

# An Analysis of Economic Value & Health System Benefits for Pharmacy Professional Services

Ontario Pharmacists' Association

September 1, 2009

FINAL REPORT – EXECUTIVE SUMMARY



## Overview

- With a growing number of Ontarians without a family physician; crowded emergency departments, walk-in clinics and physicians' offices; an escalating number of hospital admissions resulting from adverse drug reactions or poor medication adherence; and an overall shortage of various healthcare professionals in the province, healthcare delivery in Ontario is not optimized.
- The Ontario Pharmacists' Association (OPA) has long advocated that pharmacists represent a major part of the solution for what ails the province's health system. Accordingly, there is a need to determine the tangible value of the services pharmacists provide – now and under an expanded scope of practice – that will ultimately deliver:
  - Increased access to healthcare services
  - Improved quality of care and quality of life
  - More efficient utilization of resources (GPs, Emergency Departments, etc)
  - Increased personal productivity/quality of life
  - Millions of dollars in both short- and long-term savings.

# Executive Summary

## Context of Evaluation

There are a number of areas in which pharmacists can play an increased role in optimizing patient care and delivering system savings. This analysis will look at a subset of services which fall broadly under the term Medication Therapy Management\*.

Categories	Description
<b>Chronic Disease Prevention and Management</b>	A pro-active, population-based approach that addresses chronic diseases early in the disease cycle to prevent disease progression and reduce potential health complications.
<b>Adherence Initiatives</b>	Activities whereby a health care practitioner (HCP) works with the patient and/or caregiver, and, if necessary, other HCPs to ensure that chronic medication therapy is optimized through regular and continued use.
<b>Therapeutic Modification (TM)</b>	Optimizing an individual patient's therapeutic outcome through the adaptation and/or adjustment of therapy
<b>Prescription Intervention (PI)</b>	A pro-active, point-in-time assessment of the appropriateness of a prescription (new or refill) to avoid negative patient outcomes, duplication in therapy, and optimize drug utilization.
<b>Treatment of Minor Ailments (MA)</b>	Provision of assessments and, if necessary, initiation of prescription and/or over-the-counter therapy for minor ailments

\* For a definition of Medication Therapy Management, please refer to Appendix A

# Executive Summary

## Scope of Evaluation

The Ontario Pharmacists' Association requested an economic value analysis of professional services in five categories of Medication Therapy Management, offered by or under consideration for pharmacists in Ontario.

Categories	Services	Description
<b>Chronic Disease Prevention and Management</b>	<b>Health, Wellness and Disease Education</b>	Activities that aim to prevent and manage chronic disease, which include, but are not limited to, prescription dispensing, prescription counseling, clinic and education days, device and diagnostic aid training, and medication reviews.
<b>Adherence Initiatives</b>	<b>Refills of Chronic Care Medications</b>	An adherence initiative that enables a pharmacist's extension of an existing chronic care prescription without the need for a call or visit to a prescriber for reauthorization.
<b>Therapeutic Modification</b>	<b>Therapeutic Modification</b>	The act of optimizing an individual patient's therapeutic outcomes through the execution of services that do not necessarily require consultation with the prescriber (adapt/adjust therapy and order/receive lab tests).
<b>Prescription Intervention</b>	<b>Prescription Intervention Program</b>	An activity whereby the pharmacist uses professional judgment NOT to dispense a clinically inappropriate prescription.
<b>Treatment of Minor Ailments</b>	<b>Minor Ailments Program</b>	The performance of assessments according to a defined protocol – including referrals – and, if necessary, initiating Schedule I, II, or III medication therapy from a limited formulary for a defined list of ailments.

These five services are only a subset of the professional services that could be offered by pharmacists. Additional services such as an immunization program and smoking cessation therapy could also be delivered.

# Executive Summary

## Potential Value Generated from Professional Services in Year 1

The economic value analysis has identified the following estimates of gross value generated from implementation of the five professional service categories in Year 1.

### YEAR 1

#### Estimated Outcomes

Avoided ED Visits:  
**107,586**  
(2% of Total 2008 ED visits\*)

Avoided GP Visits:  
**1,280,190**  
(3.5% of Total 2005-2006 GP visits\*\*)

Avoided ADEs:  
**53,658**  
(32% of estimated ADEs in  
community setting\*\*\*)

#### Estimated Savings

Avoided ED &  
Hospitalization Costs:  
**\$23.70M**

Avoided GP Fees:  
**\$40.90M**

Avoided Drug Costs:  
**\$2.92M**

Avoided Absenteeism  
Costs:  
**\$4.90M**

**Total Estimated Savings  
in Year 1:  
\$72.42M**

Across a five-year period, the present value of the gross savings to the system is estimated at **\$473M**.

\* 5.25M ED visits annually, MOHLTC, May 2008

\*\* 36M GP visits annually, CIHI, 2008 (2)

\*\*\* 168,153 community ADEs, nD analysis, extrapolated from Zhan, C. et al., 2005

# Executive Summary

## Potential Value Generated from Professional Services in Year 5

In Year 5, gross savings to the healthcare system are estimated to be greater than \$128M.

### YEAR 5

#### Estimated Outcomes

Avoided ED Visits:  
**146,350**  
(3% of Total 2008 ED visits\*)

Avoided GP Visits:  
**2,642,107**  
(7% of Total 2005-2006 GP visits\*\*)

Avoided ADEs:  
**56,721**  
(34% of estimated ADEs in community setting\*\*\*)

#### Estimated Savings

Avoided ED & Hospitalization Costs:  
**\$30.97M**

Avoided GP Fees:  
**\$84.42M**

Avoided Drug Costs:  
**\$3.09M**

Avoided Absenteeism Costs:  
**\$9.56M**

**Total Estimated Savings  
in Year 5:  
\$128.0M**

In Year 6 and beyond, the ongoing value to the healthcare system of these five service categories would be \$128M.

\* 5.25M ED visits annually, MOHLTC, May 2008

\*\* 36M GP visits annually, CIHI, 2008 (2)

\*\*\* 168,153 community ADEs, nD analysis, extrapolated from Zhan, C. et al., 2005



# Summary of Value

## Overview of Potential Benefits Realized

By applying an evidence-based and structured (benefit/cost) analytical approach to determine the gross economic value of expanding pharmacists' scope of practice, the following benefits were identified:

Summary of Benefits (Year 1)							
Services		Health, Wellness and Disease Education	Refills of Chronic Care Medications	Therapeutic Modification	Prescription Intervention Program	Minor Ailments Program	All Categories
Dimensions	Metrics	Benefits					Total
<b>Access</b>							
Demand for Emergency Department Services	Avoided Emergency Department Visits	19,702	-	4,078	6,654	77,153	107,586
Demand for General Practitioner Services	Avoided General Practitioner Visits	-	132,232	30,278	26,614	1,091,065	1,280,190
<b>Quality</b>							
Patient Safety	Avoided Adverse Drug Events	-	-	20,390	33,268	-	53,658
<b>Resource Utilization</b>							
Emergency Department and Hospital	Avoided Emergency Department & Hospitalization Costs	\$9.98M	-	\$1.87M	\$3.05M	\$8.80M	\$23.70M
General Practitioners	Avoided Fees	-	\$4.22M	\$0.97M	\$0.85M	\$34.86M	\$40.90M
Drugs	Avoided Costs	-	-	-	\$2.92M	-	\$2.92M
<b>Personal Productivity</b>							
Absenteeism	Economic Benefit	\$0.95M	\$0.37M	\$0.13M	\$0.21M	\$3.23M	\$4.90M
<b>Total</b>		<b>\$10.9M</b>	<b>\$4.6M</b>	<b>\$3.0M</b>	<b>\$7.0M</b>	<b>\$46.9M</b>	<b>\$72.4M</b>

