Health Equity for Individuals with Multimorbidity

Great Plains IDeA Clinical and Translational Research Network
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• **Gerontologist**: health services and outcomes research, epidemiology of aging

• **Research focus**: racial and ethnic disparities in health and wellbeing in mid and late life; health care delivery changes to improve chronic disease management for vulnerable older adults

  ➢ *Development of multimorbidity, adverse health outcomes among racially and ethnically diverse older adults*
Disclosures

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Background

• Multimorbidity: multiple co-occurring chronic diseases (2+ diseases)

• Cascading consequences of multimorbidity on health outcomes greater than the risks attributable to individual diseases
  (Tinetti & Fried, 2004; Vogeli, Shields, Lee, et al., 2005)

• Multimorbidity is prevalent, disabling, and costly
  (Tinetti, Fried & Boyd, 2012; Lochner, 2013)
Multimorbidity in the U.S.

Age ≥50:
- 2+ diseases: 33%
- 0-1 disease: 67%

Age 50-65:
- 50% with 2+ diseases
- 50% with 0-1 disease

Age 65-74:
- 38% with 2+ diseases
- 62% with 0-1 disease

Age ≥75:
- 18.5% with 2+ diseases
- 81.5% with 0-1 disease

(Salive, 2013)
Health Disparities Report

2021

Data in the Health Disparities Report are based on the most recent publicly available data, which were collected prior to the pandemic.

Source: https://www.americashealthrankings.org/learn/reports/2021-disparities-report
In 2017-2019, wide disparities persisted in multiple chronic conditions by race and ethnicity.

Compared to Asian/Pacific Islander adults (3.2%), the percentage of adults with multiple chronic conditions was 6x higher for American Indian/Alaska Native adults (18.4%), 4x higher for Multiracial adults (14.1%) and 3x higher for Black adults (10.7%).
Top States with the Highest and Lowest Disparities in Rate of Multiple Chronic Conditions by Race and Ethnicity, 2017-2019
Gaps in what we know

1) Increase the evidence base on the epidemiology of multimorbidity

2) Ensure that individuals with multimorbidity are included in studies, particularly clinical trials

3) Incorporate a patient-centered approach in assessing the impact of multimorbidity on individuals’ lives
Measuring Multimorbidity

Selecting the Right Instrument for the Purpose and the Data Source

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Background: Adults have a higher prevalence of multimorbidity—
or having multiple chronic health conditions—than having a single
condition in isolation. Researchers, health care providers, and health

policymakers find it challenging to decide upon the most appropriate
assessment tool from the many available multimorbidity measures.

Objective: The objective of this study was to describe a broad range
of instruments and data sources available to assess multimorbidity
and offer guidance about selecting appropriate measures.

Design: Instruments were reviewed and guidance developed during
a special expert workshop sponsored by the National Institutes of
Health on September 25–26, 2018.

Results: Workshop participants identified 4 common purposes for
multimorbidity measurement as well as the advantages and dis-
advantages of 5 major data sources: medical record/clinical as-
sessments, administrative claims, public health surveys, patient
reports, and electronic health records. Participants surveyed 15 in-
struments and 2 public health data systems and described character-
istics of the measures, validity, and other features that inform tool
selection. Guidance on instrument selection includes recom-
Multimorbidity measurement

• For what purpose? What are we trying to understand?
• Data quality and availability partially dependent on data sources themselves
• Tailored to purpose vs. comparability
  – Measurement: numerator?
  – Measurement: denominator?
Multimorbidity measurement

Table 3. Twenty Chronic Conditions Selected by OASH for a Standard Classification Scheme and Their Corresponding Codes in 5 HHS Data Systems

