SPECIALIZED GERIATRIC SERVICES

RGPEO

May 2019

Phil St John

Section of Geriatrics

University of Manitoba

Faculty/Presenter Disclosure

- **Faculty: Phil St John**

- **Relationships with commercial interests:**
  - **Grants/Research Support: CIHR, MHRC, Riverview Foundation**
  - **Speakers Bureau/Honoraria: None**
  - **Consulting Fees: None**
  - **Other: Employee of University of Manitoba, WRHA**

  - **I am a geriatrician**

Disclosure of Commercial Support

- **I am unaware if this program has received financial or in-kind support from any outside organization.**

- **Potential for conflict(s) of interest:**
  - Phil St John has not received payment/funding, etc. from an organization supporting this program AND/OR organization whose product(s) are being discussed in this program.

Mitigating Potential Bias

Not applicable.

OBJECTIVES

- To review basic epidemiology and demography of aging
- To describe outpatient systems of care
- To review the evidence for these models of care

KEY POINTS

- Comprehensive Geriatric Assessment (CGA)
  - Is beneficial in maintaining functional status
  - Reduces the need for long term care
  - Reduces the utilization of acute care hospitals
- CGA is NOT a replacement for primary care
- There are numerous evidence based models – the correct implementation depends upon local need, context and history
- Outpatient care models should be integrated with other specialized geriatric services

HISTORICAL CONTEXT

- Health care has been delivered in the community since ancient Egyptian times
- Primary care home visits are not new
- In home Geriatric consults
  - Exton-Smith (1950s) screened patients for admission to inpatient beds – realized the benefit of home based assessments in their own right
- Geriatric Day Hospitals – started in England in the 1950s

- Increase in specialty clinics
- Spread to Canada (sometimes via the US.)
- Other models studied in the 1990s to present
  - Outreach teams
  - Primary care teams
  - Post-discharge services
  - Disease based rehab
  - Co-management
  - Decision support

The Grey Wave, the Silver Tsunami and all that

Historical Context

We are almost the healthiest population anywhere, ever

TABLE 2.1
Life Expectancy and Infant Mortality Throughout Human History

	Life Expectancy at Birth (Years)	Infant Mortality Rate (per 1000 Live Births)
Prehistoric	20–35	200–300
Sweden, 1750s	37	210
India, 1880s	25	230
United States, 1900	48	133
France, 1950	66	52
Japan, 1996	80	4

Data from Acsádi, G. and Nemeskéri, J., *History of Human Life Span and Mortality*, Budapest: Akadémiai Kiadó, 1970; Davis, K., *The Population of India and Pakistan*, Princeton, NJ. Princeton University Press, 1951; Human Mortality Database, www.mortality.org.

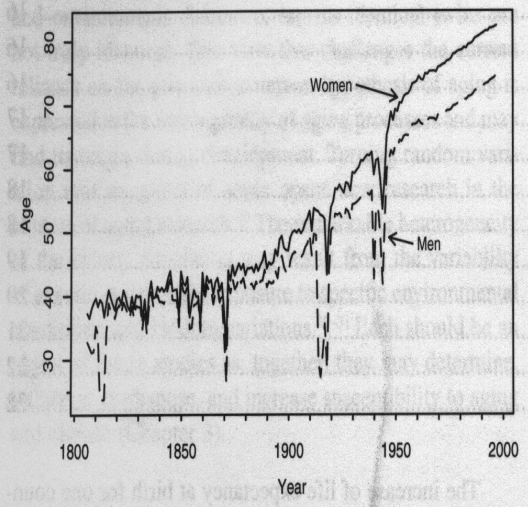
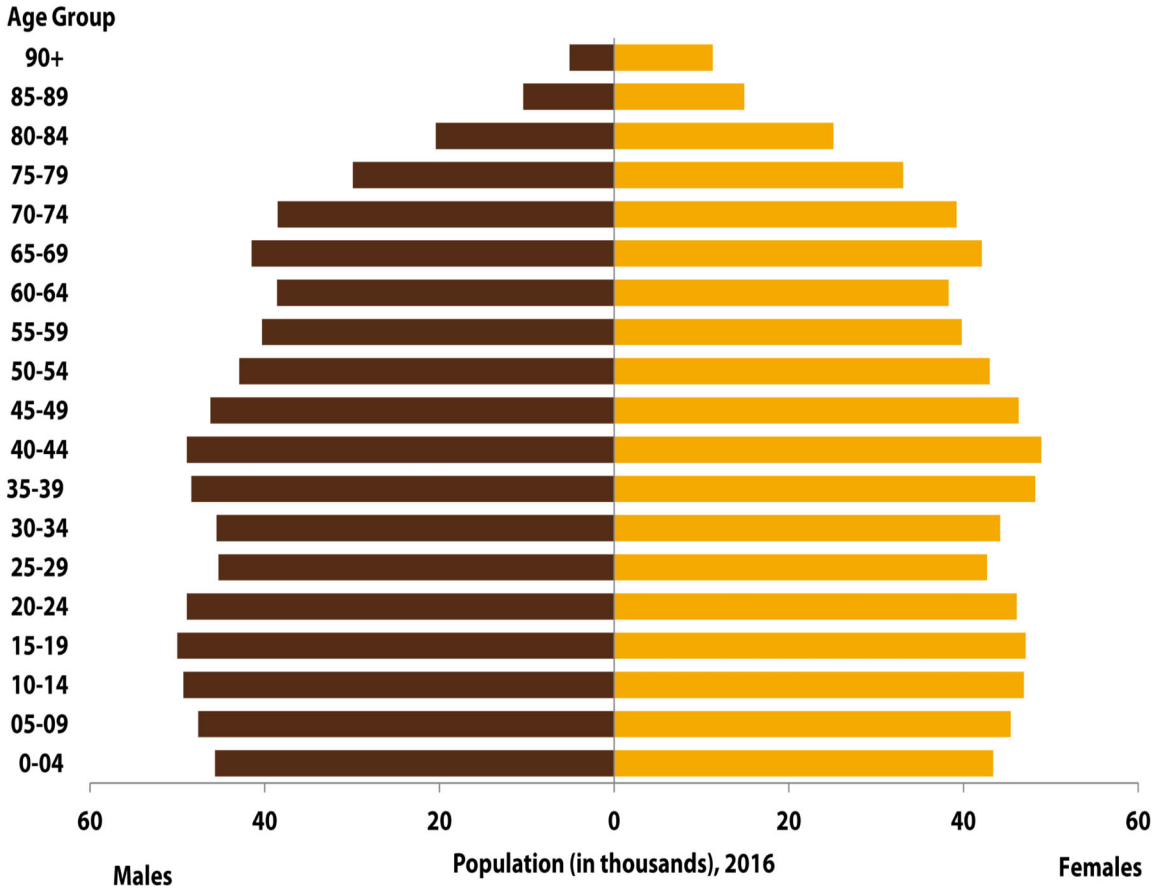


