The Challenge of Measuring Outcomes

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Health Outcomes

- The more things change the more they remain the same
  - When Less is Better- 1994
  - Public Health State Secret 2002
  - National Forum-1997
  - Romanow Report 2003
  - Definitely Not the Romanow Report 2003
  - Mazankowski 2003
  - Kirby 2003

Outline

- The Context
- Information Gathering Today
  - Use and Abuse
- Concurrent Review
- Measuring Outcomes
  - One-dimensional, Overall, Condition Specific,
- Real and Imagined Barriers to Outcomes Measurement

Hamilton Ont. October 15, 1999

“Many bad decisions about healthcare are made every day in Canada because decision makers lack the right information at the right time in the right place. These bad decisions can cost the country millions of dollars and rob Canadians of the health care they need and deserve. ***Healnet press release***

AUDITOR GENERAL

"In relation to the Canada Health Act, I observed that Health Canada does not have the information it needs to effectively monitor and report on compliance. So, within those areas of federal responsibility it is clear that better quality information is required." (Dennis Desautels, Jan. 2000)

Canada Health Act

- Universality
- Portability
- Comprehensiveness
- Accessibility

- Public Administration the dimension mainly enforced by public administrators

- NO REQUIREMENT FOR QUALITY/RESULTS

DM COMMITTMENT "WHEN LESS IS BETTER"

- ***Timely access must be guaranteed and information about waiting times made public***
- ***That quality of care will be ensured by ongoing monitoring and publication of outcomes as changes are implemented***

Secrecy Pervades Health Canada
British Medical Journal May 22

- Health Canada awarded Canadian Association of Journalists 4th annual

CODE OF SILENCE AWARD

- Health Canada the most Secretive Government Department in Canada.

"SHOWS REMARKABLE ZEAL IN SUPPRESSINGING INFORMATION AND CONCEALING VITAL DATA"

Efficiency
Cost for a Benefit

- Pareto efficiency
  - an outcome is more efficient if at least one person is made better off and nobody is made worse off.
- Kaldor-Hicks efficiency
  - A more efficient outcome can leave some people worse off. Here, an outcome is more efficient if those that are made better off could *in theory* compensate those that are made worse off and lead to a Pareto optimal outcome.
  - Some benefit from more government spending on health care; others are worse off because their pocket has been emptied and some have poorer health after treatment
- For both models, measuring results is essential - how many and how much are people better or worse off?

ANOTHER $9 Billion Miraculous Cures? More Harm?

- Kirby
  - HOW IS MANAGEMENT POSSIBLE WITHOUT INFORMATION ABOUT ACCESS, RESULTS OR WHAT ANYTHING COSTS?
- How do Canadians capture information?
- What information is captured?
- Is it useful?

msi
NOVA SCOTIA MEDICAL SERVICES INSURANCE

PROGRAMS OF THE NOVA SCOTIA DEPT. OF HEALTH
ADMINISTERED BY MARITIME MEDICAL CARE INC.
P.O. BOX 500, HALIFAX, NOVA SCOTIA B3J 2S1
TELEPHONE (902) 468-8700

MARCH 16, 2000

NO QUERY ABOUT BENEFITS!

MSI Service Audit

As part of the operation of the MSI Program, a designated number of services submitted to MSI by physicians and other providers are audited. This is a routine audit and services are selected on a random basis. The purpose of the audit is to verify that the information reported on services is accurate.

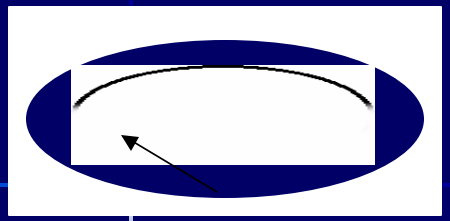
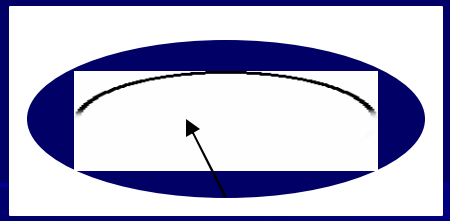
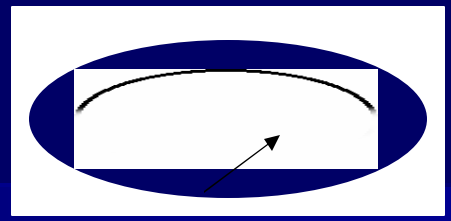
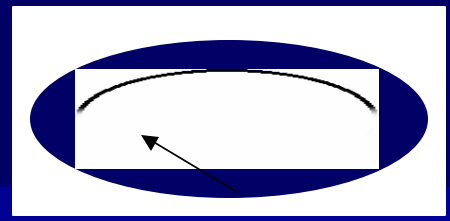
A service paid by MSI on your behalf has been selected for audit. The details are shown below. If you received the service and the information shown below is correct, please sign the letter. If the information is incorrect, write your comments on the back of the letter. Please return the letter in the enclosed confidential envelope.

If you have any questions please contact PAT ROBERTS, 496-7116 OR TOLL FREE AT 1-800-563-8880.

PROVIDER:
PATIENT:

Service Date	Type of Service	MSI Payment*
FEB 7, 2000	OFFICE VISIT	$ 20.24

COMFORT FUNCTION SEVERITY ACCESS/ WAITING TIMES

VALUE = COST FOR A BENEFIT

BENEFITS = CHANGES IN

-COMFORT, FUNCTION,

LIKLIHOOD OF DEATH

.COSTS= FINANCIAL/HUMAN

WAIT TIME, FATE OF WAITING PATIENTS

DALHOUSIE University

COSTS OF INFORMATION! VALUE?

- CIHI - $95 Million
- QE11 Chart Abstracting = $2,000,000+ (500 beds approximately)
- Over $700 Million per year on chart review
- Output is length of stay by diagnosis and procedure.
- We don’t know:
  - How many people are better? Worse? Error?
  - How long do they wait?

