



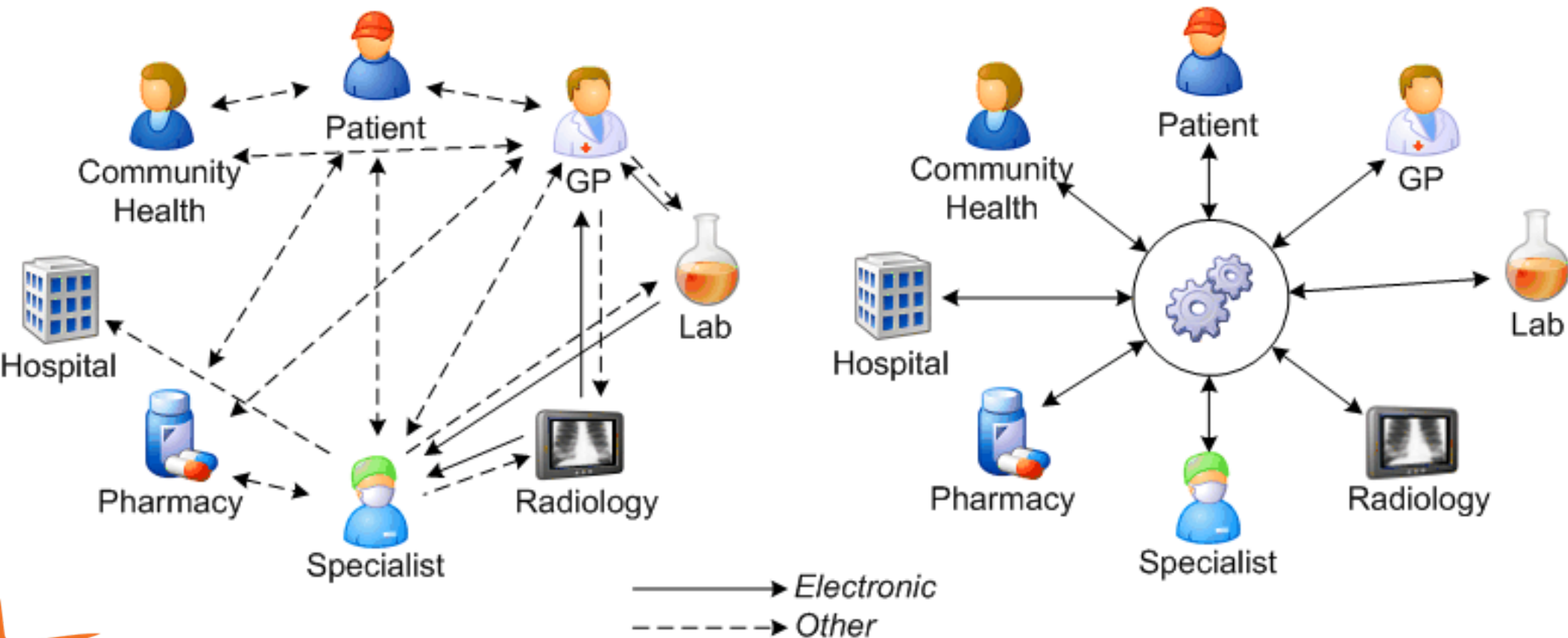
# Economically Effective Health IT

*Electronic Health Records and Chronic Disease Management*

Chris Stephens, Orion Health  
*Regional Manager – Australia & Southeast Asia*

# The Challenge...

*The challenge is to connect the disparate islands of care, information, organisation and knowledge that patients encounter, and to support workflow and decision-making:*



# George C. Halvorson

Chairman and chief executive officer of Kaiser Foundation Health Plan Inc. and Kaiser Foundation Hospitals.

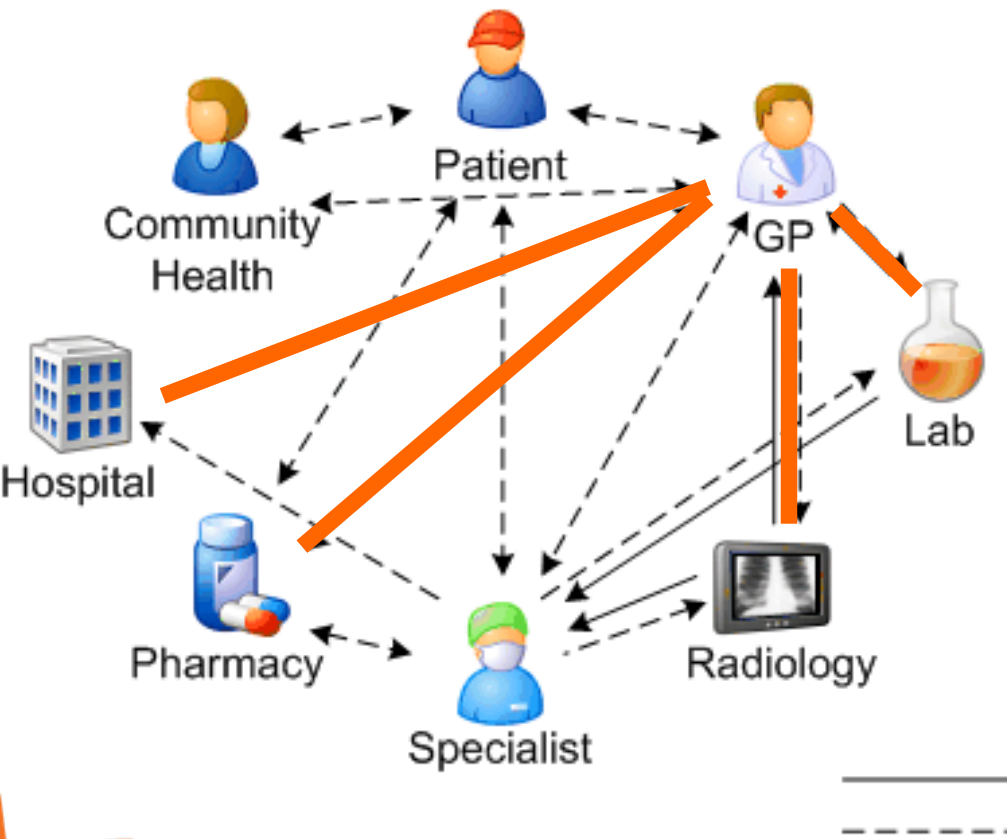
*Healthcare Will Not Reform Itself: A User's Guide to Refocusing and Reforming America's Healthcare*



