No Disclosures

A Joint Sessions of the AHA CVSN Nursing Council and PCNA
OBJECTIVES

- Appraise the quality of the evidence regarding quality of life in older adults with diabetes and chronic disease.
- Formulate an assessment and management strategy aimed at improving quality of life in older adults with diabetes and other chronic diseases.
Overview

- Aging
  - Trends
  - Aging
  - Healthy Aging
- Disease in Older Adults
  - Multiple Chronic Conditions
  - Diabetes
  - Cardiovascular Diseases
- Quality of Life/Health-Related QOL (HRQoL)
- Improving QOL/HRQoL
Population of individuals 60 and over

Proportion of population (%)

World population prospects: The 2004 revision, United Nations, 2005
Population growth in those 80 and older - 2050

Population challenges and development goals, United Nations publication, Sales No. E.05.XIII.8, 2005
Women and Aging

Projected World Population, by Sex, at Specified Age Groups, 2025

Percent

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Ages</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Ages 60+</td>
<td>54</td>
<td>46</td>
</tr>
<tr>
<td>Ages 80+</td>
<td>63</td>
<td>37</td>
</tr>
</tbody>
</table>

Genetics
  - DNA damage
  - Telomere shortening
Metabolic stress
  - Oxygen free radicals
Immune system
  - Immunosenescence
Normal Aging

- Distinguished from disease
  - Changes & decline over time but NOT lead to DM, HTN, dementia
  - Some hearing loss – pattern varies; > men
  - Personality stable after 30
  - Arterial stiffening
  - Normal cognitive decline
  - Risk factors may change over time
- NO single chronology or timeline exist
  - More differences among old than young
  - Genetics, lifestyle, & disease affect rate
“Health is a state of complete physical, mental, and social well-being - not merely the absence of disease, or infirmity.”
World Health Organization, 1948
Healthy ageing important . . . the process of developing and maintaining the functional ability that enables well-being in older age. (WHO, World Report on Ageing, 2015)
How healthy are older Americans?
CDC and Prevention. *The State of Aging and Health in America 2013*

- ✔ No leisure time physical activity in past month (31.4% vs. goal of 32.6%)
- ✔ Obesity (24.5% vs. goal of 30.6%)
- ✔ Current smoking (8.4% vs. goal of 12%)
- ✔ Taking medications for high blood pressure (94.1% vs. goal of 77.4%)
- ✔ Mammograms within past 2 years (81.9% vs. goal of 70%)
- ✔ Colorectal cancer screenings (72.2 % vs. goal of 70%)

but improvement on the remaining Healthy People 2020 targets is needed

- Flu vaccine in past year (66.9% vs. goal of 90%)
- Ever had pneumonia vaccine (68.1% vs. goal of 90%)
- Up to date on select preventive services (49.0% vs. goal of 50.9% for men; 49.0% vs. goal of 52.7% for women)

DISEASE IN OLDER ADULTS
Figure 2. Chronic conditions were the leading causes of death among U.S. adults aged 65 or older in 2007–2009

Multiple chronic conditions among Medicare fee-for-service beneficiaries, 2010


*chronic obstructive pulmonary disease.
BUT overall in non-institutionalized older adults, approximately half (49.8%, 117 million) had at least 1 of 10 chronic conditions and one quarters (25.5%) have multiple chronic conditions (MCC)

Ward et al., *Prev Chronic Dis*, 2014, 11:130389
Projected global deaths (millions) for major chronic disease groups and other causes of death in 23 selected countries, 2005-2015

Rates of Diagnosed Diabetes per 100 Civilian, Non-Institutionalized Population, by Age, United States, 1980–2014

Average Annual Incidence CVD

Kannel and McGee, Circulation 1979;59:8-13
Cumulative Incidence of the First of Any of the Predefined Cardiovascular Disease Outcomes (Panel A) and of the First Occurrence of Nonfatal Myocardial Infarction, Stroke, or Death from Cardiovascular Disease (Panel B)

Kaplan-Meier Estimates of the Risk of Death from Any Cause and from Cardiovascular Causes and the Number of Cardiovascular Events, According to Treatment Group

# Causes of Chronic Diseases

<table>
<thead>
<tr>
<th>UNDERLYING SOCIOECONOMIC, CULTURAL, POLITICAL AND ENVIRONMENTAL DETERMINANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globalization</td>
</tr>
<tr>
<td>Urbanization</td>
</tr>
<tr>
<td>Population ageing</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>COMMON MODIFIABLE RISK FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unhealthy diet</td>
</tr>
<tr>
<td>Physical inactivity</td>
</tr>
<tr>
<td>Tobacco use</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NON-MODIFIABLE RISK FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Heredity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INTERMEDIATE RISK FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raised blood pressure</td>
</tr>
<tr>
<td>Raised blood glucose</td>
</tr>
<tr>
<td>Abnormal blood lipids</td>
</tr>
<tr>
<td>Overweight/obesity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MAIN CHRONIC DISEASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart disease</td>
</tr>
<tr>
<td>Stroke</td>
</tr>
<tr>
<td>Cancer</td>
</tr>
<tr>
<td>Chronic respiratory diseases</td>
</tr>
<tr>
<td>Diabetes</td>
</tr>
</tbody>
</table>
Ranking of 10 selected risk factor causes of death in world (WHO, 2009)

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Deaths (Millions)</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. High blood pressure</td>
<td>7.5</td>
<td>12.8</td>
</tr>
<tr>
<td>2. Tobacco use</td>
<td>5.1</td>
<td>8.7</td>
</tr>
<tr>
<td>3. High blood glucose</td>
<td>3.4</td>
<td>5.8</td>
</tr>
<tr>
<td>4. Physical inactivity</td>
<td>3.2</td>
<td>5.5</td>
</tr>
<tr>
<td>5. Overweight and obesity</td>
<td>2.8</td>
<td>4.8</td>
</tr>
<tr>
<td>6. High cholesterol</td>
<td>2.6</td>
<td>4.5</td>
</tr>
<tr>
<td>7. Unsafe sex</td>
<td>2.4</td>
<td>4.0</td>
</tr>
<tr>
<td>8. Alcohol use</td>
<td>2.3</td>
<td>3.8</td>
</tr>
<tr>
<td>9. Childhood underweight</td>
<td>2.2</td>
<td>3.8</td>
</tr>
<tr>
<td>10. Indoor smoke from solid fuels</td>
<td>2.0</td>
<td>3.3</td>
</tr>
</tbody>
</table>
Association of risk factors with acute myocardial infarction in men and women after adjustment for age, sex, and geographical region: INTERHEART