Information Capture

- All charts of patients discharged from hospital are reviewed after discharge
- No one bothers to ask how many people are better or worse following care
- According to CIHI we have more health record administrators than social workers

Discharge Abstract Data Base

- **Flow of hospital information**
- Patient, Attending Clinicians, Discharge Summaries, Family Doctors, Health Records, Chart Reviewers, Discharge Abstract,
- Sent to Ottawa and Toronto
- Aggregation, Reporting

Length of Stay by Diagnosis
A proxy for cost?

- Health Record Review Process
  - Each chart reviewed-diagnoses captured.
- Compares length of stay between organizations for people with same diagnosis
- Adjustments based on number of diagnostic labels collected by health records reviewers.
- Coding Reliability Issues- Ontario
- NO SEVERITY ADJUSTMENT
  - Comfort, function, likelihood of dying
- Direct and indirect health status measures a better adjuster (cf. Persaud and Narine)

DISCHARGE ABSTRACT DATA BASE

- Abstractors review each page of chart
- Reliability for medicine about 80% agreement for most responsible, 40% when more than one diagnosis is considered.

Camp Hill Medical Centre (CHMC)

Comparison lengths of stay / All patient services - CHMC
Pre and post complexity study area / April 1 to September 30, 1993

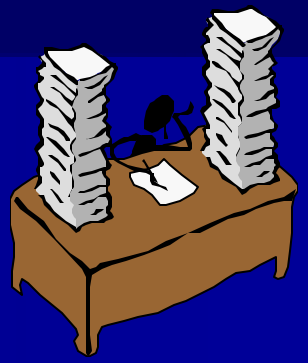
The following is camp Hill Medical Centre data used by CIHI for their complexity project. It does not reflect all dischar ges for all services. For example ENT , Psychiatry and Opthalmology .

					Pre-Complexity Data		Post Complexity Data	
Service	Total Cases	Total Matched Cases	% Matched Cases	CHMC Mean	Dbase Mean	Days ov/und Dbase	Dbase Mean	Days ov/und Dbase
10 General Medicine	1812	1320	72.8%	*8.5	6.1	2.4	8.3	0.2
30 General Surgery	963	812	84.3%	*7.8	6.8	1.0	9.4	-1.5
39 Urology	440	395	89.8%	5.5	5.4	0.1	6.8	-1.3
***31 Cardiovascular Surgery**	**431**	**370**	**85.8%**	**9.5**	**8.8**	**0.7**	**13.2**	**-3.7**
55 Gynecology	365	344	94.2%	*6.3	5.4	0.9	5.9	0.4
34 Orthopedics	356	328	92.1%	7.3	7.3	0.0	10.3	-3.0
01 Family Practice	150	111	74.0%	*10.2	7.0	3.2	9.9	0.3
60 ENT	102	89	87.3%	5.6	6.0	-0.4	7.3	-1.7
62 Opthalmology	53	50	94.3%	*4.8	7.9	-3.1	11.0	-5.2
Miscellaneous	134	126	n/a	n/a	n/a	n/a	n/a	n/a
Hospital Totals	**4806**	**3895**	**81.0%**	***7.9**	**6.5**	**1.4**	**8.9**	**-1.0**

**Statistical significance is determined by comparing the distribution of matched cases rather than placing emphasis on the average. Data will be identified as significant if it contains an abnormally high proportion of cases either in the lower or upper quartiles. The emphasis is placed on skewed distribution of cases.*

Source: Complexity Project, CIHI / Provided by: Maureen Aucoin, Health Records

CURRENT LEGACY



- MANUAL REVIEW
- LENGTH OF STAY - DIAGNOSIS
- DIAGNOSTIC LABELS
  - NOT CHANGE IN HEALTH / EFFECTIVE??
  - PERTINENCE AND POPULATIONS
  - RELIABILITY ISSUES
  - MEANING, NO ADJUSTMENT FOR SEVERITY
    - ALL PATIENTS WITH PNEUMONIA TREATED THE SAME
  - Marshall, CMAJ, Feb 98, Cx from surgery
    - Admin Data Bases, Fact or Fiction

LEAGUE TABLES

ANNUAL LEAGUE TABLES:LONGITUDINAL STUDY BMJ JUNE 1998
Perry et.al.,BMJ, June 27,1998, pg. 1931

- ***"ANY ACTION PROMPTED BY ANNUAL LEAGUE TABLES WOULD HAVE BEEN EQUALLY LIKELY TO HAVE BEEN BENEFICIAL, DETRIMENTAL OR IRRELEVANT"***

OTHER PROBLEMS WITH LEAGUE TABLES

- LABEL-BASED, NO ADJUSTMENT FOR SEVERITY
- REQUIRE ADJUSTMENTS FOR MULTIPLE COMPARISONS
- RETROSPECTIVE INFORMATION MAY ONLY BE OF HISTORICAL INTEREST
- REMEMBER DM'S SUGGESTED CONCURRENT REVIEW

Auditor General-2003 PIRC Indicators

- Data used for seven indicators were drawn from the relevant Canadian Institute for Health Information (CIHI) databases:
- • 30-day Acute Myocardial Infarction In Hospital Mortality Rate
- • 30-day Stroke In Hospital Mortality Rate
- • Total Knee Replacement Rate
- • Total Hip Replacement Rate
- • Risk Adjusted Acute Myocardial Infarction Re-Admission Rate
  - • Risk Adjusted Pneumonia Re-Admission Rate; and
- • Age Standardized Rate of Hospitalization for Ambulatory Care Sensitive Conditions

Auditor General-2003

- At this time, I am unable to provide an opinion on the accuracy of the data and the adequacy of disclosure on limitations of the data drawn from the Discharge Abstract/Hospital Morbidity Database of the Canadian Institute for Health Information for the indicators named above.

