

Technologies and Prevention: The Sault Ste. Marie Experience

Presentation by
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The primary care excellence model



GROUP HEALTH CENTRE

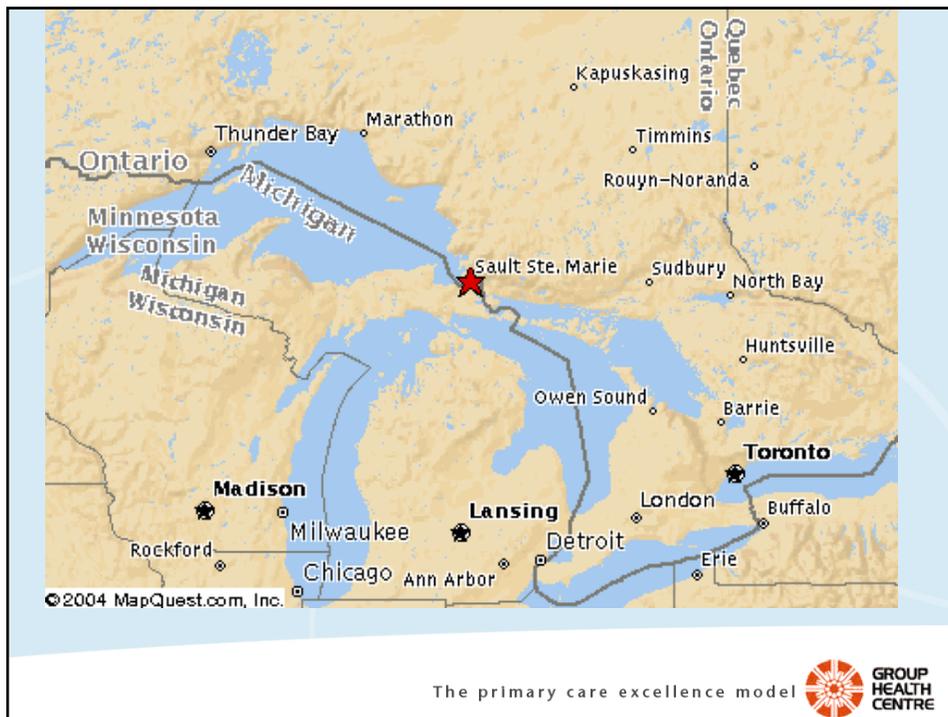


Ontario's largest and longest established ambulatory health care organization providing excellence in health care to most of the population of Sault Ste. Marie for 43 years.

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Cette présentation a été effectuée le 26 octobre 2006, au cours du Symposium "Nouvelles technologies de l'information en santé publique : implications sur le terrain" dans le cadre des Journées annuelles de santé publique (JASP) 2006. L'ensemble des présentations est disponible sur le site Web des JASP, à l'adresse <http://www.inspq.qc.ca/jasp>.



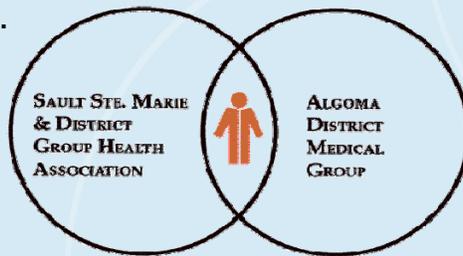
PATIENT-FOCUSED TEAM

- Unique health organization
- 60,000 patients on our roster
- Not-for-profit
- Multi-disciplinary
- Multi-specialty
- Multi-site
- 65 Physician providers
- 9 Nurse Practitioners
- 180 other professional health care providers
- Electronic Medical Record 1997



The primary care excellence model  GROUP HEALTH CENTRE

Group Health Centre is the health care partnership of the **Sault Ste. Marie and District Group Health Association** and the **Algoma District Medical Group**. The two groups are linked together by a common objective - to provide excellent, innovative, comprehensive health care to meet the needs of the community.



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The **Sault Ste. Marie and District Group Health Association** (GHA):

- a not-for-profit, charitable corporation
- governed by a volunteer, community-based Board
- owns the physical facility, equipment, furnishings
- employs all the “non-physician” staff including allied health professionals and support services



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The Algoma District Medical Group (ADMG):

- an independent corporation of 65 physicians (38 GPs, 18 Specialists, 9 Associates/Visiting Specialists)
- wide range of specialties, including anaesthesia, cardiology, dermatology, emergency medicine, internal medicine, neurosurgery, obstetrics & gynaecology, ophthalmology, paediatrics, psychiatry, radiology, sports medicine; general, orthopaedic and vascular surgery.



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GROUP
HEALTH
CENTRE

There is a Joint Management Committee with equal representation from the Boards of the Association and ADMG which makes planning and operational decisions.

Physicians are not employees of the Centre. They are independent professionals practicing in a group setting through an alternate funding plan.

Group Health Centre's success is fundamentally dependent upon the willing cooperation between an independent medical group and an independent not-for-profit corporation.

