



# **Local Ontario context: Older adults with complex conditions**

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Walter Wodchis, PhD  
(ICES, HPME, TRI, HSPRN)

**Leveraging the Culture of Performance Excellence in Ontario's Health System**

*HSPRN is an inter-organization Network funded by the Ontario Ministry of Health and Long Term Care* 1

# Older adults with complex conditions

Three messages:

1. Epidemiological and economic burden
2. Identifying target populations for intervention  
– predicting risk
3. It's all very complicated and evaluating interventions is key

# Older adults with complex conditions

Three research studies:

HSPRN:

1. Target populations for health system improvement

W.Wodchis, X.Camacho, I. Dhalla, A. Guttman, E.Lin, G.Anderson

2. Older adults with multi-morbidity

A. Bierman, G. Mery, E. Adler, N. Nanwa, W.Wodchis

ICES:

3. Frail Ontario Seniors Atlas: A high needs population

S.Bronskill, X. Camacho, S.Gill, A.Grunier, J.Poss, W.Wodchis

# Older adults with complex conditions

A. Some Canadian statistics

B. Some Ontario data

- ◆ Health system impact
- ◆ Risk Profiles

C. Co-morbidity compared to multi-morbidity

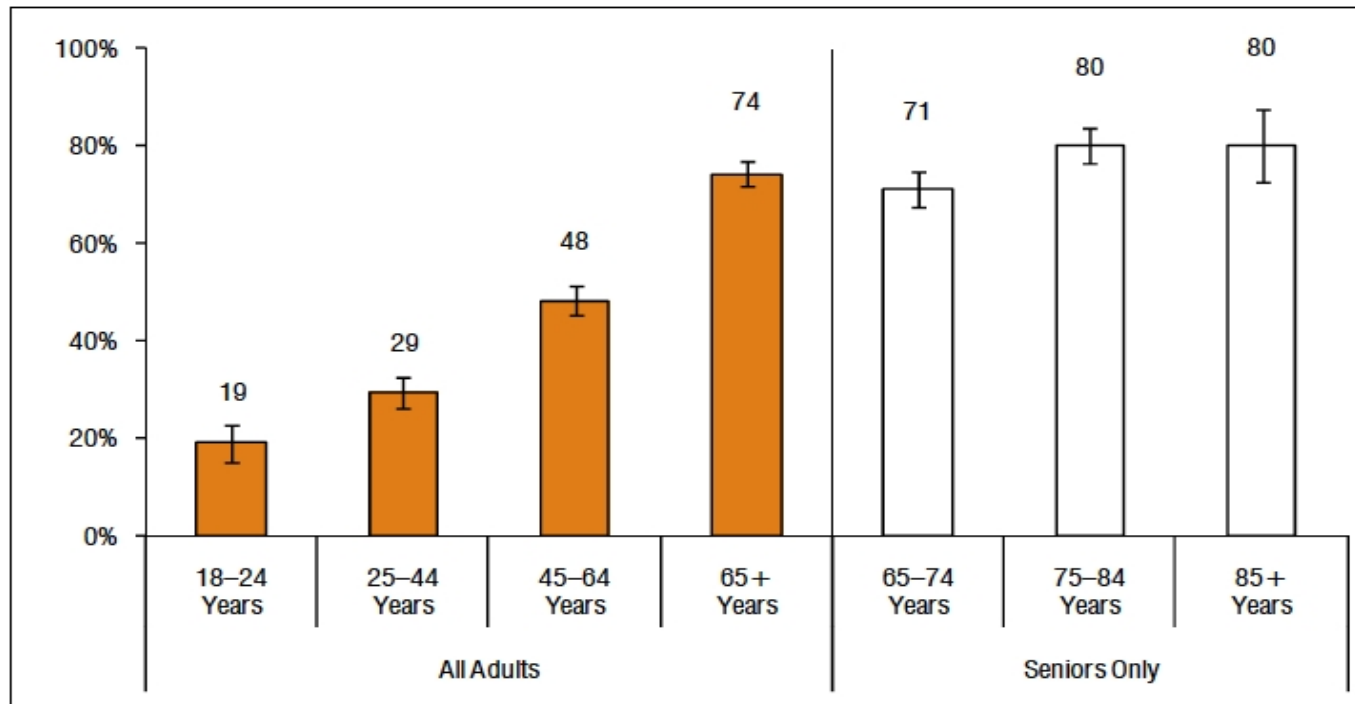
- Complexity of care management
- Differences in needs to care for multi-morbidity

D. Generating ideas for innovative strategies for care of older adults with complex conditions

# A. Some Canadian Statistics

Focus is on chronic disease

Figure 3: Percentage of Adults Who Reported Having at Least 1 of 11 Chronic Conditions, by Age Group, Canada (Crude Estimates)



- Source: Canadian Institute for Health Information: *Seniors and the Health Care System: What Is the Impact of Multiple Chronic Conditions?* July 2001

## B. Some Ontario Data

### What we've done:

1. Identify community-based cohort of clients aged 66+ admitted and discharged from Acute care between April 2007–March 2008 with :
  1. 2 or more ACSC conditions (Angina, Asthma, COPD, Diabetes, Grand Mal Seizure, Heart Failure, Hypertension)  
or any one of the following 'tracer' chronic conditions: Stroke, Cardiac Arrhythmia, Hip Fracture, Spinal Stenosis, PVD, DVT/PE

Follow for 365 days (until March 2009)