- My inability to provide an opinion is due to a lack of documentation of the CIHI quality assurance process, and because CIHI's three-year abstraction study, which will provide information on the quality of input data, will not be completed for another two years.

DEPUTY MINISTER COMMITTMENT (1994)

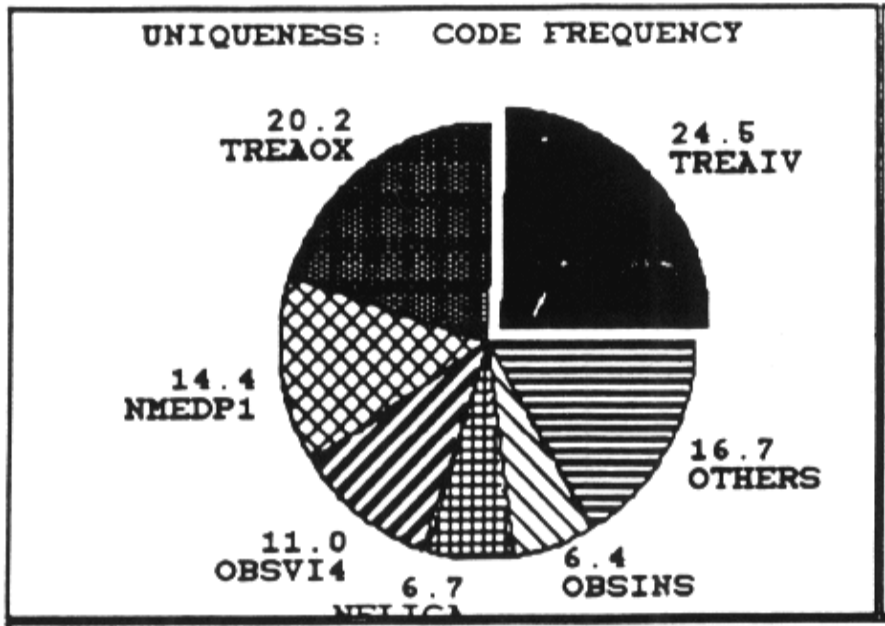
- THAT EVERY HOSPITAL IMPLEMENT CONCURRENT REVIEW OF ADMISSION, DISCHARGE AND CONTINUED STAY

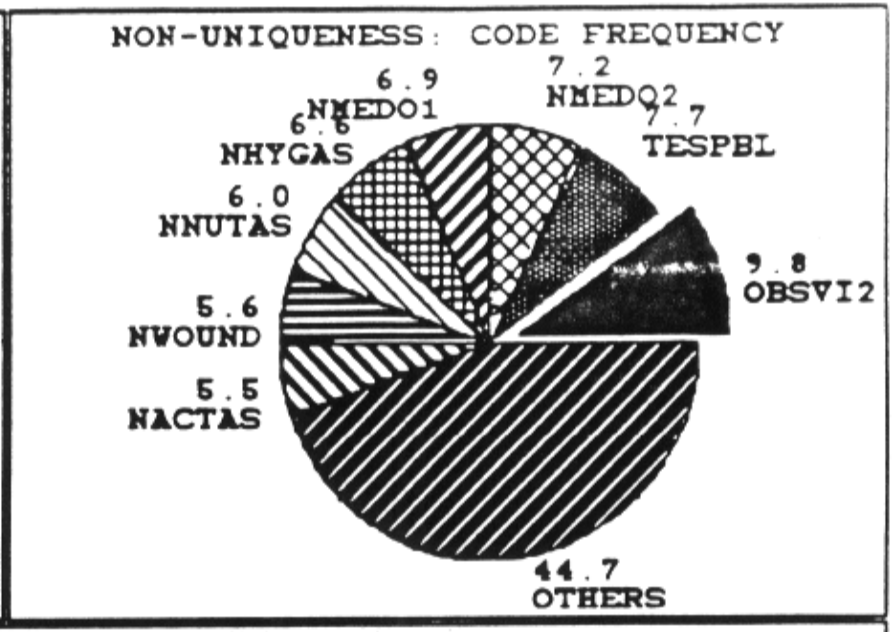
CONCURRENT CODING

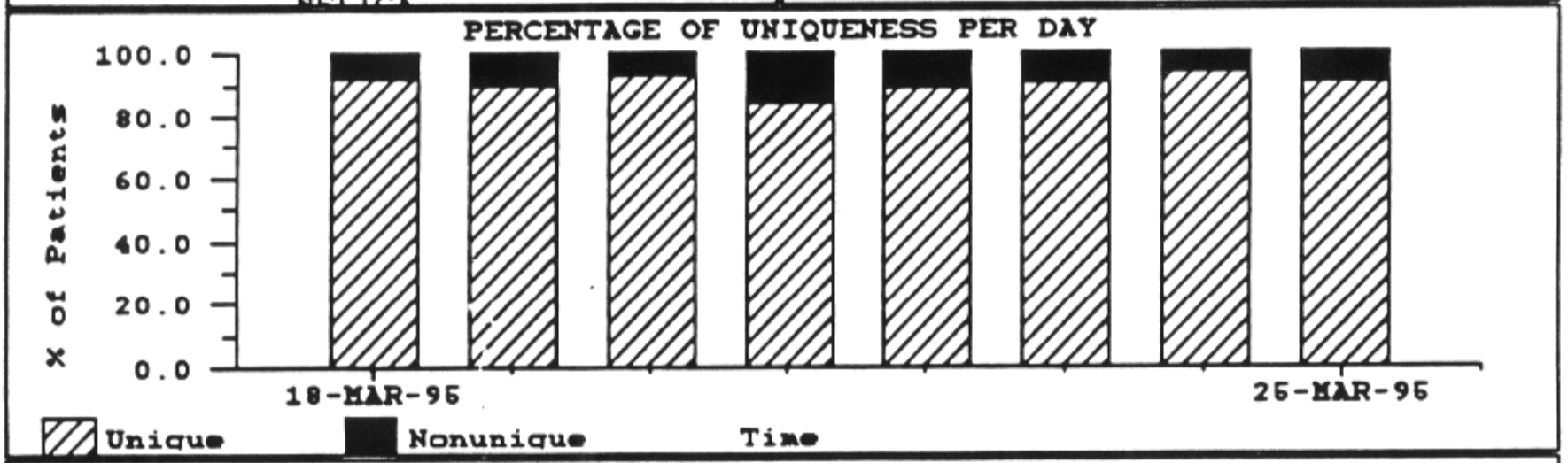
- MT. SINAI, CONCURRENT CODING
  - BETTER CODING PROCESS
  - HEALTH RECORDS PART OF TEAM
  - HIGHER RIW'S DESPITE NO CHANGE IN CLINICAL OR ADMINISTRATIVE PROCESSES
  - INCREASED FUNDING ($8 MILLION)
  - Is better coding the strategy to increase funding?

