U.S. Department of Health and Human Services

Agency for Healthcare Research and Quality
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# A Conceptual Model of the Role of Complexity in the Care of Patients With Multiple Chronic Conditions

**Richard Ricciardi, PhD, NP**

2015 U.S. Public Health Service Nursing Recognition Day
Webinar: May 6, 2015

# Thank You

- Thank You to HHS, the award selection committee, and the conference planning committee for the opportunity to present you with an overview of our research and work on care of patients with MCC

and

- For the 2015 RADM Julia R. Plotnick Publication Award for Health/Nursing Policy

# Disclosures

- Part of this research was conducted under contract to the Agency for Healthcare Research and Quality. The authors of this presentation are responsible for its content. No statement may be construed as the official position of the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services.

# Research Team

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And the AHRQ MCC Research Network

- **AHRQ:** Tess Miller, Richard Ricciardi, Joy Basu
- **Abt Associates :** Lisa LeRoy, Jessie Gerteis, Jessica Levin, Emma Oppenheim
- **MacColl Center at Group Health Research Institute:** Judith Schaefer, Karin Johnson, James Fraser
- **Inter-university Consortium for Political and Social Research:** Amy Pienta, Jared Lyle

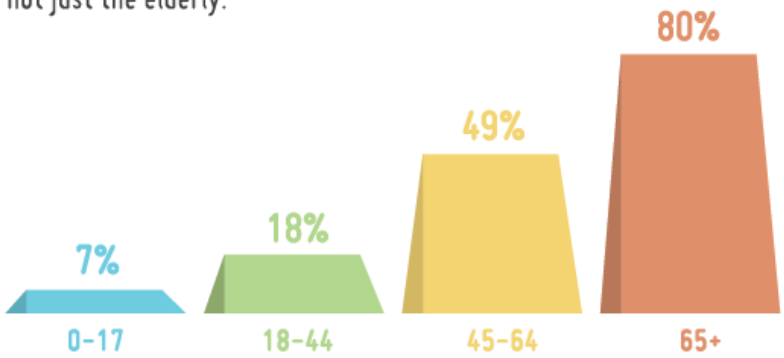
# Agenda/Objectives

- Review background on MCC
- Discuss MCC Research Network
- Provide overview of research findings and manuscript
- Discussion

# Background on MCC

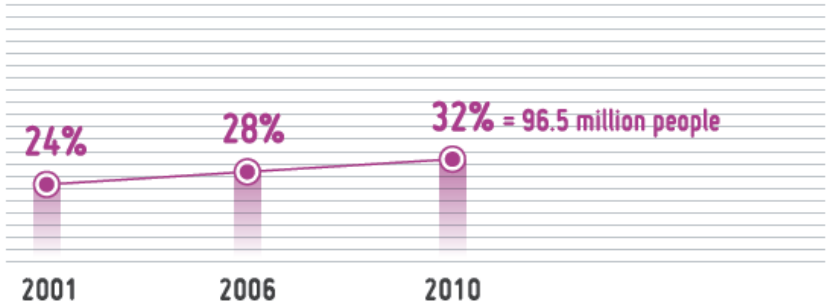
Almost **one in three** Americans lives with MCC.

The prevalence of MCC increases with age, however this problem affects a large number of working aged Americans, not just the elderly.