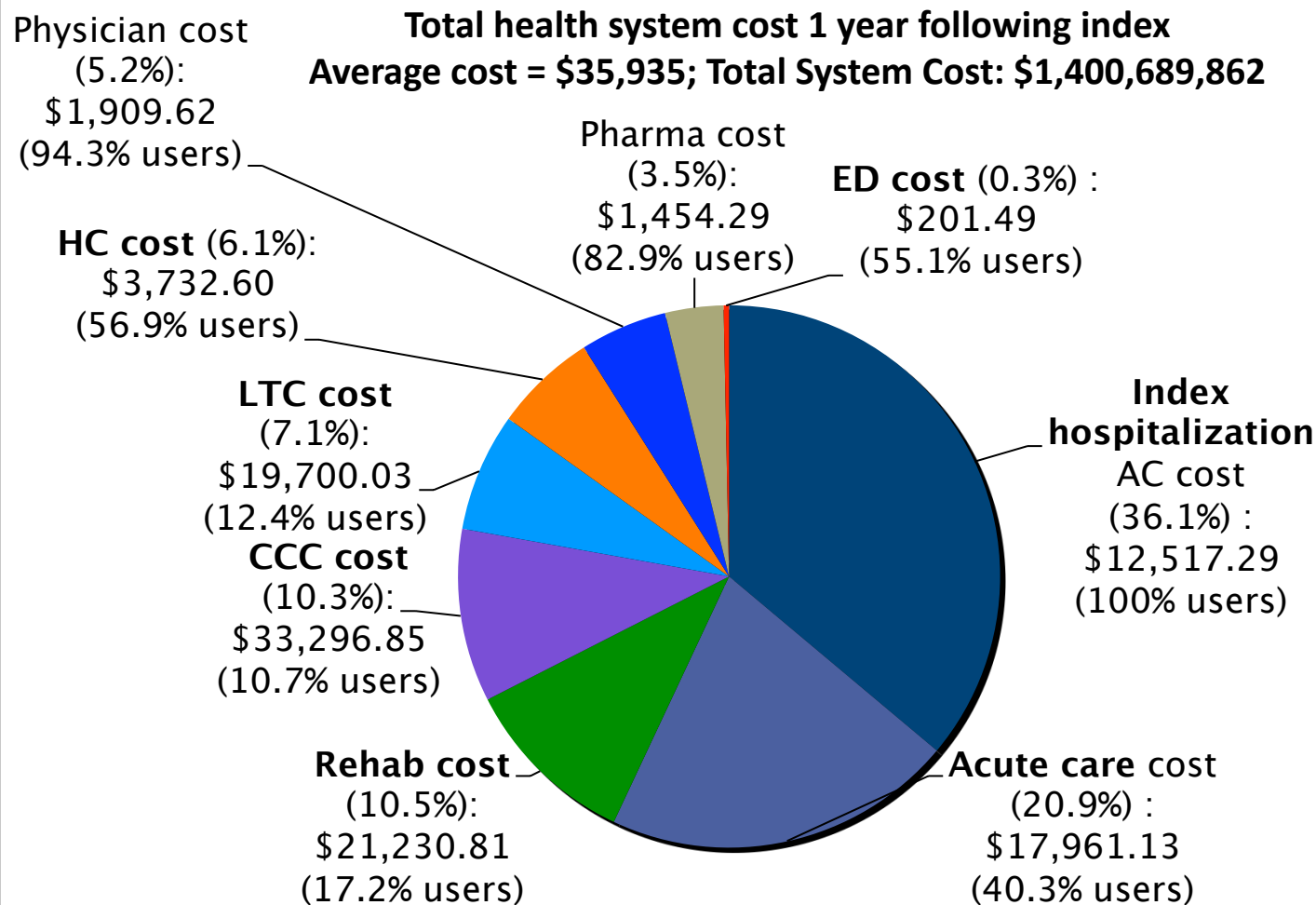
2. Link all administrative clinical databases and incorporate costs to understand system utilization and costs
3. Subset patients admitted to acute who were receiving home care prior to acute admission to identify risk groups for acute and LTC admissions after discharge.

# Target Populations for System Improvement

Summarize Utilization and Costs in 365 days following acute discharge:

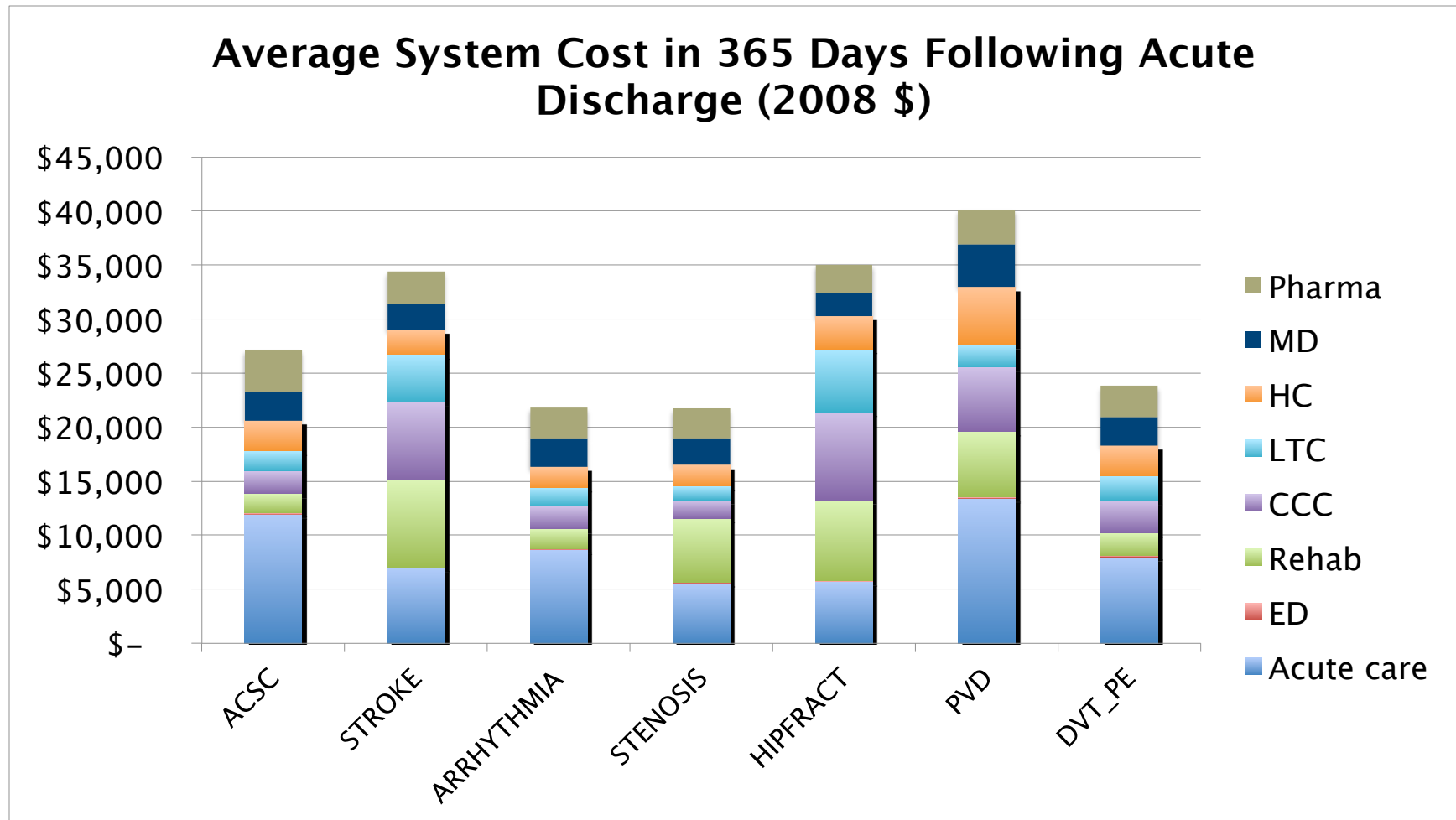
- Total Population 38,978 (0.3% population)
- Average Annual Cost \$35,935
- System Cost \$1,400,689,862 (3% system cost)