CONCURRENT REVIEW
APPROPRIATENESS OF SETTING AND OUTCOMES

SERVICE	FUNCTION	
	Normal	Diminished
Unique	Hospital	Hospital
Non-unique	Home	LTC - Home Care







DATE RANGE: 18-MAR-95 - 25-MAR-95

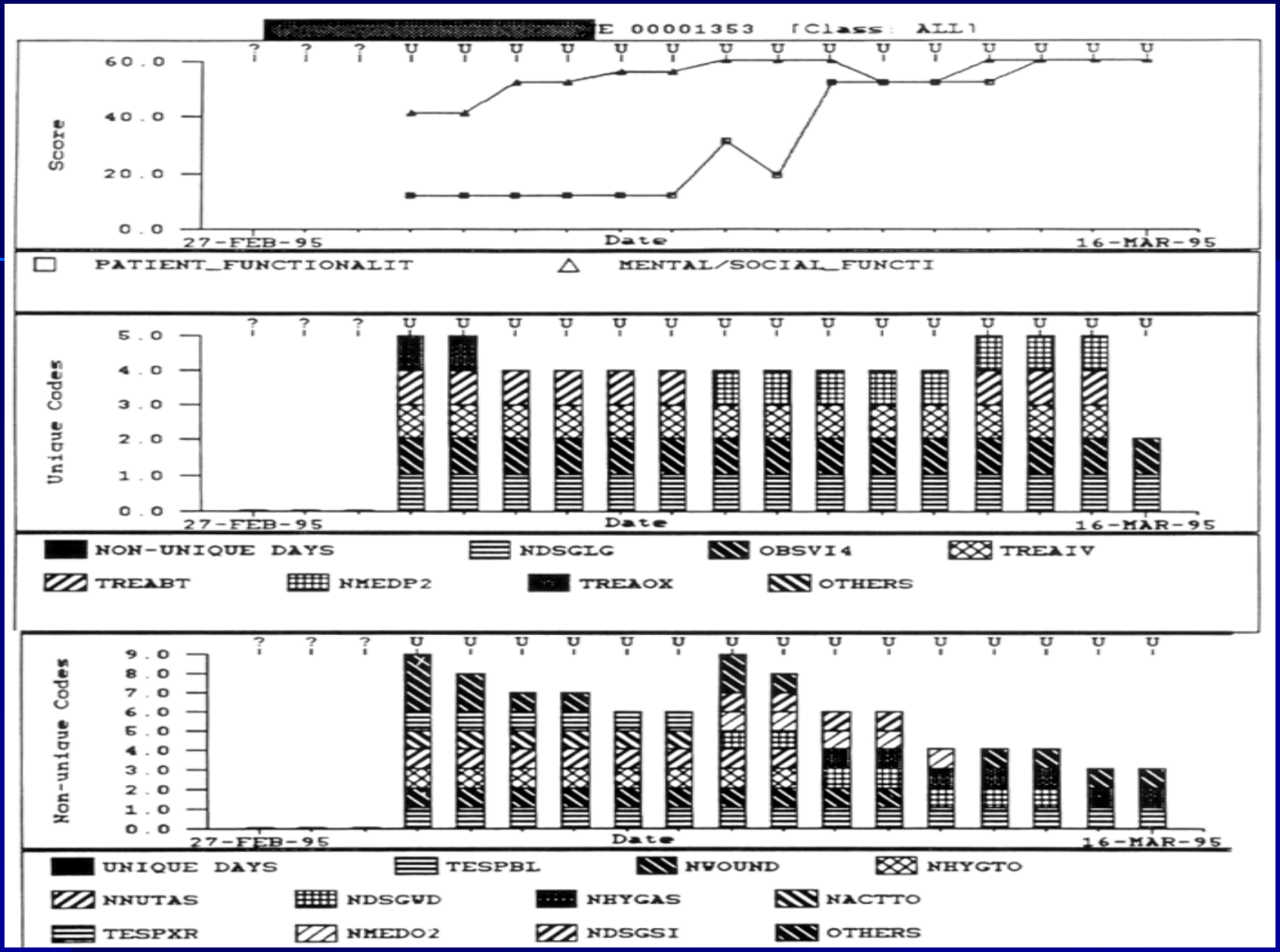
PHYSICIAN:ALL SERVICE:ALL UNIT:ALL AGE RANGE: NONE SPECIFIED SEX:B

ALL ENCOUNTERS ENCOUNTER DAYS:232 IP:Y AC:N EM:N CODE CLASS:ALL

Dx: NONE SPECIFIED

We Routinely Estimate Health Status

- We estimate health status in order to know whether to treat someone, and when to stop or modify treatment
- Information is recorded in doctors, nurses and physiotherapists notes, but not in a systematic way
- OUTCOMES ARE CHANGES IN HEALTH ASSOCIATED WITH CARE!