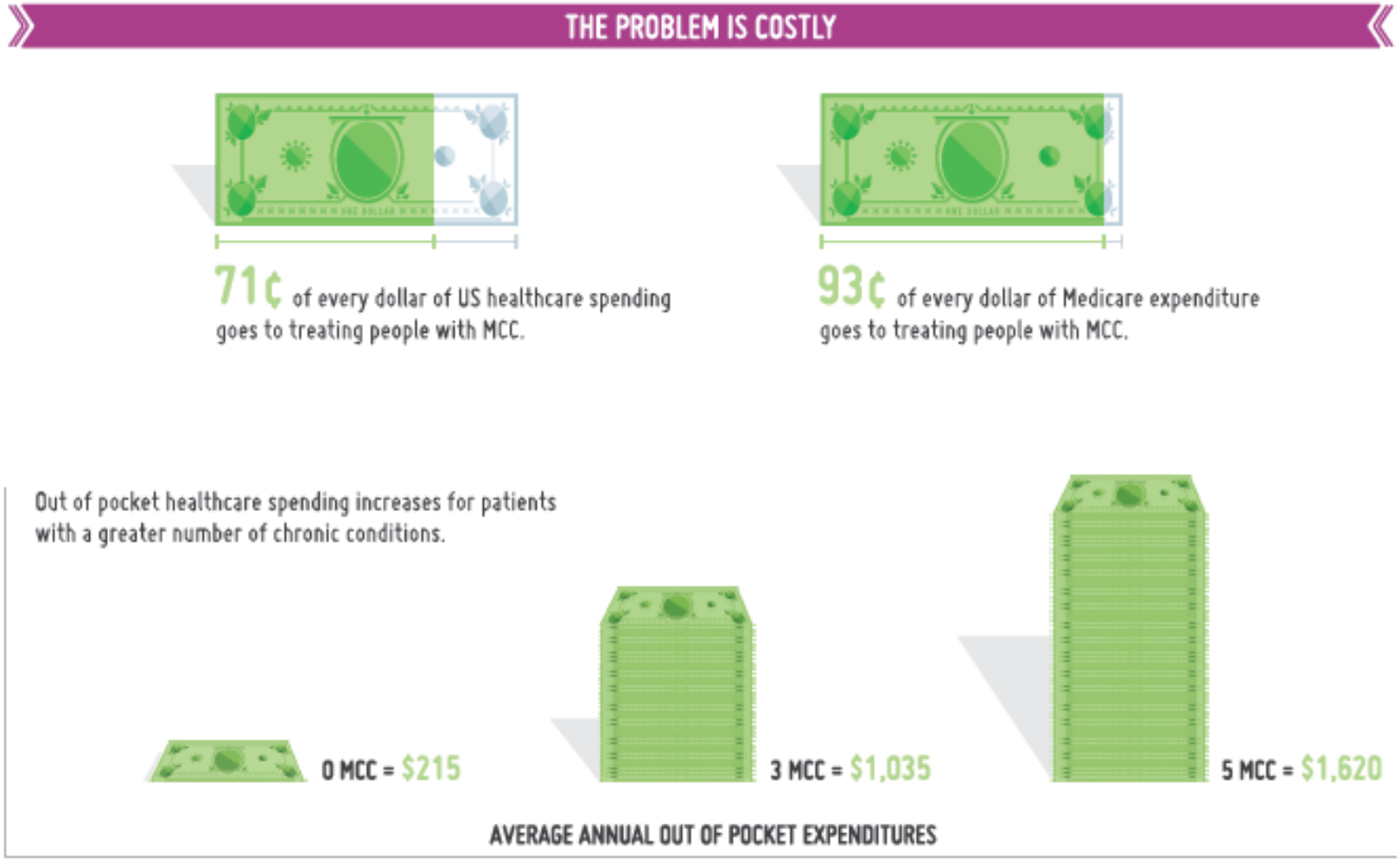

% OF US POPULATION WITH MCC BY AGE

The problem is growing and will continue to grow as the population ages.

