

Measuring and Evaluating the Performance of integrated Health Systems for Complex Chronic Disease Patients



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Multispecialty Physician Networks

Chronic disease care is uncoordinated, costly; poor care leads to more readmissions, ED visits & higher longitudinal costs

Readmission is the single most expensive component of health care spending

Multispecialty physician networks shown to improve performance (fewer readmissions and ED visits) for chronic disease patients through*:

- Strong primary care (PC) systems
- Coordinated and integrated care among PC physicians, specialists, hospitals
- Engagement of interdisciplinary health professionals
- Focus on longitudinal efficiency (total spending over 1 year)

* Crosson, Commonwealth Fund, 2009

Multispecialty physician networks: Conceptual framework

- Focus is on chronic disease vs. acute care
- Provides most appropriate locus of shared accountability & performance measurement (Goldilocks problem)
 - ▶ LHINs/regions (too big)
 - ▶ Individual providers (too small)
 - ▶ Primary Care (PC) groups (do not include specialists, hospitals)
 - ▶ Multispecialty provider networks (just right)
- Alignment of hospitals, specialists, PC physicians and other providers to promote local input and planning, integration, shared accountability
- Platform for Accountable Care Organizations (ACOs) – system of care that collectively serves large panel of patients, can be held accountable for quality, performance measurement, ability to implement system QI

Health Quality Networks

FY08-10

LHINs:

Erie St. Clair (1)

South West (2)

Waterloo Wellington (3)

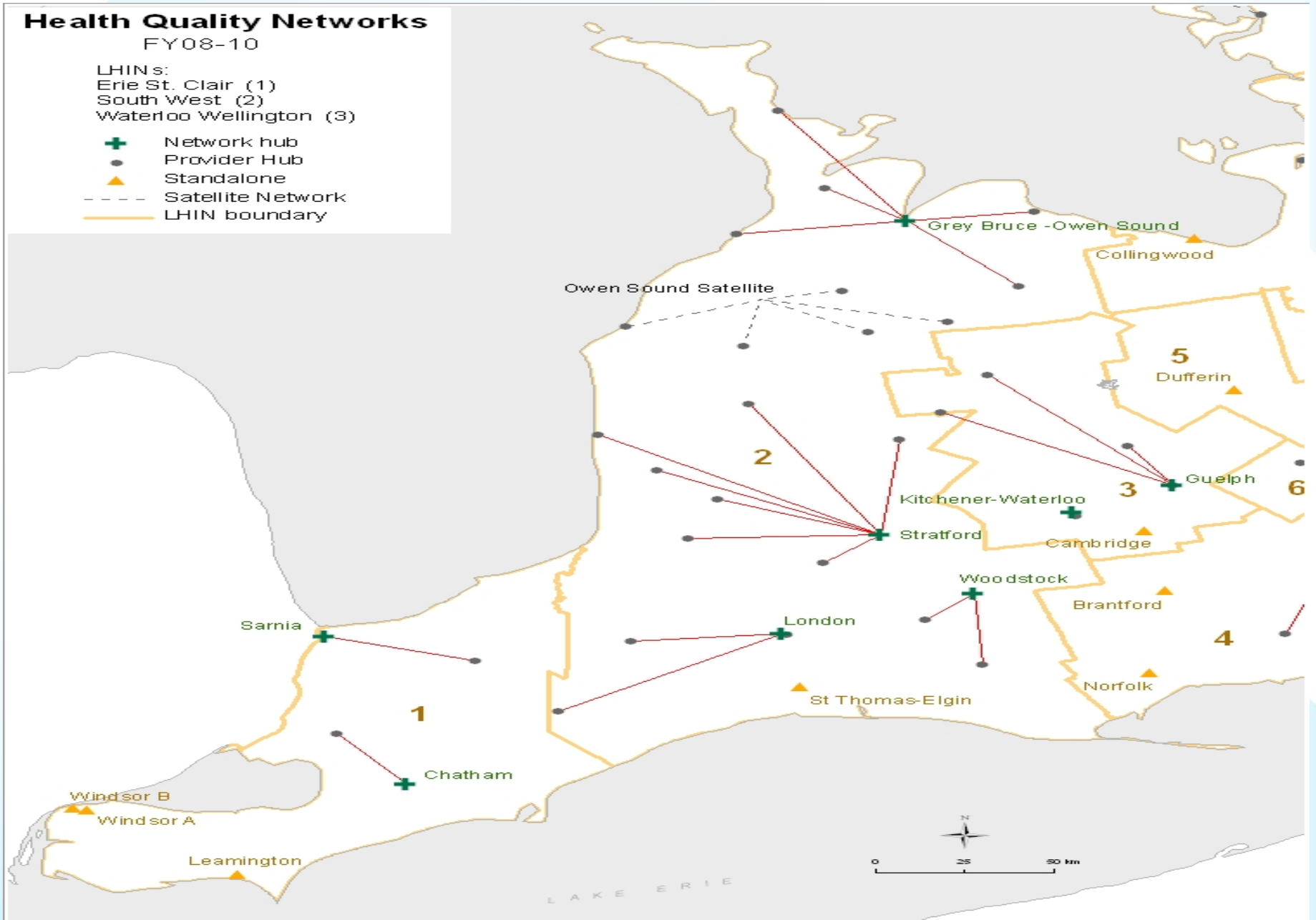
+ Network hub

• Provider Hub

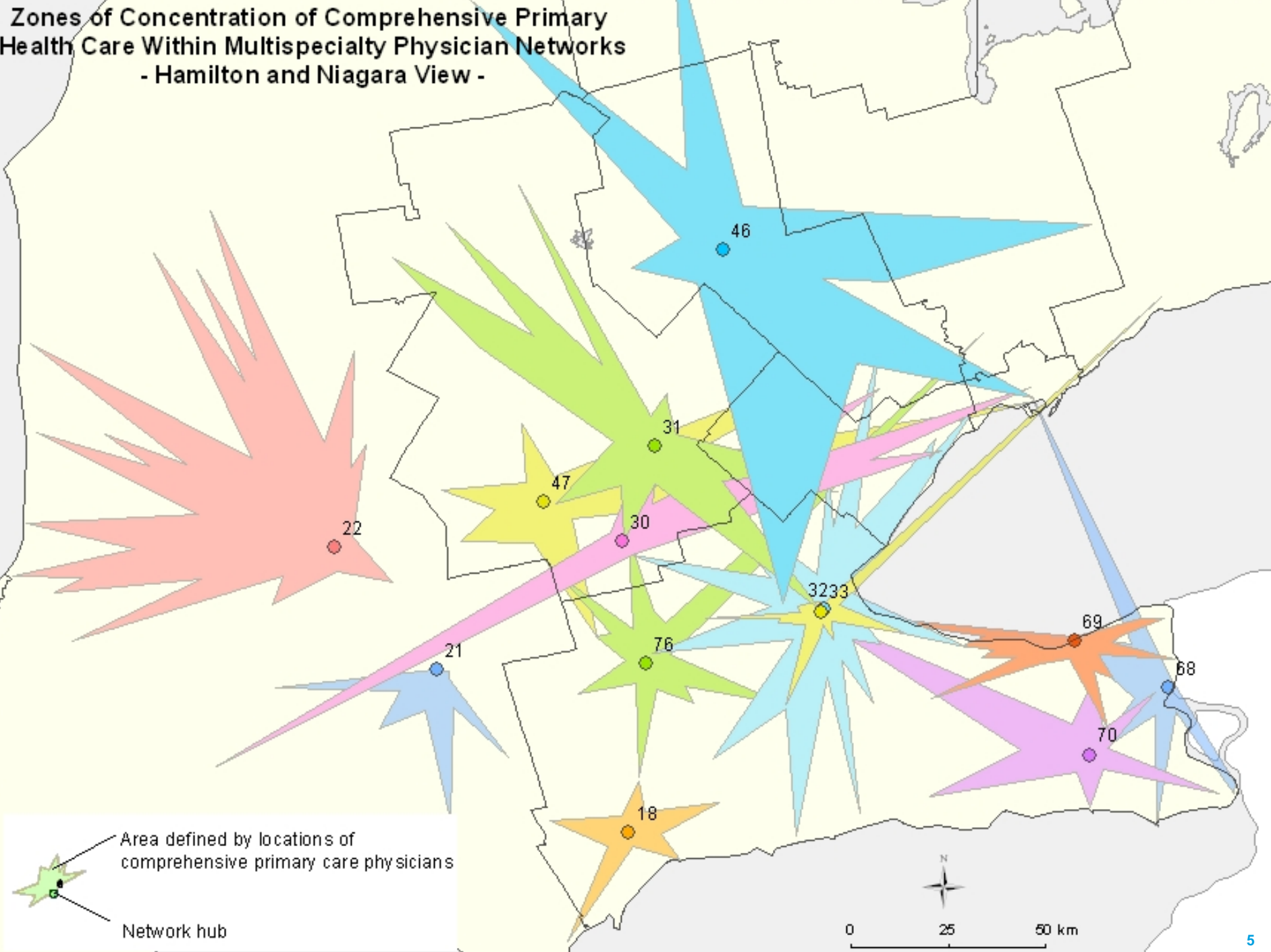
▲ Standalone

- - - Satellite Network

— LHIN boundary

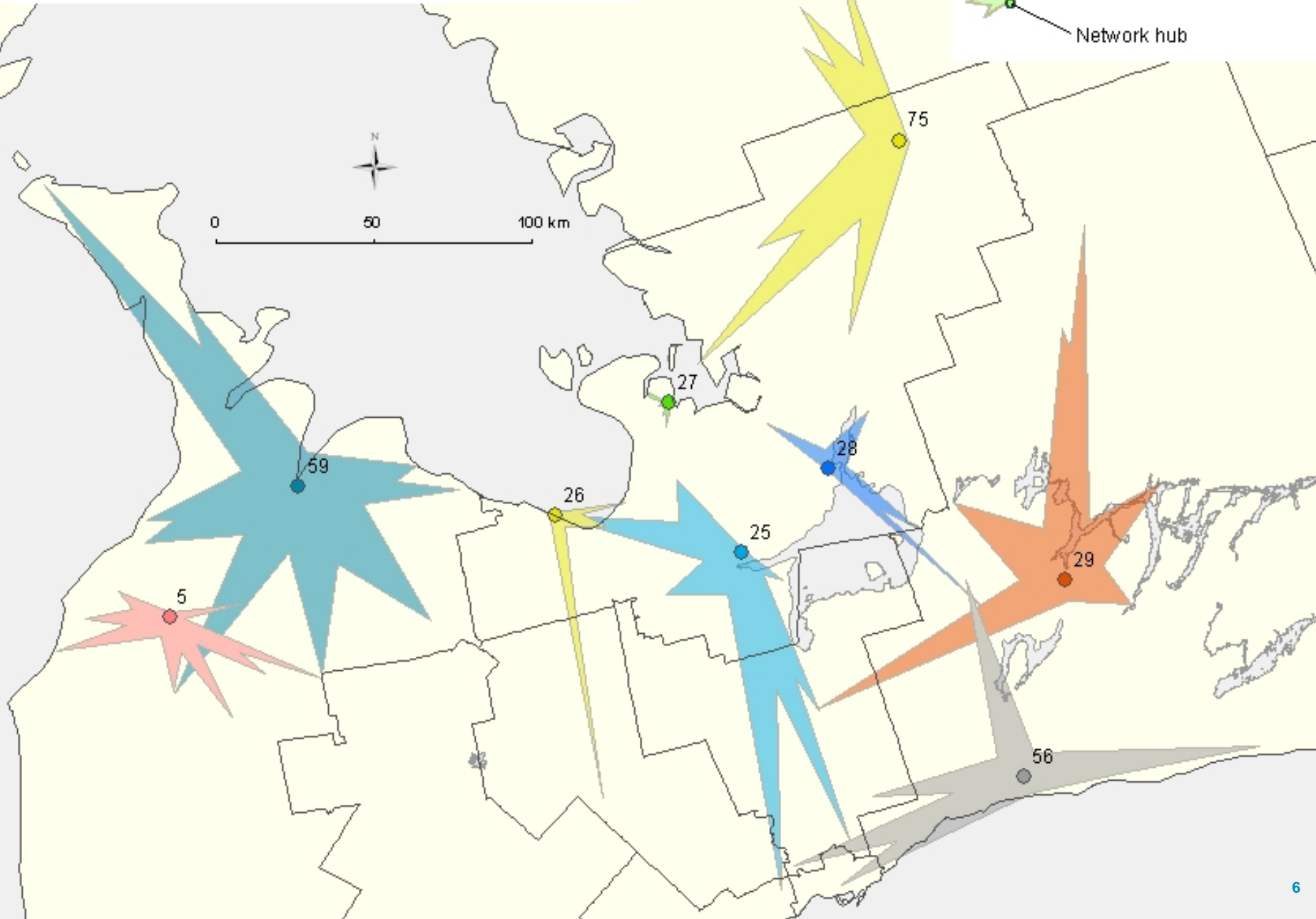
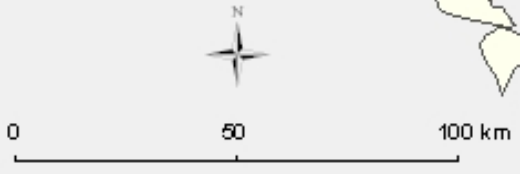


Zones of Concentration of Comprehensive Primary Health Care Within Multispecialty Physician Networks - Hamilton and Niagara View -

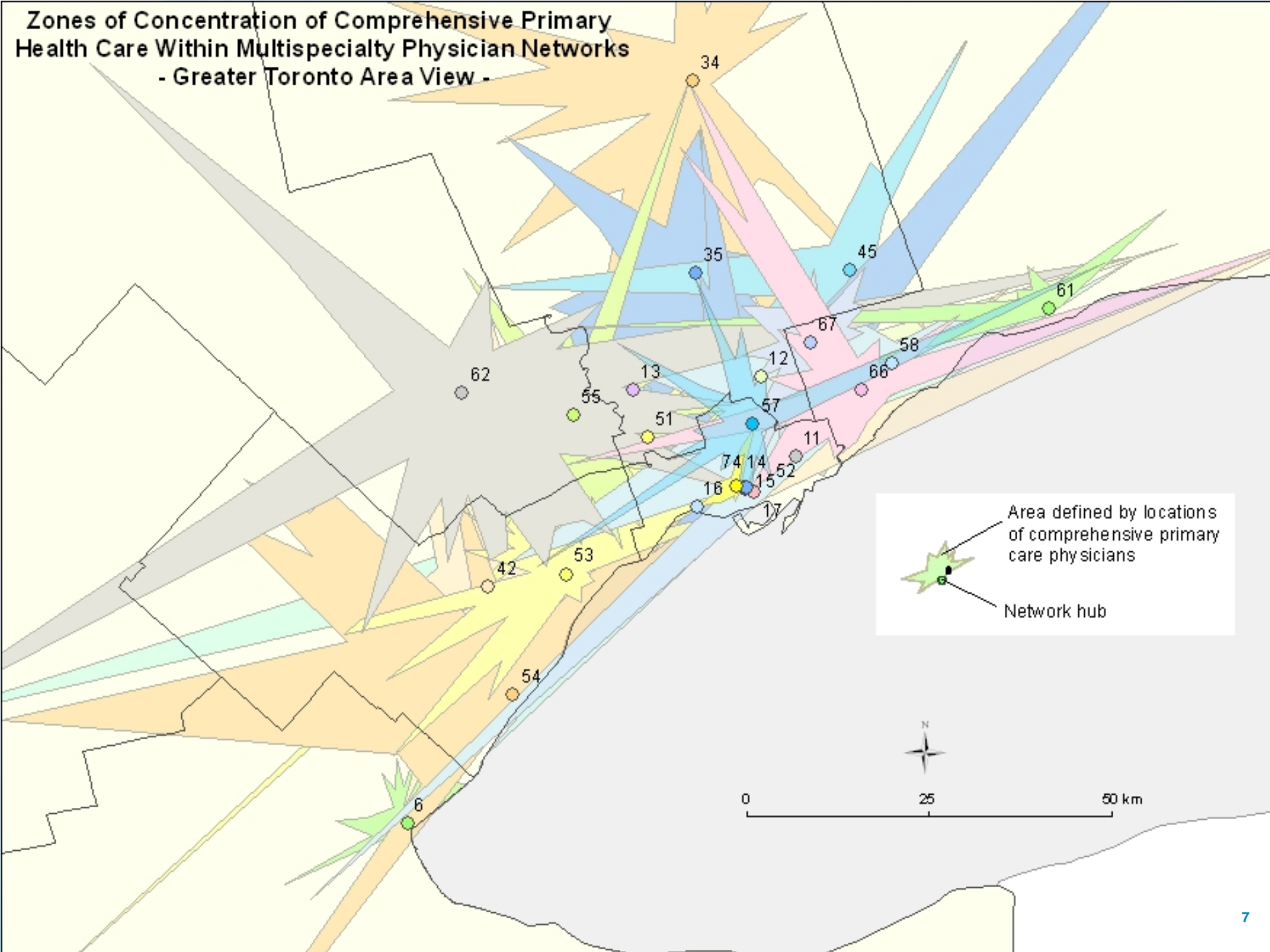


Zones of Concentration of Comprehensive Primary Health Care Within Multispecialty Physician Networks - Simcoe View -