"It would be breathtakingly stupid to put healthcare data on the computer and end up with the sets of isolated, inaccessible, non-interactive information silos we now have with paper healthcare records."

# Australia's e-Health Programme

*"Across Australia there is a groundswell of support for a better, more connected healthcare system. More than 80 percent of Australians are in favour of EHRs..." (NEHTA)*



- Coordinated Care (IEHR)
- Connecting Australia
  - E-Health Interoperability, e-Health ID, Clinical Terminology, Security Messaging, Privacy, Supply Chain
- E-Communications in Practice
  - e-Discharge Summaries
  - e-Medication Management
  - e-Pathology
  - e-Referrals

# The Big Picture

- The Pareto Principle suggests that ~80% of the healthcare spend will be spent on ~20% of the population.
- Already, we know that 70% of the health spent is on chronic disease, and it's increasing!
- Also, 80% of the healthcare costs are spent on secondary care, the ambulance at the bottom of the cliff.



# George C. Halvorson

- 1% of the population results in 35% of health care costs
- Patients with 5 morbidities see an average of 17 physicians in a year
- 1 hypothetical patient was treated by 135 providers and they came up with 82 different assessments



# Fixing Health Care

“The health systems ... are struggling to cope with soaring costs.

A lot of those extra costs come from new technology—which is odd. In most other industries, new more productive technologies drive costs down...”

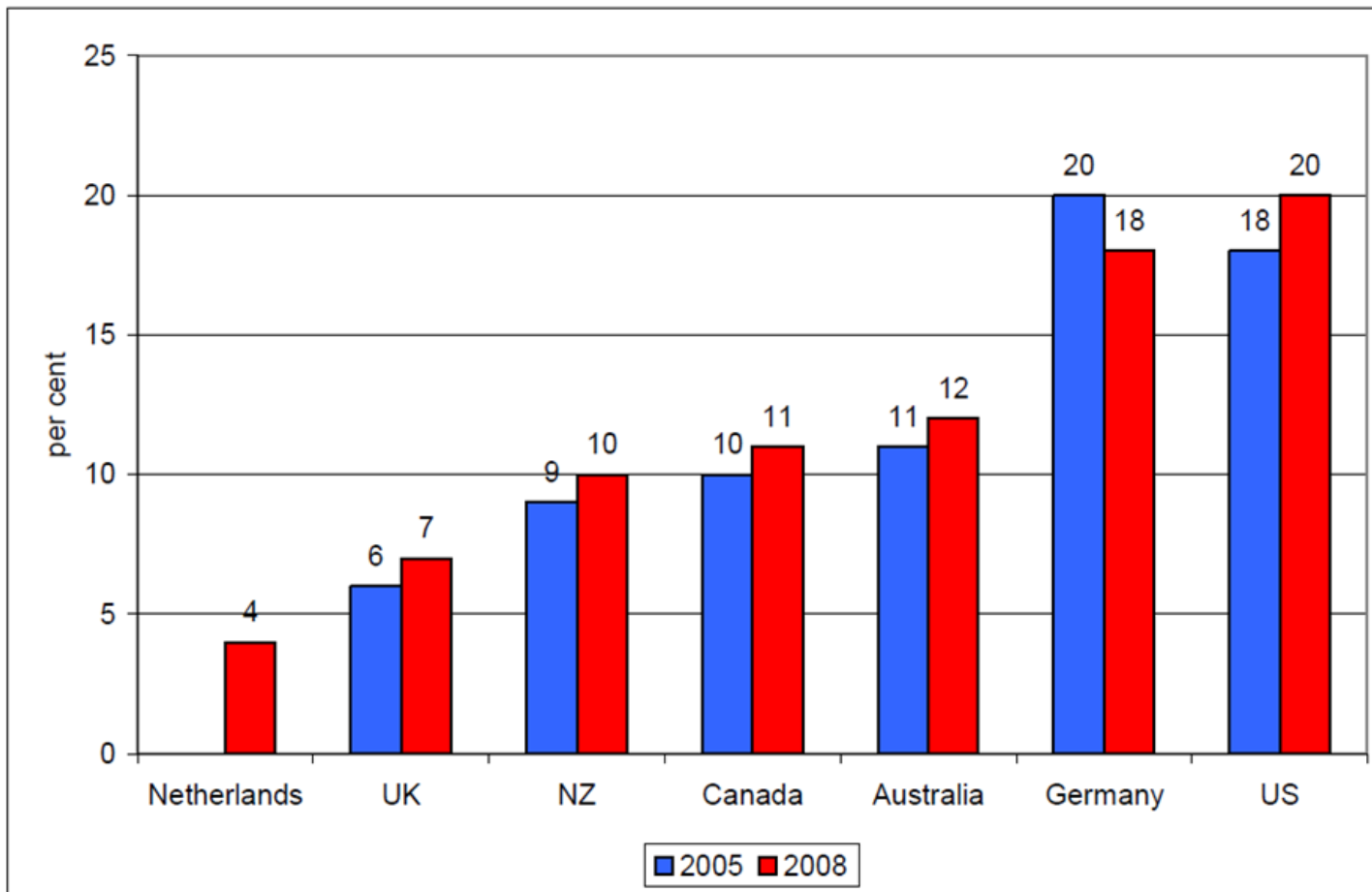
★ The Economist: April 16<sup>th</sup> 2009

