Using Electronic Resources to provide High Quality, Low Cost Healthcare

Chris Wood, MD
Medical Director, Information Systems
(Brent James, MD MSTAT
AVP Quality Improvement)
Intermountain Healthcare
chris.wood@imail.org

Intermountain Healthcare

Intermountain Healthcare is a nonprofit system of hospitals, surgery centers, doctors, and clinics that serves the medical need of the State of Utah and South Eastern Idaho.

- 23 Hospitals
- 30,000 employees
- 150 clinics
- Over 600 physicians
- SelectHealth Insurance
  - Nearly 500,000 health plan enrollees

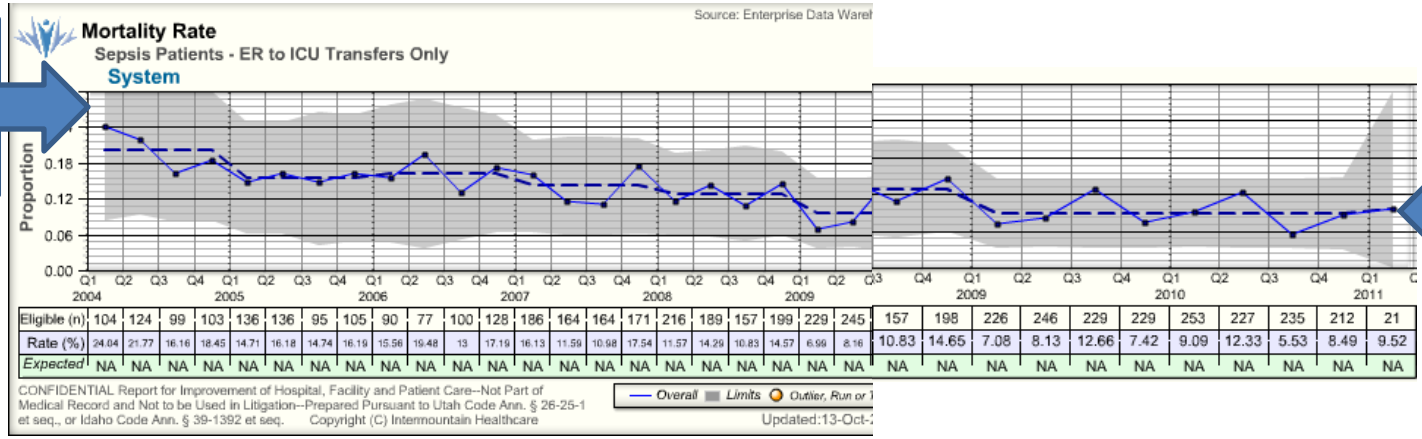
Intermountain is an internationally recognized system of hospitals, clinics and doctors focused on providing patients the highest quality of care at the lowest possible cost.

Sepsis

- Bacteria in the blood stream causing symptoms
- US National mortality rate around 27%

Mortality rate from Sepsis

2003
27%



2010
9.3%

Why focus on Quality?

40+% of all resource expenditures in hospitals is

quality-associated waste:

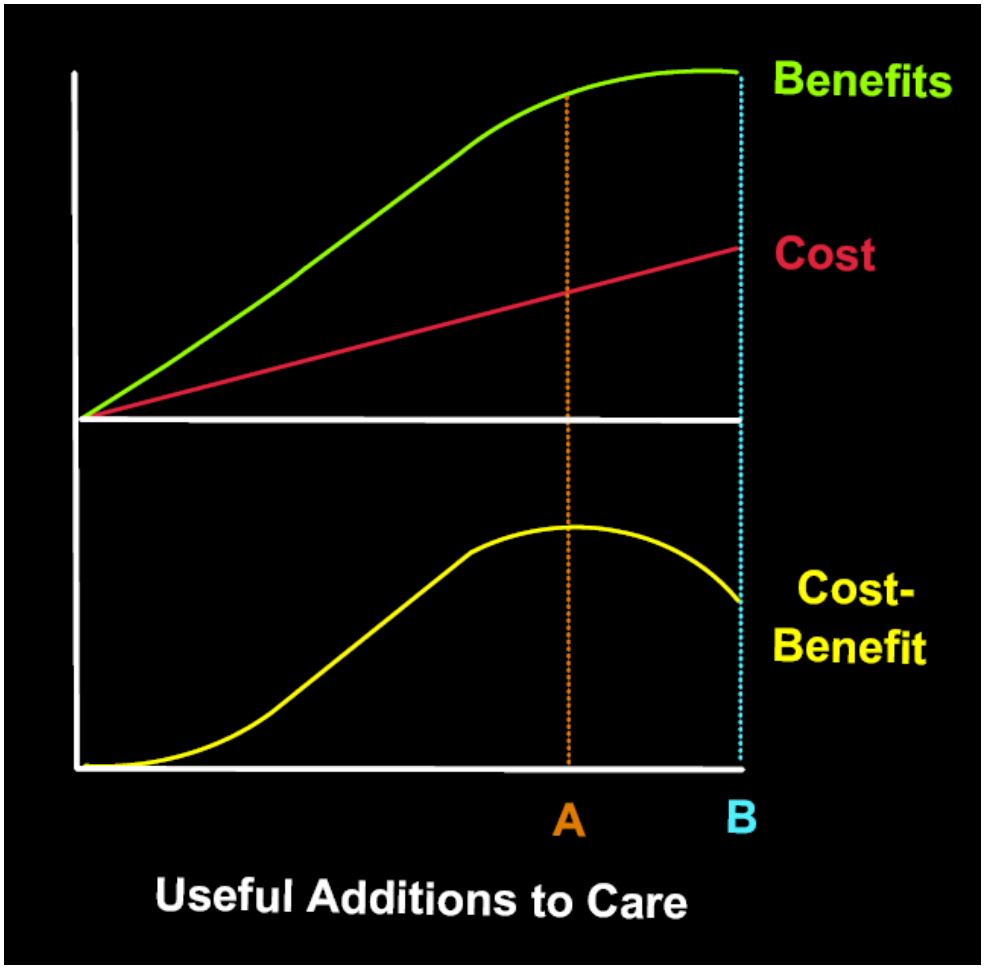
- *recovering from preventable foul-ups*
- *building unusable products*
- *providing unnecessary treatments*
- *simple inefficiency*

Andersen, C. 1991
James BC *et al*., 2006

Improve Quality or Add new Technology?

Mechanism	Quality	Cost	Forum	Potential Savings
Waste:				
Quality waste	↑	↓	internal	25-40%
Inefficiency waste	–	↓	internal	> 50%
Cost-benefit	↑	↑	society	(none)

Optimalist - Maximalist Argument



Fixes that Fail

- ***Problem:*** ***Prescription cost overruns for elderly Medicaid patients in New Hampshire***
- ***Plan:*** ***Pay for maximum of three drugs per outpatient***
- ***Results:***

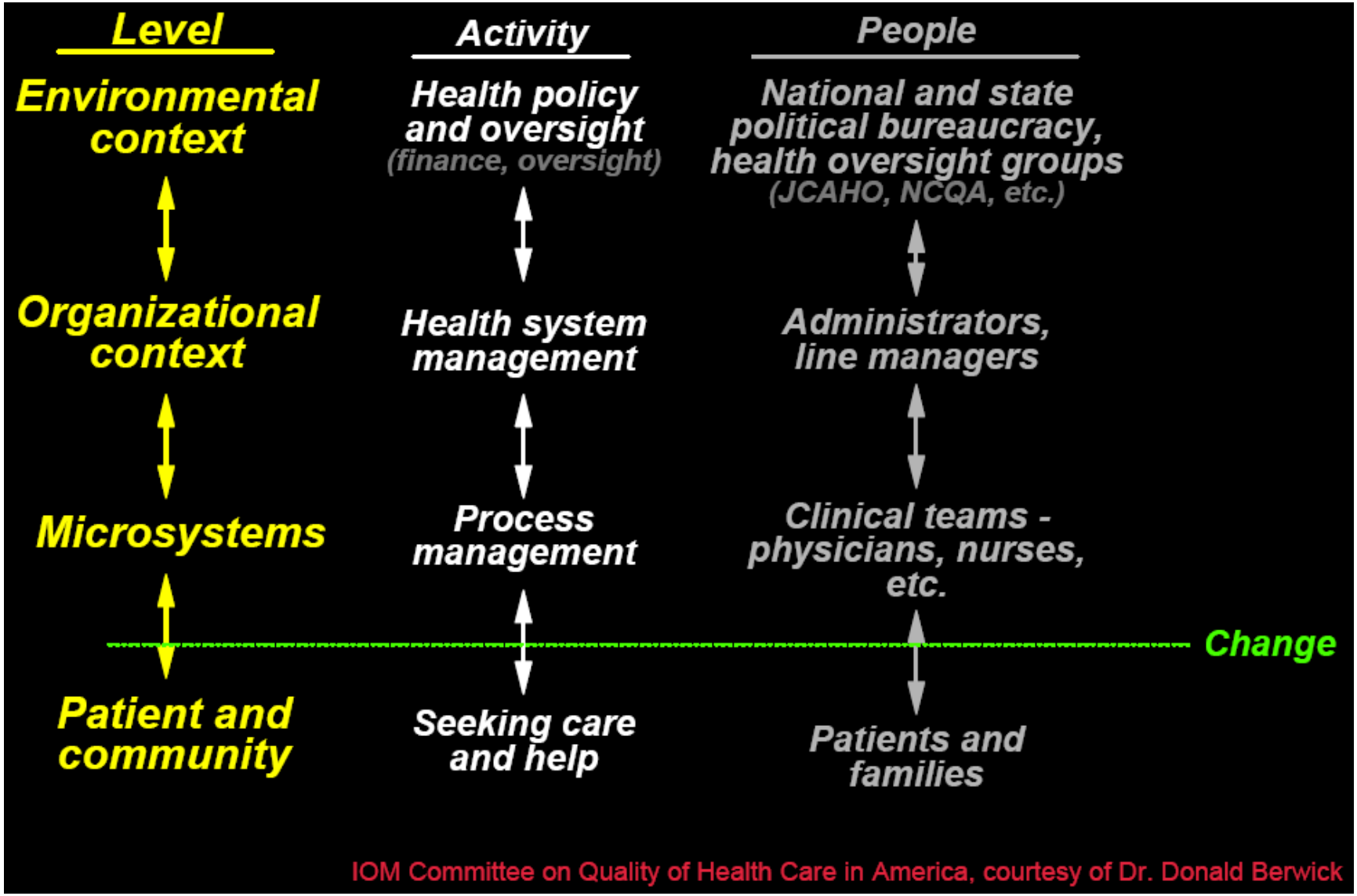
Prescription drug costs:	***down***	***35%***	
Nursing home admits:	***up***	***120%***	***(to 2.2x)***
Hospitalizations:	***up***	***20%***	***(to 1.2x)***

