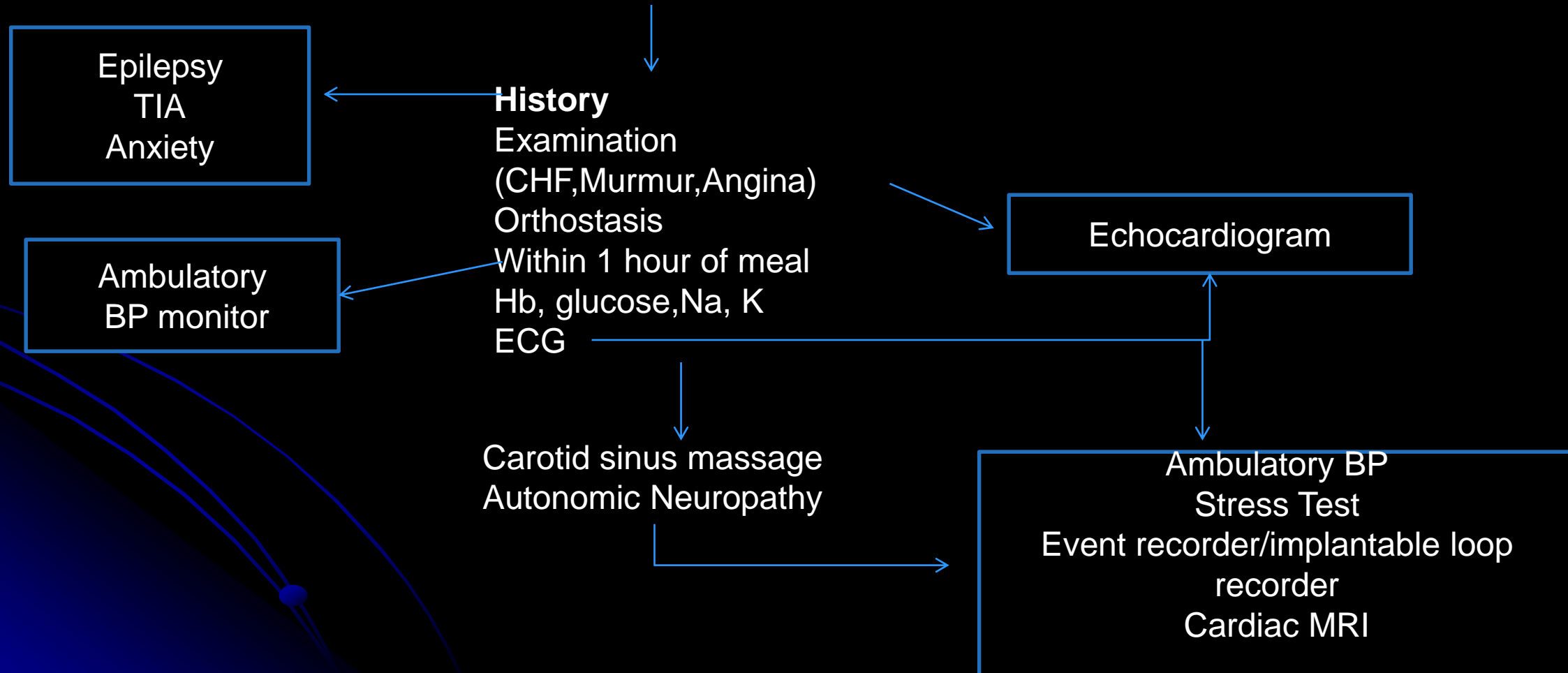
- Acarbose or placebo 20 minutes before standardized meal in 13 patients with PPH
 - Age: 65 ± 2.64 yoa
- Significant attenuation of postprandial fall
 - SBP – 17 mmHg
 - DBP – 9 mmHg



Syncope

FAINT

Persons who fall do not remember losing consciousness



Implantable Loop Recorder

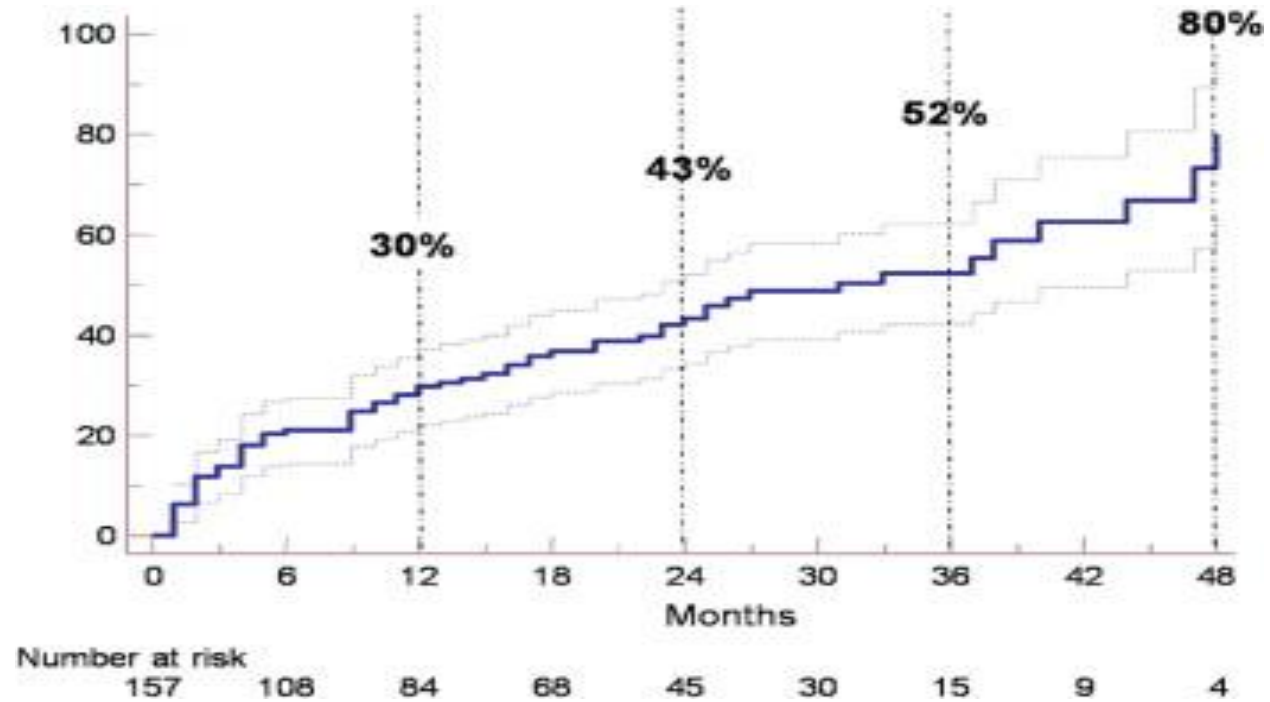


Figure 3 Time-Dependent Cumulative Diagnostic Yield of ILR The actuarial curve with its 95% confidence intervals is presented. ILR = implantable loop recorder.