Risk if acute myocardial infarction associated with exposure to multiple risk factors:

INTERHEART

Comparison of the population-attributable risk (99% CI) for common risk factors in the INTERSTROKE and INTERHEART studies


<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>INTERSTROKE (all stroke; 3000 cases, 3000 controls)**</th>
<th>INTERHEART (acute myocardial infarction; 15,152 cases, 14,820 controls)†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>34.6% (30.4–39.1)</td>
<td>17.9% (15.7–20.4)</td>
</tr>
<tr>
<td>Smoking</td>
<td>18.9% (15.3–23.1)</td>
<td>35.7% (32.5–39.1)</td>
</tr>
<tr>
<td>Waist-to-hip ratio (abdominal obesity)</td>
<td>26.5% (18.8–36.0)</td>
<td>20.1% (15.3–26.0)</td>
</tr>
<tr>
<td>Diet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet risk score</td>
<td>18.8% (11.2–29.7)</td>
<td>..</td>
</tr>
<tr>
<td>Fruits and vegetables daily</td>
<td>..</td>
<td>13.7% (9.9–18.6)</td>
</tr>
<tr>
<td>Regular physical activity</td>
<td>28.5% (14.5–48.5)</td>
<td>12.2% (5.5–25.1)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>5.0% (2.6–9.5)</td>
<td>9.9% (8.5–11.5)</td>
</tr>
<tr>
<td>Alcohol intake</td>
<td>3.8% (0.9–14.4)</td>
<td>6.7% (2.0–20.2)</td>
</tr>
<tr>
<td>Psychosocial factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All psychosocial factors</td>
<td>..</td>
<td>32.5% (25.1–40.8)</td>
</tr>
<tr>
<td>Psychosocial stress</td>
<td>4.6% (2.1–9.6)</td>
<td>..</td>
</tr>
<tr>
<td>Depression</td>
<td>5.2% (2.7–9.8)</td>
<td>..</td>
</tr>
<tr>
<td>Cardiac causes</td>
<td>6.7% (4.8–9.1)</td>
<td>..</td>
</tr>
<tr>
<td>Ratio of apolipoproteins B to A1</td>
<td>24.9% (15.7–37.1)</td>
<td>49.2% (43.8–54.5)</td>
</tr>
</tbody>
</table>

90% men
94% women
Disability Index According to Age at the Time of the Last Survey and Health Risk in 1986

Fig. 1. Strength of evidence on risk factors for cognitive decline.

Fig. 2. Strength of evidence on risk factors for dementia.

4S: Impact of Drug Therapy on Lipids and Lipoproteins in Older Adults With Hypercholesterolemia

**4S: Reduction in Coronary Events and Revascularizations in Older Adults With Established CHD**

![Bar chart showing reduction in major coronary events, CHD mortality, nonfatal MI, all-cause mortality, and revascularizations.](chart_image)

- **Major coronary events**: Less for older adults (≥65 yr) compared to younger adults (<65 yr).
- **CHD mortality**: Similar reductions for both age groups.
- **Nonfatal MI**: Smaller reductions for older adults.
- **All-cause mortality**: No significant differences.
- **Revascularizations**: Significant reductions for older adults.

* $P<0.001$; † $P=0.003$; ‡ $P=0.004$; § $P=0.007$; || $P=0.009$.

All $P$ values represent within-group differences (treatment vs placebo). RR=relative risk.

Study Interventions

Eligible participants → Randomized

Standard lifestyle recommendations

Intensive Lifestyle (n = 1079)

Metformin (n = 1073)

Placebo (n = 1082)
DPP Population

**Sex Distribution**

- Men: 32%
- Women: 68%

**Age Distribution**

- 25-44: 31%
- 45-59: 49%
- ≥ 60: 20%

The DPP Research Group, *Diabetes Care* 23:1619-29, 2000
Mean Change in Leisure Physical Activity

The DPP Research Group, *NEJM* 346:393-403, 2002
The DPP Research Group, *NEJM* 346:393-403, 2002
Diabetes Incidence Rates by Age

Risk reduction
31% by metformin
58% by lifestyle

Cases/100 person-yr

Age (years)

25-44 (n=1000) 45-59 (n=1586) > 60 (n=648)

The DPP Research Group, *NEJM* 346:393-403, 2002
QUALITY OF LIFE AND HEALTH-RELATED QUALITY OF LIFE
Quality of Life (QOL)

- An individual’s perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (Division of Mental health, WHO, MNH/PSF/93.9, 1993)
- Multidimensional concept including domains of physical health and functioning, mental health, social functioning, role functioning, satisfaction with treatment, concerns about the future and general well-being (Watkins & Connell, *Pharmacoeconom*, 1995)
- In older adults, QOL determined not only by Rx of specific disease, but ability to function and remain independent at acceptable levels (Yuen et al., *Maturitas*, 2012)
... subjective measure of overall well-being and reflects how disease and its symptoms are perceived by the patient
- Perceived and reported ... as impacting functioning ... reflects physical, social and emotional health (Pedersen et al., *Psychosomatics*, 2007)
- No universal agreement on what constitutes HRQoL, but domains: social, physical and psychological functioning (DeSedt et al., *Internat J Cardiol*, 2013)
- ... Physical, psychosocial and environmental (Fteropouilli et al., *Cardiol Young*, 2013)
▪ Subjective perception of the physical, psychological and social health status as well as general well-being (Radoschewski, 2000)
▪ HRQoL – when illness relevant (Fteropouilli et a., *Cardiol Young*, 2013)
▪ Subjective perception of the influence of disease on their everyday life (Rector et al., *J Card Fail*, 2006)
▪ . . . (domains) while at same time maintain a focus on health status and health care (Watkins & Connell, *Pharmacoeconom*, 1995)
Characteristics of Individual

- Symptom Amplification
- Personality Motivation
- Motivation

Symptom Status

- Psychological Supports
- Social & Economic Supports

Functional Status

- General Health Perceptions
- Social & Psychological Supports

Overall QOL

Nonmedical Factors

Biological & Physiologic Variables

Social & Economic Supports

Wilson & Cleary, *JAMA*, 1995
Conventional treatment focuses mainly on functional outcomes, survival and extending life. However, morbidity and mortality rates are incomplete measures... do not reflect all aspects of health. Quality of additional life years gained may be equally important as length of life (DeSedt et al., *Internat J Cardiol*, 2013)

Relevant outcomes include not only physiological measures, but also subjective factors such as disease self-management burden, social and role functioning, emotional health and physical functioning (Barr, *J Allied Health*, 1995)
What is Health-Related Quality of Life (HRQOL)?