# Target Populations for System Improvement



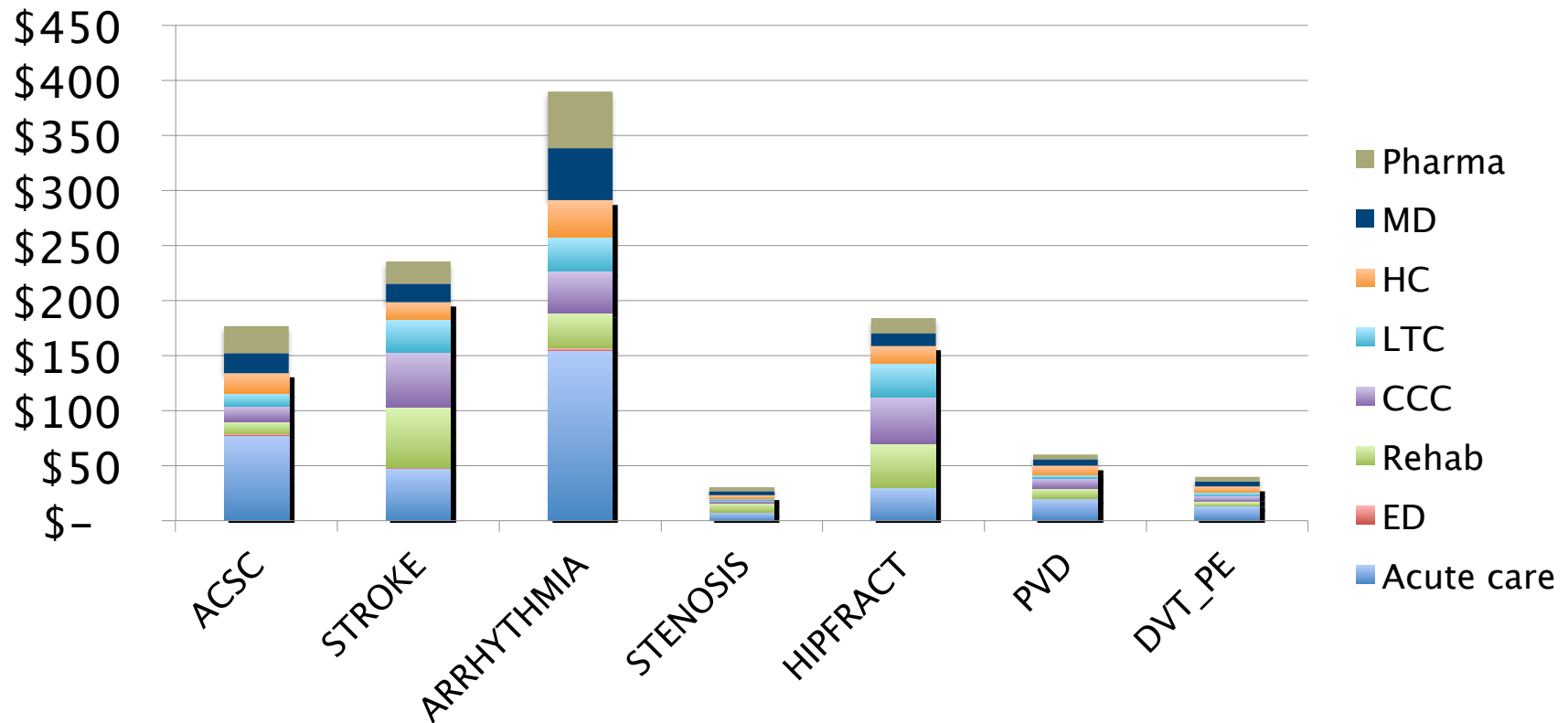


## B. Some Ontario Data



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**Total System Cost in 365 Days Following Acute Discharge (2008 \$1,000,000's)**



## B. Some Ontario Data

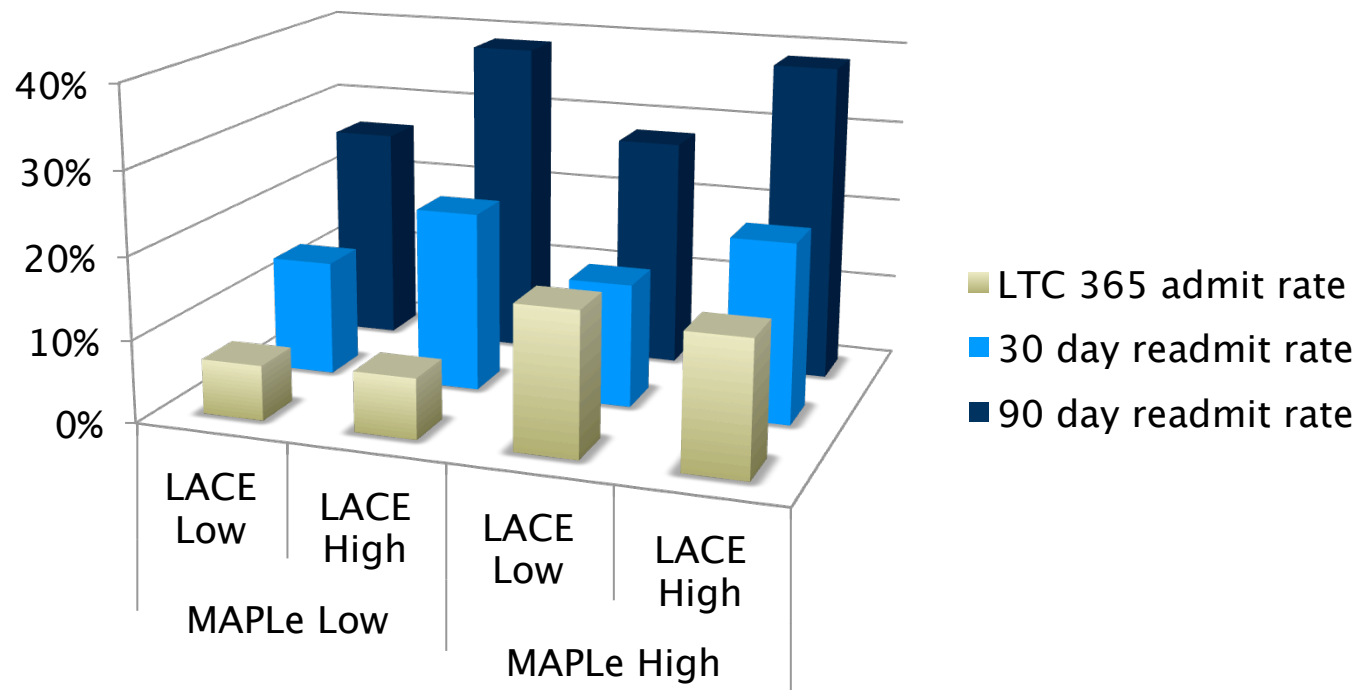
- Individuals with complex conditions are costly:
- System burden is a combination of prevalence and cost.
- Some cohorts (ACSC, Arrhythmias) use more acute, primary care and pharmacy.
- Some cohorts (Stroke, Hip Fracture) use Rehabilitation and Complex Continuing Care and are at higher risk for LTC admission.

