

# Harnessing Big Data to Advance the Care of Frail Older Canadians

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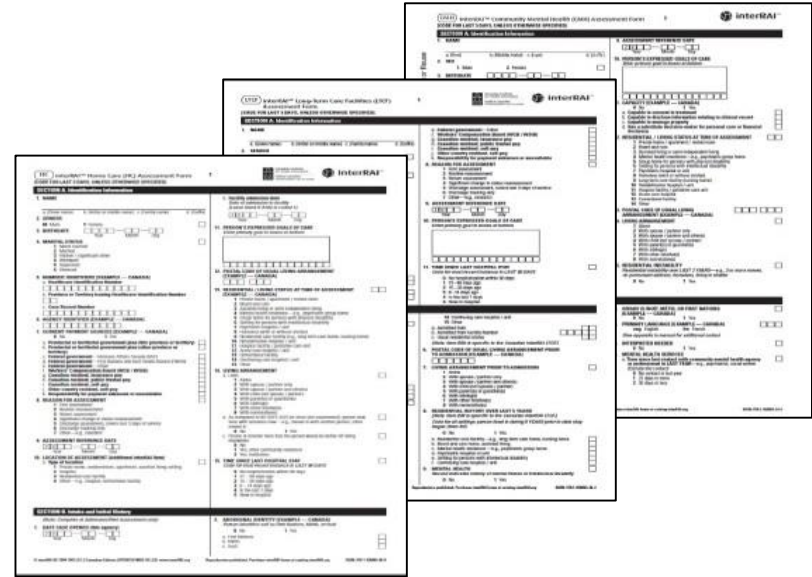
# What is big data?



- Amorphous, unstructured “cloud” data?
- Hard to use and analyze?

# CIHI's "big data"

- **Thirty reporting systems**
- **Based on standards**
- **How big?**
  - Millions: assessments in home care, nursing homes, inpatient mental health settings
  - Tens of millions: acute and ambulatory care data
  - Hundreds of millions to billions: physician billing data, pharmaceuticals



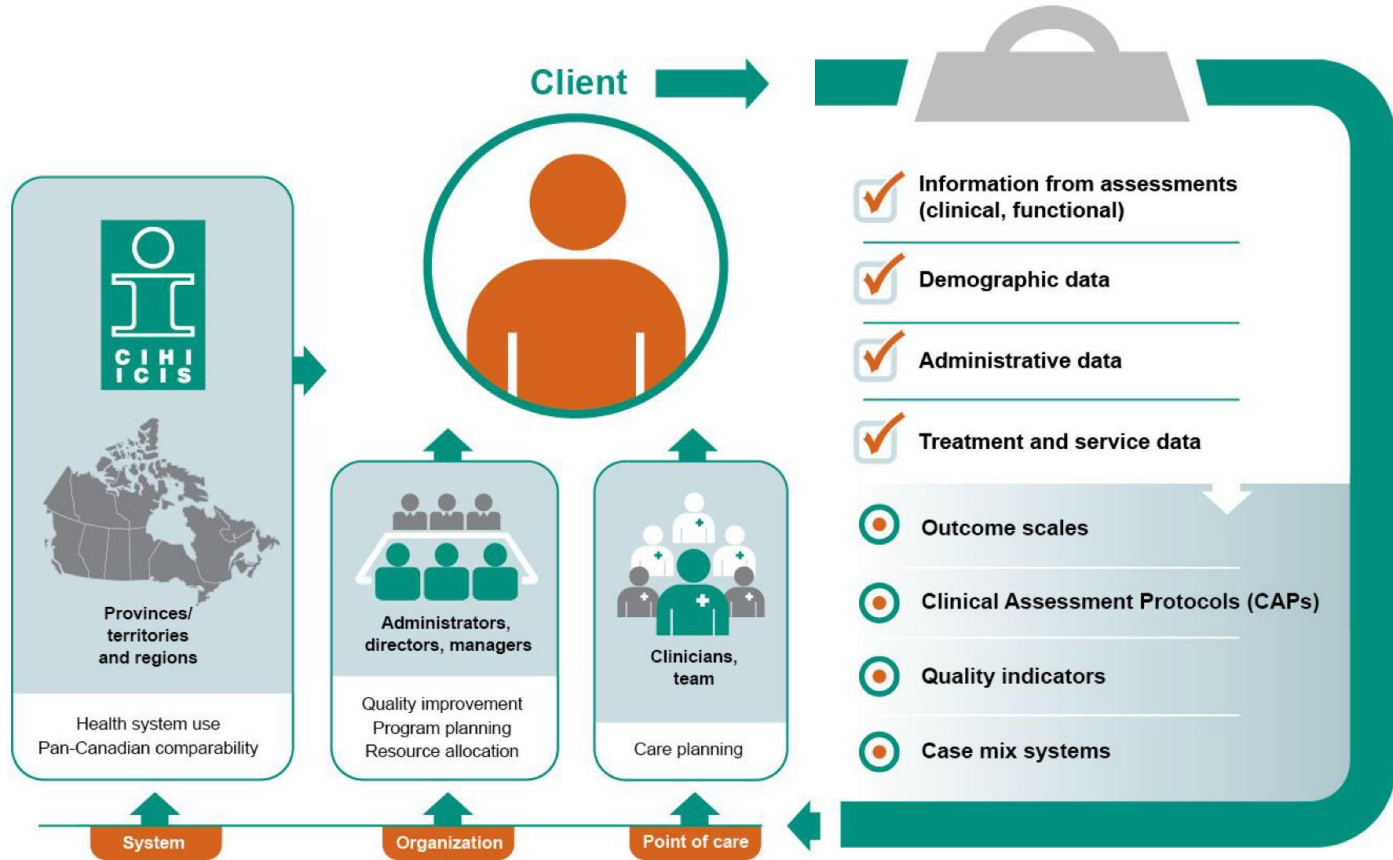
# CIHI's "big data"