- ***After 11 months, the plan was abandoned:***
  - ***rates returned to their old levels***
  - ***those institutionalized stayed institutionalized***

Soumerai *et. al* Effects of Medicaid drug-payment limits on admissions to hospitals and nursing homes. *New Engl J Med* 1991; 325(15):1072-7 (Oct 10).

Schroeder *et. al* On squeezing balloons: cost control fails again (editorial). *New Engl J Med* 1991; 325(15):1099-1100 (Oct 10).

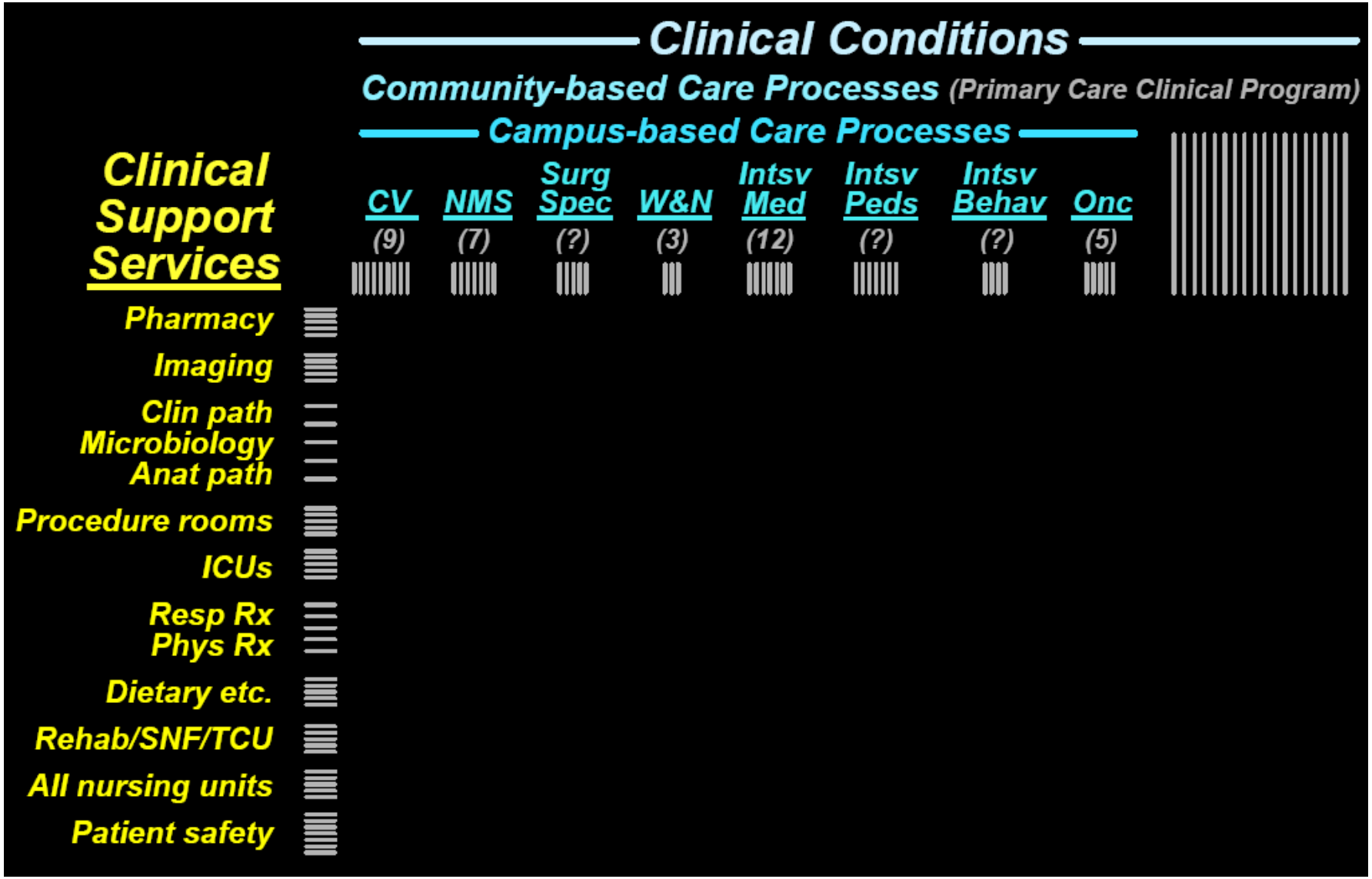
The Chain of Effect for Quality



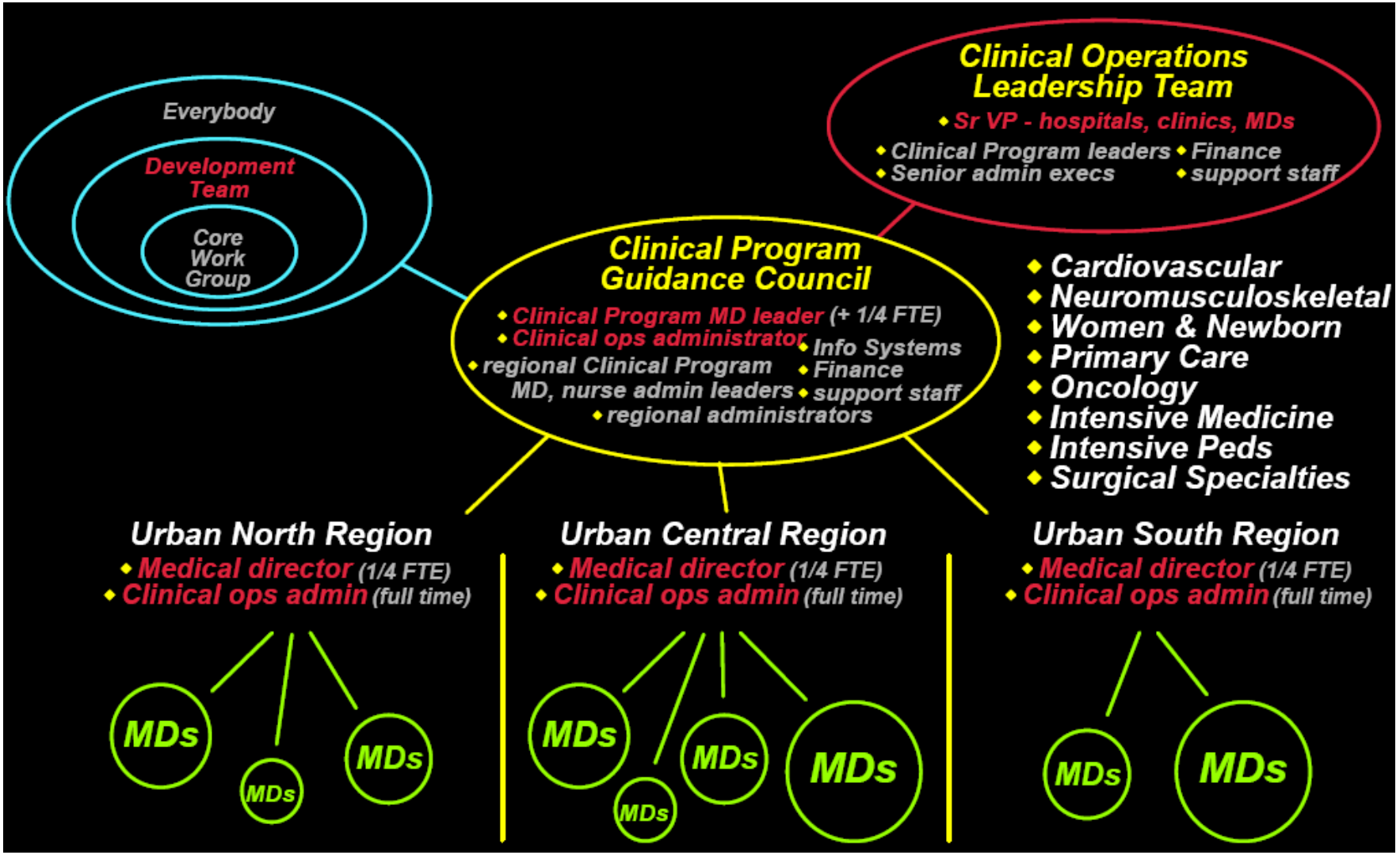
What to focus on?