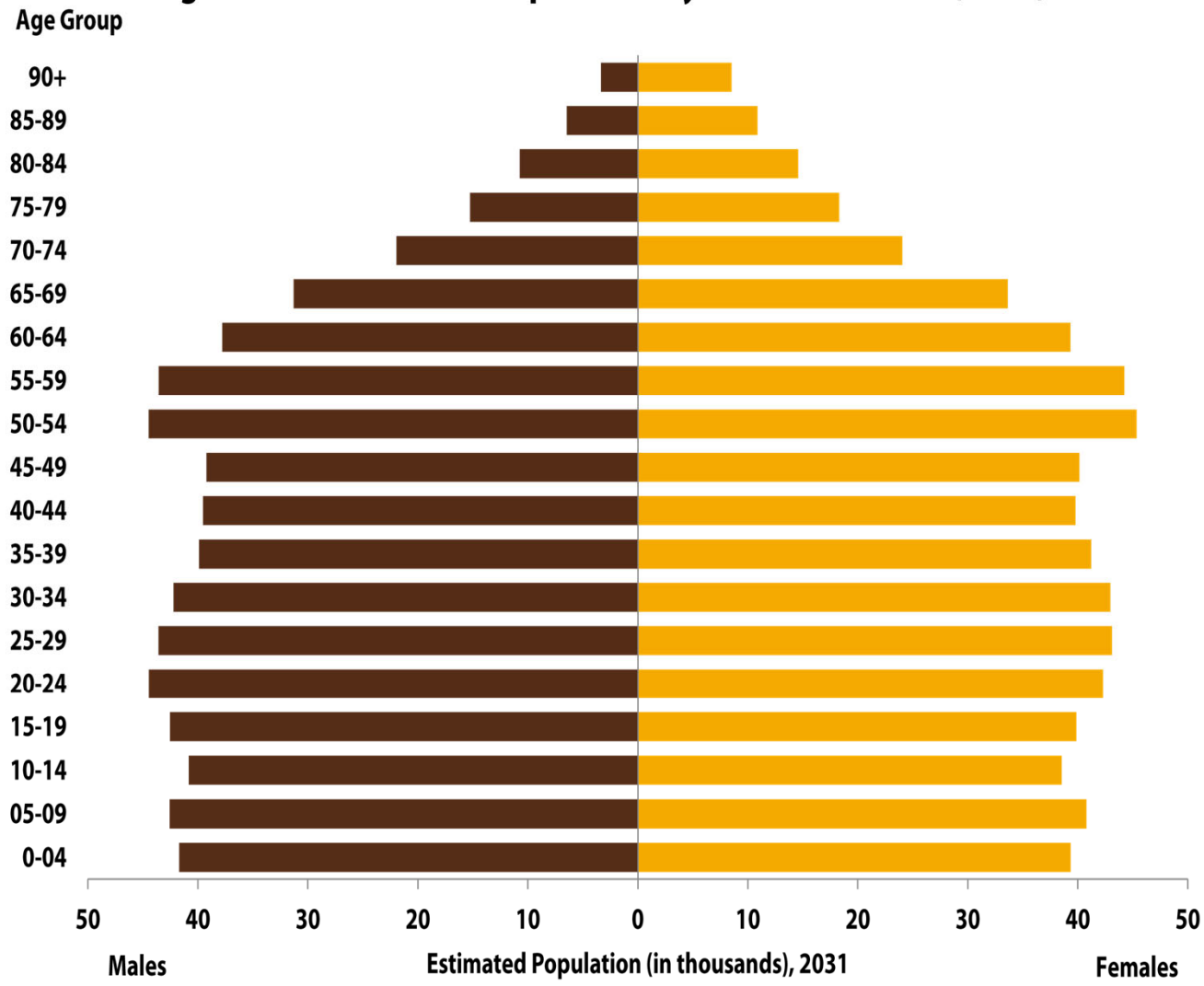
FIGURE 2.1 Life expectancy at birth by sex, France 1806–1997. (Data from Vallin, J. and Meslé, F., Tables de mortalité francaises 1806–1997, INED, Paris, 2000.)

Figure 1-3a: Manitoba Population Pyramids Actual (2016)



Source: Statistics Canada - 2016 Census. Catalogue Number 98-400-X2016001.

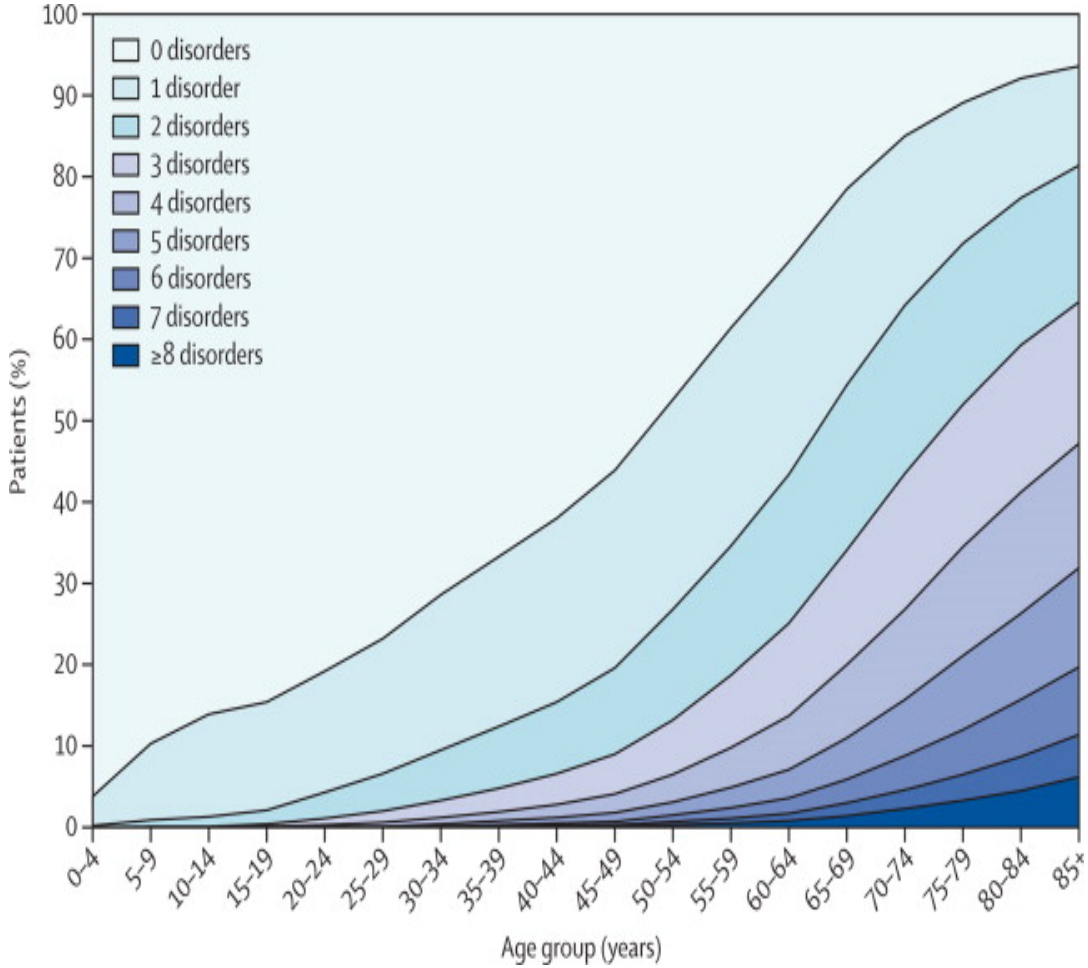
Figure 1-3b: Manitoba Population Pyramid Estimated (2031)



