Diabetes in the Elderly

[ more ain’t better ! ]

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who are “The Elderly”? 

by 2020 ~ 54.6 million over 65 years old, (now ~42 million) and . . . .

7.3 million over 85 yo (now ~ 5.5 m)!
DM prevalence in 2020

~ 10% over 65 = 5.5 million

~ 15% over 85 w have DM = 1.1 million !!
a tale of 2 patients, Mr A & Mr B

Both pt A & B are 80 yo, both have CHF, HTN, Cholesterol, A fib, BPH, DM type 2

pt A resides in AL, MMSE 10/30, assist w ADLs, BMI 15, Hx behavior dyscontrol & falls

pt B independent in home w wife, retired professor working on book & articles, MMSE 30/30, BMI 23, on boards - including Alzheimers Association
**a tale of 2 patients**

should we use the same treatment goals, screening protocols for both A & B ?

Clinical trials generate guidelines, treatment goals . . . however:

- in the past tended to eliminate those w multiple co-morbidities, seldom include any over 80 yo, still often exclude those w dementia

- a prime example is the landmark UKPDS (UK Prospective Diabetic Study in late 1970s) which excluded all over 65 yo

- the ACCORD trial (Action to Control Cardiovascular Risk in Diabetes, 2008) had an upper age limit of 79 yo – the trial was stopped d/t increased events in the study group (intensive Rx) c/w control group (usual Rx)
a tale of 2 patients

what are the differences between Mr A & Mr B?

Mr A has obvious frailty syndrome, B certainly doesn’t . . . ? WHY?

their ages & Dx lists don’t tell us . . . Genetics! History! Duration of Rx!

both Mr A & B have had DM & HTN for 30 yrs, but Mr A agreed to Rx later, initially less attentive to his Rx

Mr A therefore has had more years to develop combined VASCULOPATHY
Basement membrane is a thin layer of matrix separating parenchymal cells from connective tissue. Its ultrastructure consists of a three-dimensional network of irregular, fuzzy strands referred to as “cords”; cord thickness averages 3–4 nm... the cords are composed of at least five substances: collagen IV, laminin, heparan sulfate proteoglycan, entactin, and fibronectin.

In plain language, the basement membrane is the gel matrix around the one cell thick capillary wall which allows bi-directional diffusion of Oxygen, Glucose, CO2, other key substances, depending on the programming of the capillary wall cells, as well as the cells of the involved organ... brain, lung, muscle, intestine, etc.
VASCULOPATHY = hardening of the arteries  
(especially capillaries) = ATHERO SCLEROSIS

High Blood Pressure: The Microvascular Lesions

- Healthy Arteriole
- Hyaline Arteriole
- Hyperplastic Arteriole
- Necrotic Arteriole
- Healthy Small Artery
- Fibroelastic Hyperplasia
Vasculopathy in target organs

- Kidney → Renal Failure: 1% of 5.5 m x $80,000 = $4.4 billion/yr
- Heart → MI, CHF, Sudden Death → $ billions more
- Brain → Dementias → $ billions more x more years ! !
Vasculopathy

Would Mr A be improved if someone Fed-Ex’d him the ideal 2014 diet & DM guidelines?

Probably not - several months of ideal care won’t reverse decades of non-ideal care

Barriers?
- poor access to meds, care
- fear & denial
- lack of exercise

Diet & prior guidelines
2013 guidelines for DM

GlycoHgb < 6.5 % if young, no CVD, low comorbidities

GlycoHgb ~ 8% unless advanced vasculopathy, multiple comorbidities

so, almost all of the elderly (except Mr B) are flying the ~ 8% flag
Primum non nocere! First - do no harm

DM in the elderly – Daly MD, UCSD Geriatric Med

? is tight (& safe) control beneficial in elderly?

A meta-analysis of 33,000 pts from 5 RCTs:
- showed 17% reduction in non-fatal MI,
- a 15% reduction in other CAD events (Lancet: v 373, issue 9677, 5/09)

BUT, no significant effect on all-cause mortality or CVA!

? WHY?
WHY? mild hypoglycemia in compromised brain (similar to mild hypoxia) leads to confusion, reduced balance, blunted communication (reduced signaling for liquid, food), increased falls, increased aspiration risk

THEN . . . add in effects of co-morbidities, meds (beta-blockers, psychotropics, sleep-aids, Clonidine, etc), esp Frailty syndrome (low wt, poor appetite, reduced alertness, reduced balance)
Primum non nocere!

Association between Intensification of Metformin Rx w Insulin vs Sulfonylureas (JAMA, 2014; 311, 2288-2296)

- 43,000 pts, 39,990 to Metformin + Sulfonylurea, 2948 Metformin + Insulin

- CV event rate: M+S = 7.8/1000
  M+I = 10/1000

- All death rate: M+S = 10.6/1000
  M+I = 17/1000

- Cancer D rate: M+S = 7/1000
  M+I = 14.6/1000 (ass’n betw Insulin resistance & Ca)
Primum non nocere! HTN

**VALISH study** (none > 84 yo)
- lower risk of cerebrovascular events in 65 – 74 yo w reduction from
  > 150 systolic to < 140 systolic

  ! BUT !

- NO benefit to same reduction in 75 – 84 yo group

- Risks of BP over-Rx in elderly – orthostatic/falls, beta-blocker blahs, reduced cognition, reduced CV stamina, increased CerebroVascular risk d/t under perfusion of brain circulation - macro & micro
Primum non nocere! Lipids

PROSPER study – cholesterol lowering in elderly

- decrease in CV deaths
- no change in stroke deaths
- but higher side-effects w Pravastatin – asthenia, low appetite, wt loss
Primum non nocere - GLOBAL!

Clinical Inertia & DM over-treatment (JAMA; 311, v 22, 2236 – 2237)

TIGHT CONTROL in anyone with reduced cognition &/or multiple co-morbidities not a good idea . . . or looking from the other direction: only a subset of young motivated diabetics can safely accomplish TIGHT CONTROL

The ACCORD Study, the VADT (VA Diabetes Trial), VALISH study, PROSPER study & ADVANCE trial (Action in Diabetes & Vascular Disease) all show either no benefit, or harm w intensive control
my patients are safest w CBGs over 150, GlycoHgb < 8%

if unpredictable meals - long-acting Insulins & orals are potentially dangerous, except for Metformin

intensive dietary management is rarely practical, except for clones of Pt B
Primum non nocere - GLOBAL!

Systolic 150 range, usually HCTZ 12.5 + _____, avoid higher beta-blocker doses unless recent vascular event, check orthostatic BP often

If on hi-dose statins, consider indication for hi-dose in context of 3X risk of myopathy but minimal improvement in CV event rate - c/w usual dose statins (NEJM 2011; 365, 285-287) . . . also, hassle factor of serial lab monitoring

If any report of anorexia, GI upset &/or med refusal, then statins are 1st in line for hold . . . DC if improval off statins
Primum non nocere - GLOBAL!

a cautionary tale: Pt A w unrecognized skipped meals, Lantus still given . . .
delirium from hypoglycemia thought to be purely behavioral, not metabolic . . .
PRN Lorazepam given, in a few min pt breaks forearm w increased delirium . . .
while in-pt post-op CBGs in good range, but intense post anesthesia delirium,
and gets a dermal shear injury while struggling . . .
Cellulitis in skin injury, gets IV atbx, then C Dif, then . . . .
Primum non nocere

Diabetes and other vasculopathic conditions are manageable in the Elderly, with treatment guidelines appropriate to age & functional status

We use our training, our in-the-moment skills, and we hope for GOOD LUCK for all of our patients

Thank you for your attention