If Health IT were a drug would it be approved?

★ Alliance of Clinical Excellence – opening presentation, Mehdi Khalid

# Potential for Efficiency Gains

## The Australian Health System, The Potential for Efficiency Gains – June 2009

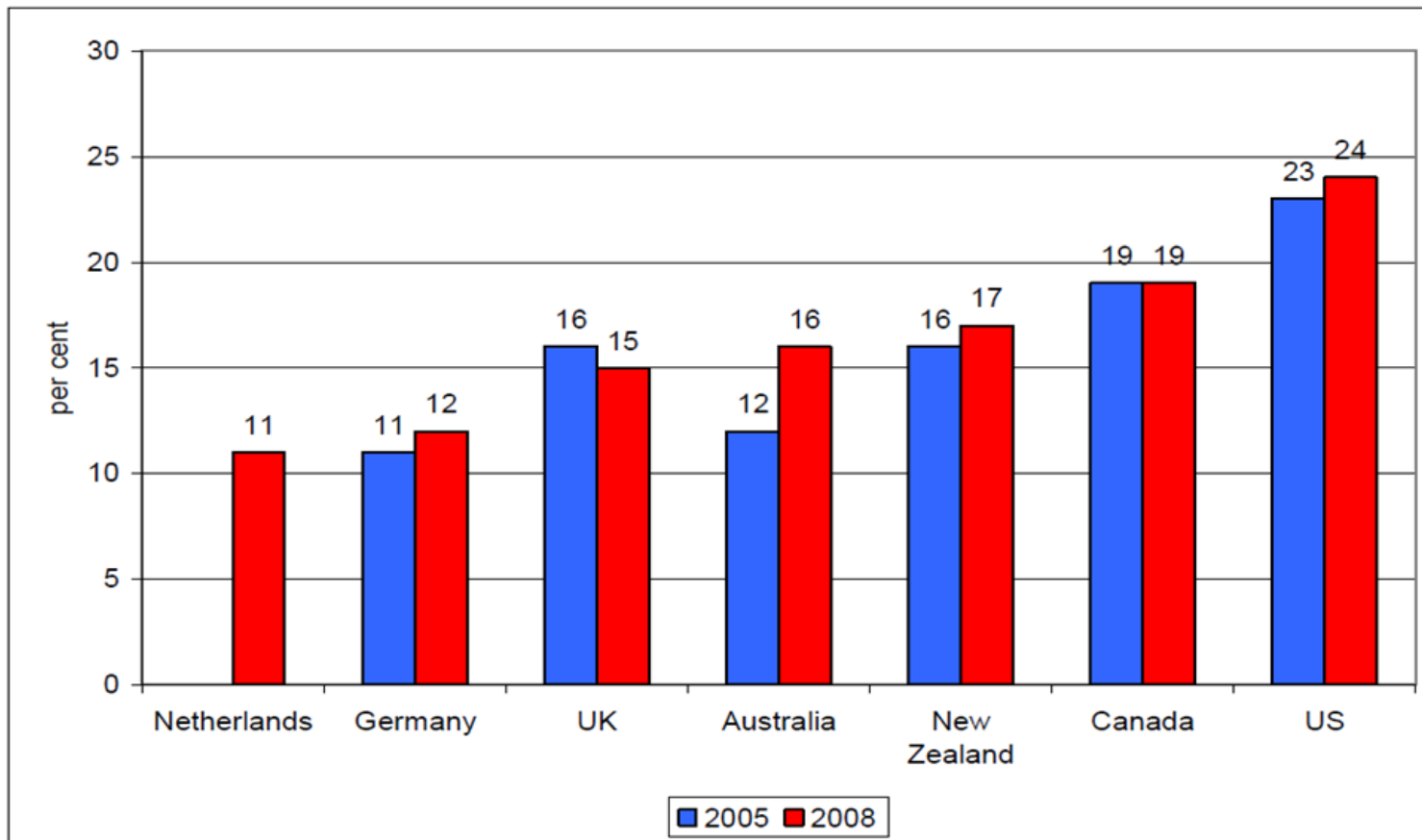


**Figure 4: Duplicate medical tests among sicker adults (Source: 2005 and 2008 Commonwealth Fund International Health Policy Survey of Sicker Adults)**  
(Percentage of patients reporting that their doctor ordered a medical test that the patient felt was unnecessary because the test had already been done before (in the last two years).)