Michele Brignole , Mohamed H. Hamdan

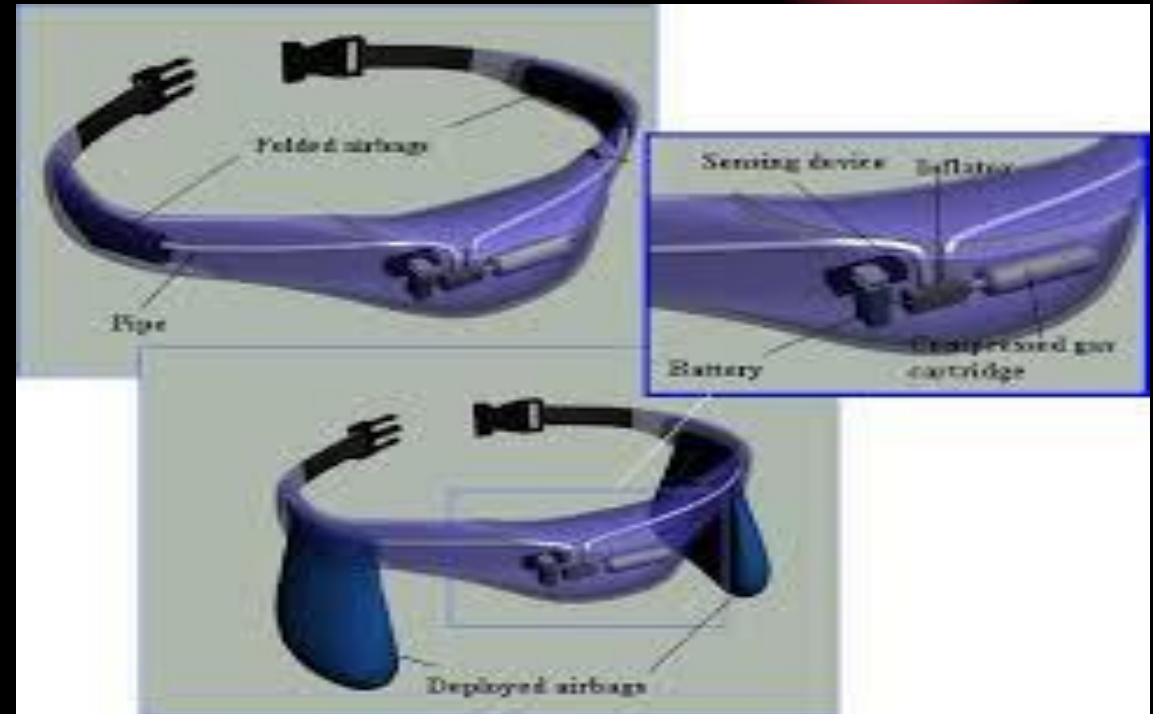
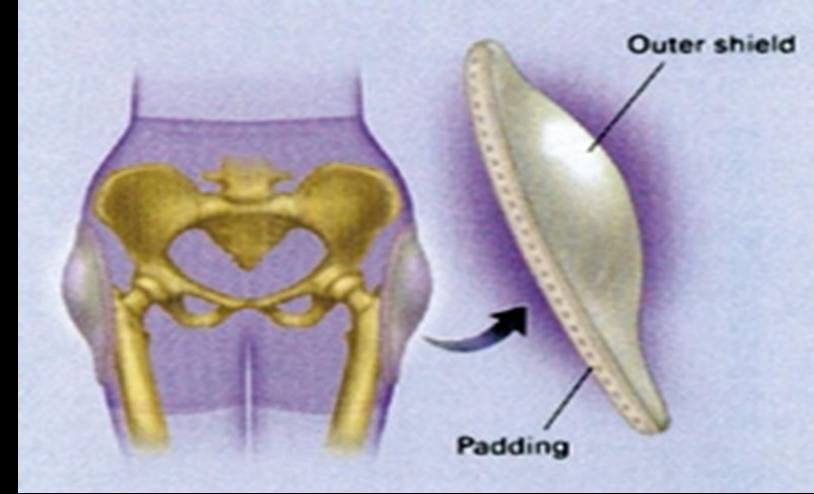
New Concepts in the Assessment of Syncope

Journal of the American College of Cardiology Volume 59, Issue 18 2012 1583 - 1591

<http://dx.doi.org/10.1016/j.jacc.2011.11.056>



For the frequent faller?



FALLS

Treatment of falls involves :

Vitamin D

Physical therapy

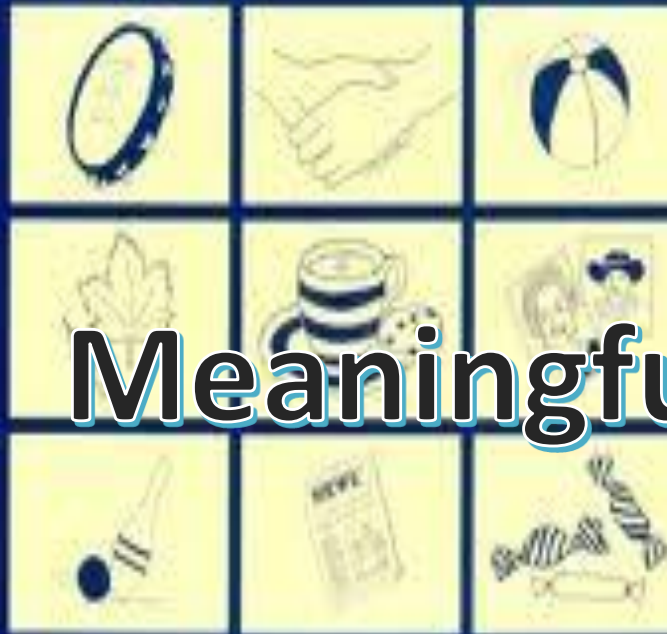
Exclusion of orthostasis

Postprandial hypotension

Reduce polypharmacy



Making a difference



Meaningful Activities

An evidence-based group programme
to offer cognitive stimulation therapy (CST)
to people with dementia

The manual for group leaders

Aimee Spector, Lane Thorgrimsen
Bob Woods, Martin Orrell

Published by **The Journal for Dementia Care**

Making a difference



An evidence-based group programme
to offer maintenance cognitive stimulation therapy
(CST) to people with dementia

The manual for group leaders

VOLUME TWO

Elsa Aguirre, Aimee Spector, Amy Streater
Juanita Hoe, Bob Woods, Martin Orrell

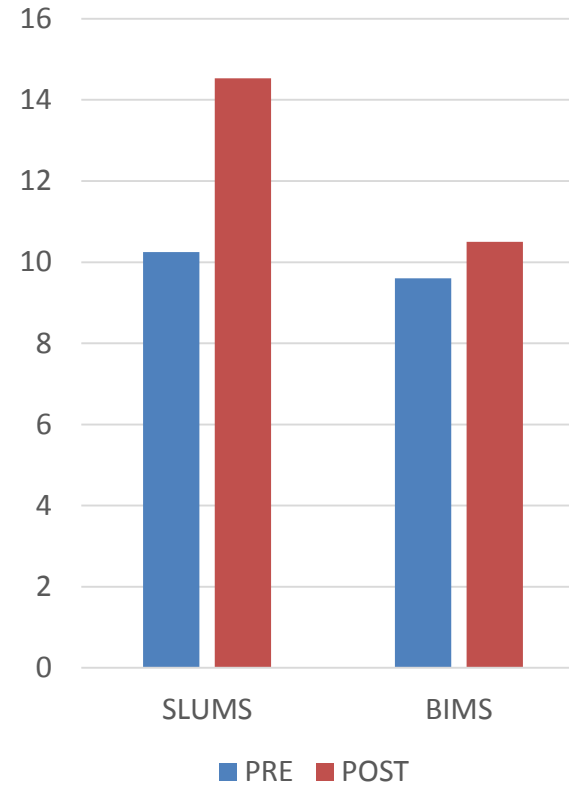
Published by **The Journal of Dementia Care**



