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PRESENTS

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ANNUAL GENERAL MEETING
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NEW YORK HILTON AND TOWERS
1335 Avenue of The Americas New York, NY
Endocrine and Metabolic Challenges in Baby Boomers

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Objectives & Disclosures

• Review - selected perspectives of endocrine & metabolic health in relation to Baby boomers

• Disclosures – None
TROUBLING demographics

• For next 19 years, **additional 10,000** Baby Boomers/ **daily** in USA, become 65 yrs!

• In 2010 T2 DM - 26 million, by 2050 **1/3rd of US population**

• **79 million** in USA currently have PRE-Diabetes

• USA spent **17% of GDP on health** in 2010

• Childhood obesity, T2DM, processed / Na laden/ fatty foods, soda-pop with cheap calories, **rampant and fast-growing across the globe**
## BMI TABLE

<table>
<thead>
<tr>
<th>Condition</th>
<th>Caucasians</th>
<th>Asians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt; 25</td>
<td>&lt; 23</td>
</tr>
<tr>
<td>Overweight</td>
<td>25 – 29.9</td>
<td>23 – 29.9</td>
</tr>
<tr>
<td>Obese</td>
<td>30 – 39.9</td>
<td>30 – 39.9</td>
</tr>
<tr>
<td>Morbid Obesity</td>
<td>≥ 40</td>
<td>≥ 40</td>
</tr>
<tr>
<td>Super Morbs</td>
<td>&gt; 60</td>
<td>&gt; 60</td>
</tr>
</tbody>
</table>
Morbidity in impending Baby Boomers

• **2007 USA**
  – 64% of, 50 - 64 yr olds (pre-boomers),
    
    (35 million people),
  – have **at least one chronic** health condition > CAD, HTN, DM
  – Geriatric changes start early as 50 yrs age

(Analysis of the Medical Expenditure Panel Survey 2007 by N. Tilipman and B. Sampat of Columbia University for The Commonwealth Fund.)
The birds of a feather flock together

- Endocrine and Metabolic problems almost,

  "never occur alone!"
Boomer metabolic Fraility

• State of reduced physiological reserves associated with increased susceptibility to disability (William’s Text of Endocrinology 11 ed)

• Boomer’s presentation can be ATYPICAL - Fatigue/Lethargy/loss of libido/cyclothymia/social withdrawal
Biochemical Aging theories that impact Endocrine system

- 1. oxidation by free radicals
- 2. non-enzymatic glycosylation
- 3. epigenetic changes such as DNA methylation and histone acetylation
- 4. widely distributed deterioration of signal transduction efficiency
Understand Diversity of Metabolic aging

- Chrono-biologic variability increases
- Physiologic/pathologic apoptoticosis is highly variable
- Compliance & response to Rx + dietary manipulation varies widely
BMR decline in – Boomers and beyond

- Gradually occurs after 2nd decade
- Multi-factorial - major endocrine contributions from Thyroid, Adrenal
- CANNOT totally be explained by sole changes in body composition
- lower fat-free mass (FFM) and sarcopenic states aggravates decline and increases mortality
Normal Aging

• Some hormone secretions *altered* with age, but changes are:
  - much less predictable - andropause
  - not well-defined by age-adjusted normal values. Eg: Hyperparathyroidism, DM 2, hypo/hyperthyroidism

• Some hormone secretion *decreases* with age
  - increased other hormone secretion *may or may not* compensate eg; Testosterone *(decreased secretion, increased LH, reduced metabolism)*
Metabolic aging stages

1. **First change** - progressive loss of reserve capacity
   - basal labs relatively unchanged – FBS
   - compensatory homeostatic attempts occur
     eg. Drop in Testosterone increases LH

2. **Second change** - reduced adaptability to environment when stressed, safety
   - valve fails (greater rise in bld sugar at OGTT)

3. **Final change** – organs fails at rest (without been stressed)
Differentiate “normal Aging” from “disease”

• Normal Aging - Impaired Homeostasis

• Disease - added insult exponentially aggravates homeostasis
Aging with related metabolic ILLNESS

• **highly prevalent**

• occasionally **asymptomatic**

• distinction **very subtle and easily miscalculated**

• does **not** make **therapeutic intervention** mandatory (Best example - GH and IGF-1 levels drop dramatically; despite supplementing GH or IGF-1 does **not** restore rejuvenation)
Altered presentation of Endo disease in elderly - symptoms and signs