# Potential for Efficiency Gains

## The Australian Health System, The Potential for Efficiency Gains – June 2009



**Figure 5: Test results/medical records not available at time of appointment, among sicker adults (Source: 2005 and 2008 Commonwealth Fund International Health Policy Survey of Sicker Adults)**

(Percentage of patients reporting that their test results/medical records were not available at the time of the appointment (in the last two years).)

# Example EHR Business Case - US

## Moving Toward a Business Sustainability Plan

### Projected Impact of HealthInfoNet

Estimated Total Annual Savings for HIN Phases	HIN Demonstration Phase 1 (2009) Savings		HIN Demonstration Phase 2 (2010) Savings		HIN Demonstration Phase 3 (2011) Savings	
Avoided Services	Low	High	Low	High	Low	High
Avoided Services in Ambulatory Care	\$2.6 M	\$2.6 M	\$3.5 M	\$3.5 M	\$5.2 M	\$5.2 M
Avoided Services in Emergency Room	\$3.7 M	\$0.3 M (Admits)	\$4.5 M	\$0.4 M (Admits)	\$5.2 M	\$0.5 M (Admits)
Reduced ER Costs – Inpatient		\$2.5 M		\$3.0 M		\$3.5 M
Reduced ER Costs – Outpatient		\$2.8 M		\$3.4 M		\$3.9 M
<b>Annual Avoided Service Savings</b>	<b>\$6.3 M</b>	<b>\$8.3 M</b>	<b>\$8.0 M</b>	<b>\$10.3 M</b>	<b>\$10.5 M</b>	<b>\$13.2 M</b>
<b>PRODUCTIVITY</b>						
Ambulatory Care Productivity Savings	\$1.5 M	\$1.5 M	\$2.0 M	\$2.0 M	\$3.1 M	\$3.1 M
ER Productivity Savings	\$2.7 M	\$2.7 M	\$3.2 M	\$3.2 M	\$3.8 M	\$3.8 M
<b>Annual Productivity Savings</b>	<b>\$4.2 M</b>	<b>\$4.2 M</b>	<b>\$5.2 M</b>	<b>\$5.2 M</b>	<b>\$6.8 M</b>	<b>\$6.8 M</b>
<b>Total Estimated Annual Savings</b>	<b>\$10.6 M</b>	<b>\$12.5 M</b>	<b>\$13.2 M</b>	<b>\$15.6 M</b>	<b>\$17.2 M</b>	<b>\$20.0 M</b>

April 7, 2009

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# Disease Management Outcomes

<http://www.ihi.org/IHI/Topics/ChronicConditions/AllConditions/ImprovementStories/GoodHeartFailureCareFollowsPatientsHome.htm>

The two Kaiser centers that have piloted this program have cut the rate of hospitalization and readmission for CHF patients ***to about a third of the average rate*** system-wide. "This was not a controlled experiment, the patients weren't randomized, but there is nothing else to explain this dramatic change,"



# Case Study – Alberta, Canada





# Capital Health Authority



**The EHR Journey**  
*'Invitation to  
Innovation'*

# Capital Health Authority

## Capital Health

### Population Served:

- Edmonton Area: 980,000
- Plus North: 1.6 million

### 13 Hospitals: 2,600 beds

- 436,000 emergency visits
- 106,000 admissions
- 85,000 surgeries
- 13,000 births

Employees: 20,000

Physicians: 2,000

### Other:

- 22 public health centers
- 9 mental health clinics
- Health Link nurse call centre (400,000 + calls)



# Capital Health Authority

- Delivering rich data from across the region
  - Patient summary, demographics and event histories
  - Consultation notes, procedure notes, transcribed reports
  - Lab results, diagnostic imaging reports
  - Event histories, discharge summaries
- Very high satisfaction rates across all service types
- High adoption and acceptance

See [www.capitalhealth.ca/YourHealth/Campaigns/netCare](http://www.capitalhealth.ca/YourHealth/Campaigns/netCare)



# Summary view of Diabetes Data

Showing all documents View By Category Look For Status All Clear 15:07 07-Sep-2007

Help Home Logout

Common Favourites Recently Viewed Patients List 1 List 2 List 3 List 4 Searches Patient Lists Concerto Messaging BIRT

Dynamic Patient Summary Chronic Disease Summary

Anatomic Pathology (10/10)

Blood Bank (15/15)

Blood Gases (62/62)

Blood Products (30/30)

Chemistry (1675/1675)

Coagulation (191/191)

Cytogenetics (2/2)

Drug Levels (14/14)

Fluids (20/20)

Hematology (298/298)

Immunology (10/10)

Microbiology (208/208)

Other (13/13)