E 00001353 [Class: ALL]
Score
60.0
40.0
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0.0
27-FEB-95
Date
16-MAR-95
PATIENT_FUNCTIONALIT
MENTAL/SOCIAL_FUNCTI
Unique Codes
5.0
4.0
3.0
2.0
1.0
0.0
27-FEB-95
Date
16-MAR-95
NON-UNIQUE DAYS
NDSGLG
OBSVI4
TREAIV
TREABT
NMEDP2
TREAOX
OTHERS
Non-unique Codes
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
27-FEB-95
Date
16-MAR-95
UNIQUE DAYS
TESPBL
NWOUND
NHYGTO
NNUTAS
NDSGUD
NHYGAS
NACTTO
TESPXR
NMEDO2
NDSGSI
OTHERS

NORTON & BAKER ADVERSE EVENTS STUDY

- 1 IN 13 PEOPLE SUFFER ADVERSE EVENTS
- Health care a risk for adverse results
- Need information about the likelihood of beneficial and adverse outcomes for informed consent
- Even in a special study, with physician reviewers no one bothered to ask about the benefits of care!

Informed Consent

- Knowing about individual and population outcomes is essential for health system management.
- To support individual, administrative, personal and political choices

WORLD HEALTH ORGANIZATION

- **WHO definition of Health**

- **Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.**

- **The correct bibliographic citation for the definition is:**

Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.

The Definition has not been amended since 1948.

Health Information

- How do we capture information?
- What information is captured?
- Is it useable as is?
- What are the outcomes we are concerned with and what are the challenges of capturing this information?
- How can we do better?

Proxy Measures Are Readily Available

- Proxy measures of less direct importance to patients include measures of
  - Cholesterol and Triglycerides
  - Measures of hemoglobin and electrolytes
  - X-Ray evidence of disc disease
  - Measures of Prostate Specific Antigen

Direct Measures

- Overall likelihood of dying, rather than cholesterol
- Urinary urgency, frequency and nocturia; rather than PSA level
- Measures of fatigue, rather than Hemoglobin
- Ability to walk without pain, rather than x-ray evidence of a healed fracture or disc disease

Measuring Results

- Unidimensional measures on particular aspects of health
  - McGill Pain Questionnaire
    - sensory-discriminative
    - Motivational affective
    - Cognitive evaluative
- Beck Depression Inventory
  - Sadness or Social Isolation

I do not feel sad

I feel sad

I am sad all the time

I am so sad I can't stand it

Myofascial Pain Syndrome Subjective Assessment Tool Kit

Developed at the
10 High Street Pain Clinic.
Please copy and use it

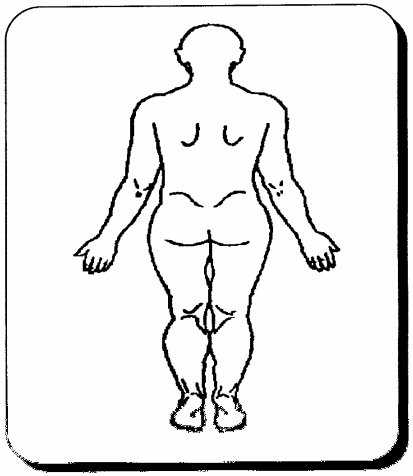
NAME_____ DATE_____

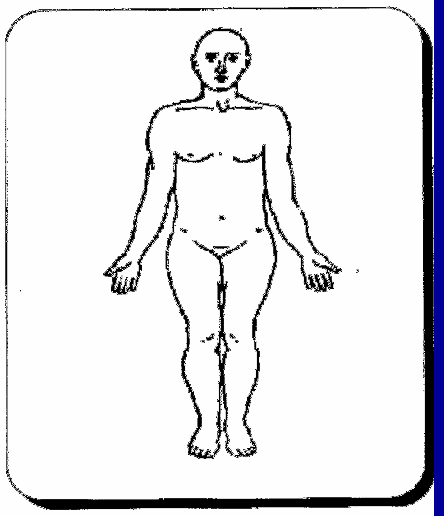
Please tick any of the words that describes your pain under the column that describes it's intensity.

	None	Mild	Moderate	Severe
Throbbing				
Shooting				
Stabbing				
Cramping				
Gnawing				
Hot-Burning				
Aching				
Heavy				
Tender				
Splitting				
Tiring-Exhausting				
Sickening				
Fearful				
Punishing-Cruel				

PLEASE DRAW YOUR PAIN

xxx	Burning	= =	Numbness
!!	Stabbing	**	Cramping
00	Aching	##	Other





Your Pain is:

On Most Days	No Pain Discomforting Horrible	Mild Distressing Excruciating
At It's Worst.....	No Pain Discomforting Horrible	Mild Distressing Excruciating
At It's Best.	No Pain Discomforting Horrible	Mild Distressing Excruciating
TODAY	No Pain Discomforting Horrible	Mild Distressing Excruciating

How many hours of the day are you in pain?.....
How many days per week are you in pain?.....
How many weeks per year are you in pain?.....
What Drugs Have You Taken Today?.....

.....

Your Pain Today - Tick along scale below .

No Pain [_____] **Worst Possible Pain**

Measuring Overall Health Status

- **A Call to Establish Common Metrics for Consumer-reported Health Status Measurement** SF 36-org
- Overall complications of treatments
- SF 36
  - Would you say your health is
    - Excellent, very good, good, fair, poor?
  - Has health changed?
  - Are various vigorous or moderate activities
    - Limited a lot, limited a little or not limited at all?