- Pareto Principle
- 20% of the problems account for 80% of the waste/cost/mortality
- Define our most costly, high risk and high volume procedures and improve their quality
- Divide our key processes into sensible leadership teams that can oversee the workgroups that carry out the key processes

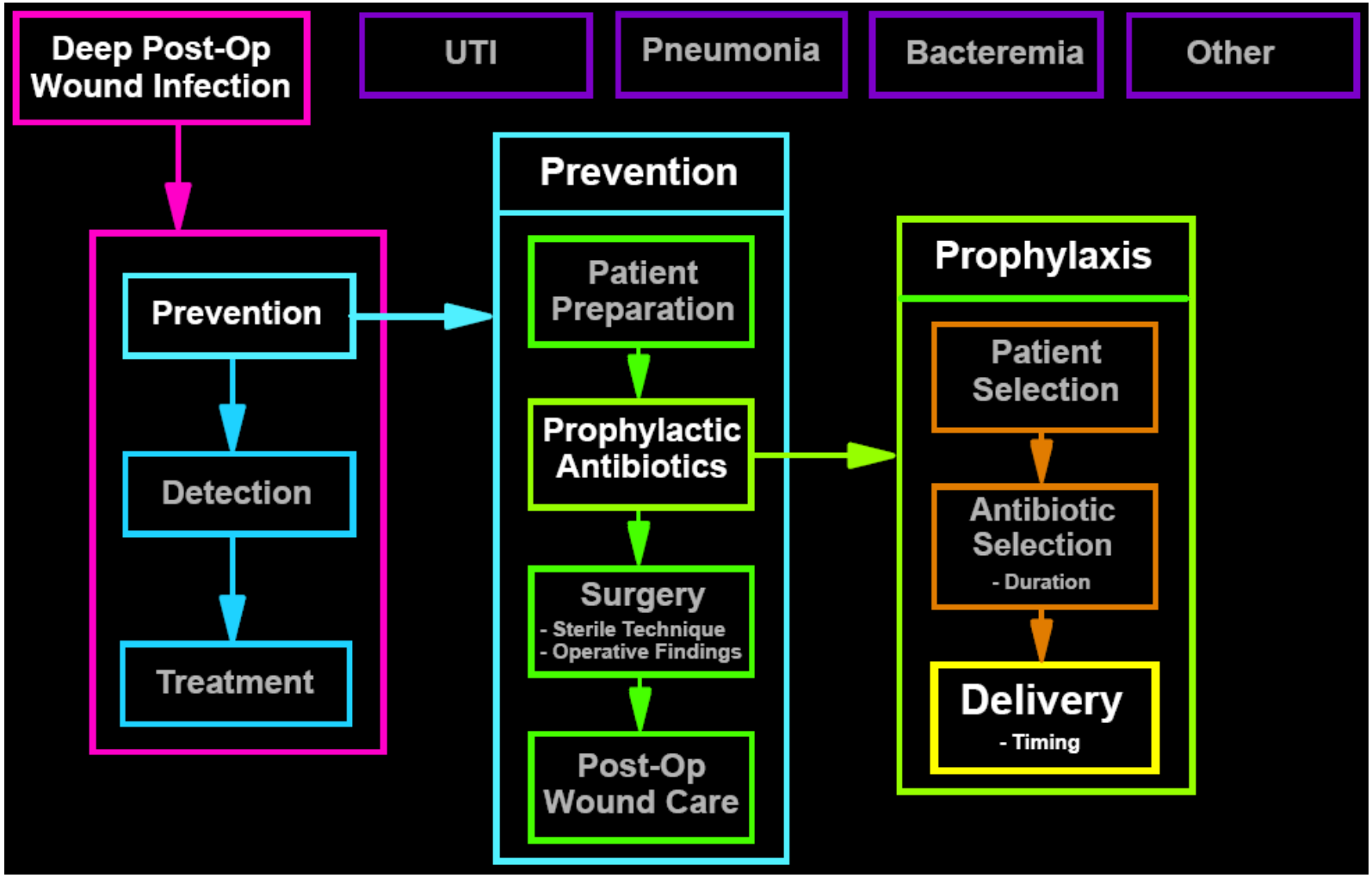
Organized around Key Clinical Processes



Structure: Implementing EBM



Projects: Post-Op Wound Infections



Deep Post-op Wound Infections

	1985	1986	1991
% prophylaxis given at optimal time	40	58	96
% Infections	1.8	0.9	0.4
Est. decrease in infections relative to 1985 rate	--	33	51
Est. savings at $14,000 per case (in thousands)	--	462	714