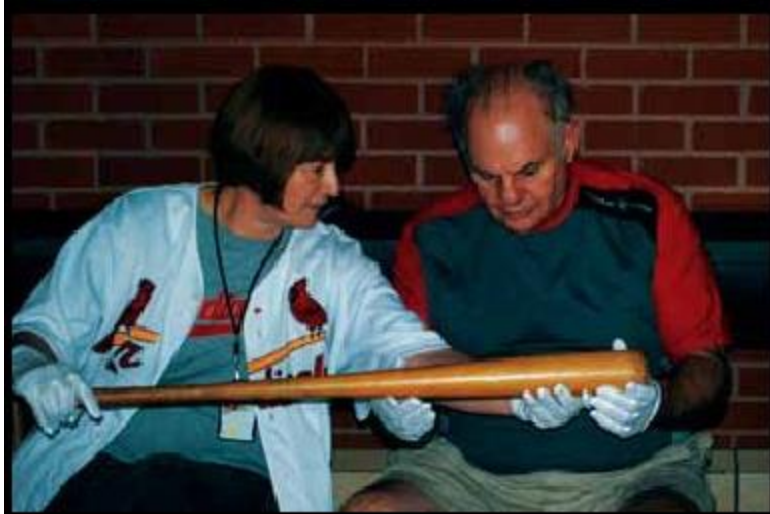
Cognitive Stimulation Therapy : NHC Nursing Home



Mental Status



Cardinals Reminiscence League



Education @meddocslu

By Twitter

- Anticholinergic drugs (Benadryl, Paxil, digoxin, oxybutynin, etc) cause poor memory and brain shrinkage
- Hypodermoclysis, the subcutaneous infusion of fluids, is a useful and easy hydration technique suitable for mild to moderate dehydration
- Consider faints in every fall. Patients who fall do not remember losing consciousness

Compliant Falls : Dual Stiffness Flooring

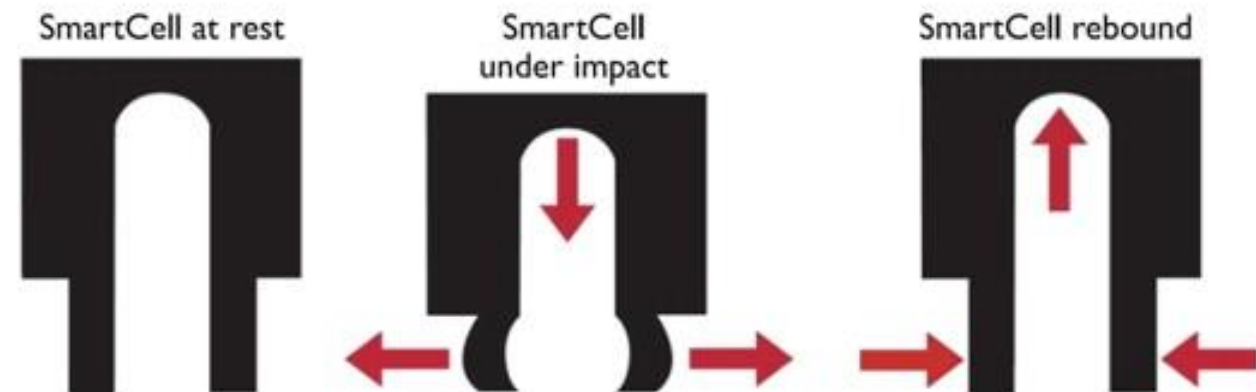


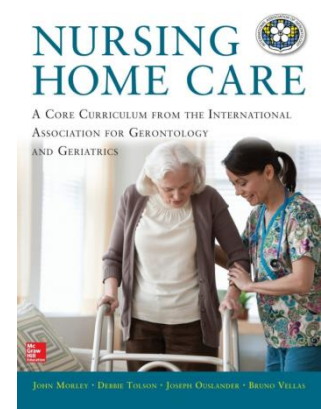
Dual-Stiffness Flooring: Can It Reduce Fracture Rates Associated With Falls?

Falls and Type of Injury	Dual-stiffness Flooring	Regular Floor
No. of falls	82 (49%)	85 (51%)
No. of falls with injury	44 (53%)	48 (56%)
Redness	2.4%	1.2%
Bruise	2.4%	7.1%
Abrasion	9.8%	15.3%
Cut	13.4%	9.4%
≥2 injuries	1.2%	1.2%
Fracture	0.0%	2.4%
Other	2.4%	2.4%

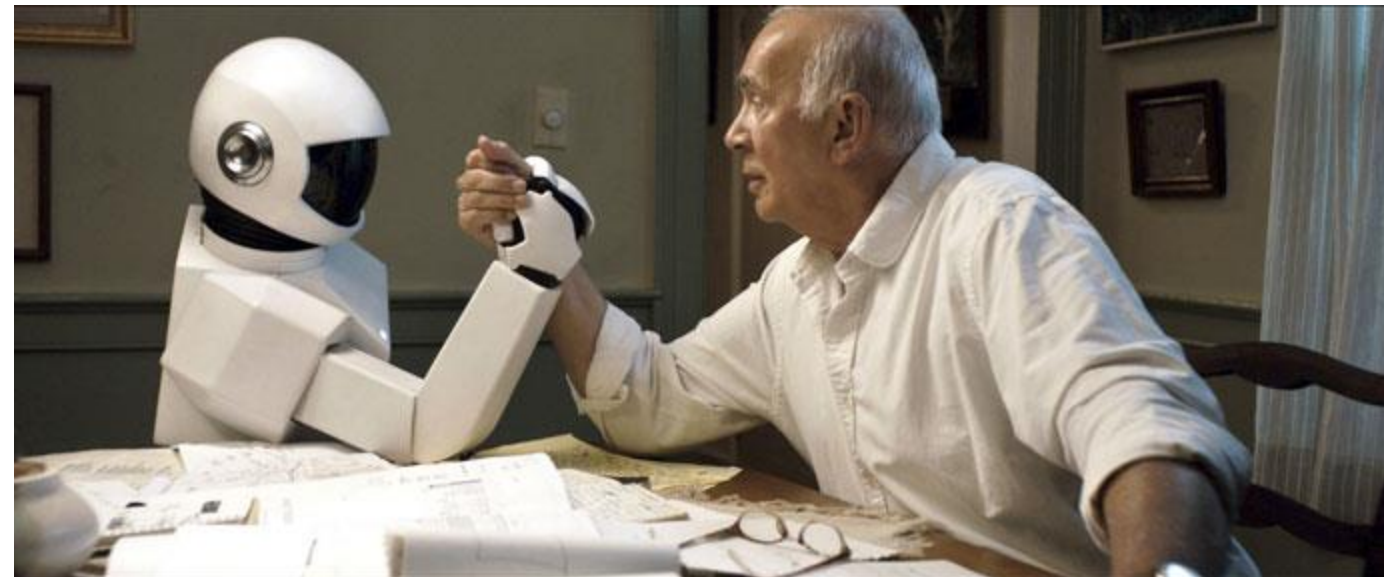


SmartCells get softer as they are compressed.





