

Managing Clinical Processes: Doing Well by Doing Good

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Session format

- ▶ **Open discussion** - ask questions, raise issues, share experience
BUT: please raise hand, to maintain some semblance of order
- ▶ **We will start each session on time ...**
BUT: there is no guarantee that we will end on time (due to open discussion format); therefore
- ▶ **Feel free to move about ...**
BUT: please be careful of your table-mates

Session context

◆ **Focused on clinical medicine -**

- ◆ *based on professional values*
- ◆ *looking within IHC (mostly)*

◆ **Redundant -**

- ◆ *intense study and discussion;*
- ◆ *at home: consolidate, rethink, read, discuss and experiment;*
- ◆ *meet again to revisit and re-explore, at a deeper level*

◆ **Clinical QI is not particularly linear -**

- ◆ *theory mixed with practical tools;*
- ◆ *things immediately useful mixed with long-term business strategies;*
- ◆ *methods mixed with management philosophy;*
- ◆ *system-level structural issues mixed with practical front-line issues*

all cross-linked - *requiring a willing suspension of disbelief until we have enough of the quality paradigm linked together to judge it as a whole ...*

Course structure

- ◆ **Meet four times -**

- 1. Theory**
- 2. Measurement**
- 3. Team skills**
- 4. Project presentations**

at long intervals -- better for learning, essential for projects

- ◆ **Major goals -**

- 1. Lead / facilitate clinical improvement**
- 2. Internal consultant on clinical improvement**
- 3. Teach clinical improvement**

The emergence of modern medicine

~1860 - 1910:

- ◆ ***new high standards for clinical education***
- ◆ ***strict requirements for professional licensing***
- ◆ ***clinical practice founded on scientific research***
 - *shift to germ theory, rather than "an imbalance of the 4 bodily humors," as the basis for disease*
 - *health care's first entry into "evidence-based medicine"*
- ◆ ***new internal organization for hospitals***

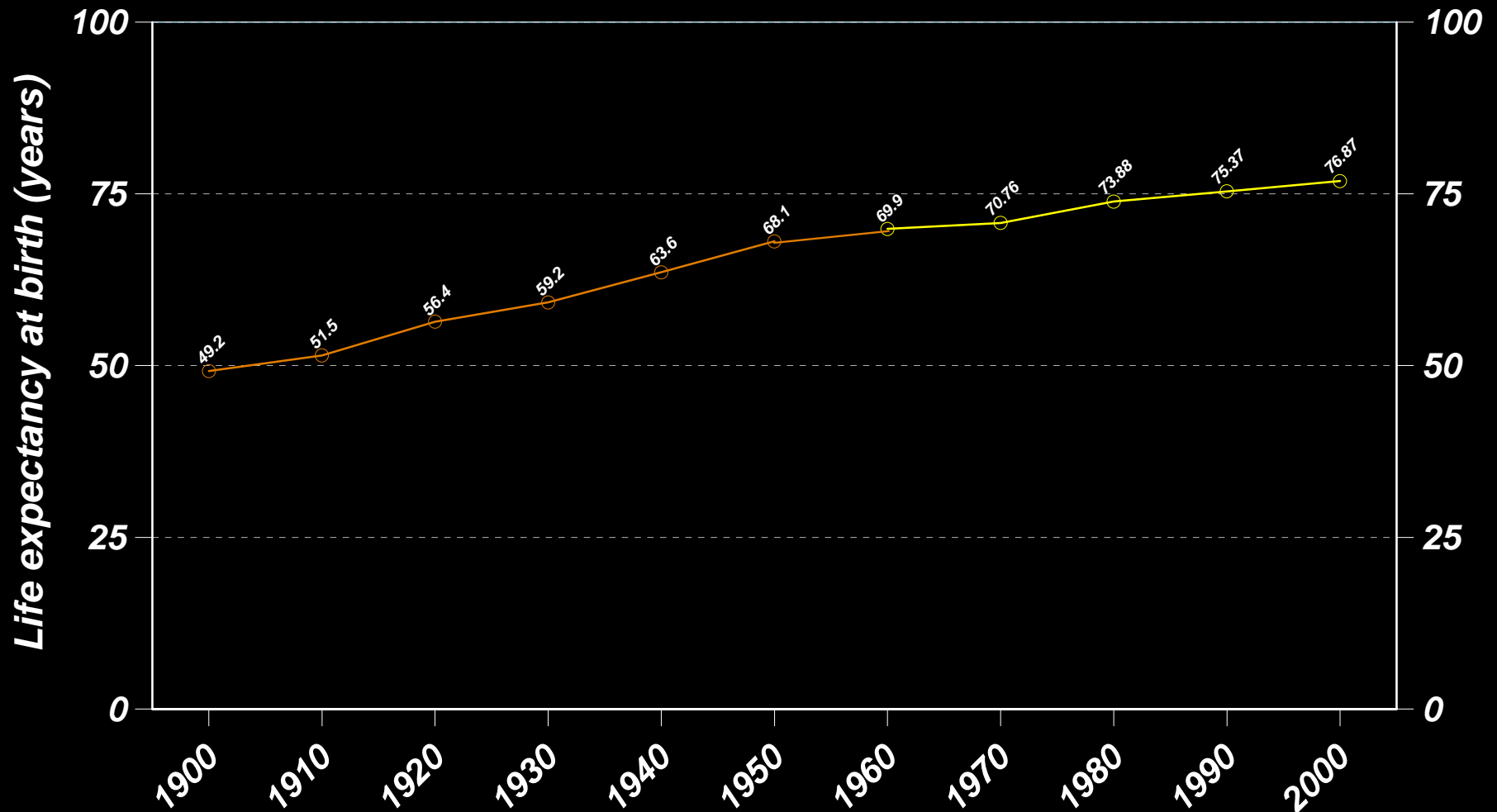
1912 : The 'Great Divide'

"... for the first time in human history, a random patient with a random disease consulting a doctor chosen at random stands a better than 50/50 chance of benefitting from the encounter."

Harvard Professor L. Henderson

(Harris, Richard. *A Sacred Trust*. New York, NY: New American Library, 1966)

"We routinely achieve miracles"



Since 1960, 6.97 years gained over 4 decades = 1.74 years / decade

(from 1900-1960, 20.7 years gained over 6 decades = 3.45 years / decade)

Cutler DM, Rosen AB, Vijan S. The value of medical spending in the United States, 1960-2000. New Engl J Med 2006; 355(9):920-7 (Aug 31).

Current health care

is the best the world has ever seen

A few simple examples:

- ◆ **From 1900 to 2000, average life expectancy at birth increased from only 49 years to almost 77 years.**
- ◆ **Since 1960, age-adjusted mortality from heart disease (#1) has decreased by 56%; and** (from 307.4 to 134.6 deaths / 100,000)
- ◆ **Since 1950, age-adjusted mortality from stroke (#3) has decreased by 70%.** (from 88.8 to 26.5 deaths / 100,000)

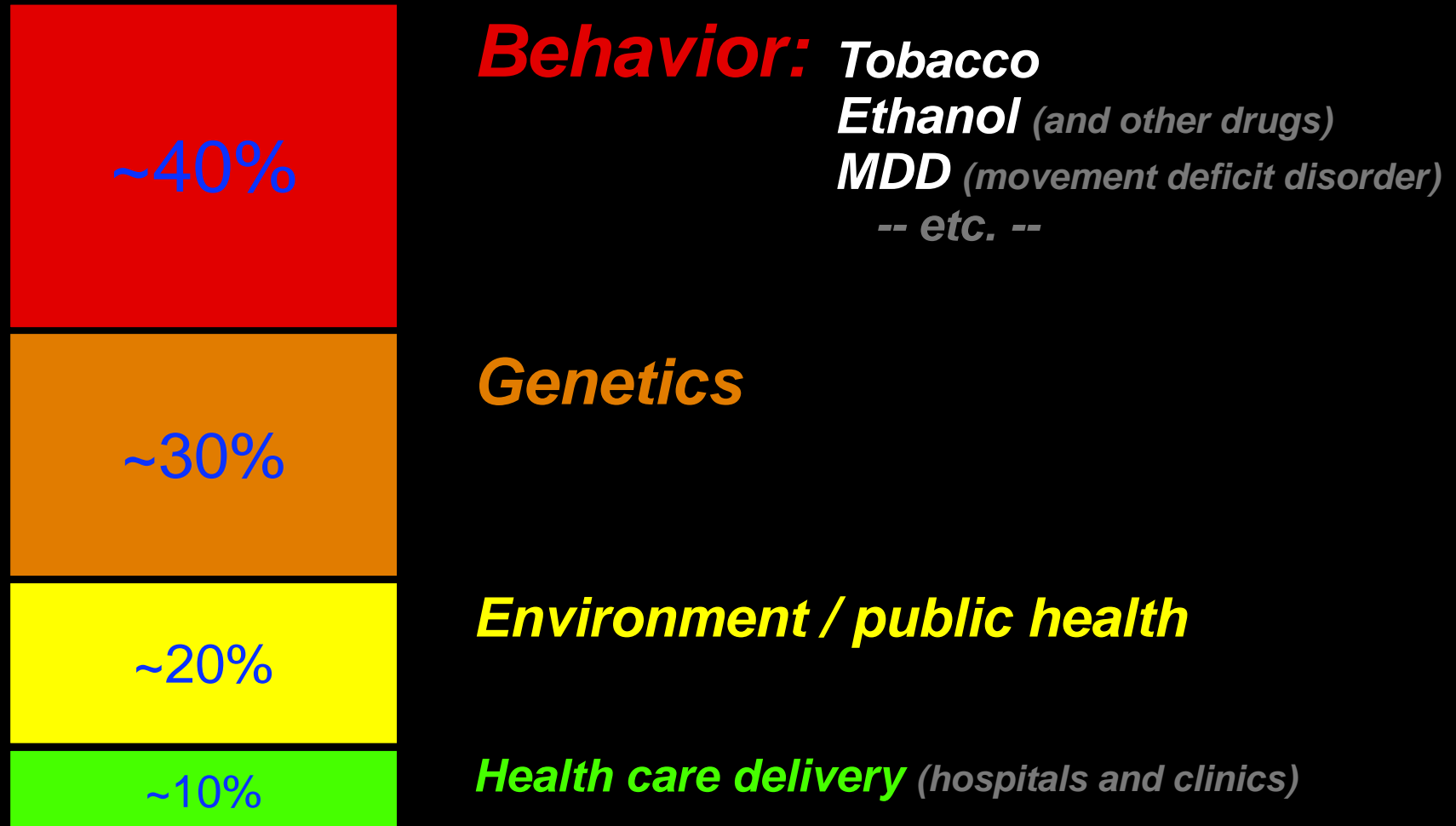
Initial life expectancy gains almost all resulted from public health initiatives -- clean water, safe food, and (especially) widespread control of epidemic infectious disease. But since about 1960, direct disease treatment has made increasingly large contributions.

Centers for Disease Control. Decline in deaths from heart disease and stroke--United States, 1900-1999. *JAMA* 1999; 282(8):724-6 (Aug 25).

National Center for Health Statistics. *Health, United States, 2000 with Adolescent Health Chartbook*. Hyattsville, MD: U.S. Dept. of Health and Human Services, Center for Disease Control and Prevention, 2000; pg. 7 (DHHS Publication No. (PHS) 2000-1232-1).

U.S. Department of Health and Human Services, Public Health Service. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. Washington, DC: U.S. Government Printing Office, 1991 (DHHS Publication No. (PHS) 91-50212).

Total health: How long, how well we live



McGinnis JM & Foege WH. Actual causes of death in the United States. *JAMA* 1993; 270(18):2207-12 (Nov 10).
McGinnis JM, Williams-Russo P, & Knickman JR. The case for more active policy attention to health promotion.
Health Affairs 2002; 21(2):78-93 (Mar).