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GROUP
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CENTRE

TECHNOLOGY NOT NEW TO GHC



We've come a long way!

This is how appointments were originally booked at the Centre...several clerks sitting by the phone, with all the binders of appts, filed in a rotating storage area.

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New Healthcare Communication & Technology Centre Opened 2006



- Computerized appointments, billing and registration systems for over 20 years
- These systems needed to be interfaced with new technology (EMR)

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PRACTICE MANAGEMENT APPLICATIONS

- A comprehensive Practice Management Application (PMA) ensures accuracy and timeliness of information to providers
- PMA includes components necessary for roster management, registration, appointments, billing, transcription, scanning
- Interfaced seamlessly to an EMR

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PATIENT APPOINTMENTS

- Book over half a million appointments a year
- Comprehensive PMA links all vital administrative components necessary for an office practice
- Patient scheduling streamlined by building on the common patient demographics in registration
- Call centre environment offer patients the ease of one phone number for all provider bookings
- Appointments with several providers are easily coordinated to maximize patient's visits
- Provider schedules in system are perpetual, minimal updating

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EMR – THE NEED

- Approximately 60,000 active medical record paper charts on site
- Long standing vision to have an integrated, legible, accessible chart essential to provide quality care
- Dynamic Evidence- Based Medical Research in Primary Care
- EMR was the tool to achieve this



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EMR - THE CHALLENGE

- Criteria (process consideration: what would the EMR do for us?)
 - Need to fit into existing IT investment
 - Research
 - Rapid access to patient medical information across multiple providers
 - Improved security of medical information
 - Segregated psychiatric specialties
 - Physician acceptance - varied levels of computer use (some physicians had never used computers!)
- Financial (internal cost)
- Archival decisions
- Vendor selection
- Two-year process

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IMPLEMENTATION

Hardware/Software delivered August 1997

- Fibre connections and miles of Cat-5
- 200+ terminals/PC's, 50+ printers
- Ergonomics of exam rooms
- Dictation system

“Go live” October 1997

- Complex pilot and “go live” process
- Provide patient care throughout
- Archived throughout process

A THREE RING CIRCUS!

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HEALTH CARE REVAMPED

In 2 weeks, all providers are using EMR
(paper charts available but closed volumes)

Largest primary care
EMR in Canada:

A fully functioning,
integrated EMR
accessed by 240 health
care providers
simultaneously.



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EMR

- stable, accessible from hospital and home
- registries of patients with chronic diseases for research and systematic management
- character version; Windows version soon
- OCR scanning cumbersome



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COLLABORATION



ONE LEGIBLE, COMPLETE, SIMULTANEOUSLY AVAILABLE
CHART (local and remote access provided)

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MEDICAL INFORMATION MANAGEMENT

- Rapid return of results
- Tied to chart - integration of information
- Messaging to assistant within same chart
- Trail of care kept - medical legal improvement
- Flow sheets individualized, graphic analysis
- Rapid feedback to patient improves care
- Large change management - pressure to deal with information immediately

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TRANSCRIPTION

- High quality, secure centralized transcription provides quick turnaround time
- Timely service critical to provision of health
- Enhances provider satisfaction
- Integral part of electronic medical record
- 2.7 million lines annually

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SECURITY, CONFIDENTIALITY AND PRIVACY

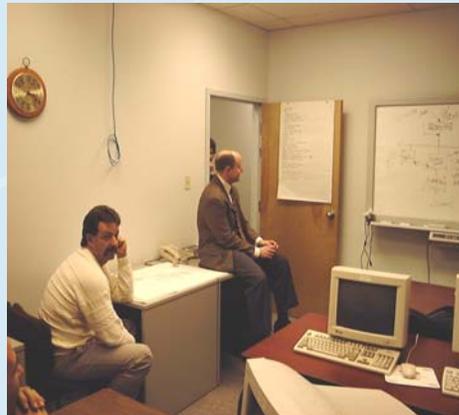
- Privacy paramount
- Existing policies updated for electronic media
- Collaboration with CLINICARE on technical innovations
 - Locked charts
 - Access logging
 - Handcuffing users
 - Sleep screen
- Refinement is ongoing

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I.T. SUPPORT CRITICAL FOR SUCCESS

Planning and review
EMR User Group
Maintenance of system
On-site support
Training of users ongoing
Security



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INSIGHTS FROM OUR IMPLEMENTATION

- EMR needs to be accepted and committed to at all levels
- Learning curve – new skills, new work processes, steep curve
- Change management an essential component
- Training and support fundamental
- Technical expertise imperative
- Information flow is imperative and individualization improves acceptance

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INSIGHTS FROM OUR IMPLEMENTATION

- Realism in scope and expectations - expensive, lack of standards
- Customization required for unique circumstances
- Interfaces are costly but essential for integration of disparate systems
- Blend the different perspective and strengths of IT, vendors, health care providers for optimal results
- Collaboration and communication vital (EMR User Group met every Friday initially – discussed what's working, what isn't and what to do?)
- EMR User Group still meets monthly; now also Privacy Committee (PHIPA)

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PRIMARY CARE EXCELLENCE

EMR is the cornerstone of our primary care research and program development...