• For public health surveillance purposes, HRQOL was defined as...“an individual’s or group’s perceived physical and mental health over time.” (Measuring Healthy Days, CDC 2000)

• http://www.cdc.gov/hrqol

• http://www.cdc.gov/brfss
Would you say that in general your health is excellent, very good, good, fair, or poor?

Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?

During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?
Unhealthy Days = days in the past 30 days when both physical and mental health were not good

- 🙁 = Physically unhealthy day
- 😞 = Mentally unhealthy day
- 😊 = Healthy day
Additional Healthy Days Measures

1. any activity limitation  
   if yes…  
2. major cause  
3. how long  
4. routine care  
5. personal care  
6. pain days  
7. depression day  
8. anxiety days  
9. sleepless days  
10. vitality days
Physically unhealthy days (mean number of days)

United States, DC & Territories - 2014
Physically unhealthy days (mean number of days in past month)
View by: Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Mean (Number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-54 years</td>
<td>4.5 ± 0.2</td>
</tr>
<tr>
<td>55-59 years</td>
<td>5.0 ± 0.3</td>
</tr>
<tr>
<td>60-64 years</td>
<td>5.5 ± 0.4</td>
</tr>
<tr>
<td>65 years or older</td>
<td>6.0 ± 0.5</td>
</tr>
</tbody>
</table>

Healthy People 2020 Target: No target specified.
Data Source: Behavioral Risk Factor Surveillance System (BRFSS)

Prevalence of sufficient sleep

United States, DC & Territories - 2014
Percentage of older adults getting sufficient sleep (>6 hours)
View by: Age Group

Healthy People 2020 Target: No target specified.
Data Source: Behavioral Risk Factor Surveillance System (BRFSS)

Oral health: tooth retention

United States, DC & Territories - 2014
Percentage of older adults who report having lost 5 or fewer teeth due to decay or gum disease
View by: Age Group

Healthy People 2020 Target: No target specified.
Data Source: Behavioral Risk Factor Surveillance System (BRFSS)

Disability status

United States, DC & Territories - 2014
Percentage of older adults who report having a disability
View by: Age Group

Healthy People 2020 Target: No target specified.
Data Source: Behavioral Risk Factor Surveillance System (BRFSS)

Measuring Health-Related Quality of Life (HRQOL)

- Broad outcome measures designed to measure physical, emotional, and social dimensions of health (McDowell & Newell, 1996).
- No one definition of HRQOL is agreed upon, but generally assessed with generic measures (e.g., Short-Form 36) or disease-specific measures (e.g., Quality of Life in Epilepsy Scale-10 (Ware & Sherbourne, 1992; Cramer et al., 1996).
- Quality of Life Instruments Database (QOLID): Online database of generic and disease-specific measures. [http://www.proqolid.org](http://www.proqolid.org)
HRQoL-4 (CDC) –self-rated health
  - Overall perceived quality
  - # days when physical health not good in past 30 days
  - # days when mental health “
  - # days when usual activity limited because of either poor mental or physical “
  - Total number unhealthy days = sum when physical or mental health not good (max 30 days)

[www.cdc.gov/hrqol/pdfs/mhd.pdf](www.cdc.gov/hrqol/pdfs/mhd.pdf)


Dominick et al., *Health Qual Life Outcomes*, 2004
SF-12 Health Survey

12 Likert scale questions covering 8 dimensions
- General health
- Physical (PCS-12)
  - Physical functioning
  - Role-physical
  - Bodily pain
- Vitality
- Mental (MCS-12)
  - Social functioning
  - Role-emotional
  - Mental health
- Standardized 0 to 100
  - Lower = worse health

Ware et al., How to score version 2 of the SF-12 health survey. Lincoln, RI: QualityMetric Inc., 2002.
What is important for your QOL?
Patient-reported health status. *From disease or from medical treatments (eg, side effects or complications).
Physical and mental health influences in older adults

- Medical care costs
- Smoking
- Leisure-time physical activity
- Large effects especially with functional limitations

Thompson et al., AJPH, 2012

- Mental health*
- Social participation
- Physical health

Layte et al., JAGS, 2013
Domains focused upon in older adults (Raggi et al., PLoS ONE, 2016)

- Multimorbidities
- Visual impairment
- Obesity
- Behavioral issues
  - Alcohol; smoking; active lifestyle
- Social factors
  - Social and family relationships; SES
- Little known about built environment
  - Walkable environments
  - Lower prevalence of psychiatric symptoms
  - Poorer self-rated health with worse environments
- Sociodemographics (inversely related with higher QOL)
  - Age
  - Lower education
  - Active smoking
- Social networks
  - Having a good social network
  - Living in a house perceived as usable and with low risks of accidents

COURAGE: 5639 persons in Spain, Finland and Poland
COURAGE: 5639 persons in Spain, Finland and Poland (2)

- Chronic conditions (not, except for these)
  - Depression
  - Self-report pain determining moderate to extreme difficulty
  - Moderate to extreme learning difficulties
  - Feeling of sadness
  - Self-report moderately emotionally affected by one's health condition
  - Severe/extreme distant vision problems
Depression and Chronic Illness (CI)

- Decrease HRQOL more than either alone
- May have greater impact than other CI (Hays et al., *Arch Gen Psychiatry*, 1995; Bonicatto et al., *Soc Sci Med*, 2001)
- DM + HTN + anxiety + depression (Sherbourne et al., *Arch Gen Psychiatry*, 1996)
### Mean symptom days for selected activity-limiting conditions 1995-1997 BRFSS (13 states)