The Great Equation:

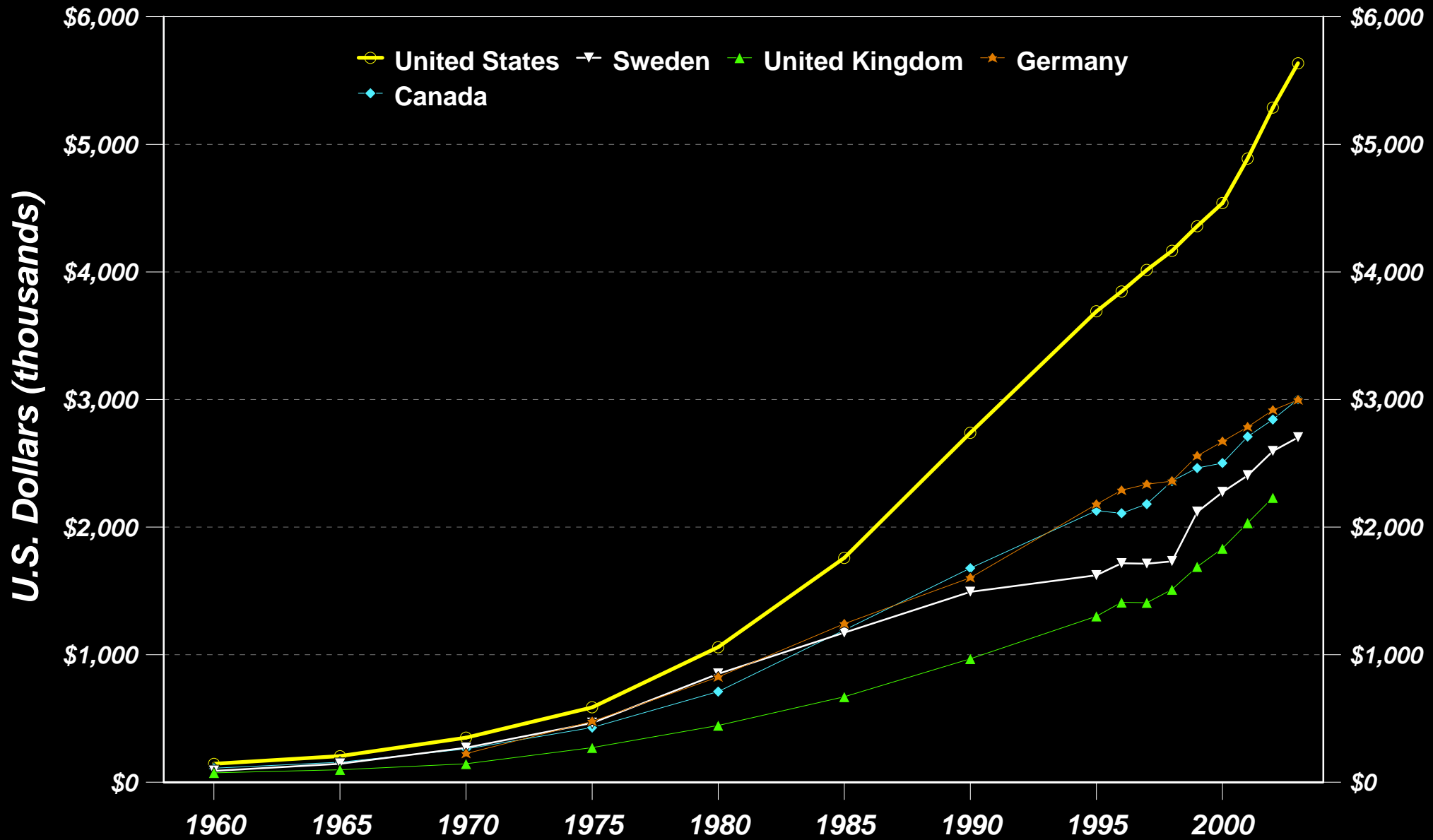
Health = *medical care*
and *medical care* = "access to care"

"But the Great Equation is wrong ..."

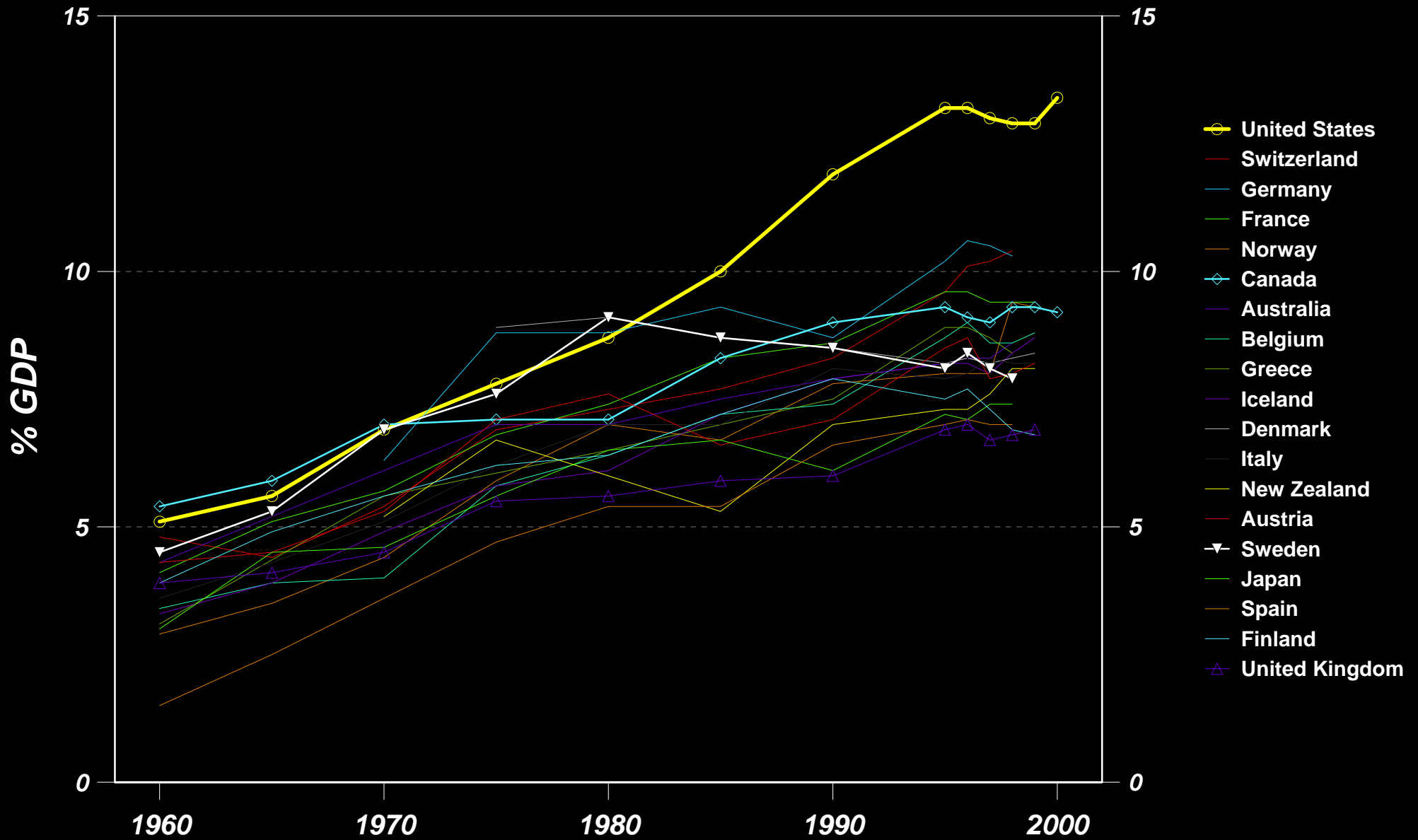
Health spending



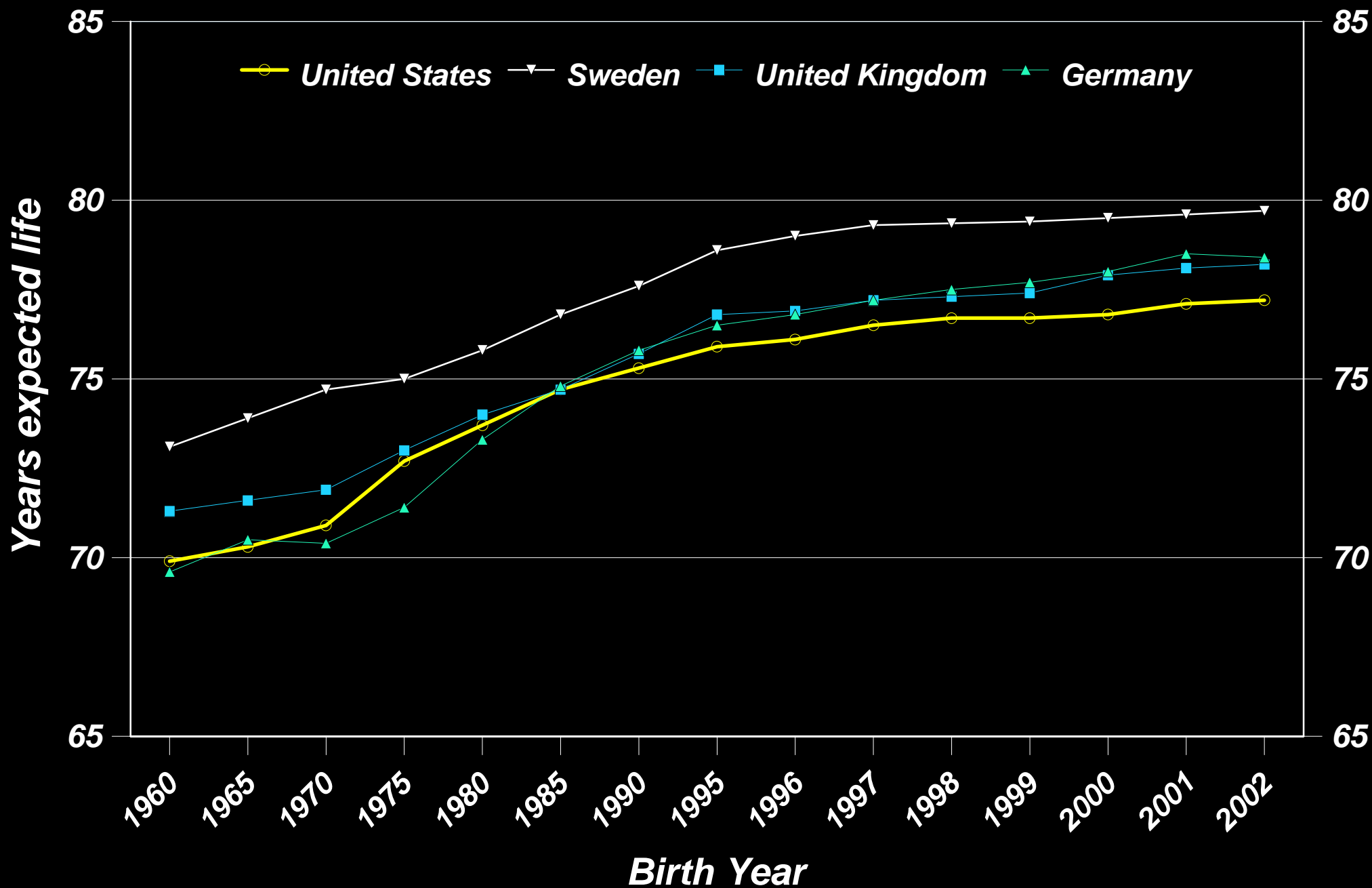
Health cost per resident, by country



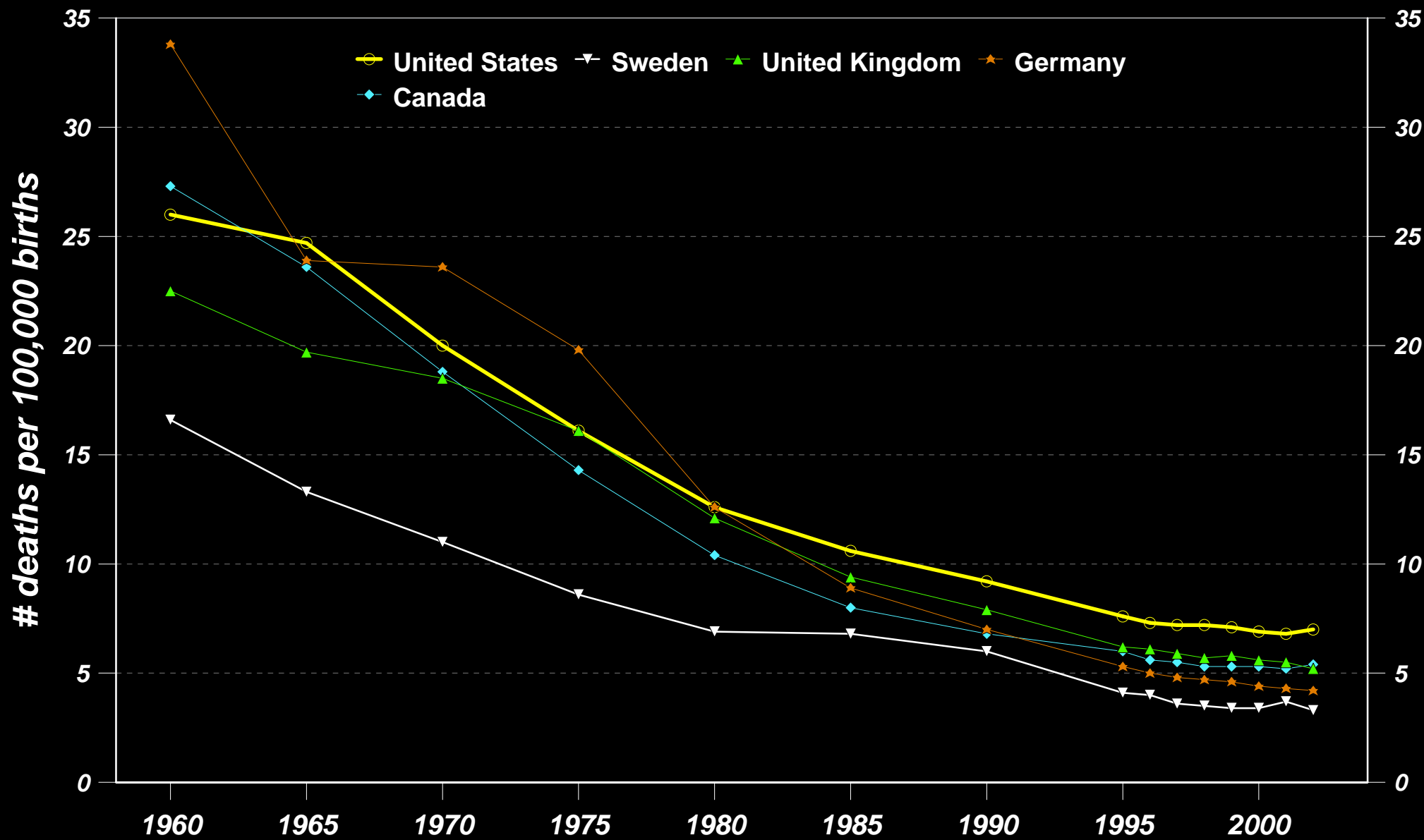
Health care as % GDP, by country



Life expectancy at birth, by country



Infant mortality per 100,000 births



What do we get for all that money?