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HEALTH PROMOTION INITIATIVES (HPI)

HPI aims to develop and evaluate evidence-based outcomes management programs in order to improve the quality of health care for GHC patients



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HPI PRINCIPLES

- Aid the provision of Appropriate Evidence-Based Care
GUIDELINES BY THEMSELVES DON'T WORK
- Primary Care and Patient-centric
- Population Health Approach
- Continuous Assessment and Evaluation
 - start with the evidence
 - pilot projects
 - if pilot successful, then program developed
- Outcomes Based

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HPI

Programs

- Diabetes (HPID)
- Congestive Heart Failure
- Anticoagulation
- Mammography/ Breast Health
- Immunization
- Smoking Cessation
- Asthma
- Cervical screening

Projects

- Vascular Intervention Project
- Falls, Fractures, Osteoporosis
- COPD

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HPI DIABETES (HPID) GOALS

- To provide excellent health care to GHC patients with diabetes based on the principles of evidence-based medicine
- To develop and continuously evaluate a registry of GHC patients with diabetes
- To provide appropriate evidence-based health promotion interventions

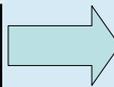
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HPID REGISTRY: METHODS

**Inclusion: Adult >18 yrs with CDA
definition of diabetes mellitus**
Exclude: Gestational Diabetes

44,000 GHC patients in EMR
1,981 original HPID patients
November 1999



59,000 GHC patients in EMR
3,415 HPID patients Oct 2005

*Started as Project

*Developed into Program

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GOOD HEALTH OUTCOMES IN DIABETES (GHOD SCORE)

Process outcomes

- BP within 6 mo
- HbA1c within 6mo
- Lipids annually
- Albuminuria annually
- Foot exam within 1yr
(↑ From 6 months)
- Eye exam within 1yr
(↓ from 2yrs)
- On ACE/ARB
- On ASA/antiplatelet
- On Statins

Clinical outcomes

- BP within 6 mo and $\leq 130/80$ mmHg
- HbA1c within 6 mo and $\leq .07$
- Lipids annually and LDL < 2.5

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Diabetes Template in EMR

20.Jan.05 MedRpt: HPID Dr's Desktop-Pauline Bragaglia Reason: (21)

(99999998) TESTING PATIENT AltID-SAH-99999998 LV 20Jan05
 2ND FLOOR 240 MCNABB ST Female (49) 09Sep55 Home:(705)759-1234
 SAULT STE. MARIE ON P6A 8U7 Ins: BC NA Work: N/A
 Usual Dr: *** Unknown Doctor *** MC F

HPI DIABETES v4 (hpid)

LAST REVISED [2004/07] PROVIDER ID[303] ver5

	DATE DONE	DATE DUE	LAST VALUE
WT/BMI *	[2005/05]	[2006/05]	[95.0]kg Abd girth[97]cm
BP ***	[2005/06]	[2005/12]	[110]/[70]
Hba1c ***	[2005/04]	[2005/10]	[.090]
EYE EX. *	[2005/05]	[2006/05]	: DR. UNKNOWN
LIPIDS *	[2005/04]	[2006/04]	LDL[1.55] Ratio[3.1]
FEET ***	[2005/08]	[2005/11]	: Decrease pulses
ALB/CREA *	[2005/05]	[2006/05]	:
SMOKER *	[N/A]	[N/A]	Y/N[N]: Quit 1993
FLU SHOT *	[2004/10]	[2005/10]	
ACE/ARB	Y/N[Y]	ASA/AP[Y]	STATIN Y/N[Y]
THERAPY DIET	Y/N[Y]	EXERCISE Y/N[Y]	ORAL Y/N[N] INSULIN Y/N[Y]

VITALS & NURSING ASSESSMENT (v) January 18, 2005
 F3, F5Lab SF5Rx F4Merge F6Idx InsInput F7Srch F9Prt SF9PI SF4New Sc/Rc Page 1

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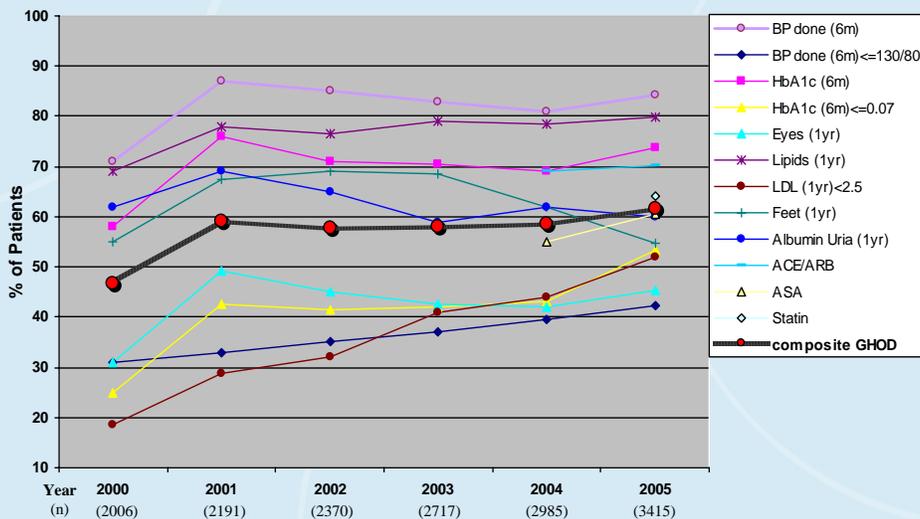
HPID Outcomes improve 55% over 18 months (p<.01)