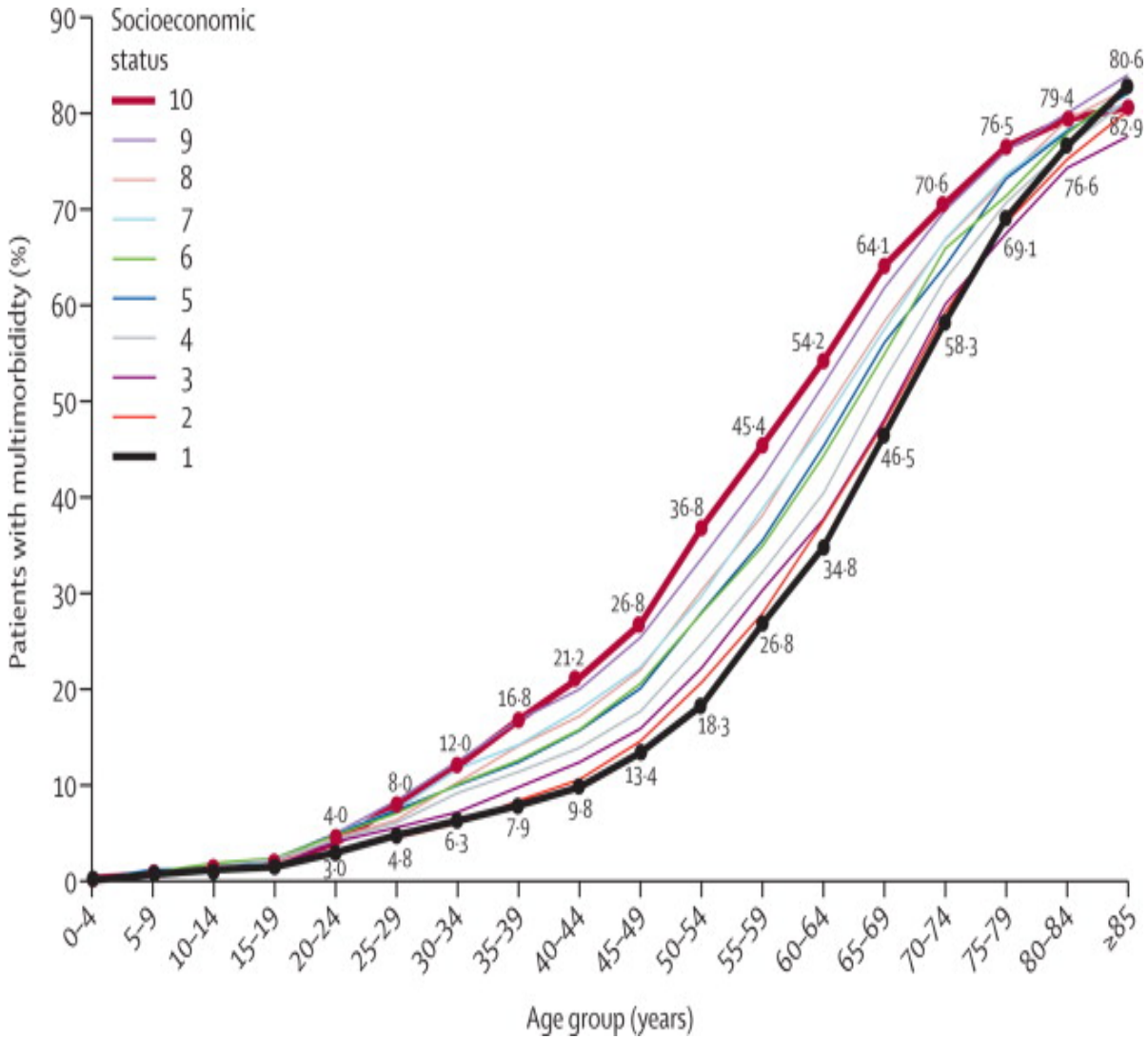
Source: Statistics Canada - 2016 Census. Catalogue Number 98-400-X2016001.


MISSION ACCOMPLISHED

Multimorbidity

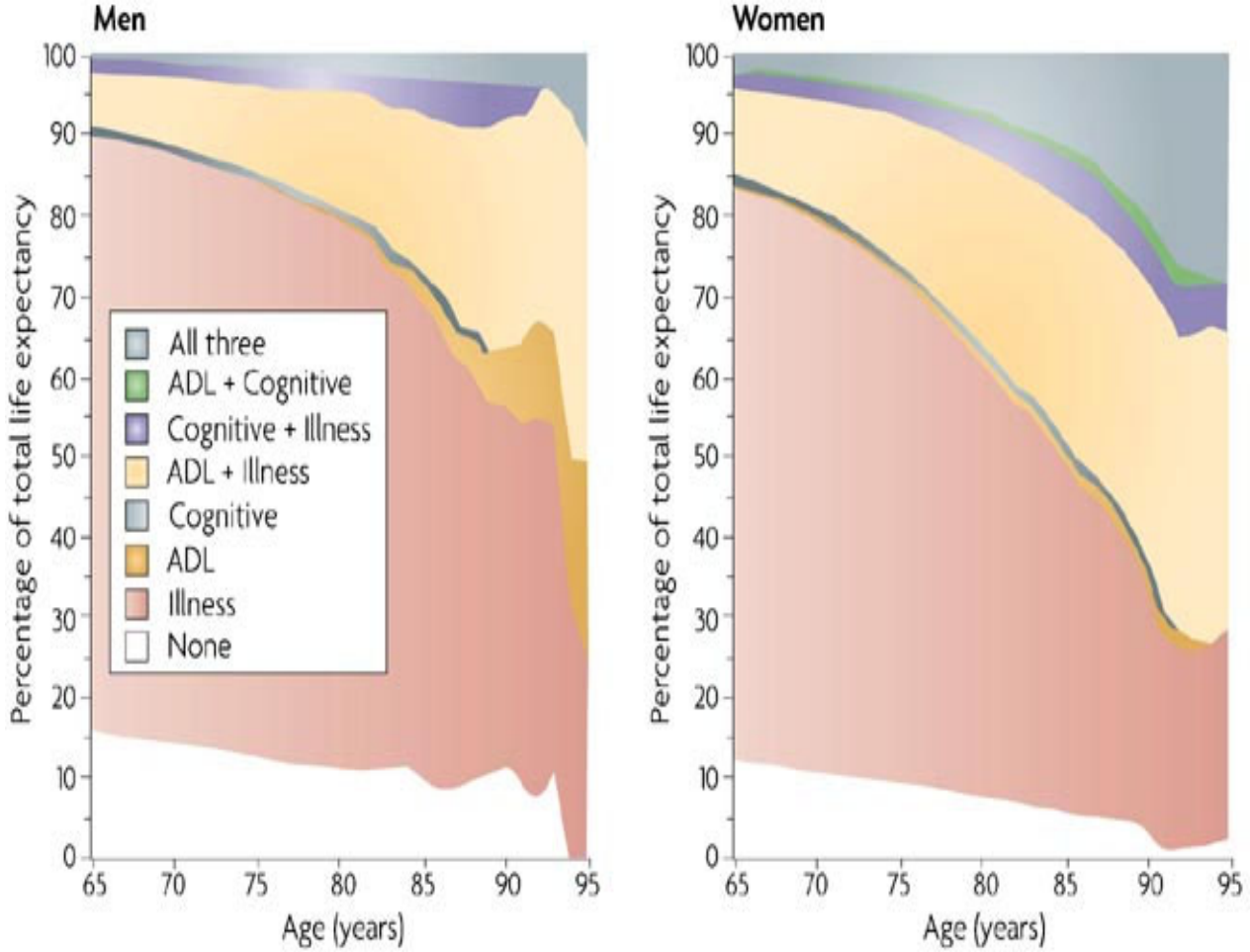


Lancet, Volume 380, Issue 9836, 2012, 37–43



Prevalence of multimorbidity by age and socioeconomic status
On socioeconomic status scale, 1=most affluent and 10=most deprived.