- 1. High touch** -- *patients value their relationship with a trusted clinical advisor more than any other element in health care delivery (the clinician-patient relationship)*
- 2. Rapid response** -- *the Rule of Rescue*

High touch: Caring, not just curing

A man stricken with disease today is assaulted by the same fears and finds himself searching for the same helping hand as his ancestors did five or ten thousand years ago. He has been told about the clever tools of modern medicine and somewhat vaguely, he expects that by-and-by he will profit by them, but in his hour of trial his desperate want is for someone who is personally committed to him, who has taken up his cause, and who is willing to go to trouble for him.

D. Emerick Szilagyi, MD: *In Defense of the Art of Medicine, 1965*
(with thanks to Dr. Steven Kappes, Milwaukee, WI)

High touch? Maybe not ...

- ~~1. **High touch** -- patients value their relationship with a trusted clinical advisor more than any other element in health care delivery (the clinician-patient relationship)~~
2. **Rapid response** -- the Rule of Rescue

Primary care vs. Secondary care

Rapid response: The Rule of Rescue

*Jonsen AR, 1986: The imperative people feel to rescue identifiable individuals facing (avoidable?) suffering or death.**

- ◆ *subconscious personal identification at an emotional level;*
- ◆ *a person instead of just a number; a name and a face*
 - *The child down the well*
 - *The whales trapped in the ice*
 - *The dog on the abandoned boat*
 - *"60 Minutes" program on pertussis vaccination*

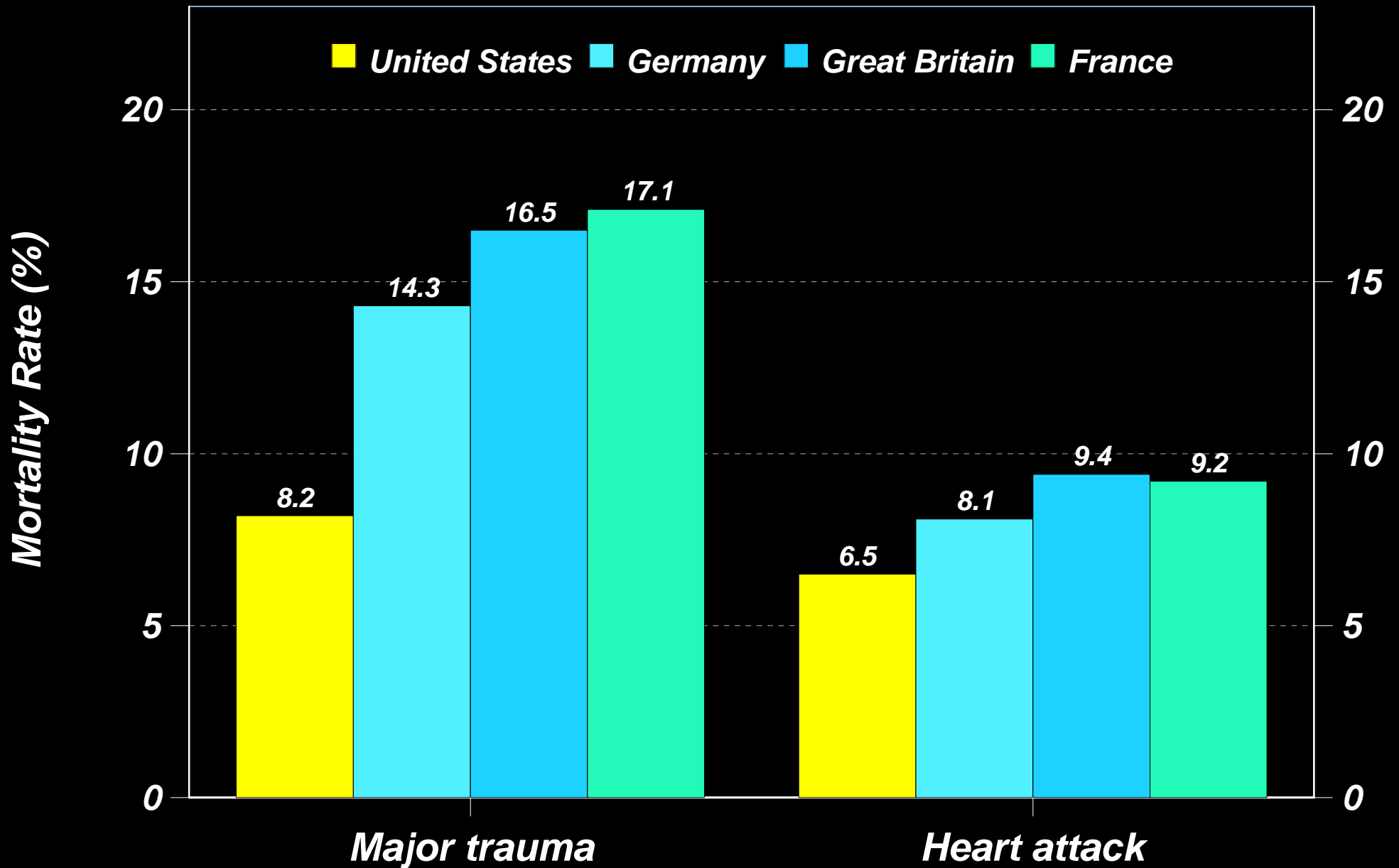
"A single death is a tragedy, a million deaths is a statistic."

Joseph Stalin (who killed more than 17 million of his own Russian people)

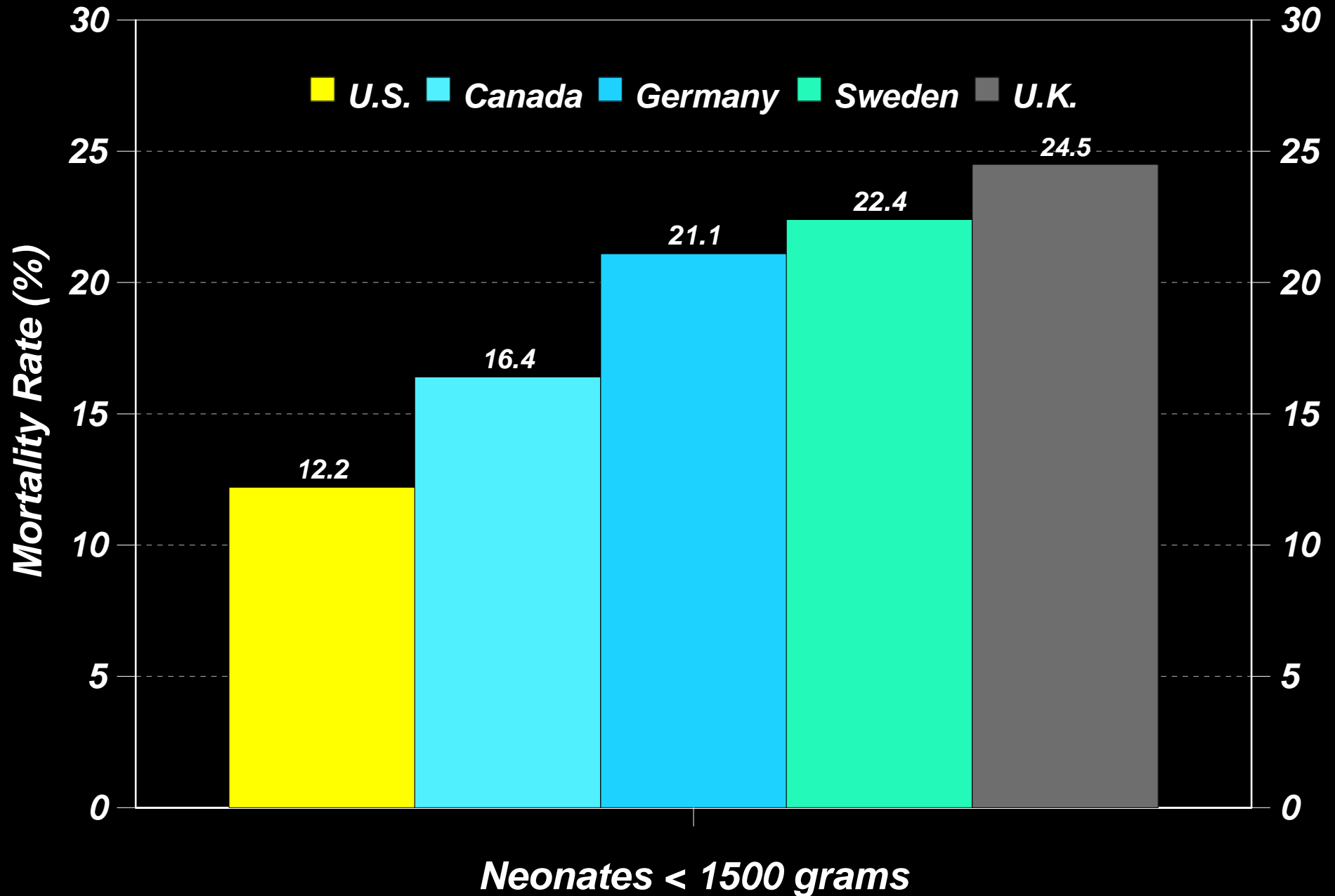
* McKie J & Richardson J. The rule of rescue. *Soc Sci Med* 2003; 56(12):2407-19 (June).

Richardson J & McKie J. *Working Paper 112: The Rule of Rescue*. West Heidelberg, Victoria, Australia: The Centre for Health Program Evaluation; 2000.