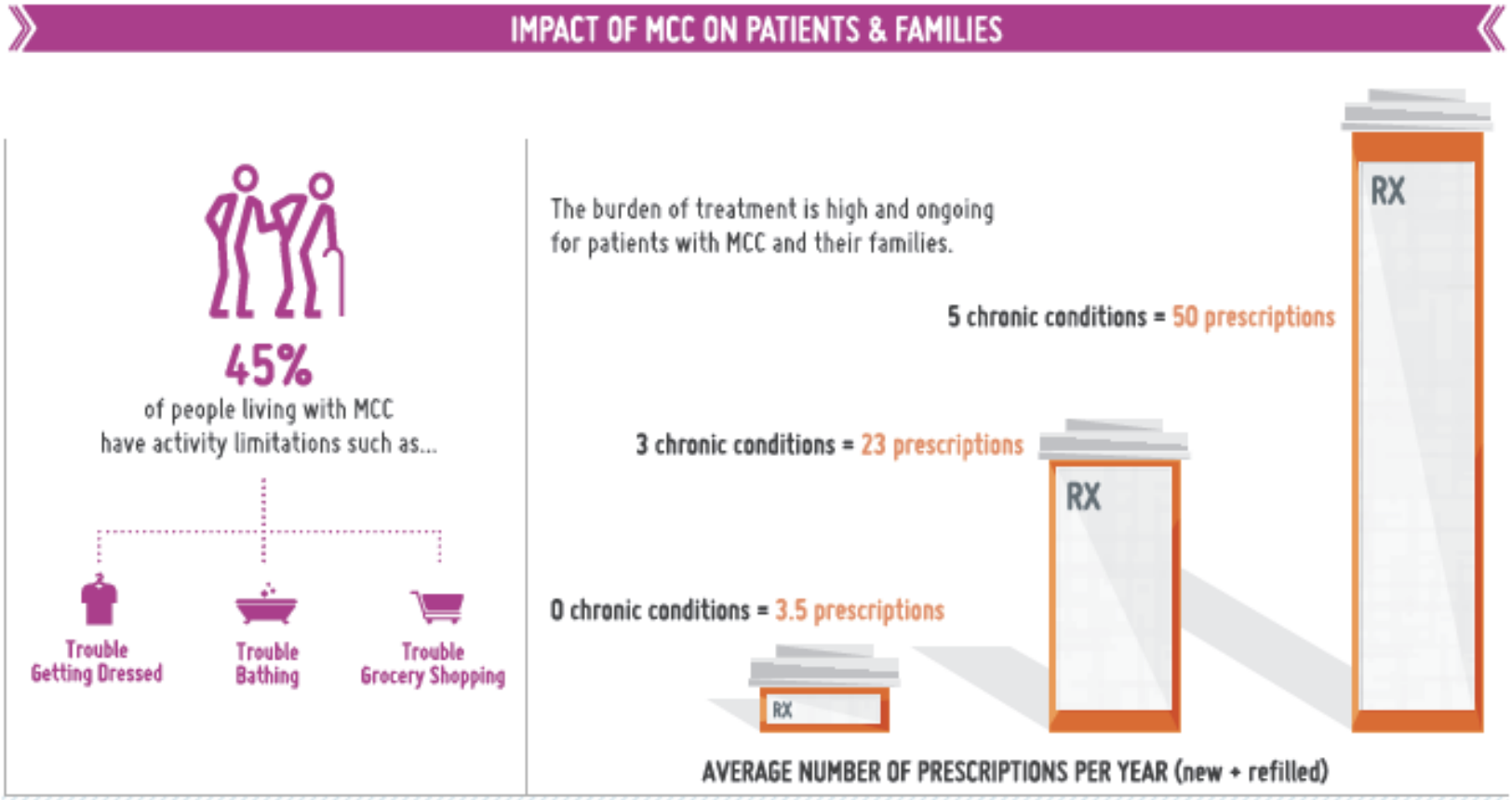



% OF US POPULATION WITH MCC OVER TIME

# Background (cont.)



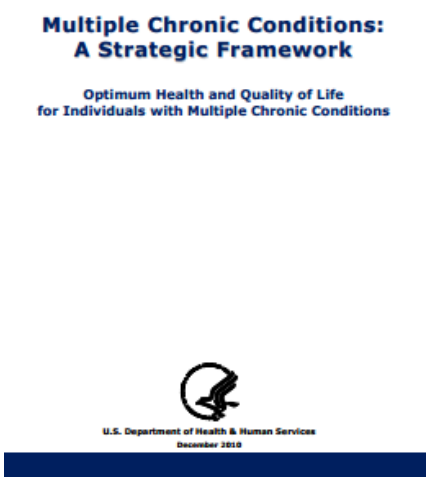
# Background (cont.)



# HHS Interagency Workgroup on Multiple Chronic Conditions (MCC)

- In 2008, HHS Office of the Assistant Secretary for Health launched an initiative to strengthen efforts directed at MCC, including establishment of the HHS Interagency Workgroup on MCC.

