FRAILTY IN OLDER ADULTS
THE EXAMPLE OF BLOOD PRESSURE

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HEALTHY AGING 101

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LEARNING OBJECTIVES

After this lecture I hope you will be able to:

- Define frailty and how to recognize it in older adults

- Know how and when to refer to the clinical frailty scale

- Recommend preventive measures for frailty in older adults

- Appreciate heterogeneity in the aging process

DISCLOSURES

- I have no financial disclosures
- This will not be a traditional 'evidence based' talk
- My thinking in this talk is not linear
- I think I might be a bit frail myself

A TALE OF TWO WARRING TRIALS

HYPERTENSION IN THE VERY ELDERLY TRIAL (HYVET NEJM 2008, BMJ FOLLOW UP 2012)

- The question asked: is blood pressure control helpful in people over 80?

- Blood pressure reduction decreased all cause mortality, CVS mortality, and stroke (few events however)

- The HYVET extension seemed to confirm the benefit of continuing blood pressure control

- The more recent SPRINT trial seems to confirm this as well

BLOOD PRESSURE AND MORTALITY IN THE OLDEST OLD (JAGS 2001)

- A population based longitudinal study in the USA with 12,802 persons over 65

- For those over 85, no relation to outcome with increasing SBP in women, but better survival in men with higher SBP

- Same findings in a 2007 veteran's study in the USA (~96% men)

  WHY DIFFERENT RESULTS FROM HYVET?

HINTS FROM TRADITIONAL LITERATURE

BMJ 1998

– Cohort study from Leiden showed increased BP=increased survival in those over 85

– If those with poor health status removed, results reversed

Archives of Internal Med 2012 (not a treatment trial)

– Fast walkers had greater risks with high BP

– Slow walkers, BP did not alter outcomes

– Couldn't complete the walk test, high BP beneficial

HUMAN DIVERSITY INCREASES WITH AGE

- Few newborns are continent

- Almost none speak a foreign language

- All seem to specialize in nursing, peeing, and pooping

They are all similar in their abilities (some controversy about which ones are cuter)

TODDLERS

At one year

- Some children saying a few words, others none
- Some walking well, others still in the 'mature creep' phase

All well within the range of normal!

Variation much greater than a newborn

TEENAGERS

- Some are studying really hard so they can become health care providers

- Some want to leave school and work

- Some are already entrepreneurs (former SHS chair)
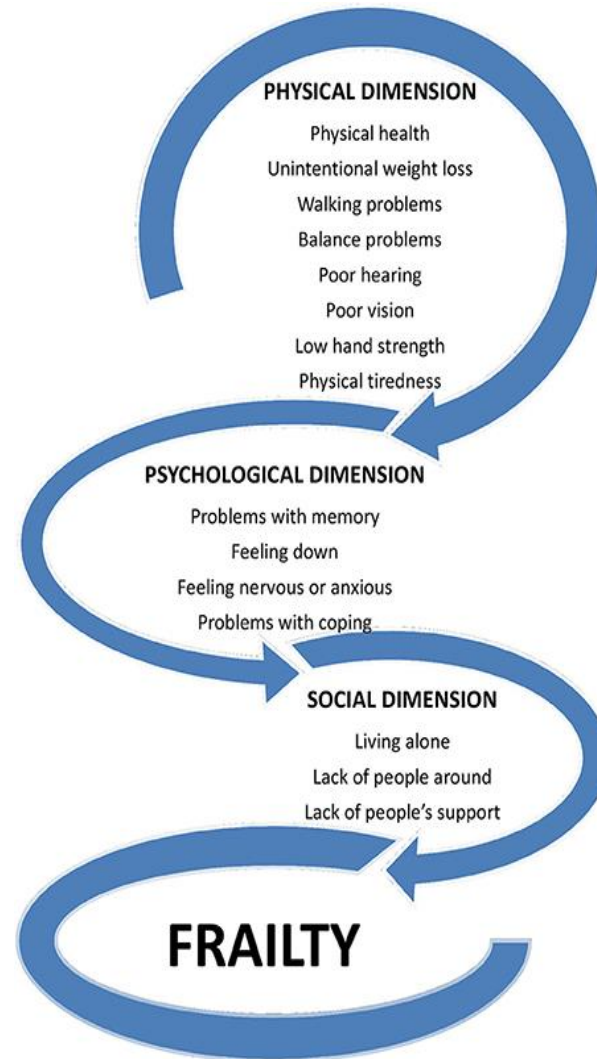
  ALL NORMAL