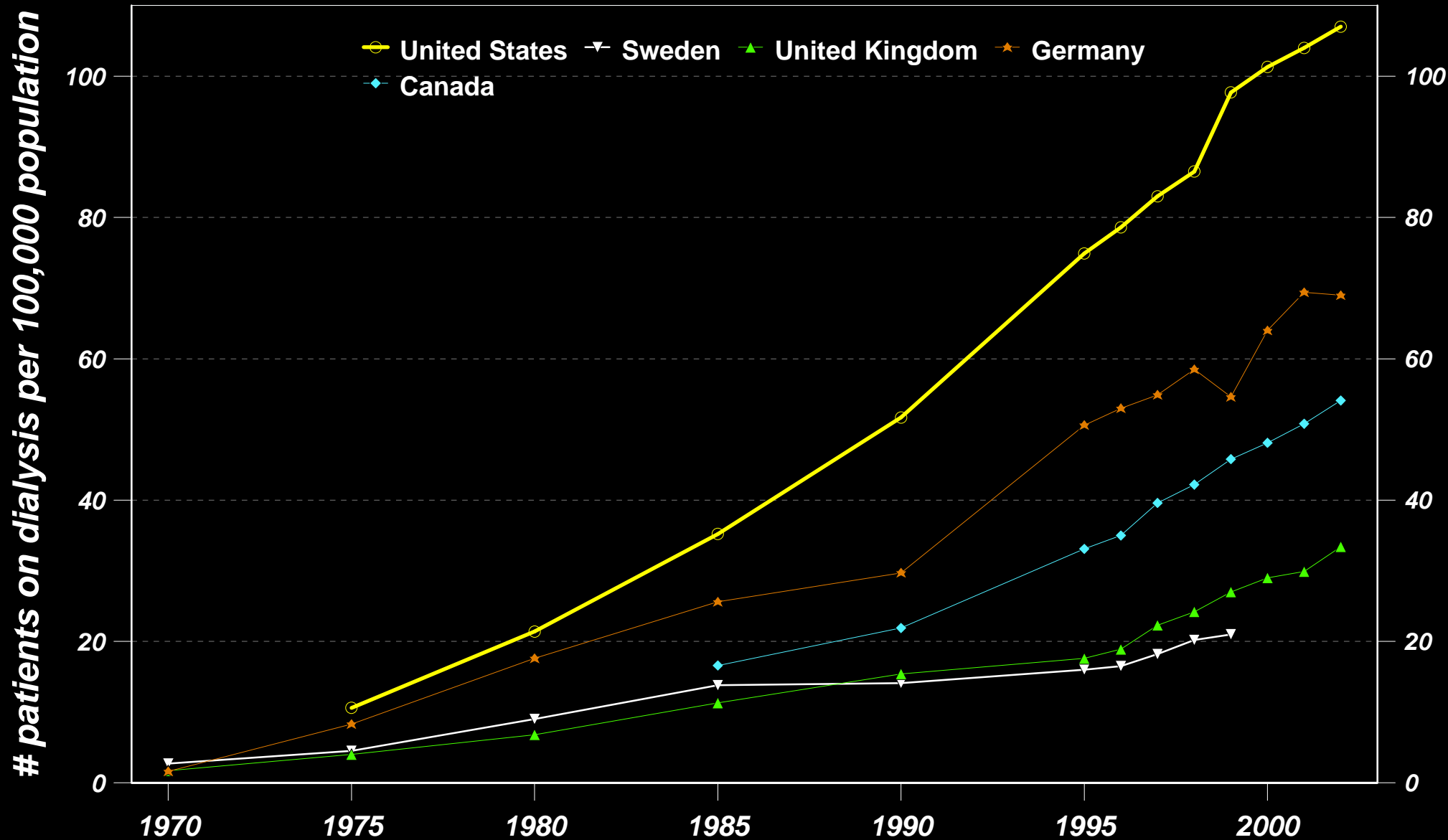
System performance, by nation



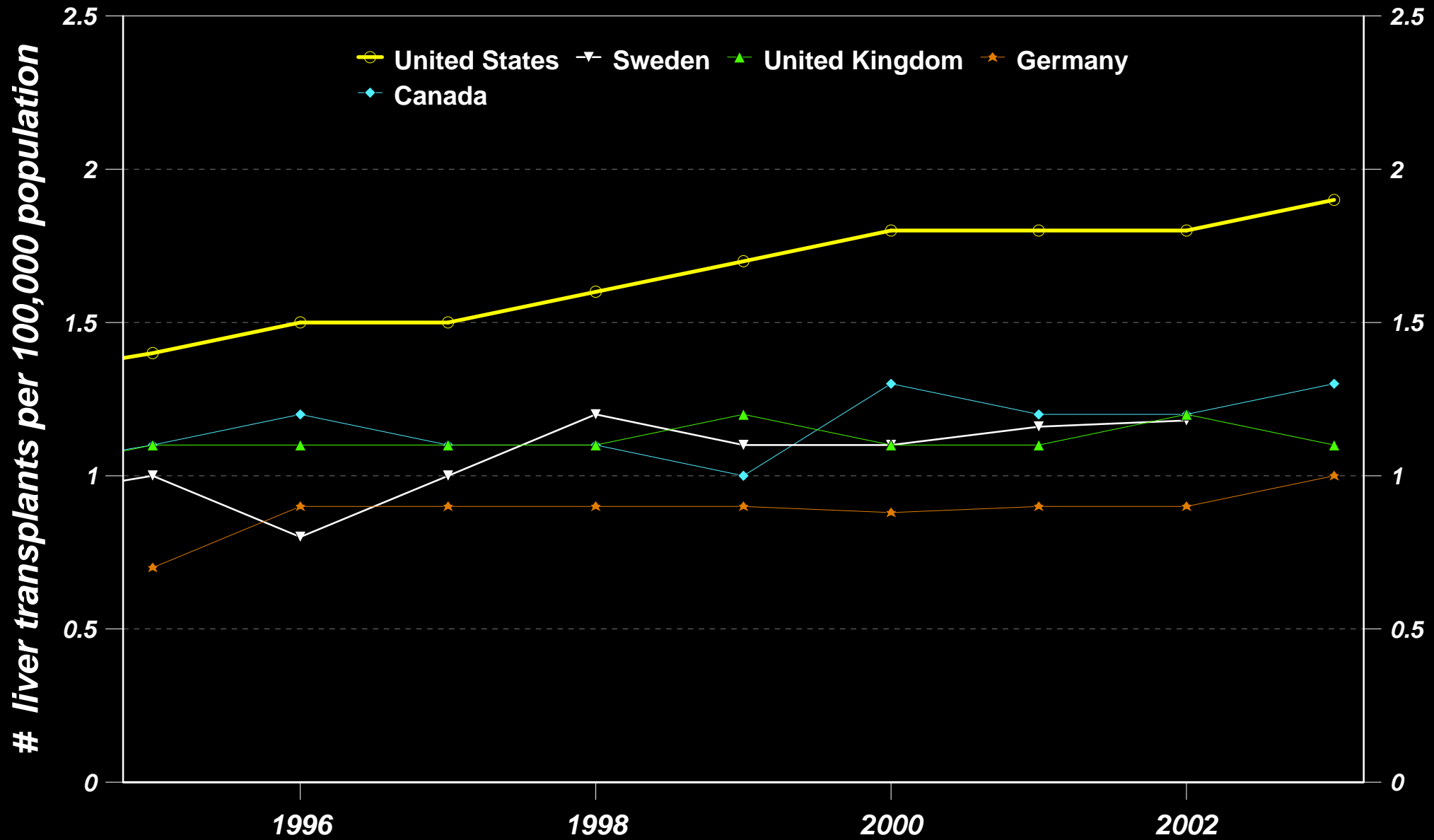
System performance, by nation



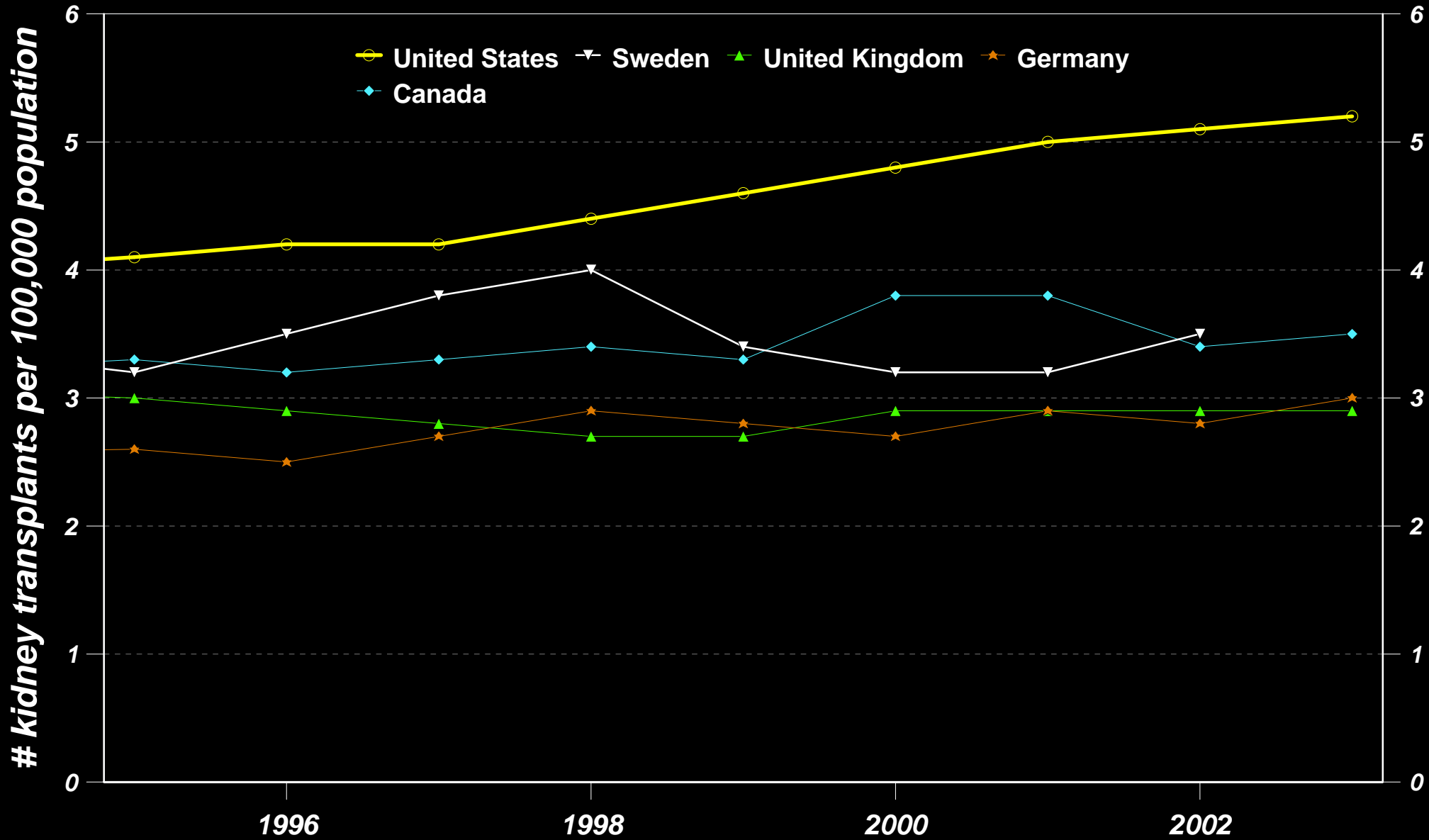
Renal dialysis per 100,000



Liver transplants per 100,000



Kidney transplants per 100,000

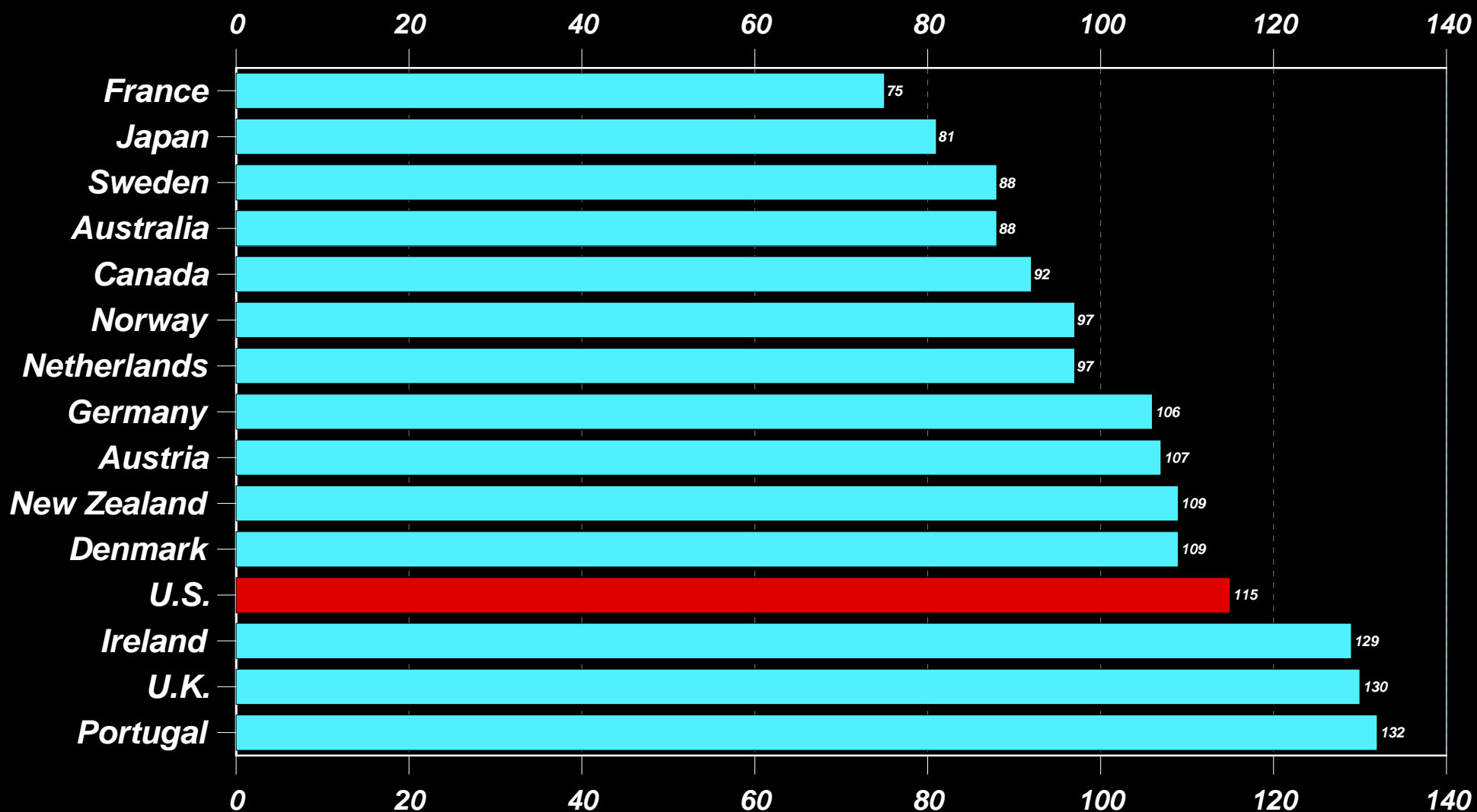


International health comparisons

- ◆ *On a macro basis, many countries out-perform the U.S.:*
This is primarily attributable to healthier behaviors, better public health, and a heavy emphasis on easily accessible primary care (easy access = "high touch" = better satisfaction; primary care is relatively cost effective)
- ◆ *the U.S. system performs significantly better for those with severe illness or injury. This is due to several factors:*
 - **Better access to technology**
 - **Less explicit and implicit rationing**
 - **Easy access to subspecialists** - *better / more extensive health professional training; very much less waiting in line for specialty care (queueing)*