- **Two main sources:**
- **"Thin" files: sent to CIHI: few data elements, many records**
  - E.g. pharmaceuticals
- **"Fat" files: data created at the point of care/business through CIHI specifications, used locally for care and management, then sent to CIHI**
  - E.g. hospital clinical and financial data
  - InterRAI data from nursing homes, home care, inpatient mental health facilities

# Data + no tools = Not much

- **CIHI data created locally: tools are included!**
  - Care planning, clinical decision support
  - Management decision support, utilization management, case mix

# Flow of interRAI Assessment Information



# First use of the data: locally

- **Data created locally with tools included**

- Care planning, clinical decision support
- Management decision support, utilization management, case mix

– <https://www.youtube.com/watch?v=0FtDsycnz7A&feature=youtu.be>

# Second use of the data: the circle of care

- **The data have to flow across care settings—e.g. from nursing home to ED**
- **Working with Infoway and others to support interoperability**
  - Ten assessments designated as Canadian Approved Standards in 2014 through the Standards Collaborative coordinated by Canada Health Infoway



# Third use of the data: comparative reporting

- **After CIHI receives the data, we create open analytical environments for hospitals, nursing homes, etc.**
  - The "nude beach"
  - See best practices, outcomes of peers
  - <https://www.cihi.ca/en/cihi-data-helps-put-philosophy-into-practice>
  - Restraint use down 40% in this nursing home, and 20% across the entire health region!