HPID SUMMARY				
GHOD 9	Jul-00	Jun-01	26-Jun-02	10-Jun-03
	%	%	%	%
BP DONE	71.0	86.0	85.3	83.4
BP DONE and <=140/85	40.0	50.0	51.9	59.1
HbA1c DONE	58.0	76.0	72.03	71.8
HbA1c DONE and <=0.070	25.0	43.0	42.2	43.4
EYE EXAM	59.0	68.0	67.9	63.2
LIPIDS	68.0	78.0	76.5	79.2
LDL done and <3.0	33.0	46.0	50.5	56.7
FOOT EXAM	38.0	52.0	55.4	55.6
ALBUMIN URIA	63.0	69.0	65.1	58.3
composite (ghod 8)	52.8	65.3	64.5	64.3
composite (ghod 9)	50.6	63.1	63.0	63.4
			Avg BP	135/77
			Avg HbA1c	0.071
			Avg LDL	4.31

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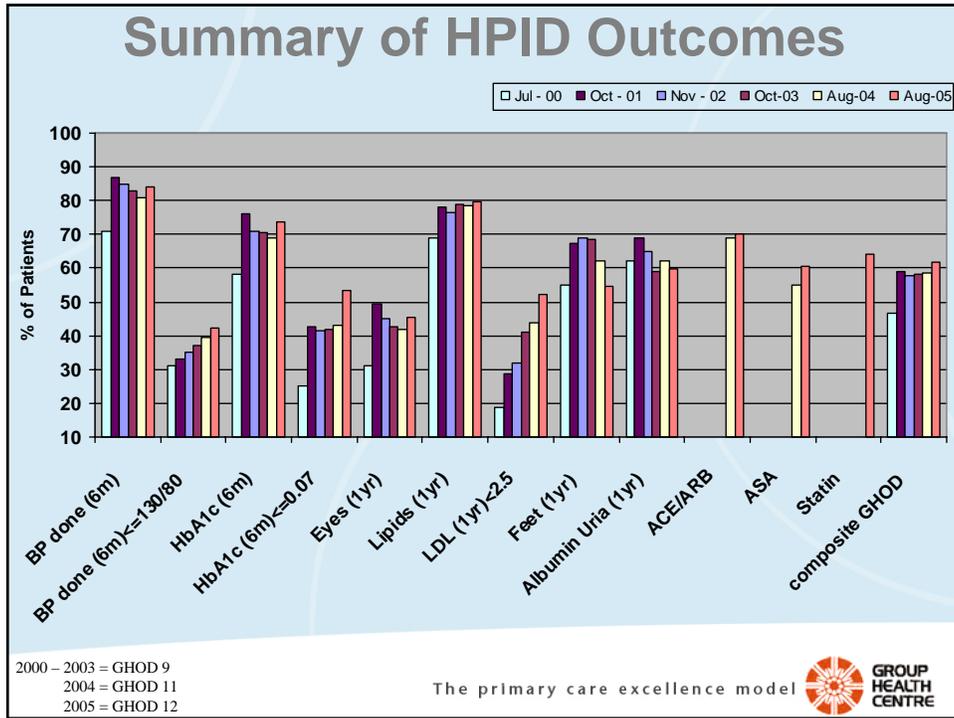
HPID Outcomes 2000 - 2005



2000 - 2003 = GHOD 9
 2004 = GHOD 11
 2005 = GHOD 12

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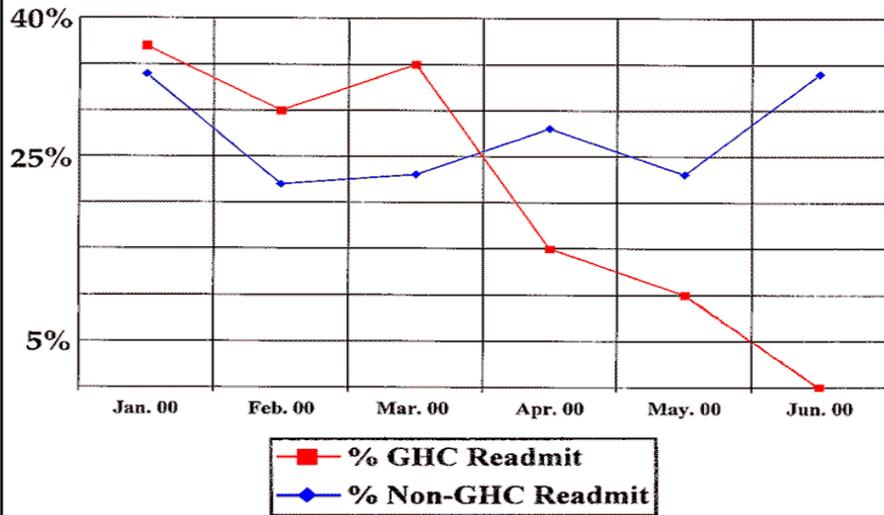