Disease/Condition Specific Scores

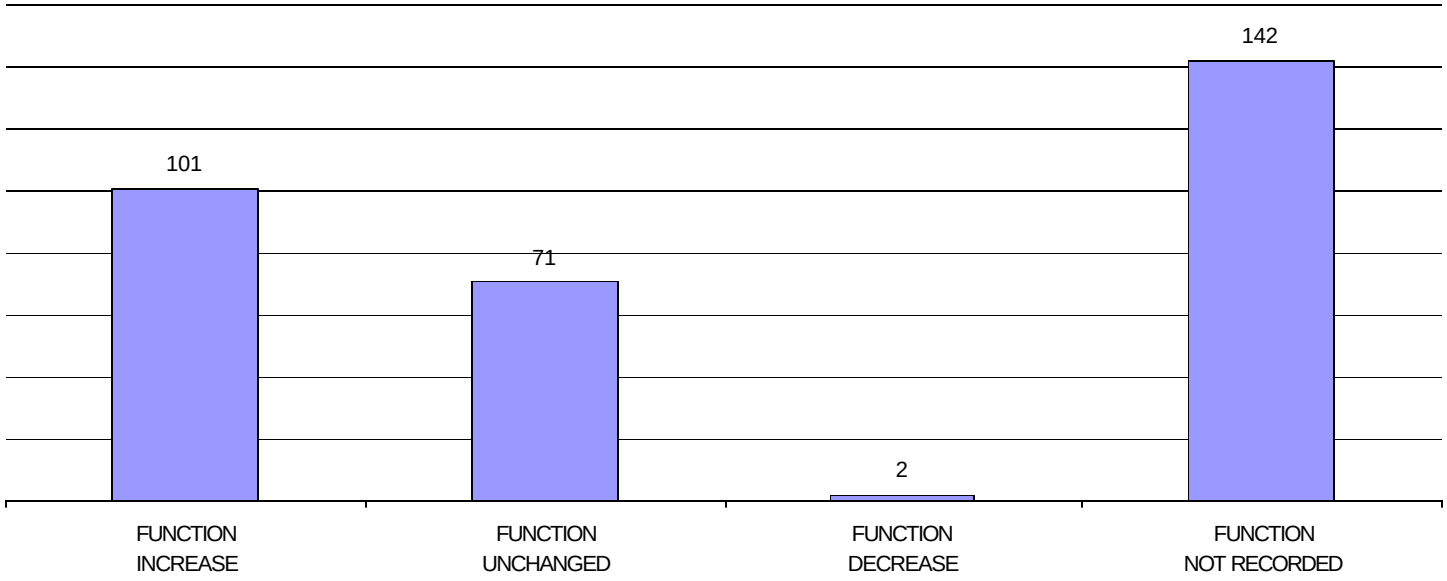
- Asthma Quality of Life Scores
  - Juniper and Guyatt -1993
  - Symptoms, Emotional quality of life

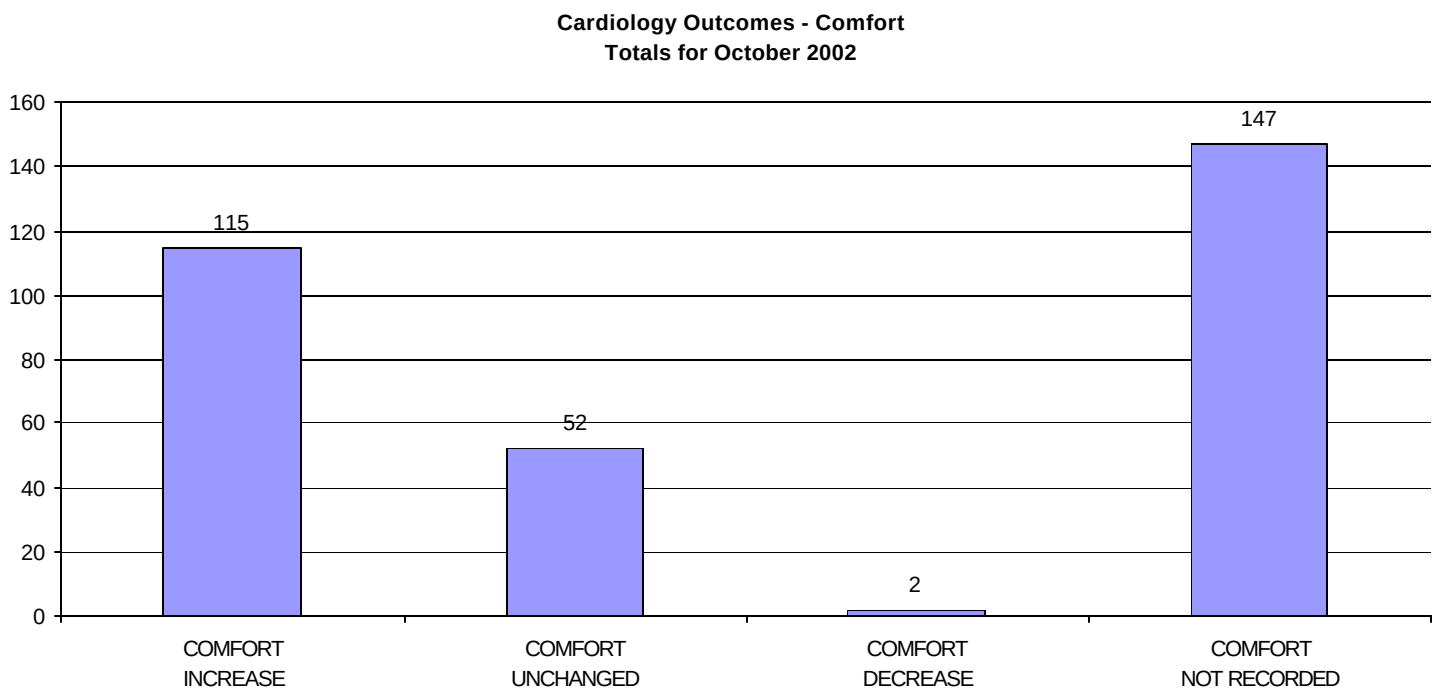
  -Children's variant as well
  - Questions about influence on activities