## B. Risk for Acute and LTC

<u>Risk for LTC</u> MAPLe [5 levels: Low–Very High] (Method for Assigning Priority Levels)	<u>Risk for Acute</u> LACE [0–18] (Length of stay, Acuity, Charlson comorbidity, Emergency Use)
Activities of Daily Living Cognitive Performance Behaviour Wandering Decision-making decline Environment or medication mgmt Ulcers Self-reliance (Geriatric screen) Meal preparation assistance Few meals or swallowing problem Falls	Acute length of stay  Acuity on admission (admit via ED)  Charlson comorbidity (AMI, CVA, PVD, diabetes, CHF, COPD, liver, tumor, renal, AIDS) Number of emergency visits in 6 months prior to admission

## B. Risk for Acute and LTC

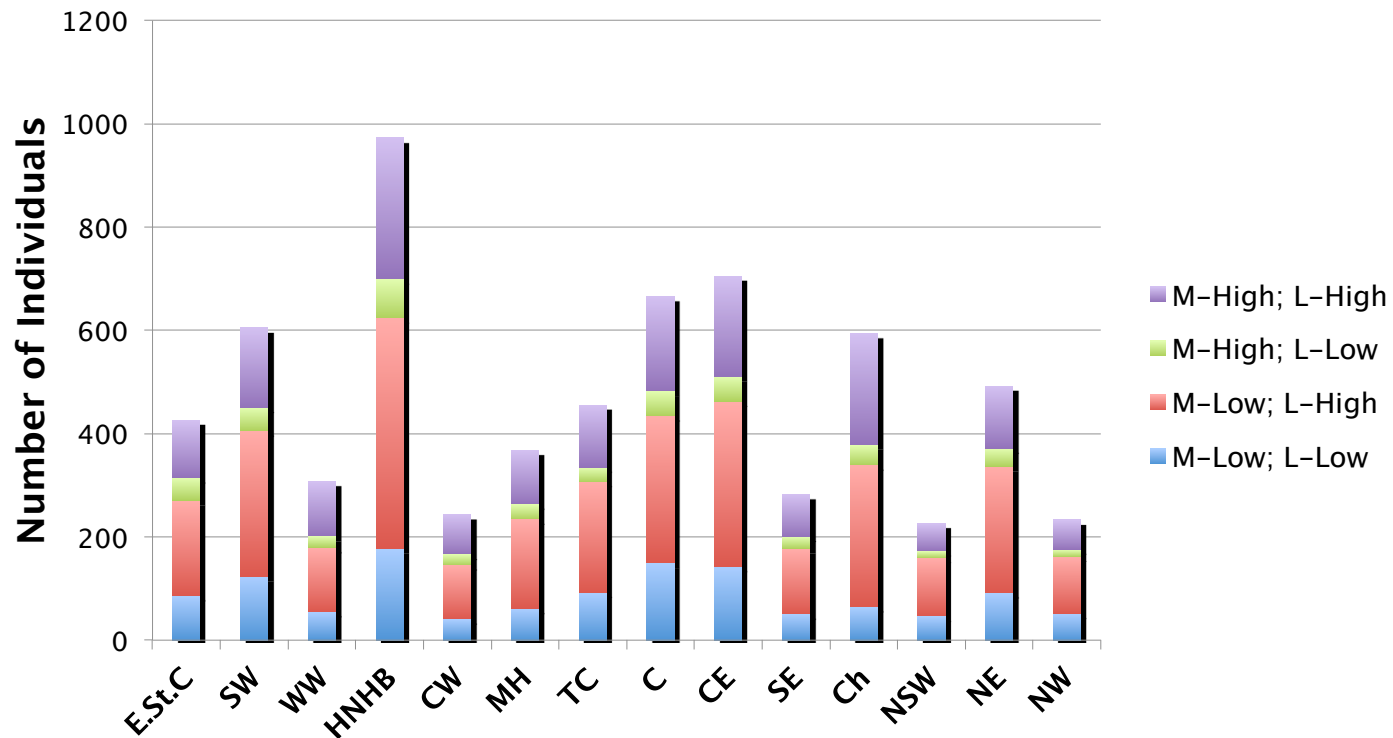
**Acute and LTC Admission for Homecare Clients Discharged Home from Acute**



M-Low is MAPLe Low, Mild & Moderate; L-low is LACE < 10  
LTC Admission within 365 days after acute discharge

## B. Risk for Acute and LTC

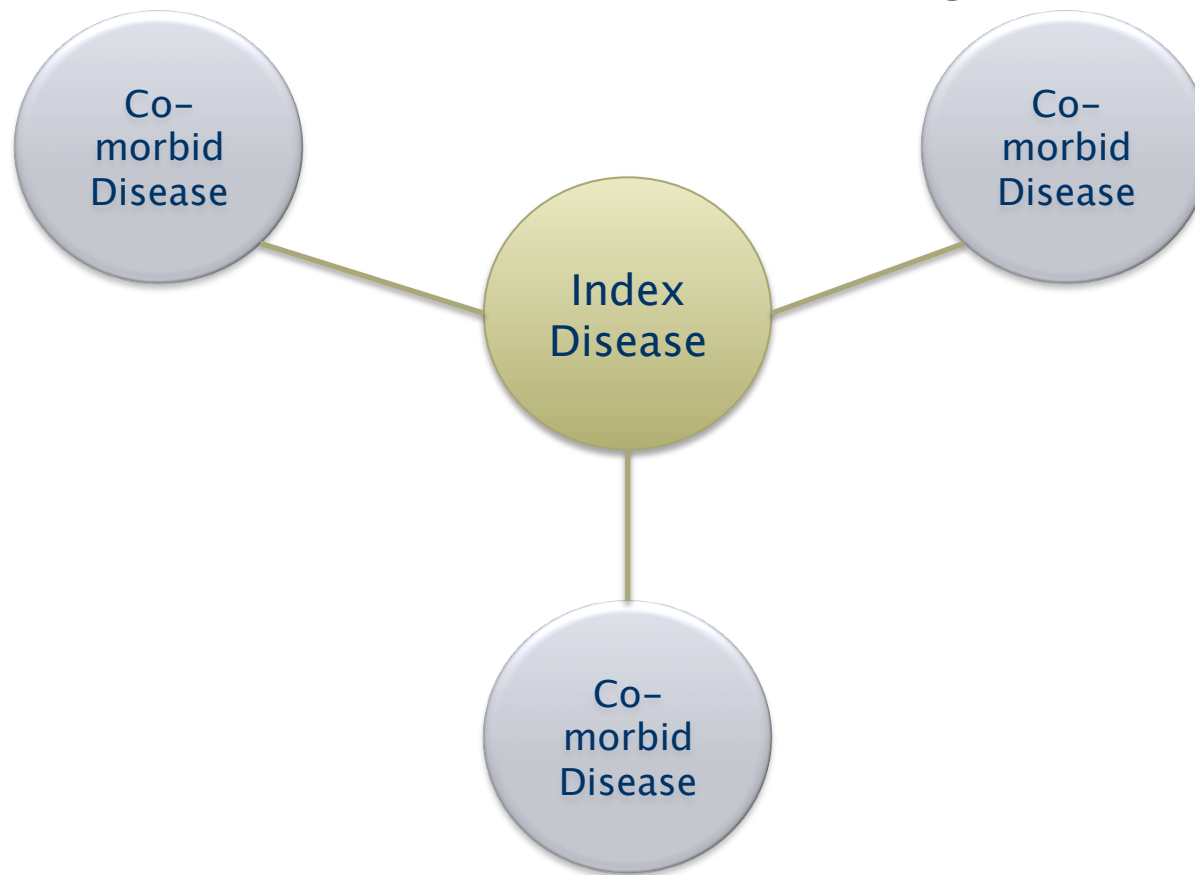
Prevalence of Risk Profile all Acute Discharges  
among clients in cohort by LHIN 2007/08