National standard: 2 - 4% deep post-op wound infection rate

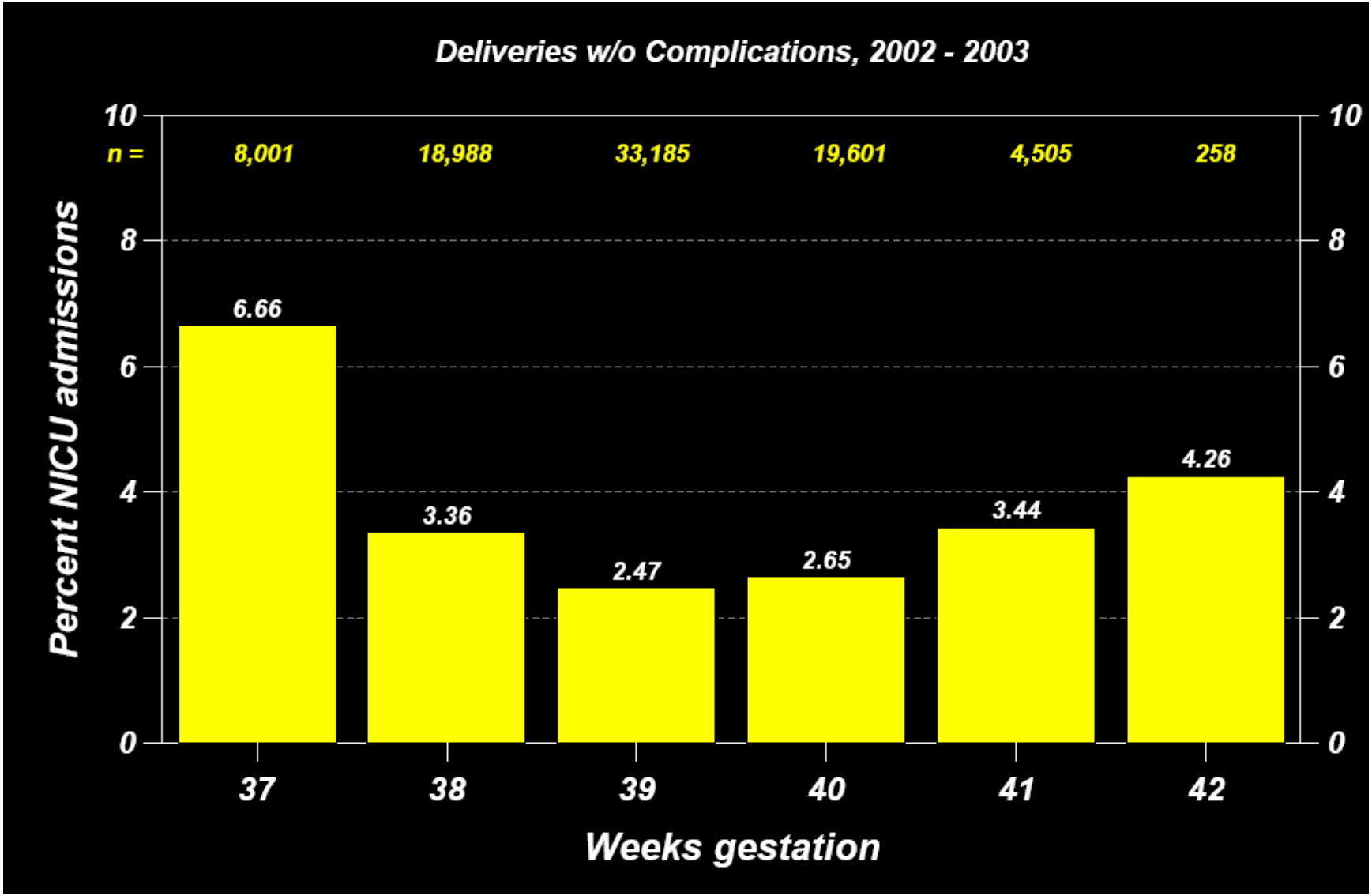
LDSH Dept of Clinical Epidemiology

Deep Post-op Wound Infections

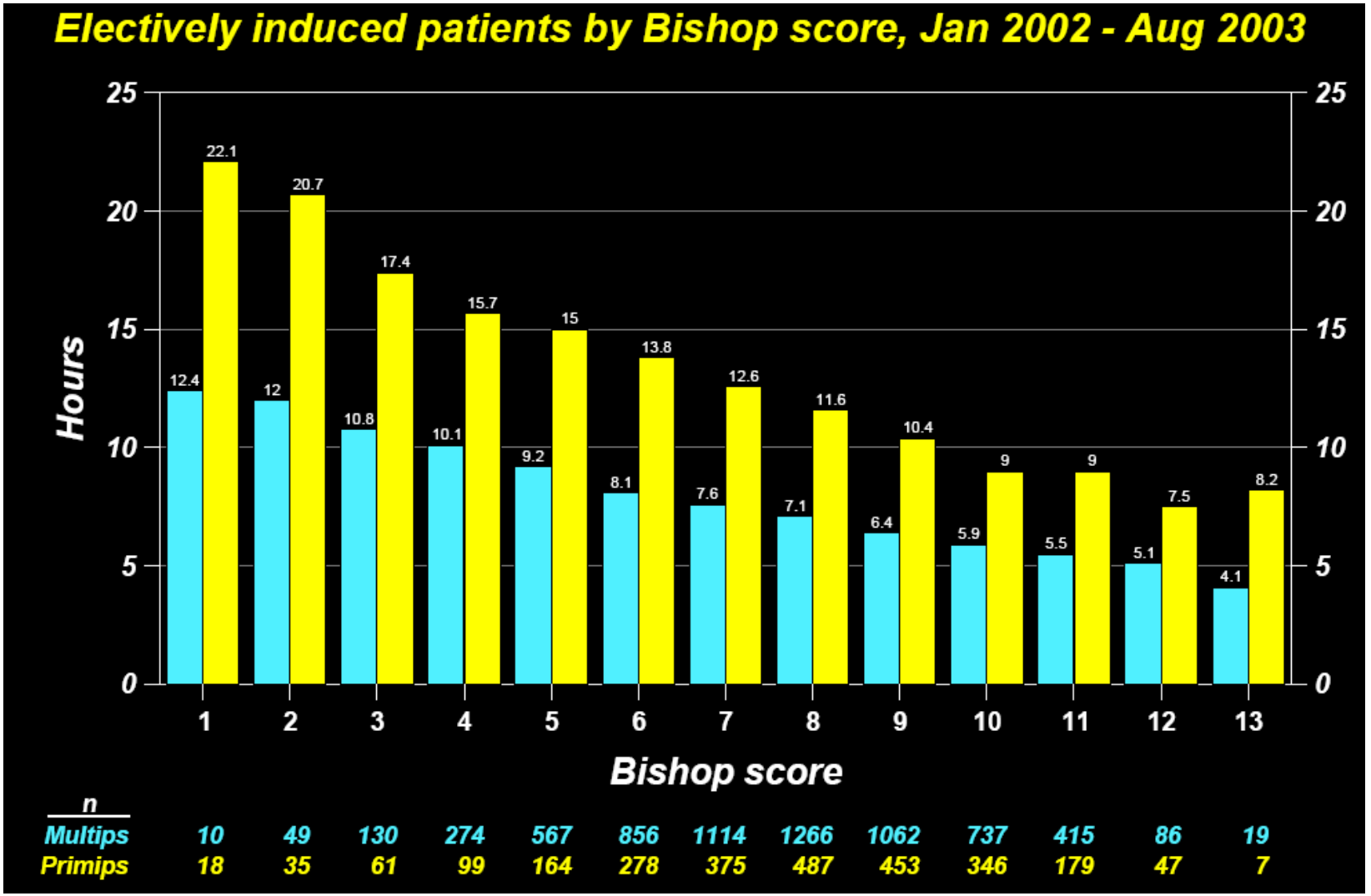
	1985	1994
% elective surgeries receiving prophylaxis	38.0	37.1
% receiving first dose 0-2 hrs before incision	40.0	99.1
% continuing prophylaxis 24 hrs after surgery	43.0	14.3
Mean number of doses per case	19.0	5.3