CHF: THE EPIDEMIC

- Number one admission diagnosis in most hospitals in Canada
- High re-admission rate (>25%)
- High mortality rate
- Incidence and Prevalence Increasing

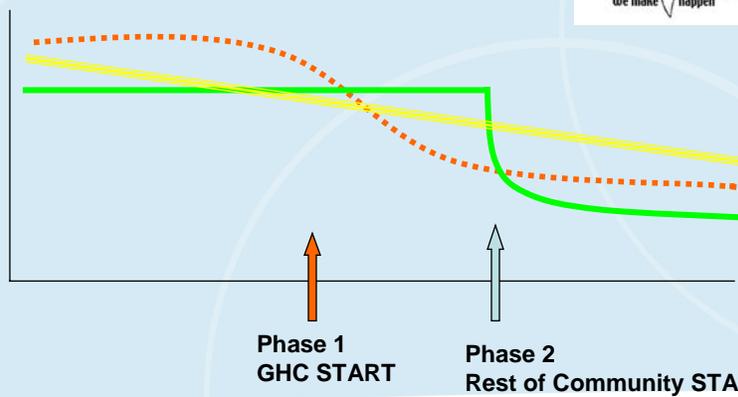
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**The Congestive Heart Failure
Percent of CHF Readmissions
Within One Month With the Same
or Related Diagnosis**



CHF TRANSITION PROJECT

RE-ADMISSION RATES

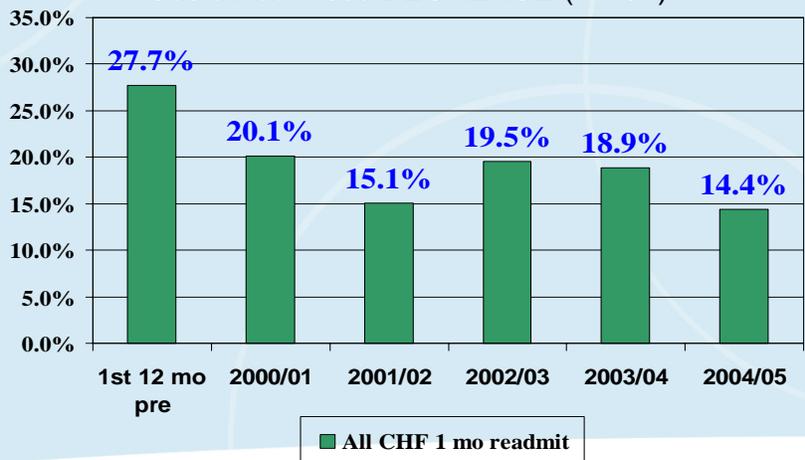


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PHASE 2: COMMUNITY IMPLEMENTATION

Sustained 43% DECREASE (P<.01)



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IN-HOSPITAL CARE

Patient/Family

Physician

- Coordinate CHF medical management

Discharge Planner

- Identify admission
- Introduce program to patient/family

Dietitian

- CHF diet education

Hospital Nurse

- CHF orders/care map
- Education/support
- Discharge checklist

GHC Nurse (FHW)

- Review EMR for cardiac history
- Identify medications and communicate with team
- Pre-discharge teaching in hospital.

Pharmacist

- Clarify and review medications
- Create discharge medication list and prescription for patient/family
- Patient education re medications

CCAC Case Manager

- Visit patient post-discharge

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ANTICOAGULATION CLINIC

- Mission: To provide safe, effective and efficient anticoagulation to patients maintained on oral anticoagulation utilizing a clinic coordinated by a specialized anticoagulant nurse through medical directive.
- Anticoagulants are medications prescribed specifically to keep blood from clotting.
- Nurses use specialized software to track patients, INR results, and measure outcomes.

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ANTICOAGULATION CLINIC OUTCOMES

- Total number of patients in program 583
- Largest community AC clinic in Canada
- INR results in therapeutic range (+/- 0.2) are 84.62% (target compliance >70%), excellent quality control!
- “usual care” benchmarks are in the 40-60% range
- Major bleeding events are rare (<1%)
- Better care for patients; takes load off Family Physician, but through EMR, GP is always in the loop

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Algoma Breast Health Program

- In 2005, 70.6% of female GHC patients received mammography screening, versus the national average of 53.6%* based on the 1996/97 National Population Health Survey (*CMAJ 2001:164(3):329-34).
- In 2003, GHC collaborated with Ontario Breast Screening Program and Sault Area Hospital to reduce wait times for mammography screening
- Successfully reduced wait times for diagnosis to surgical intervention, from 108 days to less than 30.