Mortality amenable to health care

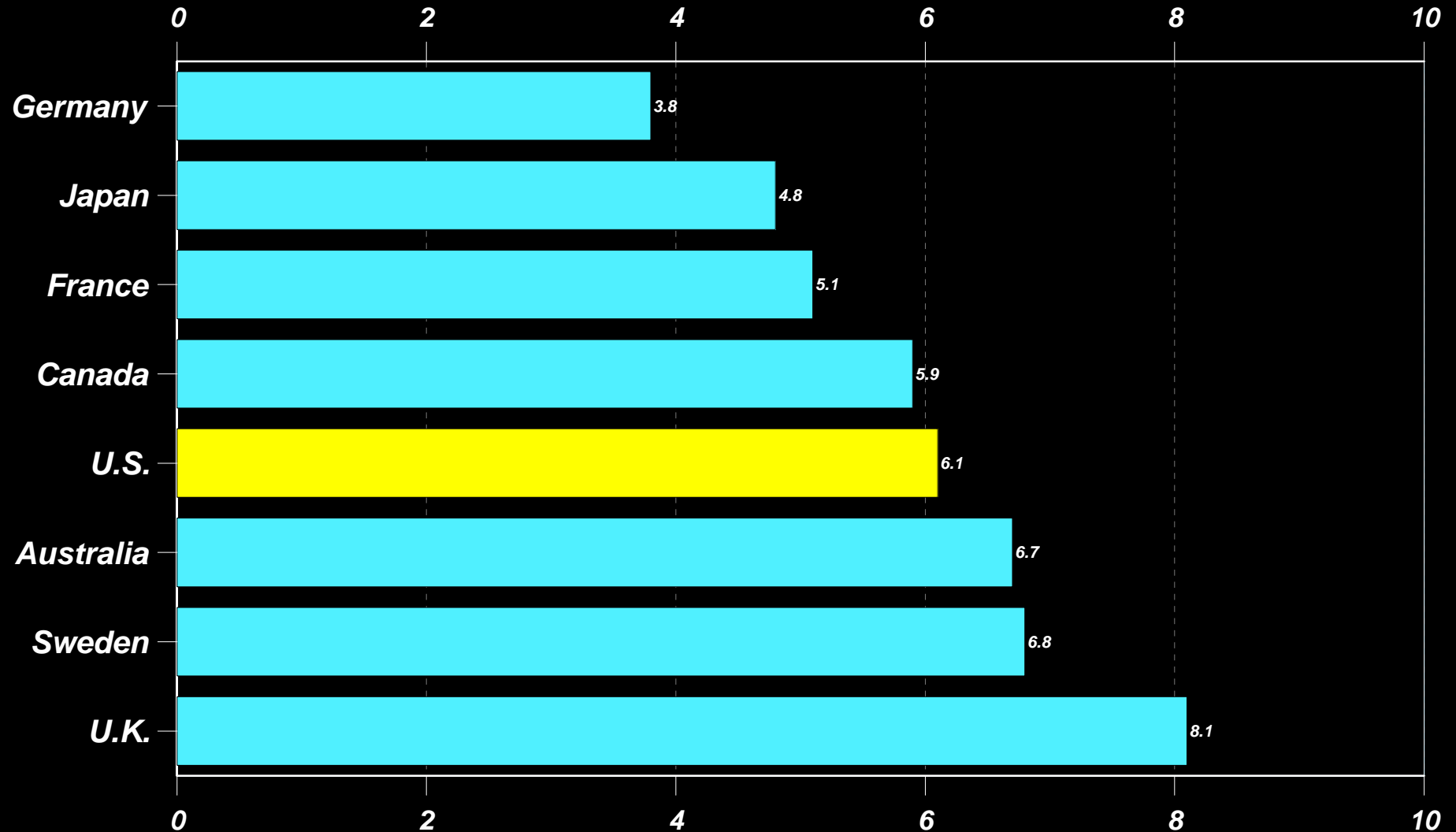
Deaths per 100,000 population



Source: World Health Organization, Nolte and McKee, Rutgers Center for State Health Policy Standardized for age (1998)
Utah from 2003, normalized for general US change from 1998

Health care cost increases

Average annual inflation, 1997 - 2003



European view is changing

Ulla Schmidt, German Health Minister

“Fifteen years ago, we in Europe smugly believed that American health policy was bankrupt. Healthcare [in America] cost more, delivered less, and was inequitably applied.



Today, we are not so sure. We see demands on our system that are unsustainable. Our costs are rising, our services are aging, the wealthy are leaving our systems, and our populace is increasingly dissatisfied with what we provide. We have much we can learn from you ... Innovation is something that government tends to do badly.”

Dr. John Wennberg

- ★ **Geography is destiny** ("Who you see is what you get" *)
- ★ **There is no health care "system"**
- ★ **Supplier-induced demand:**
 - ◆ *Field of Dreams approach: Build it and they will come*
 - ◆ *James T. Kirk: Do something, Bones! She's dying!*
 - ◆ *Eddy: More is better -- if it might work, do it*
 - ◆ *Chassin: Enthusiasm for unproven methods*
 - ◆ *Boston City / Boston University Hospital, 1998:*
 - ▶ *Same housestaff on both services*
 - ▶ *More beds / easier access to resources on Boston University service*
 - ▶ *Boston University readmit rate ~50% higher*

* *Richard Deyo, MD, MPH - in: Cherken, Deyo, Wheeler and Ciol. Physician variation in diagnostic testing for low back pain. Arth & Rheum 1994; 37(1):15-22 (Jan).*

November 30, 1999:

The Institute of Medicine

Committee on Quality of Health Care in America

announces its first report:

To Err is Human: Building a Safer Health System

Care-associated injuries in hospitals

account for

**44,000 - 98,000 preventable deaths per year
in the United States**

**More people die from hospital-based preventable medical injuries
than from breast cancer or AIDS or motor vehicle accidents**

Brennan et al. *New Engl J Med* 1991

Thomas et al. 1999

**Injuries drive direct health care costs totaling
\$9 - 15 billion per year**

Thomas et al. 1999

Johnson et al. 1992

November 20, 2003:

The Institute of Medicine

Committee on Patient Safety Data Standards

announces a major follow-on report:

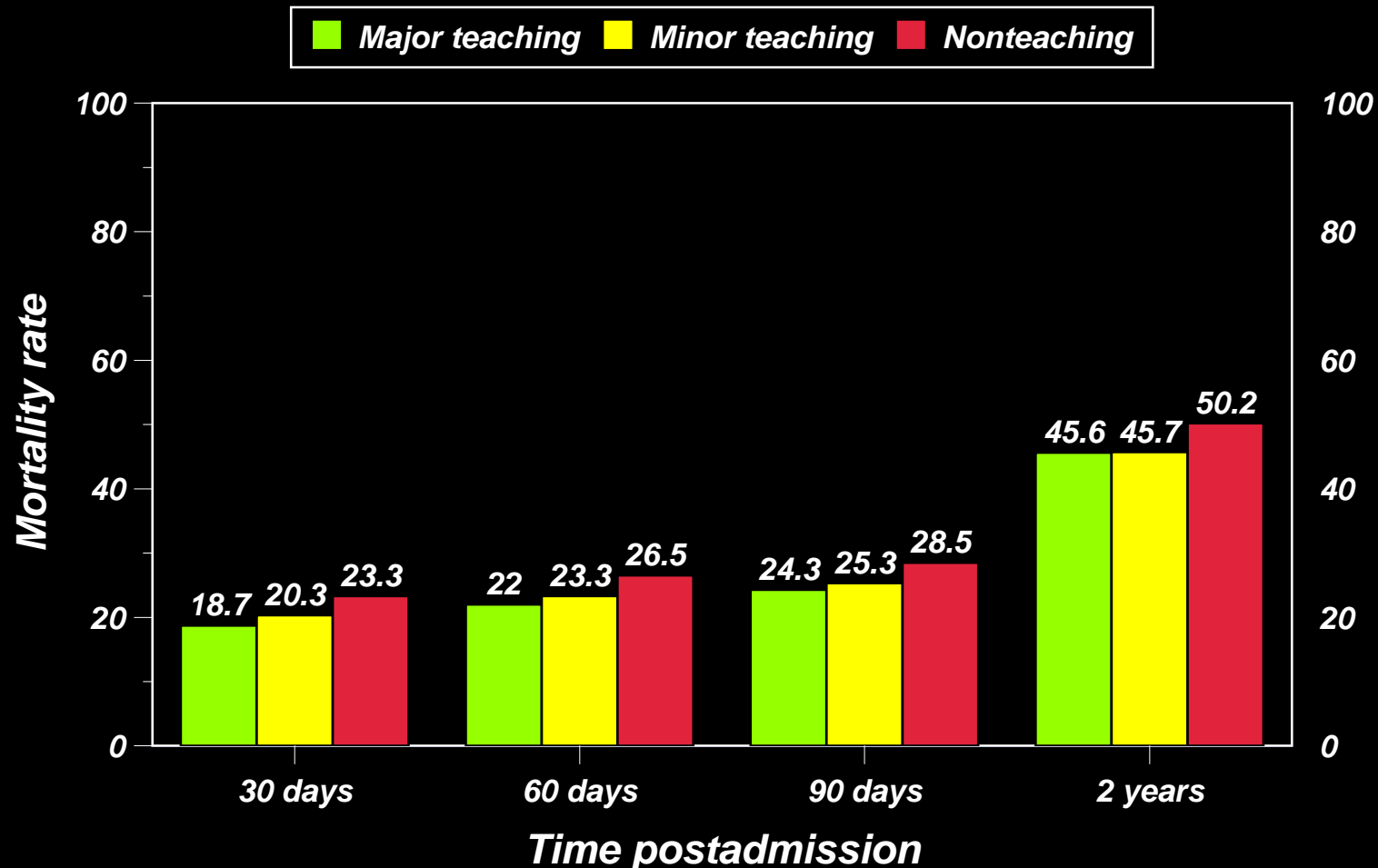
Patient Safety: Achieving a New Standard for Care

Injuries of commission

versus

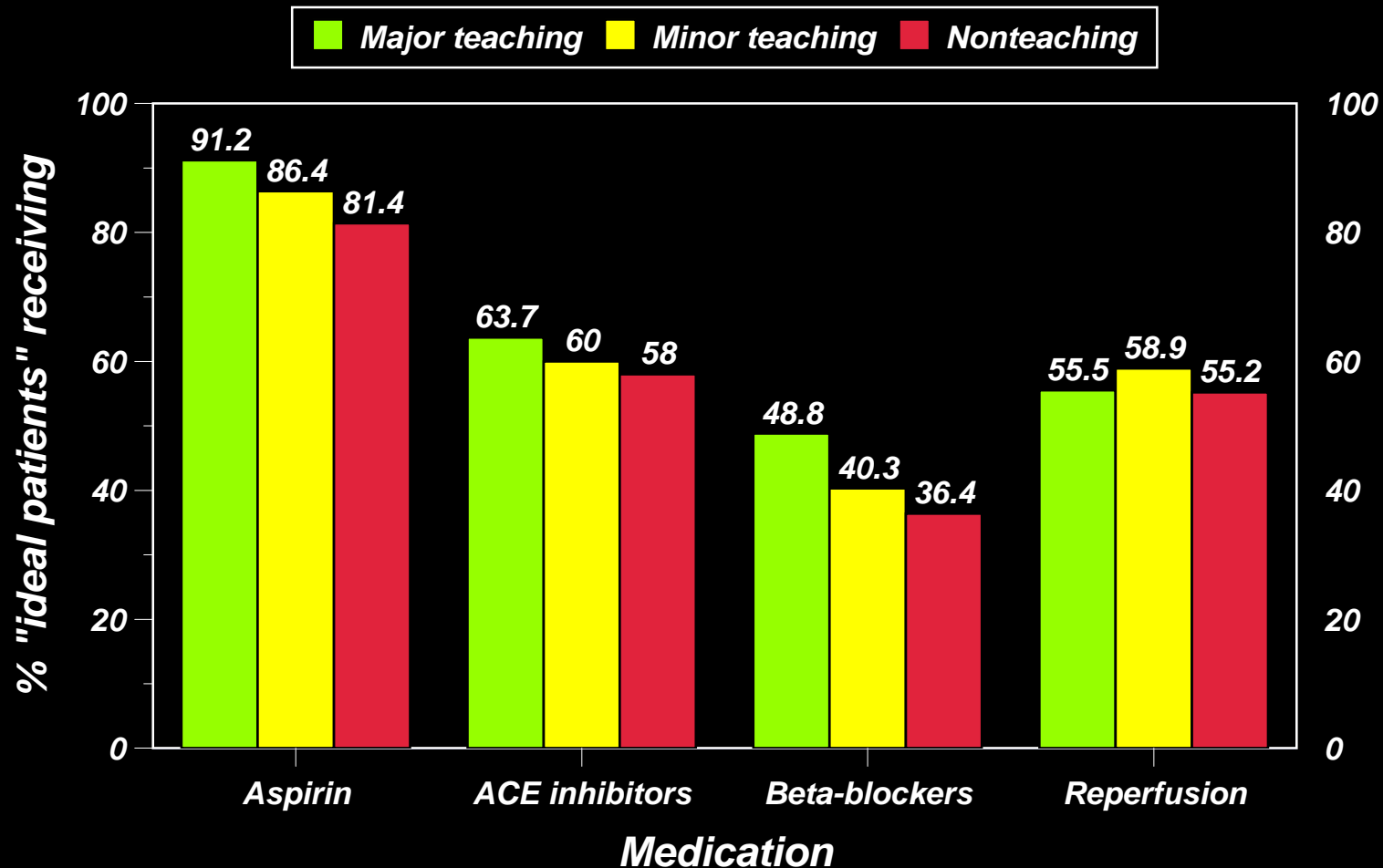
Injuries of omission

How good is American health care?



Allison JJ et al. Relationship of hospital teaching with quality of care and mortality for Medicare patients with acute MI. *JAMA* 2000; 284(10):1256-62 (Sep 13).

How good is American health care?



Allison JJ et al. Relationship of hospital teaching with quality of care and mortality for Medicare patients with acute MI. *JAMA* 2000; 284(10):1256-62 (Sep 13).

***American health care
"gets it right"
54.9%
of the time.***

McGlynn EA, Asch SM, Adams J, *et al.* The quality of health care delivered to adults in the United States. *N Engl J Med* 2003; 348(26):2635-45 (June 26).

