

# Variations from birth to death: Who are the high cost, high need patients?

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**Smarter Health Care  
National Research Programme**





# Medical Practice Variations Research

Wennberg International Collaborative (WIC) has garnered international interest in Medical Practice Variations (MPV)

MPV exist everywhere regardless of health care system

MPV is a **problem of health system performance**

MPV pierced the veil of rationality in medical practice

Generational change in how physician bodies perceive themselves

Opponents of MPV research outspoken in their criticism: financial self-interest; physician autonomy; public faith in modern medicine; political issues re distribution of health care resources

**Outcomes research, communication:** solutions to raising awareness of & understanding remedies for unwarranted variation



## Unwarranted Variations: Why should we care?

**Unwarranted variation** is variation that cannot be explained by population illness or patient preferences

Measurement of **unwarranted variation** in health care:

- Reflects differences in health system performance
- Identifies differences in quality, efficiency, equity
- Helps identify causes of high & low performance
- Represents opportunities for improvement
- Helps identify benchmarks in quality & efficiency
- Tracks effects of policy change & clinical improvement efforts

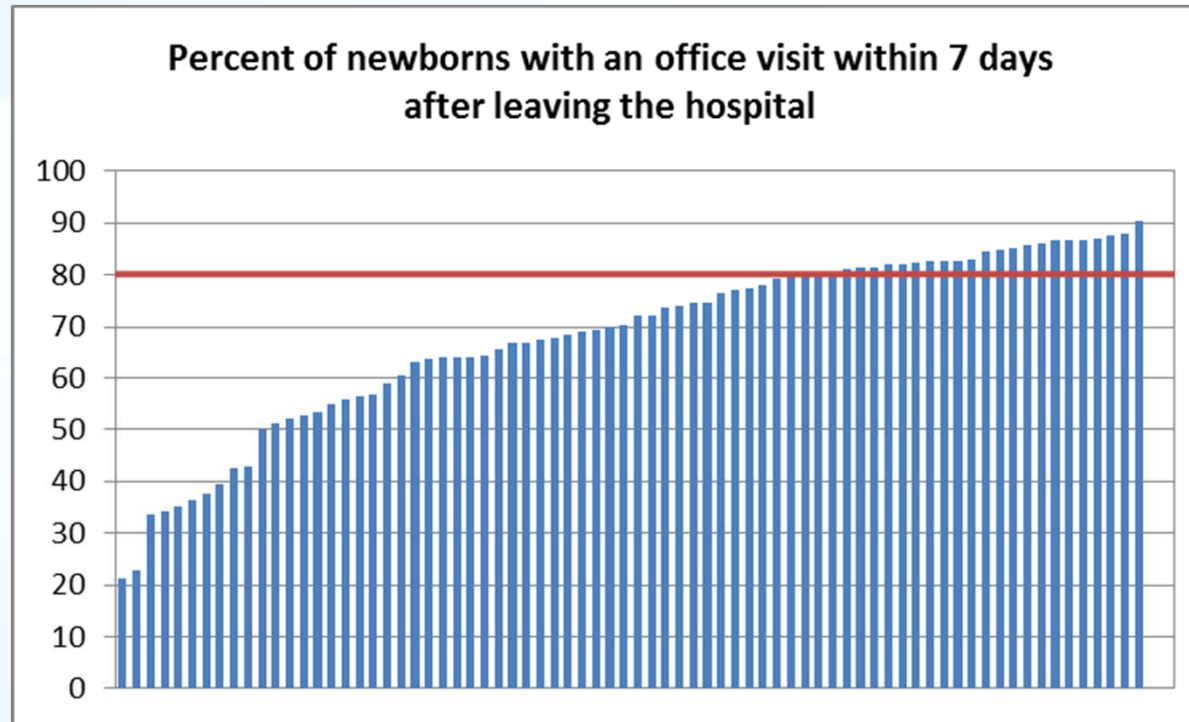


# Causes, Consequences, Remedies of Variation

Category of Variation	Cause	Consequence	Remedy
<b>Evidence-based</b> (health care services supported by well-articulated medical theory and strong evidence for efficacy)	Clinician decisions are not consistent with medical science	Lower probability of good outcomes	Clinical microsystem improvements
<b>Preference sensitive care</b> (more than one valid treatment strategy available, each with different risks & benefits; the choice of treatment involves trade-offs)	Provider- vs. patient-driven decision making	Patient does not receive preferred treatment	Shared decision making, clinical decision aids
<b>Supply sensitive care</b> (services where the local supply of health care resource has a major influence on utilization rates in the absence of evidence for these additional services)	Health system resources are idiosyncratically located and poorly related to outcomes	Higher resource use with marginal or no patient benefit	Wiser capital investments in health care resources