Area defined by locations of comprehensive primary care physicians
Network hub



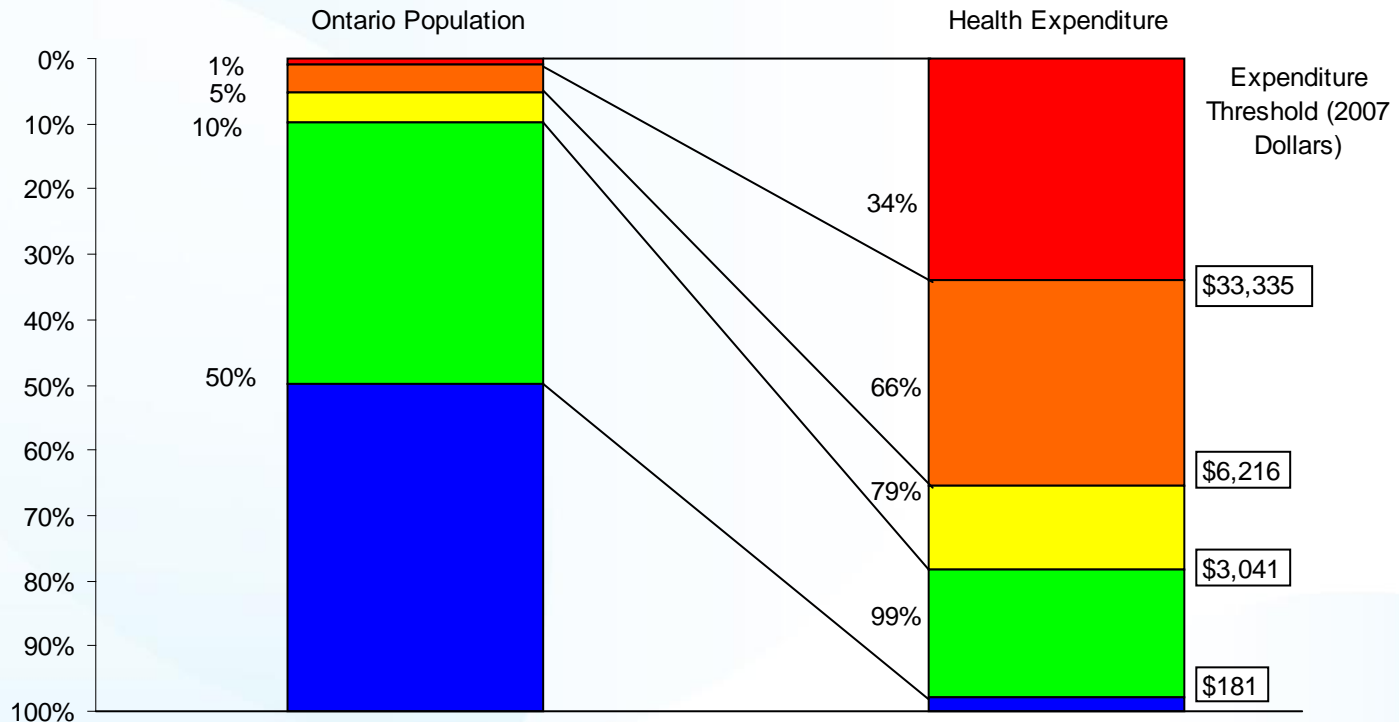
Zones of Concentration of Comprehensive Primary Health Care Within Multispecialty Physician Networks - Greater Toronto Area View -



High Need/ High Cost Patients

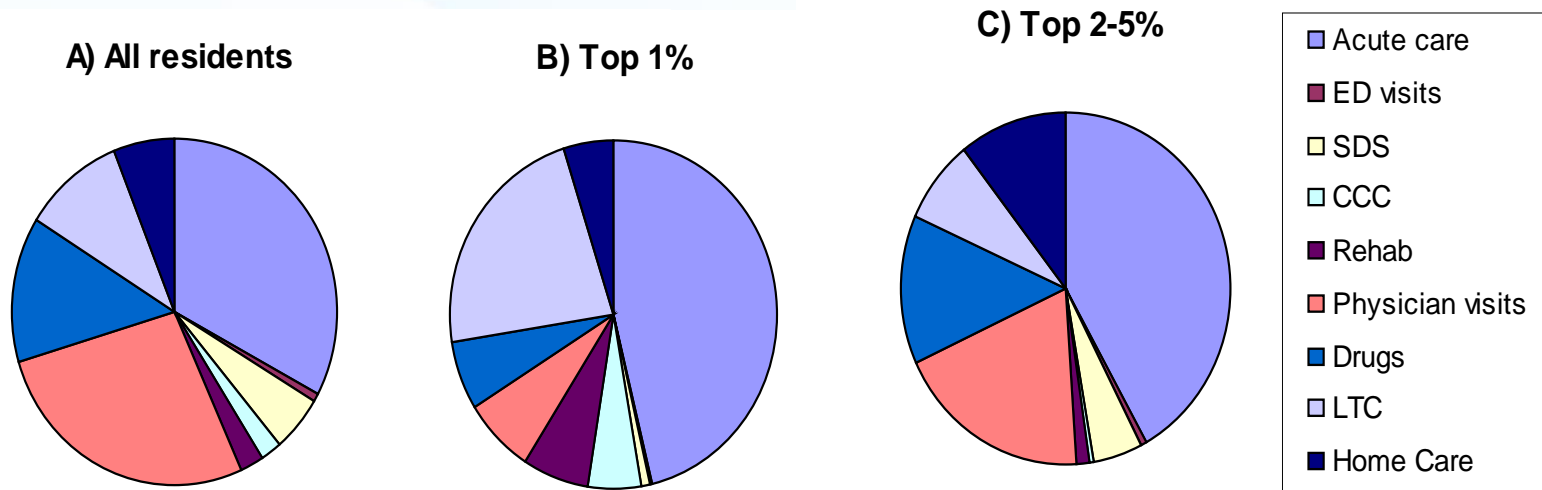
http://www.longwoods.com/articles/images/The_Concentration_of_Healthcare_Spending_from_ICES.pdf

**Figure 1. Health Care Cost Concentration:
Distribution of health expenditure for the Ontario population,
by magnitude of expenditure, 2007**



On average, health care spending is highly concentrated with the top 5% of the population (ranked by cost) accounting for 66% of expenditure

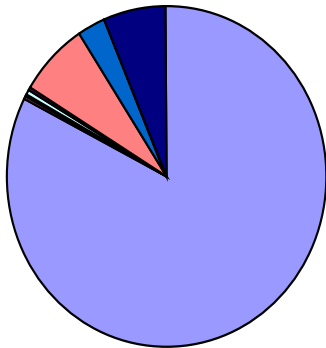
Figure 7. Total System Spending by Sector in Entire Population and Among Top 1% and Top 2-5% of Spending



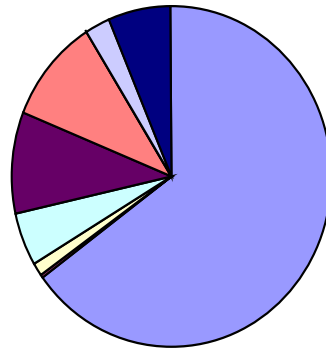
The largest costs are incurred in acute care (including physician services in acute care), physician and long-term care (LTC) institutional costs with the latter costs contributing relatively more in the highest 1% of the population.

Figure 8. Total System Spending by Sector in Different Age Groups in Top 1% of Spending

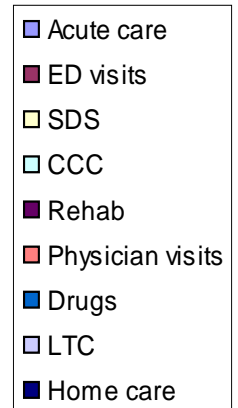
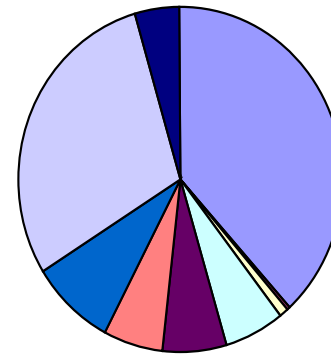
A) Age 0 to 17 (N=4,518)



B) Age 18 to 64 (N=23,007)



C) Age 65+ (N=110,056)



Among the population with the highest 1% of total system spending, costs for children are concentrated in acute care, for adults it is both acute and community while older adults incur majority of costs in acute and LTC.

High need vs high cost users

Targeting high-cost groups for intervention is problematic:

- it 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** (≥ 3 chronic conditions or severe mental illness with ≥ 1 chronic condition)

Healthcare: The Current State



Too many people relying on Emergency Departments instead of receiving the right care in the community



Too many people are having trouble navigating the system



Too many ALC patients



Too many people being readmitted to hospital within days of leaving hospital

Ministry of Health and Long Term Care, June 25, 2013

Ontario Ministry of Health implements the Excellent Care for All Act (ECFA)

- **Goal:** provide coordinated, efficient, effective care for **patients with complex needs**
- ECFA focused on **primary care (PC)** but...
- Looking to create **networks of physicians** for quality improvement and inter-sectoral (hospital-community) challenges like hospital readmissions.
- The networks form a unit of measurement, accountability and local action for quality improvement.
- Creation of **Health Links: December 2012**


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Transforming Ontario's Health Care System

Community Health Links provide coordinated, efficient and effective care to patients with complex needs

Five per cent of patients account for two-thirds of health care costs. These are most often patients with multiple, complex conditions. When the hospital, the family doctor, the long-term care home, community organizations and others work as a team, the patient receives better, more coordinated care. Providers will design a care plan for each patient and work together with patients and their families to ensure they receive the care they need. For the patient it means they will :

- Have an individualized, coordinated plan
- Have care providers who ensure the plan is being followed
- Have support to ensure they are taking the right medications
- Have a care provider they can call who knows them, is familiar with their situation and can help.

[Read about evidence informed best practices in Transitions of Care, Optimizing Chronic Disease Management and Supporting Health Independence at bestPATH](#), a Health Links resource designed by Health Quality Ontario.

For an example of how a community Health Link can make a difference in a patient's life, [read Bernice's story](#).

The concept of a community Health Link is very similar to a project The Change Foundation is leading, supporting a project in Northumberland. [Read more about this extraordinary community initiative](#).

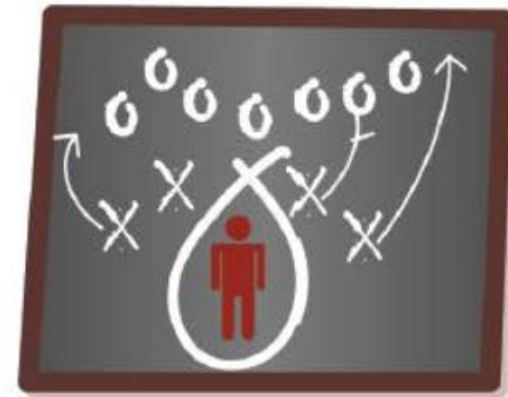
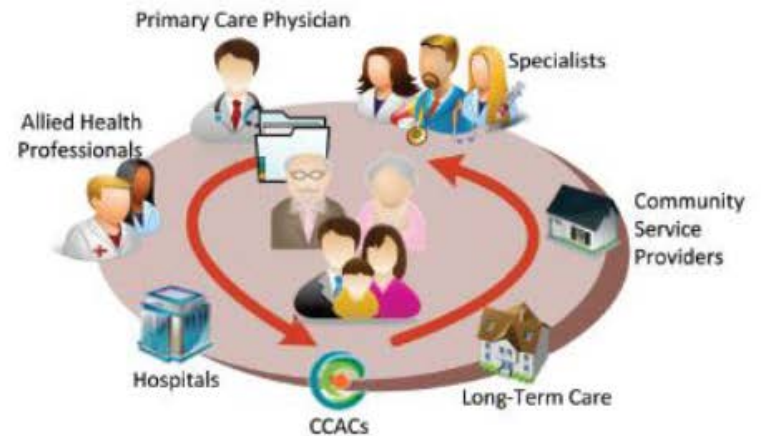


[Transcript](#) | [Mobile](#)

HealthLink
LOGIN

Health Links: Partnering Around Patients

- New model of care at the clinical level where providers are charged with coordinating plans at the patient level
- Initial focus on improving patient care and outcomes for people with complex health conditions, while delivering better value for investment



Ministry of Health and Long Term Care, June 25, 2013

Health Links: A New Way of Working Together

- Transformation at this scale creates an opportunity for a different approach
- Provincially driven objectives; locally driven solutions
- Supports collaboration of all system partners
- Maximizes community, regional and LHIN-wide resources
- Creates environment for better system utilization and collaboration



Ministry of Health and Long Term Care, June 25, 2013

Health Links' initial focus

WHAT:

Complex Patient Cohort

- Identifying patients with complex needs

Coordinated Care Planning

- Developing common principles
- Creating care plans for portion of the complex patient cohort

Attaching Complex Patients to PC

- Leveraging existing resources to attach complex patients to primary care (PC)

HOW:

Establishing the Health Links

- Leverage all provincial, LHIN and local assets
- Address sustainability, reinvestment and governance
- Funding

EMR/IT Connectivity

- Establishing the right solution to enable coordinated care across Health Links

Barrier Removal

- Review legislative/ regulatory, policies and procedures as they are raised

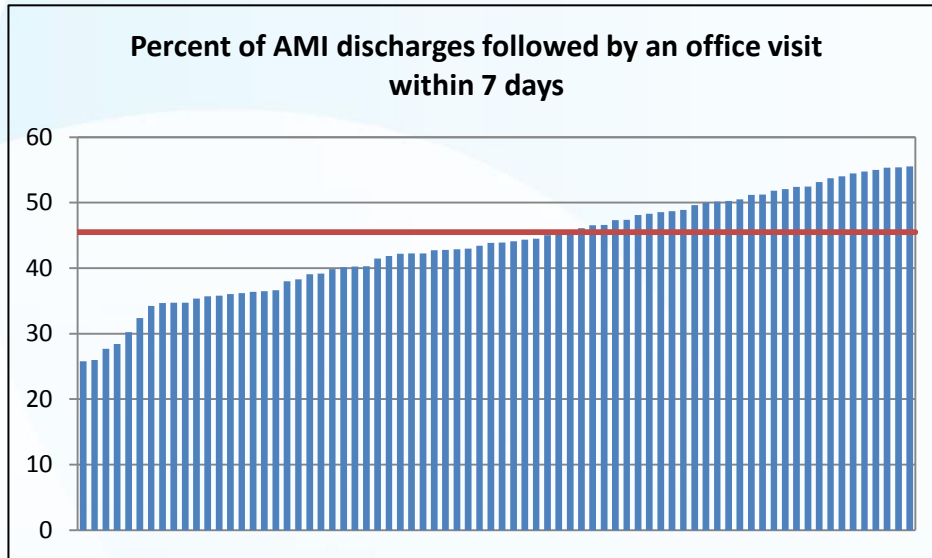
Health Care Quality Domains

- Hospital-community transitions
- Evidence-based (EB) Medications
- Screening and prevention
- Avoidable admissions and readmissions
- Cancer end-of-life (EOL) care
- Spending

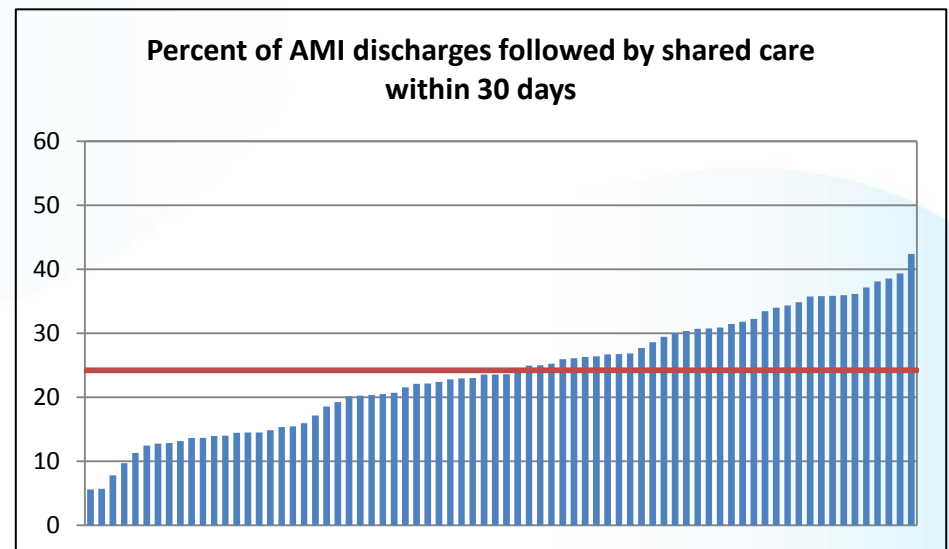
Stukel TA, Croxford R, Rahman F, Glazier R, Bierman A. Quality of Care and Costs Across Ontario Physician Networks: an ICES Chartbook. Toronto, ON: Institute for Clinical Evaluative Sciences. Forthcoming (October 2015)