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Flu Immunization

- Through a joint collaborative project with our local public health unit, we provide community flu clinics. 22,155 patients were immunized last year, which was a 7% increase over the previous year.
- Flu immunizations are entered into the EMR by both Algoma Health Unit and Group Health Centre providers and are accessible by both organizations
- This success is the result of strong community collaboration and the utilization of technology to improve efficiencies in process.

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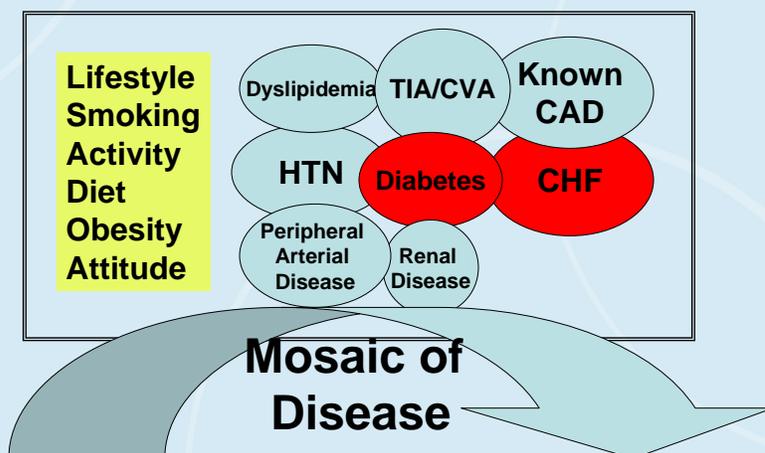
Cardiovascular disease

- leading single cause of mortality in Ontario
- prevalence in Northern Ontario is 50% higher than in the rest of Ontario (ICES Atlas 2003)
- lower socio-economic status, higher smoking rates, more obesity, more hypertension, more diabetes
- INTERHEART Study demonstrated that 95% of myocardial infarctions attributable to 9 modifiable risk factors

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ATHEROSCLEROSIS – VASCULAR DISEASE



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VIP OBJECTIVES

- Increase participation of patient and family in decision making, self-care and adherence to agreed management plans
- Increase collaboration among the health care team
- Increase patient access to continuity of care, better clinical outcomes and satisfaction
- Decrease modifiable CV risk factors for primary care patients in GHC and Algoma District
- Appropriate use of cardio-protective medications

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VIP ESSENTIALS

- Vascular Risk patient consents to Registry – intake from various sources
- Baseline Vascular Health Assessed by VIP team member – education
- Goal setting → put in EMR and VIPnet
- Management plan shared with team
 - Appropriate referrals made
- Follow-up

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The intervention

- regular contact with study nurse
- self management information, strategies
- motivational interviewing and patient centered decision making
- multidisciplinary support
 - nutrition counselling
 - diabetes education
 - exercise
 - smoking cessation
 - stress management
- collaboration with physicians and pharmacists