M-Low is MAPLE Low, Mild & Moderate; L-low is LACE < 10

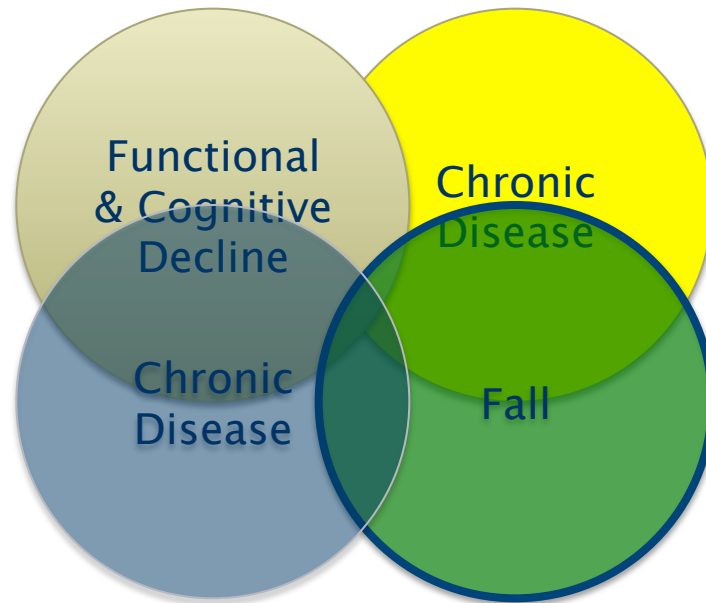
## C. Co-morbidity vs Multi-morbidity

Single-disease Chronic Disease Management model



# C. Co-morbidity vs Multi-morbidity

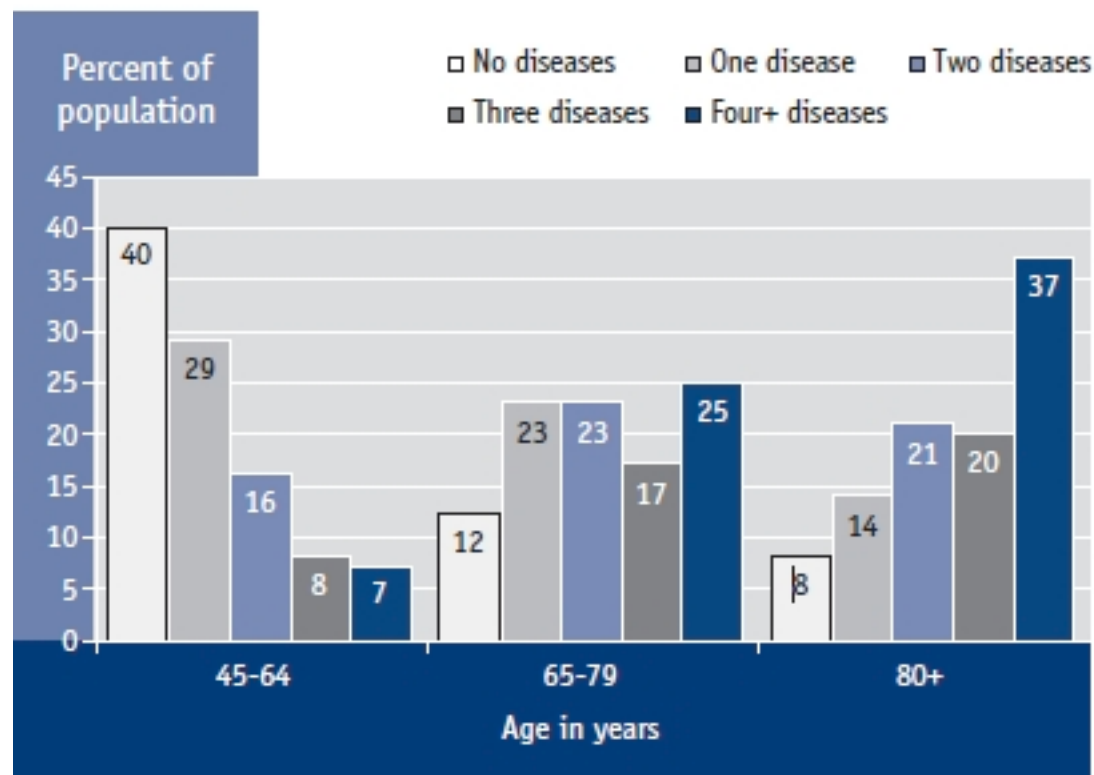
Focus is on multi-morbidity (e.g. ACSC)





## C. Co-morbidity vs Multi-morbidity

Focus is on multi-morbidity

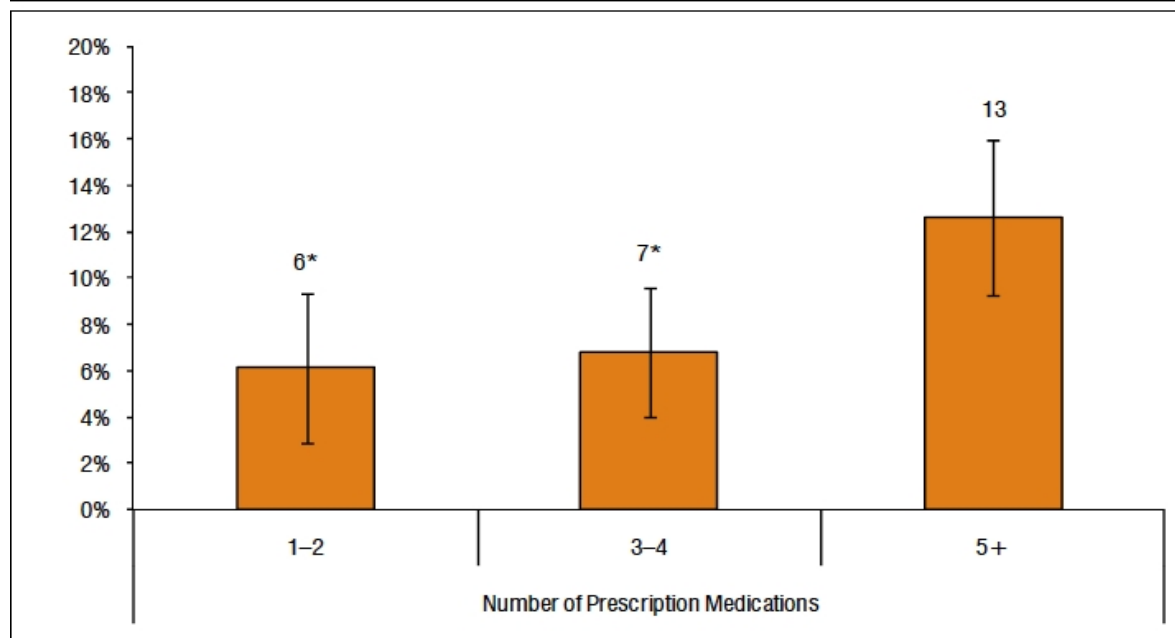


- Source: The Chief Public Health Officer's Report on the State of Public Health in Canada. 2010 : *Growing Older – Adding Life to Years*