### Care Co-ordination

Responsible Physician : JONES, DR. PETER

Follow Up Scheduled : Yes

Follow Up Date : 24-Sep-2007

Follow Up Type/Reason : Telephone

### Co-Morbidities / Complications

Depression	05-Sep-2007
Foot Disorder	07-Aug-2007
Sexual Dysfunction	04-Aug-2007
Obesity	12-Apr-2006
Hypertension	24-Feb-2006
Lung Transplant	16-Aug-2004
Retinopathy	05-May-2003
Gestational Diabetes	22-Dec-2000

### Medications

Diamicon	1 time a day	10 mg	02-MAR-2006	Take as supplemented	Oral blood glucose lowering drugs (A10B)
gliclazide	3 times a day	12 mg	02-JAN-2006	No refills	Oral blood glucose lowering drugs (A10B)
Tenormin	1 time every month	225 ug	05-MAY-2007	Research on Medication	Antihypertensive/Renal Medications (C02)
Atenolol	2 times every 2 weeks	125 ug	02-MAY-2004		Antihypertensive/Renal Medications (C02)

### Markers Of Disease Progression

#### A1C

Hemoglobin A1C (HBA1C) : 6.3 % 05-DEC-2005 08:46 High

#### Blood Glucose

Glucose, fasting :	5.6 mmol/L	16-APR-2007 08:29
Glucose, random :	7.6 mmol/L	19-AUG-2003 10:55

#### Creatinine

Creatinine :	159 umol/L	16-APR-2007 08:29 High
Calculated GFR :	40 mL/min/1.73m2	16-APR-2007 08:29 Low

#### Lipids

LDL Cholesterol :	2.15 mmol/L	07-SEP-2006 09:02
Triglyceride :	1.67 mmol/L	07-SEP-2006 09:02
Total Chol/HDL Ratio :	3.5	07-SEP-2006 09:02
Cholesterol :	4.06 mmol/L	07-SEP-2006 09:02

#### Microalbumin

Albumin/creatinine :	42.31 mg/mmol	21-JUL-2003 03:40 High
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Alberta Netcare



# Peer Study – Perceived Value

- Perceived value of information: Respondents that either agreed or strongly agreed to finding the following netCARE information valuable:
  - Lab Test Results: 93%
  - Diagnostic Imaging: 89%
  - Transcribed Reports (discharge summaries, OR reports etc.): 86%
  - Event History: 76%
  - Demographics: 63%
  - Other Reports: 62%
  - Pharmaceutical Information Network: 37%

# Peer Study - Reductions

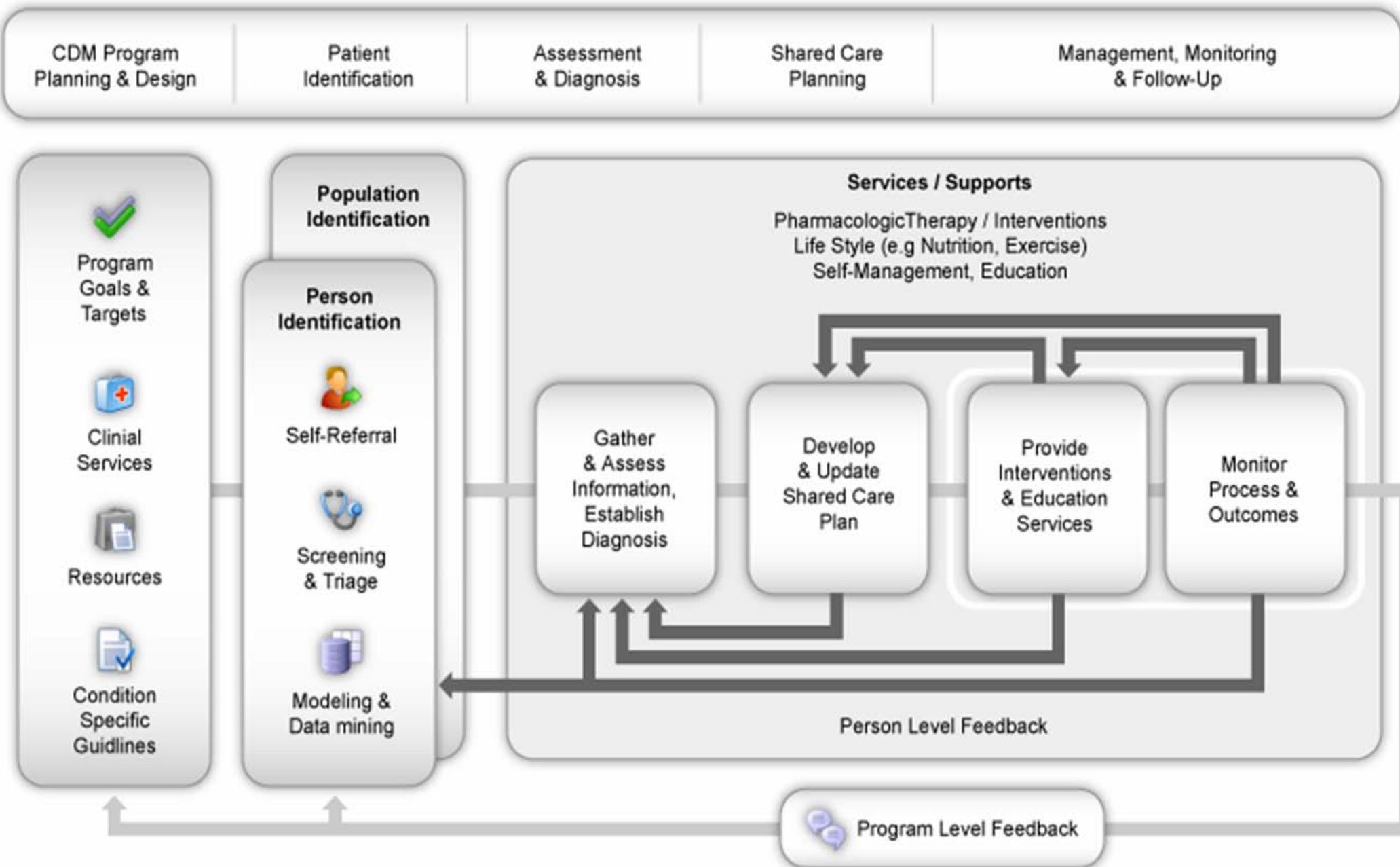
- Respondents agreed or strongly agreed to netCARE reducing:
  - Waiting time for patients: 31%
  - # of phone calls/faxes to obtain info: 70%
  - # of paper records accessed: 64%
  - Unnecessary duplication of tests and procedures: 61%
- Community Health ER Doctor "it has changed my life, the best thing that ever happened to me"