Technology and Aging



Rapid Bedside Diagnosis



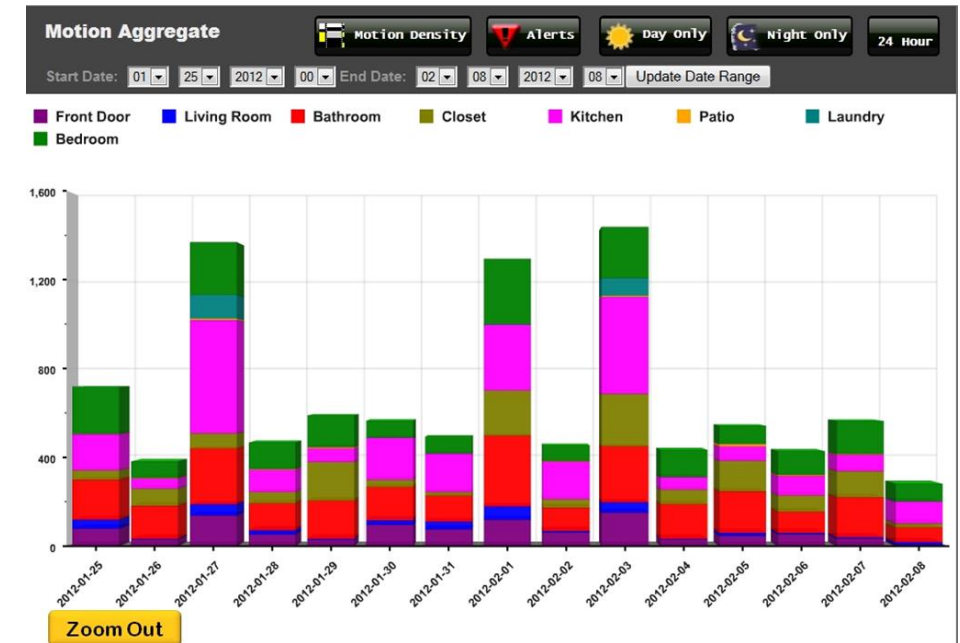
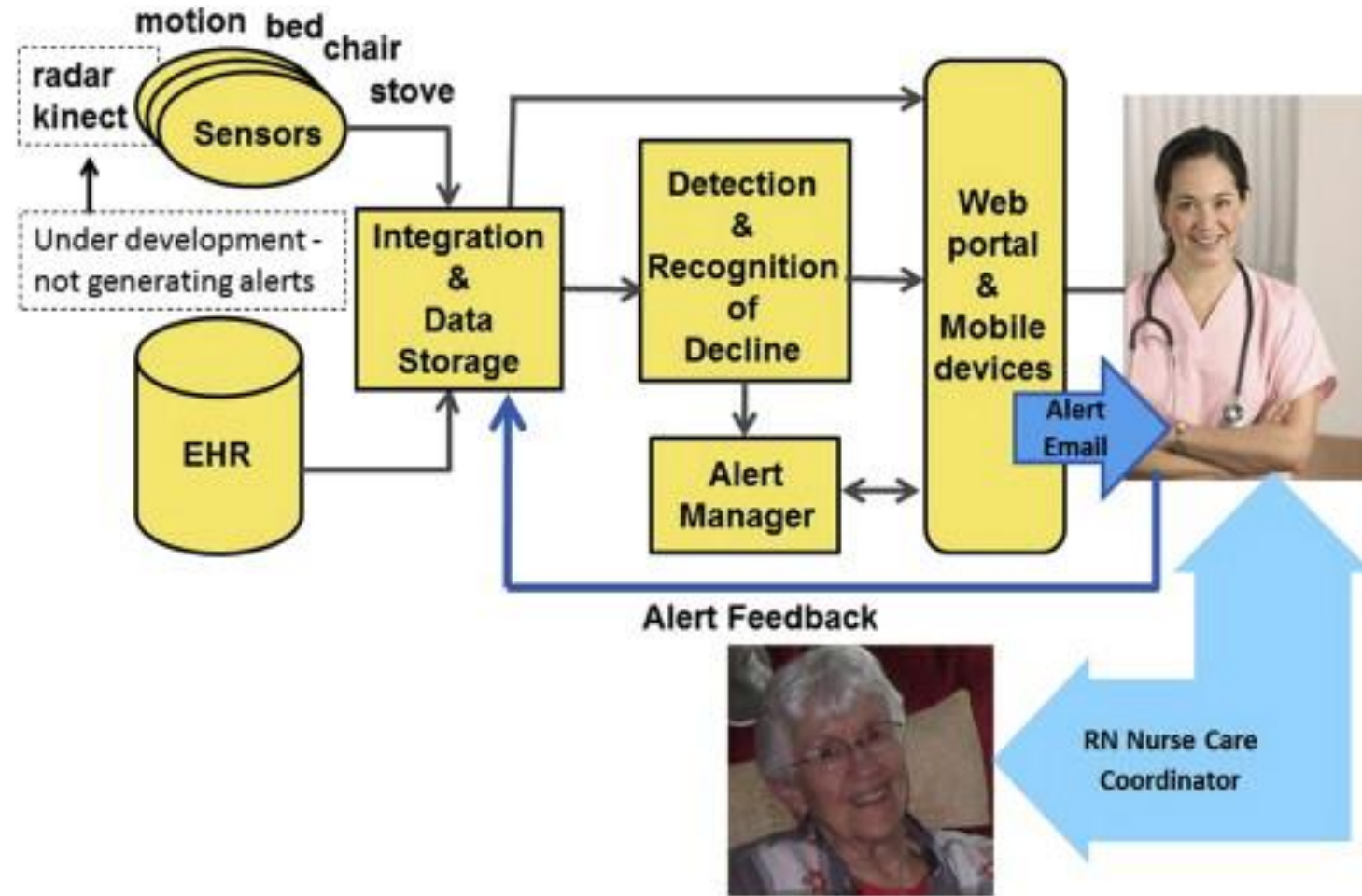
Table 5. Technology and Aging

- Smart homes
- Health Apps
- Electronic Health Record
- Telemedicine
- Robodiagnostics
- Robotherapy
- Robonurses
- Robovision
- Robohearing
- Exoskeletons
- Robo companions
- Brain stimulation

Tiger Place : University of Missouri



Sensor Technology to Support Aging in Place



Marilyn J. Rantz, Marjorie Skubic, Steven J. Miller, Colleen Galambos, Greg Alexander, James Keller, Mihail Popescu

Journal of the American Medical Directors Association, Volume 14, Issue 6, 2013, 386–391