<table>
<thead>
<tr>
<th>Condition</th>
<th>NO LIMIT</th>
<th>ARTHRITIS</th>
<th>CANCER</th>
<th>DEP/ANX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unhealthy days</td>
<td>4</td>
<td>12</td>
<td>19</td>
<td>21*</td>
</tr>
<tr>
<td>Low vitality</td>
<td>10</td>
<td>18</td>
<td>22</td>
<td>24*</td>
</tr>
<tr>
<td>Pain</td>
<td>1</td>
<td>13*</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>Depression</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>19*</td>
</tr>
<tr>
<td>Anxiety</td>
<td>5</td>
<td>8</td>
<td>11</td>
<td>19*</td>
</tr>
<tr>
<td>Sleeplessness</td>
<td>7</td>
<td>9</td>
<td>11</td>
<td>13*</td>
</tr>
<tr>
<td>Limitation of usual activities</td>
<td>1</td>
<td>5</td>
<td>13*</td>
<td>13*</td>
</tr>
</tbody>
</table>

* *highest mean for symptom*
Risk Factors for Depression: 75 and Older

- Weyerer et al., *J Affective Disorders*, 2008
  - Increases with age
  - Impaired hearing and vision
  - Multimorbidity (twice as high)
  - Current smoker
  - Abstinent (ETOH)
  - At least two cognitive domains other than memory impaired
17-27% major depression; 20-45% symptoms
With both – 3 X risk for future events
Greater impact than chronic medical conditions
Functional limitations due to depression additive to limitations from chronic conditions
ACS, stable CAD, CABG, AMI
- Functional status, symptom burden and return to work, hospitalization
Less likely to attend CR, adhere to meds/lifestyle, social isolation, impair actual functioning, and encouraging negative perception of health status
Fig. 1. Mean scores on the quality of life scales and summary components for older adults with and without depressive symptoms and those who also suffer from chronic diseases. GDS, Geriatric Depression Scale.

Table 3
Multivariable adjusted odds ratios (ORs) and 95% confidence intervals (CI) for lowered cognitive function*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Men OR (95% CI)</th>
<th>Women OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>2.52 (1.75-3.64)</td>
<td>2.45 (1.64-3.66)</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>1.28 (1.03-1.60)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Quality of life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very good and good</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Neither poor nor good</td>
<td>1.03 (0.86-1.24)</td>
<td>1.16 (0.94-1.44)</td>
</tr>
<tr>
<td>Very poor and poor</td>
<td>1.67 (1.07-2.61)</td>
<td>2.81 (1.92-4.11)</td>
</tr>
<tr>
<td>Self-rated health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good and very good</td>
<td>1.0</td>
<td>n.s.</td>
</tr>
<tr>
<td>Average</td>
<td>1.21 (0.99-1.50)</td>
<td></td>
</tr>
<tr>
<td>Poor and very poor</td>
<td>1.57 (1.15-2.14)</td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure, mm Hg</td>
<td>1.01 (1.00-1.01)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Physical activity in leisure time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd tertile (&gt; 22.5 hours/week)</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>2nd tertile (14.1-22.5 hours/week)</td>
<td>n.s.</td>
<td>1.14 (0.88-1.49)</td>
</tr>
<tr>
<td>1st tertile (0.0-14.0 hours/week)</td>
<td></td>
<td>1.32 (1.03-1.69)</td>
</tr>
</tbody>
</table>
CVD Risk Factors and Cognitive Decline

- CVD
- Specific vascular biomarkers
- Risk factors
  - Cholesterol
  - HTN
  - DM
  - Fibrinogen levels
  - Homocysteine
  - CRP
  - Lifestyle behavior

Singh-Manoux et al., *Eur Heart*, 2008
Gunstad et al., *J Clin Neurosci*, 2006
Llewellyn et al., *BMC Neurol*, 2008
Engelhardt et al., *Ageing and Soc*, 2011
Lee et al., *Int Psychogeriatric*, 2010
Factors associated with poor cognitive performance

- Older age
- Lower education level
- Women slightly better
- Stroke
- Hx CHD
- Diabetes ?
- HTN ?
- Smoking
- Alcohol intake
- Physical activity
- Depressive symptoms
- Poor QOL most important “predictor”

Tamosiunas et al., *BMC Neurology*, 2012
55% of adults > =65 arthritis or chronic joint symptoms
  - Increase from 2.9 million to 6.5 by 2031
In addition to disability and physical function (BRFSS):
  - Poorer general, physical and mental health
  - Activity limitation
  - Pain*
  - Sleep
  - Feeling healthy and full of energy
  - Non-white, men, nursing home residence, married, lower income and co-morbid illness

Dominick et al., *Health and Qual Life Outcomes*, 2004
Adults with disabilities
- 31% those 55-64; 52% aged 65 and older

With functional limits (9/4 more phys/men unhealthful days)
- Age – phys unhealthy days ↓ with ↑ age (opposite without limitations)
  - ≥ 65 FEWER unhealthy days
- Healthy survivor vs response shift
  - Medical care costs
  - Leisure-time physical activity
  - Smoking

Without – direction similar, but effects smaller

Functional Limitations
(Thompson et a., AJPH, 2012)
Physical, psychological and social domains of health, as distinct areas that are influenced by a person's experiences, beliefs, expectations and perceptions (Testa & Simonson, NEJM, 1996)

- PA improves HRQoL by improving physical functioning and psychological well-being (Shibata et al., 2007)
- All SF-36 domains (except RE) correlated
- PA correlated with depressive symptoms in both community and institutionalized older adults
Levels of Physical Inactivity

- Over 5 years of follow-up prevalence of physical inactivity significantly increased

- All: 24% → 33%
- Men: 24% → 31%
- Women: 25% → 36%
# Results: Predictors of Physical Inactivity at 5 Years

<table>
<thead>
<tr>
<th>Predictors</th>
<th>All</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Ethnicity</td>
<td>OR=1.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Education</td>
<td>OR=0.91</td>
<td>OR=0.93</td>
<td>OR=0.88</td>
</tr>
<tr>
<td>Baseline level of PA</td>
<td>OR=3.3</td>
<td>OR=3.56</td>
<td>OR=3.38</td>
</tr>
<tr>
<td>Presence of Peripheral Neuropathy</td>
<td>OR=1.3</td>
<td>OR=1.54</td>
<td></td>
</tr>
<tr>
<td>HbA1C</td>
<td>OR=1.14</td>
<td>OR=1.17</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>OR=1.05</td>
<td>OR=1.06</td>
<td></td>
</tr>
<tr>
<td>Level of HDL</td>
<td></td>
<td></td>
<td>OR=1.02</td>
</tr>
<tr>
<td>Waist Circumference</td>
<td></td>
<td></td>
<td>OR=1.06</td>
</tr>
</tbody>
</table>
Personal perceptions of life experience, social, vocational and domestic functioning against hope and ideals form aspects of physical, psychological, relationships, environmental and spiritual domains (Bradley et al., *Diabet Med*, 2009; Rubin & Peyrot, *Diabetes Metab Res Rev.*, 1999)