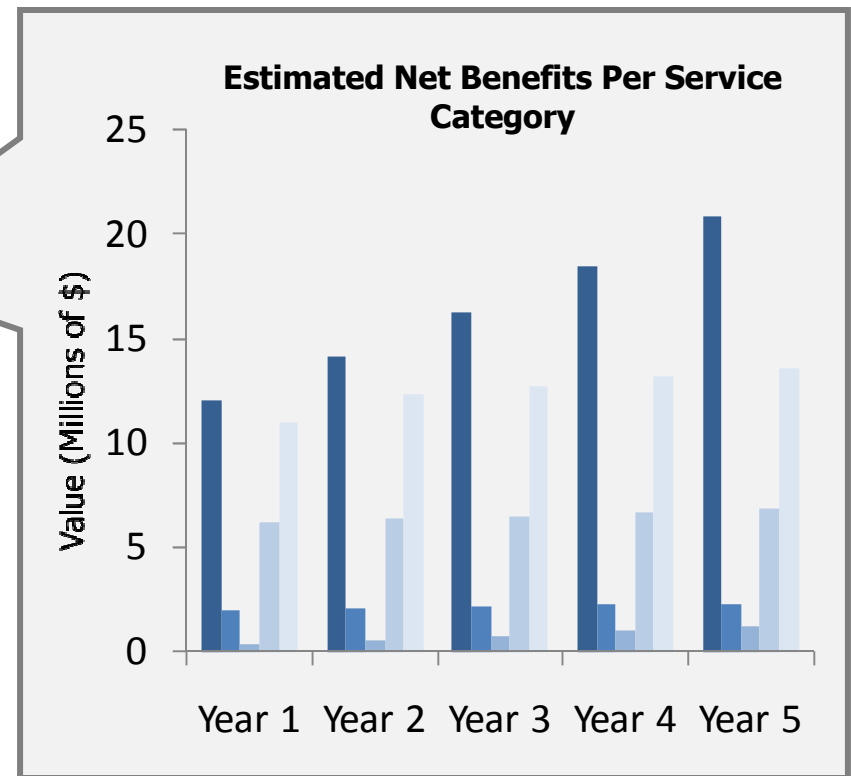
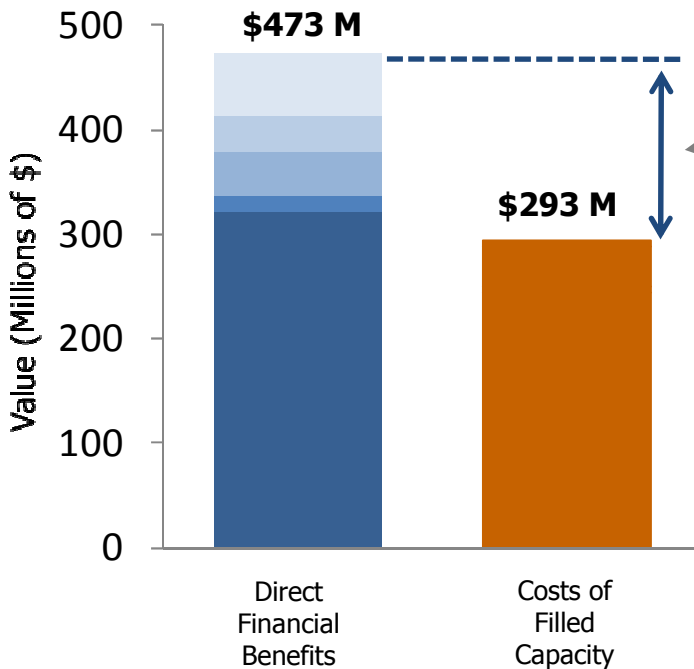
Total economic benefits in Year 1 are estimated at \$72.4M. The benefits pertaining to patient safety amount to approximately 50,000 avoided ADEs. System benefits include an estimated 1.4M reduction in ED and GP visits.



# Summary of Value Net Value

The present gross value of benefits accrued, if the five service categories are implemented, is approximately \$473M. However, if the new GP capacity is filled, the net value would amount to approximately \$180M for the five-year period.

**Estimated Net Present Value of Benefits and Filled Capacity (Years 1 to 5)**



Source: nD Analyses 2009

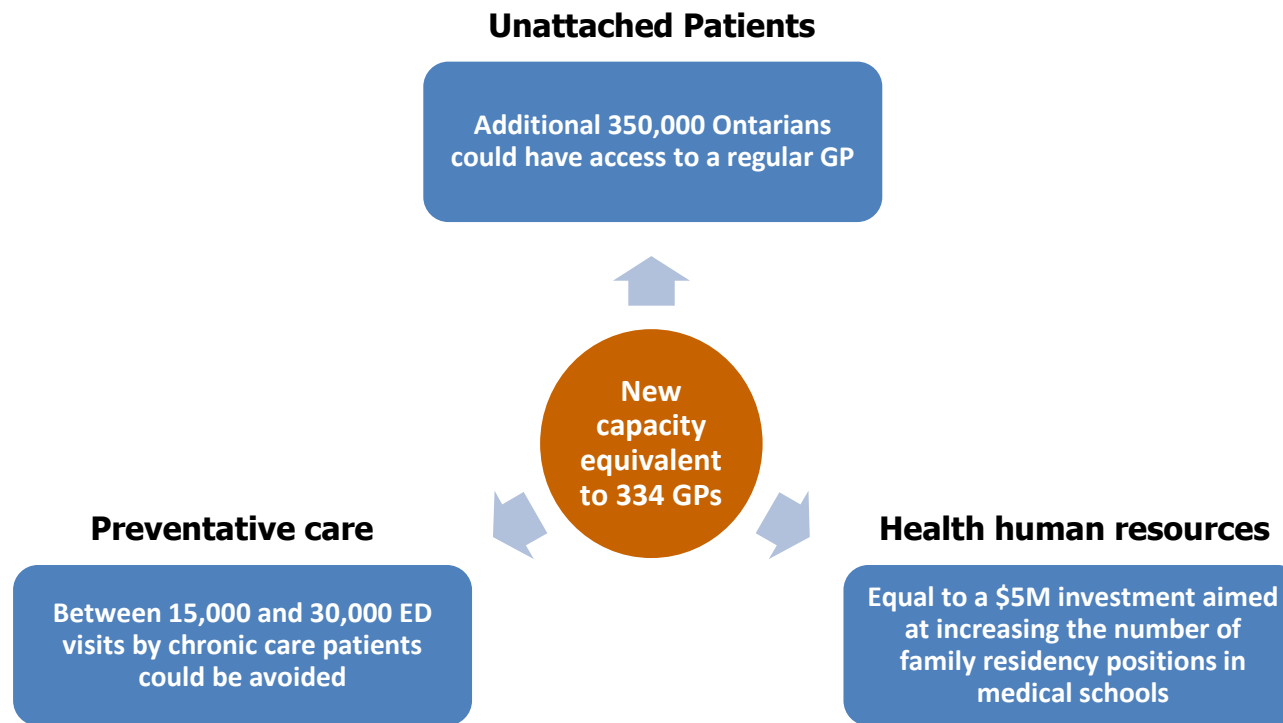
- All Categories
- Minor Ailments Program
- Therapeutic Modification
- Refills of Chronic Medications
- Prescription Intervention Program
- Health, Wellness and Disease Education

Source: nD Analyses 2009



## Summary of Value Benefits of New Capacity

Approximately 1.3M GP visits could be freed up by modifying the provision of pharmacists' professional services. Ontario would need to add 334 additional GPs to provide an equivalent capacity to the healthcare system.



This new capacity could be utilized to increase access for unattached patients, reduce ED visits or increase GP time with their current patient complement.

## Summary of Value – Alignment with Ministry Priorities

The outcomes of the five service categories are also aligned with one or more of the Ministry's priorities.