TELEMEDICINE



history

1955 Nebraska Psychiatric Institute
Norfolk State Hospital
First telepsychiatry

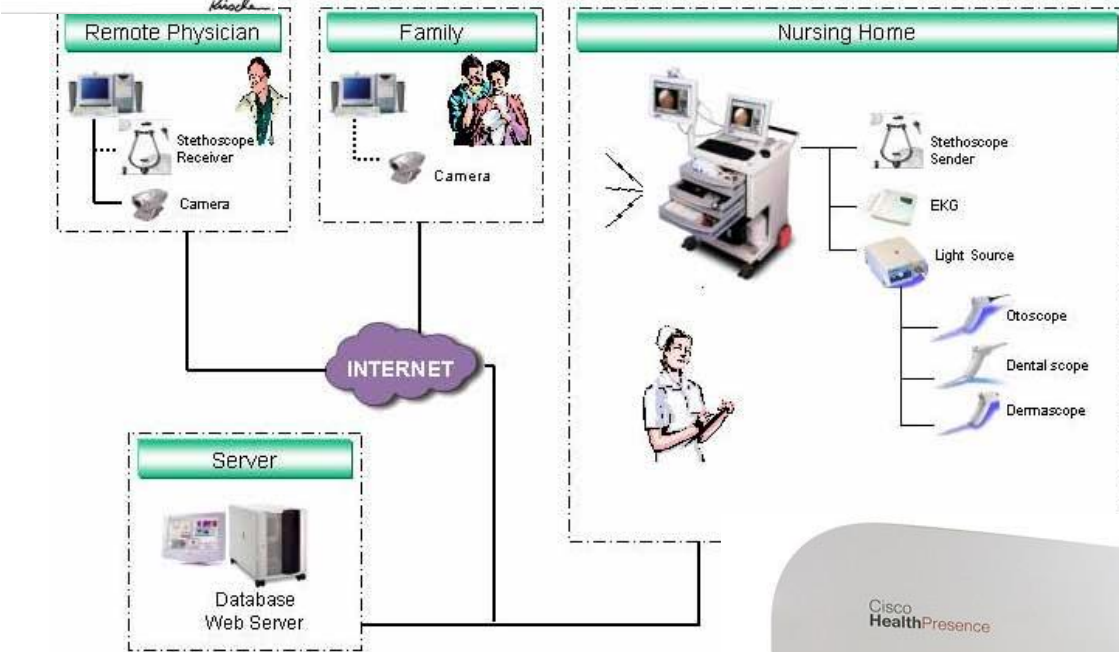
1970s Alaska Satellite Biomedical Demonstration Program
village health
Data collection, teleeducation

A composite image with a dark blue background. On the left, a black and white photograph shows a telepsychiatry session in 1955 at the Nebraska Psychiatric Institute, with several people in white coats gathered around a table, looking at a small television screen. On the right, a photograph shows large satellite dishes in the 1970s, part of the Alaska Satellite Biomedical Demonstration Program. The word "history" is written in white in the top right corner.

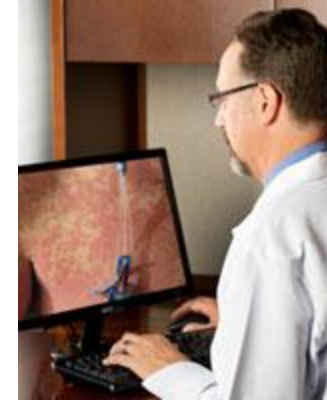
**Boston Logan Airport to Massachusetts General Hospital
1967**



IT WAS AN ON-LINE MEDICAL SITE.



Telemedicine



Teledermatology



Specialist

Telemedicine : Pilot Projects

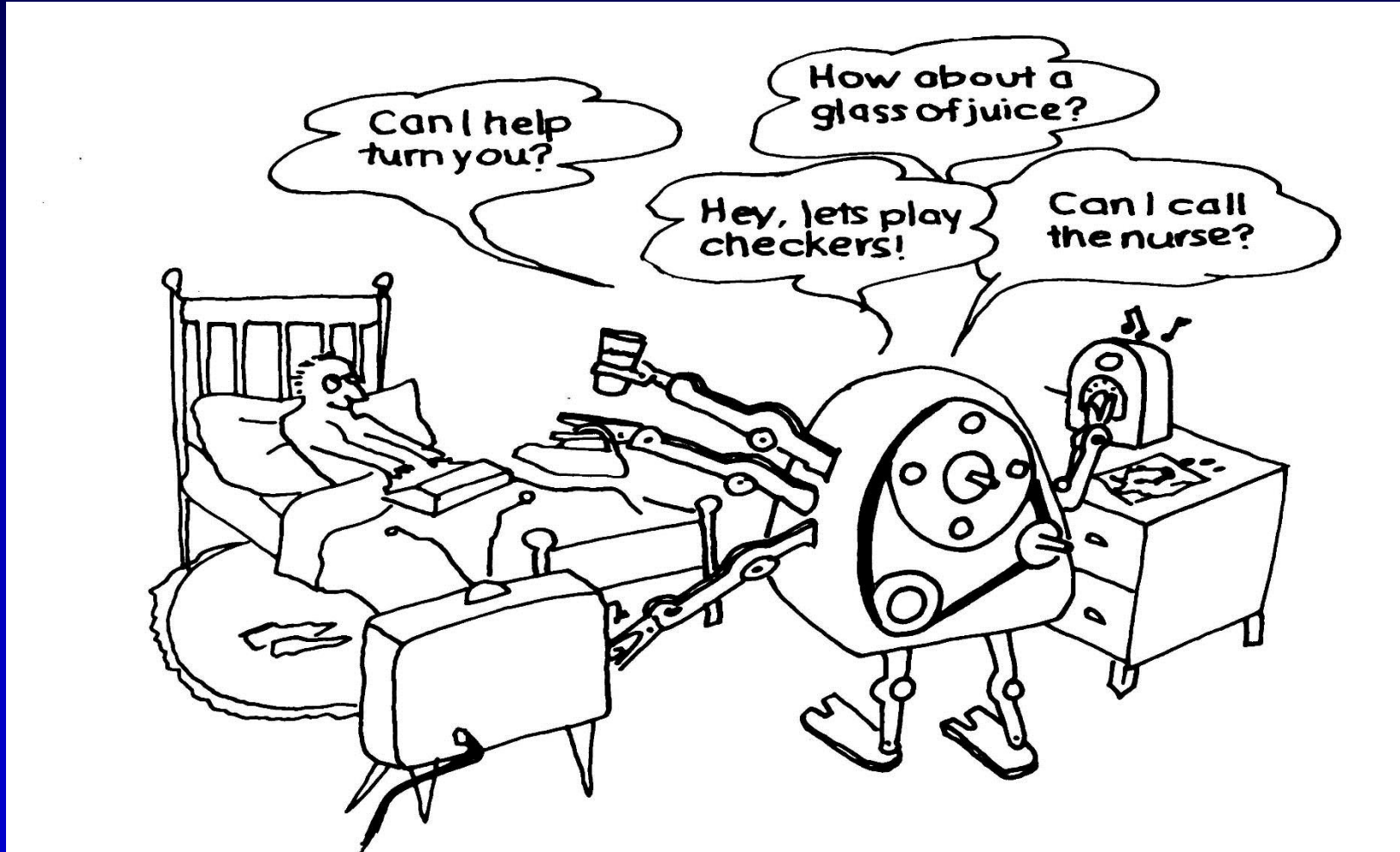
Implementation of Telemedicine Consultation to Assess Unplanned Transfers in Rural Long-Term Care Facilities, 2012–2015: A Pilot Study

Year	Total Number of eLTC Consults	No Transfer	Transferred
2012 [‡]	76	46 (61%)	30 (39%)
2013	99	46 (46%)	53 (54%)
2014	386	273 (71%)	113 (29%)
2015 [‡]	175	146 (83%)	29 (17%)
Total number of eLTC consults	736	511 (69%)	225 (31%)

High-Intensity Telemedicine Decreases Emergency Department Use for Ambulatory Care Sensitive Conditions by Older Adult Senior Living Community Residents

Visit Type	Intervention (% per year, 95% CI)	Control (% per year, 95% CI)	P Value for Group–Time Interaction
All ED visits	–34.0 (–1.8, –55.4)	+1.2 (–10.5, +14.3)	.0622