Postoperative Knee Score

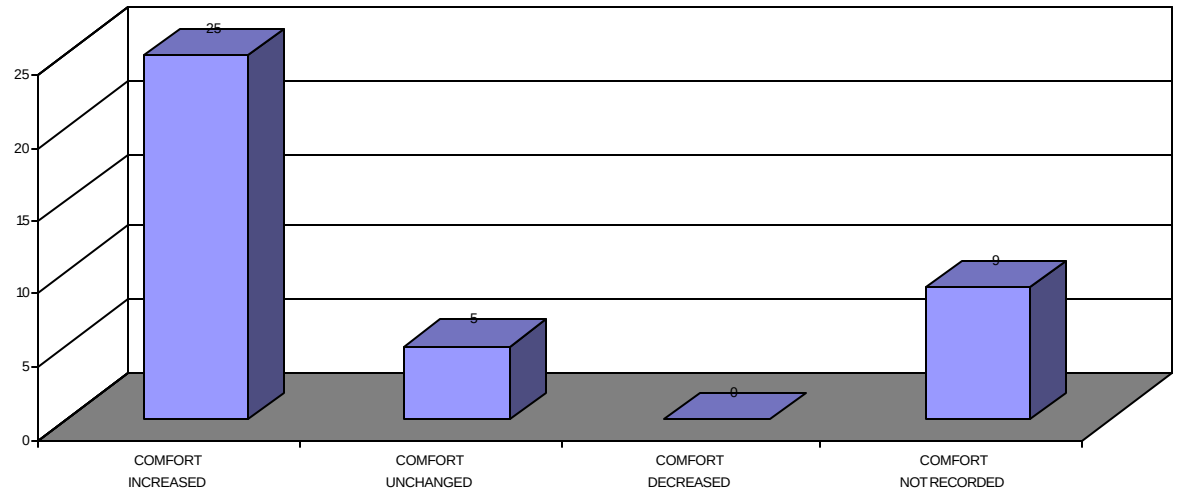
- How much pain does the patient have at rest?
  - None
    Mild or Occasional
    Moderate
    Severe
- How much pain does the patient have while walking
  - None
    Mild or Occasional
    Moderate
    Severe
- Also questions about stairs, crutches, range of motion
- Functional knee score asks about range of motion and instability.
- THE MEASURES ARE DETAILED
  - MORE DETAILED THAN REQUIRED FOR CLINICAL USE AND TIME CONSUMING
- IS A LIKERT SCALE SUFFICIENT??? Who Benefits? Who Pays?

Cardiology Outcomes - Function
Totals for October 2002

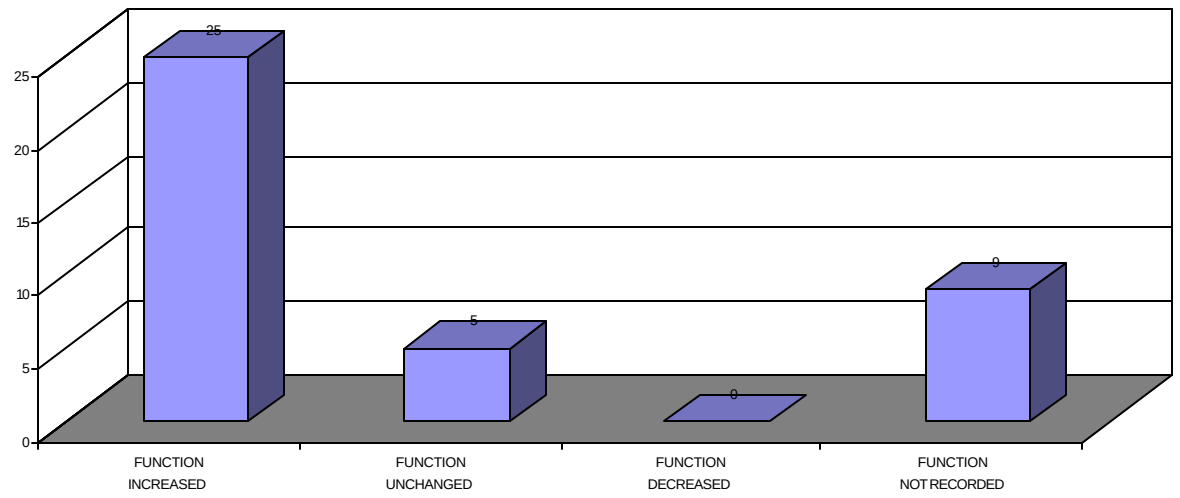



Cardiology Outcomes - Comfort
Totals for October 2002
160
140
120
100
80
60
40
20
0
115
52
2
147
COMFORT INCREASE
COMFORT UNCHANGED
COMFORT DECREASE
COMFORT NOT RECORDED

Psychiatric Outcomes - Comfort
Totals for June 2003



Psychiatric Outcomes - Function
Total for June 2003



Are Canadians Getting What They Pay For?

- Purposes of health care
  - A) To produce information about our aches and pains
  - B) To improve comfort
  - C) To improve function
  - D) To increase life expectancy

Linking Activities and Results

- Treatments
  - Information, Tincture of time
- Pills
  - Some are beneficial, some are harmful; some are harmful and beneficial, how often
- Surgery
  - Not always beneficial in short or long term
  - Condition specific and overall health

MEANING OF RATES

- VAGINAL BIRTH AFTER C-SECTION
  - Meaning requires information about maternal and newborn mortality and morbidity
- CIHI-High rate is beneficial
- New England Journal - 1/400 increase in mortality-high rate a poor indicator of quality but CIHI/MacLeans suggests a low rate is better. More important is differences in mortality and morbidity.

Antidepressant Outcomes?

- Reports to FDA suggest that antidepressants are no better than placebo
- No long term studies
- Shouldn't drug labels be required to indicate the likelihood of benefits and harms (1/1,000 patients on effexor have seizures) ? Shouldn't outcomes be captured?