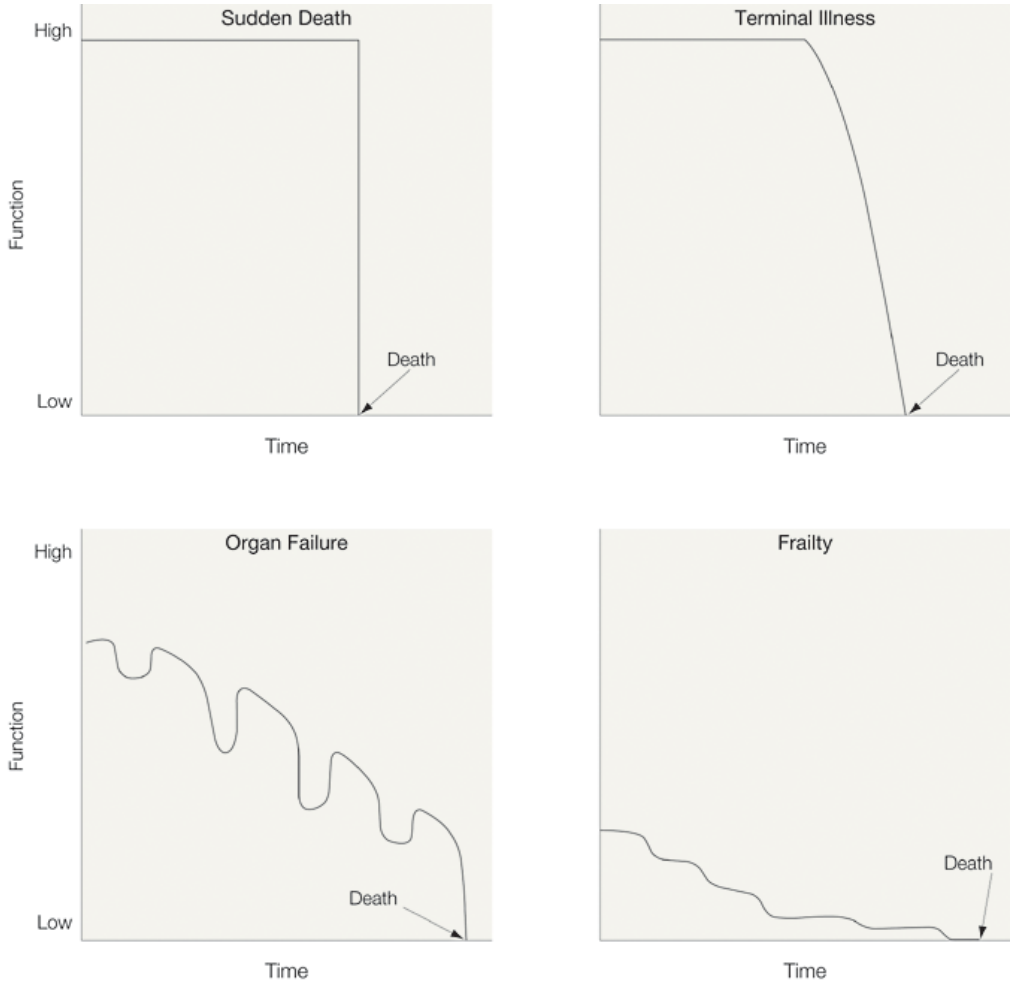
Age and Chronic Illness



Nature Reviews | Neuroscience

Brayne *Nature Reviews Neuroscience* **8**, 233–239 (March 2007)

Functional Trajectories



Lunney et al. J Am Geriatr Soc , 2002, 50 (pg. 1108-1112)

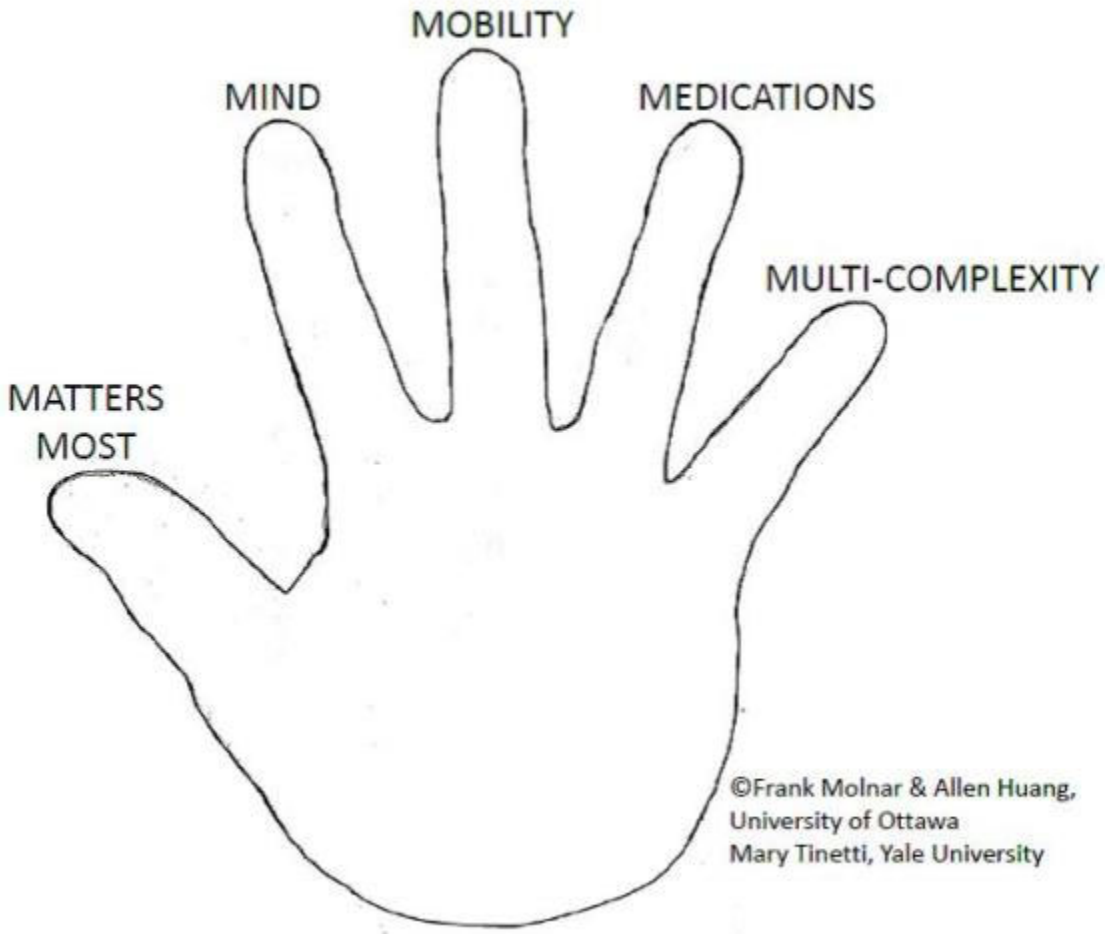
Geriatric Giants

- Impaired Independence
- Incontinence
- Instability
- Impaired Cognition
- Immobility
- (Iatrogenesis)

- “Families felt something was wrong”

(Isaacs, 1965 and 1980)

The New Giants



Molnar F et al, copied without permission

Summary of Demography and Epidemiology

- This has been a slow steady predictable increase in the number of older adults
- Most of these individuals are healthy and functionally intact
- However, the rates of functional impairment, cognitive impairment and morbidity have increased predictably
- Maybe we should do something about this

What should we do??

- Align health systems to the needs of the older populations they now serve
  - Person oriented care
  - Focus on intrinsic capacity
  - Appropriate work force
  - Access to CGA
- Adequate LTC
- Age friendly environments
- Good data

WHO Report on Ageing, 2016

Comprehensive Geriatric Assessment

- A multidisciplinary diagnostic and treatment process that identifies medical, psychosocial, and functional limitations of a frail older person in order to develop a coordinated plan to maximize overall health with aging

Rubenstein 1991

- **Disease Oriented**
  - Disease treatment
  - Discrete pathology
  - Symptoms addressed by curing the disease
  - Outcomes are survival or presence of the disease

- **Integrated**
  - Individual priorities
  - Complex causal pathways
  - Treatment goals set by individual
  - Survival one of several competing goals

Tinetti and Fried, 2004 (images from VA and CBS)

Common referral triggers

- Age
- Medical comorbidities (eg, hip fracture, transcatheter aortic valve replacement [TAVR])
- Psychosocial problems
- Specific geriatric conditions such as functional disability
- Previous or predicted high health care utilization
- Consideration of change in living situation (eg, from independent living to assisted living, nursing home, or in-home caregivers)

Who Benefits?