## C. Co-morbidity vs Multi-morbidity

One aspect is medication management

Figure 6: Percentage of Seniors Who Reported 1 or More of 11 Chronic Conditions Who Also Reported Experiencing a Side Effect From a Prescription Medication That Required a Visit to a Medical Doctor in the Past 12 Months, by Number of Prescribed Medications, Canada (Crude Estimates)



Source: Canadian Institute for Health Information: *Seniors and the Health Care System: What Is the Impact of Multiple Chronic Conditions?* July 2001

## D. Patients' experience is sub-optimal

There are many older adults with multi-morbidity in Canada:

- Seniors with three or more reported chronic conditions accounted for 40% of reported health care use among seniors
- **Gaps exist in preventive and collaborative care for seniors**
- Though most seniors have access to PHC:
  - ◆ fewer than half (48%) reported talking at least some of the time to a health professional about their treatment goals.

## D. Ontario patients' current experience (during 365 days after acute discharge)

		ACSC	Arrhythmia	Hip Fracture	Stroke
Number of Different Pharmacies Used	0	1%	1%	1%	3%
	1-3	87%	87%	87%	87%
	4+	12%	12%	12%	10%
Number of different non-institutional physicians	0	12%	10%	12%	24%
	1-5	44%	44%	58%	47%
	6-15	40%	43%	29%	28%
	16+	4%	3%	1%	1%
Total all non-institutional provider visits (physician, pharmacy, home care)		67±105 IQR [13-74]	55±87 IQR [15-55]	69±115 IQR [13-73]	49±96 IQR [5-44]

## D. Multi-morbidity is a complex issue

- Very few Clinical Practice Guidelines address multi-morbidity (many are impractical & may be harmful in some cases of multi-morbidity)
- Trial-based evidence gap: multi-morbid groups are excluded
- Some co-occurring conditions may be managed synergistically (e.g. ace inhibitors in diabetes and hypertension)
- Chances of adverse effects from medications may be related to severity of other diseases (e.g. Cox-2 inhibitors in individuals with severe diabetes or hypertension).

A few key authors: Elizabeth Bayliss, Chad Boult, Cynthia Boyd, Martin Fortier, Alex Jadad, Andres Cabrera, Renee Lyons, etc

## D. Strategies that balance safety and patient-centeredness

### Goals of care:

- Avoidance of adverse events including stroke, falls and fractures, acute admissions and death.
- Patient-centered care involves patient preferences and involvement of caregivers
- Maintenance of independence / function
- Goals of care for progressively older persons may focus more on function (and less on secondary prevention?)

## D. Ideas for innovative strategies

Innovative strategies to:

- How can we improve consultation and referrals between primary and specialist services
- Should we increase use of geriatricians in care planning
- Could we develop hospital-based multi-specialty clinics with interdisciplinary teams (using organizational model of community health centers)
- How to share clinical records and patient-centered care goals among and between medical and home care to maintain and improve function

# Older adults with complex conditions

## Summary

1. Older adults with complex conditions are costly and have complex transitions through the health system
2. Improved patient and caregiver support and better coordination and information flow in the community: physician – homecare – pharmacy.
3. Targeting enhanced care to those at highest modifiable risk offers the greatest value for money.

## Research in Progress:

1. Measurement of modifiable risk (relative effectiveness of known strategies among target populations, e.g. follow-up care, medication reconciliation).
2. Development of innovative strategies



# Older adults with complex conditions

- Discussion...