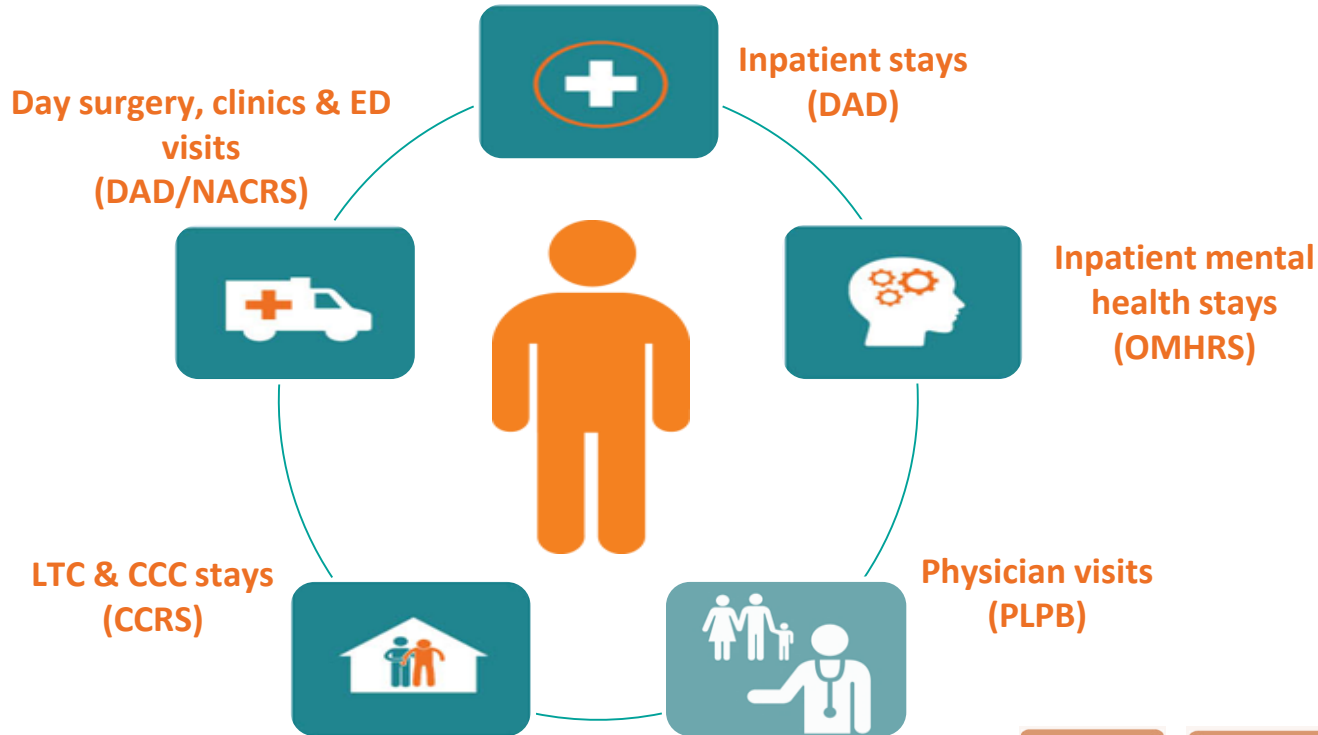
# Fourth use of the data: system-wide performance measurement and improvement

- Almost two million Canadians assessed with interRAI instrument:
- 48% were frail (based on CHES score)
- 47% with low physical functioning
- 19% with severe cognitive impairment

# Fourth use of the data: system-wide performance measurement and improvement

- Initiatives using the data:
  - Helping fifty nursing homes reduce use of anti-psychotic medications (CFHI)
- Better and more universal application of frailty measures
- POP! CIHI's new Population grouping methodology helps understand the entire population, including high users of the health system and frail Canadians

# CIHI's population grouping methodology



## Pop grouper vs. other CIHI case-mix products

### Similarities

- Clinical classification
- Predictive indicators

### Differences

- Multiple sectors
- Target population includes all persons registered for publicly-funded health care
- Looks at person over a 2-year time period



# POP clinical profile



Assigned at the **person**  
level

Applied at the  
**population** level

# Predictive indicators

- Number of physician visits
- Number of ED visits
- Probability of long term care admission
  
- ...for the entire population

# Final thoughts

# Identifying frailty at the frontline of care



- Grow identification of frailty as part of standard care--especially in acute care
- Expand clinical instruments being used across the country already
- Maximize return on clinicians' time spent assessing
- Harness information to identify the vulnerable and avoid adverse outcomes





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**Better data. Better decisions. Healthier Canadians.**



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