- **Non-specific** > wt loss, fatigue, constipation, depression, weakness
- Psychomotor retardation, Atr Fib, exacerbated existing CHF – apathetic Hyperthyroidism
- Hyperosmotic non-ketotic coma - DM
- Confusion – due to hypercalcemia – hyperparathyroidism
- Manifestations altered/masked by existing co-morbidities/polypharmacy
Easily discernible Endocrine derangements in Boomers

• Menopause

• Apathetic thyrotoxicosis

• Hyperosmolar non-ketotic state
Problem with current “normal” reference values in boomers

- Age adjusted “normal” ranges rarely available

- “normals” historically calculated for young/middle age

- “normals” more “cross-sectional” vs. Longitudinal (reducing applicability and accuracy)

- “normals” confounded by multiple *SICK-elderly* in validation cohorts
“Normal range “ Sodium of 145 in the elderly – “may not reflect normalcy for given patient”

- Hyponatremia relatively more common in elderly
  - occult adreno-cortical insufficiency
  - more hypothyroidism, CHF, Cirrhosis, edema states
  - high risk of beer drinkers potomania/hyperglycemia
  - lower intake from salt poor diets
  - tubular conservation of sodium is impaired
  - CKD and conditions that predispose to SIADH more common
  - multiple therapeutics including loop diuretics Thiazides, Metolazone
“U-shaped curve” relation for CAD and **ALL-cause mortality** vs. LDL-C

- In the oldest of old, decrease in baseline LDL-C linked with **increased mortality**

- Exact Threshold for optimal TC or LDL-C in elderly > **undefined**
Statin Rx in seniors - *very controversial*

- Optimum LDL/TG levels *not* clearly defined (ATP 3 gives no special values)
- Multiple confounders + high mortality - preclude accurate conclusions
- Statin Rx - "NO age ceiling" that limits CAD benefits
- Dieting induced wt-loss to reduce lipids – may *increase* mortality
- Therapeutic life style as sole lipid control - practically unachievable
Principles of Rx Geriatric Endo

• Treatment plan - **consider**
  - co-existing illness/meds
  - target organ changes in sensitivity

  
  *(WHI – Estrogens had different outcomes for immediate post-menopausal women Vs. Older women)*

• Dosing - **adjust to GFR**

• Start lowest effective dose/go slow > **but go**
Principles of Rx Geri-Endo

• **Review doses frequently** > titrate / taper-off/monitor once therapeutic goals met

• Increase *concurrent physical and cognitive activity*- to minimize body/mind decline
Bottom line for boomer Metabolic Rx

- EBM for Boomers - therapeutic / healthy lifestyle changes **definitely benefit**

- Artificial “hormonal supra-physiological supplementation” – **may do more harm**
Supplementation in boomers

• Vit D  RDA - 1000-2000 IU  with upper tolerable limit of 4000 IU
  (AACE 2011 recommends Vit D levels at 30-50 ng/ml)

• Calcium RDA -  Elemental calcium – in divided doses to avoid constipation

  Women > 50 yr = 1200 mg  with upper tolerable limit of 2000 mg

  Men > 50 yr = 1000 mg with upper tolerable limit of 2000 mg

• Problems - higher risk of kidney stones  with higher doses of calcium, dosing needs to be timed separately from other meds

  (Source - IOM report + AACE Recommendations 2011)
Endocrinologists solely cannot meet demand

- **Demand for Endocrinologists** will Exceed Supply

- Senior endocrinologists are retiring rapidly - PCPs will have to assume burden
  (AAMC Work-Force Study Aug 2011 p. 12)

- Decreasing funding and manpower for allopathic health

- **Rising life expectancy**
  - overwhelming rise in > 50 yr (AARP) age
  metabolic and endocrine diseases
Potential remedies for Boomer Metabolics in 21st century America + Globe

- Increasing collaboration of Endocrinologists with PCP
- ACA act of 2010
- ACO - Accountable Care Organization
- PCMH – Patient Centered Medical Home
- Integrated Metabolic & Dietetic Health Education/Health Literacy/ Preventive Health
- Tele-medicine & Care Coordination
- Health exchanges to incentivize therapeutic behavior
- Medical Foster Home ( VA model )
- Global collaboration in taming metabolic disease tide
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  Columbia, MO 65212
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