LDSH Dept of Clinical Epidemiology

Literature vs. Data
NICU admits by weeks gestation



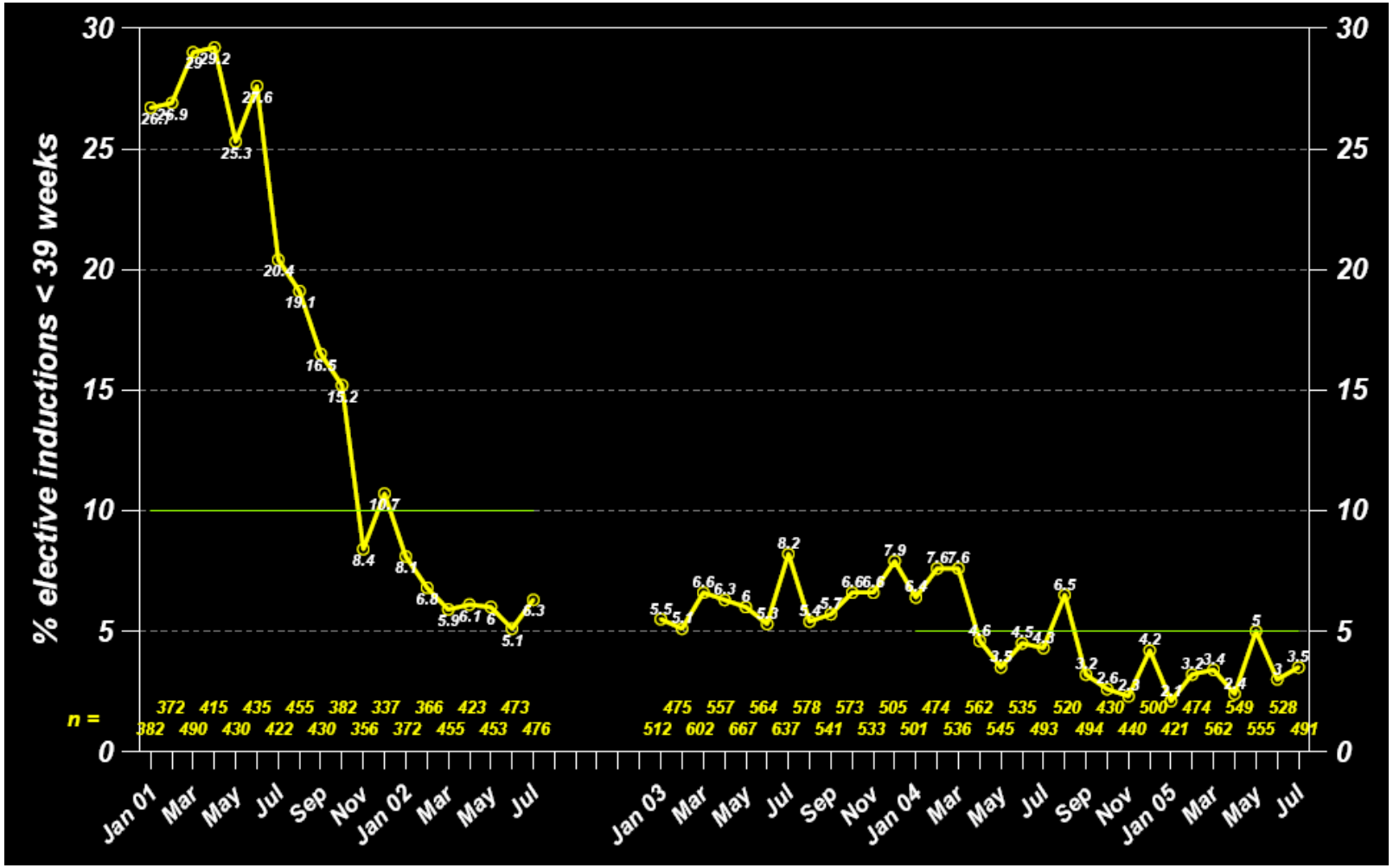
Average Hours in Labor and Delivery



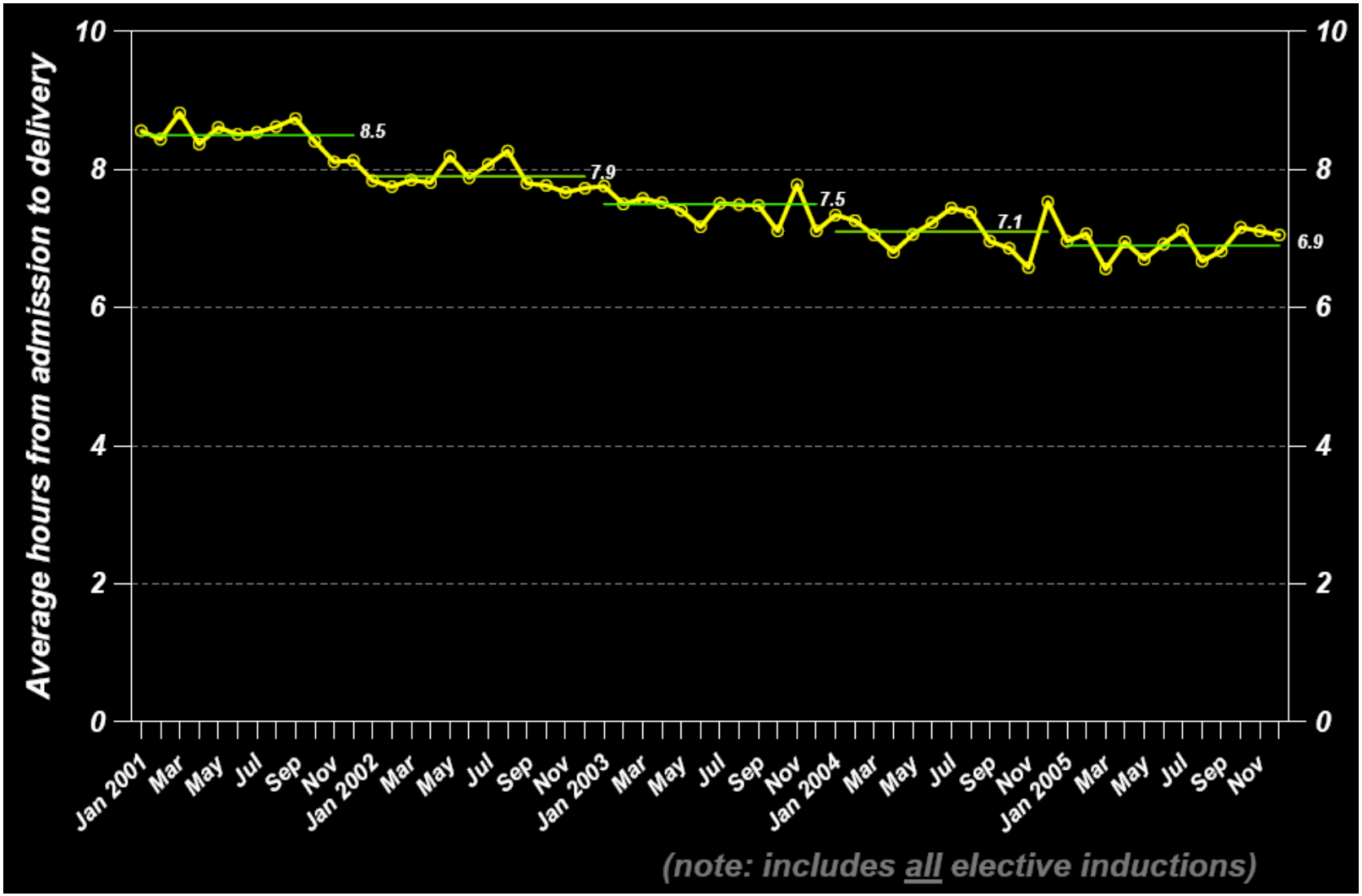
Interventions

- Educate Physicians about facts
- New Admission workflow
- New Admission tool
  - Calculates Estimated Date of Delivery (EDD)
  - Offers appointments after 39 weeks gestation
- Preserves Relationship between physician and patient