The geriatric process

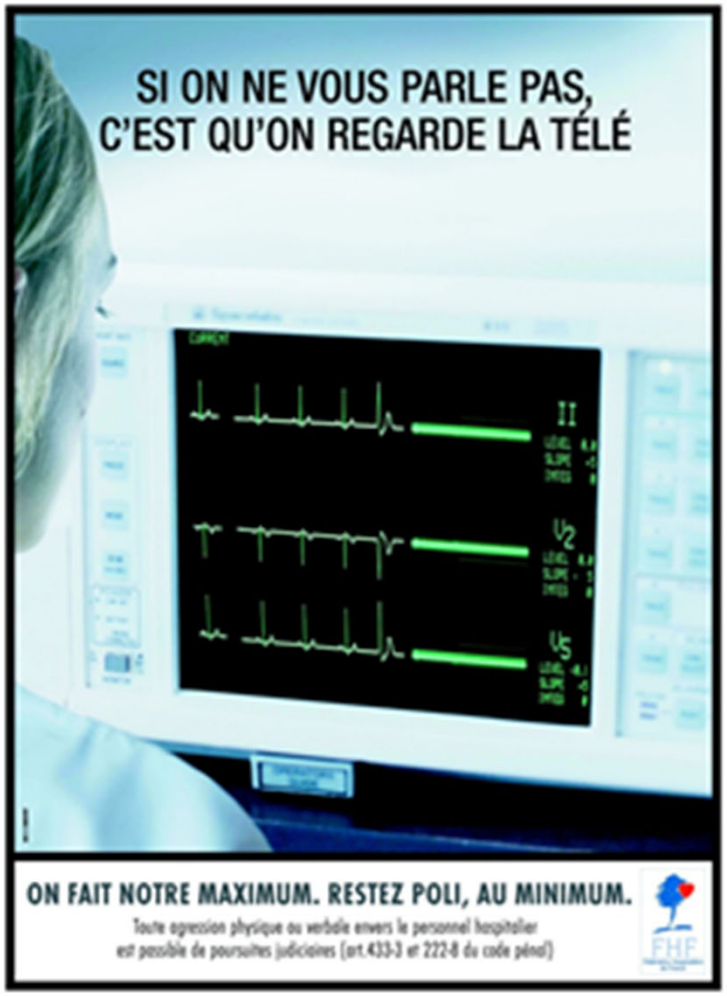
- **Assessment**
  - Health (diagnoses, prognosis)
  - Function (physical, mental)
  - Resources (culture, education, social, economic)

- **Agree objectives of care**
  - What does the patient want?
  - What is feasible?

- **Specify the management plan**
  - Objective—To close the ecological gap between what the patient can do and what the environment requires
  - Therapeutic changes—improve the patient
  - Prosthetic changes—reduce environmental demands

- ***Regular review***
  - Is progress as expected?
  - Does the plan need changing?

Grimley-Evans. BMJ 1997;315:1075


SI ON NE VOUS PARLE PAS,
C'EST QU'ON REGARDE LA TÉLÉ
ON FAIT NOTRE MAXIMUM. RESTEZ POLI, AU MINIMUM.
Toute agression physique ou verbale envers le personnel hospitalier
est passible de poursuites judiciaires (art.433-3 et 222-8 du code pénal)
FHF

Geriatric Technology

TEAMS

- **Multidisciplinary team** - a team of professionals including representatives of different disciplines who coordinate the contributions of each profession, which are not considered to overlap, in order to improve patient care.
- **Interdisciplinary team** - group of health care professionals from diverse fields who work in a coordinated fashion toward a common goal for the patient.
- **Transdisciplinary team** a team composed of members of a number of different professions cooperating across disciplines to improve patient care through practice or research.

Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health, Seventh Edition. 2003 Saunders

- There is no “right” team – it is context specific

- There are “wrong” teams
  - Silos
  - Poor communication within team and between teams
  - Under-resourced teams
  - Lack of clear mandate

MODELS OF CARE

- No Geriatrics
- Geriatricians in primary care of well elderly – good evidence of poor outcomes/cost (Hoogendijk et al)
- Co-managed care – eg. Ontario memory clinics (Lee, et al, 2019)
- Clinics – usually disease-based (eg memory clinics, falls clinics, incontinence clinics)

CGA Models

- Disease based multidisciplinary teams
- Decision Support Teams (eg PATH clinic, pre-TAVR clinics, etc)
- ***CGA multidisciplinary teams – Geriatric Day Hospitals***
- ***Home based CGA***

Evidence for GDH

Medical day hospital care for older people versus alternative forms of care (Review)

Brown L, Forster A, Young J, Crocker T, Benham A, Langhorne P, Day Hospital Group

Conclusions

- Evidence for better outcomes with comprehensive assessment compared to usual care
- No evidence of superiority of GDH compared to other comprehensive care

Since then

- AGE-Fit Trial (Ekdahl et al, 2016)

- RCT in Sweden
  - Longer time alive and in the community
  - Similar hospitalization, but less time in hospital
  - Comparable cost

Outreach Teams

- Home visiting services
- Present in many Canadian cities
- Visit from health professional
- Medical, social, functional and psychological
- Sometimes with follow-up

Evidence for Benefit

- Reduced Nursing Home Admission – OR 0.90
- Reduced risk of functional decline – OR 0.95
- Reduced death rate – OR 0.94

Stuck et al, 2002

However

- Effect only seen in interventions that
  - Had BOTH medical and psychosocial components
  - Had multiple follow-up visits and/or control over recommendations
  - Targetted younger, less frail people

Huss, 2008

Evidence for all outpatient CGA

Study context	Not living at home N=79 578	Death N=93 754	Nursing home admission N=79 575	Hospital admission N=20 047	People with falls N=15 607	Physical function N=21 651
Geriatric assessment of general elderly people	0·95 (0·93 to 0·98)	1·00 (0·98 to 1·03)	0·86 (0·83 to 0·90)	0·98 (0·92 to 1·03)	0·76 (0·67 to 0·86)	−0·12 (−0·16 to −0·08)
I^2	35·3%	39·7%	47·5%	61·4%	0	0
Geriatric assessment of elderly people selected as frail	1·00 (0·87 to 1·15)	1·03 (0·89 to 1·19)	1·01 (0·83 to 1·23)	0·90 (0·84 to 0·98)	0·99 (0·89 to 1·10)	−0·01 (−0·06 to 0·04)
I^2	43·3%	0	28·8%	11·0%	0	57·9%
Community-based care after hospital discharge	0·90 (0·82 to 0·99)	0·97 (0·89 to 1·05)	0·77 (0·64 to 0·91)	0·95 (0·90 to 0·99)	0·82 (0·61 to 1·08)	−0·05 (−0·15 to 0·04)
I^2	2·2%	5·2%	0	57·0%	40·3%	0
Fall prevention	0·86 (0·63 to 1·19)	0·79 (0·66 to 0·96)	1·26 (0·70 to 2·27)	0·84 (0·61 to 1·16)	0·92 (0·87 to 0·97)	−0·25 (−0·36 to −0·13)
I^2	0	0	0	0	65·8%	4·1%
Group education and counselling	0·62 (0·43 to 0·88)	0·80 (0·42 to 1·55)	0·50 (0·05 to 5·49)	0·75 (0·51 to 1·09)	n/a	0·05 (−0·20 to 0·30)
I^2	0	0	n/a	n/a	n/a	n/a
All complex interventions	0·95 (0·93 to 0·97)	1·00 (0·97 to 1·02)	0·87 (0·83 to 0·90)	0·94 (0·91 to 0·97)	0·90 (0·86 to 0·95)	−0·08 (−0·11 to−0·06)
I^2	29·3%	10·6%	29·0%	43·0%	52·8%	45·9%*

n/a=not applicable. *Activities of daily living −0·08 (−0·11 to −0·04, I^2=37·5%) and generic physical function −0·09 (−0·13 to −0·05, I^2=64·0%).

Table: **Relative risk (95% CIs) of outcome by intervention context (standardised mean difference for physical function) and I^2 heterogeneity statistic**

Beswick et al, Lancet, 2008

- Complex interventions can help elderly people to continue living at home, largely through prevention of the need for nursing-home care, and can help to reduce the rate of falls.

- Substantial variation in the format of care, involvement of health-care professionals, and site of care provision and intensity was reported.

- Because the evidence did not suggest that one format of care provision was better than another, the possibility might exist to tailor different formats of care to the needs and preferences of the individual, a conclusion similar to that drawn from the UK assessment of an expert patient programme.