Wennberg, Fisher, Skinner Health Affairs, 2002

# Newborns: % with Follow-Up Visit Post-Discharge

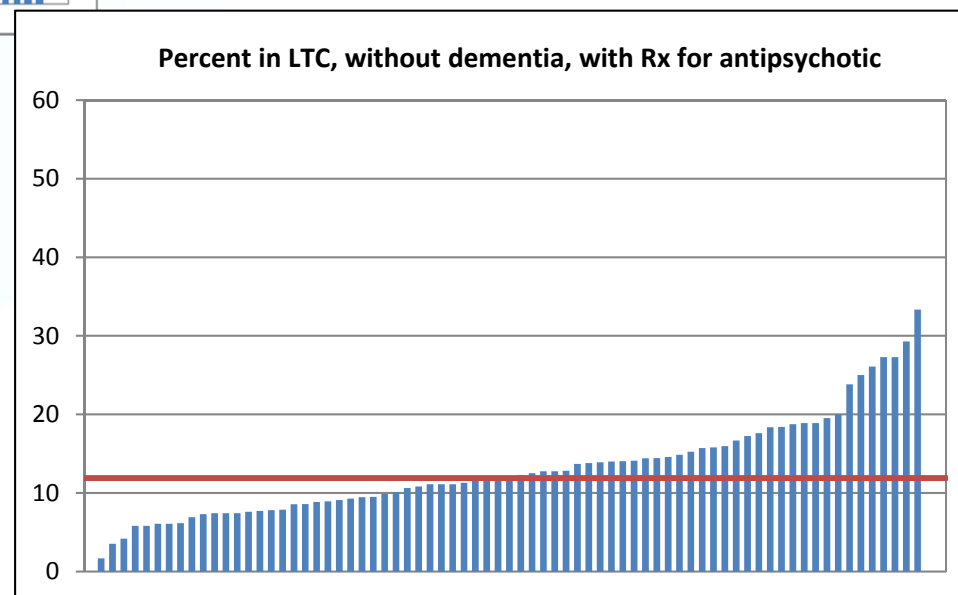
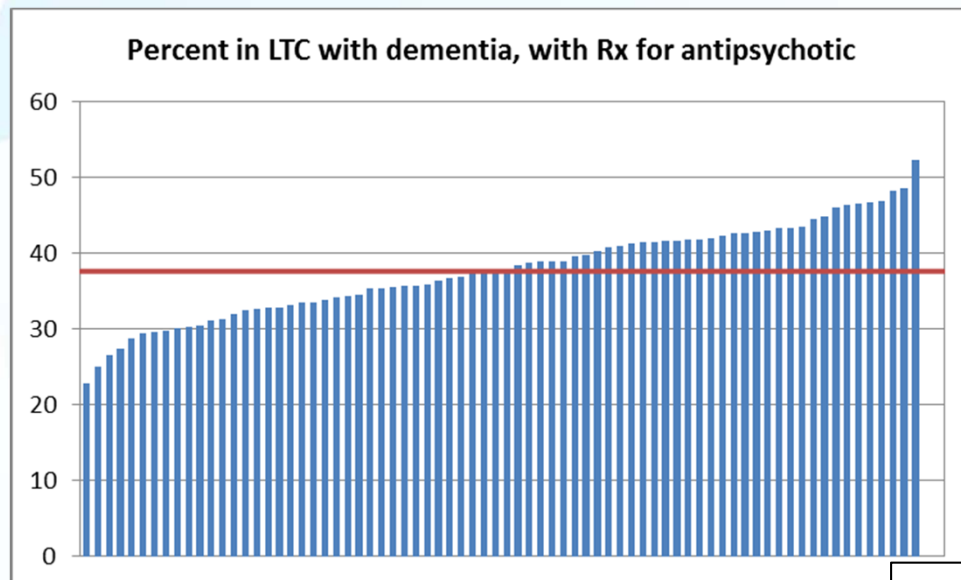


P19	Percent of newborns with follow-up				
	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>
	55.7	68.3	80.2	85.6	87.1

Stukel TA et al. Variations in Quality Indicators Across Ontario Physician Networks.