50+% of all resource expenditures in hospitals is quality-associated waste:

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

U.S. fiscal exposures (Comptroller General David Walker)

| | | |
|---|--|---|
| <ul style="list-style-type: none"> ● Explicit liabilities <ul style="list-style-type: none"> ◆ Publicly held debt (e.g., the national debt) ◆ Military & civilian pensions & retiree health ◆ Other | \$ 4.3 3.1 <u>1.7</u> | \$ 9.1 trillion |
| <ul style="list-style-type: none"> ● Commitments & contingencies (e.g., PBGC, undelivered orders) | | 0.9 |
| <ul style="list-style-type: none"> ● Implicit exposures <ul style="list-style-type: none"> -Future Social Security benefits <ul style="list-style-type: none"> ◆ Obligations in excess of trust fund ◆ Debt held by the trust fund -Future Medicare Part A benefits <ul style="list-style-type: none"> ◆ Obligations in excess of trust fund ◆ Debt held by the trust fund -Medicare Part B benefits -Medicare Part D benefits | 4.0 <u>1.7</u> 8.6 <u>0.3</u> | 5.7 8.8 12.4 8.7 |
| Total: | | \$45.6 trillion |

Note: Estimates for Social Security and Medicare are the intermediate 75-year estimates of the Social Security and Medicare Trustees as of January 1, 2005. All other data are as of September 30, 2004. Totals may not add due to rounding.
 Source: 2004 Financial Report of the U.S. Government and 2005 Social Security and Medicare Trustees reports.

Another way to think about it

| | |
|----------------------------------|----------------|
| ◆ <i>Debt held by the public</i> | \$4.3 trillion |
| ◆ <i>Trust fund debt</i> | <u>3.1</u> |
| ◆ <i>Gross debt</i> ¹ | \$7.4 trillion |

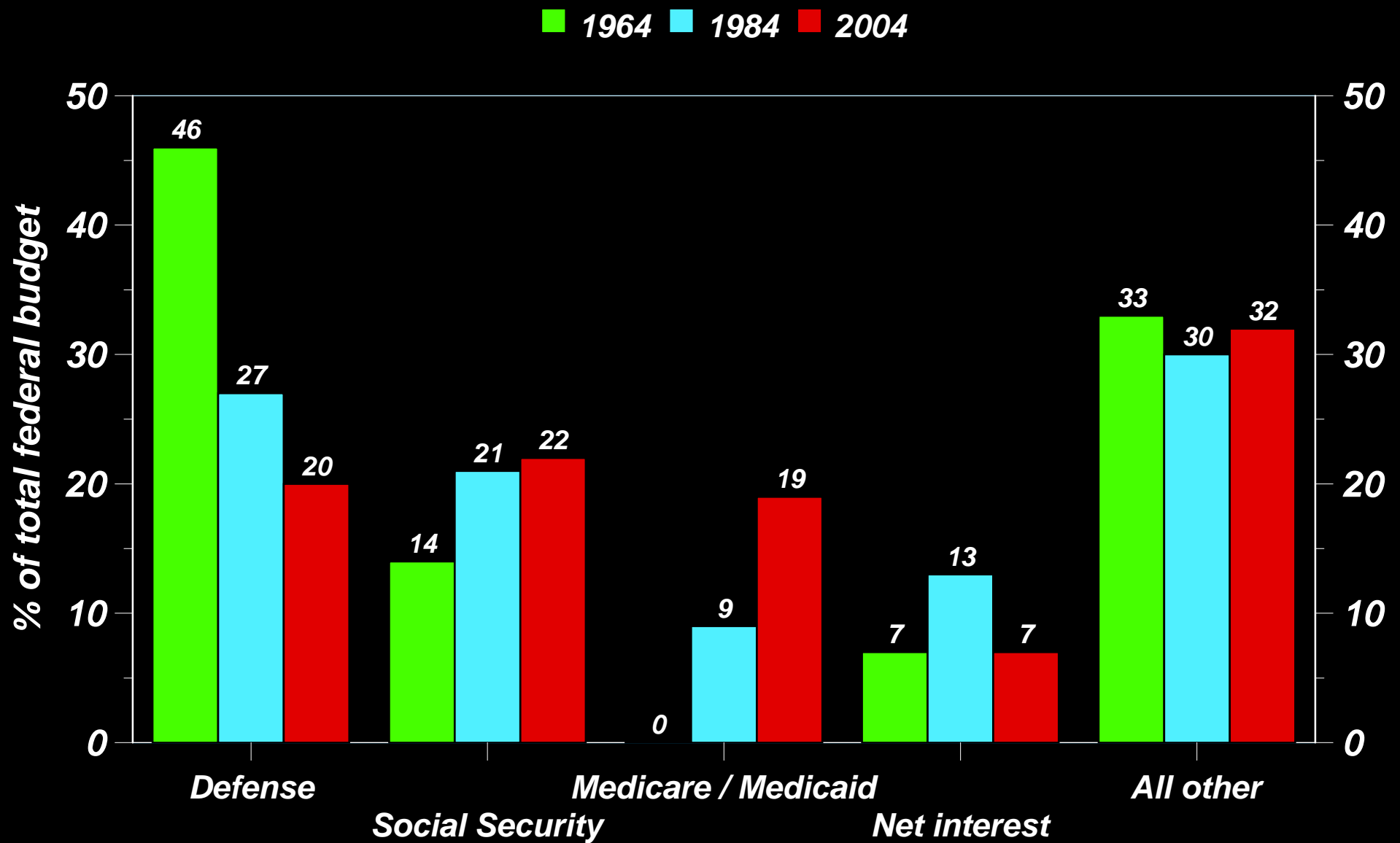
◆ *Gross debt per person:* about \$25,000

◆ *The \$46 trillion is fiscal exposures is:*

- *a burden of more than \$150,000 per person or more than \$370,000 per full-time worker;*
- *nearly 19 times the current annual federal budget, and 4 times the current annual Gross Domestic Product;*
- *almost equal to the (estimated) \$48.5 trillion total net worth, including home equity, of all U.S. citizens.*

¹ Includes all debt held by government accounts.

Composition of federal spending

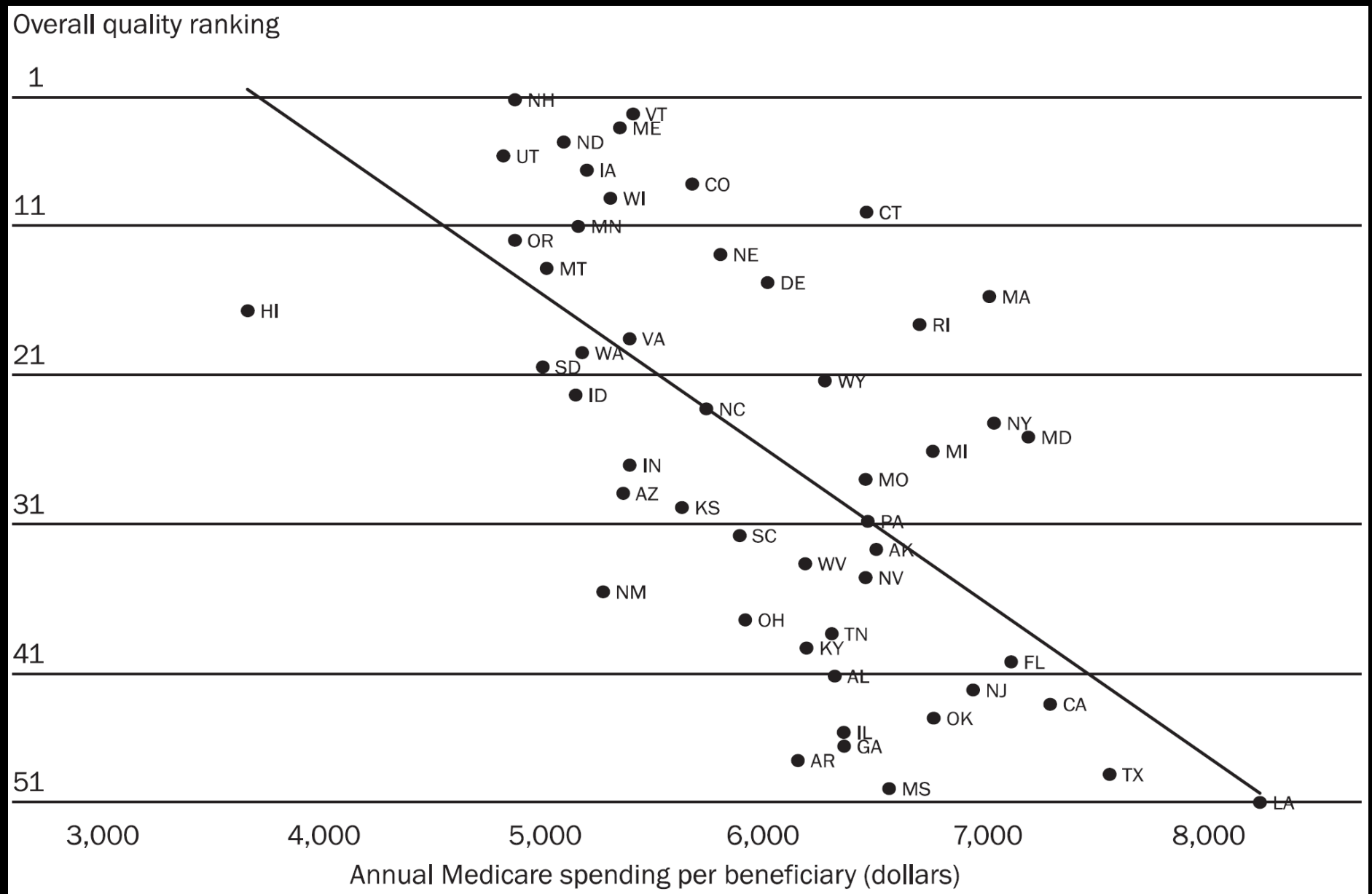


Source: Office of Management and Budget

Looming financial crisis

- ◆ ***Unsupportable increases in federal spending***
- ◆ ***Employers exiting health insurance***
(transferring cost increases to employees)
- ◆ ***Increasing numbers of under- and uninsured***
- ◆ ***Medical tourism*** *(off-shore treatment)*

Medicare cost versus quality



Baicker, K and Chandra, A. Medicare spending, the physician workforce, beneficiaries' quality of care. *Health Affairs Web Exclusive* 7 April 2004; W4-184-97.

Current care delivery is in trouble

- ◆ **Well-documented, massive, variation in practices** (*beyond the level where it is even remotely possible that all patients are receiving good care*)
- ◆ **High rates of inappropriate care**
- ◆ **Unacceptable rates of preventable patient injury**
- ◆ **A striking inability to "do what we know works"**
- ◆ **Huge amounts of waste, spiraling prices, and limited access** (*45 million uninsured Americans, and still climbing*)

March 1, 2001:

The Institute of Medicine

Committee on Quality of Health Care in America

announces its second report:

***Crossing the Quality Chasm:
A New Health System for the 21st Century***

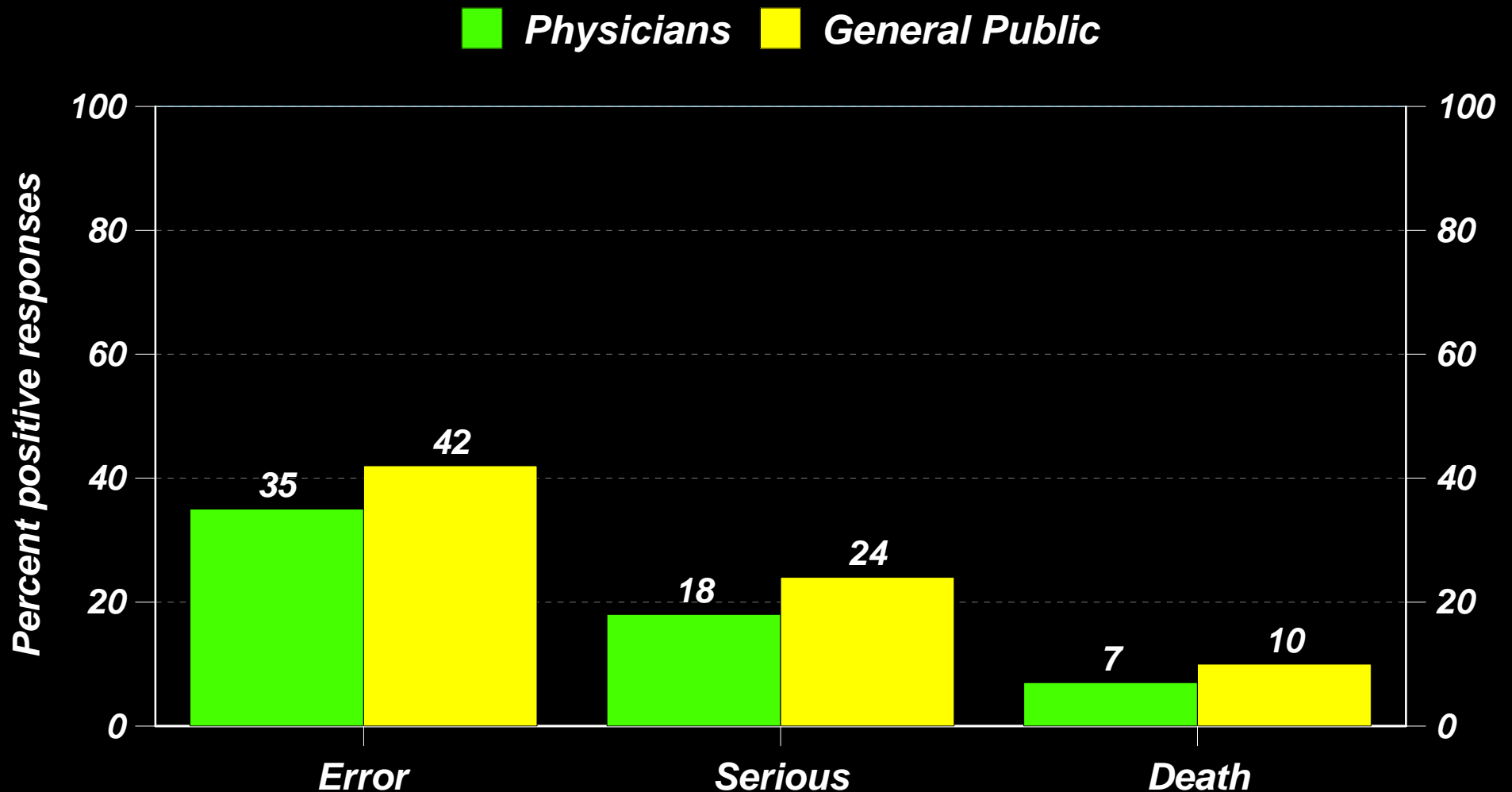
"Between the health care we have and the care we could have lies not just a gap, but a chasm."