# Calgary Health Region

- Delivering integrated care of chronic disease
- Commenced CDM projects early 2002



# Chronic Disease Management Model

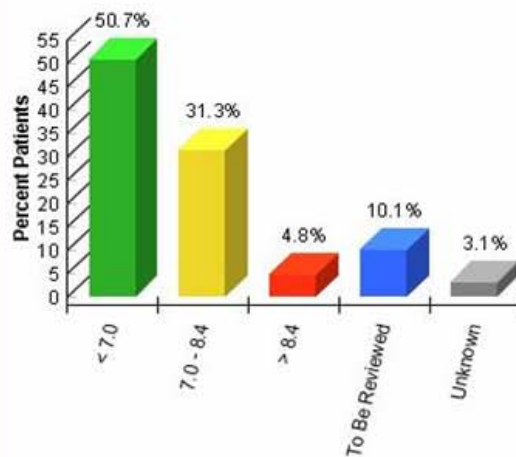


# Reporting - Provider View

Dash Board - Small 13:40 16-Aug-2007

A1C

A1C (by Provider)



Provider : [Name], DR. [Specialty]  
Total Number of Patients : 227

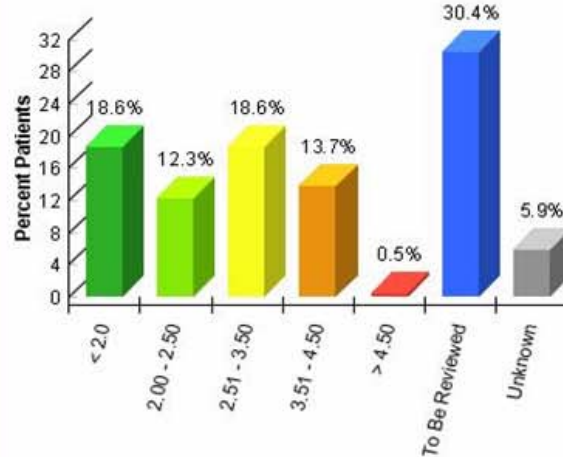
Category	Patient Count
< 7.0	115
7.0 - 8.4	71
> 8.4	11
To Be Reviewed	23
Unknown	7

Trend

Printer friendly version

LDL

LDL (by Provider)



Provider : [Name], DR. [Specialty]  
Total Number of Patients : 204

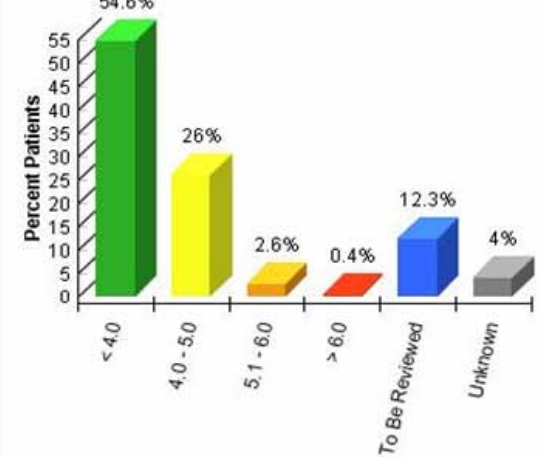
Category	Patient Count
< 2.0	38
2.00 - 2.50	25
2.51 - 3.50	38
3.51 - 4.50	28
> 4.50	1
To Be Reviewed	62
Unknown	12

Trend

Printer friendly version

Total Cholesterol : HDL Ratio

Total Cholesterol : HDL Ratio (by Provider)



Provider : [Name], DR. [Specialty]  
Total Number of Patients : 227

Category	Patient Count
< 4.0	124
4.0 - 5.0	59
5.1 - 6.0	6
> 6.0	1
To Be Reviewed	28
Unknown	9