- Produced the HHS Strategic Framework on MCC, a national roadmap for public and private stakeholders, as well as an annotated inventory of federal initiatives involving MCC.


Multiple Chronic Conditions:
A Strategic Framework

Optimum Health and Quality of Life
for Individuals with Multiple Chronic Conditions

U.S. Department of Health & Human Services
December 2010

# Four Goals: HHS Strategic Framework

- Foster health care and public health system changes to improve the health of individuals with multiple chronic conditions
- Maximize the use of proven self-care management and other services by individuals with multiple chronic conditions
- Provide better tools and information to health care, public health, and social services workers who deliver care to individuals with multiple chronic conditions
- Facilitate research to fill knowledge gaps about, and interventions and systems to benefit, individuals with multiple chronic conditions

# AHRQ's Vision

- Between 2008 and 2010 AHRQ funded 45 R21 and R24 grants (otherwise known as the **MCC Research Network**) to expand and enhance the existing body of knowledge and evidence on care for patients with MCC.

- Goal of grants:
  - a) help to optimize decisions about preventive care and management of chronic care in multimorbid patients
  - b) support comparative effectiveness research
  - c) develop infrastructure to support MCC research.

| Awarded grants | Research topic |
|---|---|
| 18 R21s (2008 & 2009) | Preventive services |
| 14 R21s (2010) | Comparative effectiveness |
| 13 R24s (2010) | Research infrastructure |

# AHRQ's MCC Research Network

http://www.ahrq.gov/professionals/prevention-chronic-care/decision/mcc

To improve understanding of :

- Interventions that provide greatest benefit to MCC patients
- The safety and effectiveness of interventions that may be affected by MCC
- Interventions that may need to be modified for specific patient population

# Summary Grant Profiles

- http://www.ahrq.gov/professionals/prevention-chronic-care/decision/mcc/

AHRQ MCC Research Network

Comparative Effectiveness Research to Optimize Prevention and Healthcare Management for the Complex Patient – R21 Grants

## Determining Processes of Cardiovascular Care Relevant to Complex Patients

Principal Investigator: Elizabeth Bayliss, MD, MSPH
Institution/Partners: Kaiser Permanente Colorado, Institute for Health Research; Colorado Health Outcomes Center, University of Colorado School of Medicine
Project Period: 09/30/10 – 09/29/12
Grant Number: R21 HS19520-01

### Description

Clinicians commonly face decisions about prevention of coronary heart disease (CHD) following a new diagnosis of cancer. Such decisions must take into account cancer prognosis; cardiovascular risk status; overall burden of morbidity; and the patient's goals, preferences, and values. This study assesses outcomes of cancer mortality and cardiovascular events in populations with incident cancer, cardiovascular risk, and other morbidities. Findings from this study will assist patients and clinicians in determining individualized CHD prevention strategies following a cancer diagnosis; and should inform guideline development for the care of complex patients.

### Specific Aims

1. Assess the attainment of CHD outcomes for cancer patients, taking into consideration cancer prognosis, overall illness burden, and the interaction between them.
2. Assess the comparative effectiveness of CHD prevention interventions for cancer patients based on occurrence of, and time to, CHD outcomes and all-cause mortality.

### Findings

- Among 539 patients given a poor prognosis for their cancer (less than 25% chance of 5-year survival), 343 were taking statins for secondary prevention and 196 for primary prevention of cardiovascular disease. 58% of the secondary prevention and 62% of the primary prevention group had at least one statin refill after diagnosis. There were no significant differences between groups for number of days between diagnosis and last refill, or between last refill and death.

### Main Objective

To assist patients and clinicians in determining individualized coronary heart disease prevention strategies following a new cancer diagnosis.

### Chronic Conditions Considered

Cancer
Coronary heart disease

### Study Design & Methods

Analytic epidemiologic study

Methods include Cox proportional hazards,linear regression, and competing hazards analyses.

### Data Sources & Sample Size

Electronic health records for two cohortsof a total of 7,039 adults at Kaiser Permanente Colorado who received an initial cancer diagnosis between 1999 and 2007.

