

## A Study of Trends in Obesity Progression Among Complex Patients

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### Description

Obesity is a significant contributor to premature mortality and morbidity and decreased quality of life in the United States. Many people with obesity also suffer from hypertension and depression. This exploratory study examined trends in body mass index (BMI) and blood pressure control among patients with co-occurring obesity, hypertension, and/or depression and assessed the effectiveness of an intensive lifestyle intervention for patients with these conditions. Results from this study can help inform local and national quality improvement measures as well as treatment guidelines for managing patients with this common and costly constellation of priority conditions.

### Specific Aims

1. Evaluate the progression of obesity among patients with obesity alone versus obesity with hypertension and/or depression; stratified by age, gender, race, and disease status. Assess the impact of various interventions to treat obesity, hypertension, and depression.
2. Test whether the presence of hypertension and/or depression influences the effectiveness of an intensive lifestyle modification intervention to reduce obesity and cardiometabolic risk delivered in a randomized controlled trial entitled the Evaluation of Lifestyle Interventions to Treat Elevated Cardiometabolic Risk in Primary Care (E-LITE).
3. Assess how well the sample of patients and physicians in the E-LITE trial represents the patients and physicians in other clinics in the Palo Alto Medical Foundation, and compare practice styles of E-LITE physicians with non-E-LITE physicians.

### Main Objective

Examine trends in BMI and blood pressure control among patients with co-occurring obesity, hypertension, and/or depression and assess the effectiveness of an intensive lifestyle intervention for patients with these conditions.

### Chronic Conditions Considered

Obesity  
Hypertension  
Depression

### Study Design & Methods

Observational study

Multilevel growth curve model, instrumental variable, and propensity score techniques.

### Data Sources & Sample Size

Electronic health record and claims data for approximately 188,000 patients with obesity, hypertension, or depression from a large medical practice between 2000 and 2010. Additionally, survey and laboratory data for 240 patients enrolled in the E-LITE study at 6, 12, and 24 months after the intervention.

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

- 1.D. Implement and effectively use HIT
- 1.F. Evaluate models of care, incentives, and other health system interventions
- 3.A. Identify best practices and tools
- 4.C. Increase clinical research

# A Study of Trends in Obesity Progression Among Complex Patients (continued)

## Findings

- A large number of patients in this sample lived with the constellation of obesity, hypertension, and depression. The vast majority (more than 85%) of patients with at least two of the conditions were younger than age 65 years.
- Though the percentage of patients diagnosed with obesity and hypertension increased over time, in 2010 only 51% of patients with high blood pressure were diagnosed with hypertension, and 19% of those with a weight problem were diagnosed as such. Having comorbidities was associated with higher odds of being diagnosed with hypertension or obesity. Co-occurrence of hypertension with obesity was associated with slower weight gain over time, while co-occurrence of depression and obesity was associated with faster weight gain.
- In patients with both obesity and hypertension, treatment for hypertension was associated not only with a reduction in blood pressure, but also slower BMI increase over time.

## Implications

There are missed opportunities for diagnosing and treating patients living with obesity, hypertension, and depression. Because the constellation of obesity, depression, and hypertension affects a large number of people, most who are younger than age 65, more effective disease management for this population could result in large cost savings for employers and payers.

## Publications (as of September 2013)

Grembowski DE, Schaefer J, Johnson K, Fischer H, Moore SL, Tai-Seale M, Ricciardi R, Fraser JR, Miller D, LeRoy L. The AHRQ Multiple Chronic Conditions Research Network conceptual model for research on complex patient care. *Medical Care*. In Press, 2014.

Tai-Seale M, Wilson C, Stone A, Dubin M, Luft H. Patients' body mass index and blood pressure over time: diagnoses, treatments, and the effects of comorbidities. *Medical Care*. In Press, 2014.

Xiao L, Yank V, Wilson SR, Lavori PW, Ma J. Two-year weight loss maintenance in primary care-based Diabetes Prevention Program lifestyle interventions. *Nutr Diabetes*. 2013; 3(e76).

(Additional publications currently in preparation).

## Posters and Presentations

Tai-Seale M, Wilson C, Ma J, Luft H. Patients with co-occurring hypertension, obesity, and depression: diagnosis vs. treatment, and is treatment of one condition associated with changes in other conditions? Poster presented at: Advancing Research in the Era of Healthcare Reform. 19th Annual HMO Research Network Conference; 2013 April 16-18; San Francisco, CA.

Tai-Seale M. Singles, dyads, & triads. Paper presented at: Leveraging Knowledge and Action to Improve Health Care Quality. 6<sup>th</sup> Annual Conference of the Agency for Healthcare Research and Quality; 2012 Sept 9-12; Bethesda, MD.