<table>
<thead>
<tr>
<th>OASH List of Chronic Conditions</th>
<th>Name of Condition in Data Collection System</th>
<th>Data Collection System</th>
<th>Term or Code Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>Hypertension/high blood pressure</td>
<td>NHIS</td>
<td>Self-reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NAMCS</td>
<td>Check-box</td>
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<td></td>
<td></td>
<td>NSER</td>
<td>98.99</td>
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<td></td>
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<td>NSER</td>
<td>98.99</td>
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<tr>
<td></td>
<td></td>
<td>CMS*</td>
<td>401.0, 401.1, 401.9, 402.00, 402.01, 402.10, 402.11, 402.90, 402.91, 402.99, 403.01, 403.10, 403.11, 403.90, 403.91, 404.00, 404.02, 404.03, 404.04, 404.10, 404.21, 404.12, 404.13, 404.90, 404.91, 404.92, 404.93, 405.01, 405.09, 405.11, 405.19, 405.91, 405.99, 406.11, 427.2</td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>Congestive heart failure</td>
<td>CMS*</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NAMCS</td>
<td>Check-box</td>
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<td></td>
<td></td>
<td>NSER</td>
<td>108</td>
</tr>
<tr>
<td></td>
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<td>NSER</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CMS*</td>
<td>390.91, 404.01, 404.11, 404.01, 404.02, 404.03, 404.04, 404.99, 428.0, 428.1, 428.20, 428.25, 428.30, 428.32, 428.33, 428.35, 428.40, 428.41, 428.42, 428.43, 428.5</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>Coronary artery disease</td>
<td>CMS*</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NAMCS</td>
<td>Included in ischemic heart disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NSER</td>
<td>100, 101</td>
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<td>NSER</td>
<td>100, 101</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CMS*</td>
<td>410.00, 410.01, 410.02, 410.10, 410.11, 410.12, 410.20, 410.21, 410.22, 410.30, 410.51, 410.32, 410.40, 410.41</td>
</tr>
</tbody>
</table>

*CMS = Centers for Medicare & Medicaid Services
Let’s talk about data
Data: Health & Retirement Study

- University of Michigan Institute for Social Research
- Biennial nationally-representative community sample
- Middle- and older-age adults (51 years and older)
  - Includes oldest-old
  - Repeated observations of individuals upon study entry
- Approximately 43,000 people surveyed
Data: Health & Retirement Study

HRS Longitudinal Cohort Sample Design

- EGENX 1966-71
- LBB 1960-65
- MBB 1954-59
- EBB 1948-53
- WB 1942-47
- HRS 1931-41
- CODA 1924-30
- AHEAD <1924
Racial/ethnic differences in multimorbidity development and chronic disease accumulation for middle-aged adults

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Abstract

Multimorbidity—having two or more coexisting chronic conditions—is highly prevalent, costly,
Trajectories of chronic disease accumulation over time, HRS 1998–2014

Multimorbidity and Race/Ethnicity

Racial and Ethnic Differences in Multimorbidity Changes Over Time

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Background: Our understanding of how multimorbidity progresses and changes is nascent.

Objectives: Assess multimorbidity changes among racially/ethnically diverse middle-aged and older adults.

Design, Setting, and Participants: Prospective cohort study using latent class analysis to identify multimorbidity combinations over 16 years, and multinomial logistic models to assess change relative to baseline class membership. Health and Retirement Study respondents (age 51 y and above) in 1998 and followed through 2014 (N=17,297).

Measures: Multimorbidity latent classes of: hypertension, heart disease, lung disease, diabetes, cancer, arthritis, stroke, high depressive symptoms.

Results: Three latent classes were identified in 1998: minimal disease (45.8% of participants), cardiovascular-musculoskeletal (34.6%), cardiovascular-musculoskeletal-mental (19.6%); and 3 in 2014: cardiovascular-musculoskeletal (13%), cardiovascular-musculoskeletal-mental (12%), multi-system multimorbidity (15%). Remaining participants were deceased (48%) or lost to follow-up (12%) by 2014. Compared with minimal disease, individuals in cardiovascular-musculoskeletal in 1998 were more likely to be in multi-system multimorbidity in 2014 (odds ratio (OR) = 1.78, P < 0.001), and individuals in cardiovascular-musculoskeletal-mental in 1998 were more likely to be deceased (OR = 2.45, P < 0.001) or lost to follow-up (OR = 3.08, P < 0.001). Hispanic and Black Americans were more likely than White Americans to be in multi-system multimorbidity in 2014 (OR = 1.67, P = 0.042; OR = 2.60, P < 0.001, respectively). Black compared with White Americans were more likely to be deceased (OR = 1.62, P = 0.01) or lost to follow-up (OR = 2.11, P < 0.001) by 2014.

Conclusions and Relevance: Racial/ethnic older adults are more likely to accumulate morbidity and die compared with White peers, and should be the focus of targeted and enhanced efforts to prevent and/or delay progression to more complex multimorbidity patterns.