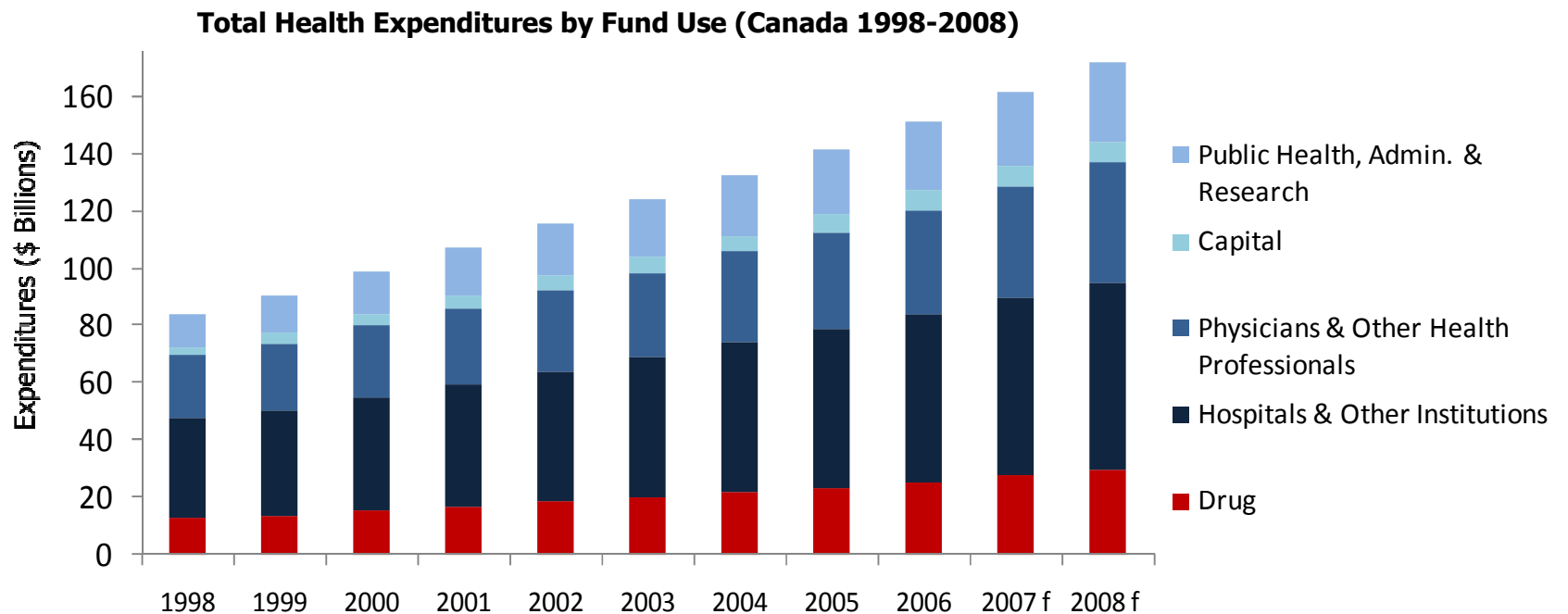
Service Categories	ED Wait Times Priority	Access to Primary Care Priority
<b>Health, Wellness and Disease Education</b>	<ul style="list-style-type: none"> <li>Reinforces preventative care and elements of health promotion to avoid hospitalization</li> <li>Increases opportunities to identify chronic diseases</li> <li>Improves treatment adherence on chronic medications for unstable patients</li> <li>Supports community care initiatives such as aging at home</li> </ul>	<ul style="list-style-type: none"> <li>Provides alternate source of information pertaining to chronic diseases</li> </ul>
<b>Refills of Chronic Care Medications</b>	<ul style="list-style-type: none"> <li>Maintains or improves adherence rates for stable patients</li> <li>Supports community care initiatives such as aging at home</li> </ul>	<ul style="list-style-type: none"> <li>Redirects stable patients to another professional</li> </ul>
<b>Therapeutic Modification</b>	<ul style="list-style-type: none"> <li>Improves effectiveness of treatment</li> </ul>	<ul style="list-style-type: none"> <li>Prevents multiple visits to the GP for same issue</li> </ul>
<b>Prescription Intervention Program</b>	<ul style="list-style-type: none"> <li>Detects inappropriate prescriptions with potential for adverse events</li> </ul>	<ul style="list-style-type: none"> <li>n/a</li> </ul>
<b>Minor Ailments Program</b>	<ul style="list-style-type: none"> <li>Provides patient with an alternate option to see a professional</li> </ul>	<ul style="list-style-type: none"> <li>Redirects patient with minor ailment to another professional</li> </ul>

Key enablers identified by the Ministry, such as ePrescribing and other eHealth initiatives, could also be leveraged to increase the value delivered through the five service categories.

## Current State of Affairs

### Growing Healthcare Expenditures

Over the last 10 years, Canada's total healthcare expenditures have grown at an average rate of approximately 7.4% annually and are forecasted to continue to grow at an unsustainable rate.



Source: Canadian Institute for Health Information, National Health Expenditure Trends, 1975-2008

Healthcare expenditures must be controlled in order to prevent the crowding out of other government priorities.

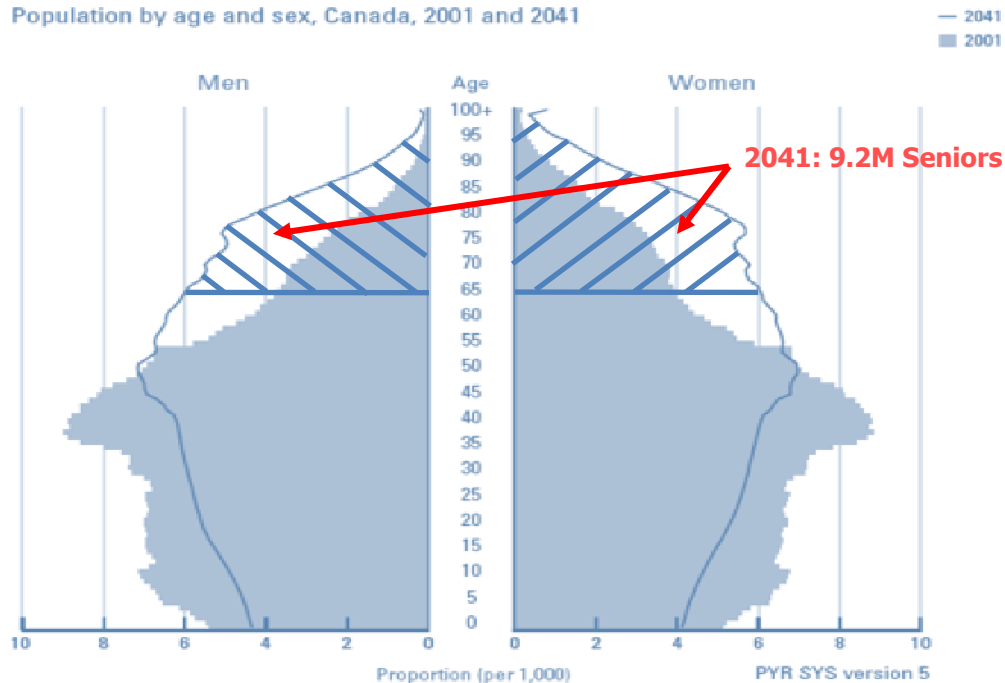


# Current State of Affairs

## Shifting Demographics

As the population ages, the healthcare spending can be further exacerbated.