Improving Long Term Care



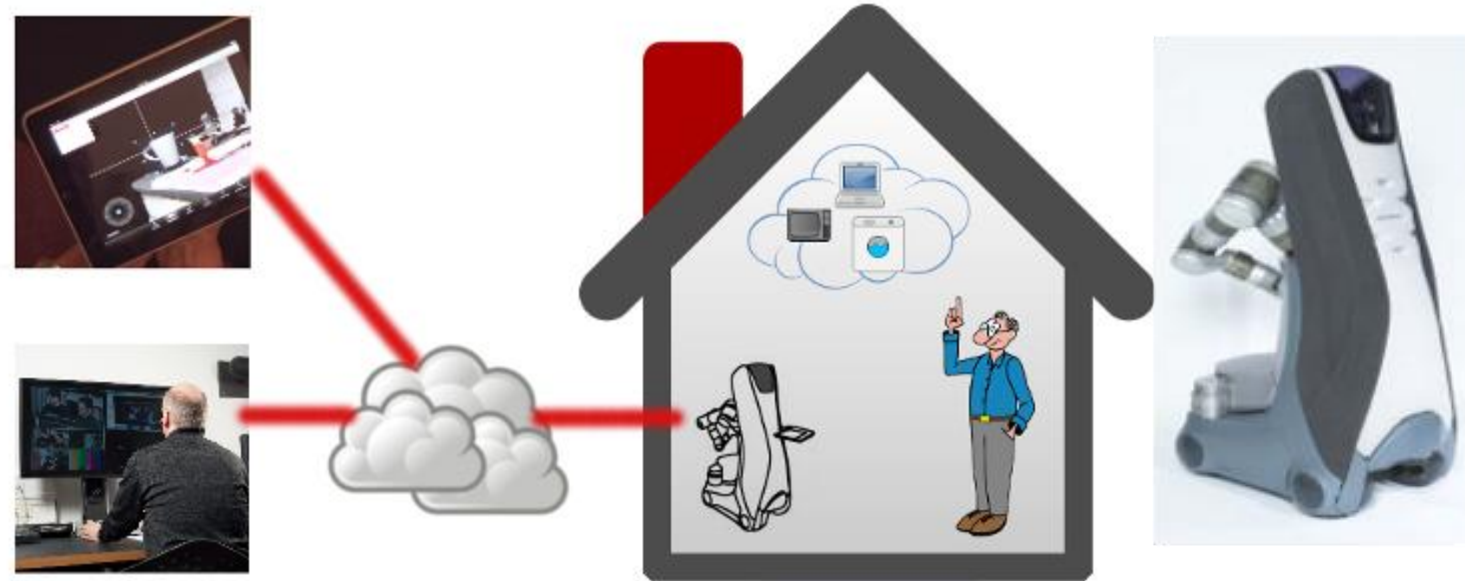
PROJECT COMPANIONABLE

remotely-controlled, semi-autonomous robotic solutions in domestic environments to support elderly people

Remote Site



Local Site



Arm and hand to fetch and carry objects, controls home infrastructure, recognises surroundings, communication with medical and public facilities, supervision of vital signs, emergency calls

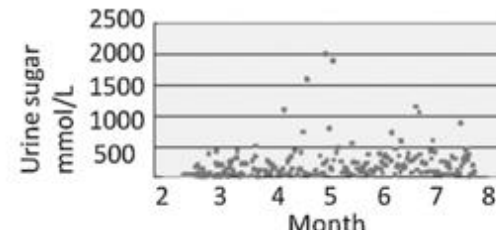
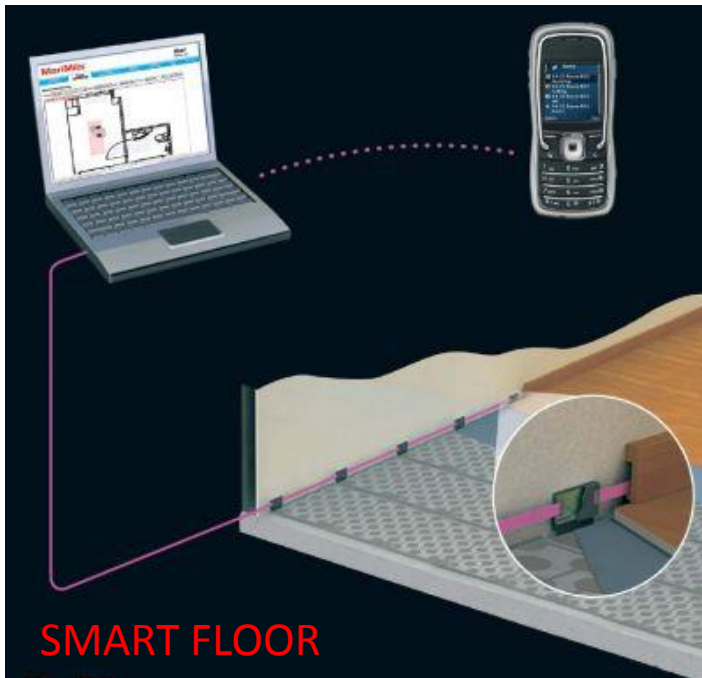
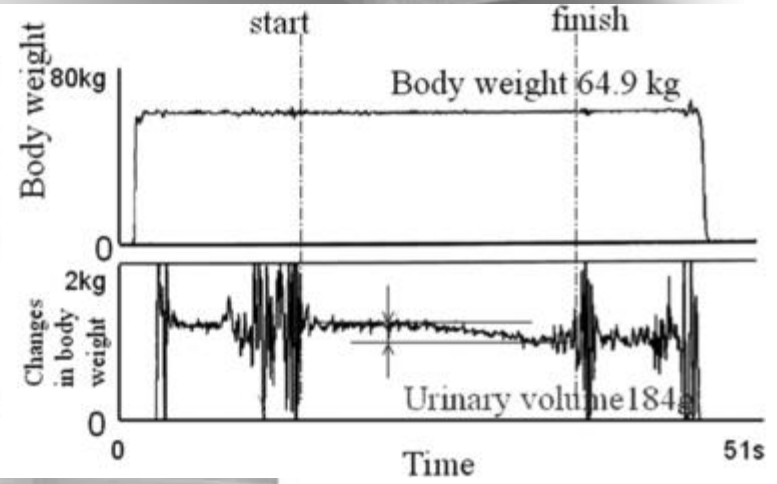
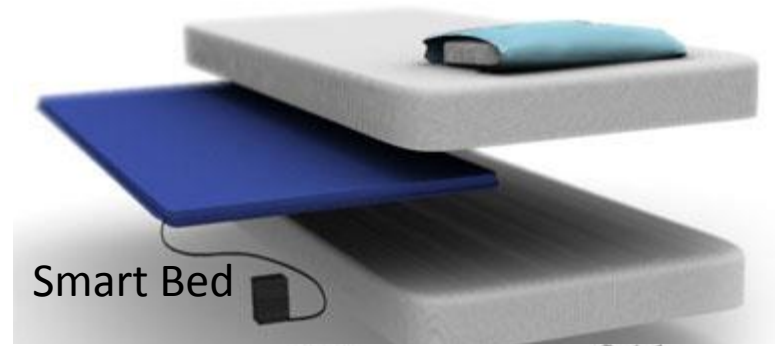
HOPIS