Hospital-Community Transitions: Visit to Physician Post-Admission

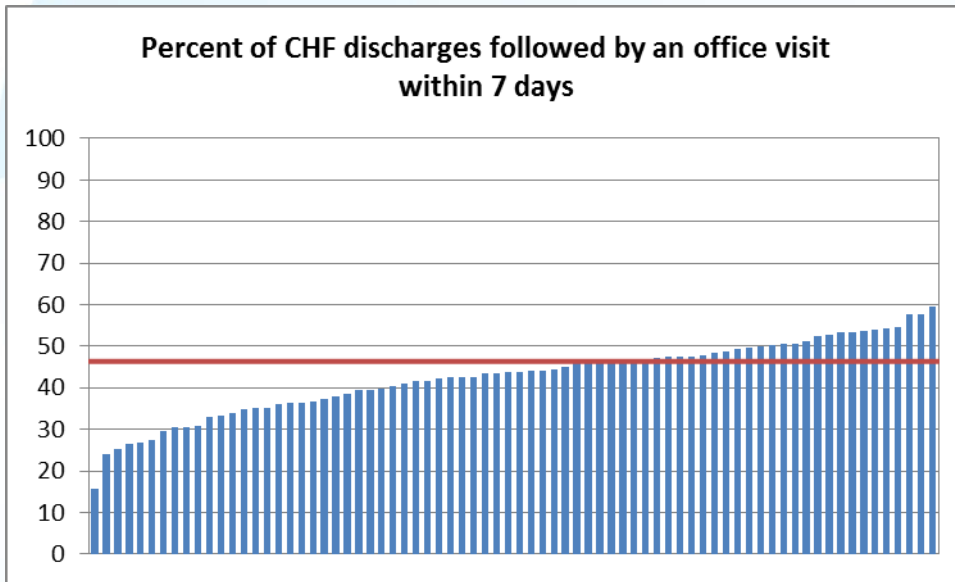
AMI: % with Follow-Up Visit Post-discharge



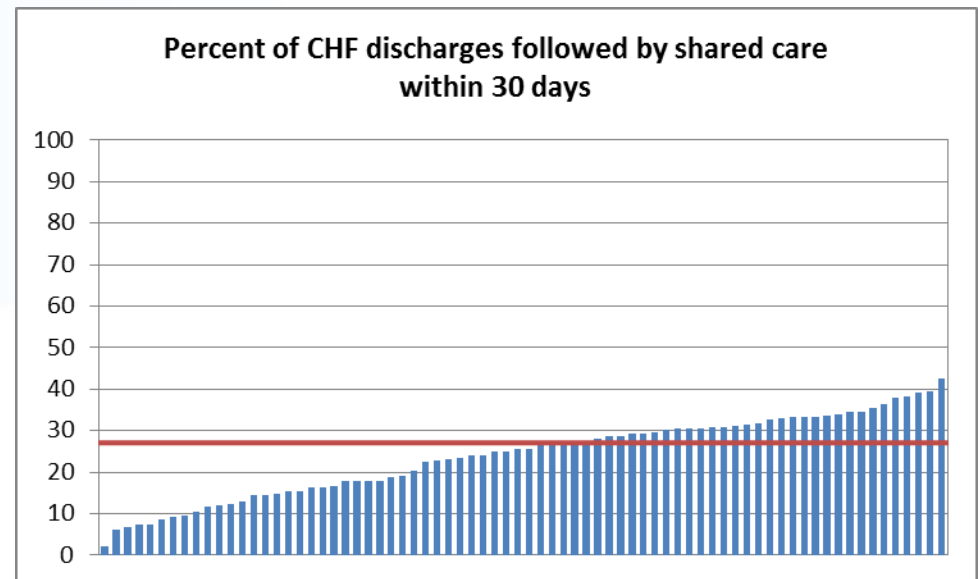
P1	Percent with follow-up				
	10 th	25 th	50 th	75 th	90 th
Any follow-up within 7 days	35.4	39.8	45.5	51.2	54.7
Shared care within 30 days	13.9	18.6	24.2	30.9	35.8



CHF: % with Follow-Up Visit Post-Discharge

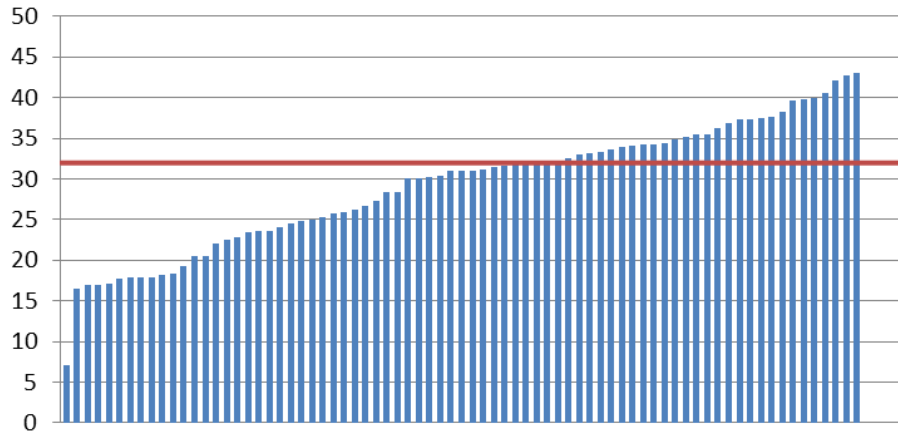


P4	Percent with office visit				
	10 th	25 th	50 th	75 th	90 th
Any follow-up within 7 days	33.3	39.9	46.4	50.2	53.9
Shared care within 30 days	12.9	19.1	27.1	32.6	36.4

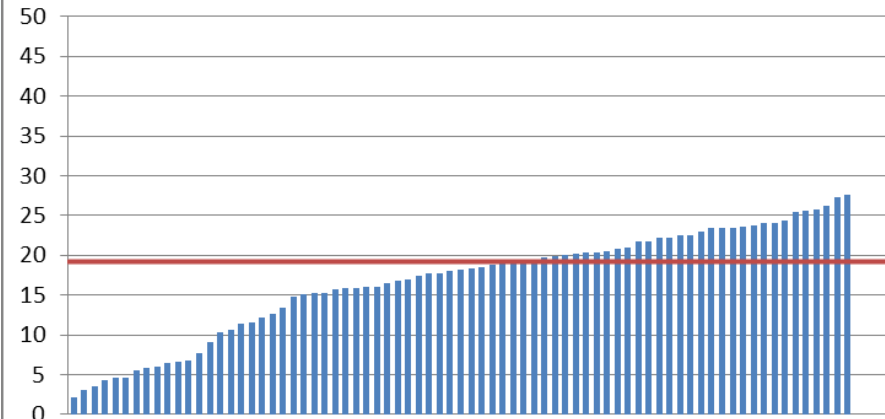


Psychiatric conditions: % with Follow-Up Visit Post-Discharge

Percent of mental health discharges followed by an office visit within 7 days

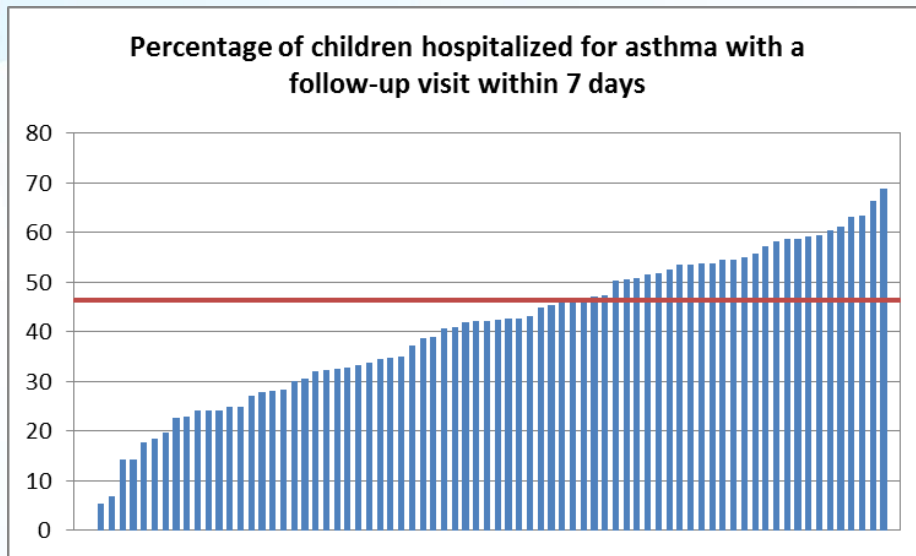


Percent of mental health discharges followed by shared care within 30 days

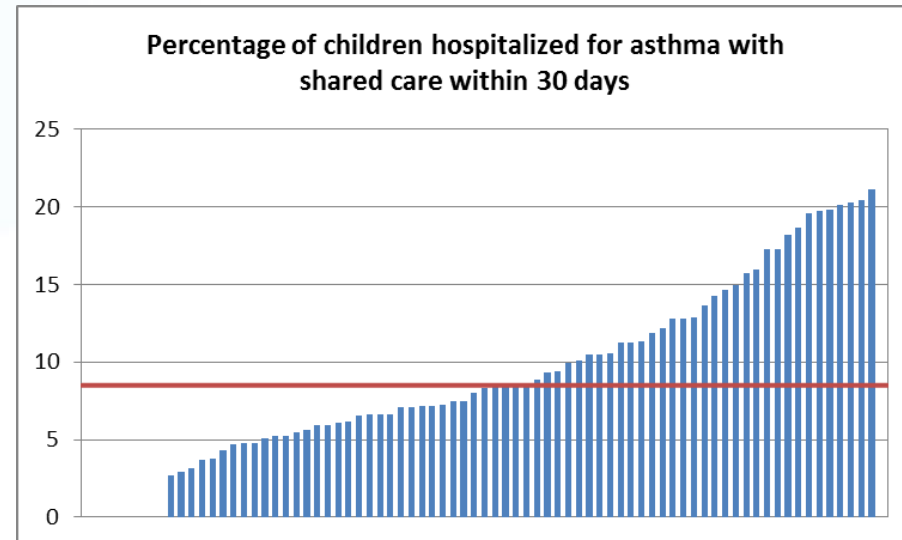


P6	Percent with office visit				
	10 th	25 th	50 th	75 th	90 th
Any follow-up within 7 days	19.2	26.6	32.0	34.9	39.6
Shared care within 30 days	9.1	16.5	19.2	22.5	24.1

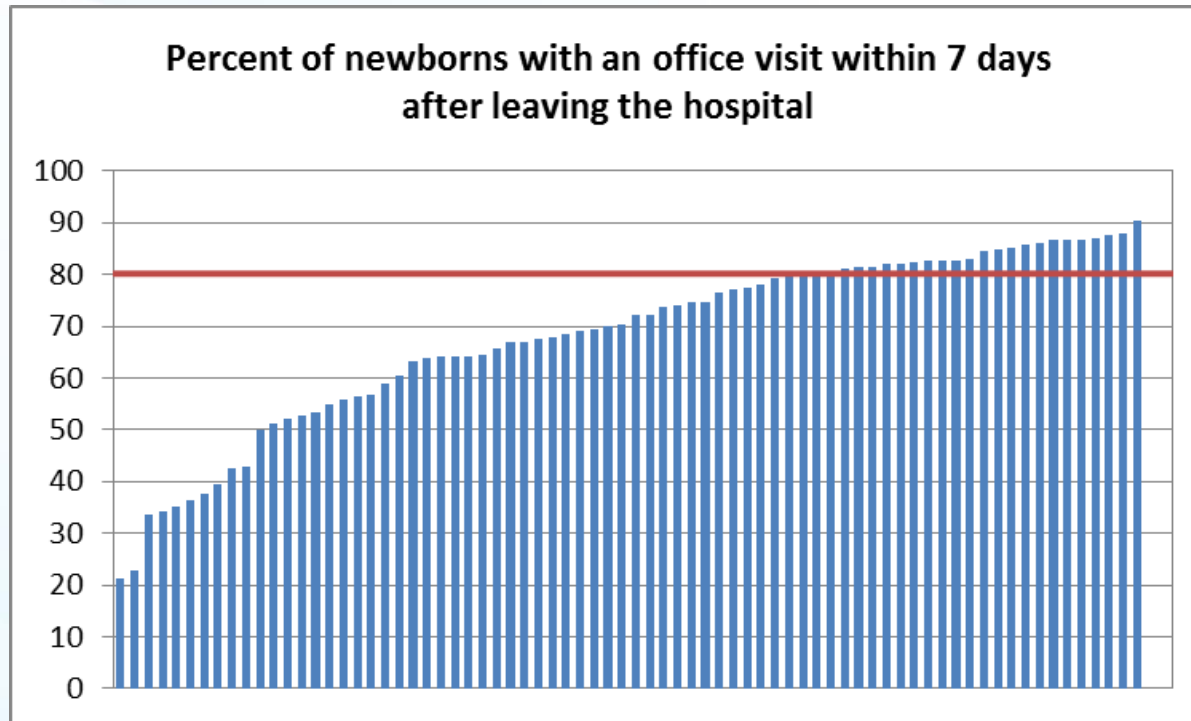
Pediatric Asthma: % with Follow-Up Visit after Hospital Discharge



P21	Percent with office visit after hospital discharge				
	10 th	25 th	50 th	75 th	90 th
Any follow-up within 7 days	24.3	39.0	46.4	53.5	59.3
Shared care within 30 days	3.8	5.9	8.5	11.3	18.7



Newborns: % with Follow-Up Visit Post-Discharge

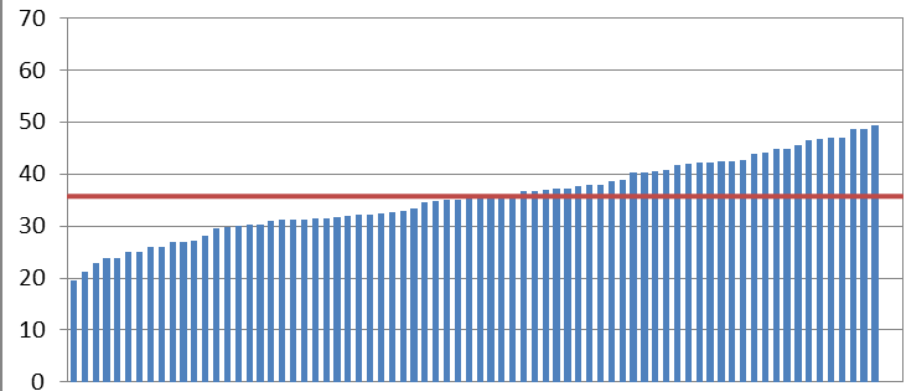


P19	Percent of newborns with follow-up				
	10 th	25 th	50 th	75 th	90 th
	55.7	68.3	80.2	85.6	87.1

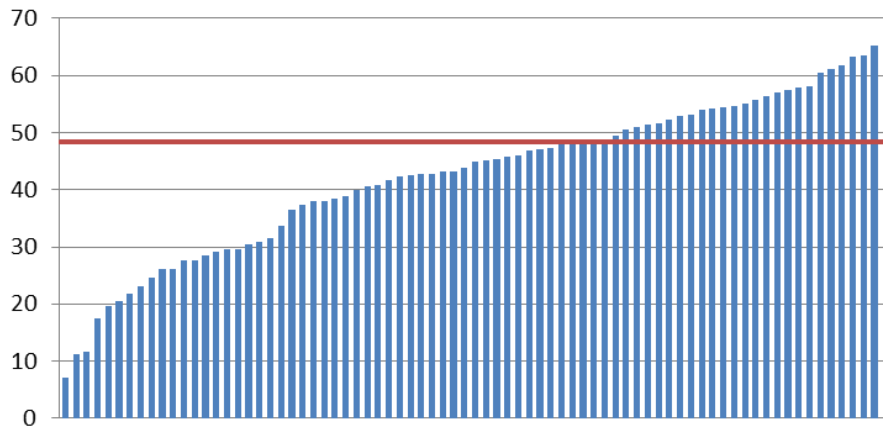
Ambulatory Care Sensitive (ACS) Conditions: % with Follow-Up Visit Post-Discharge

P23	Percent with office visit				
	10 th	25 th	50 th	75 th	90 th
adults: follow-up within 7 days	26.9	31.5	35.8	41.9	46.7
Children (pneumonia and asthma only): follow-up within 7 days	28.6	40.8	48.4	54.1	58.1

Percentage of adult COPD, diabetes, asthma, pneumonia and angina discharges followed by an office visit within 7 days