OLDER ADULTS

Healthy, active old age

Old and *frail*

COMPONENTS OF FRAILTY

PHYSICAL DIMENSION

Physical health

Unintentional weight loss

Walking problems

Balance problems

Poor hearing

Poor vision

Low hand strength

Physical tiredness

PSYCHOLOGICAL DIMENSION

Problems with memory

Feeling down

Feeling nervous or anxious

Problems with coping

SOCIAL DIMENSION

Living alone

Lack of people around

Lack of people's support

FRAILTY

FRAILTY LIKELY THE MISSING VARIABLE IN THE HYPERTENSION TRIALS

There is a huge selection bias in many clinical trials involving the elderly, as volunteering, getting to assessment site, etc. is difficult for frail elderly people

- How do we recognize frailty
- How do we 'grade' frailty
- How do we treat it
- How does it modify other treatments

POSSIBLE SCALES TO USE

Cumulative Deficit Model of Frailty: Frailty Index
(Rockwood et al)

"The more things that are wrong with you, the more likely you are to be frail"

- Frailty Index counts "deficits"
- A deficit is a think that is wrong with you (symptom, sign, disease or disability)

Frailty Index = the proportion of deficits accumulated over time
Simple calculation:
- Zero deficits from list of 50: FI = 0/50 = 0
- Ten deficits from list of 50: FI = 10/50 = 0.20
- Frailty Index(s) based on deficit accumulation closely related to risk of death (Mexico, China, Canada, Europe etc. ...)

Requires a comprehensive geriatric assessment, so not useful for primary care. It does provide a framework for treatment.

CLINICAL PHENOTYPE

Weight loss	Unintentional loss of ≥ 4.5 kg in the past year
Weakness	Hand-grip strength in the lowest 20% quintile adjusted for sex and body mass index
Exhaustion	Poor endurance and energy, self-reported from the Center for Epidemiologic Studies Depression Scale
Slowness	Walking speed under the lowest quintile adjusted for sex and height
Low physical activity level	Lowest quintile of kilocalories of physical activity during the past week, measured by the Minnesota Leisure Activity Scale

Modified from Fried et al., with permission from Oxford University Press [49].

ROCKWOOD FRAILTY SCALE

Clinical Frailty Scale

1 Very Fit – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 Well – People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally, e.g. seasonally.

3 Managing Well – People whose medical problems are well controlled, but are not regularly active beyond routine walking.

4 Vulnerable – While not dependent on others for daily help, often symptoms limit activities. A common complaint is being "slowed up", and/or being tired during the day.

5 Mildly Frail – These people often have more evident slowing, and need help in high order IADLs (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6 Moderately Frail – People need help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.

7 Severely Frail – Completely dependent for personal care, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 Very Severely Frail – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9 Terminally Ill – Approaching the end of life. This category applies to people with a life expectancy <6 months, who are not otherwise evidently frail.

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia,** recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia,** they cannot do personal care without help.

Feasible in clinical practice and Canadian

ADAPTED ROCKWOOD SCALE

Score	Fitness level	Definition
1	Very fit	Robust, active, energetic, well motivated and fit; these people commonly exercise regularly and are in the most fit group for their age
2	Well	Without active disease, but less fit people than people in category 1
3	Well, with treated comorbid disease	Disease symptoms are well controlled compared with those in category 4
4	Apparently vulnerable	Although not frankly dependent, these people commonly complain of being 'slowed up' or have disease symptoms
5	Mildly frail	With limited dependence on others for instrumental activities of daily living
6	Moderately frail	Help is needed with both instrumental and noninstrumental activities of daily living
7	Severely frail	Completely dependent on others for the activities of daily living

Adapted with permission from Clinical Frailty Scale [22].

8, 9 Not as relevant in primary care

WHO SHOULD BE ASSESSED FOR FRAILTY?

Lightning Learning: Clinical Frailty Scale

WHAT?