Key Words: multimorbidity, multiple chronic conditions, latent class analysis

(Med Care 2021;59: 402–409)
Trajectories of chronic disease accumulation over time, HRS 1998–2014

- Class in 1998
  - MINIMAL DX: n = 7,928
  - CV–MSK MM: n = 5,986
  - CV–MSK–METAB MM: n = 3,383

- Class in 2014
  - CV–MSK MM: n = 2,400
  - CV–MSK–METAB MM: n = 2,063
  - MULTISYSTEM: n = 2,641
  - DECEASED: n = 8,301
  - LOSS TO FOLLOW-UP: n = 2,052

OHSU
Multimorbidity in the Safety-Net
Prevalent Multimorbidity Combinations Among Middle-Aged and Older Adults Seen in Community Health Centers

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BACKGROUND: Multimorbidity (≥2 chronic diseases) is associated with greater disability and higher treatment burden, as well as difficulty coordinating self-management tasks for adults with complex multimorbidity patterns. Comparatively little work has focused on assessing multimorbidity patterns among patients seeking care in community health centers (CHCs).

OBJECTIVE: To identify and characterize prevalent multimorbidity patterns in a multi-state network of CHCs over a 5-year period.

DESIGN: A cohort study of the 2014-2019 ADVANCE multi-state CHC clinical data network. We identified the most prevalent multimorbidity combination patterns and assessed the frequency of patterns throughout a 5-year period as well as the demographic characteristics of patient panels by prevalent patterns.

PARTICIPANTS: The study included data from 838,642 patients aged ≥45 years who were seen in 337 CHCs frequently occurring pattern across all years is hyperlipidemia-hypertension. The three most frequent patterns are various iterations of hyperlipidemia, hypertension, and diabetes and are consistent in rank of occurrence across all years. CKD-hyperlipidemia-hypertension and anxiety-depression are both more frequent in later study years.

CONCLUSIONS: CHCs are increasingly seeing more complex multimorbidity patterns over time; these most often involve mental health morbidity and advanced cardiometabolic-renal morbidity.

KEY WORDS multimorbidity · multiple chronic conditions · community health centers · safety net clinics · vulnerable populations

What’s next?
Potential ways forward

• Triangulating information across multiple data sources
  – *self report, EHR, lab, Rx, administrative*

• Need for valid and reliable procedures to improve longitudinal disease measurement
Potential ways forward

• Account for disease accumulation and subsequent changes, impairments, losses

• Develop and validate population-sensitive measures for system-wide severity that assess the HRQOL consequences of multimorbidity
Potential ways forward

• Holding ourselves accountable (researchers, sponsors, reviewers) and encouraging close representation by race/ethnicity and other health disparity groups

• Advancing efforts to maximize response rates and minimize or account for non-random attrition
Summary

• Investments to address causes, mechanisms, and consequences of multimorbidity in consideration of “whole person” wellbeing
  ➢ co-occurring disease, personal, and social conditions

• These investments are even more consequential for disproportionately affected population groups
  ➢ understand what works, how, and for whom to be responsive to needs

• Prioritize health care delivery models that enable chronic care management and maintenance of good level of quality of life
  ➢ clinical and community resources, services, programs that support the most vulnerable older adults
The Black American Amputation Epidemic

by Lizzie Presser
May 19, 2020

Source: https://features.propublica.org/diabetes-amputations/black-american-amputation-epidemic/
The Delta was Mississippi’s poorest region, with the worst health outcomes. Fakorede had spent years studying health disparities: African Americans develop chronic diseases a decade earlier than their white counterparts; they are twice as likely to die from diabetes; they live, on average, three years fewer. In the Delta, Fakorede could treat patients who looked like him; he could find only one other black interventional cardiologist in the entire state. A growing body of evidence had shown how racial biases throughout the medical system meant worse results for African Americans.

Despite the great scientific strides in diabetes care, the rate of amputations across the country grew by 50% between 2009 and 2015. Diabetics undergo 130,000 amputations each year, often in low-income and underinsured neighborhoods. Black patients lose limbs at a rate triple that of others. It is the cardinal sin of the American health system in a single surgery: save on preventive care, pay big on the backend, and let the chronically sick and underprivileged feel the extreme consequences.
ABOUT EVERY FIVE YEARS, the doctors and researchers who make up the U.S. Preventive Services Task Force reassess their screening guidelines. In 2018, the members returned to peripheral artery disease and the blood flow tests that Fakorede had asked local primary care doctors to conduct. Once again, the panel declined to endorse them, saying there was not enough evidence that the tests benefited the average asymptomatic American.

In their statement, they acknowledged that public commenters had raised concerns that the disease “is disproportionately higher among racial/ethnic minorities and low-socioeconomic populations” and that this recommendation “could perpetuate disparities in treatment and outcomes.” In response, the panel said it needed better evidence. But as the National Institutes of Health has found, minorities in America make up less than 10% of patients in clinical trials.
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Thank you! Questions?

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Cited Literature