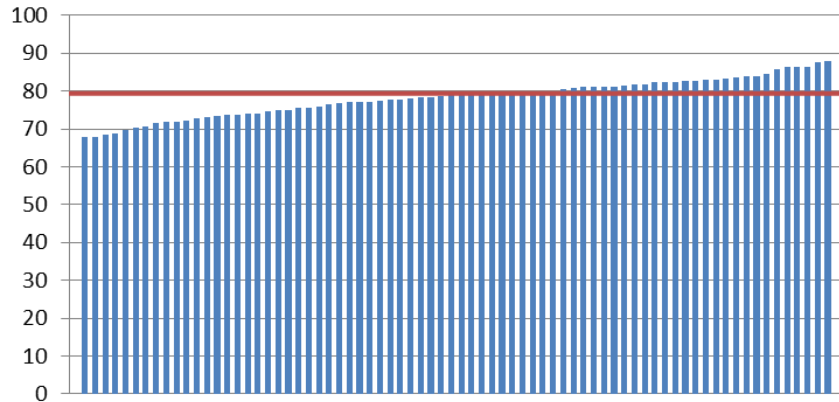
Percentage of pediatric asthma and pneumonia discharges followed by an office visit within 7 days



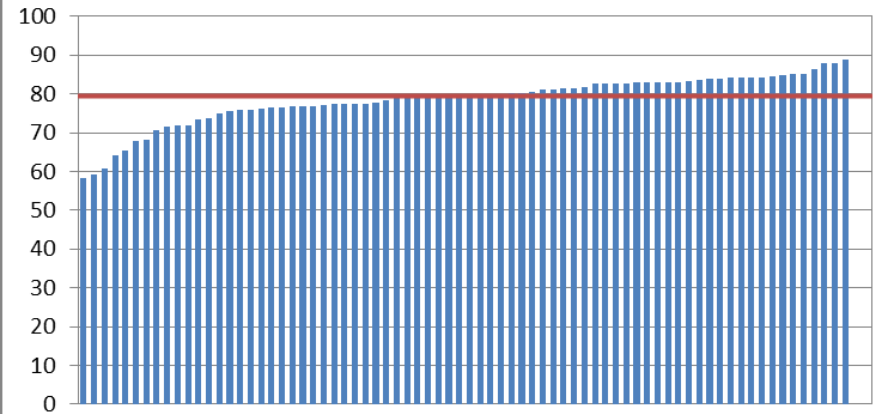
Evidence-Based Medications

AMI: % with EB Prescriptions Post-Discharge

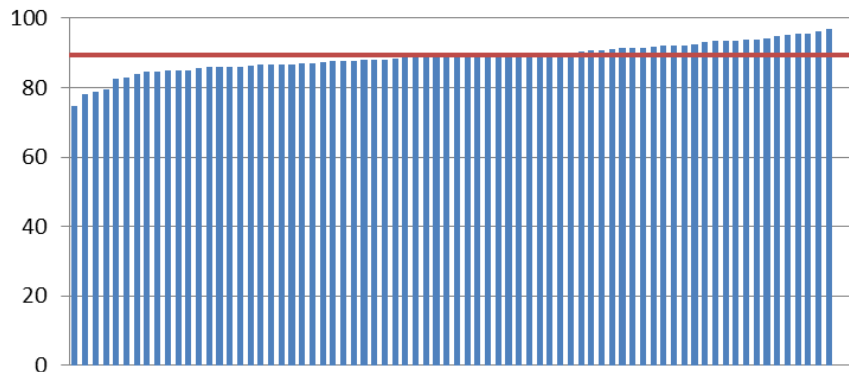
Percent of AMI patients receiving ACE/ARB within 90 days



Percent of AMI patients receiving beta-blockers within 90 days after discharge



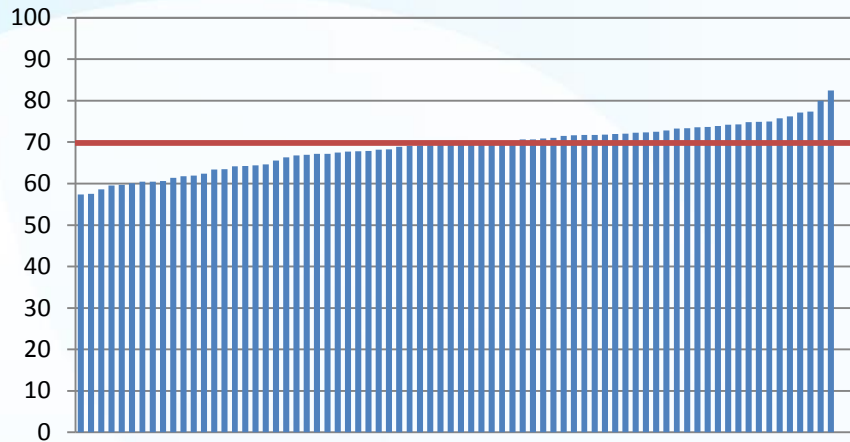
Percent of AMI patients receiving statins within 90 days after discharge



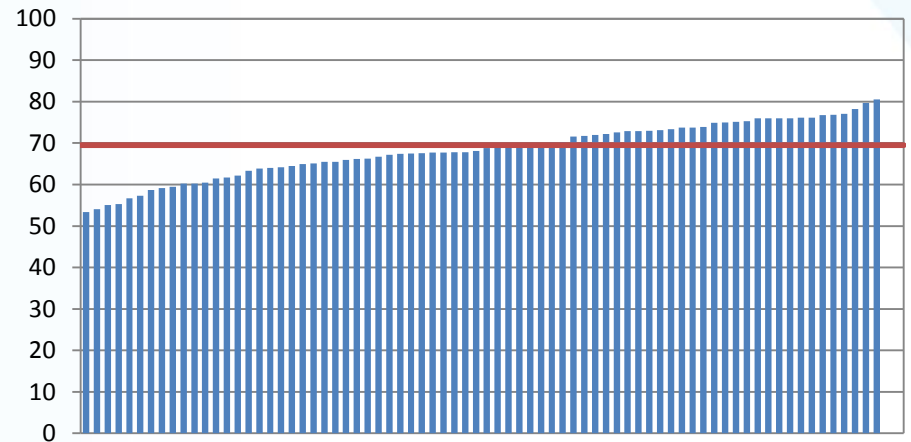
P2	Percent with prescription				
	10 th	25 th	50 th	75 th	90 th
ACE/ARB	72.9	75.7	79.4	82.5	84.5
B-blocker	71.8	76.5	79.5	82.9	84.3
Statin	84.9	87.1	89.4	92.0	93.9

CHF: % with EB Prescriptions Post-Discharge

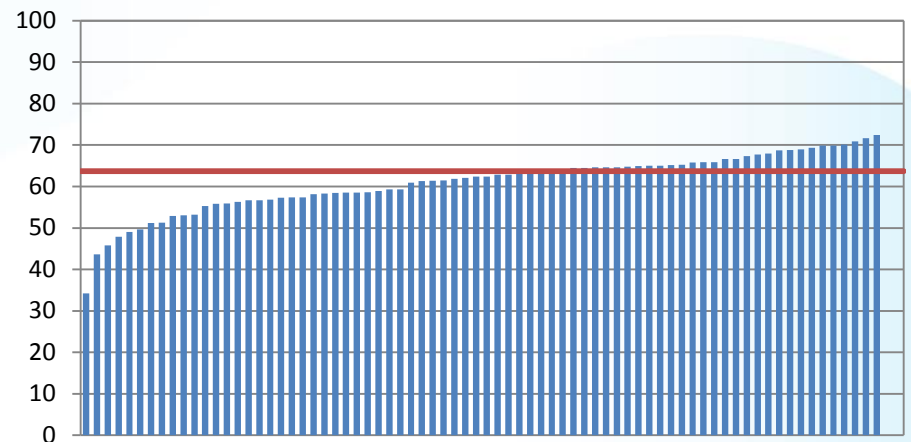
Percent of CHF patients receiving an ACE/ARB within 90 days after discharge



Percent of CHF discharges receiving beta-blockers within 90 days after discharge

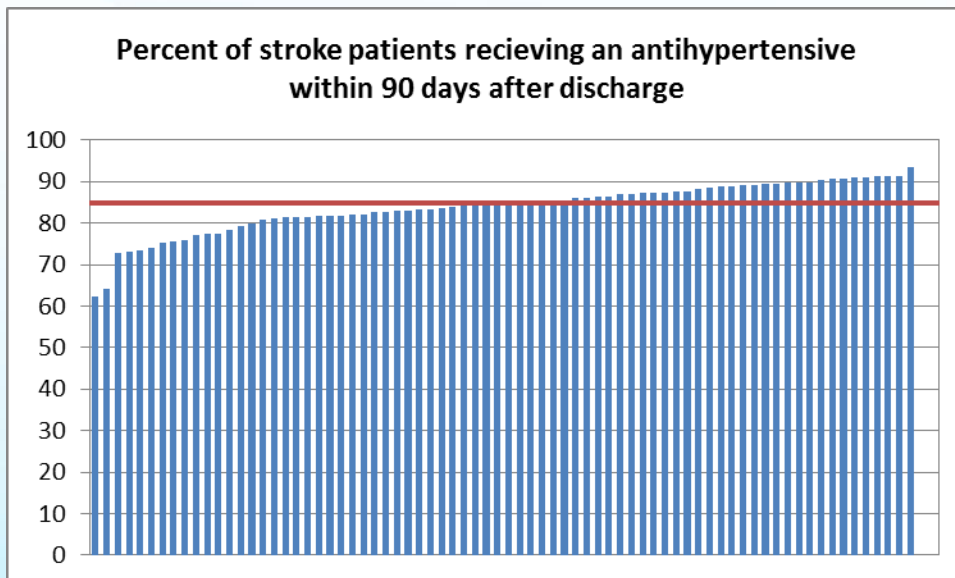
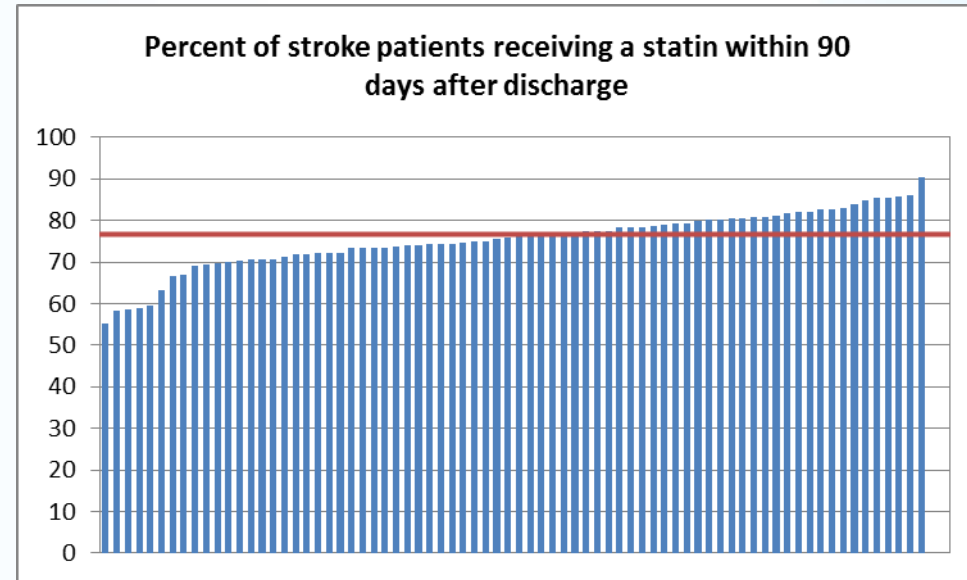


Percent of CHF patients receiving statins within 90 days after discharge



P5	Percent who filled a prescription				
	10 th	25 th	50 th	75 th	90 th
ACE/ARB	61.9	66.3	69.8	72.3	74.9
B-blocker	61.5	64.9	69.5	73.9	76.1
Statin	55.9	58.5	63.7	66.6	69.4

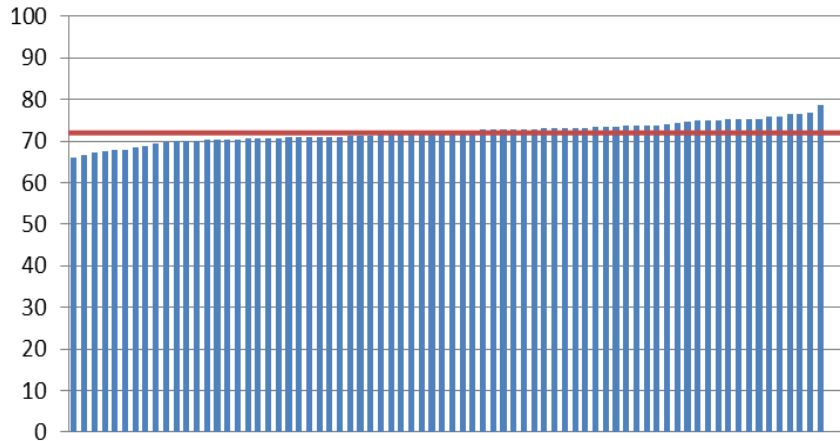
Stroke: % with EB Prescriptions Post-Discharge



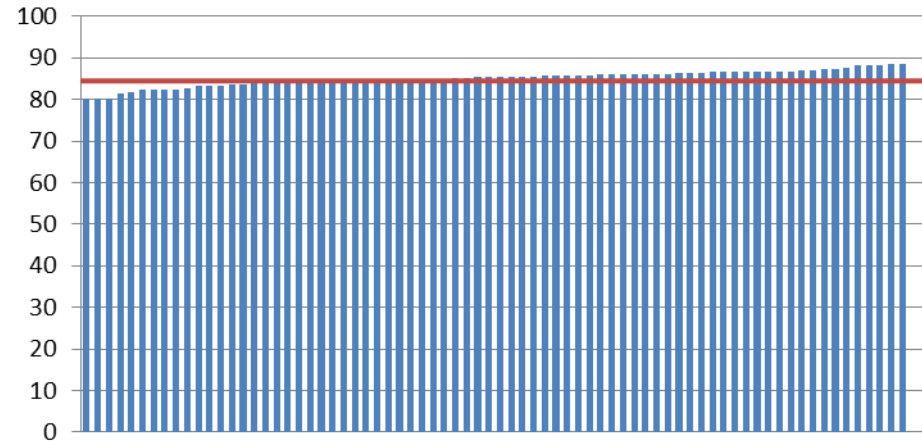
P8	Percent who filled a prescription				
	10 th	25 th	50 th	75 th	90 th
Statin	70.0	73.3	76.7	80.9	84.7
Antihypertensives	77.2	81.5	84.9	88.6	90.3

Diabetes: % with EB Medications

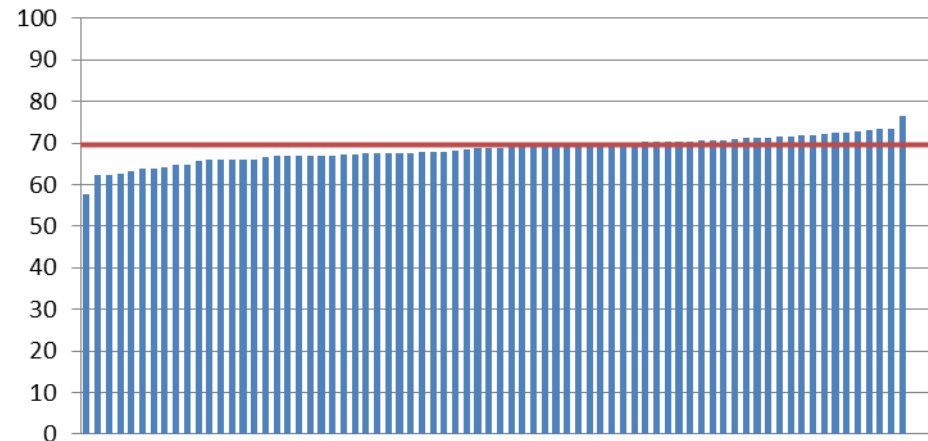
Percent of people with diabetes filling a prescription for an ACE/ARB



Percent of people with diabetes filling a prescription for an antihypertensive



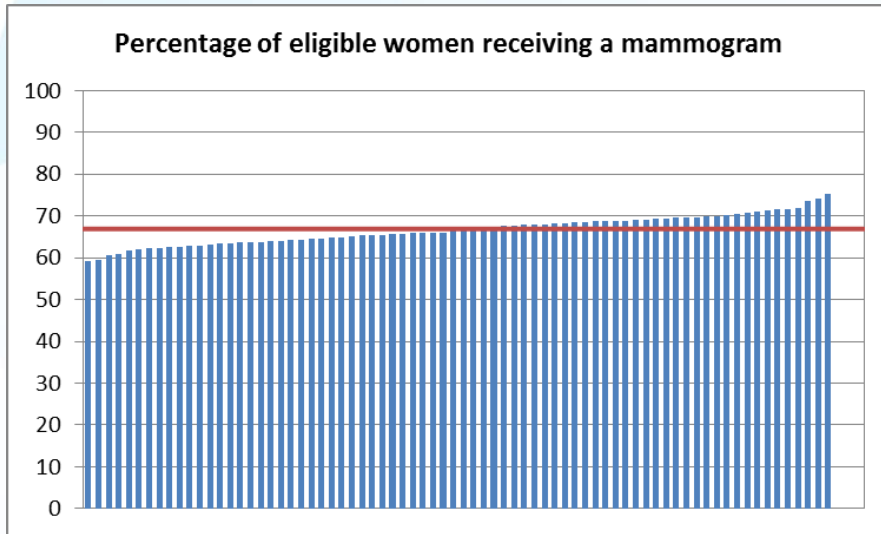
Percent of people with diabetes filling a prescription for a statin