Population by age and sex, Canada, 2001 and 2041



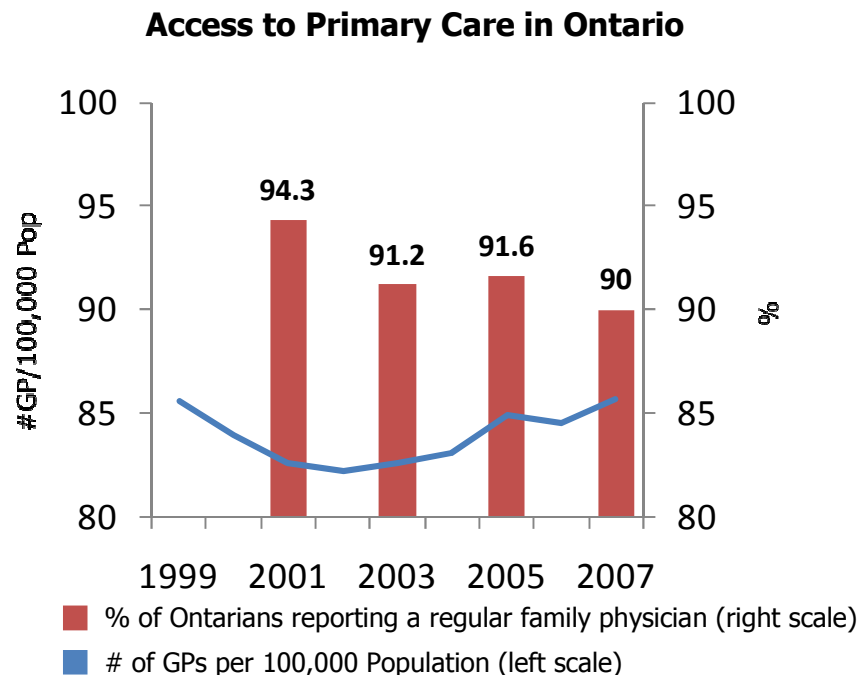
- StatsCan projections indicate that seniors constitute the fastest growing demographic group in Canada
- The population of Canadian seniors is expected to reach 6.7 million in 2021 and 9.2 million in 2041 (nearly one in four Canadians)
- Canadian seniors typically use the healthcare system more frequently and intensively
- The aging population will exacerbate the prevalence of chronic disease

Source: Statistics Canada

Growth in healthcare costs must be brought to a sustainable level without compromising on quality of care and without losing the focus on improving outcomes.

## Current State of Affairs Access to Primary Care

Accessing primary care remains a challenge for Ontarians.



- More than 700,000 Ontarians do not have access to primary and preventative care, including blood tests, eye examinations and cancer screening
- Close to 20% of unattached patients (individuals who are without a family physician) in Ontario visit the ED for primary care
- Lack of continuity of care impacts the quality of services rendered to patients and can lead to unnecessary and expensive hospitalizations\*

Source: ICES 2005, OPHRDC 2008, Statistics Canada 2007

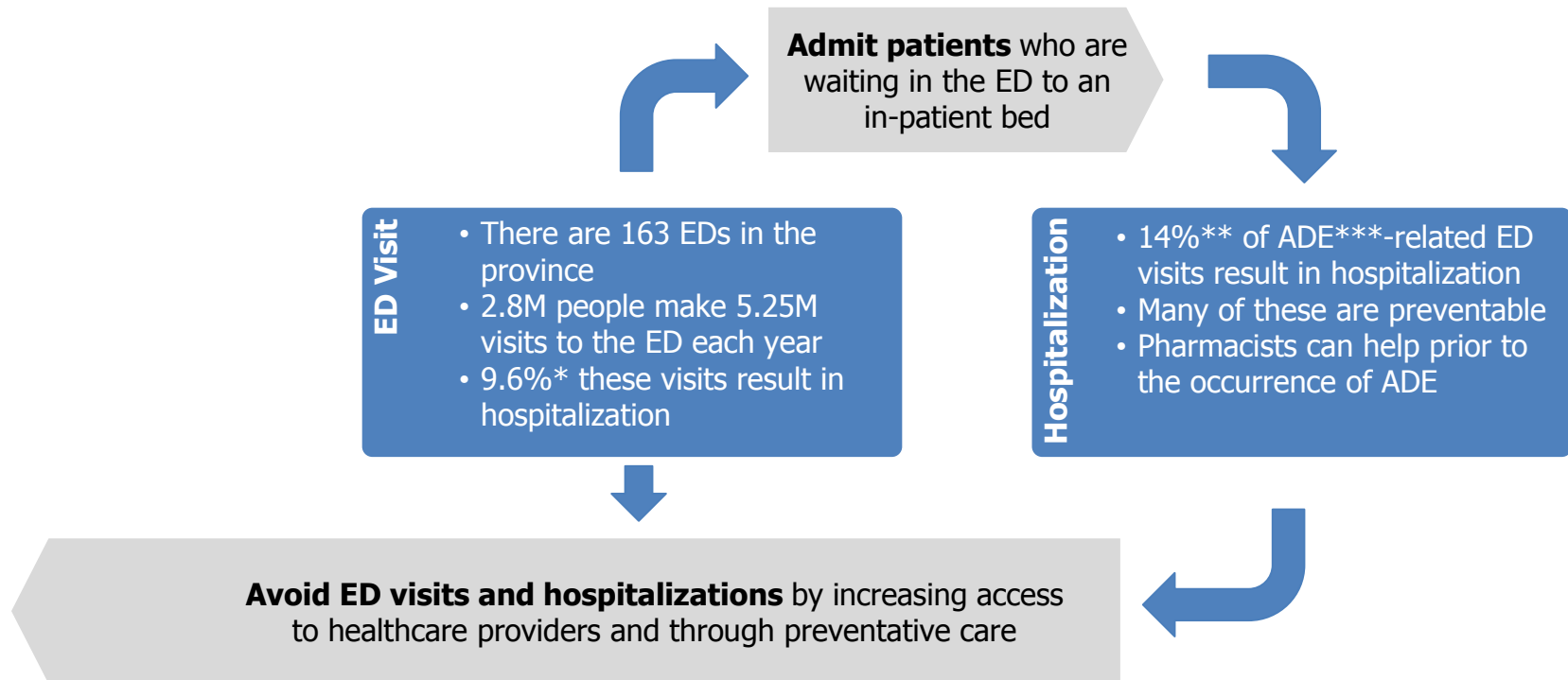
Growing healthcare demand and increasing retirement rates among GPs will exacerbate the existing health human resource shortages in the near future.

\*Source: Merritt Hawkins & Associates. "2007 Primary Care Access Survey"  
[http://www.merrithawkins.com/pdf/2007\\_survey\\_primarycare.pdf](http://www.merrithawkins.com/pdf/2007_survey_primarycare.pdf)

# Current State of Affairs

## Emergency Department (ED) Wait Times

ED wait times can be reduced by addressing two key issues: alternate-level of care patients and unnecessary/preventable ED visits.



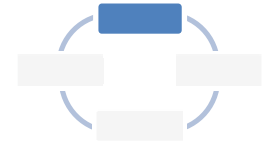
While the province continues to reduce the ALC back-log, pharmacists can play a crucial role in decreasing the incidence of Adverse Drug Events, preventing ED visits and hospitalizations, as well as improving access to GPs.