The Onion, 2008

ESSENTIAL COMPONENTS OF CGA

- Must attend to all aspects of a person and their context
- Must have some mechanism to ensure advice is carried out
- Should be within an organized geriatric programme

IF This is done correctly

- **Better outcomes for frail older adults**
- **Better outcomes for their families**
- Better outcome for the system

CONCLUSIONS

- Outpatient CGA is an important piece of outpatient care
- It reduces functional decline, the risk of long-term care and hospital utilization
- How CGA is offered depends upon local context

Table 1. Characteristics of Two Models of Medical Care

Disease-Oriented Model	Integrated, Individually Tailored Model
Clinical decision making is focused primarily on the diagnosis, prevention, and treatment of individual diseases.	Clinical decision making is focused primarily on the priorities and preferences of individual patients.
Discrete pathology is believed to cause disease; psychological, social, cultural, environmental and other factors are secondary factors, not primary determinants of disease.	Health conditions are believed to result from the complex interplay of genetic, environmental, psychological, social, and other factors.
Treatment is targeted at the pathophysiologic mechanisms thought to cause the disease(s).	Treatment is targeted at the modifiable factors contributing to the health conditions impeding the patient's health goals.
Symptoms and impairments are best addressed by diagnosing and treating "causative" disease(s).	Symptoms and impairments are the primary foci of treatment even if they cannot be ascribed to a discrete disease.
Relevant clinical outcomes are determined by the disease(s).	Relevant clinical outcomes are determined by individual patient preference.
Survival is the usual primary focus of disease prevention and treatment.	Survival is one of several competing goals.

Authors' conclusions

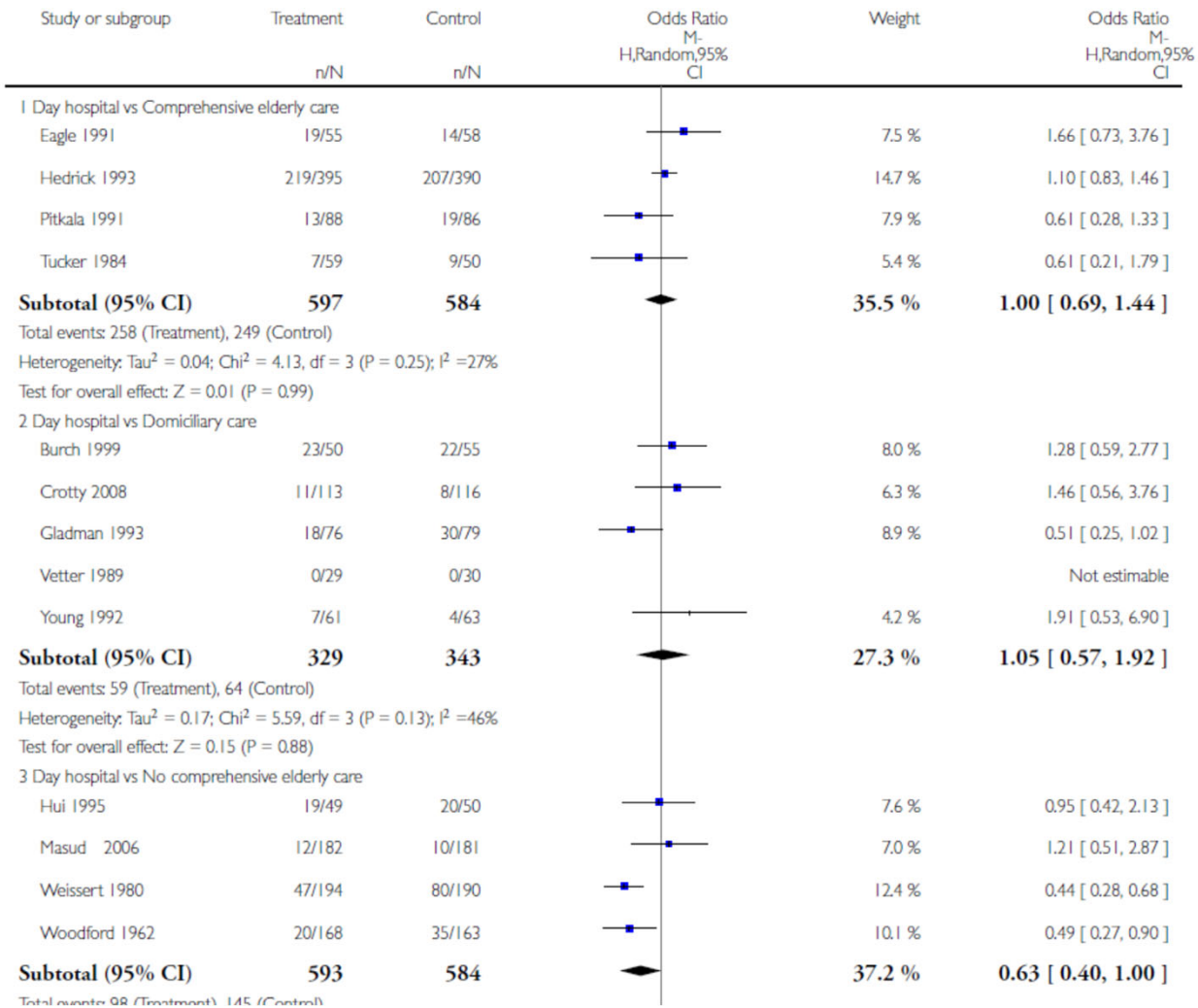
There is low quality evidence that medical day hospitals appear effective compared to no comprehensive care for the combined outcome of death or poor outcome, and for deterioration in ADL. There is no clear evidence for other outcomes, or an advantage over other medical care provision.

Analysis 1.2. Comparison 1 Day Hospital vs Alternative Care - patient outcomes, Outcome 2 Death or institutional care by the end of follow up.

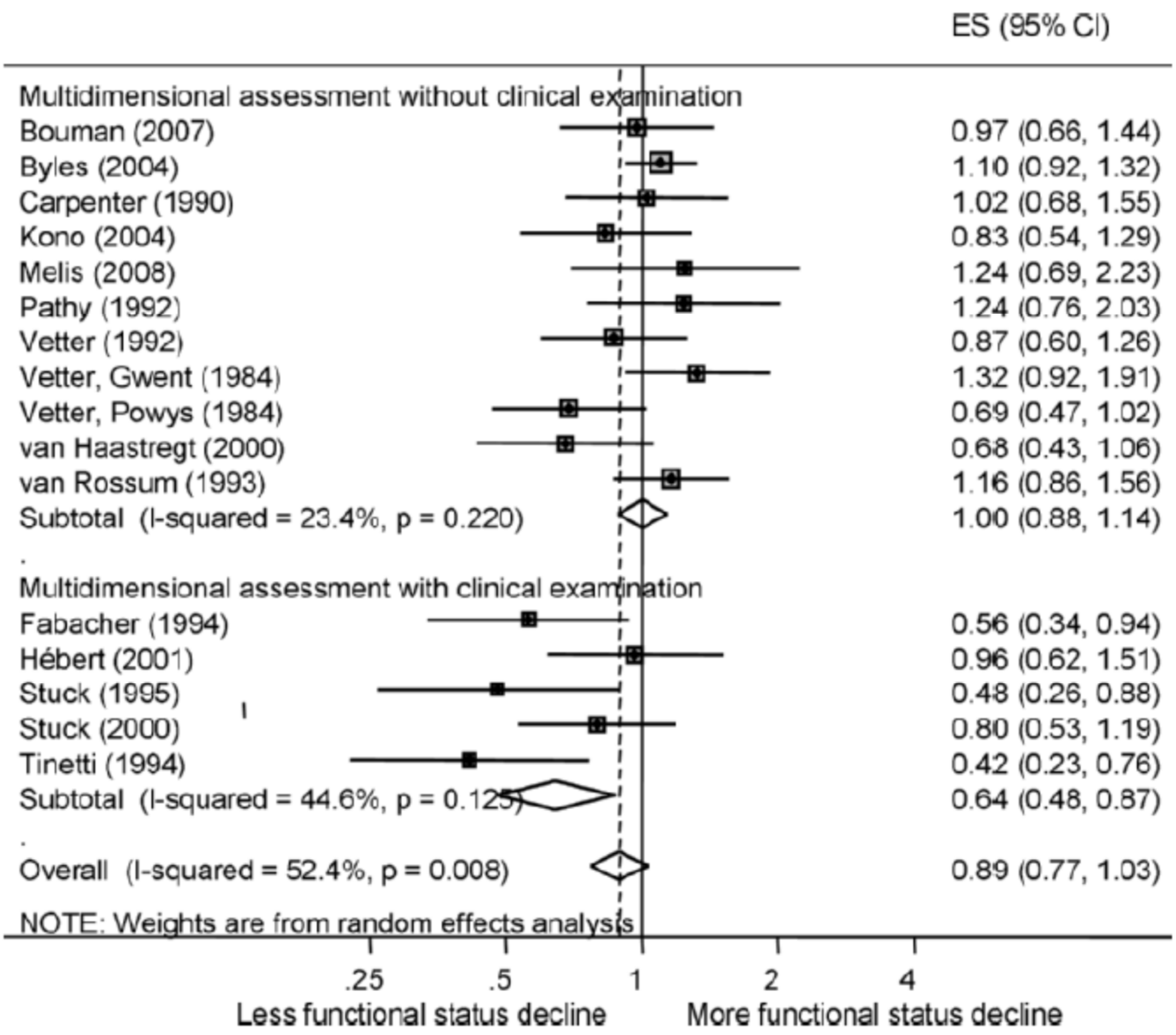
Review: Medical day hospital care for older people versus alternative forms of care