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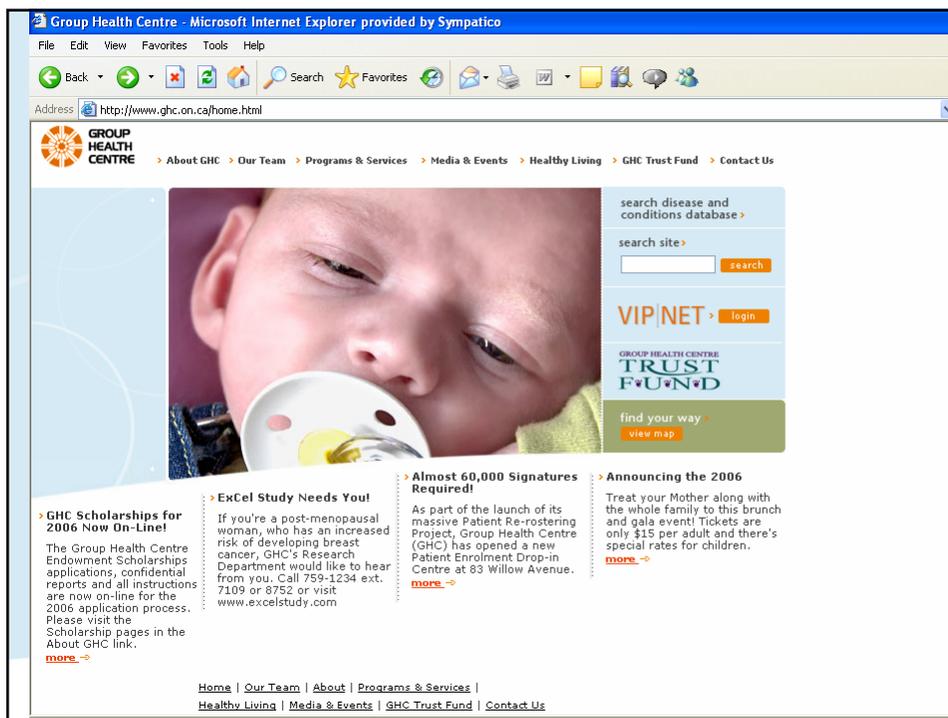
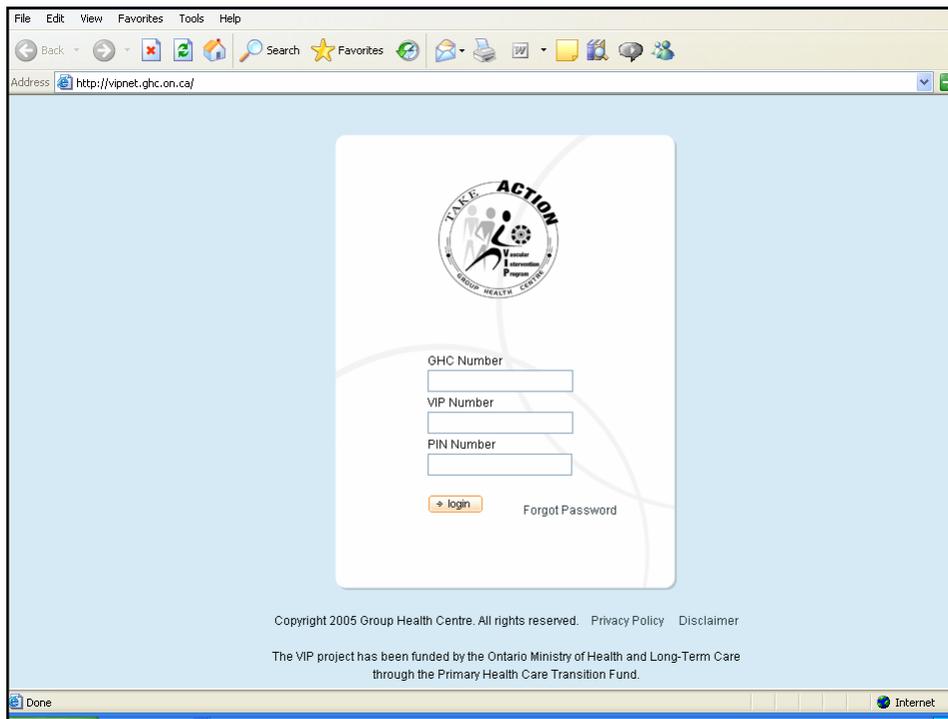


VASCULAR HEALTH TEMPLATE

- | | |
|---------------------|---------------------|
| ▪ Abdominal Obesity | ▪ LDL |
| ▪ Fitness | ▪ Blood Pressure |
| ▪ Activity Level | ▪ Glucose control |
| ▪ Smoking Status | ▪ Depression status |
| ▪ Diet | ▪ Microalbuminuria |

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VIP NET [Dashboard](#) [My History](#) [Risk Factors](#) [Action Plan](#) [Contact](#)

DASHBOARD [logout](#) | [change my password](#)

Patient: TESTING PATIENTS
VIP #: h6666
GHC #: 6666

MY HISTORY

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[view history](#)

ACTION SCORE

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[view score](#)

ACTION PLAN

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[view plan](#)

CONTACT VIPNET

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[view info](#)

CHANGE MY PASSWORD

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[change pin](#)

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VIP NET [Dashboard](#) [My History](#) [Risk Factors](#) [Action Plan](#) [Contact](#)

RISK FACTORS [logout](#) | [change my password](#)

Patient: TESTING PATIENTS
VIP #: h6666
GHC #: 6666

Select A Visit: [print this page](#)
Visit: V0 on Jun 25, 2005 [modify risk factors](#)

Visitation Date: 2005-06-25 00:00:00 **ACTION SCORE: 70**

Risk Factors	1	2	3	4	5	6	7	8	9	10
Family History	< 40 or known CAD, DVD, PAD	Age <= 45	Age <= 50	Age <= 55	Age < 60 or unknown history	Age <= 65	Age <= 70	Age <= 75	Age > 75	None
Diabetes Mellitus	Type 2 > 30yrs or Type 1	Type 2 > 25yrs	Type > 20yrs	Type 2 > 15yrs	Type 2 > 10yrs	Type2 > 5yrs	Type 2 < 5yrs	Blank	I GT or IFG ***	None
Blood Presure	> 180 / or 110	< 180 / 110	< 160 / 100	< 150 / 95 with meds	< 150 / 90 without meds	< 140 / 90 with meds ***	< 140 / 90 without meds	< 130 / 80 with meds ****	< 130 / 85 without meds	< 120 / 80 without meds
Lipid (LDL)	> 4.0	< 4.0	< 3.75	< 3.5	< 3.25	< 3.0	< 2.75	< 2.5	< 2.25	< 2.0
Smoking Status	> 1 pack /	< 1 pack /	Second Hand Smoke	Quit > 3mons	Quit > 6mons	Quit > 9mons	Quit > 12mons	Quit > 18mons	Quit > 24 mons	Never Smoked

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VIP NET [Dashboard](#) [My History](#) [Risk Factors](#) [Action Plan](#) [Contact](#)

MY HISTORY [logout](#) | [change my password](#)

This is where the copy will go.