\*Source: CIHI, 2007

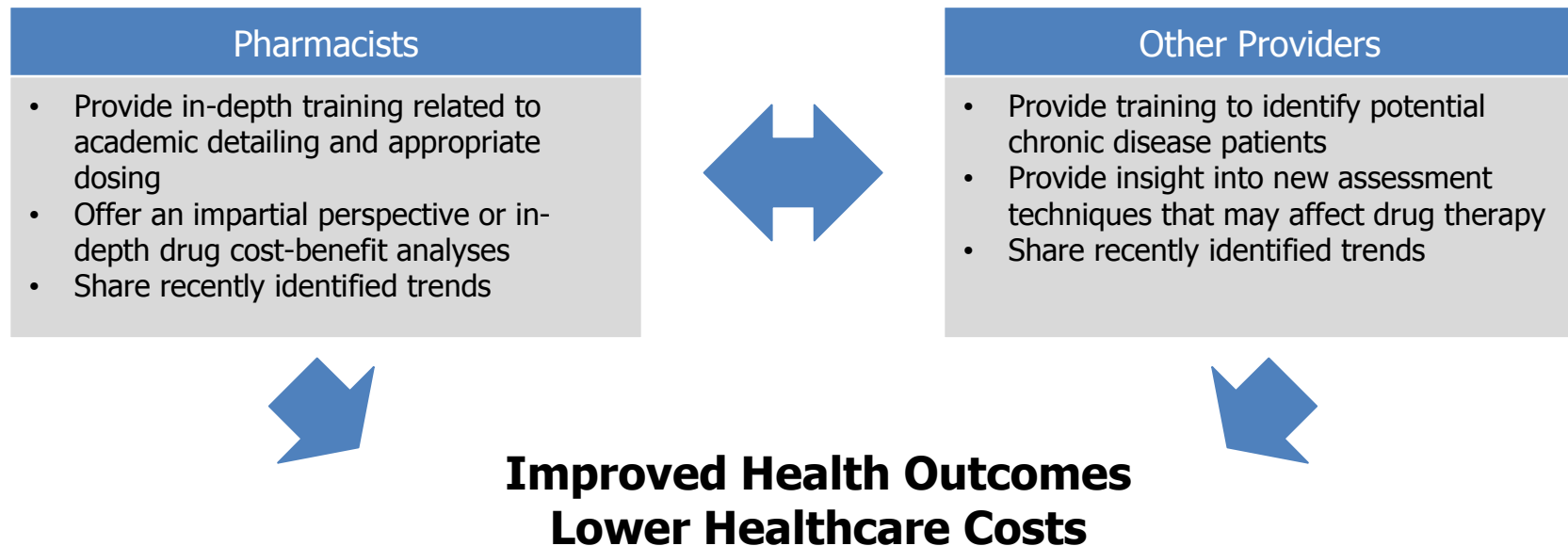
\*\*Source: Zed, 2005

\*\*\*Adverse Drug Events: Injury caused by a medication

## Key Considerations: Additional Opportunities - People Knowledge Sharing Among Healthcare Service Providers



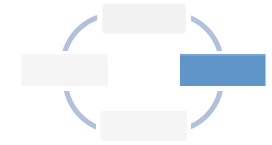
Pharmacists, working together with other healthcare providers, can further enhance system access, quality of care and quality of life, leveraging each other's domain-specific knowledge and skills.



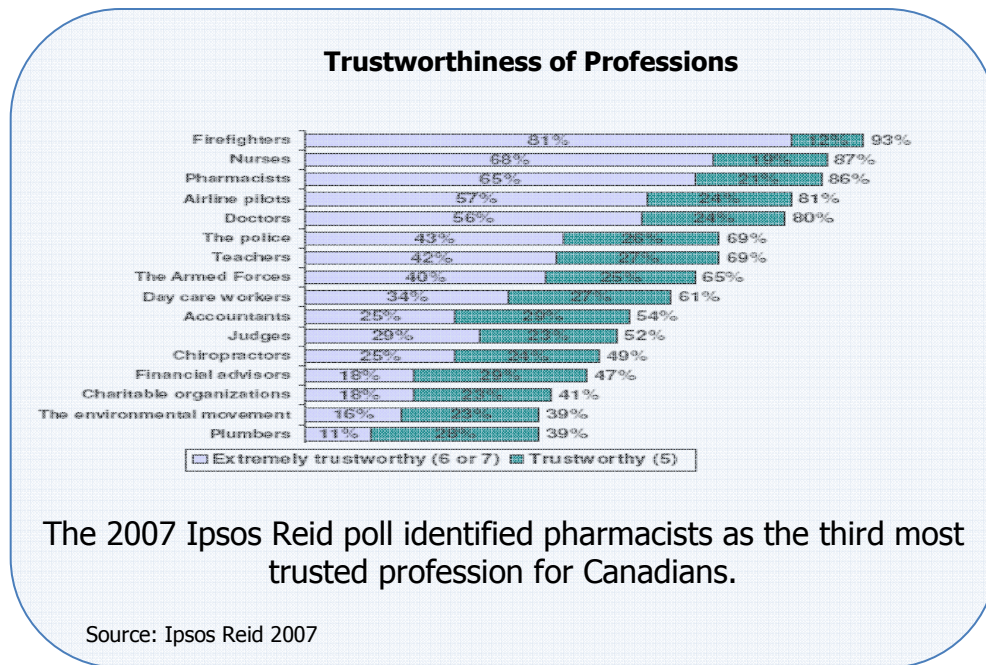
Greater knowledge-sharing will facilitate the development of effective, efficient and proactive interactions among healthcare providers.



# Key Considerations: Additional Opportunities - Process Advice & Orientation Services



Pharmacists represent a well established resource which could be leveraged to provide advice & orientation services to the public, particularly given the high levels of awareness and trust.



Ontario has started to use pharmacists as an entry point to the healthcare system:

- As part of the ColonCancerCheck screening program, Ontarians without a regular GP can go to their local pharmacy to obtain more information on how colorectal cancer can be prevented and can receive a FOBT screening kit.

As a trusted resource, pharmacists could offer educational and navigational services. Similar to their role in the *ColonCancerCheck* Screening program, they could also act as an additional entry point into the healthcare system, especially through the Minor Ailments Program.

Source: Trust Survey 2007 Canada – Ipsos.pdf



# Executive Summary

## Assumptions

Various assumptions have been used in developing this model.

Assumption	Rationale
Population growth follows projections by the Ontario Ministry of Finance	Demographic shifts will increase the number of patients presenting to a GP, creating incentives to alleviate this pressure through alternative care
For CDPM, pharmacist action is maintained throughout the period and continued in steady-state	Studies have observed that, post intervention, adherence to therapy guidelines would fall back to pre-intervention level
Diabetes and hypertension-related complications considered in this model would only affect patients with low productivity	A conservative approach has been taken in estimating the avoidance of productivity loss because of the type of data used in calculating complications related to diabetes and hypertension. As a consequence, loss of productivity due to diabetes and hypertension were excluded
Only one refill a year per Rx	According to the PAPE* agreement, pharmacists may authorize a prescription extension only once
Adverse drug events would be detected by pharmacists who would then adapt/adjust the medication therapy or intervene by not dispensing the clinically inappropriate prescription	Some problematic prescriptions cannot be adjusted or adapted based on TM guidelines. For these prescriptions, the pharmacist would refuse to fill them and would contact, when appropriate, the prescriber to obtain a new prescription
ADEs would either lead to ED visits or GP visits	Patients would visit their physician because of the adverse effects even if the ADE does not warrant an ED visit
Adherence to pharmacy minor ailments service will increase progressively to reach a steady state over five years	As Ontarians familiarize themselves with the usefulness of being able to obtain a prescription for minor ailments at their local pharmacy, uptake would increase
Ontarians who visit an emergency department for a minor ailment will only do so once a year	To provide conservative evaluation given the lack of data on MA at the ED level (no breakdown of CTAS IV and V data available publicly)
GP capacity will remain stable over the five-year period to a steady state (i.e. # of visits remain relatively the same)	Number of GPs has remained stable, limiting capacity expansion. Recent actions to increase the number of GPs will produce results in the medium term, but may be compensated by GPs retiring or decreasing volume of services