Comparison: 1 Day Hospital vs Alternative Care - patient outcomes

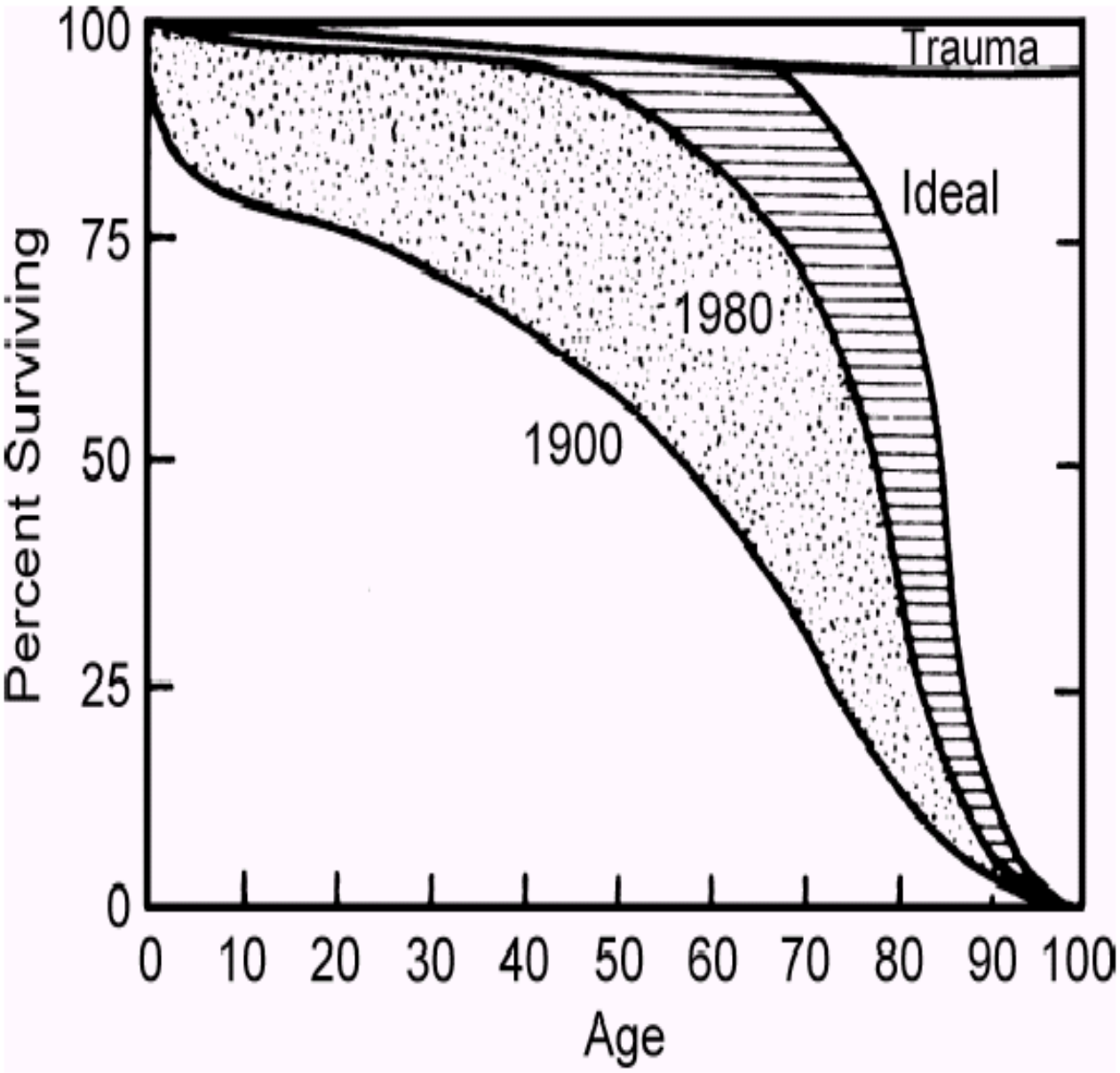
Outcome: 2 Death or institutional care by the end of follow up



Study or subgroup	Treatment n/N	Control n/N	Odds Ratio M-H,Random,95% CI	Weight	Odds Ratio M-H,Random,95% CI
1 Day hospital vs Comprehensive elderly care					
Eagle 1991	19/55	14/58		7.5 %	1.66 [0.73, 3.76]
Hedrick 1993	219/395	207/390		14.7 %	1.10 [0.83, 1.46]
Pitkala 1991	13/88	19/86		7.9 %	0.61 [0.28, 1.33]
Tucker 1984	7/59	9/50		5.4 %	0.61 [0.21, 1.79]
Subtotal (95% CI)	**597**	**584**		**35.5 %**	**1.00 [0.69, 1.44]**
Total events: 258 (Treatment), 249 (Control)					
Heterogeneity: $Tau^2 = 0.04$; $Chi^2 = 4.13$, df = 3 (P = 0.25); $I^2 = 27\%$					
Test for overall effect: Z = 0.01 (P = 0.99)					
2 Day hospital vs Domiciliary care					
Burch 1999	23/50	22/55		8.0 %	1.28 [0.59, 2.77]
Crotty 2008	11/113	8/116		6.3 %	1.46 [0.56, 3.76]
Gladman 1993	18/76	30/79		8.9 %	0.51 [0.25, 1.02]
Vetter 1989	0/29	0/30			Not estimable
Young 1992	7/61	4/63		4.2 %	1.91 [0.53, 6.90]
Subtotal (95% CI)	**329**	**343**		**27.3 %**	**1.05 [0.57, 1.92]**
Total events: 59 (Treatment), 64 (Control)					
Heterogeneity: $Tau^2 = 0.17$; $Chi^2 = 5.59$, df = 3 (P = 0.13); $I^2 = 46\%$					
Test for overall effect: Z = 0.15 (P = 0.88)					
3 Day hospital vs No comprehensive elderly care					
Hui 1995	19/49	20/50		7.6 %	0.95 [0.42, 2.13]
Masud 2006	12/182	10/181		7.0 %	1.21 [0.51, 2.87]
Weissert 1980	47/194	80/190		12.4 %	0.44 [0.28, 0.68]
Woodford 1962	20/168	35/163		10.1 %	0.49 [0.27, 0.90]
Subtotal (95% CI)	**593**	**584**		**37.2 %**	**0.63 [0.40, 1.00]**
Total events: 98 (Treatment), 145 (Control)					