The healing professions

- ▶ ***We put our patients first*** -- as clinicians, we place our patients' health needs before any other end or goal; we act as our patients' advocates. We accept, promote, and honor a fiduciary trust on behalf of our patients.
- ▶ ***We maintain a special body of knowledge*** -- as clinicians, (1) we practice - we apply knowledge not generally available outside of the professions (information disparity). (2) We teach - we transmit that knowledge to the next generation. And (3) we learn - we improve the knowledge we ourselves received. (e.g., Geisinger Health System mission: Heal. Teach. Discover. Serve.)
- ▶ ***We police our own ranks*** -- acting on behalf of patients, we assure that all members of the healing profession respect our fiduciary trust and are competent (a social contract; the 'official' definition of "professional autonomy")

Medical errors

Asked physicians and members of the general public whether they had experienced a preventable error in their own or a family member's care



Are most injuries unavoidable?

The price we pay

(for)

diseases of medical progress

Barr, David. Hazards of modern diagnosis and therapy - the price we pay. *JAMA* 1955; 159(115):1452-6 (Dec 10)

Moser, Robert H. Diseases of medical progress. *N Engl J Med* 1956; 255(13):606-14 (Sep 27)

***Medicine used to be simple,
ineffective, and relatively safe.***

***Now it is complex, effective,
and potentially dangerous.***

Sir Cyril Chantler

Neal G. Reducing risks in the practice of hospital general medicine. In *Clinical Risk Management, 2nd edition*. British Medical Journal, 2001.

Chantler, Cyril. The role and education of doctors in the delivery of health care. *Lancet* 1999; 353:1178-81.

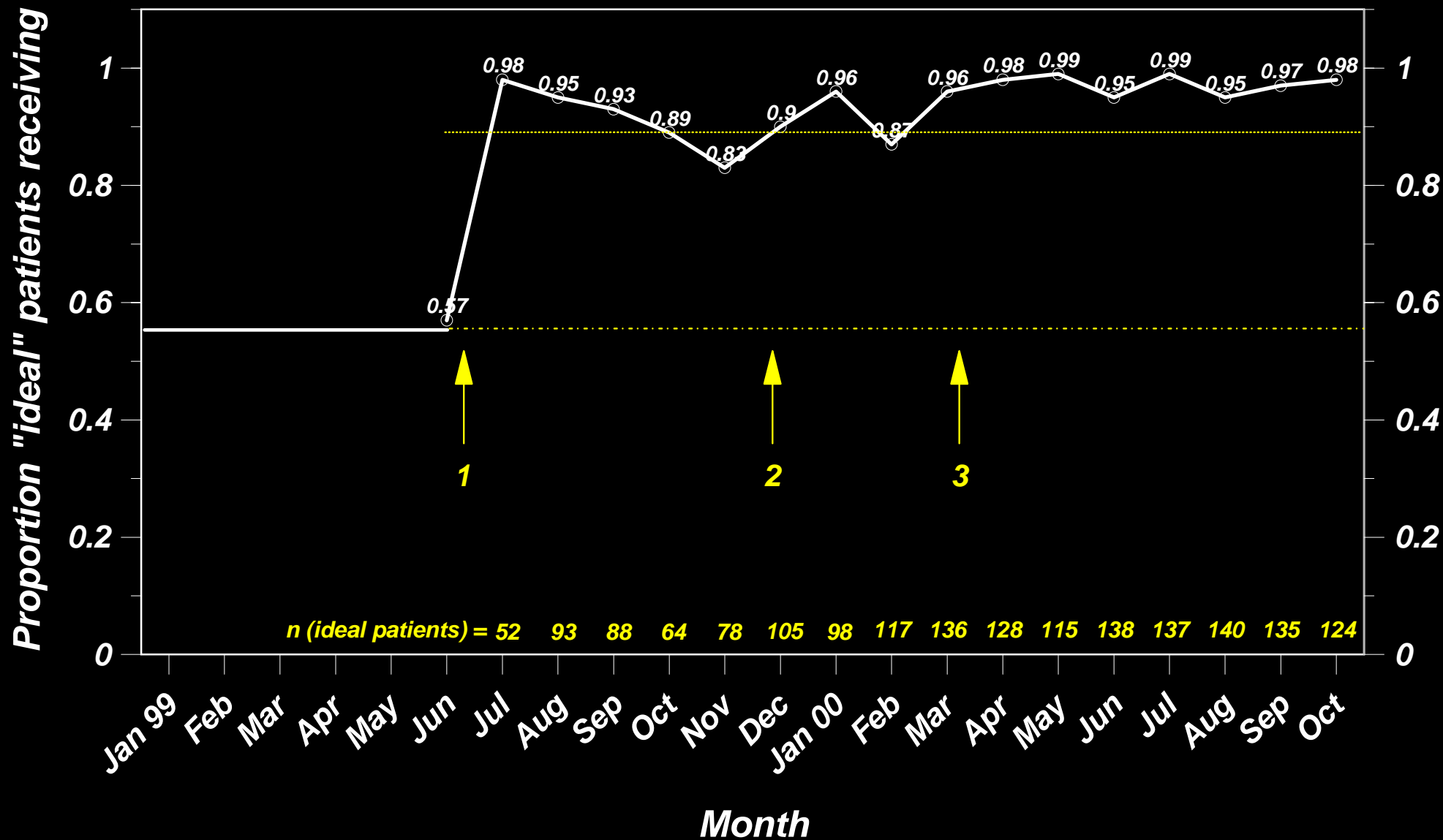
Medicine is a two-edged sword:

*That which is powerful enough to
heal*

*can also **harm***

Beta blockers at discharge

Beta Blockers at discharge



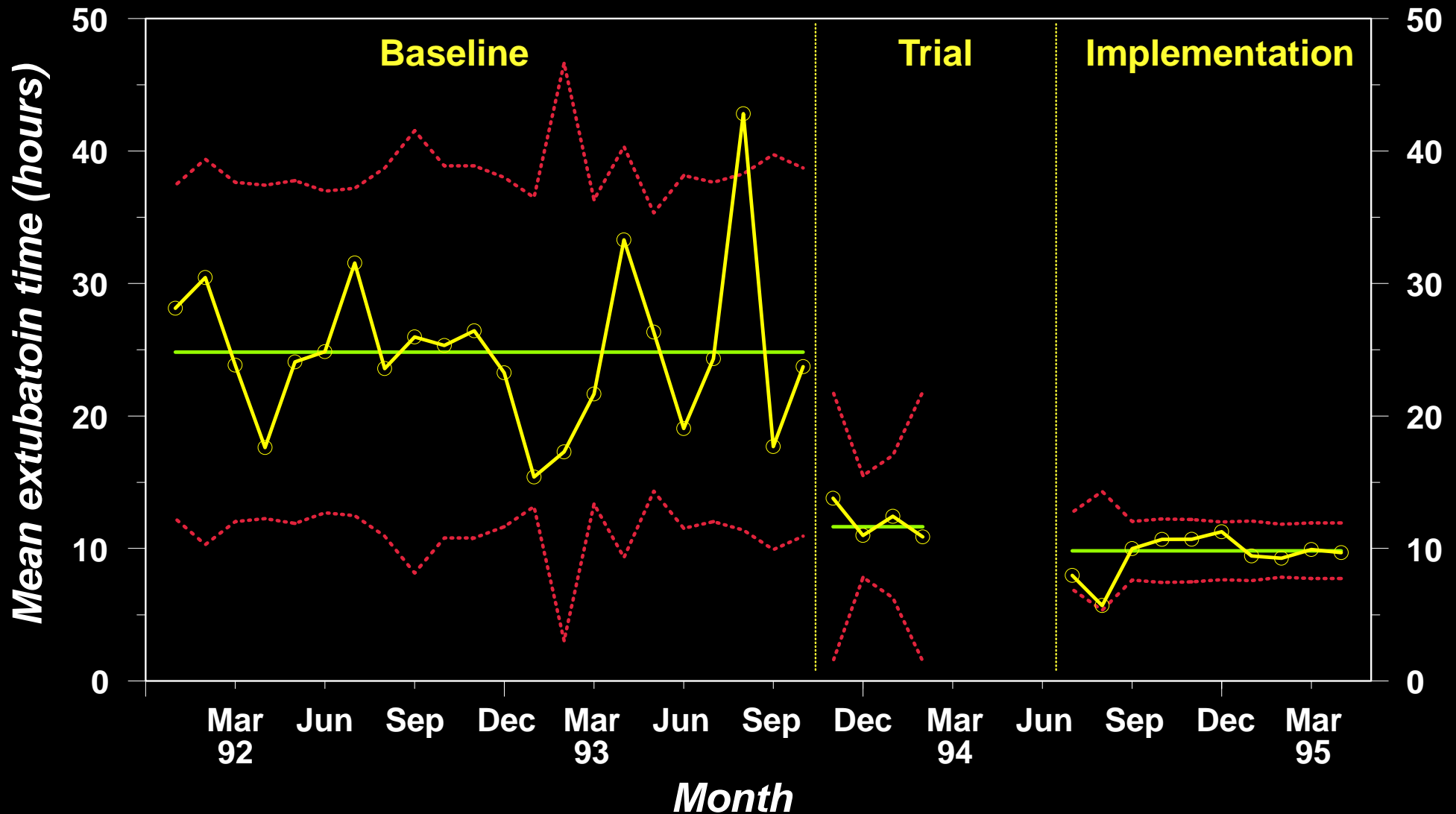
Cardiac discharge meds

| | <u>Before</u> | <u>After</u> | <u>National 2000</u> |
|--------------------------------|---------------|--------------|--------------------------|
| Beta blockers | 57% | 97% | 41% |
| ACE / ARB inhibitors | 63% | 95% | 62% |
| Statins | 75% | 91% | 37% |
| Antiplatelet | 42% | 98% | 70% |
| Warfarin (chronic AFib) | 10% | 92% | <10% |

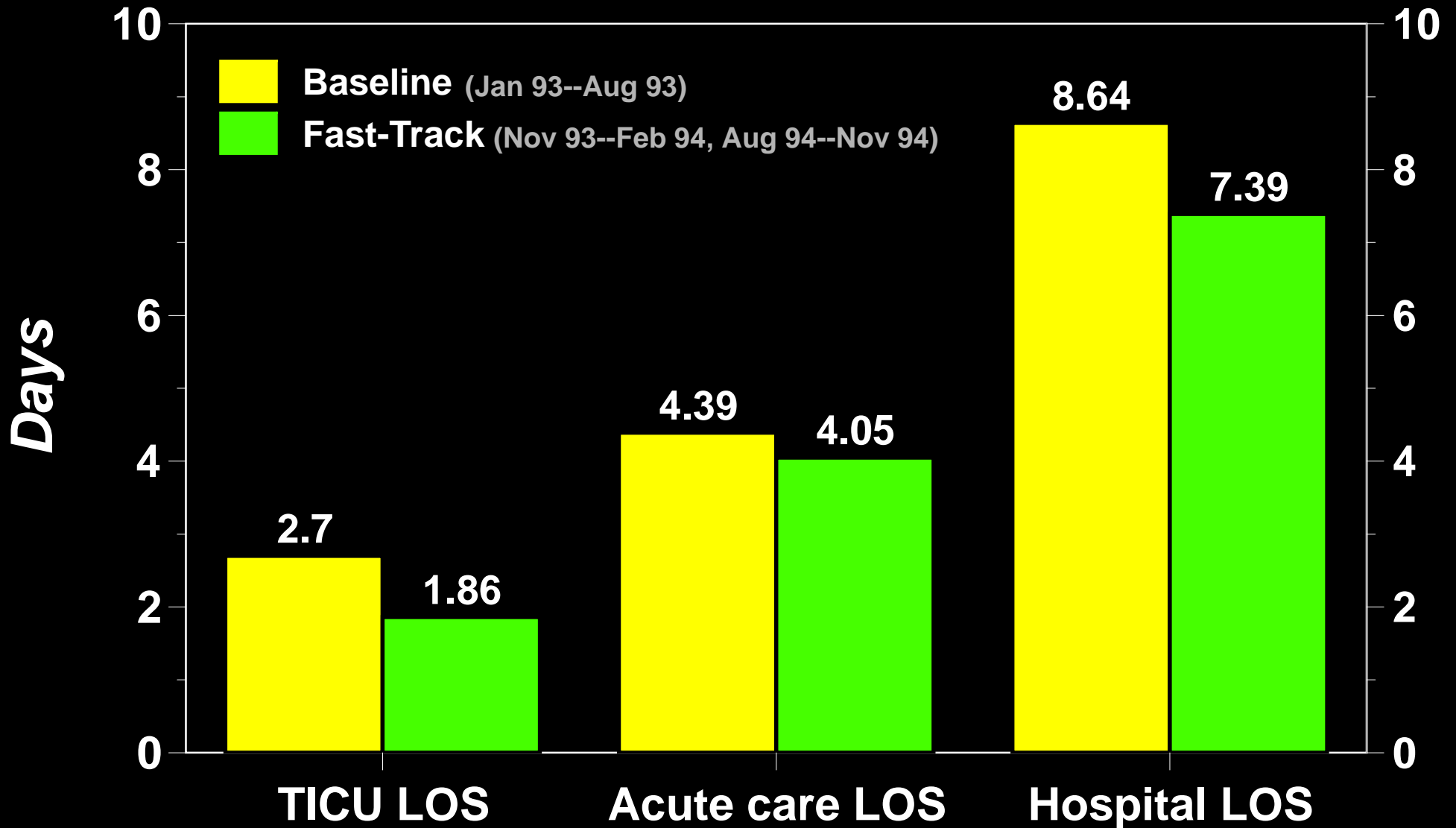
| | Mortality at 1 year | | | Readmissions w/ in 1 year | | |
|-------------------------|--------------------------------|--------------|-----|--------------------------------------|--------------|-----|
| | <u>Before</u> | <u>After</u> | | <u>Before</u> | <u>After</u> | |
| CHF (n = 19,083) | 22.7% | 17.8% | 331 | 46.5% | 38.5% | 551 |
| IHD (n = 43,841) | 4.5% | 3.5% | 124 | 20.4% | 17.7% | 336 |
| Total | | | 455 | | | 887 |