\*PAPE: Pharmacist Authorization of Prescription Extensions



# Example of Model Methodology Employed – Health, Wellness and Disease Education

*- A Subset of Chronic Disease Prevention and Management (CDPM) -*



# Health, Wellness and Disease Education Model Principles

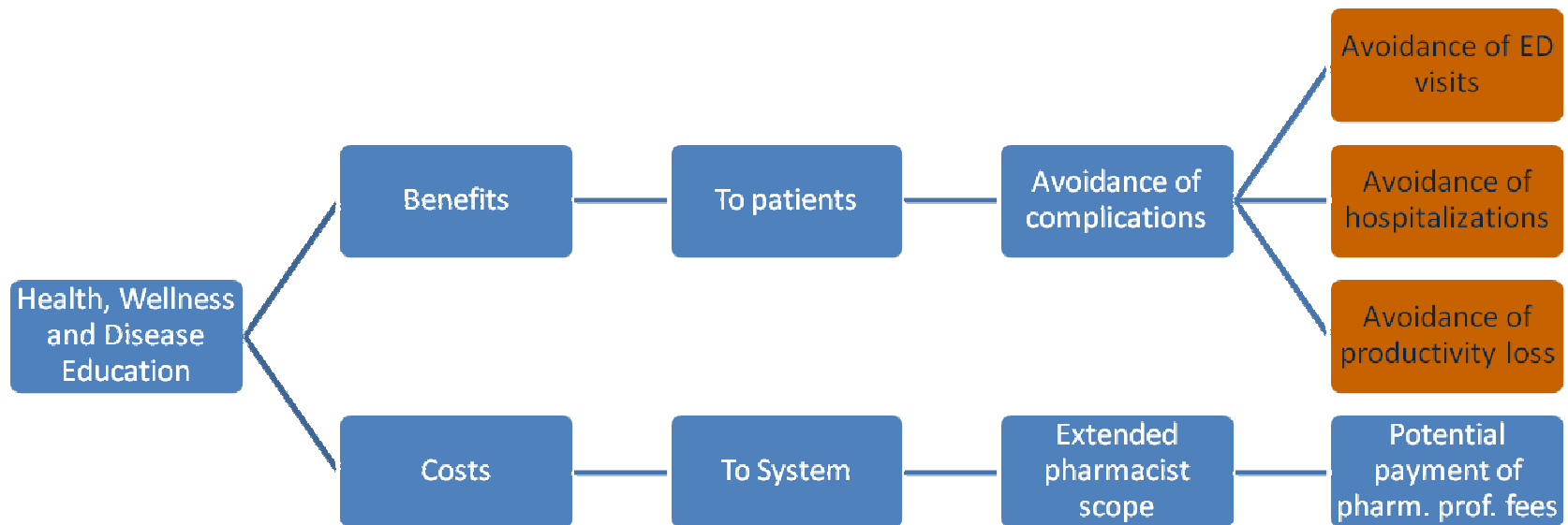
The value of chronic disease prevention and management is based on the principle that a pharmacist's intervention will increase proper adherence to therapy guidelines, thereby reducing the occurrence of complications requiring hospitalization.

Assumption	Rationale
Pharmacist action is maintained throughout the period and continued in steady-state	Studies have observed that, post intervention, adherence to therapy guidelines would fall back to pre-intervention level
Diabetes- and hypertension-related complications considered in this model would only affect patients with low productivity	A conservative approach has been taken in estimating the avoidance of productivity loss because of the type of data used in calculating complications related to diabetes and hypertension. As a consequence, loss of productivity due to diabetes and hypertension were excluded.



# Health, Wellness and Disease Education Value Tree

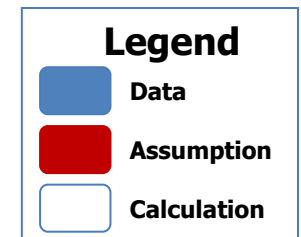
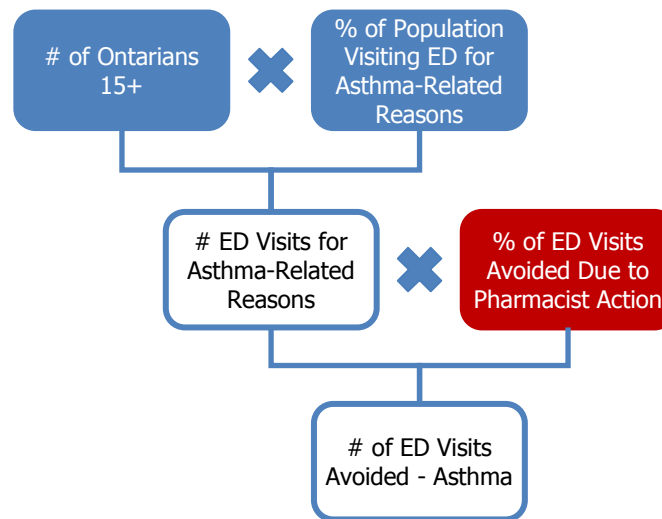
Pharmacists working in an expanded role, in preventing and managing chronic disease, would generate the following benefits and costs.



# Health, Wellness and Disease Education

## Asthma – ED Visits

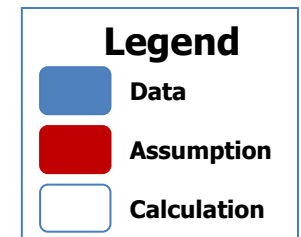
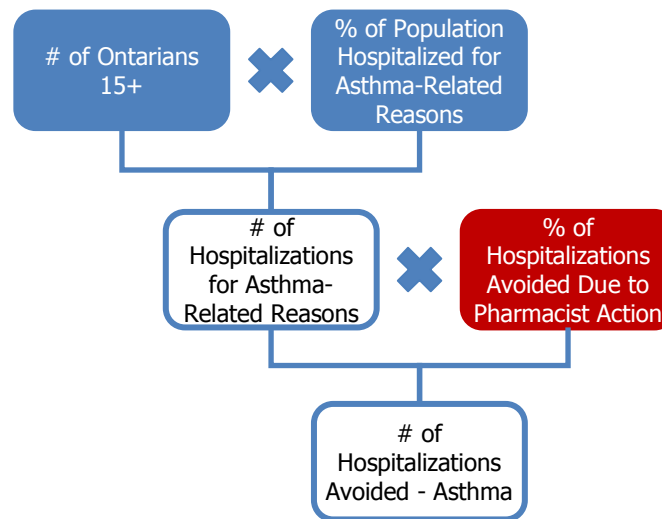
Many asthma-induced ED visits can be avoided through improved patient management. Pharmacists can help in this process.



# Health, Wellness and Disease Education

## Asthma – Hospitalizations

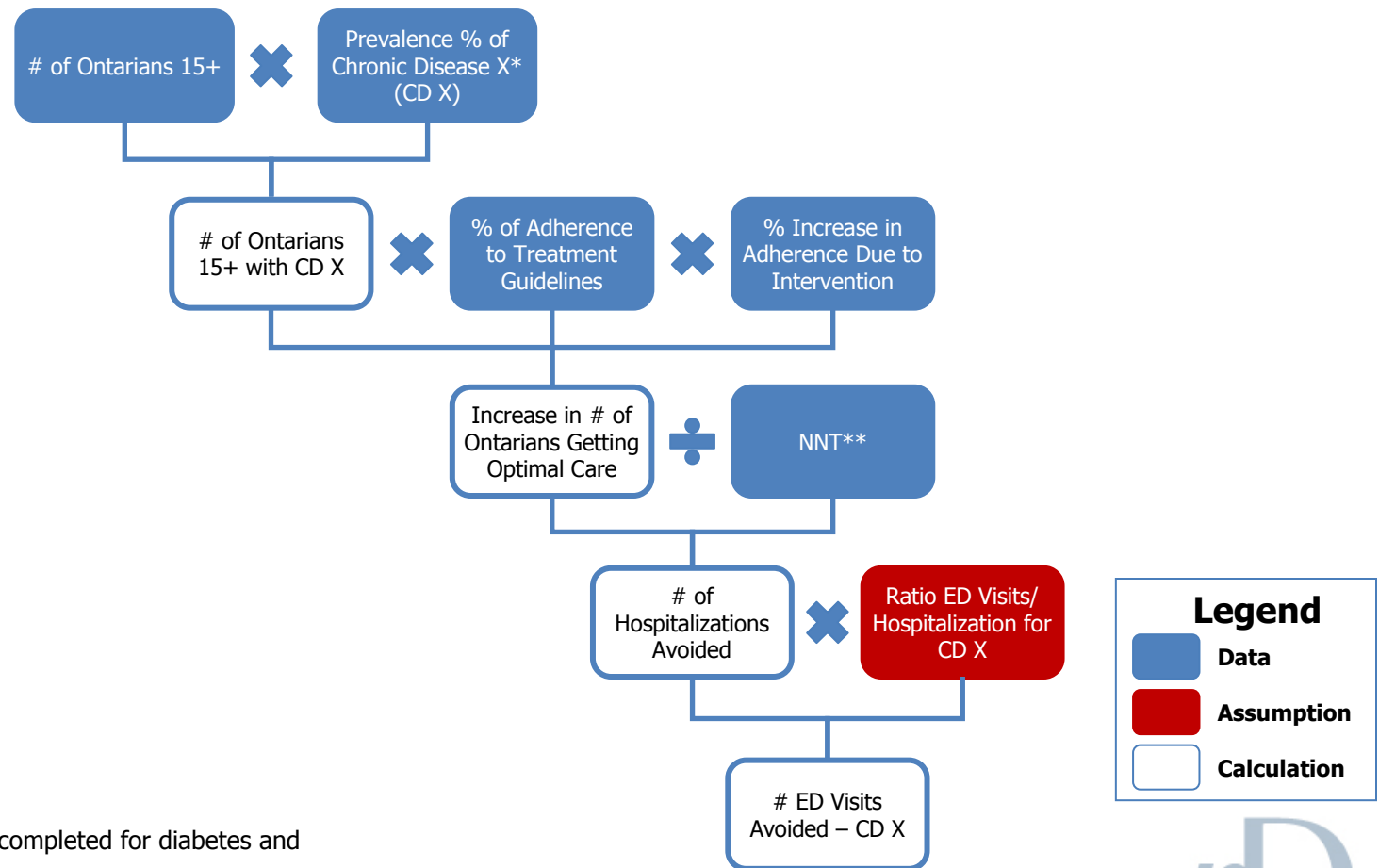
Pharmacists' interventions can help asthmatics better manage their condition and lessen their probability of hospitalization.