Huss et al, 2008


100
75
50
25
0
Percent Surviving
Trauma
Ideal
1980
1900
0 10 20 30 40 50 60 70 80 90 100
Age

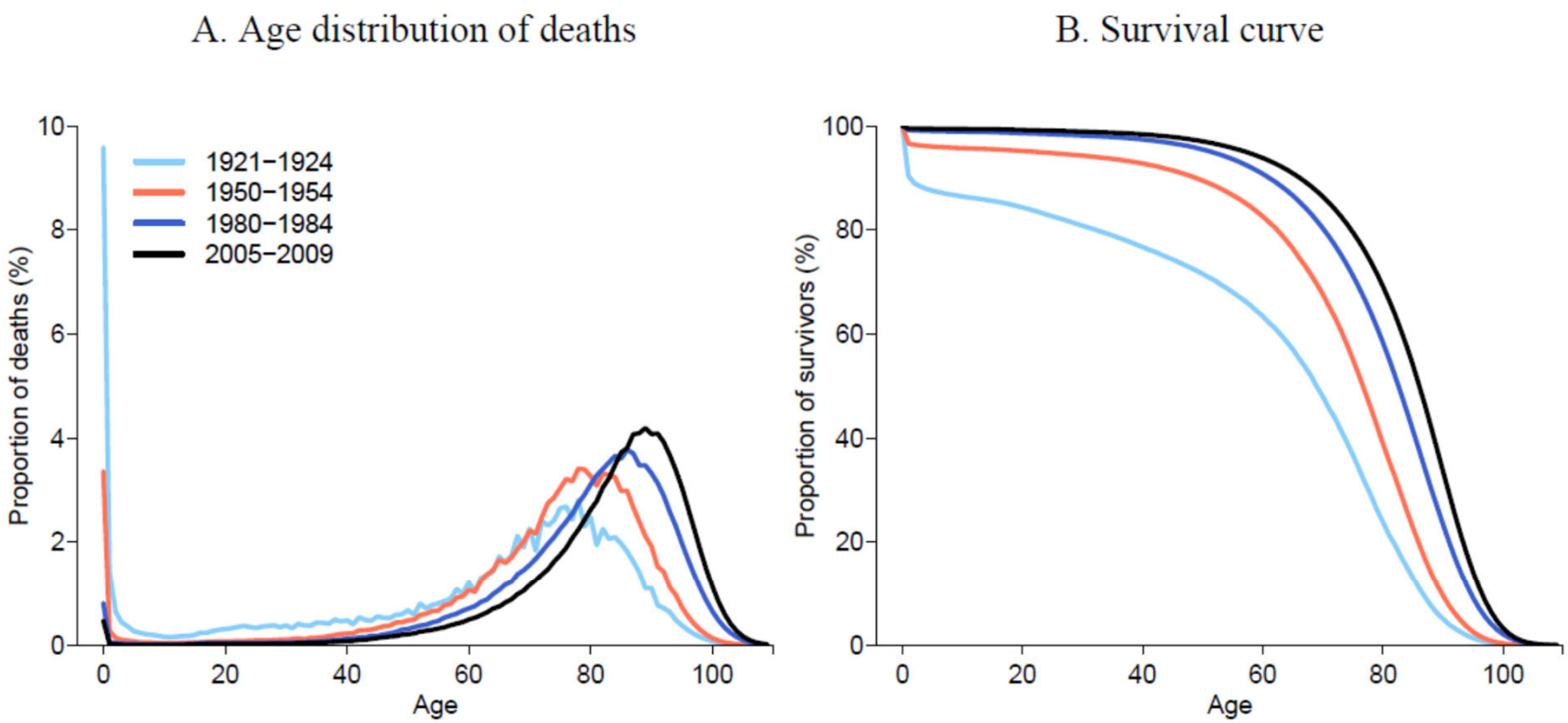


Figure 7. Changes in two life table functions: the age distribution of deaths and the survival curve for Canadian females, selected periods between 1921–24 and 2005–09.

Source: Canadian Human Mortality Database, 2014.

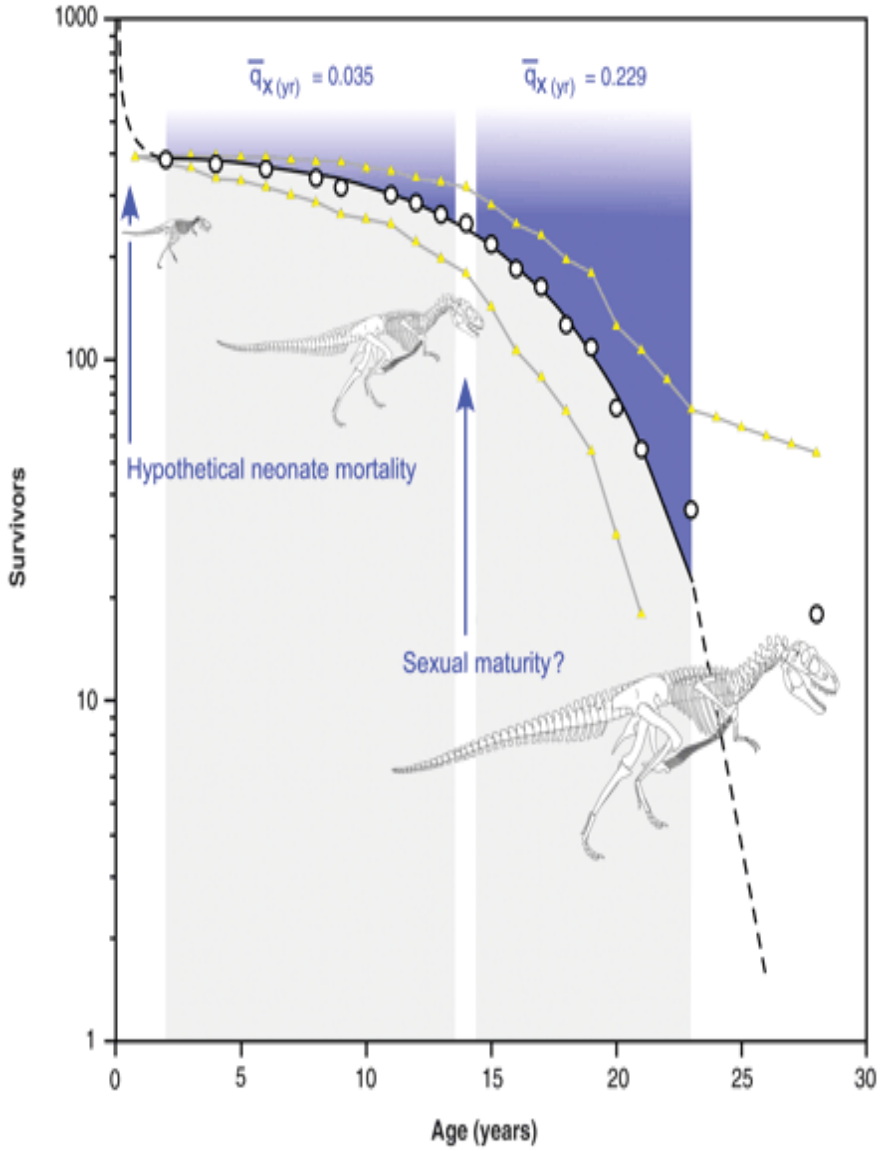

1000
100
10
1
Survivors
$\overline{q}_{x\,(yr)}$ = 0.035
$\overline{q}_{x\,(yr)}$ = 0.229
Hypothetical neonate mortality
Sexual maturity?
0
5
10
15
20
25
30
Age (years)

Chart 1
Total number of expected years of life at birth and at age 90, 1921-2011