### Strategies Addressed from the HHS Strategic Framework on Multiple Chronic Conditions

1.B. Define appropriate health care outcomes
3.A. Identify best practices and tools
4.C. Increase clinical research

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## Determining Processes of Cardiovascular Care Relevant to Complex Patients (Continued)

- Among 6,500 patients with a cancer prognosis of more than 25% 5- year survival, over a 2-year period 5% experienced a cardiac event, 14% died of cancer, and 81% experienced neither.
- In a competing hazards analysis, elevated pre-existing cardiovascular risk predicted cardiovascular events; and cancer prognosis, cardiovascular risk, and overall morbidity all predicted cancer mortality.

### Implications

In persons with cancer with a poor prognosis, there may be an opportunity to reevaluate medication burden in persons taking statins for primary prevention, and it is unclear whether continuing statins prescribed for secondary prevention affects cardiovascular outcomes. For populations with a range of cancer prognoses with more than 25% 5-year survival; survivorship care begins at cancer diagnosis, should emphasize personal preferences with regard to cancer treatment, and may incorporate active management of cardiovascular risk factors for persons for whom prevention of cardiovascular events is a personal priority.

### Publications

Bayliss E, Bronsert R, Reifler L, Ellis J, Steiner J, McQuillan D, Fairclough D. Statin prescribing patterns in a cohort of cancer patients with poor prognosis. Journal of Palliative Medicine. In press.

### Posters and Presentations

Bayliss E. Challenging common assumptions about multimorbidity. Paper presented at: Leveraging Knowledge and Action to Improve Health Care Quality. 6th Annual Conference of the Agency for Healthcare Research and Quality; 2012 Sept 9-12; Bethesda, MD.

Bayliss E. Process of cardiovascular care relevant to complex patients. Poster presented at: Learning Health Care Systems: Leading Through Research. 18th Annual HMO Research Network Conference; 2012 Apr 29-May 2; Seattle, WA.

Bayliss E. Determining processes of cardiovascular care relevant to complex patients. 60 Second Presentation at: Agency for Healthcare Research and Quality Multiple Chronic Conditions Research Network Meeting; 2011 Sept 18; Washington, DC.
http://www.ahrq.gov/about/annualconf11/video/specsessions/primecare03/index.html

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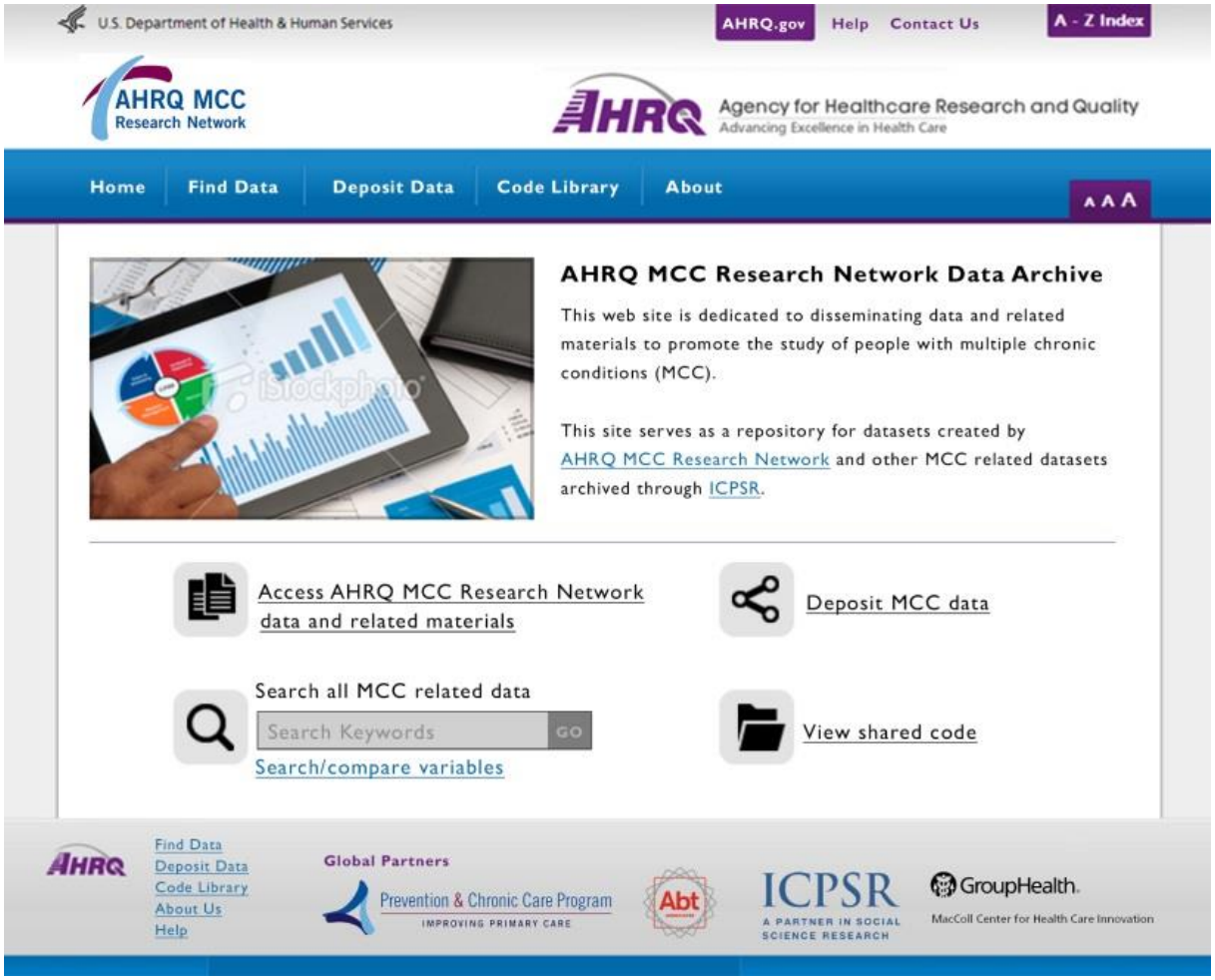
# 2010 R24 Datasets