# Health, Wellness and Disease Education

## Diabetes and Hypertension – ED Visits and Hospitalizations

Pharmacists' interventions can increase adherence to treatment guidelines, preventing complications leading to hospitalization.

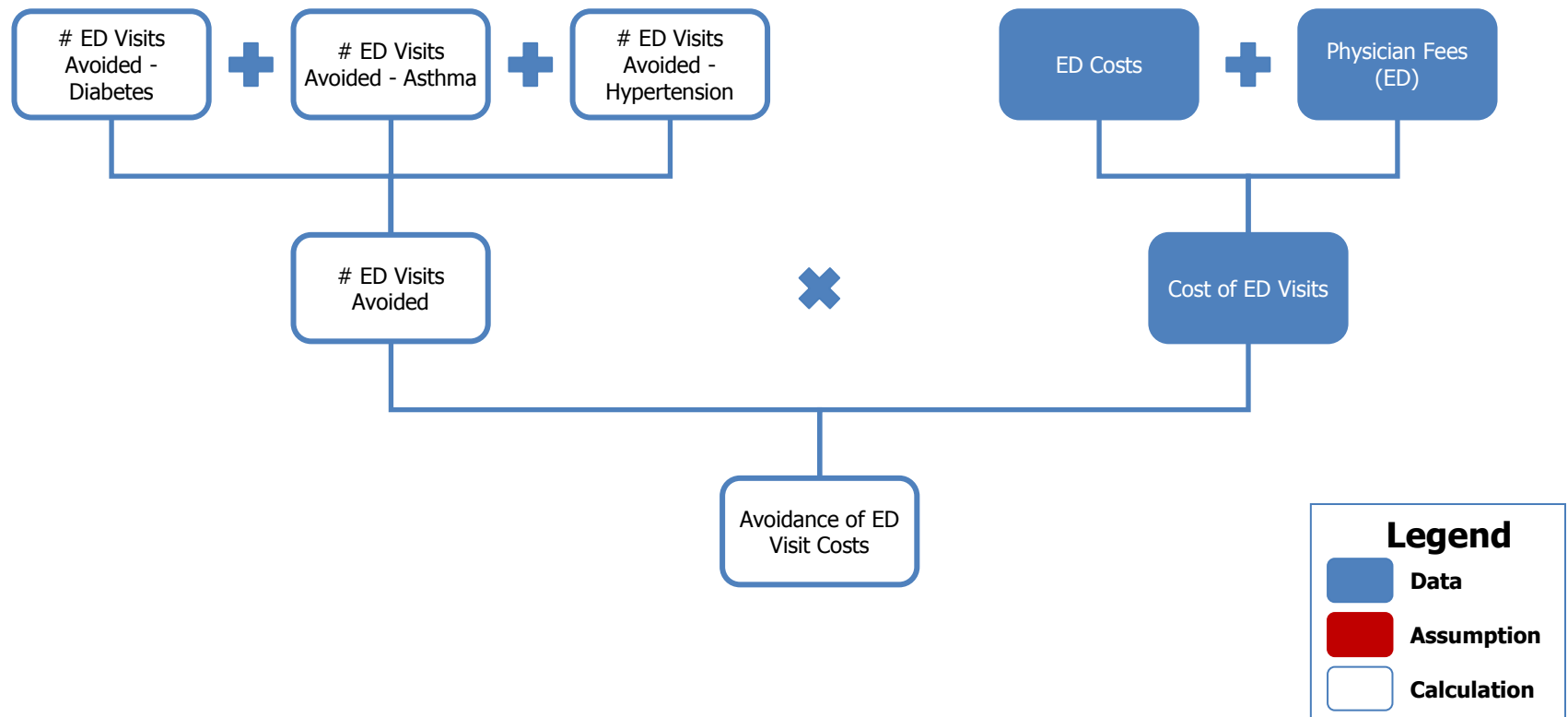


\*These calculations are completed for diabetes and hypertension.

\*\*Number of persons needed to treat over one year to prevent complications

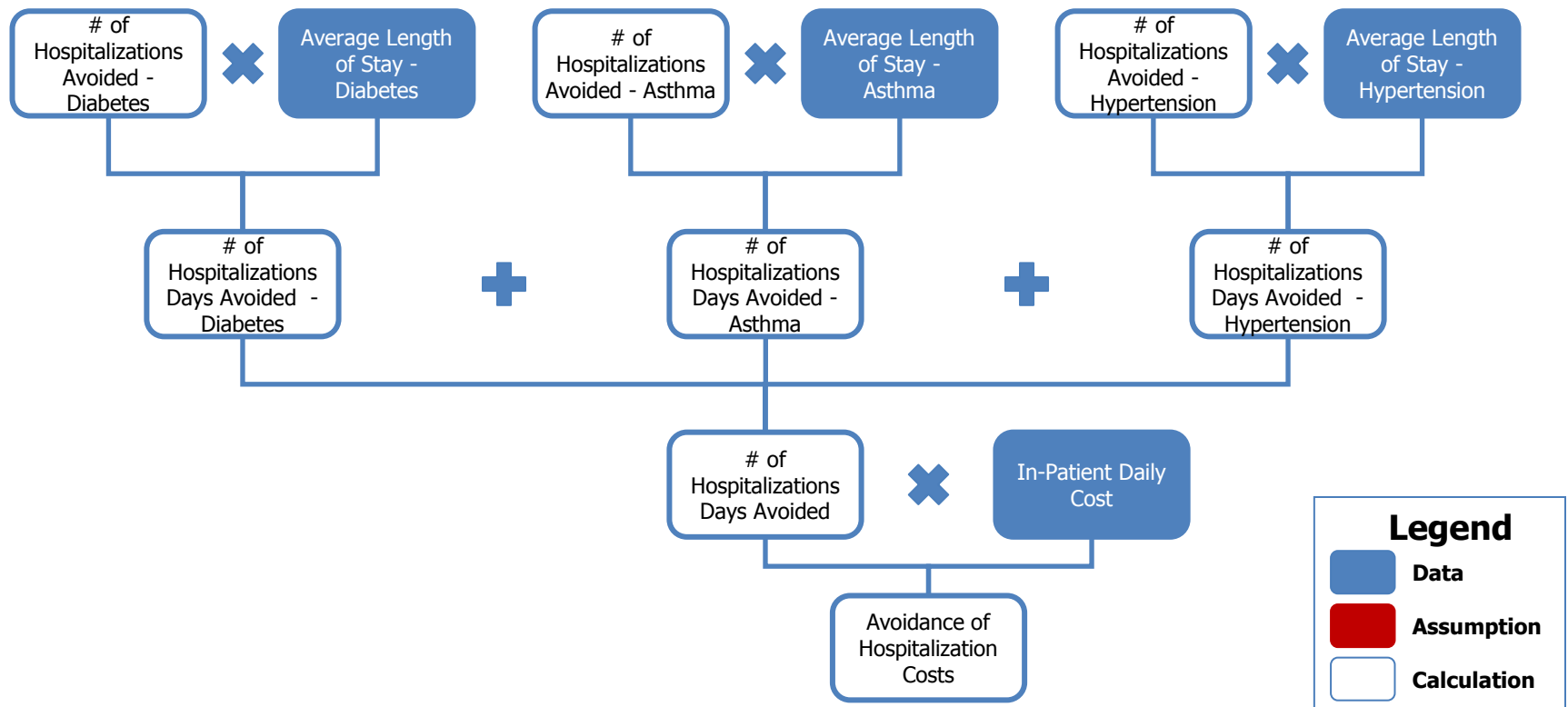
# Health, Wellness and Disease Education Benefits – Avoidance of ED Costs

Avoided ED visits lead to decreased system costs.