Trend

Printer friendly version



# Full Task List







**AB-573447400 ADA JONES** (Female/69 years) [1938/09/20] **A5557184, C3269925**


[Full Task List](#)







23:22 7/15

orion
? Help Home
Logout
Favourites
Common
Workflows
DM Reports
DM Search
DM Patients
DM Providers
DM Overdue Tasks
DM Patients for Current Provider
Alberta Wellnet
DM Patients for Most Responsible Provider
OACCS (batch)
Crystal Reports
Alberta Wellnet
Registration
Concerto
Concerto UI
Monitoring
Messaging
CDM Home Care









**Filter Options**

Task Due From  To  Task in











Status ☒ Completed ☒ Declined ☒ Future ☒ Due ☒ Overdue ☐ Hidden ☐ History

Display Options:


## CDM - HomeCare

Form	Responsible	Due	Last Edited	Status
  CDM Shared Patient Assessment	Janice Couperwhite (200)	2005/12/07	2005/12/07	Completed
  CDM Shared Patient Assessment	Janice Couperwhite (200)	2006/12/07	2005/12/07	Completed
  CDM DM-Htn-Dyslip Assess 1.0	Lois Cassie (196)	2005/12/07	2005/12/14	Completed
 CDM Physician form	Physician	2005/12/14		Overdue
 CDM Shared Patient Assessment				

### DHCC pathway

Form	Responsible	Due	Last Edited	Status
  DHCC assessment	Terry Dingle (027)	2006/02/21	2006/03/13	Completed 
  Progress Report	Terry Dingle (027)	2006/03/13	2006/03/13	Completed 
  Triage and Appointments	Janet Gill (010)	2006/01/31	2006/05/18	Completed 
 Triage and Appointments				

## Living Well

Form	Responsible	Due	Last Edited	Status
LW Triage and registration	Chantel Van Aalst (198)	2005/12/20	2005/12/21	Completed
 LW Triage and registration				

Complete/Declined Form (Historical)  
Complete/Declined Form  
Overdue Form  
Due Form  
Future Form

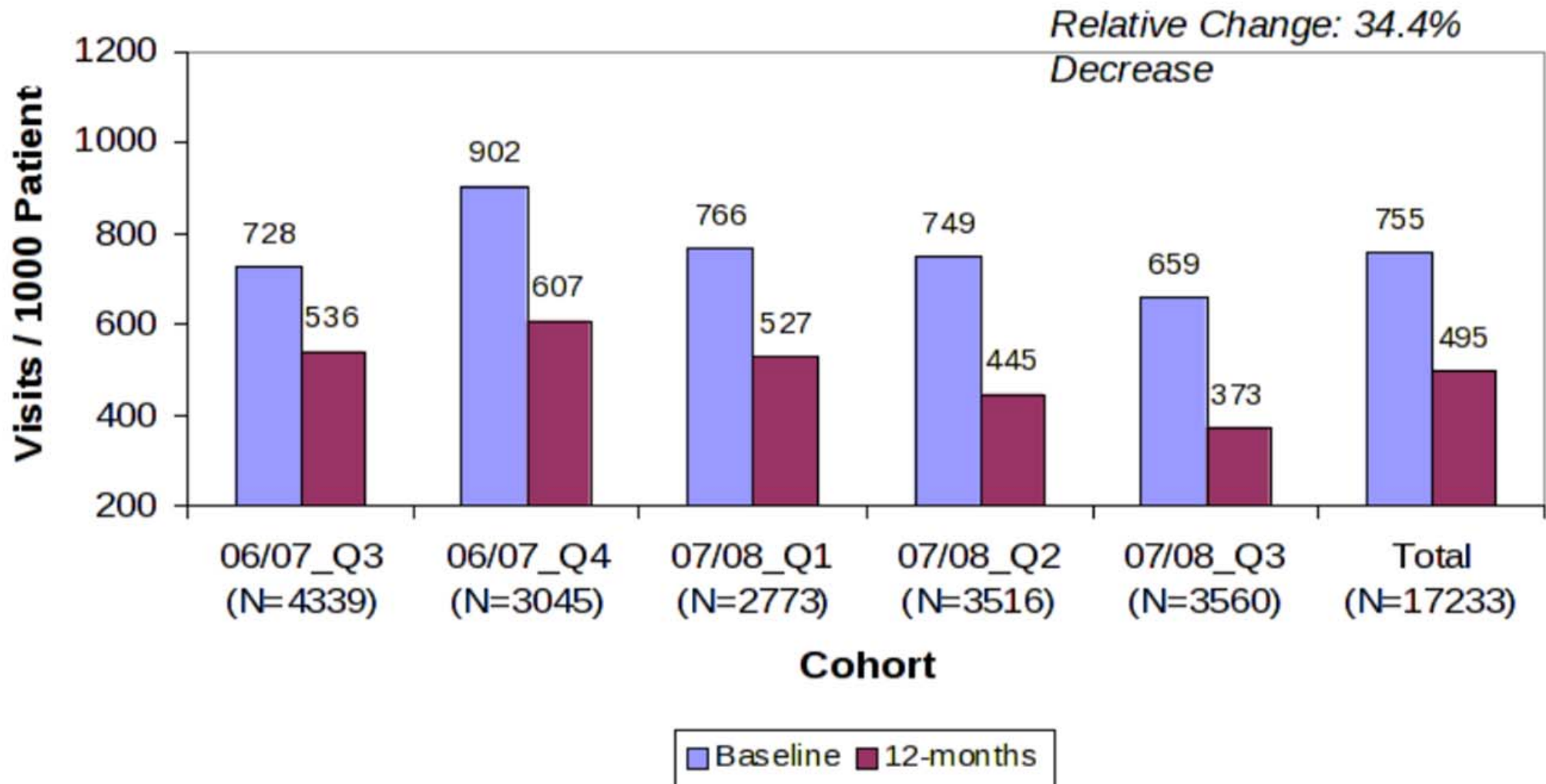
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# Extending Disease Management