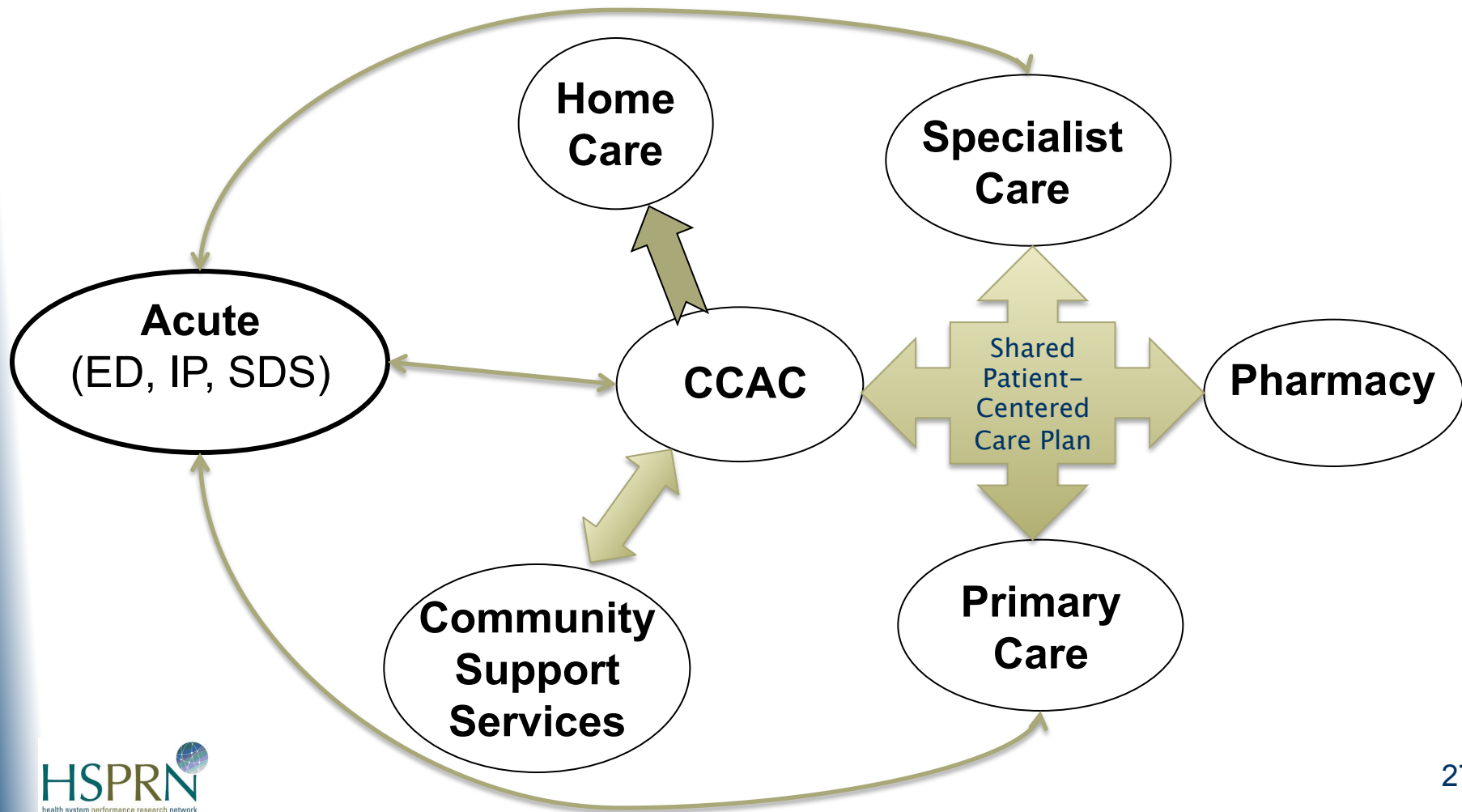
*what are your thoughts?*

*a dialogue – Ontario and Europe*

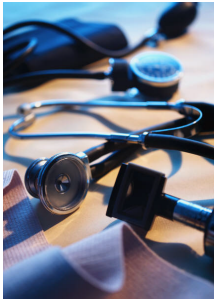
# Supplemental Slides

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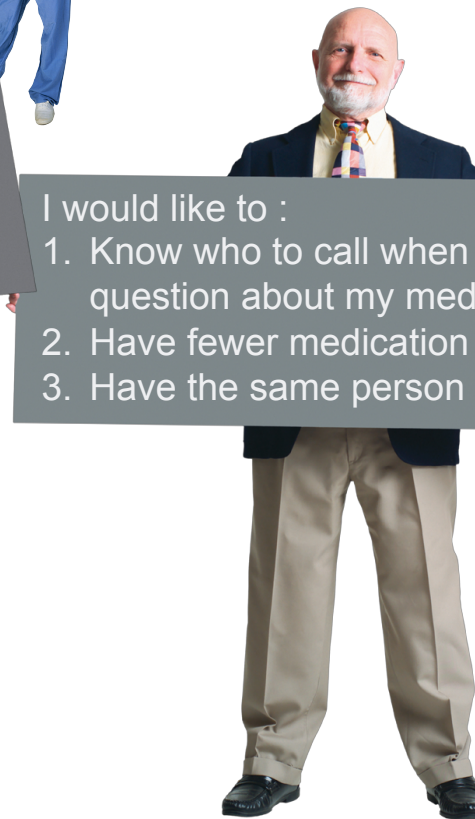
## D. Patient-centered strategies



# D. Patient-centered strategies



How do I get support to help me and my dad when his dementia acts up.

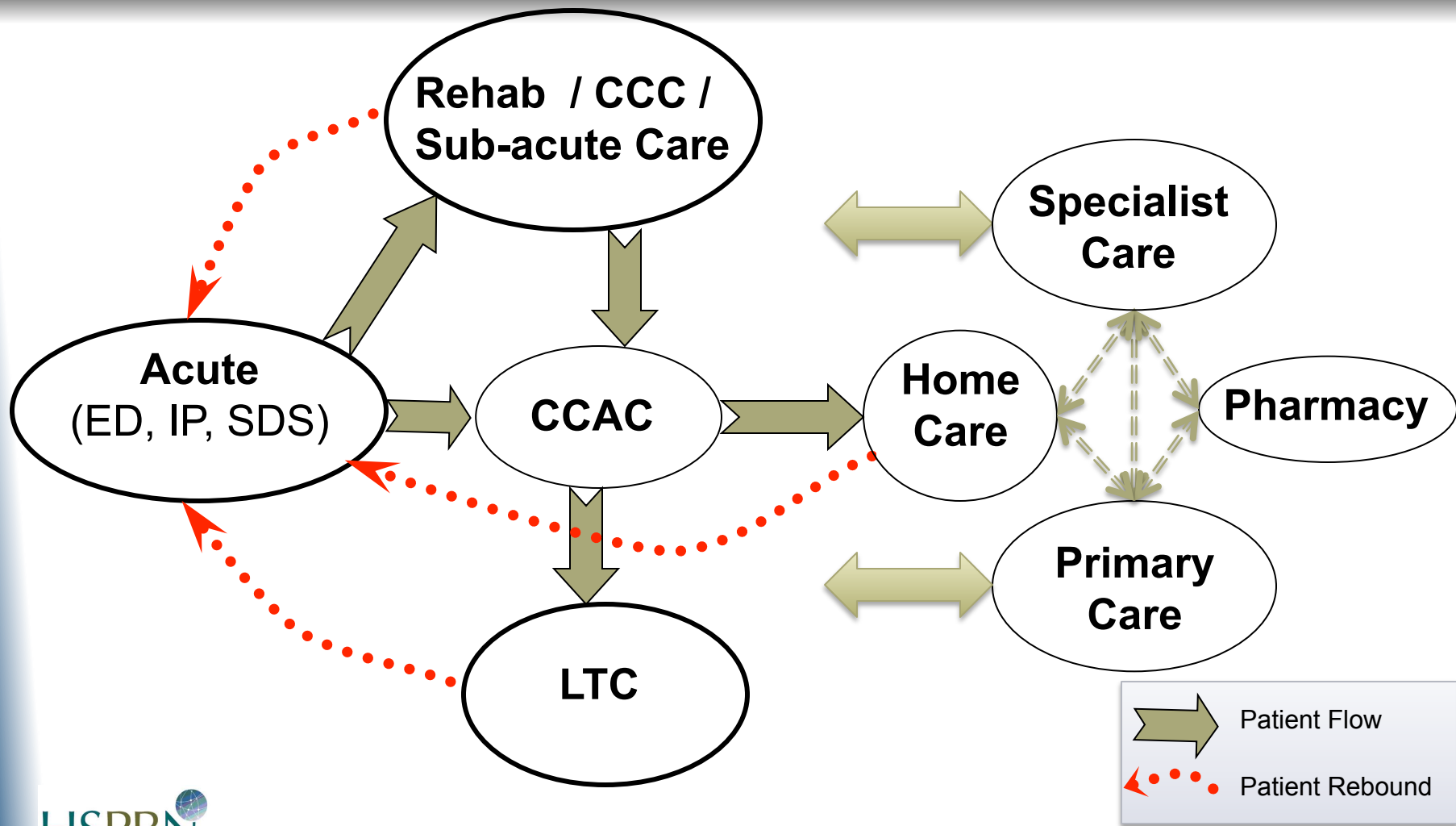


I would like to :

1. Know who to call when I have a question about my medication
2. Have fewer medication side-effects
3. Have the same person check on me



## D. Measurement that follow patients



# Most Prevalent Index Diagnoses with Readmission within 90 days

MRD* (ICD-10) and description	Patients	Readmitted (%)
I48. Atrial fibrillation and flutter	4,398	1,078 (25%)
I50. Heart failure	2,867	1,048 (37%)
J44. Other chronic obstructive pulmonary disease	2,200	823 (37%)
I21. Acute myocardial infarction	1,103	373 (34%)
I20. Angina pectoris	787	249 (32%)
E11. Type 2 Diabetes mellitus	525	187 (36%)
Z54. Convalescence	283	83 (29%)
I80. Phlebitis and thrombophlebitis	260	80 (31%)
I24. Other acute ischaemic heart diseases	219	76 (35%)
N39. Other disorders of urinary system	140	42 (30%)
T82. Complications of cardiac and vascular prosthetic devices, implants and grafts	136	45 (33%)
N17. Acute renal failure	115	41 (36%)

