Predictive Analytics in Nursing Homes
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Disclosures

• CEO and Founder of Probari, Inc., a healthcare start up designed to disseminate clinical care models to reduce hospital transfers
Background

- >15,600 nursing homes in the United States
  - Rehabilitation (post-acute), long term care
- > 28,900 Assisted Living Facilities
  - Social care model
- Majority of nursing home residents have dementia
- On average, residents receive: 2 hours of nursing time and 2.64 hours of CNA time per day
Background

• Funded by Medicare and Medicaid
• Increasing value based purchasing arrangements, managed care
• Highly regulated – Federal and State
Predicting Avoidable Hospital Transfers

POTENTIAL OPPORTUNITY FOR AI APPROACHES
Transfer Background

• ~25% of nursing home residents are transferred to the hospital annually
• Up to 40% of transfers are considered “potentially avoidable”
• Hospitalizations are
  ▶ Expensive
  ▶ Disruptive to care
  ▶ Hazardous to frail patients
• Nursing home patients are particularly vulnerable to the risks in transitions of care
Reducing Avoidable Hospitalizations

• Nursing homes have motivation to reduce avoidable hospitalizations
  ▸ Readmission rates are tracked and reported publicly
  ▸ Liable for both financial penalties and decreases in publicly reported quality scores if there are high rates of readmission to the hospital
Technological Solutions

• Invest in tools and services to improve quality and achieve lower transfer rates
• Invest in technology that improves patient outcomes and enhances efficiency
• Supporting clinical care and streamline processes may help aid staff retention
Potential Opportunities

• Predictive analytics tool to identify high risk residents for hospital transfers
• Target resources to higher risk residents
• Existing clinical programs and initiatives can inform model development and provide a framework for informed implementation within nursing homes
Datasets Available

• MDS (Minimum Data Set)
  ▶ Demographic information
  ▶ Clinical characteristics (comorbidity and cognitive assessments)
  ▶ Treatments and therapies received

• Facility EHR datasets
  ▶ Day to day clinical information
  ▶ Content and quality varies
  ▶ Limited interoperability

• Medicare and Medicaid claims data
  ▶ Billing data collected to monitor cost, usage, and quality, and to manage enrollment
Potential End Users

- Front line staff
  - CNAs
- Clinicians
  - RNs, NPs, MDs
- Nursing home operators
- Health systems
- Insurance plans
- Policymakers
Challenges and Potential Solutions

• Predictive models may be useful to address high priority issues in nursing homes such as reducing hospital transfers
• If developed with limited clinician input are unable to support staff decisions
• Quality of “data in” must be addressed
• Challenge of implementing into workflow should not be underestimated