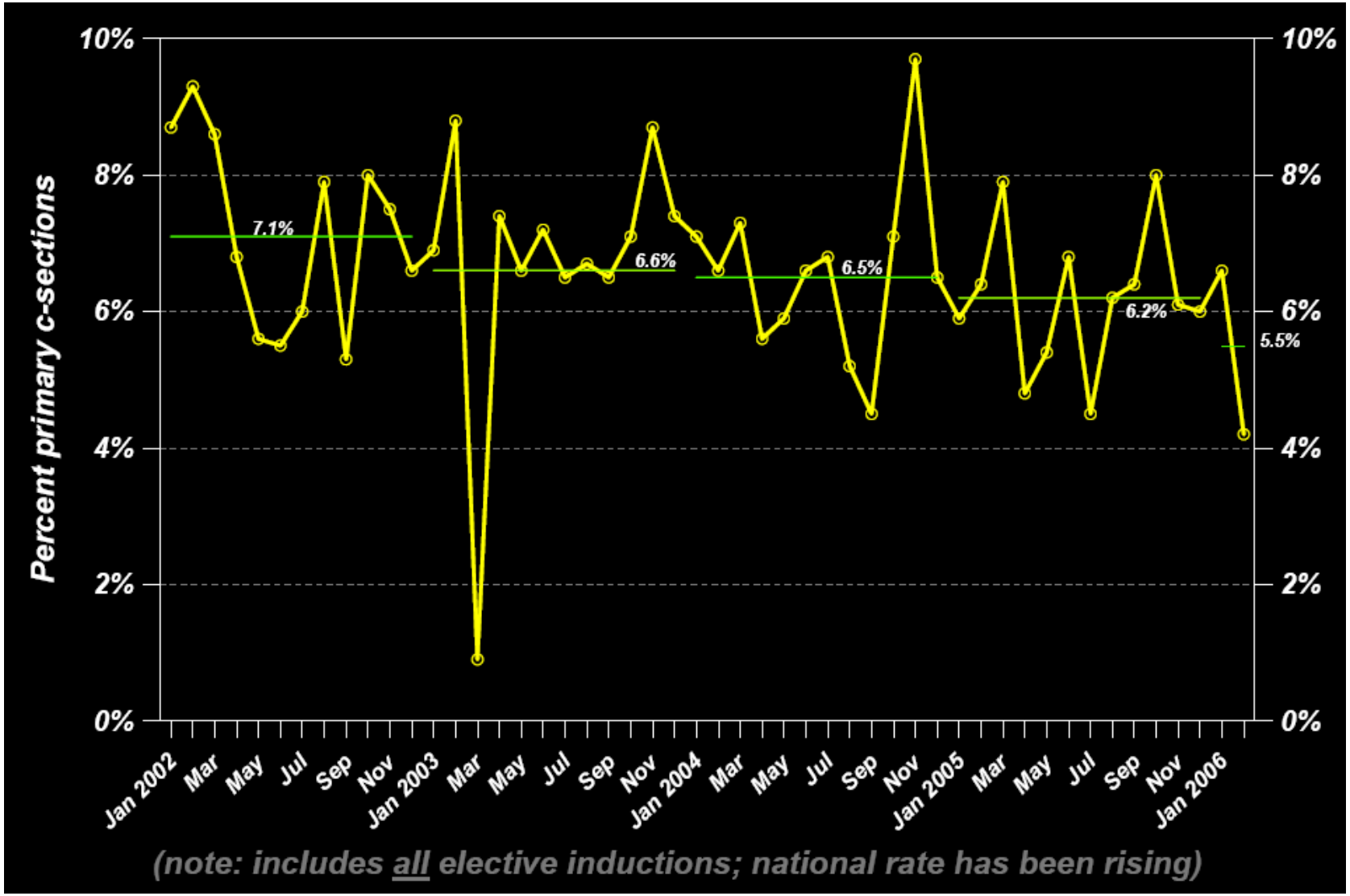
Elective Inductions <39 weeks



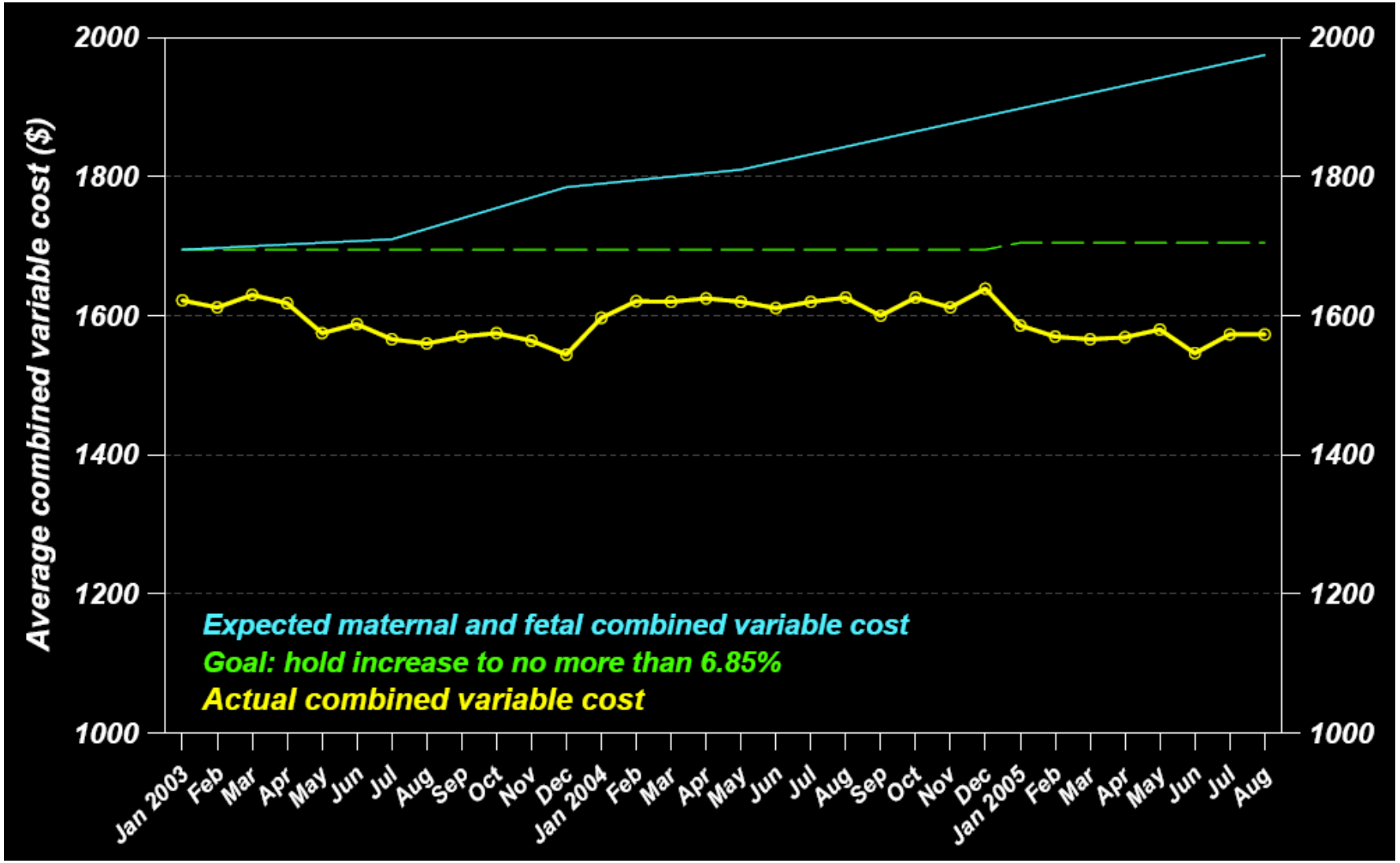
Elective Induction: Length of Labor

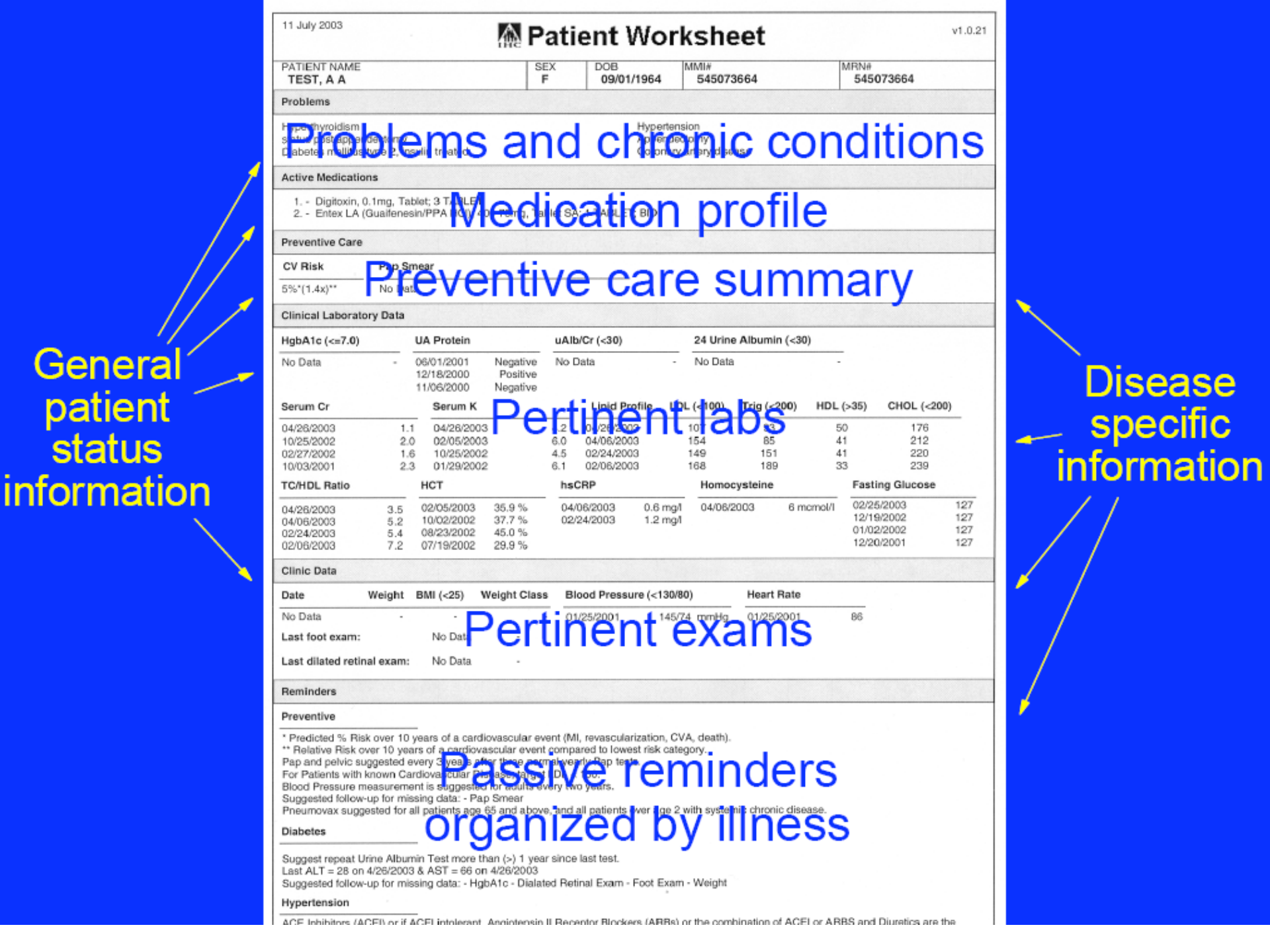


Elective Induction: Primary C-Section



Labor & Delivery Variable Cost





11 July 2003
Patient Worksheet
v1.0.21
PATIENT NAME
TEST, A A
SEX
F
DOB
09/01/1964
MMI#
545073664
MRN#
545073664
Problems
Hypertension
Active Medications
1. - Digitoxin, 0.1mg, Tablet; 3 TABLET
2. - Entex LA (Guaifenesin/PPA
Preventive Care
CV Risk
Pap Smear
5%*(1.4x)**
Clinical Laboratory Data
HgbA1c (<=7.0)
No Data
UA Protein
06/01/2001 Negative
12/18/2000 Positive
11/06/2000 Negative
uAlb/Cr (<30)
No Data
24 Urine Albumin (<30)
No Data
Serum Cr
04/26/2003 1.1
10/25/2002 2.0
02/27/2002 1.6
10/03/2001 2.3
Serum K
04/26/2003
02/05/2003 6.0
10/25/2002 4.5
01/29/2002 6.1
Lipid Profile
04/06/2003 154 85 41 212
02/24/2003 149 151 41 220
02/06/2003 168 189 33 239
TC/HDL Ratio
04/26/2003 3.5
04/06/2003 5.2
02/24/2003 5.4
02/06/2003 7.2
HCT
02/05/2003 35.9 %
10/02/2002 37.7 %
08/23/2002 45.0 %
07/19/2002 29.9 %
hsCRP
04/06/2003 0.6 mg/l
02/24/2003 1.2 mg/l
Homocysteine
04/06/2003 6 mcmol/l
Fasting Glucose
02/25/2003 127
12/19/2002 127
01/02/2002 127
12/20/2001 127
Clinic Data
Date
Weight
BMI (<25)
Weight Class
Blood Pressure (<130/80)
Heart Rate
No Data
01/25/2001 145/74 mmHg
01/25/2001 86
Last foot exam:
Last dilated retinal exam:
Reminders
Preventive
* Predicted % Risk over 10 years of a cardiovascular event (MI, revascularization, CVA, death).
** Relative Risk over 10 years of a cardiovascular event compared to lowest risk category.
Pap and pelvic suggested every 3 years after three normal yearly Pap tests.
For Patients with known Cardiovascular Disease, target LDL < 100.
Blood Pressure measurement is suggested for adults every two years.
Suggested follow-up for missing data: - Pap Smear
Pneumovax suggested for all patients age 65 and above, and all patients over age 2 with systemic chronic disease.
Diabetes
Suggest repeat Urine Albumin Test more than (>) 1 year since last test.
Last ALT = 28 on 4/26/2003 & AST = 66 on 4/26/2003
Suggested follow-up for missing data: - HgbA1c - Dialated Retinal Exam - Foot Exam - Weight
Hypertension
Problems and chronic conditions
Medication profile
Preventive care summary
Pertinent labs
Pertinent exams
Passive reminders organized by illness
General patient status information
Disease specific information

Individualized reports on performance compared to shared baselines

Diabetes Summary Report

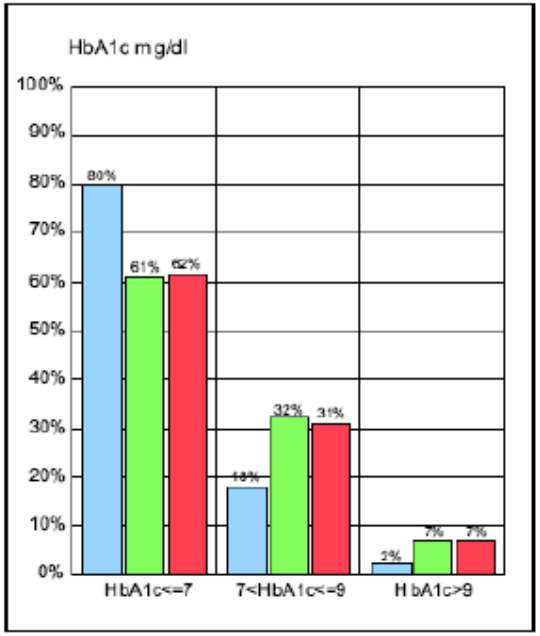
Provider: Towner, Steven (168)

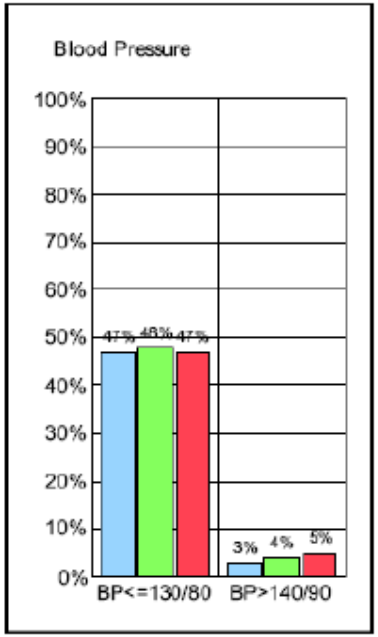
Period: Jan 2005 - Dec 2005

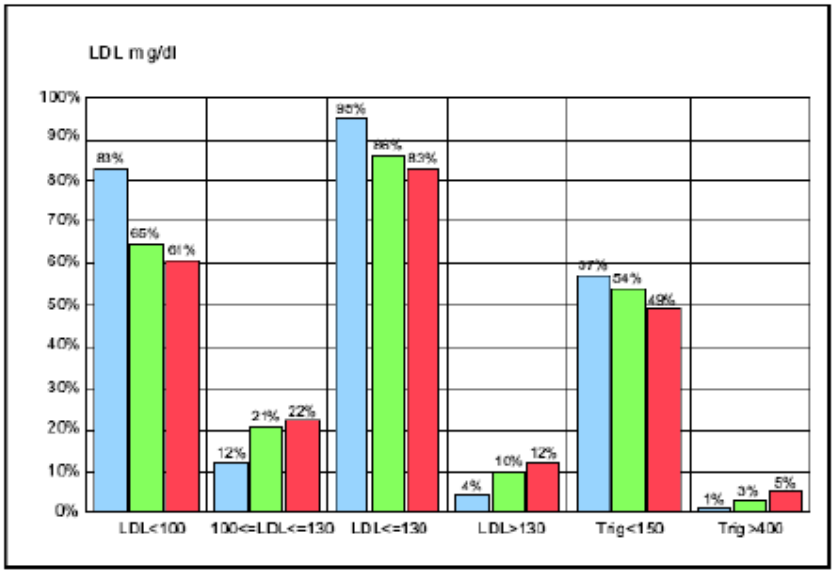
Patients Tested (Prop of Tot Pts%) - All Patients