Associations with QoL, self-efficacy and control (Stuckey et al., *Diabetes Care*, 2014; Bradley et al., *Diabet Med*, 2009; Imayama et al., *Health Qual Life Outcomes*, 2011)

Better social support, acceptance of seriousness and consequences, less difficulty managing (Misra et al., *J Diabetes Complications*, 2008)

Chew et al., (*Health Qual Life Outcomes*, 2015)
- Diabetes distress - association with HRQoL; religiosity had +
- Not married, dyslipidemia, depression = lower
  Women and shorter duration = higher
QOL with Uncontrolled Type 1 (n=31)  
(Vanstone et al., Ontario Health Tech Assess Series, 2015)

- Perceptions of patients (families & partners)
- Affect all aspects: physical, emotional, practical and social (interact across domains)
- Psychological distress, negative moods, cognitive difficulties, irritable or aggressive, and associated problems with relationships, self-image & confidence; pervasive/under-addressed - Live in fear of Cx
- QOL of families is also negatively impacted
- Anxious about consequences of hypoglycemia and may curtail activities as a result
Physical

- Weight
- Sexual dysfunction
- Fluctuating mood
- Impaired cognitive function
  - Dangerous, distressing, humiliating
- Frustration of poor control

- Family unsafe/vulnerable with irritable/aggressive behavior
- Panic, disorientation, confusion, decreased consciousness and loss of control
- Acute in pregnant women
Emotional

- Fear and anxiety
- Amputation, blindness, death, organ failure, necrobiosis
- Hypoglycemia
- Guilt and powerlessness
- Estranged/outsider
- Depression
- Way structure lives
- Rigidly adhering
- Limited ways for social engagement and employment
- Limiting/restrictive – affects family
Social

- Negative impact on social well-being
  - Alienation
  - Embarrassment
  - Stigmatization
  - Inability to participate

- Challenging and exhausting and potential alienating
  - Family concerns
  - Antagonism between family members
  - Sacrifices
  - Conflict
HRQoL in Adults with T1DM

- Female, lower income, longer duration, complications, more than 1 episode hypoglycemia per month, low physical activity (Lloyd et al., *Diabetes Res Clin Pract*, 1999)
- Female, obesity, complications, co-morbidities (Coffey et al., *Diabetes Care*, 2002)
- Marital status, social relationships, co-morbidities (Parkerson et al., *Med Care*, 1999)
- Fewer co-morbidities, lower BMI, current non-smoking, higher physical activity levels with higher HRQoL (Imayama et al., *Health Qual Life Outcomes*, 2011)
The Association of Psychological Factors, Physical Activity, Neuropathy, and Quality of Life in Type 2 Diabetes

Deborah A. Chyun, PhD
Gail D. Melkus, EdD
Deborah M. Katten, MS
Wendie J. Price, RN
Janice A. Davey, MSN
Neil Grey, MD
Gary Heller, MD
Frans J. Th. Wackers, MD

82% ↑ anxiety; 14% depressive symptoms (DS)
Females, peripheral/autonomic neuropathy, physical inactivity, ↑ BMI, anxiety and DS with poorer QOL

**HRQOL – DM**

**Broad conceptualization**
- Diabetes-39*
- Diabetes Care Profile (DCP)**
- Diabetes Impact Management Scales (DIMS)*
- Diabetes Quality of Life (DQOL)**
- Diabetes-Specific Quality of Life Scale (DSQOLS)**
- Diabetes Quality of Life Clinical Trial Questionnaire – Revised (DQLCTR-R)*

**Specific**
- Appraisal of Diabetes Scale (ADS) – stressful impact
- Audit of Dependent Quality of Life (ADDQoL) – life without diabetes
- Problem Areas in Diabetes (PAID) – diabetes-related distress*
- Diabetes Health Profile (DHP) – diabetes-related distress, activity and eating**
- Questionnaire on Stress in Patients with Diabetes-Revised (QSD-R) – diabetes-related distress*
- Well-Being Enquiry for Diabetics (WED) – perceptions in relation to mental health***
BP, lipids diabetes and BMI targets were more often achieved in the very old and elderly

Rajendran et al., *Heart, Lung, & Circ*, 2013
<table>
<thead>
<tr>
<th>SF-36 Scale</th>
<th>AF (152)</th>
<th>PTCA (69)</th>
<th>PTCA (78)</th>
<th>CHF (216)</th>
<th>Post MI (69)</th>
<th>Health (47)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GH</td>
<td>54</td>
<td>51</td>
<td>65†</td>
<td>47†</td>
<td>59‡</td>
<td>78†</td>
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<tr>
<td>PF</td>
<td>68</td>
<td>60</td>
<td>76‡</td>
<td>48†</td>
<td>70</td>
<td>88†</td>
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<td>RF</td>
<td>47</td>
<td>47</td>
<td>71†</td>
<td>34†</td>
<td>51</td>
<td>89†</td>
</tr>
<tr>
<td>VIT</td>
<td>47</td>
<td>48</td>
<td>60†</td>
<td>4424</td>
<td>58†</td>
<td>71†</td>
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<td>MH</td>
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<td>76†</td>
<td>81†</td>
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<td>RE</td>
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<td>64</td>
<td>83†</td>
<td>64</td>
<td>73</td>
<td>92†</td>
</tr>
<tr>
<td>SF</td>
<td>71</td>
<td>74</td>
<td>87†</td>
<td>71</td>
<td>85†</td>
<td>92†</td>
</tr>
<tr>
<td>BP</td>
<td>69</td>
<td>68</td>
<td>73</td>
<td>63‡</td>
<td>73</td>
<td>77‡</td>
</tr>
</tbody>
</table>