Monitors blood sugar, blood pressure and temperature





Remote Monitoring



Medication Dispenser



Snackbot

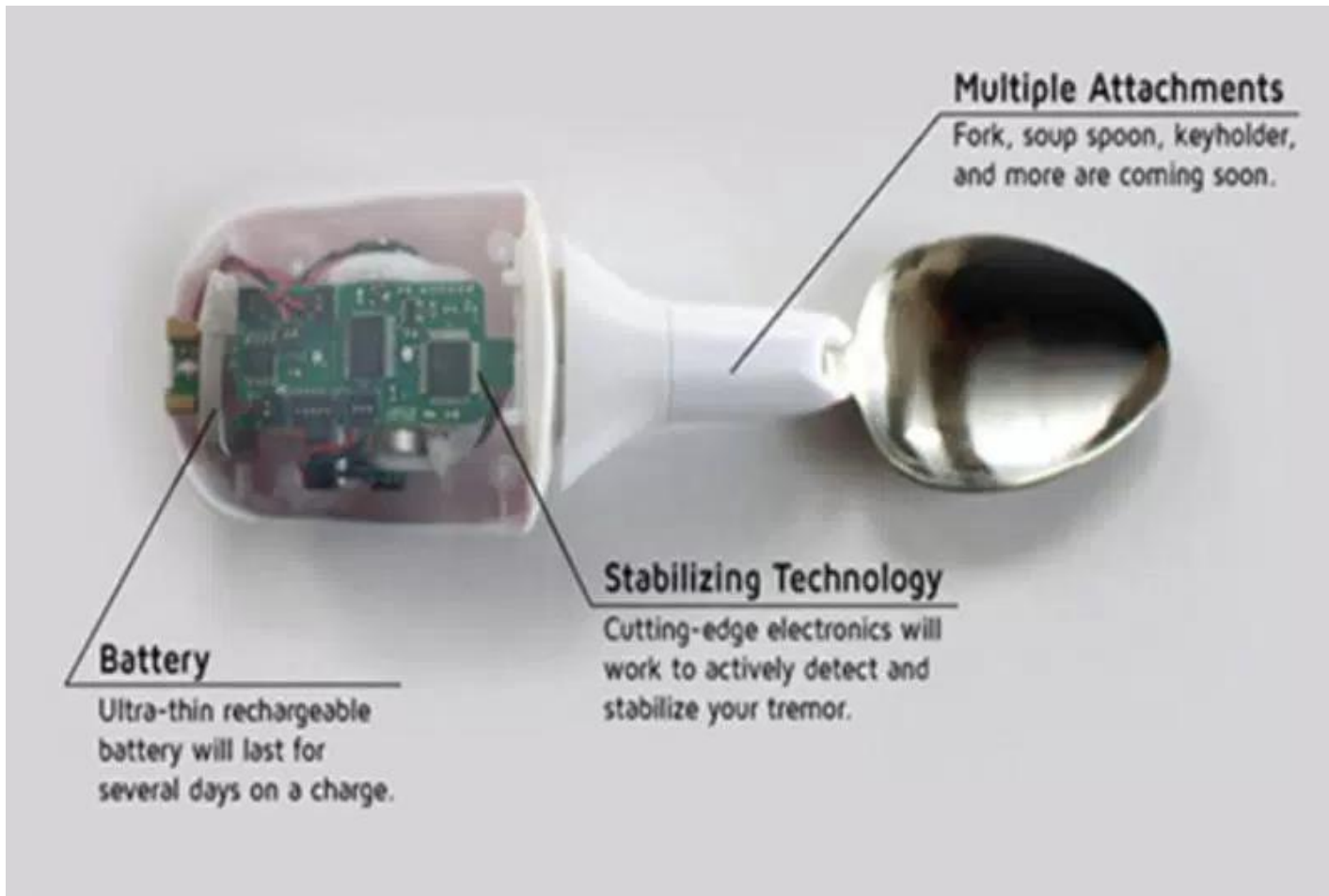


My Spoon

Secom Co



Restabilizing Spoon for Persons With Parkinson's Disease



Example of a robotic nurse (RIBA) assisting with a transfer. These robots are safer for the resident and avoid back injuries among staff



Bed Bath

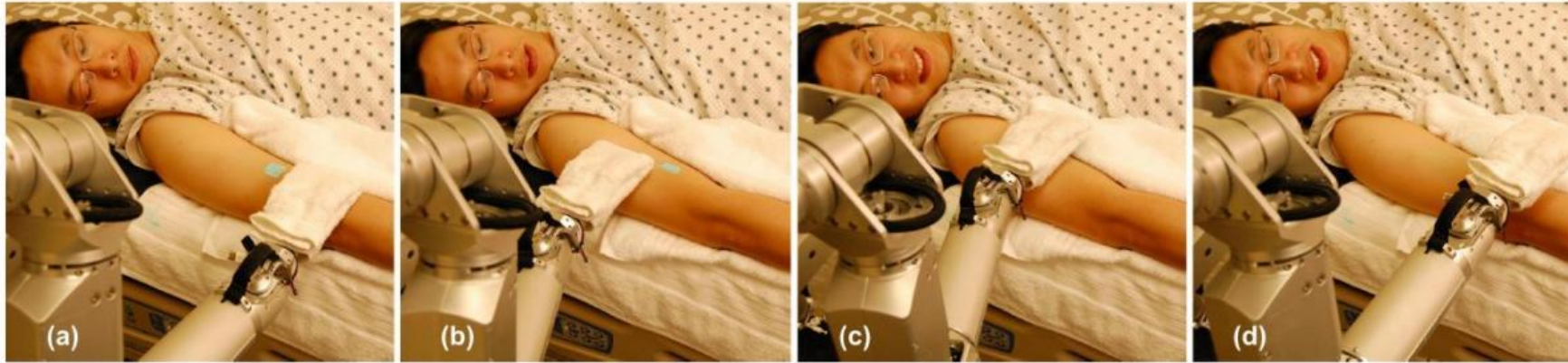
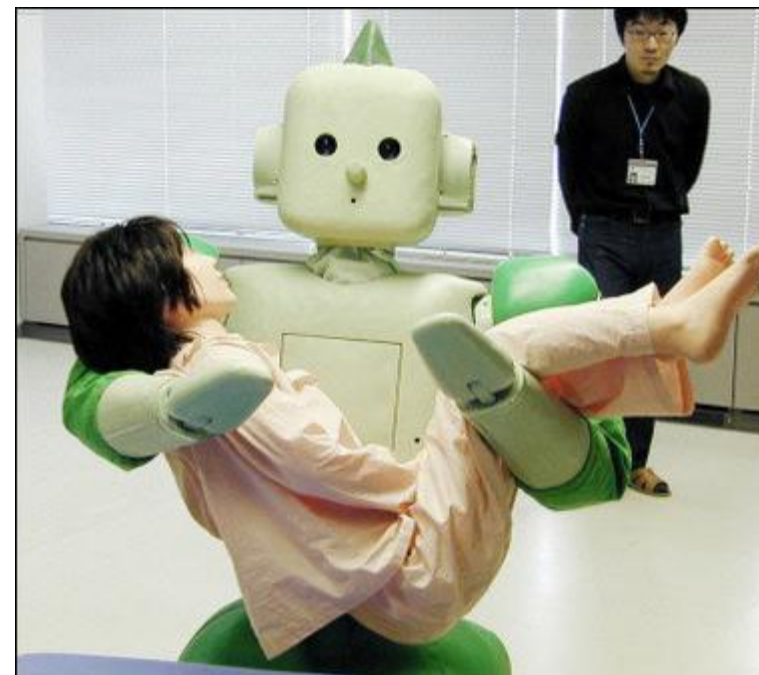


Fig. 5. Sequence in a cleaning task: (a) initial contact made with upper arm; (b) wiping to the left; (c) wiping to the right; (d) task completed.





Are Nursebots the Future ?