<https://www.ices.on.ca/Publications/Atlases-and-Reports/2016/Variations-in-Quality-Indicators-Across-Ontario-Physician-Networks>

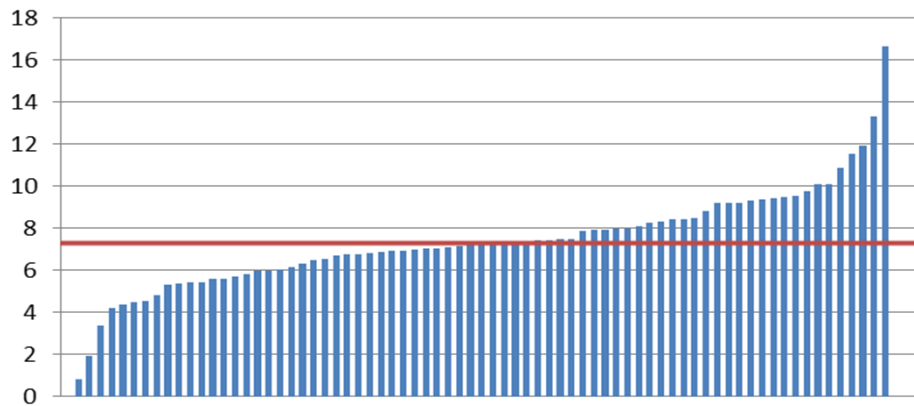
# Frail elderly in LTC: % Prescribed Antipsychotics



P15	Percent with prescription for antipsychotics				
	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>
With dementia	30.2	33.5	37.6	41.7	44.6
Without dementia	7.3	8.8	11.9	14.8	18.8

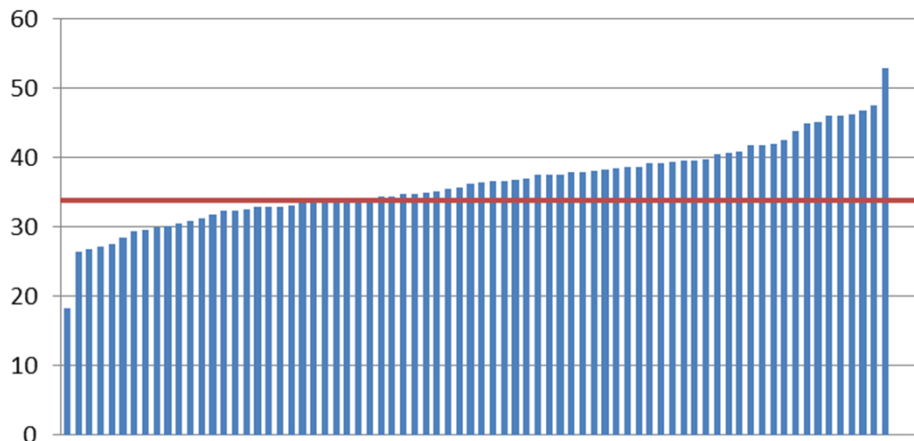
# End of Life (EOL) Cancer Patients: ICU, ED, Chemotherapy in Last 2 Weeks of Life

Percent of cancer patients who had an ICU stay in the last 2 weeks of life

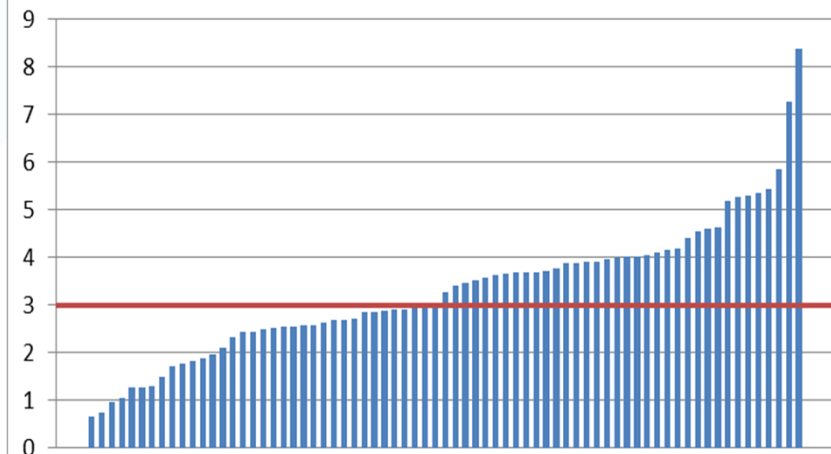


EOL2,3,4	Percent observed during last 2 weeks of life				
	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>
ICU adm	5.4	6.2	7.3	8.1	9.5
ED visit	29.6	32.4	33.9	38.3	41.8
Chemo	1.5	2.5	3.0	3.9	4.6

Percent of cancer patients who were in the ED in the last 2 weeks of life



Percent of cancer patients who received chemotherapy during the last 2 weeks of life