VASCULAR HISTORY

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[view history](#)

MEDICINE HISTORY

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[view history](#)

MY PROGRESS

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[view progress](#)

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VIP NET [Dashboard](#) [My History](#) [Risk Factors](#) [Action Plan](#) [Contact](#)

ACTION PLAN [logout](#) | [change my password](#)

Patient: TESTING PATIENTS
 VIP #: h6666
 GHC #: 6666

Select A Visit:
 [print this page](#)

Visitation Date: 2005-02-21 00:00:00

What are the most important factors for good vascular health?	
First Choice	Psychosocial
Second Choice	Nutrition
Third Choice	None

Listing in order of priority what you would like to work on first. This table also indicates how confident you were at making a positive change.

First Choice	Nutrition	1
Second Choice	Lipid	1
Third Choice	Abdominal Girth	2

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VIP NET [Dashboard](#) [My History](#) [Risk Factors](#) [Action Plan](#) [Contact](#)

VASCULAR HISTORY [logout](#) | [change my password](#)

[Vascular History](#) [Medicine / Allergy History](#) [My Progress](#)

Patient: TESTING PATIENTS
 VIP #: h6666
 GHC #: 6666 [print this page](#)

Visit: V0 on Jun 25, 2005

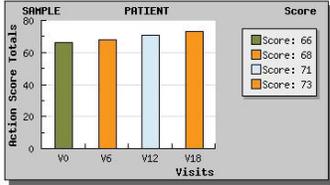
PATIENT HISTORY

	Answer	Comments
MI	No	
Angina	No	
CABG	No	
PTCA	No	
Congestive Heart Failure	No	
Valve Problems	Yes	No Comments Available
Dysrhythmia Problems	Yes	
LVEF < 40%	No	
History of Cardiac Arrest	No	
PAD (ABI<0.09, aoribh stenosis > 50	..	

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MY PROGRESS

	Jul 15, 2004	Jan 25, 2005	Jun 30, 2005	Jan 11, 2006
Family History	5	10	5	1
Diabetes	1	1	1	1
Blood Pressure	10	9	9	9
Lipid	8	10	10	10
Smoking	10	10	10	10
Nutrition	8	7	6	6
Abdominal Girth	6	6	6	6
Activity Level	5	1	8	10
Physiologic Age	7	7	7	10
Psychosocial	5	6	8	9
Action Score (out of 100)	66	68	71	73



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HPI/CHRONIC CARE: SUMMARY

- Complex, more opportunity
- Patient-focused
- Primary Care, Population-based
 - “Real world” registries vs “Carve-out” approach
 - Real patient data
 - Family Registries – genomics/proteomics
 - Gene-environment interactions
 - Long-term cohort Follow-up
- Evidence-Based, Outcomes Driven with Successful Implementation
- EMR - Much easier to measure outcomes than paper charts

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EMRxtra

- New project announced in August of 2006
- Partnership with Canada Health Infoway, Group Health Centre and the Ontario Pharmacists' Association to expand the circle of care to include pharmacists
- To build on VIP and CHF programs
- With patient consent, pharmacists can access EMR
- Pilot phase in pharmacy in GHC main building
- Then extended to all community pharmacies
- Better coordination of medications
- Development of web portal for patients to access their health information

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What has worked

- looking to the evidence
- Chronic Disease Management model
- pilot projects
- start simple
- controlled trials
- ownership of data
- generating enthusiasm
- technology enhances coordination of care and information
- technology enables measurement of outcomes, as well as production of benchmark reports (how are we doing...compared to last year? compared to last 5 years?)

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NATIONAL RECOGNITION

- Romanow Report
- Presented at numerous National Conferences and International Conferences (recent Chronic Disease Management conference in Calgary); regular presenters at E-Health conferences
- Selected as 1 of 5 Programs of Excellence by National Health Council of Canada <http://hcc-ccs.com/videos.aspx> (video launch) and several mentions in the First Report
- Inaugural Tommy Douglas Future of Medicare Award for Primary Care (2005)
- Only Healthcare Organization in Canada to receive 4 consecutive National Best Practice Awards at OHA Conference (2002, 2003, 2004, 2005)
- Invited by Provincial MOH to present CDM in primary health care settings at National Workshop in April 2006; one of only two plenary Canadian success stories

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Questions/Discussion?

Contact Information:

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THANK YOU!



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