† p < .05; ‡ p < .001
Patient-reported health status. *From disease or from medical treatments (e.g., side effects or complications)
Somatic Symptoms in CAD: Bothered A Lot
(Kohlmann et al., *JAMA Intern Med*, 2013)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tired/low energy (30%)</td>
<td></td>
</tr>
<tr>
<td>Constipation, diarrhea, loose (8%)</td>
<td></td>
</tr>
<tr>
<td>Pain in arms, legs, joints (27.4%)</td>
<td></td>
</tr>
<tr>
<td>Nausea, gas, indigestion (7.8%)</td>
<td></td>
</tr>
<tr>
<td>Trouble sleeping (26.9%)</td>
<td></td>
</tr>
<tr>
<td>Pain during intercourse (7.5%)</td>
<td></td>
</tr>
<tr>
<td>SOB (24%)</td>
<td></td>
</tr>
<tr>
<td>Headaches (5.2%)</td>
<td></td>
</tr>
<tr>
<td>Back pain (22.2%)</td>
<td></td>
</tr>
<tr>
<td>Stomach pain (3.6%)</td>
<td></td>
</tr>
<tr>
<td>Feeling heart race or pound (10.1%)</td>
<td></td>
</tr>
<tr>
<td>Menstrual problems/cramps (1.8%)</td>
<td></td>
</tr>
<tr>
<td>Chest pain [CP] (9.6%)</td>
<td></td>
</tr>
<tr>
<td>Fainting spells (1.0%)</td>
<td></td>
</tr>
<tr>
<td>Dizziness (9.6%)</td>
<td></td>
</tr>
</tbody>
</table>

At least 5 in 50%; 11 frequently experienced by at least 30%; CP (42.5%)
QOL = higher symptom severity, lower education & obesity
Symptom severity = depression, anxiety, FHx, HTN, lower education, female
- Women
- Older
- Less educated
- MI or ischemia as recurring diagnosis
- Hx stroke
- Recurrent CHD event
- Current smoking
- Central obesity
- Lack of exercise
- Poor HbA1c control with diabetes

EUROASPIRE III

(De Smedt et al., Int J Cardiol, 2012)
<table>
<thead>
<tr>
<th>Number of risk factors</th>
<th>PCS-12</th>
<th>MCS-12</th>
<th>EQVAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>46.11(9.76)</td>
<td>50.80(9.22)</td>
<td>72.85(17.23)</td>
</tr>
<tr>
<td>1</td>
<td>44.38(9.79)</td>
<td>50.01(9.62)</td>
<td>70.25(18.07)</td>
</tr>
<tr>
<td>2</td>
<td>42.15(10.16)</td>
<td>49.49(10.16)</td>
<td>66.68(18.44)</td>
</tr>
<tr>
<td>3</td>
<td>41.27(10.07)</td>
<td>48.62(10.33)</td>
<td>64.82(18.90)</td>
</tr>
<tr>
<td>4</td>
<td>39.73(9.88)</td>
<td>47.98(10.76)</td>
<td>61.99(19.64)</td>
</tr>
<tr>
<td>5</td>
<td>38.21(9.73)</td>
<td>46.85(12.37)</td>
<td>60.47(18.06)</td>
</tr>
</tbody>
</table>

p-value: <0.001* <0.023 <0.001

*p-value adjusted for age, gender, educational level, recruiting diagnosis, diabetes, history of stroke and recurring coronary events

Risk factors included are: raised blood pressure, raised total cholesterol, current smoking, low physical activity and central obesity

De Smedt et al., *Int J Cardiol*, 2012
Quality of Life Index- Cardiac Version (QLI-CV) (Ferrans & Powers, *Adv Nurs Sci*, 1985); 32 items in 4 domains
- Health and functioning
- Psychological/spiritual
- Socioeconomic
- Family
  - Satisfaction with various life domains; importance of each
- Lower PCS and MCS than national data
- Hospitalization: SF-36 MCS PCS
- Mortality: HTN age, male, PCS
Perspectives highly symptomatic patients (n=8)
Not measured as discrete construct (n=2)
Self-reported symptoms
  - Palpitations, tachycardia and dyspnea associated with PSVT
Multidimensional – wide variety of instruments
Atrial Arrhythmia-Related Symptom v3 Symptom Checklist: Frequency and Severity & SF-36
Tiredness (lack of energy) & difficulty sleeping
Some age differences; no sex differences
  - Older less likely: feeling warm/flushed, SOB or hard to catch breath
Symptoms correlated with physical and mental health
• Tiredness/lack of energy
• Difficulty sleeping
• SOB
• Hard to catch breath
• Heart fluttering/skipping
• Heart racing
• Weakness
• Lightheadedness
• Feeling warm/flushed

• Sweating
• Headache
• Trouble concentrating
• Poor appetite
• Chest pain, pressure, or fullness when racing/fluttering
• Nausea
• Chest pain, pressure or fullness when NOT racing
Women had greater functional impairment
  Fewer asymptomatic (32%) and more symptoms
    Palpitations
    Lightheadedness/dizziness
    Fatigue, DOE, chest discomfort
  Lower QoL
    Symptoms
    Daily activities
    Treatment concern
From: Differences in Clinical and Functional Outcomes of Atrial Fibrillation in Women and Men Two-Year Results From the ORBIT-AF Registry

Figure Legend:
Atrial Fibrillation Symptoms in Women and Men. Shown are the frequencies of atrial fibrillation symptoms in women and men. The P values are for the differences between women and men.
Chronic Heart Failure
(Erceg et al., Clin Interventions in Aging, 2013)

- Symptoms of disease
  - Dyspnea
  - Fatigue
- Psychologic disorders
  - Anxiety
  - Depression
- Adverse effects of drugs
- Costs of treatment
- Higher NYHA class
- Similar in preserved/reduced LVEF
- Advanced age
- Female sex
- Depression
- Treatment with aldosterone antagonists
- Improvements with ACE and beta-blockers
- Little know about multiple meds, depression, cognitive impairment
- Lower income
- Longer duration of HF
Compromised in some physical domain
- Reduced physical functioning
- Poorer general health
- More symptoms

No differences in psychosocial and environmental/occupational
- Or in relation to physical: pain, sleep, gross/fine motor functioning

Some relationships with disease severity (individually)
- Dx, cyanosis, exercise capacity, arrhythmias and functional status
May reflect perceived lack of understanding, leading to unrealistic expectations and misconceptions about physical functioning

Unclear disease course may result in uncertainty and insecurity about condition and prognosis

? Strong sense of coherence growing up with disease made them understand, manage and find meaning in their experiences

Response shift – change in internal standards, values and priorities
Now imagine that you are 80 years old, have type 2 diabetes, and CAD. How might these affect your HRQoL? How about if you lived in an unsafe environment?
HOW TO IMPROVE QOL?
AHA Impact Goal 2020

By 2020, to improve the cardiovascular health of all Americans by 20% while reducing deaths from cardiovascular diseases and stroke by 20%.