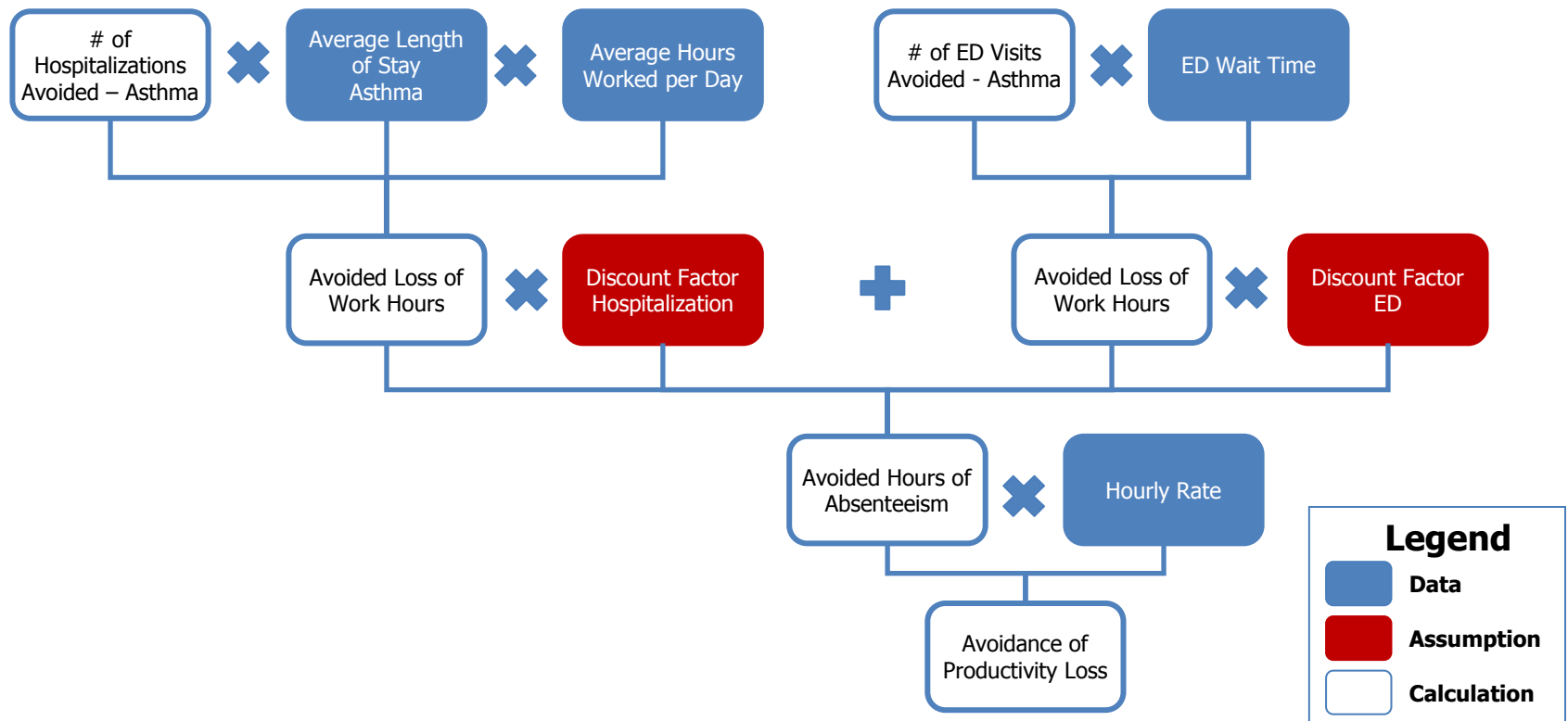
# Health, Wellness and Disease Education Benefits – Avoidance of Hospitalization

Pharmacists' interventions would prevent hospitalizations, thereby allowing for system savings.



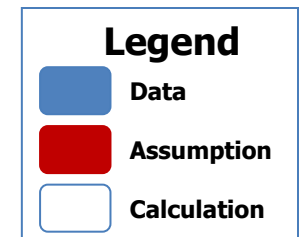
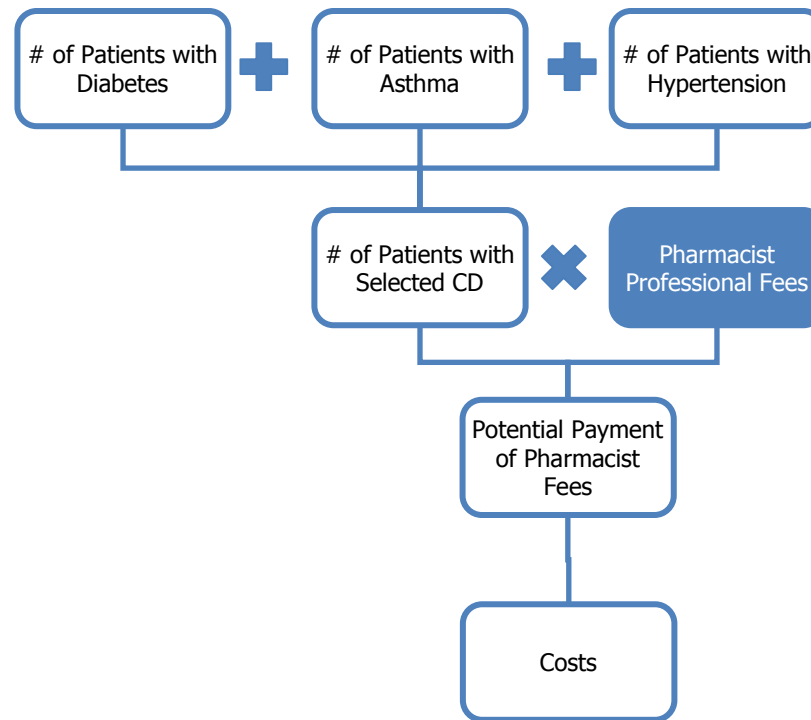
# Health, Wellness and Disease Education Benefits – Avoidance of Productivity Loss

Visits to the ED and hospitalizations can lead to production losses due to absenteeism. By preventing them, pharmacists reduce this economic cost.



# Health, Wellness and Disease Education Costs

A variety of fees could be incurred by a payor for health, wellness and disease education programs led by pharmacists.



## Appendix F Glossary

Term	Acronym
Adverse Drug Event	ADE
Alternate-Level of Care	ALC
Chronic Disease Prevention and Management	CDPM
Chronic Health Condition	CHC
Chronic Obstructive Pulmonary Disease	COPD
Emergency Department	ED
General Practitioners	GP
Health Human Resource	HHR
Medication Therapy Management	MTM
Minor Ailments Program	MAP
Non-Steroidal Anti-inflammatory Drugs	NSAIDS
Ontario Drug Benefit Program	ODBP
Prescription Intervention	PI
Refusal-to-Fill	RTF
Therapeutic Modification	TM

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