- More than 20 distinct programs
- Such as
  - Diabetes, dyslipidemia, asthma, hypertension, Cardiovascular disease and COPD
- Innovative programs include
  - Chronic pain
  - Anticoagulation management
  - National home care partnership
  - WHIC minimum data set messaging

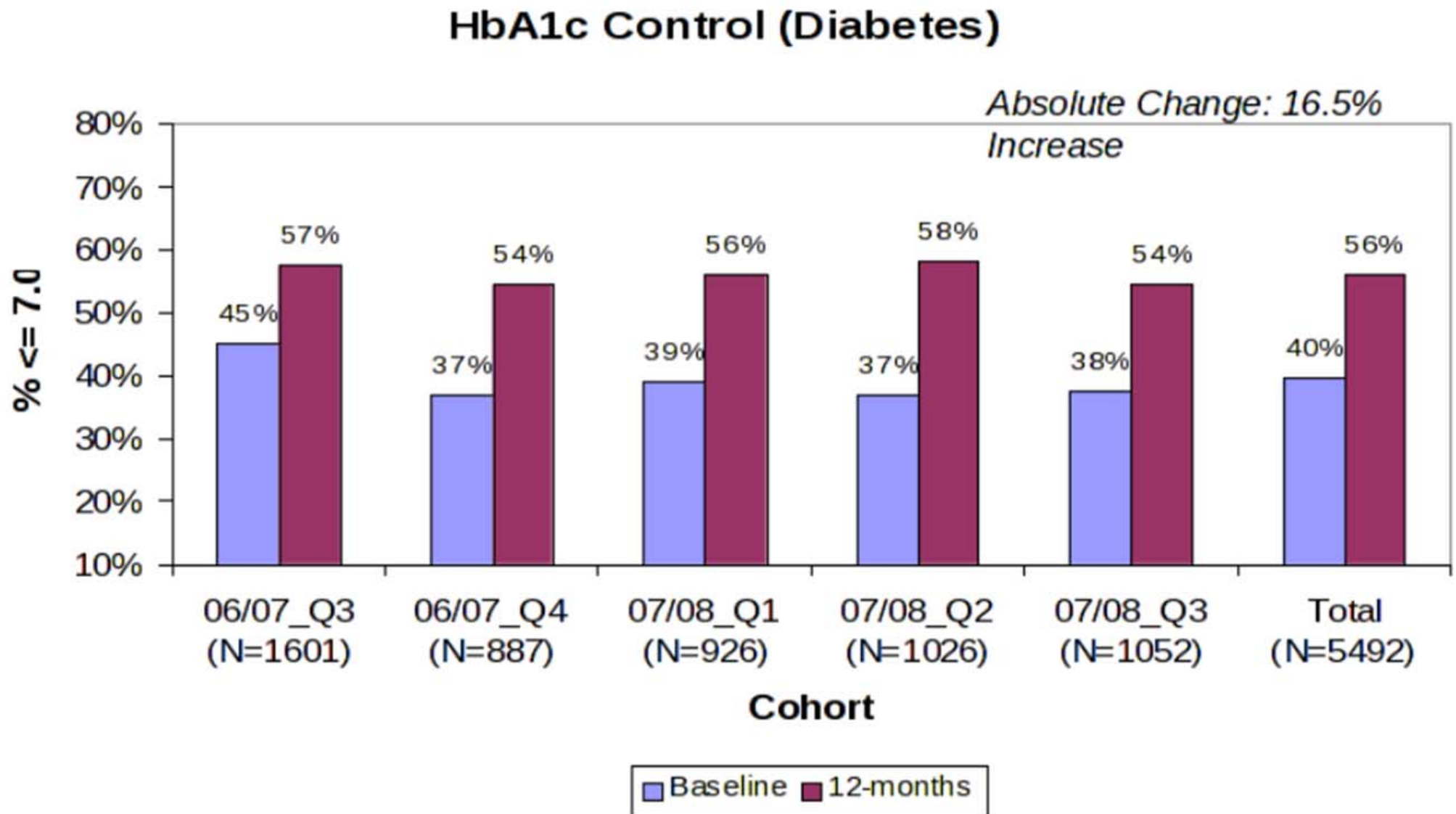
# 34% reduction in ER visits

## Emergency Department Admissions (All Conditions)





# 16% improvement in A1c (diabetics)



# Developing Alberta Wide Netcare