Lloyd-Jones et al., Circulation, 2010;121:586-613
New Emphasis

- Original goals for 2010 for smoking, physical activity, obesity and diabetes were not met and are an important focus for 2020
- New strategies needed
  - New metric
  - Emphasis on prevention
  - Control of risk
  - Improving quality of life
  - Promoting health

Lloyd-Jones et al., Circulation, 2010;121:586-613
Ideal Cardiovascular Health

- Simultaneous presence of 4 favorable health behaviors: abstinence from smoking within past year, ideal body mass index (BMI), physical activity at goal, and consumption of dietary pattern promoting CV health

- Simultaneous presence of 4 favorable health factors: abstinence from smoking with past year, untreated total cholesterol < 200 mg/dL, (5.2 mmol/L), untreated blood pressure < 120/80 mm Hg, and absence of diabetes

- Absence of clinical CVD

Lloyd-Jones et al., Circulation, 2010;121:586-613
Fig. 1

Prevalence of ≥14 unhealthy and impaired activity days by CVHS, NHANES 2001–2010. Note: *p*-values represent overall differences between groups.

Allen et al., *Health and Quality of Life Outcomes*, 2015
Ideal Cardiovascular Health

- ↓ CV and cancer morbidity and mortality
- ↓ CV Healthcare costs
- ↑ Cognitive function
- ↑ Longevity
- ↑ Overall health status
- ↓ Fewer physically and mentally unhealthy days

Allen et al., *Health & QOL Outcomes*, 2015
Folsom et al., *JACC*, 2011
Ford et al., *Circ*, 2012
Stamler et al., *JAMA*, 1999
Daviglus et al., *NEJM*, 1998
Rasmussen-Torvik et al., *Circ*, 2013
Reis et al., *Ann Neurol*, 201
Rumsfeld et al., *JAMA*, 1999
Grool et al., *J Intern Med*, 2012
Spertus et al., *Circ*, 2002
Prevention across lifespan
Identifying high risk
Assessment and Management
  - Risk factors
  - QOL/HRQOL
    - Generic
    - Disease specific
  - Symptoms
  - Depression
  - Oral health
  - Environment

“Oral health is an essential element of healthy aging.”
S. Shulman, GSA
Comorbidity, inflammation, mitochondrial metabolism, cognition, balance and sleep are among the constellation of factors that bear on cardiorespiratory function in old age.
Recommendations: Physical Activity (1)

- Children with diabetes/prediabetes: at least 60 min/day physical activity B

- Most adults with type 1 C and type 2 B diabetes: 150+ min/wk of moderate-to-vigorous activity over at least 3 days/week with no more than 2 consecutive days without exercise. Shorter durations (minimum 75 min/week) of vigorous-intensity or interval training may be sufficient for younger and more physically fit individuals.

- Adults with type 1 C and type 2 B diabetes should perform resistance training in 2-3 sessions/week on nonconsecutive days

American Diabetes Association Standards of Medical Care in Diabetes. Lifestyle Management. Diabetes Care 2017; 40 (Suppl. 1): S33-43
• All adults, and particularly those with type 2 diabetes, should decrease the amount of time spent in daily sedentary behavior. B Prolonged sitting should be interrupted every 30 min for blood glucose benefits, particularly in adults with type 2 diabetes. C

• Flexibility training and balance training are recommended 2–3 times/week for older adults with diabetes. Yoga and tai chi may be included based on individual preferences to increase flexibility, muscular strength, and balance. C

American Diabetes Association Standards of Medical Care in Diabetes. Lifestyle Management. Diabetes Care 2017; 40 (Suppl. 1): S33-43
Recommendations: Psychosocial Care

• Psychosocial care should be provided to all people with diabetes, with the goals of optimizing health outcomes and QOL.

• Psychosocial screening and follow-up include:

  ● Attitudes
  ● Expectations for medical mgmt. & outcomes
  ● Affect/mood
  ● Quality-of-life (QOL)
  ● Resources- financial, social & emotional
  ● Psychiatric history

American Diabetes Association Standards of Medical Care in Diabetes. Lifestyle Management. Diabetes Care 2017; 40 (Suppl. 1): S33-43
Recommendations: Psychosocial Care

• Providers should consider assessment for symptoms of diabetes distress, depression, anxiety, disordered eating, and cognitive capacities using patient-appropriate standardized and validated tools at the initial visit, at periodic intervals, and when there is a change in disease, treatment, or life circumstance. B

• Consider screening older adults (aged ≥65 years) with diabetes for cognitive impairment and depression. B

American Diabetes Association Standards of Medical Care in Diabetes. Lifestyle Management. Diabetes Care 2017; 40 (Suppl. 1): S33-43
Diabetes Distress

- Diabetes distress
  - Very common and distinct from other psychological disorders
  - Negative psychological reactions related to emotional burdens of managing a demanding chronic disease

- Recommendation: Routinely monitor people with diabetes for diabetes distress, particularly when treatment targets are not met and/or at the onset of diabetes complications. B
11. Older Adults
Older Adults

• 26% of patients aged >65 have diabetes.
• Older adults have higher rates of premature death, functional disability & coexisting illnesses.
• At greater risk for polypharmacy, cognitive impairment, urinary incontinence, injurious falls & persistent pain.
• Screening for complications should be individualized and periodically revisited.
• At higher risk for depression

Functional, cognitively intact older adults (≥65 years of age) with significant life expectancy should receive diabetes care using goals developed for younger adults. C

Determine targets & therapeutic approaches by assessment of medical, functional, mental, and social geriatric domains for diabetes management. C

Recommendations: Older Adults
Glycemic goals for some older adults might be relaxed but hyperglycemia leading to symptoms or risk of acute hyperglycemic complications should be avoided in all patients. C

Hypoglycemia should be avoided in older adults with diabetes. It should be screened for and managed by adjusting glycemic targets and pharmacologic interventions. B

Patients with DM in long-term care facilities need careful assessment to establish a glycemic goal & to make appropriate choices of glucose-lowering agents. E

Other CV risk factors should be treated in older adults with consideration of the time frame of benefit and the individual patient. E