Issues

- Purpose of Outcome Measures
  - Clinical recording, research, administrative
- Who benefits from outcome measurement?
- Who pays?
- Are the costs different for better measures? Are better measures cost worthy?
- Are guestimates adequate for the purpose?

The Challenge

Health care is an unregulated monopoly because regulator and monopolist are the same

You can't manage what you don't measure and

If management isn't necessary than neither is measurement

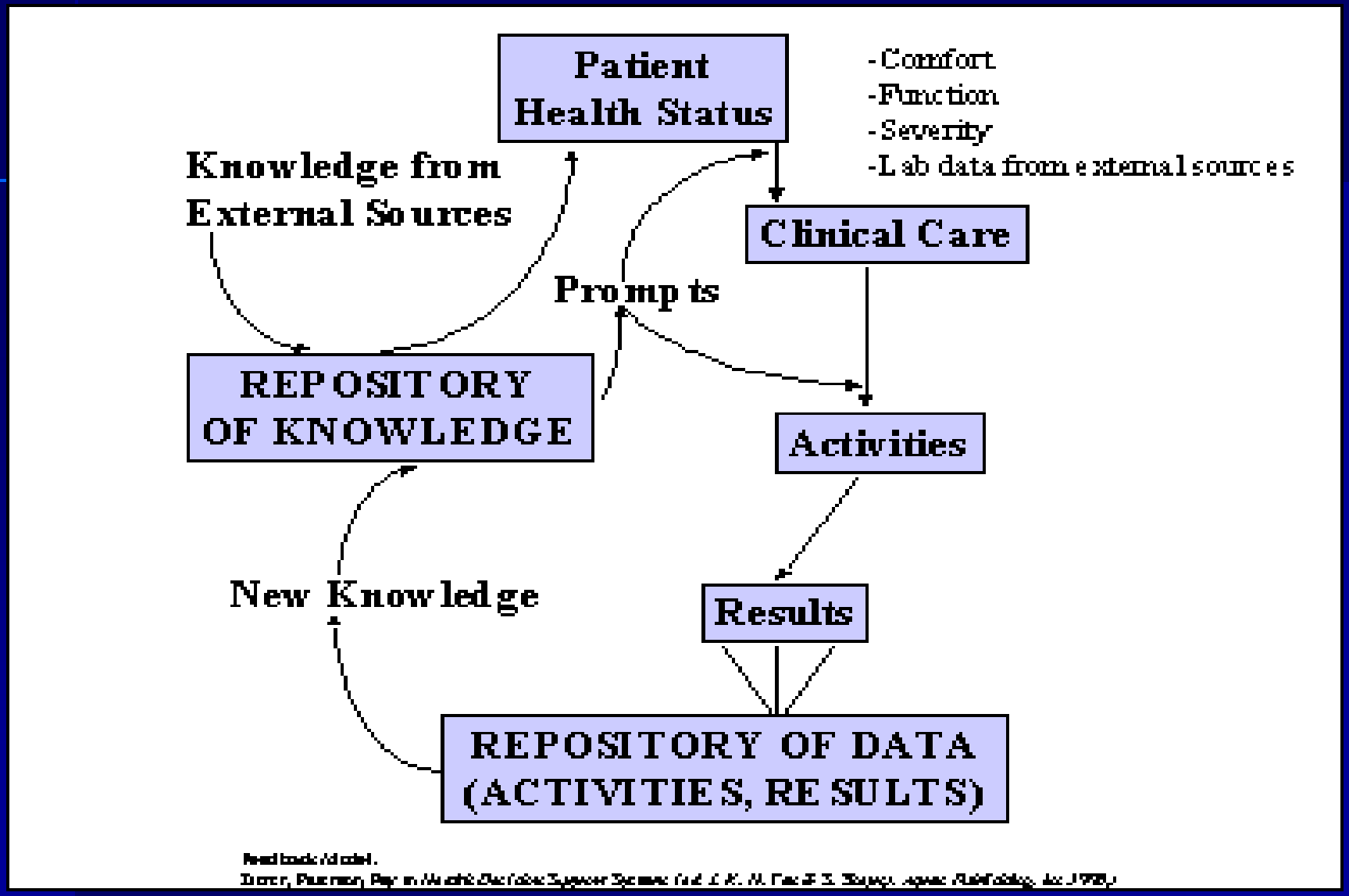
Activity based incentives for care. Little incentive to identify and reduce superfluous activity

Predictive modeling/data mining needed to learn which activities are pertinent or irrelevant to a result.

Measuring Individual Results

- Patients can participate using scales and self-reported information
- One role for government to insist on appropriate labeling. But they don’t do it with regards to their own institutions.

⌘Collection, Storage, Aggregation, Mining, Use



Privacy/Security Complicates the Piece

- Should information captured for one purpose be used for other purposes?
- Conflict between informed consent and ability to decide how ones health information will be used even if there are appropriate security guarantees.

ANOTHER $9 Billion

- Management?
  - Access
  - Results
- Harms? Population Outcomes
  - PSA screening- bmj
  - Routine colonoscopies over 50
  - Breast Screening in young women
  - Antidepressants for adolescents and adults

Operating in the Dark Public Health State Secret

- Lack of Regular and Reliable information about access and health outcomes
  - Adverse outcomes from error are only one type of bad outcome!
- How can Canadians get the best value for the dollars they spend on health care?
- Reducing superfluous activity
- What proportion of Canadians do we want in health occupations?
- How can technology help-HealthInfoRX?

1 cruise ship/month Sunk!!!!

- 9,000-24,000 Canadians die from health system error
- Error is only one cause of poor outcomes
  - Mistaken beliefs
  - Lack of appropriate resources
    - Modern diagnostic and therapeutic materials
  - Lack of timely care
- Need to capture all beneficial and adverse outcomes

Canada Threatens to Throw More Money at Health Care

Information: The road to peace.