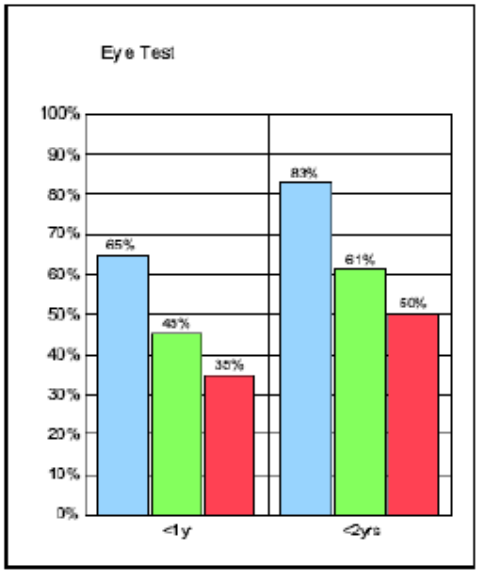
	Provider	Region	System
HbA1c	188(97%)	1,582(90%)	25,429(83%)
LDL	190(98%)	1,658(94%)	26,040(85%)
Eye Exam	159(82%)	399(23%)	6,509(21%)
Microalbuminuria	159(82%)	1,236(70%)	14,969(49%)
Blood Pressure	188(97%)	1,248(71%)	15,344(65%)
Total Patients	**194**	**1,757**	**30,470**

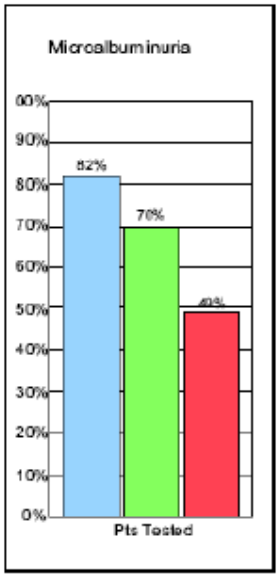
1. LDL measures represent two years ending in the chose period. 2. Eye exam % calculated using Health Plans patients only. 3.Includes spot microalbumin, 24 hour urine for protein and microalbumin/creatine ratio within the reporting period, or any history of treatment for nephropathy. 4. Blood pressure data only available for physicians with access to Clinical Workstation and/or Results Review.

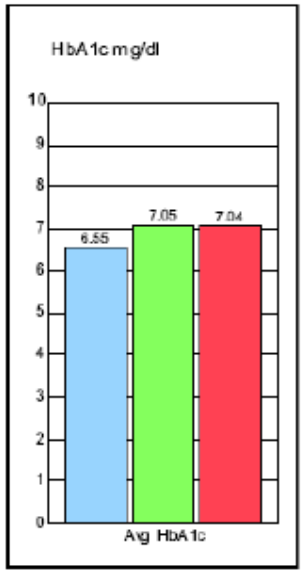












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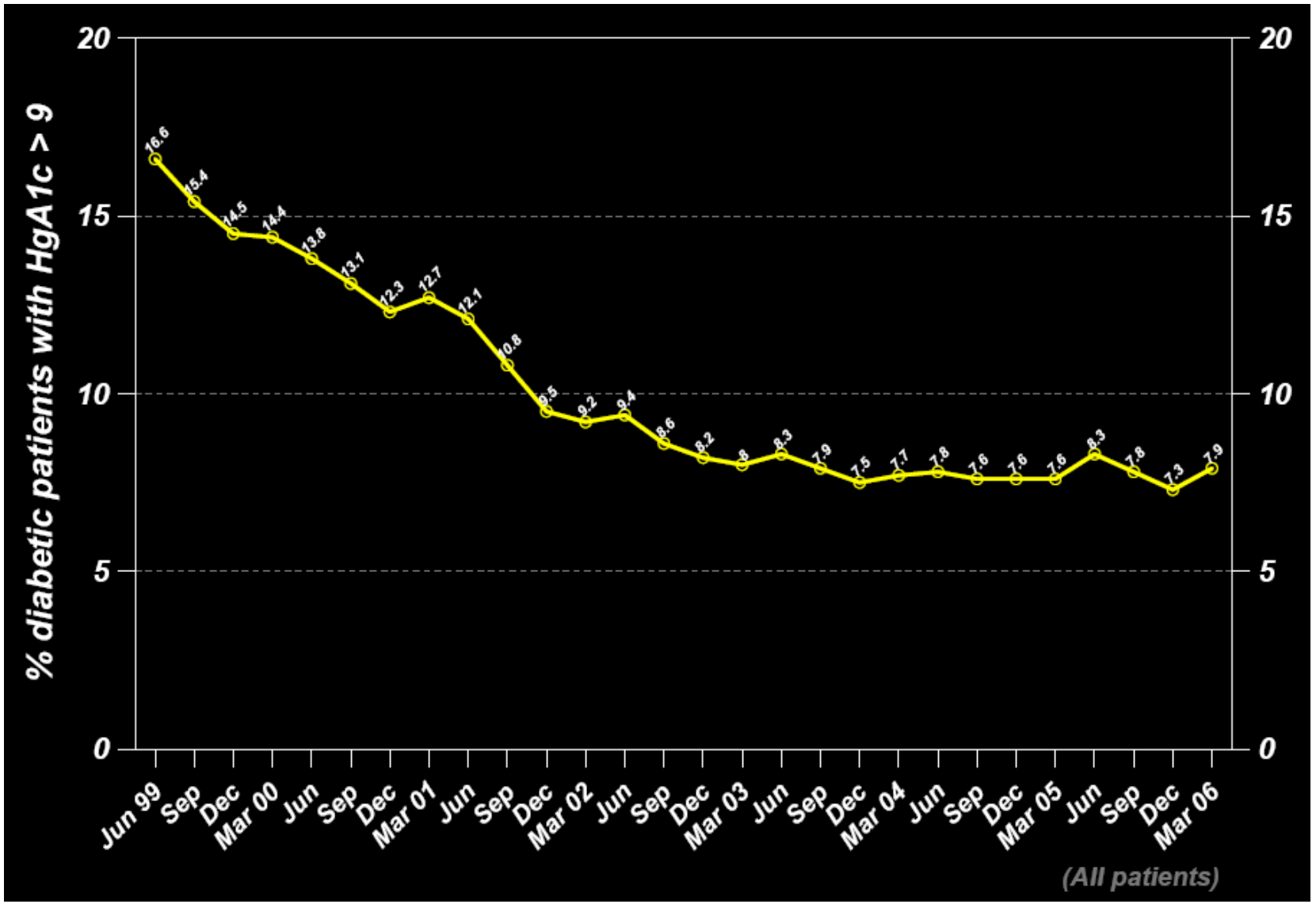
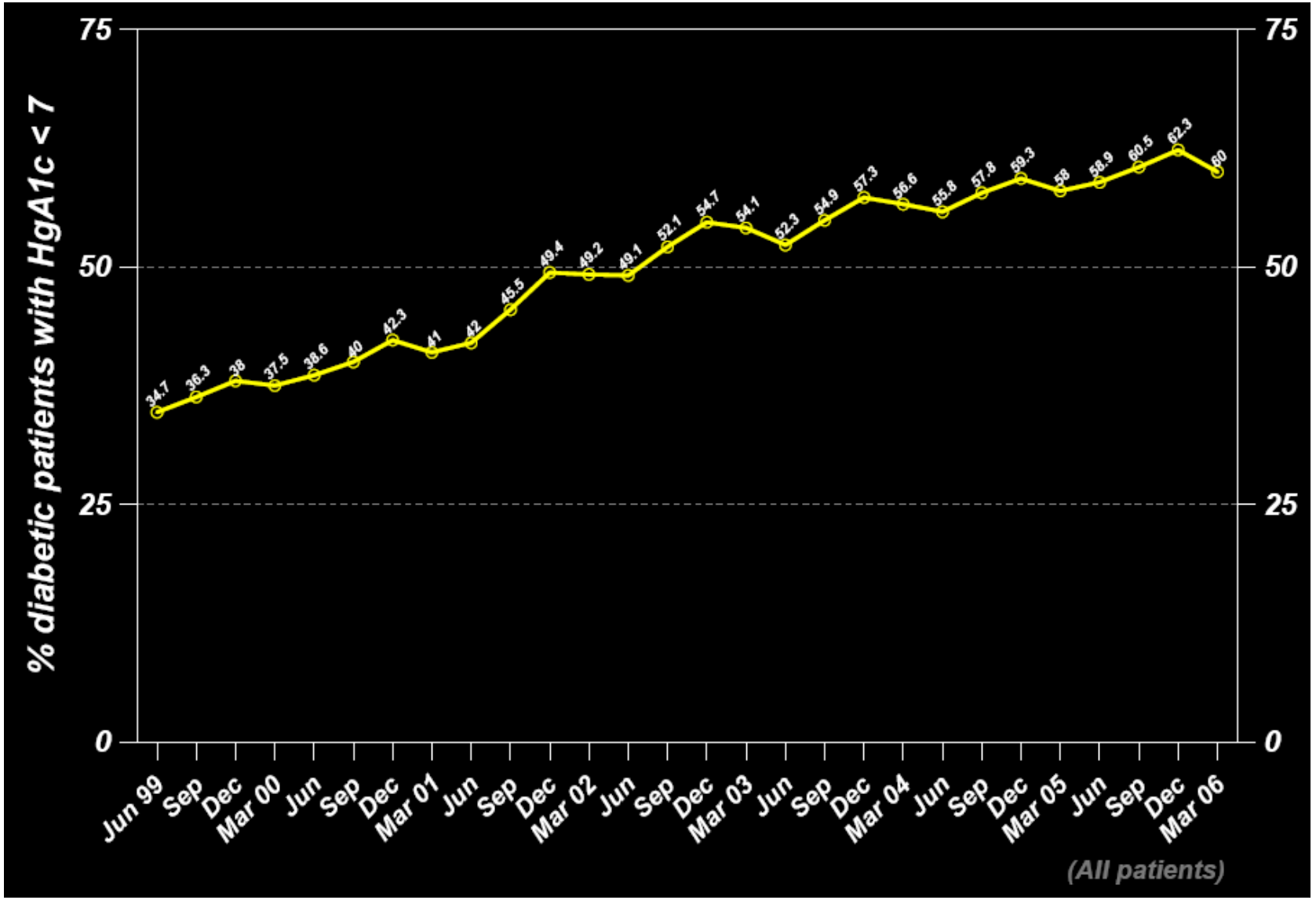
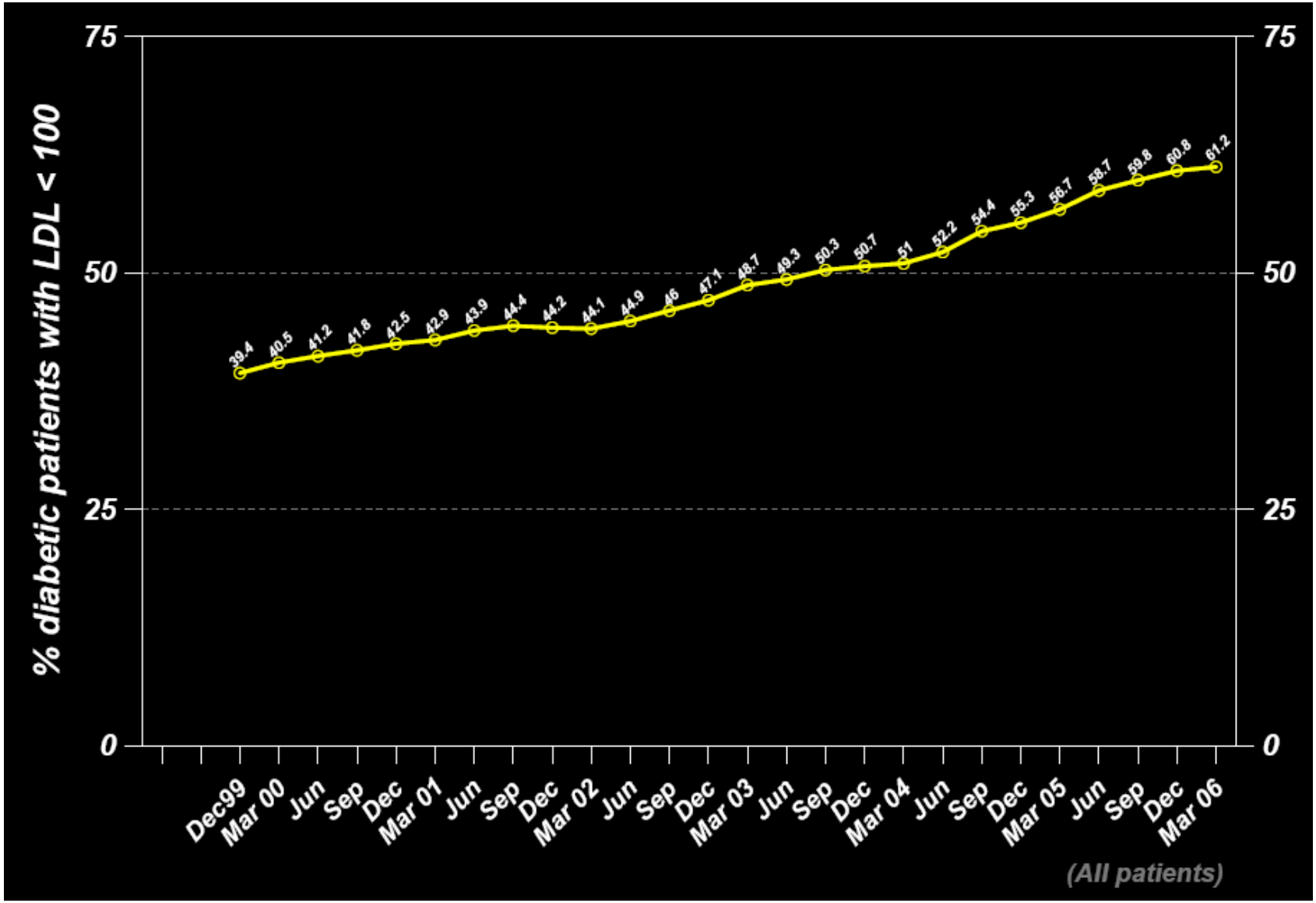
Results: Poor HgbA1c Control drops