# High need vs high cost users

## Targeting high-cost groups for intervention is problematic:

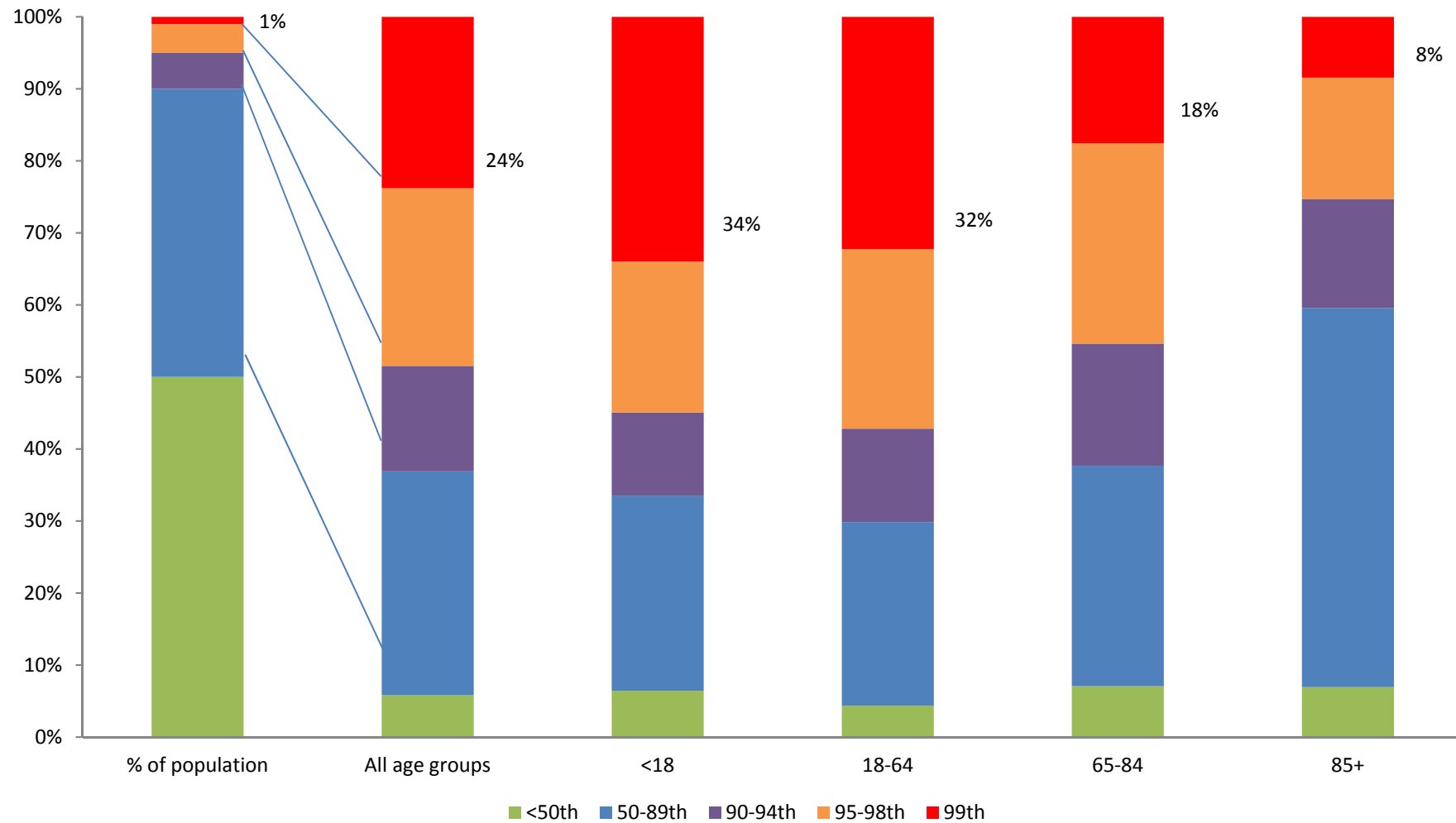
- misses the opportunity to manage patients before their conditions have exacerbated
- only 40% are persistently high cost in the following year
- it does not incentivize integrated care systems.

## High need patients

- **Complex chronic conditions** (diabetes, congestive heart failure (CHF), asthma, epilepsy, chronic obstructive pulmonary disease (COPD), stroke, coronary artery disease (CAD), cancer)
- **Children with complex medical conditions** (neurological impairment and with technology dependence)
- **Mental health disorders** (schizophrenia, bipolar disorder, depression, anxiety states, substance abuse, personality disorders, dual diagnosis)
- **Frail elderly** (dementia, Alzheimer's, chronic dialysis, those in long-term care, rehabilitation, chronic care facilities)
- **Multiple chronic conditions** ( $\geq 3$  chronic conditions or severe mental illness with  $\geq 1$  chronic condition)



# Distribution of total Ontario health care expenditures, by percentile of the population and age group



# The Learning Health System

**JAMA** The Journal of the  
American Medical Association

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US Institute of Medicine definition of a Learning Health System: “one in which knowledge generation is so embedded into the core of the practice of medicine that it is a natural outgrowth and product of the healthcare delivery process and leads to continual improvement in care.”