Frailty affects:

~10% aged over 65 years

<50% aged over 85 years

Patients with long term conditions aren't necessarily frail, however those patients *can also have frailty.*

Frailty can be assessed by identification of deficits, as described by the Rockwood **Clinical Frailty Scale.**

While it is associated with the aging process, frailty can be a long term condition, so it can worsen and improve.

WHY?

Identification of frailty helps to **improve both long and short term** health management for these patients.

These patients require more in-depth comprehensive geriatric assessment where possible.

Recognition of frailty is important in planning any intervention.

The scale ranges from **1** *(very well)* to **8** *(very severely frail)* and **9** *(terminally ill, though not otherwise frail).*

HOW?

Clinical Frailty Scale

(Dalhousie University)

http://bit.ly/2pLDrUF

Fit for Frailty

(British Geriatric Society)

http://bit.ly/2oYejr1

Author: Darren Whitelaw   Date: 21.04.2017   Version 1.1

- Anybody with functional issues
- Anybody with cognitive issues
- Anybody whose family is worried
- Several ER visits, etc.

THE FUTURE
- EMRs will pick out enough data to flag potentially frail older adults
- These predictors will likely include lab values as well

HUMANS VS. MACHINES
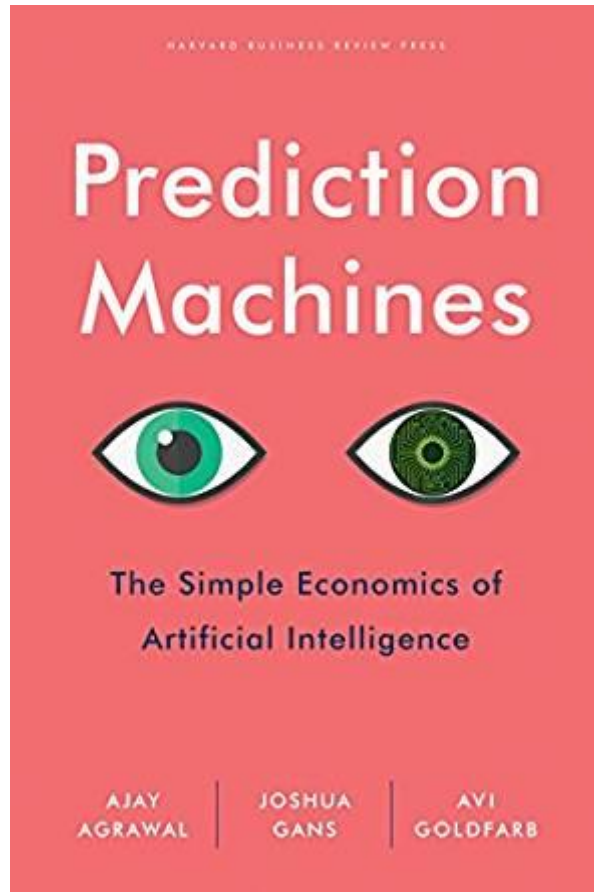
- Machine learning will help BUT REMEMBER
  - Humans are terrible at statistics, computers are great at statistics
  - Humans are great with judgement, machines do not display judgement
  - Human health care practitioners will always be needed

HOW TO ASSESS THE FRAIL PATIENT

Comprehensive Geriatric Assessment (CGA)

- Thorough medical history (often with collateral information)

- Geriatric review of symptoms

- Functional assessment (basic and instrumental ADLs)

- Thorough physical exam including vision, hearing, postural BP, gait, neurological exam, cognitive testing

- Assessment of living circumstances, finances etc.

MANAGEMENT AND PREVENTION

- Correctable factors on CGA need to be addressed, exercise and good nutrition stressed

- Real issue is can we prevent frailty

- Current thinking mirrors studies on successful aging: lifelong exercise, healthy eating to maintain optimal weight, treat vascular risk factors, don't smoke, select the right parents

- Beware the 'ragged fringe': *America the Wise* by Theodore Roszak (author of *The Making of a Counterculture)*

WHAT'S NEXT?

Operationalizing frailty scores in primary care

This will require

- Consensus on which scale to use

- Adapt EMRs to screen for frailty

- More clinical trials that include frailty assessments (and do the proper randomizations), so that we know at which score interventions are likely not to help

- Similar to life expectancy and use of preventive medicine

ALTERNATIVE TO GROWING OLD