# Most Prevalent Readmission MRD for I48. Atrial Fibrillation Initial Discharge (n=1078)

MRD* (ICD10) and description	Readmitted (%)
I48. Atrial fibrillation and flutter	274 (25.4%)
I50. Heart failure	129 (12.0%)
J44. Other chronic obstructive pulmonary disease	42 (3.9%)
I29. Other cardiac arrhythmias	34 (3.2%)
J18. Pneumonia, organism unspecified	28 (2.6%)
I21. Acute myocardial infarction	27 (2.5%)
R07. Pain in throat and neck	26 (2.4%)
I63. Cerebral Infarction	20 (1.9%)
I20. Angina pectoris	18 (1.7%)
I24. Chronic ischaemic heart diseases	18 (1.7%)

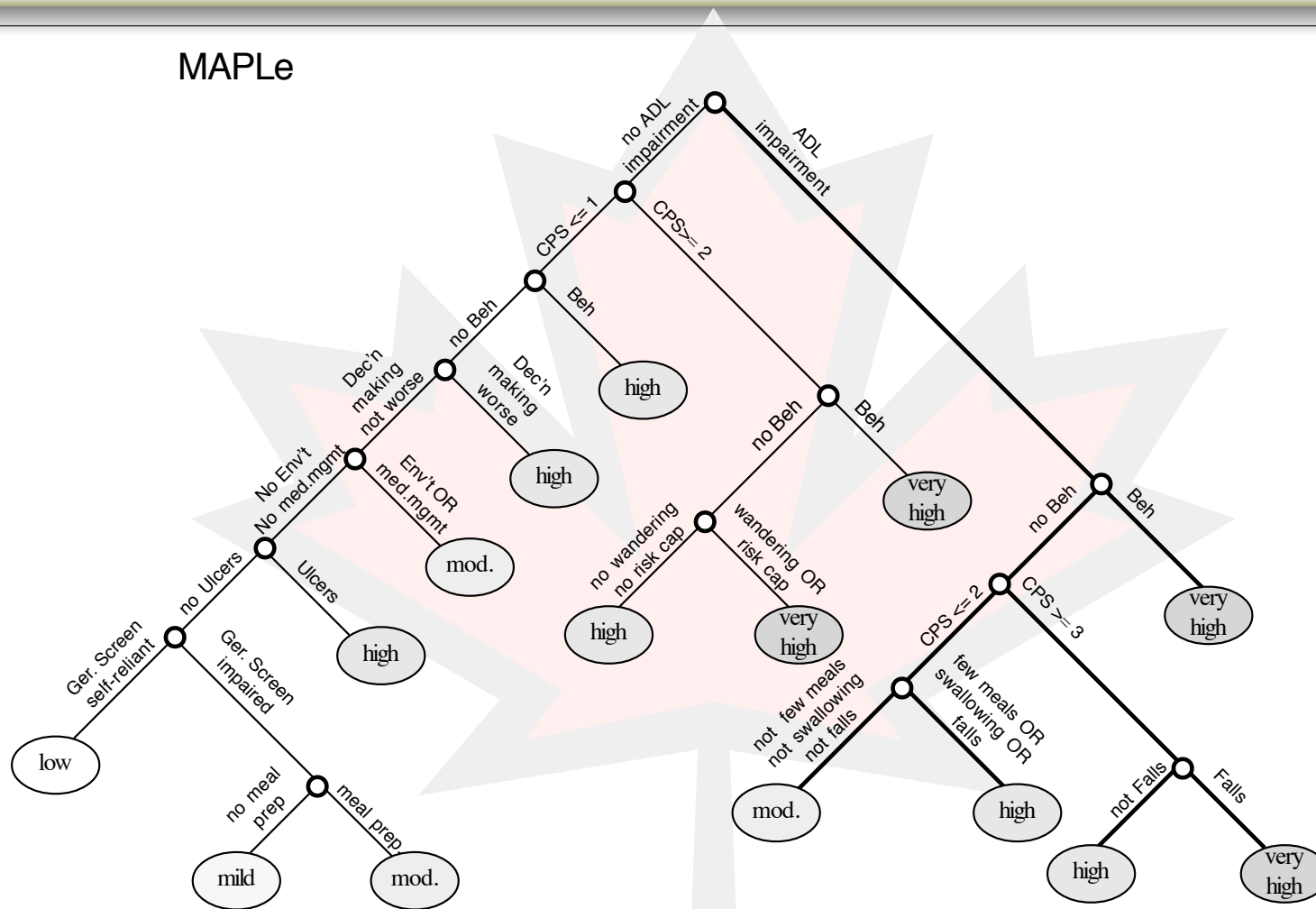
\* MRD is Most Responsible Diagnosis defined as the diagnosis most responsible for the total length of stay in hospital

# Overlap among 2+ ACSC Diagnoses

Diagnosis	% of Total (N=7,315)
Heart Failure & COPD	39.8%
Heart Failure & Angina	10.4%
Heart Failure & Hypertension	9.0%
Heart Failure and Diabetes	5.5%
Diabetes and COPD	7.3%
Diabetes and Hypertension	4.9%
Hypertension and Angina	4.5%
Hypertension and COPD	4.5%
Total (in this set)	85%



## B. Risk for Acute and LTC



# B. Risk for Acute and LTC

## LACE index scoring tool

### Step 1. Length of Stay

Length of stay (including day of admission and discharge): \_\_\_\_\_ days

Length of stay (days)	Score (circle as appropriate)
1	1
2	2
3	3
4-6	4
7-13	5
14 or more	7



L

### Step 2. Acuity of Admission

Was the patient admitted to hospital via the emergency department?  
If yes, enter "1" in Box A, otherwise enter "0" in Box A

A

### Step 3. Comorbidities

Condition	Score (circle as appropriate)	<p>If the TOTAL score is between 0 and 3 enter the score into Box C. If the score is 4 or higher, enter 5 into Box C</p> <p>C</p>
Previous myocardial infarction	+1	
Cerebrovascular disease	+1	
Peripheral vascular disease	+1	
Diabetes without complications	+1	
Congestive heart failure	+2	
Diabetes with end organ damage	+2	
Chronic pulmonary disease	+2	
Mild liver disease	+2	
Any tumor (including lymphoma or leukemia)	+2	
Dementia	+3	
Moderate or severe renal disease	+3	
AIDS	+4	
Moderate or severe liver disease	+4	
Metastatic solid tumor	+6	
<b>TOTAL</b>		

### Step 4. Emergency department visits

How many times has the patient visited an emergency department in the six months prior to admission (not including the emergency department visit immediately preceding the current admission)?  
Enter this number or 4 (whichever is smaller) in Box E

E

Add numbers in Box L, Box A, Box C, Box E to generate LACE score and enter into box below. If the patient has a LACE score is greater than or equal to 10 the patient can be referred to the virtual ward

LACE

If you have questions about the use of this tool, please contact Dr. Irfan Dhalla at [dhallai@smh.toronto.on.ca](mailto:dhallai@smh.toronto.on.ca) or by pager through St. Michael's Hospital locating (416-864-5431)