http://www.icpsr.umich.edu/icpsrweb/AHRQMCC/



# MCC Research Network

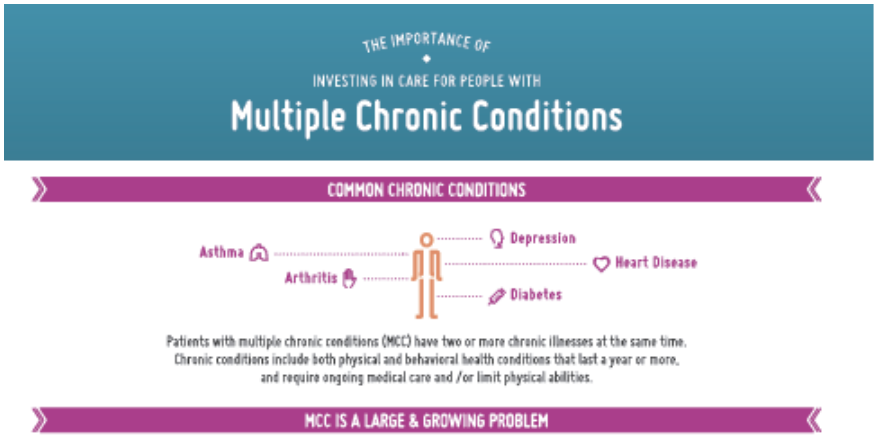
- In 2014 AHRQ funded additional 14 research grants

| Awarded grants | Research topic | Expected date of Completion |
|---|---|---|
| 7 R01 (2014) | RFA-HS-14-001 “Rapid Secondary Analysis to Optimize Care for Patients with Multiple Chronic Conditions” | 2016 |
| 7 R21 (2014) | RFA-HS14-002“Addressing Methodological Challenges in Research for Patients With Multiple Chronic Conditions” | 2015 |

# Other MCCRN Products

Products that showcase AHRQ's interests and contributions to MCC include:

- **Animated video** essay to raise awareness about care issues for MCC patients
- **Infographic** illustrating the scope of MCC, highlighting its growing impact on the U.S. population and on healthcare spending and utilization
- **MCC Chartbook:** 2010 Medical Expenditure Panel Survey Data