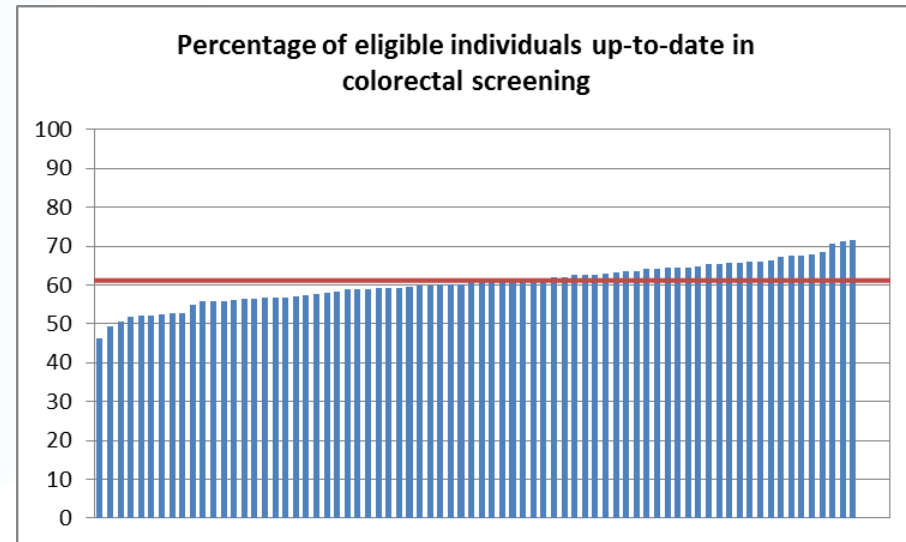
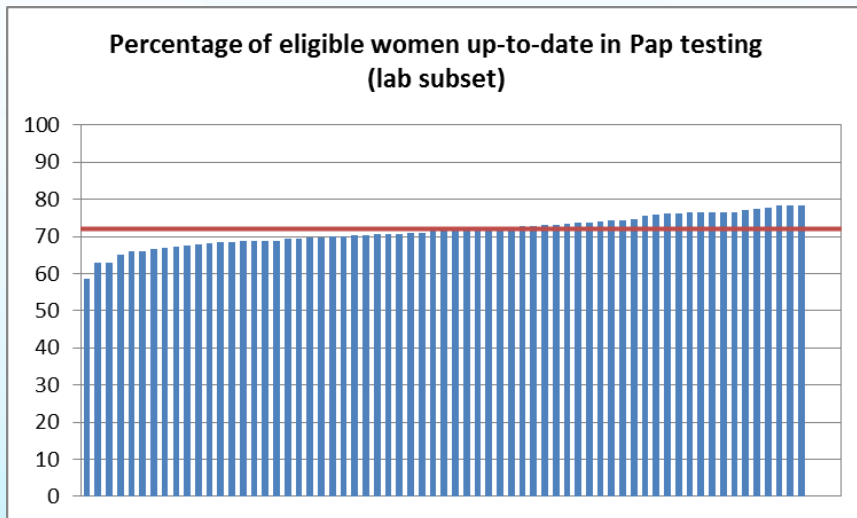
P17	Percent who filled a prescription				
	10 th	25 th	50 th	75 th	90 th
ACE/ARB	69.9	70.6	72.0	73.4	75.3
Antihypetensive	82.4	83.5	84.5	86.0	86.8
Statin	65.9	67.5	69.6	70.7	72.4

Screening and Prevention

Cancer Screening: % Up-to-Date

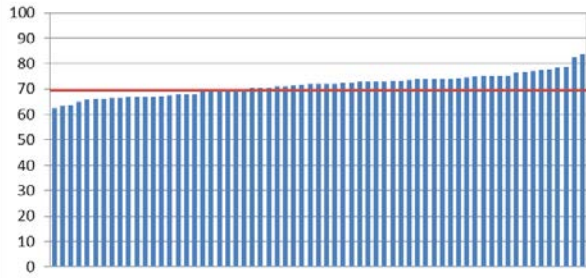


P10	Percent screened				
	10 th	25 th	50 th	75 th	90 th
Mammograms	62.4	64.3	66.9	69.6	71.1
Colorectal screening	55.8	57.5	61.2	64.5	67.4
Pap tests	68.4	69.6	72.1	76.1	77.0

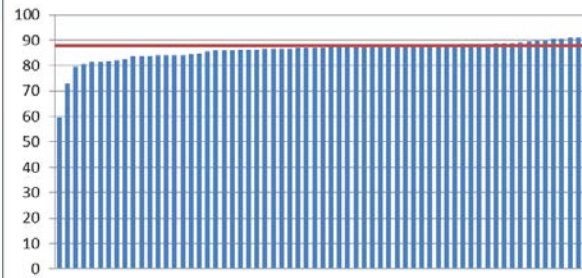


Diabetes: % receiving optimal screening

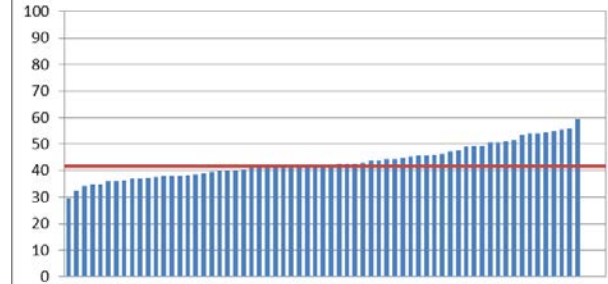
Percentage of people with diabetes receiving an eye exam (lab subset)



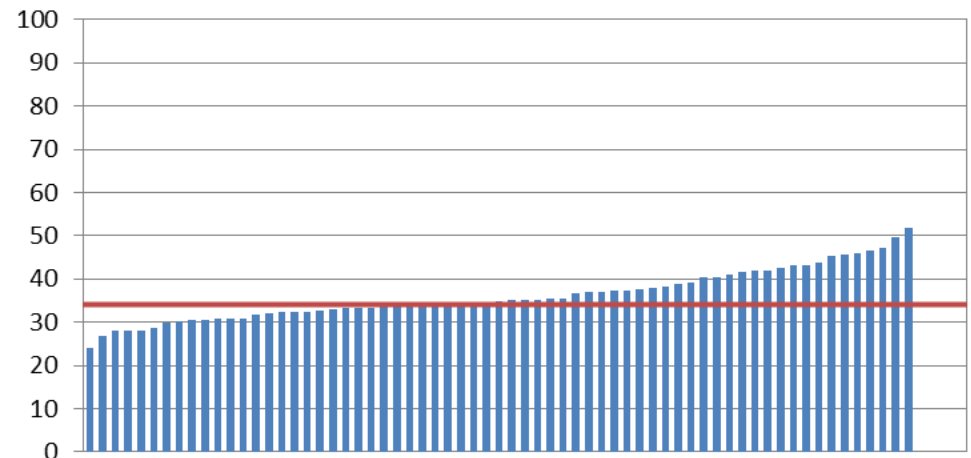
Percentage of people with diabetes receiving cholesterol testing (lab subset)



Percentage of people with diabetes receiving HbA1c testing (lab subset)



Percentage of people with diabetes receiving optimal care (lab subset)

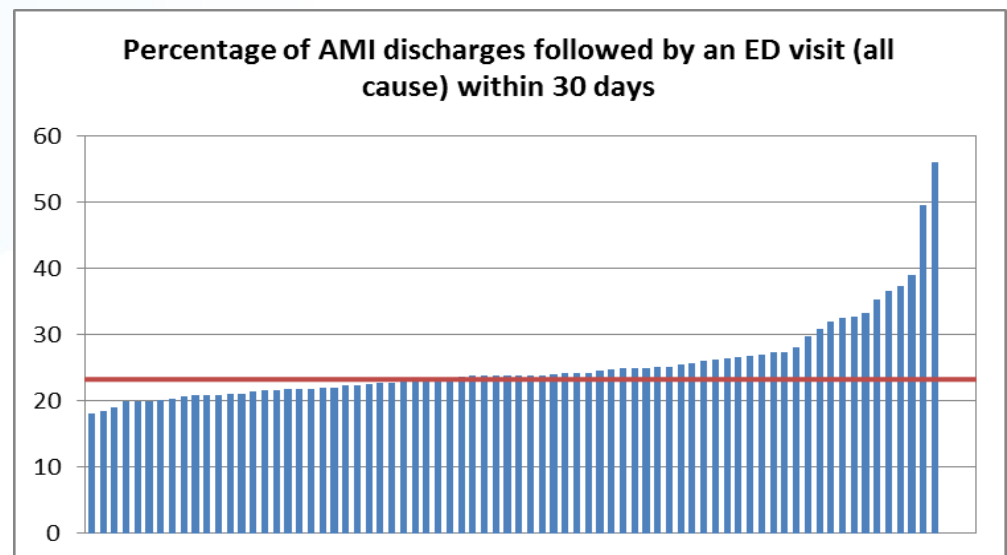
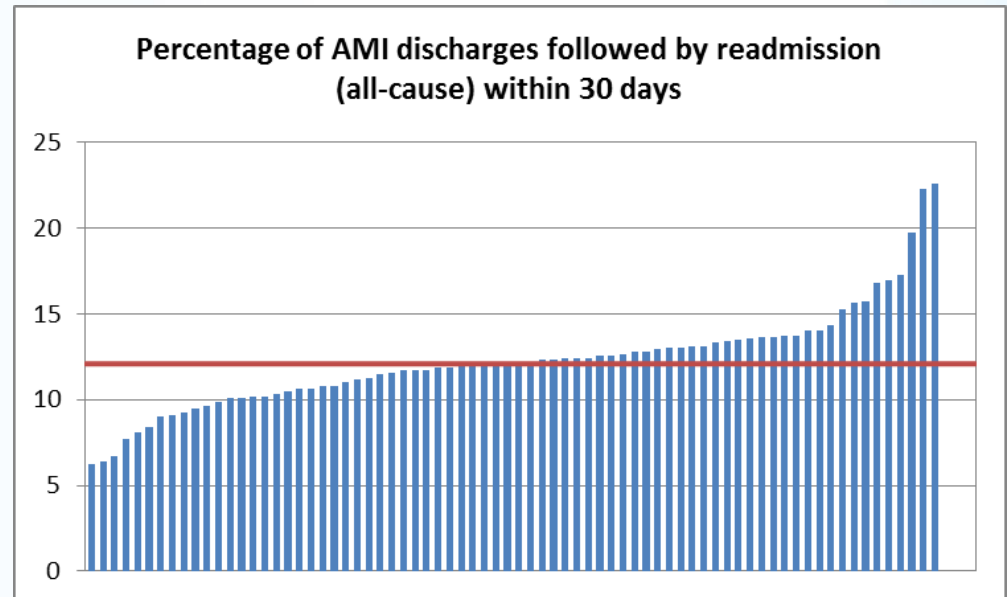


P9	Percent tested				
	10 th	25 th	50 th	75 th	90 th
Eye exam	66.1	66.9	69.5	72.9	74.7
Cholesterol testing	84.2	86.7	87.9	88.9	90.0
HbA1c testing	36.1	38.0	41.7	43.8	50.6
Optimal care	30.0	32.1	34.1	37.1	42.5

Adverse Outcomes: Potentially Avoidable Readmissions and ED Visits

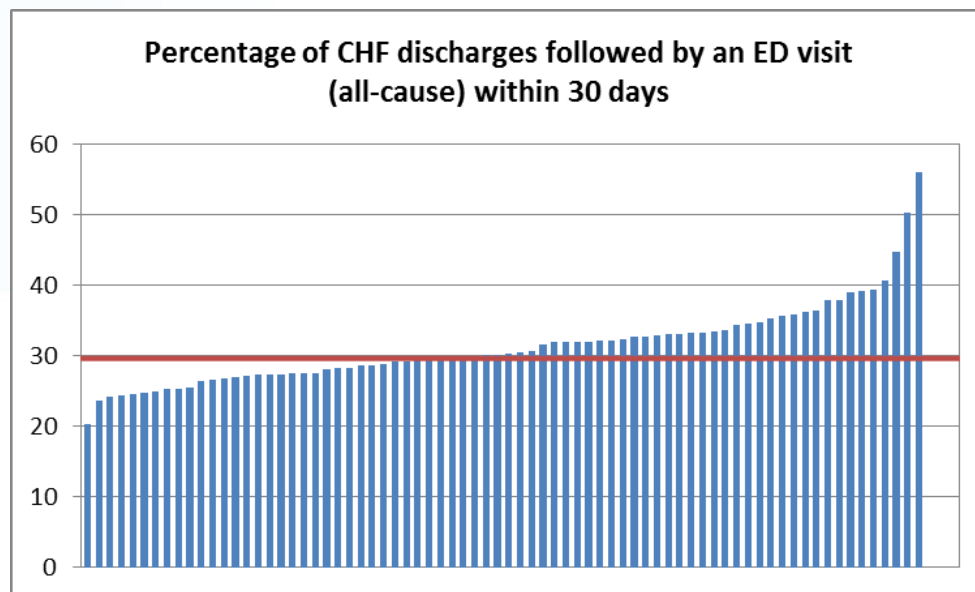
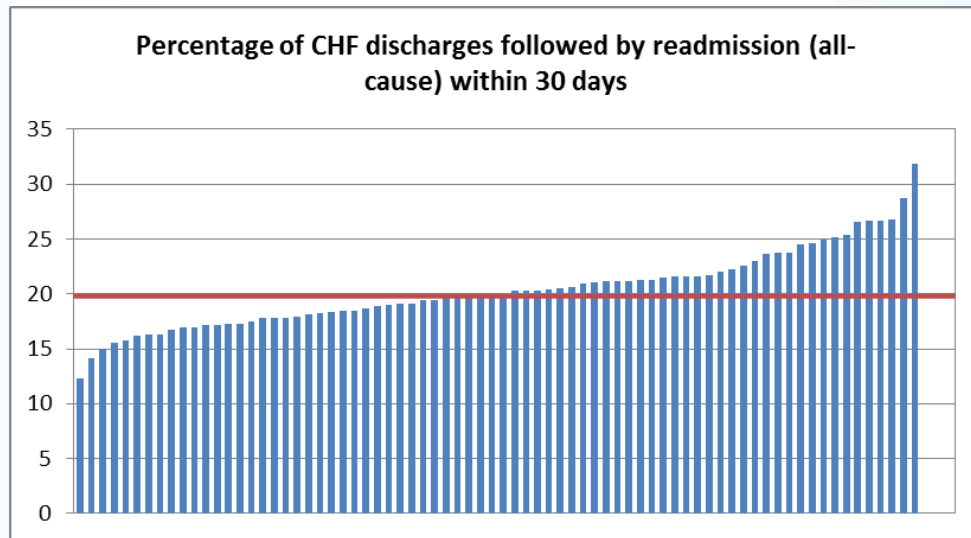
AMI: 30-day All-Cause Readmission and ED Rates

PA7	Percent of AMI hospitalizations with a readmission				
	10 th	25 th	50 th	75 th	90 th
All-cause readmissions	9.1	10.6	12.1	13.1	14.1
All-cause ED visits after discharge	20.1	21.4	23.3	25.1	29.9