Results: Excellent HgbA1c Control



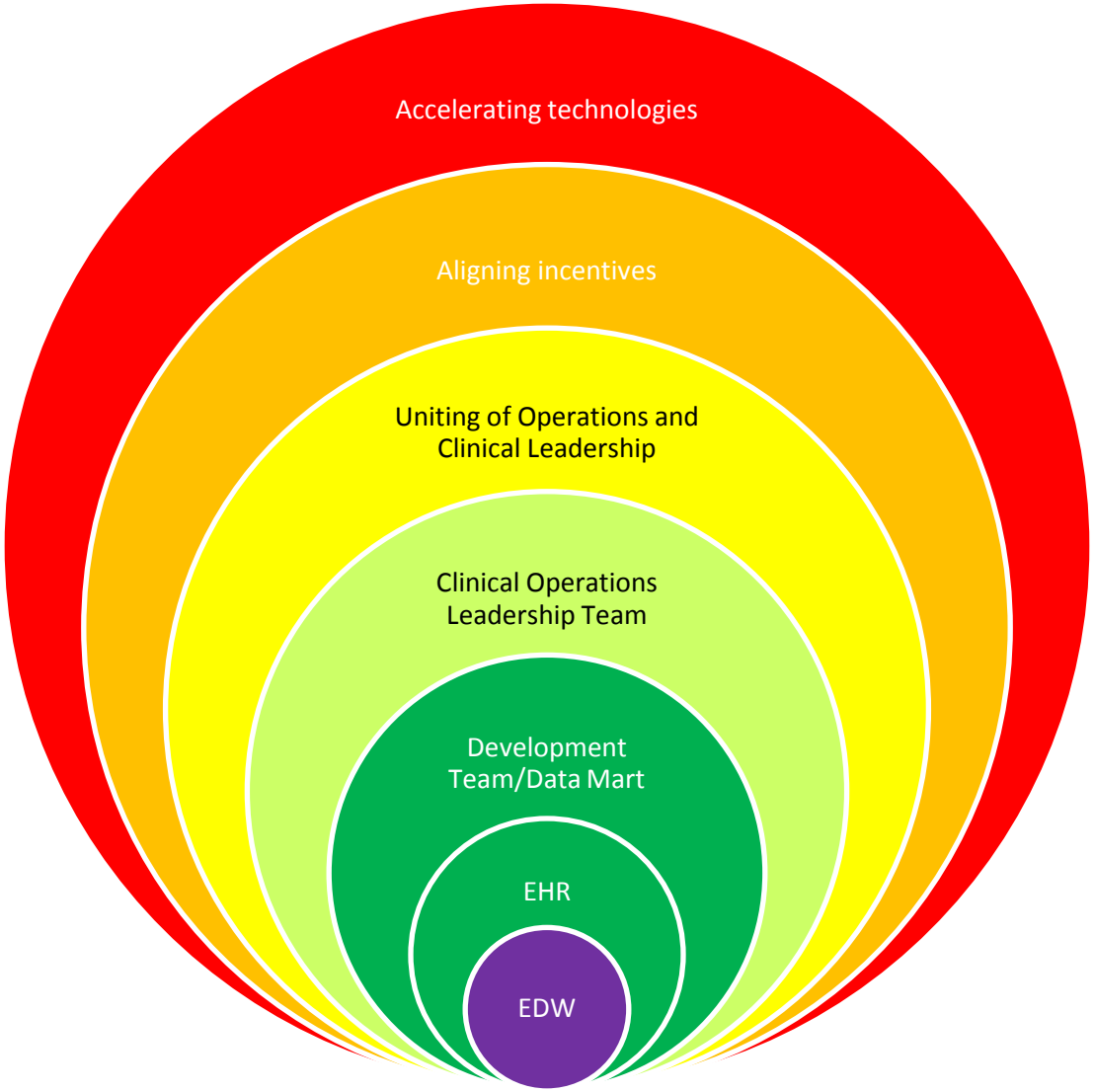
Allied Benefit: Improved Lipids



IS Tools

- Must integrate into the key workflow tools of clinicians and teams
- Must not damage workflow, should enhance it
- Must gather key data that reminds clinicians of best practice and allows monitoring of outcomes patients would care about

Evolving toward a High Quality Low Cost Healthcare organization



Discussion and Questions

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