Actionable Taxonomy to Identify Patients with High Healthcare Utilization and Potential Interventions

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## Background & Unmet Need

- The top 10% of healthcare-utilizing patients account for 50% of healthcare spending
- This high-need, high-cost category of patients is highly heterogeneous and difficult to identify with current taxonomy
- Current systems of identifying these high-touch patients rely on claims data, which do not incorporate important aspect of social circumstance
- Moreover, current classifiers limit patients to mutually exclusive groups, giving an incomplete picture of their medical needs
- **Unmet Need**: A method to classify high-need, high-cost patients into actionable groups which incorporate the complex and numerous determinants of health

## Technology Overview

- **The Technology**: A new taxonomy which integrates both claims data and social determinants of health to identify high-cost patients and potential interventions
- The new groups are classified by differentiated patient attributes, including the presence of chronic conditions, substance use disorders, mental illness, and social vulnerability
- **PoC Data**: In a cross-sectional study of a Medicare fee-for-service cohort in NYC, patients were sorted into 10 overlapping categories
  - The study identified "multiple chronic conditions" as the category with the most high-cost patients, and found that 73% of high-cost patients fell into multiple of these categories
  - In another study, the group found that patients with both the highest preventable utilization and highest costs represented only 1.9% of patients but 33% of preventable costs among Medicare patients

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**Patents:**
US Application Filed

**Publications:**
- Benda et al. Jamia. 2020
- Khullar et al. J Gen Intern Med. 2020
- Zhang et al. Healthc (Amst). 2020

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**Cornell Reference:**
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Technology Applications

- Analyze patient populations to identify targeted interventions for those with high healthcare utilization
- Inform strategies for improving population health outcomes and healthcare delivery
- Reduce the burden of healthcare on traditional providers by identifying areas of alternative care

Technology Advantages

- Classifiers integrate data from both claims and social health data sources
- Datasets integrate more current data sets as well as longitudinal data
- The taxonomy can help identify opportunities for targeted interventions among patient populations

**Figure 1:** The categories outlined by the taxonomy integrate both claims data and information on social determinants of health.

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Supporting Data / Figures

**ACO Algorithm: Patient Flow**

1. **Patient sees doctor**
   The doctor diagnoses the patient

2. **Ongoing patient care**
   Patient data is entered in the EHR system (visits, lab results, conditions, diagnoses, etc.)

3. **Patient is assigned to an Accountable Care Organization (ACO)**

4. **ACO runs algorithms on all patients**
   ACO identifies patients who have costs that are potentially avoidable

5. **Algorithm Results**
   Algorithms identify opportunities for preventative care and cost savings

6. **Ongoing Care**
   Clinicians with the support of the care management team can implement a new care plan leading to cost savings

**Figure 2:** Theoretical patient journey using the taxonomy in an Accountable Care Organization (ACO) setting.

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