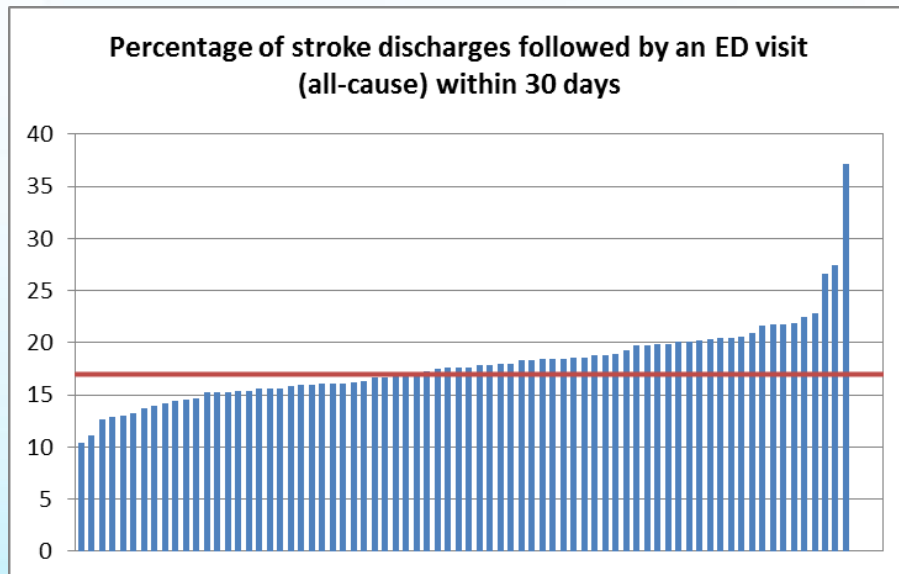
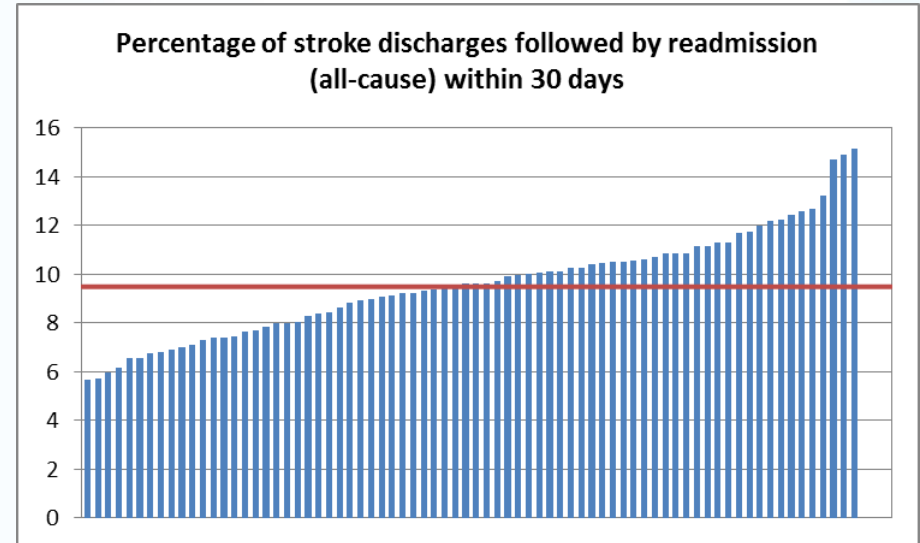
CHF: 30-day All-Cause Readmission and ED Rates

PA8	Percent of CHF hospitalizations with a readmission or ED visit				
	10 th	25 th	50 th	75 th	90 th
All-cause readmissions	16.2	17.8	19.8	21.6	24.5
All-cause ED visits after discharge	24.8	27.4	29.7	33.1	35.9

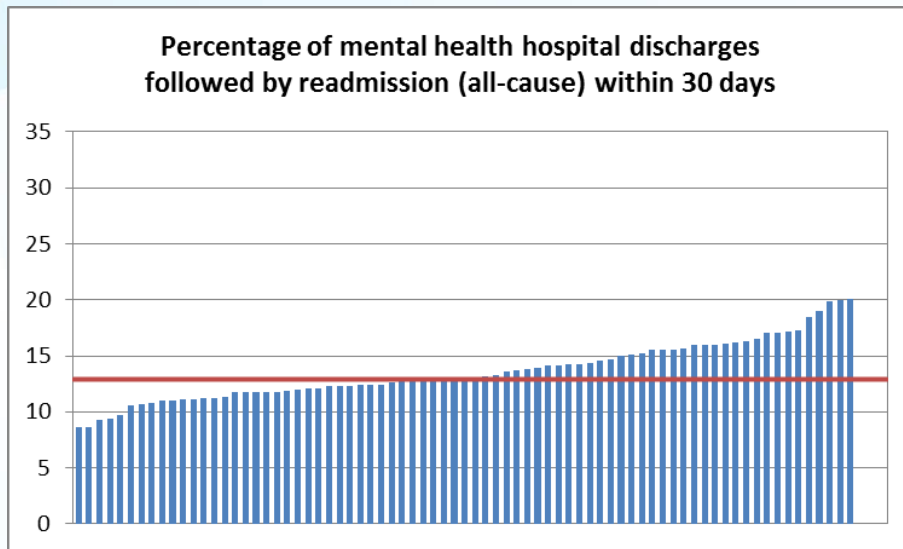


Stroke: 30-day All-Cause Readmission and ED Rates

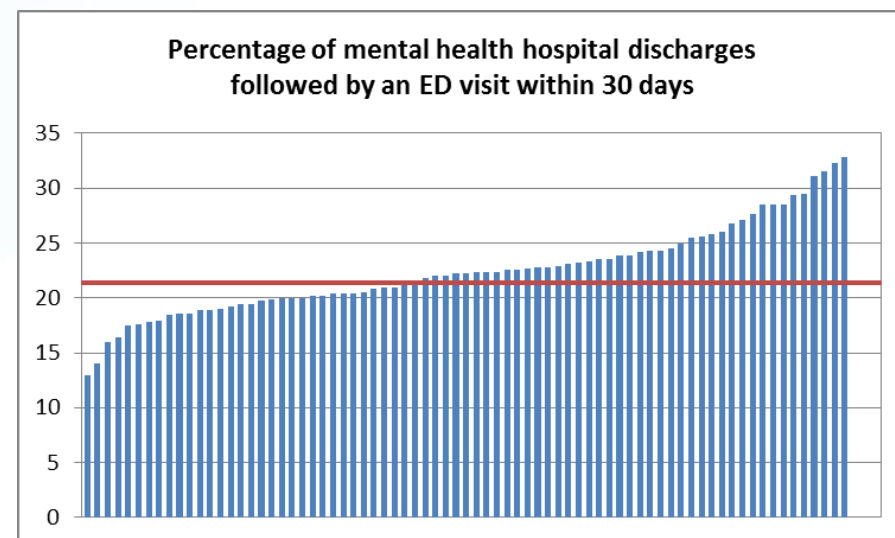
PA9	Percent of stroke hospitalizations with a readmission or ED visit				
	10 th	25 th	50 th	75 th	90 th
All-cause readmissions	6.8	8.0	9.5	10.6	11.7
All-cause ED visits after discharge	13.7	15.4	17.0	18.5	20.3



Psychiatric Conditions: 30-day All-Cause Readmission and ED Visits

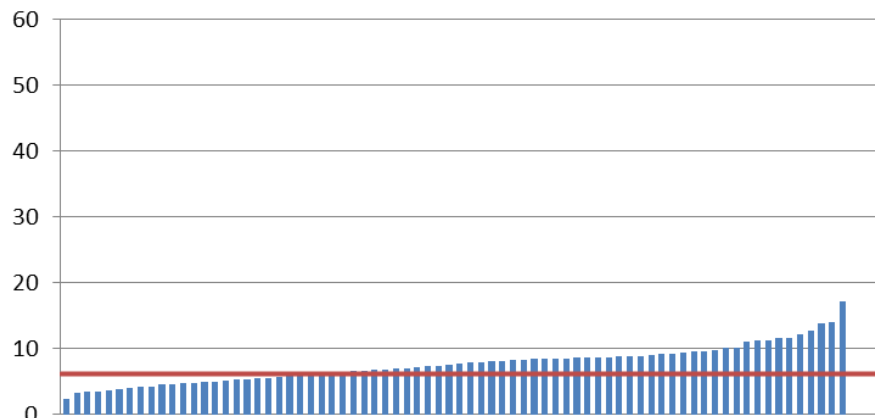


PA06	Percent				
	10 th	25 th	50 th	75 th	90 th
all-cause readmissions	11.0	11.8	12.9	14.6	16.1
all-cause ED visit after discharge	18.0	19.5	21.4	23.6	25.9



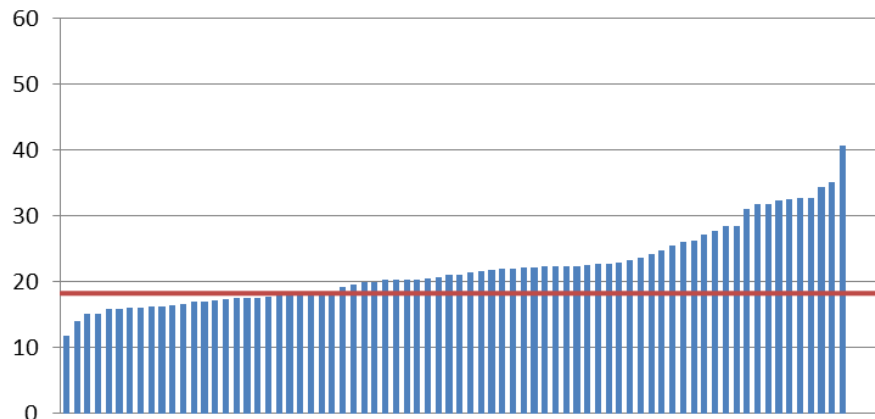
Diabetes: Admission Rates for Diabetes Complications

Hospitalizations for acute complications of diabetes, per 1,000 people with diabetes

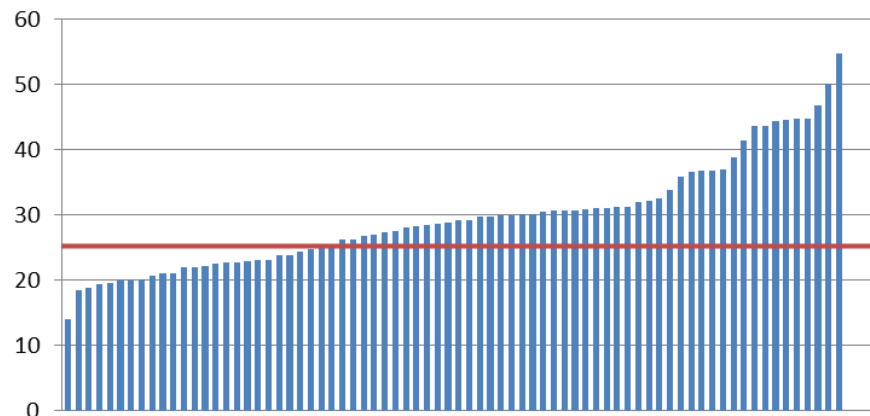


PA4	Number of hospitalizations per 1,000 people with diabetes				
	10 th	25 th	50 th	75 th	90 th
For an acute condition	3.7	4.7	6.2	8.4	9.3
For a chronic condition	15.9	16.5	18.3	22.2	26.3
For any condition	19.7	21.1	25.3	29.9	35.9

Hospitalizations for chronic complications of diabetes, per 1,000 people with diabetes

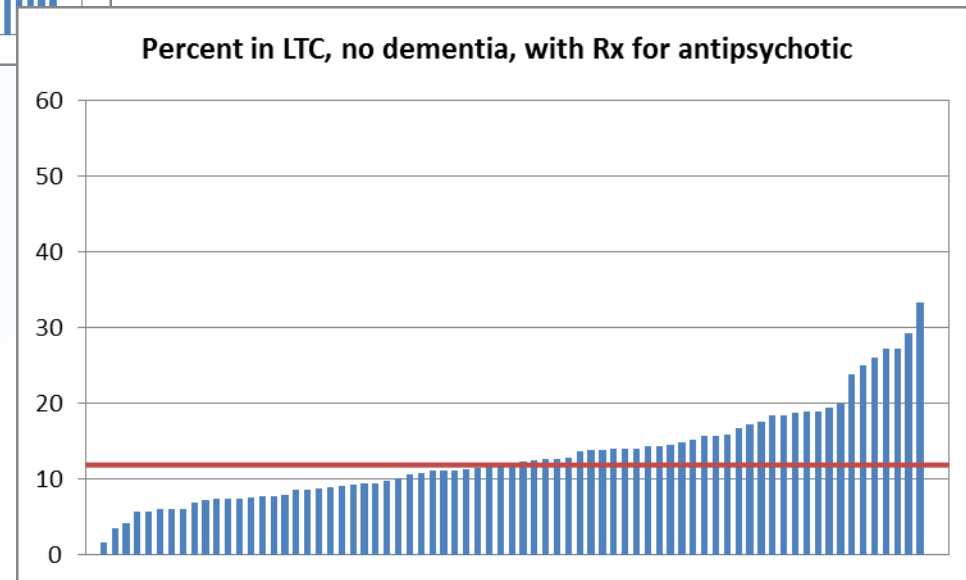
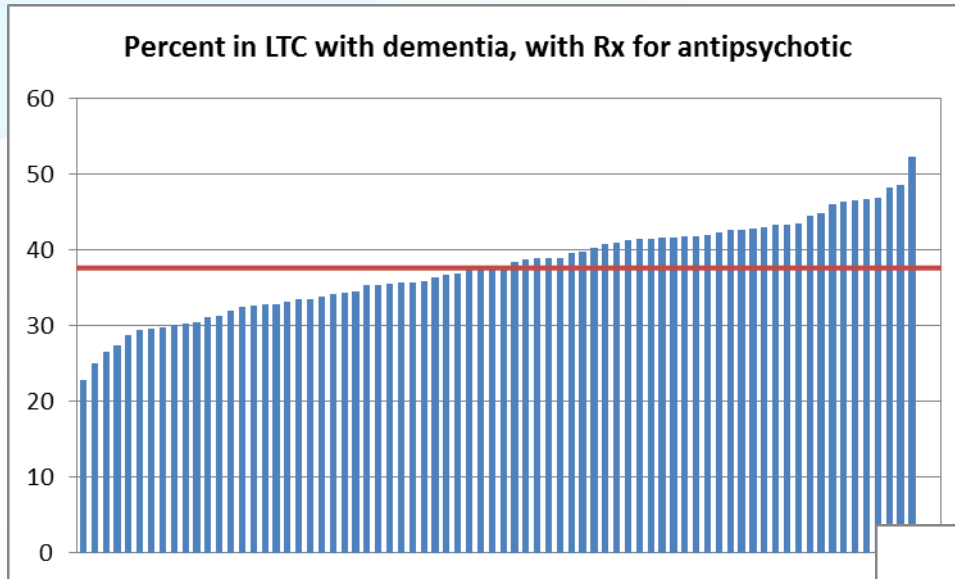


Hospitalizations for complications of diabetes, per 1,000 people with diabetes



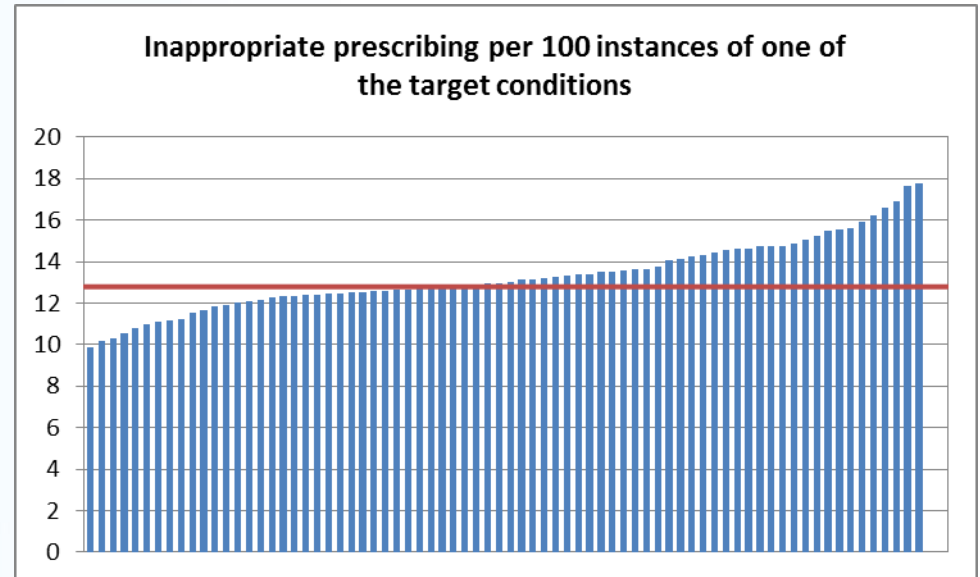
Adverse Outcomes: Drug Safety

LTC Drug Safety: % Prescribed Antipsychotics



P15	Percent with prescription for antipsychotics				
	10 th	25 th	50 th	75 th	90 th
Overall	28.2	31.4	34.2	38.4	39.6
With dementia	30.2	33.5	37.6	41.7	44.6
No dementia	7.3	8.8	11.9	14.8	18.8