# Publications

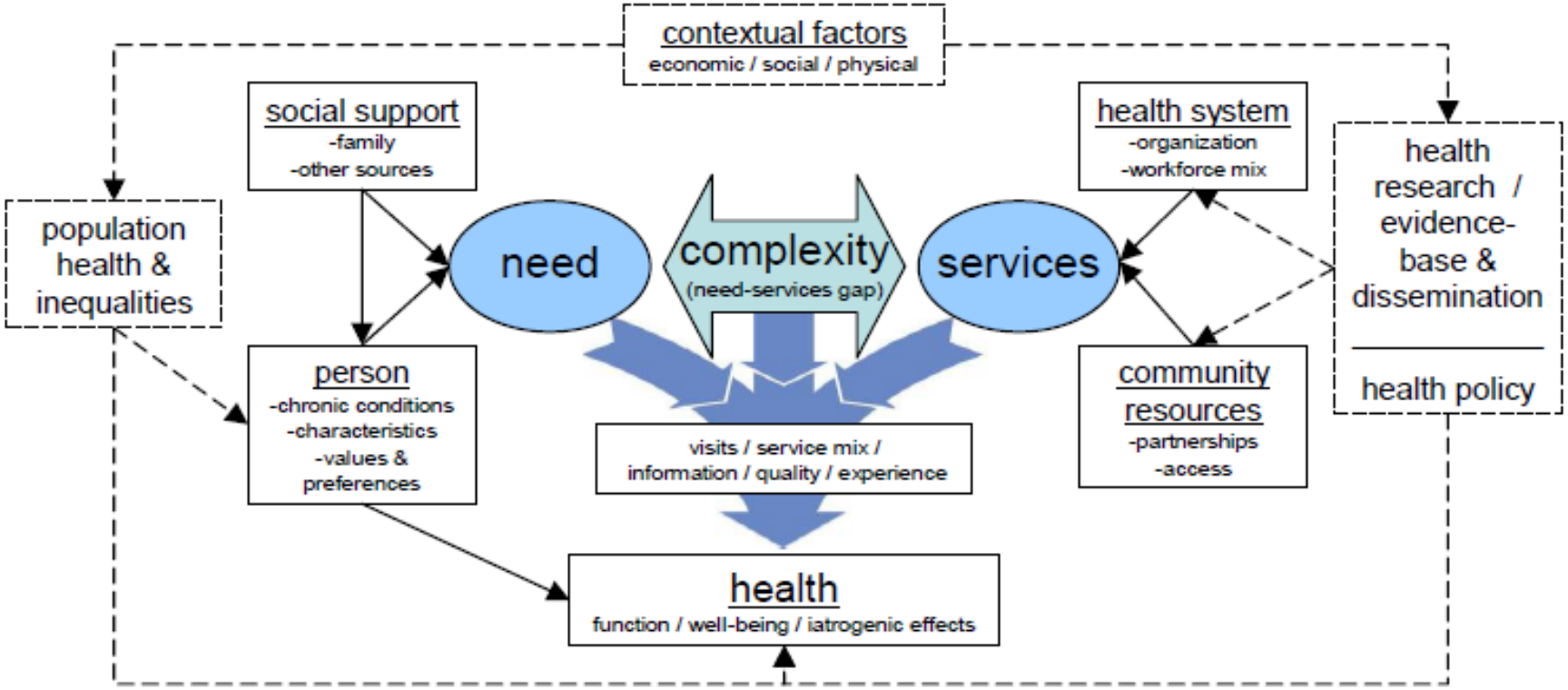
- *Medical Care* Special Issue on MCC, published in February 2014

## A Conceptual Model of the Role of Complexity in the Care of Patients With Multiple Chronic Conditions

*David Grembowski, PhD,* Judith Schaefer, MPH,† Karin E. Johnson, PhD,† Henry Fischer, MD,‡ Susan L. Moore, PhD, MSPH,‡ Ming Tai-Seale, PhD, MPH,§ Richard Ricciardi, PhD, NP,‖ James R. Fraser, BA,† Donald Miller, ScD,¶ and Lisa LeRoy, MBA, PhD,# on behalf of the AHRQ MCC Research Network*