- Treatment of HTN is indicated in most older adults C
- Lipid-lowering and aspirin therapy may benefit those with life expectancy at least equal to the time frame of primary or secondary prevention trials. E
When palliative care is needed, strict BP control may not be necessary and withdrawal of therapy may be appropriate. Intensity of lipid management can be relaxed and withdrawal of lipid-lowering therapy may be appropriate. E

Screening for complications should be individualized, but attention should be paid to complications that would lead to functional impairment. C
Screening for geriatric syndromes may be appropriate in older adults with limitations in basic and instrumental activities of daily living. C

Older adults with DM should be considered a high-priority population for depression screening and treatment. B

Annual screening for early detection of mild cognitive impairment or dementia is indicated for adults 65 years of age or older. B

Recommendations: Older Adults (4)

- Consider diabetes education for long-term care facility staff. E
- Overall comfort, prevention of distressing symptoms & preservation of quality of life and dignity are primary goals for diabetes management at the end of life. E

HRQoL in Primary Care in Older Adults with CAD
(Ose et al., PLOS ONE, 2012)

- **Chronic Care Model** (Bodenheimer et al., *JAMA*, 2002)
- **Guided Care** (Boyd et al., *Gerontologist*, 2007)
- **GRACE – Geriatric Resources for Assessment and Care for Elders** (Counsel et al., *JAMA* 2007)
- **PACE – Program of All-inclusive Care for Elderly** (Friedman et al., *Gerontologist*, 2005)
- Requires strong pt perspective & involvement
  - Not only disease but impact of & Rx on daily life
  - ↑age, ↓education, female, ↑# other conditions: neg affect
  - Good med adherence, more positive eval of physicians’ behavior, referral to exercise program: + effect
Chronic Disease Self-Management Program (Better Choices, Better Health® Workshop)

The Chronic Disease Self-Management Program is a workshop given two and a half hours, once a week, for six weeks, in community settings such as senior centers, churches, libraries and hospitals. People with different chronic health problems attend together. Workshops are facilitated by two trained leaders, one or both of whom are non-health professionals with chronic diseases themselves.

Subjects covered include: 1) techniques to deal with problems such as frustration, fatigue, pain and isolation, 2) appropriate exercise for maintaining and improving strength, flexibility, and endurance, 3) appropriate use of medications, 4) communicating effectively with family, friends, and health professionals, 5) nutrition, 6) decision making, and, 7) how to evaluate new treatments.

Each participant in the workshop receives a copy of the companion book, Living a Healthy Life With Chronic Conditions.

related info

- CDSMP Leader's Manual translations available:
  - Chinese 2012
  - Creole (Haitian) 2012
  - Danish 2012
  - Finnish 2012
  - Hmong 2012
  - Japanese 2012
  - Samoan 2012
  - Tongan 2012
- Licensing information
- Organizations licensed to offer the CDSMP
- Spanish language CDSMP
### Enhancing Use of Clinical Preventive Services Among Older Adults – Closing the Gap

<table>
<thead>
<tr>
<th>Featured Services</th>
<th>Client-oriented Interventions</th>
<th>Provider- and System-oriented Interventions</th>
</tr>
</thead>
</table>
| Influenza and pneumococcal vaccination    | • Home visits to increase vaccination coverage  
  • Multi-component interventions for expanding access in health care settings  
  • Reduced client out-of-pocket costs  
  • Client reminder and recall systems  
  • Multi-component interventions that include education | • Provider assessment and feedback  
  • Provider reminder systems  
  • Standing orders |
| Breast cancer screening                   | • Client reminders  
  • Small media  
  • One-on-one education, tailoring information to each person’s needs  
  • Reduced structural barriers  
  • Reduced out-of-pocket costs | • Provider assessment and feedback  
  • Provider reminder and recall systems |
| Colorectal cancer screening               | • Client reminders for colorectal cancer screenings by fecal occult blood testing (FOBT)  
  • Small media  
  • Reduced structural barriers | • Provider assessment and feedback  
  • Provider reminder and recall systems |
| Diabetes screening                        | Reviewed only for diabetes control  
  • Diabetes self-management education in community gathering places | Reviewed only for diabetes control  
  • Case management interventions to improve glycemic control  
  • Disease management programs |
| Lipid disorder screening                  | Not reviewed  
  • Diabetes self-management education in community gathering places | Not reviewed |
| Osteoporosis screening                    | Not reviewed | Not reviewed |
| Smoking cessation counseling              | • Reduced client out-of-pocket costs for cessation therapies  
  • Multi-component interventions that include telephone support | • Increased unit price of tobacco products  
  • Mass media campaigns when combined with other interventions  
  • Provider reminders when used alone or with provider education |

Principles of Risk Reduction

- Population versus individual
- Primary prevention focuses on individuals known to be at risk
  - Screen and treat
  - Most events occur in individuals with only moderate elevation of numerous risk factors
    - Population-based strategies needed
    - Developmentally appropriate, culturally sensitive interventions in community
Impact of a combination of population-wide prevention and targeting high-risk subjects on the effective control of blood pressure.

Concepts of Prevention

- The power of primordial prevention
- *CVD and risk factors develop early in life*
- Balance of population-level approaches for health promotion and disease prevention and individualized high-risk approaches

Lloyd-Jones et al., *Circulation*, 2010;121:586-613
Strategy of Prevention

▪ Mass approach - everybody receives only a small benefit, BUT community has large benefit - *Prevention Paradox*

▪ If a preventive measure exposes many people to even a small risk, then harm it does may outweigh benefits since these are seen in relatively few

▪ So a strategy that concentrates only on high-risk individuals (good for them and in presence of limited resources) but ability to reduce burden of disease in whole community is disappointingly small

*Lessons from CVD, Geoffrey Rose, BMJ, 1981*
a critical need for a multitude of large population-based studies and clinical trials using novel study designs that incorporate patient-centered outcomes relevant to older patients
Healthy aging is the development and maintenance of optimal mental, social and physical well-being and function in older adults. This is most likely to be achieved when communities are safe, promote health and well-being, and use health services and community programs to prevent or minimize disease.

Definition of Healthy Aging – Minnesota Dept of Health
www.health.state.mn.us/divs/orthpc/pubs/healthyaging/hareportnofs/pdf
There is potential to use patient health status as a foundation for shared [medical] decision making in treatment decisions.
Questions

Thank you!