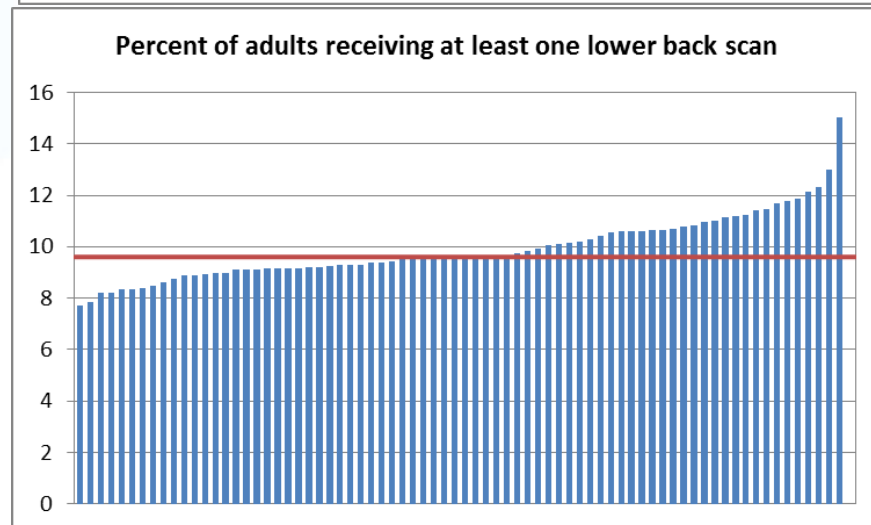
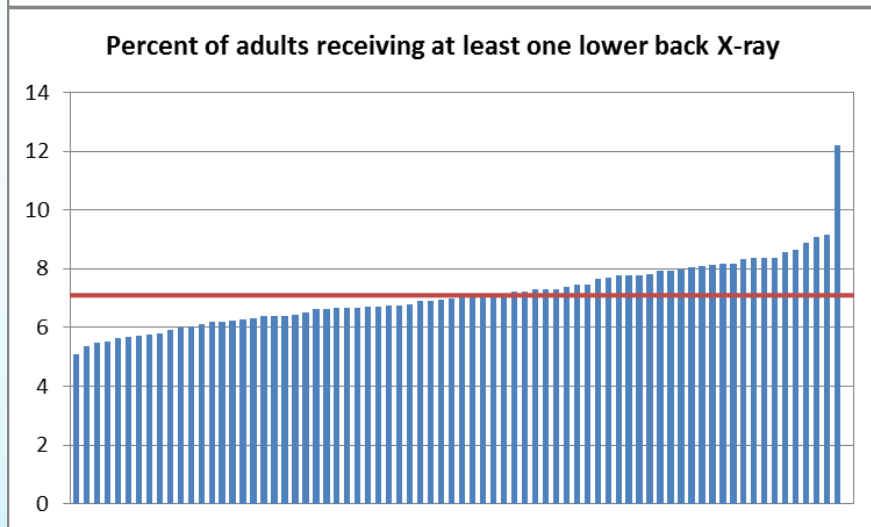
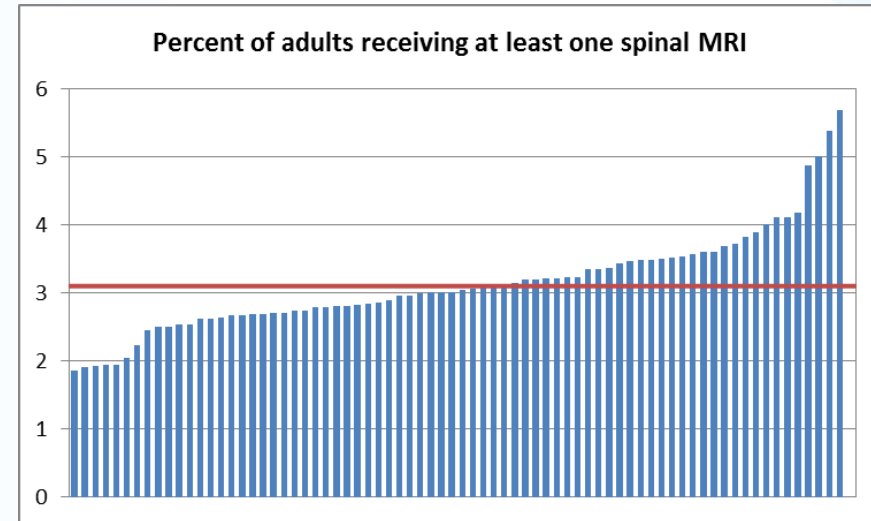
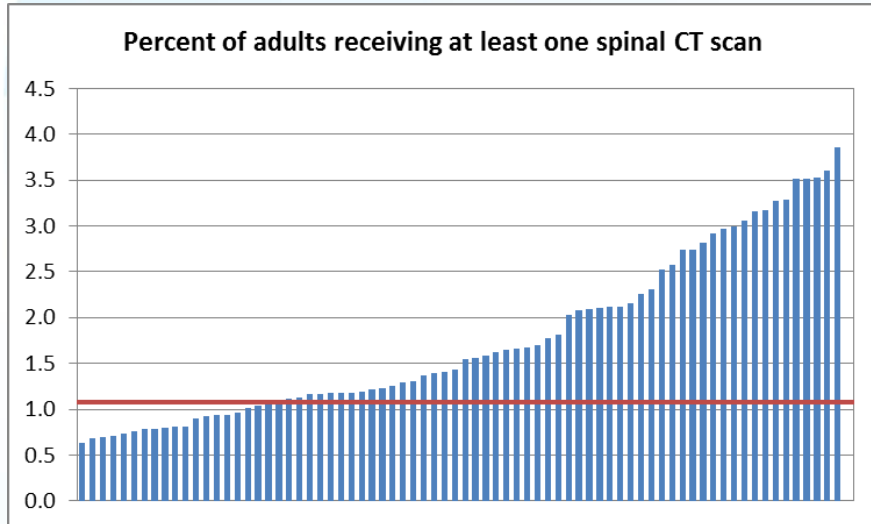
Drug Safety: Prescription Rates for Contraindicated Medications



P16	Inappropriate prescribing per 100 instances of one of the conditions				
	10 th	25 th	50 th	75 th	90 th
	11.2	12.3	12.8	14.1	15.2

Imaging: Percentage Receiving a Lower Back Scan*

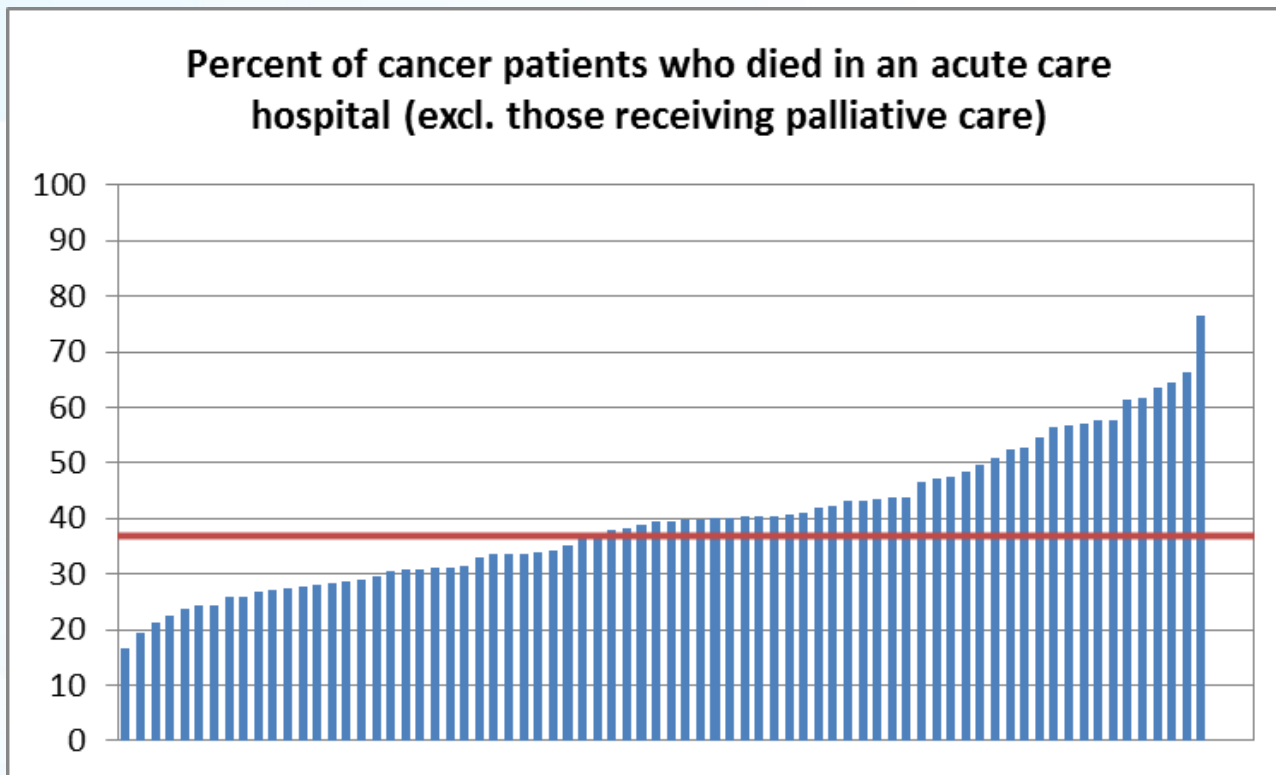
PA12	Percentage of people receiving a lower back scan				
	10 th	25 th	50 th	75 th	90 th
CT scan	0.7	0.9	1.2	1.7	2.8
MRI	2.6	2.7	3.1	3.5	3.7
X-ray	6.0	6.4	7.1	7.9	8.4
Total scans	8.5	9.2	9.6	10.6	11.2



*Percentage receiving at least one scan over a two-year period

Cancer End-of-Life Care

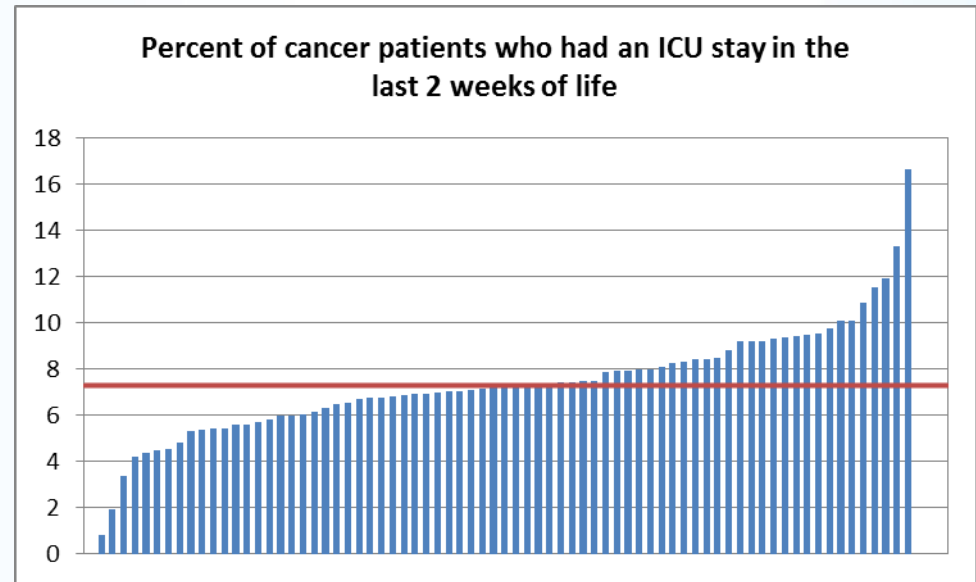
Cancer Patients: % Died in Hospital



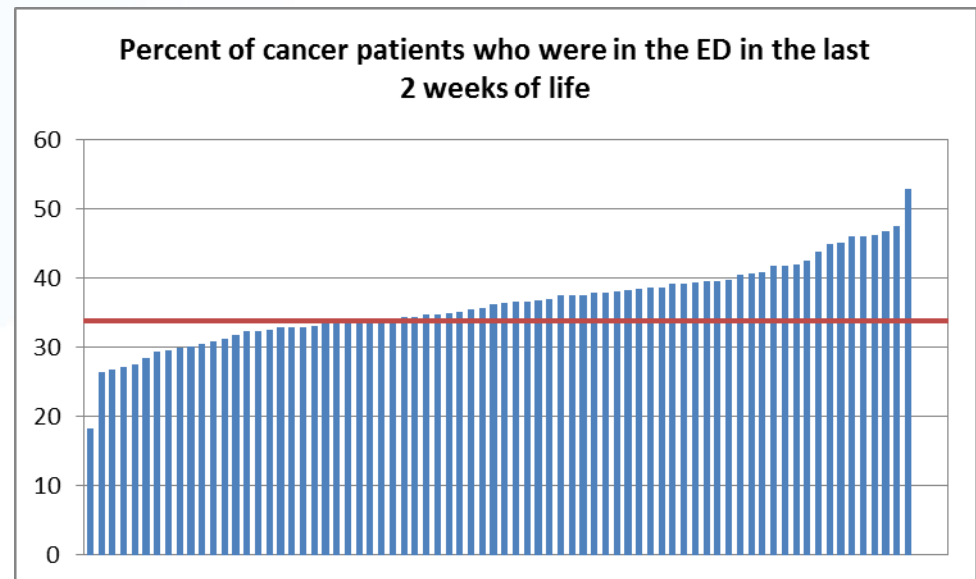
EOL1	Percent who died in hospital, excluding those receiving palliative care				
	10 th	25 th	50 th	75 th	90 th
	24.5	29.6	36.9	41.0	52.6

Cancer Patients: ICU Stays and ED Visits in Last 2 Weeks of Life

EOL2	Percent with an ICU stay in the last 2 weeks of life				
	10 th	25 th	50 th	75 th	90 th
	5.4	6.2	7.3	8.1	9.5

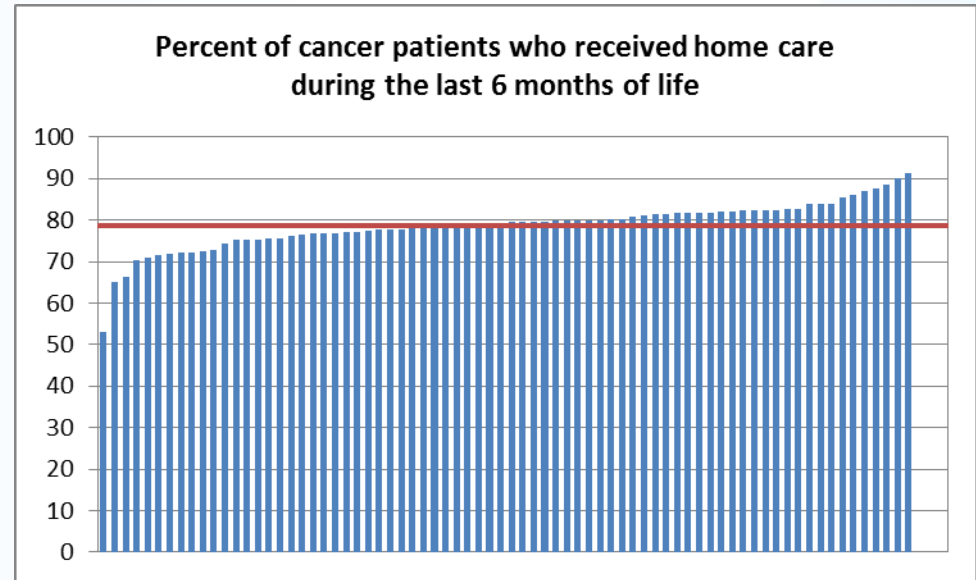


EOL3	Percent who were in the ED in the last 2 weeks of life				
	10 th	25 th	50 th	75 th	90 th
	29.6	32.4	33.9	38.3	41.8

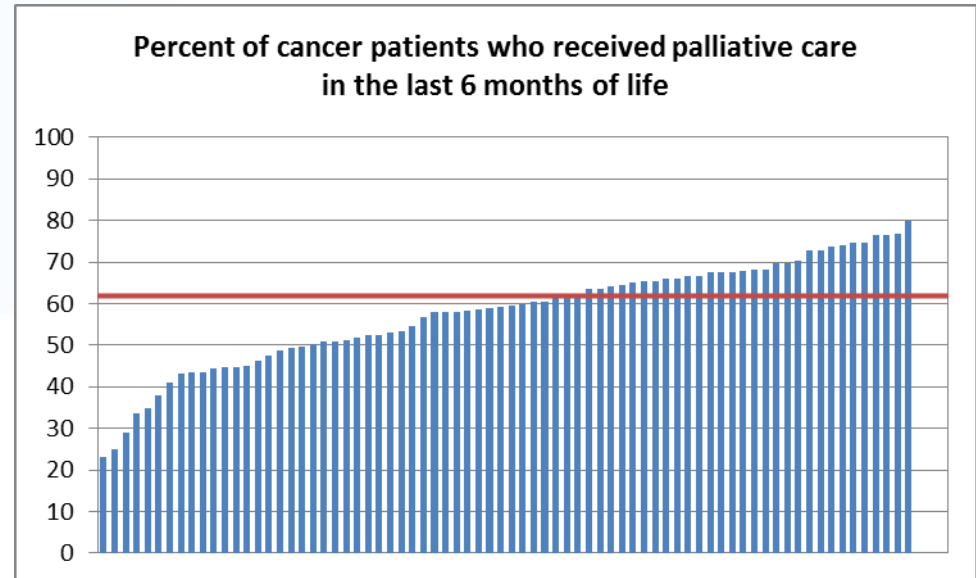


Cancer Patients: Home care and Palliative Care in Last 6 Months of Life

EOL5	Percent who had a home care visit in the last 6 months of life				
	10 th	25 th	50 th	75 th	90 th
	72.4	76.7	78.7	81.8	83.8