**Hand Wrist Assisting Robotic Device
(Howard)**

**17% greater range of motion
20% increased dexterity.**

Robotic Companion



Is it time for geriatricians to teach about Robo Sapiens ?

The TalkPath™ Suite of Speech Therapy Apps
Now in the App Store.



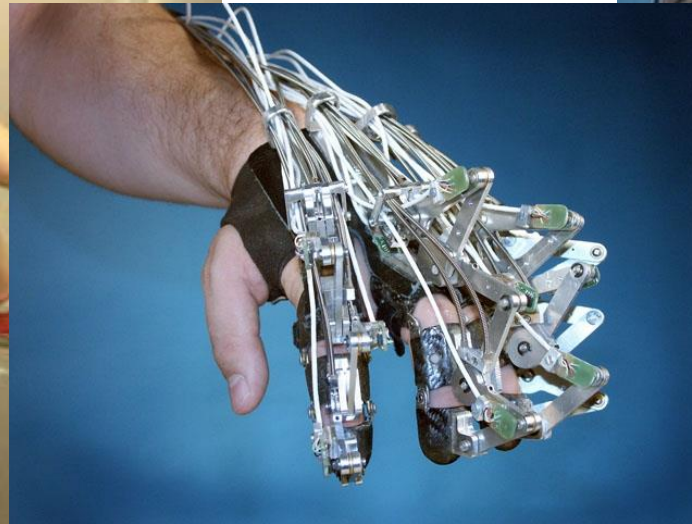
Aphasia Communication Devices



Intelligent Walkers



EXOSKELETONS

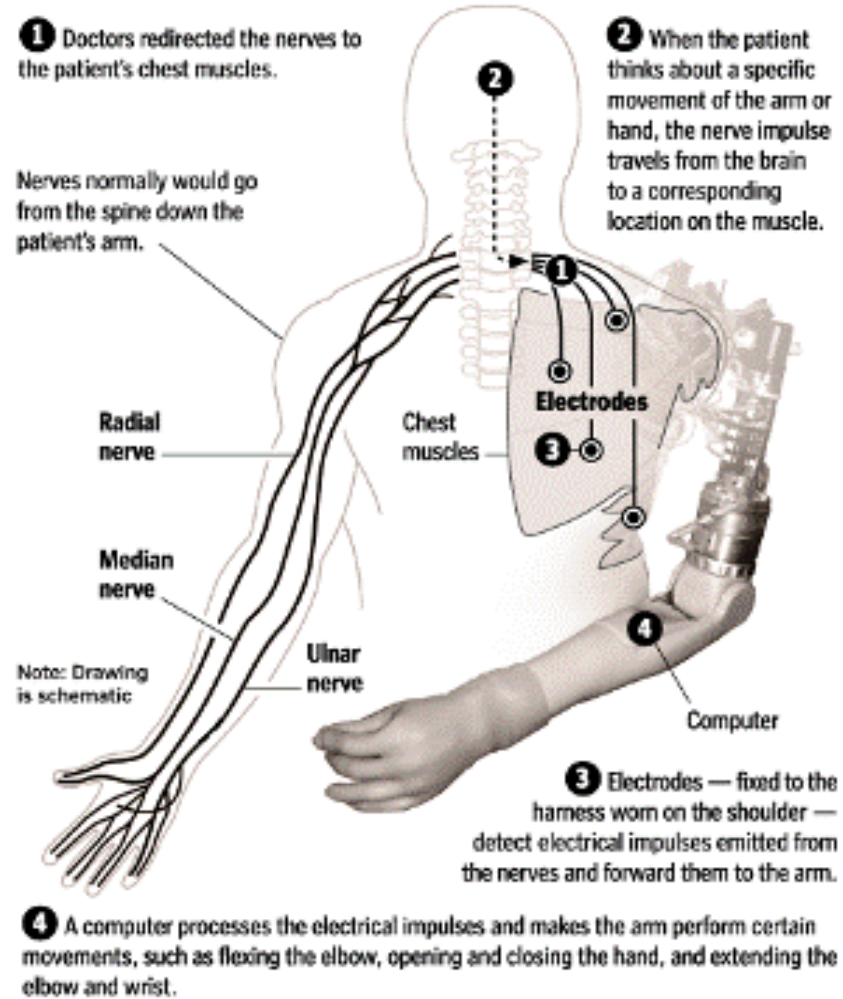
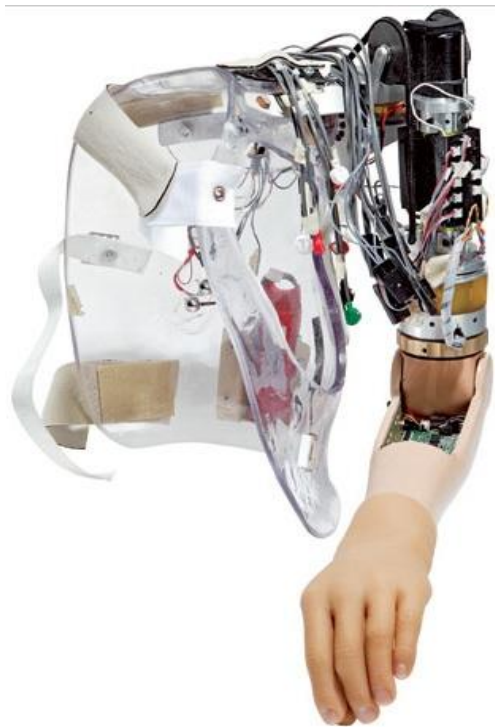


Exoskeleton : Paraplegia

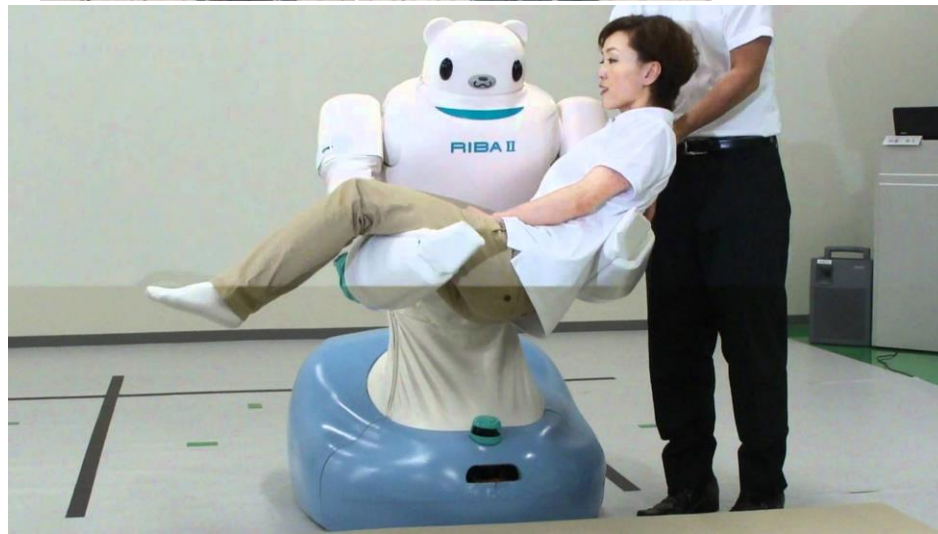




Photo: Neural Engineering Center for Artificial Limbs, Rehabilitation Institute of Chicago



Robots



The Future Nursing Home

- A home with meaningful activities to maintain function
- Early recognition of those who will not benefit from hospitalization---?FRAIL-NH
- Telemedicine
- Restraint free
- Robotic assistants