*Medical Care* • Volume 52, Number 3 Suppl 2, March 2014

# A Conceptual Model of the Role of Complexity in the Care of Patients with MCC



# TABLE 1 Synopsis of Published Chronic Disease Conceptual Models

| Title and Author | Model Purpose | Complexity/MCC Components | How Health is Defined and Measured |
|---|---|---|---|
| The interplay between diabetes management and management of comorbid chronic conditions, Piette and Kerr[11] | Consider the ways in which comorbid chronic conditions can influence diabetic patients' medical care, self-management, and outcomes. Suggests points of intervention for improving systems of care. | Rising prevalence of multimorbidity. Inadequate health system support and little guidance on how to manage multimorbid patients. Patient ability to manage self-care, based on comorbidities, time, financial resources. Prevalent and incident comorbid chronic conditions classified into dominant, discordant, concordant. Also distinguishes between symptomatic and asymptomatic conditions. | Diabetes-specific and nondiabetes health |
| Framework to assist in determining glycemic treatment targets in patients with type 2 diabetes, Ismail-Beigi et al[12] | Set a glycemic target range for an individual patient in the outpatient setting. | A set of clinical characteristics (comorbid conditions, age, duration of DM, presence of macrovascular and microvascular disease, history of severe hypoglycemia), and pyschosocioeconomic context (support systems, medication adverse effects, psychological and cognitive status, economic considerations, quality of life). Influence of the patient perspective referenced in text. | Glycemic target range for an individual patient |
| Health-related quality of life outcomes of healthcare organization and delivery, Patrick[13] | Model how structures and processes within the healthcare system (especially managed care), as well as determinants outside the healthcare system, especially managed care, influences health-related quality of life | Text delves into social theory and discusses power and dependency relations | Outcomes include quality of life divided into 5 categories. The model also highlights cost of care and equity as outcomes. |
| Relationships among measures of patient outcome in a health-related quality of life conceptual model, Wilson and Cleary[14] | Categorize measures of patient outcomes according to the underlying health concepts they represent and propose specific causal relationships between different health concept; integrate clinical and social science paradigms | Not specific to MCC, pathways flow from biological and physiological factors, to symptoms, functioning (physical, psychological, social, and role function), to general health perceptions, to overall quality of life. Complex direct and indirect relationships between and among the concepts at nonadjacent levels. | Quality of life "Implication and challenge for researchers is to measure these various outcomes and to develop statistical models that explicitly estimate the size of the effects specified in this model" |
| The vector model of complexity, Safford et al[15] | Vector portray the numerous influences that together make a patient more or less complex | Multiple chronic conditions, along with biological, socioeconomic, cultural, environmental, and behavioral forces | Congruence between doctor or healthcare system and patient, reflected in evidence and guidelines; quality measurement and performance profiling; and new research methods |
| Cumulative complexity model, Shippee et al[16] | Explores how clinical and social factors accumulate and interact to influence and shape the patient's health and influence healthcare | Person-centric approach to multimorbidity and chronic conditions in which the individual's personal, social, and clinical factors dictate the patient experience and function as complicating factors on health and health outcomes | The cumulative complexity model is posited as a framework for researchers and clinicians to develop diagnostic criteria and/or decision algorithms to improve the clinical management of patients with multiple comorbidities |
| Chronic care model, Wagner et al[17] | Organize the health system to improve outcomes for chronic illness care | Not specifically defined | Different components relate through productive interactions in a structural framework for effective chronic illness treatment/disease management |

# For More Information…

- **MCC Research Network Results and Products**
  - Materials developed through the AHRQ MCC Research Network can be found here: http://www.ahrq.gov/research/mccrn.htm

- **Access to MCC Research Network Data**
  - Several of the datasets are housed on the AHRQ MCC Research Network Data Archive site: http://www.icpsr.umich.edu/AHRQMCC/.

# AHRQ's New Mission

To produce evidence to make health care safer, higher quality, more accessible, equitable, and affordable, and to work with HHS and other partners to make sure that the evidence is understood and used.

Questions