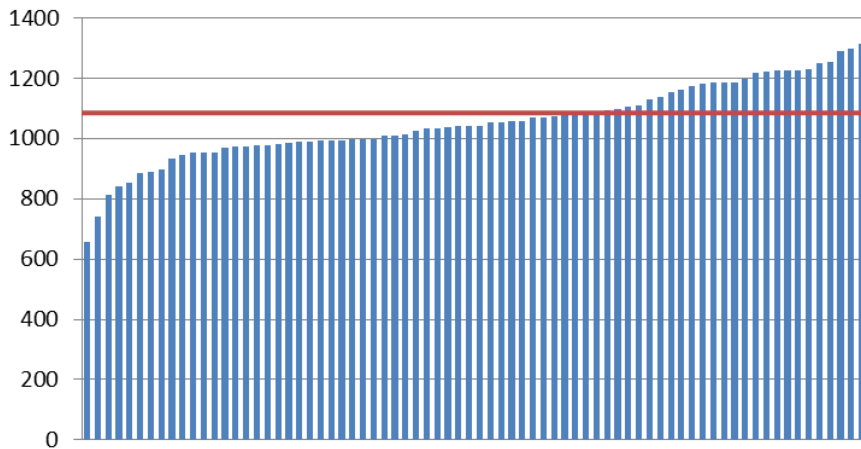
EOL6	Percent who received palliative care in the last 6 months of life				
	10 th	25 th	50 th	75 th	90 th
	43.5	50.3	61.9	66.7	74.0



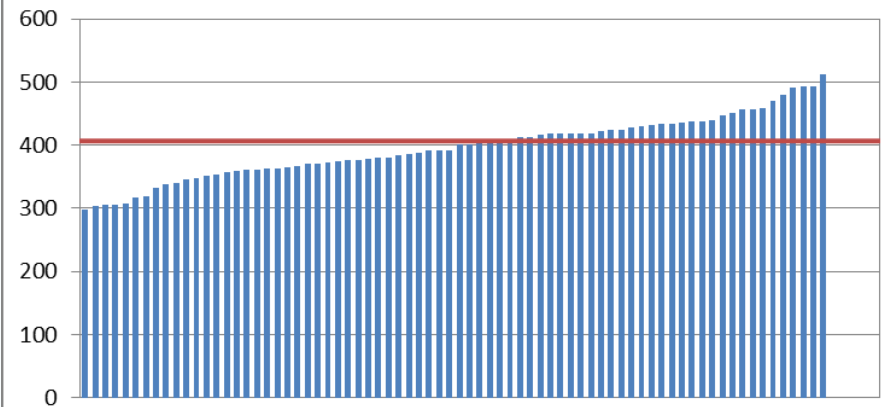
Spending

Age-Sex Adjusted Per Capita Total Physician, Primary Care Physician and Specialist Costs

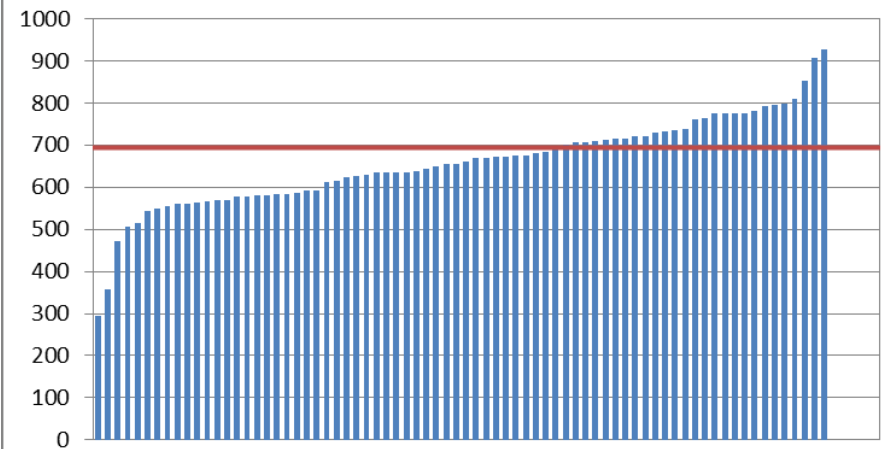
Age-sex adjusted per capita total physician costs



Age-sex adjusted per capita primary care physician costs



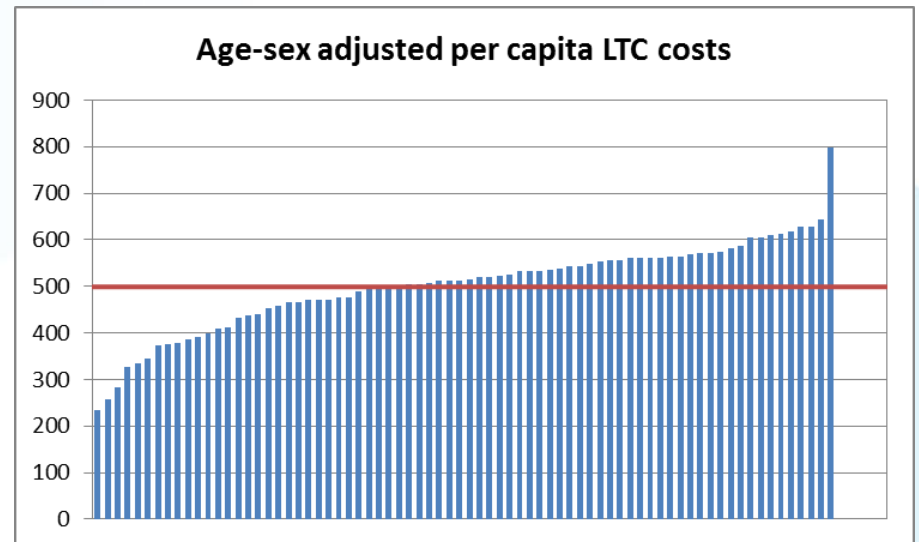
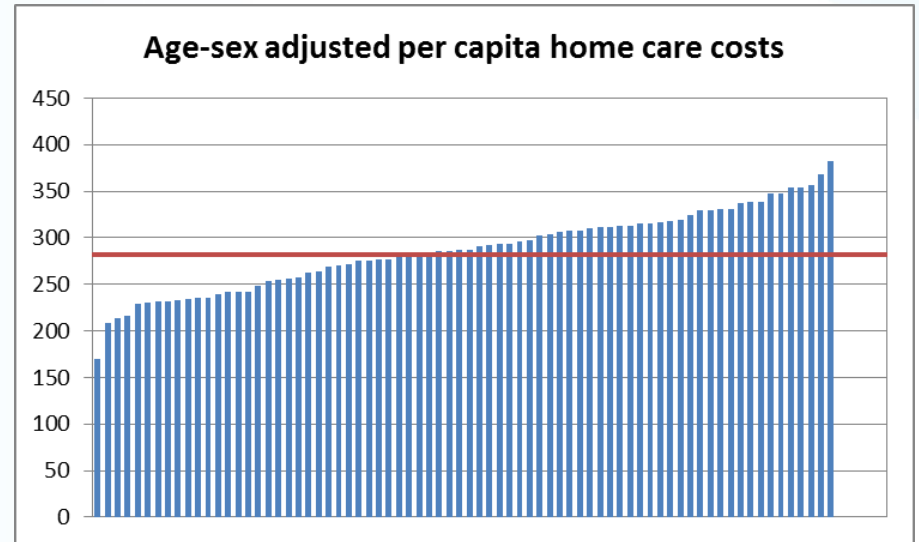
Age-sex adjusted per capita specialist costs



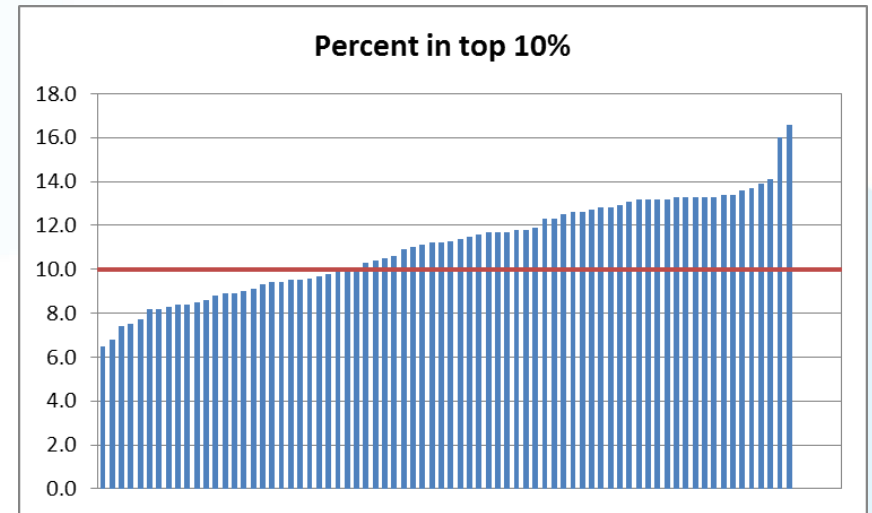
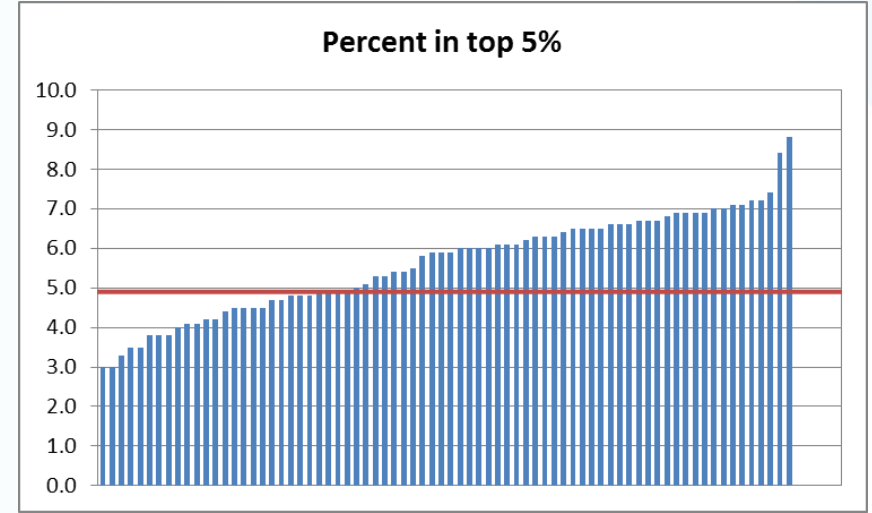
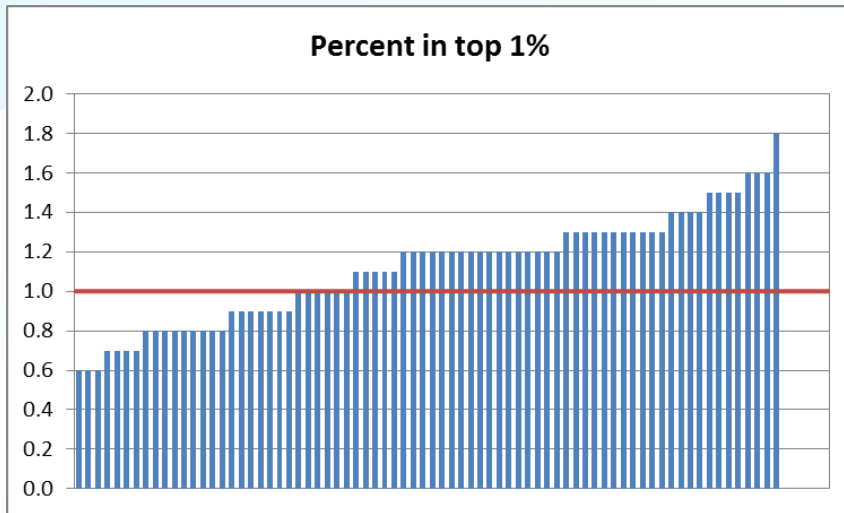
	Age-sex adjusted per capita costs				
	10 th	25 th	50 th	75 th	90 th
Total Physician	953	1,025	1,085	1,185	1,226
Primary Care Physician	317	370	407	433	479
Specialist	579	635	694	761	793

Age-Sex Adjusted Per Capita Home Care and Long Term Care Costs

	Age-sex adjusted per capita costs				
	10 th	25 th	50 th	75 th	90 th
Home Care Costs	229	242	282	308	337
LTC Costs	374	409	499	539	572

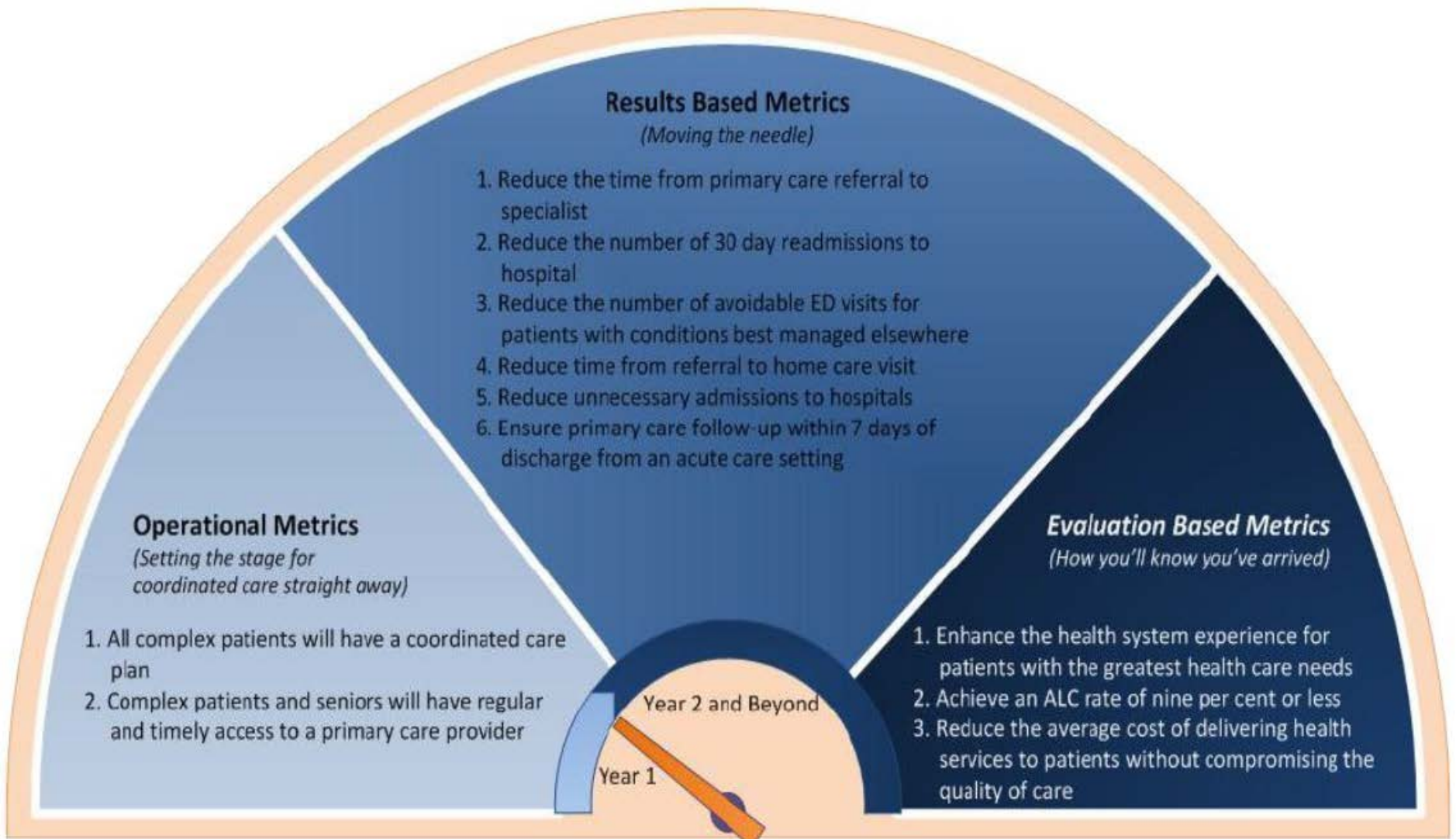


Percent of Network Residents within top 1%, 5% and 10% of Provincial Costs



	Age-sex adjusted per capita costs				
	10 th	25 th	50 th	75 th	90 th
Top 1%	0.70	0.80	1.00	1.20	1.30
Top 5%	3.50	4.10	5.00	6.00	6.70
Top 10%	7.50	8.50	10.00	11.60	13.20

Indicators of success



Health Links: Work-planning & the Path Forward July 2013 Ministry of Health & Long-Term Care

Advanced Health Links



ICES-HQO Partnership: Measuring and Evaluating the Performance of integrated Health Systems

- Refine Quality Indicators to **focus on complex chronic disease (high needs) patients**
- Investigate network characteristics associated with **high performance**
- Implement sophisticated statistical techniques (Bayesian hierarchical modeling) to **profile the performance of the networks**
- **Engage with health system planners from Health Quality Ontario (HQO) to evaluate & monitor integrated health systems**