Fast-track extubation protocol

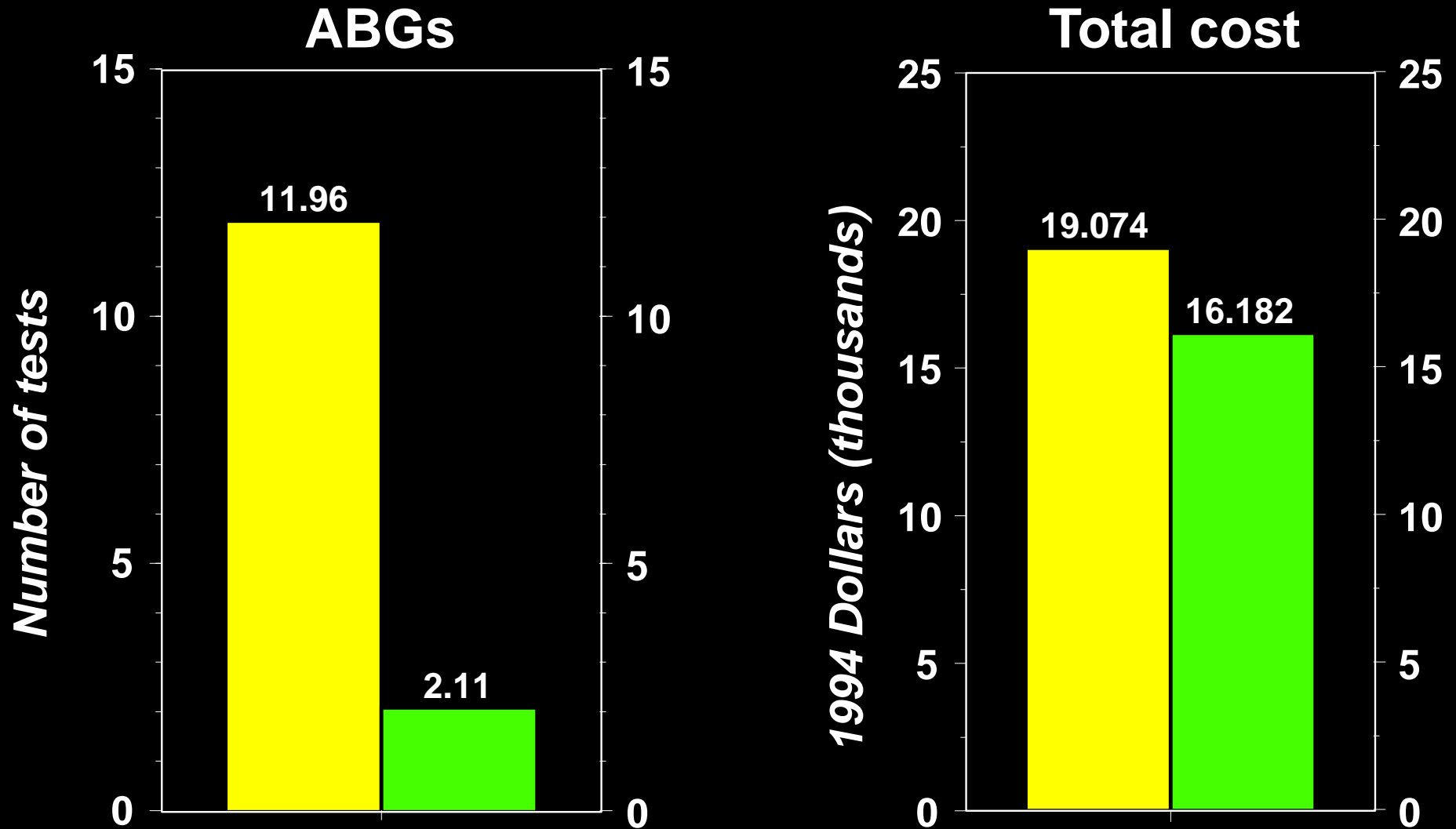
X-Bar Chart - 0.01 control limits



Fast-track extubation protocol

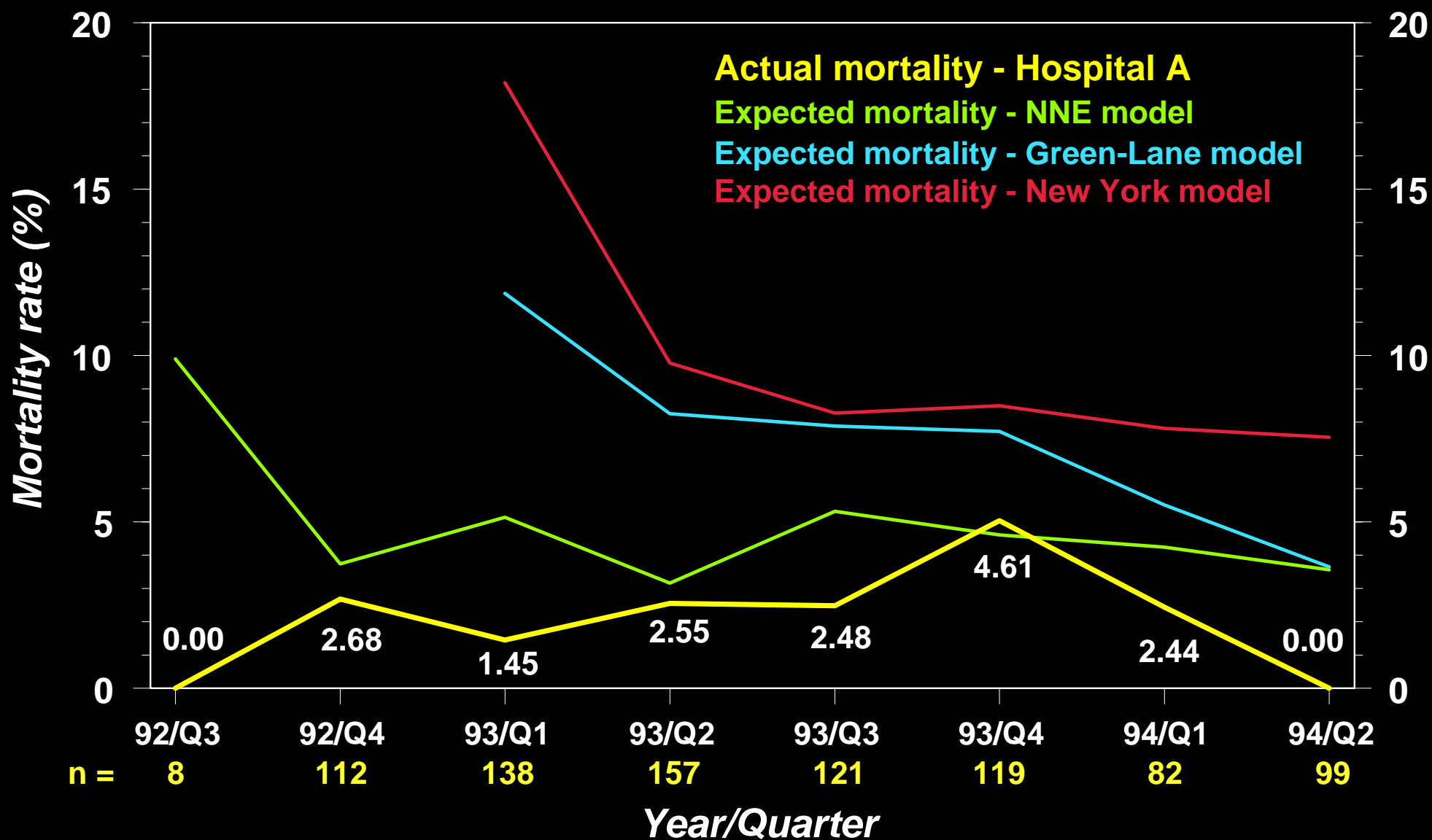


Fast-track extubation protocol



- Baseline (Jan 93--Aug 93)
- Fast-Track (Nov 93--Feb 94, Aug 94--Nov 94)

Risk-adjusted CABG Mortality

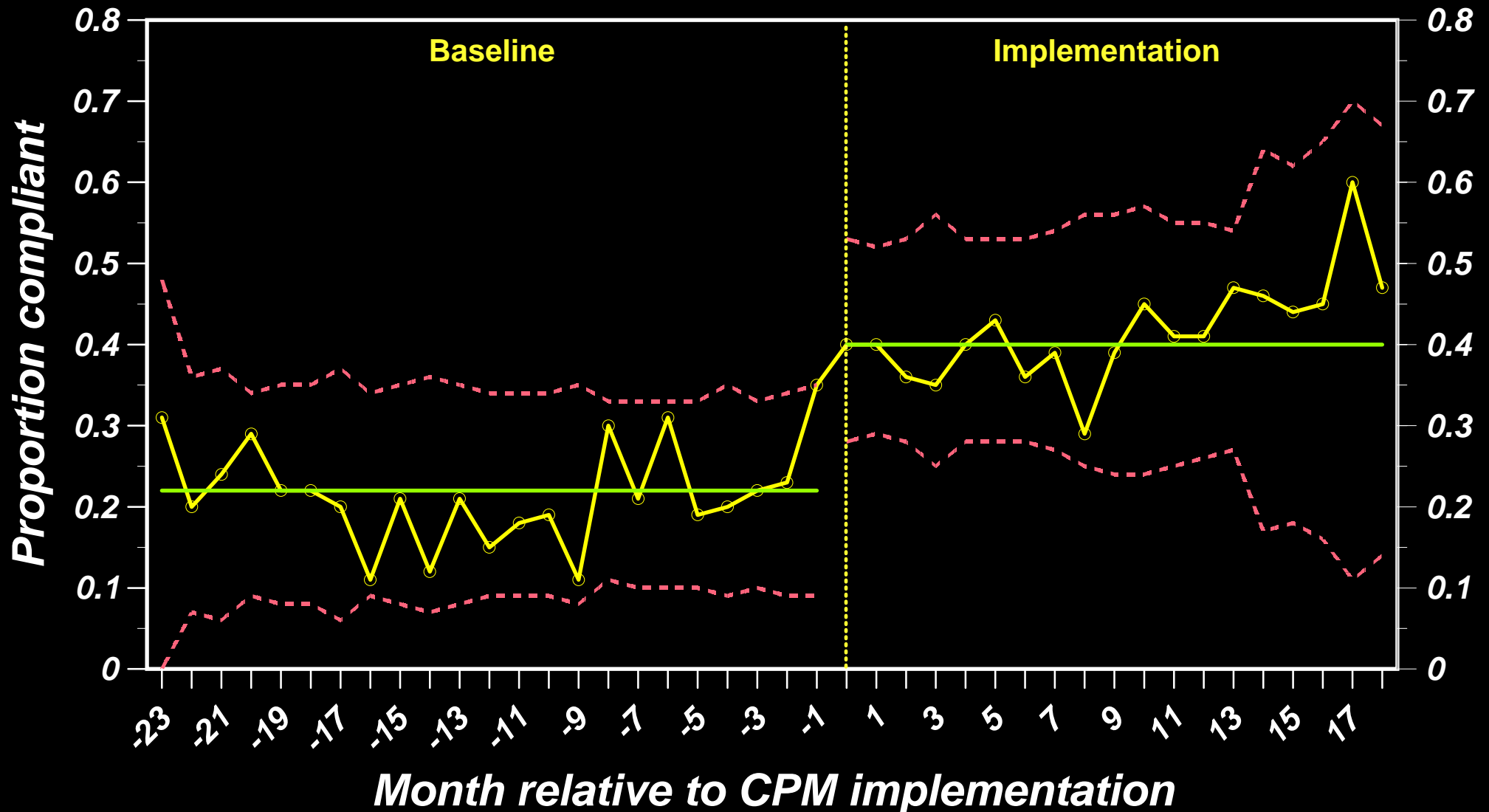


Community acquired pneumonia

| | <u>1994 without guideline</u> | <u>1995 with guideline</u> |
|----------------------------|---------------------------------------|------------------------------------|
| % patients admitted | 39% | 29% |
| Average LOS | 6.4 days | 4.3 days |
| Time to antibiotic | 2.1 hours | 1.5 hours |
| Average cost / case | \$2752 | \$1424 |

CAP protocol compliance

Implementation Group -- Loose Abx Compliance

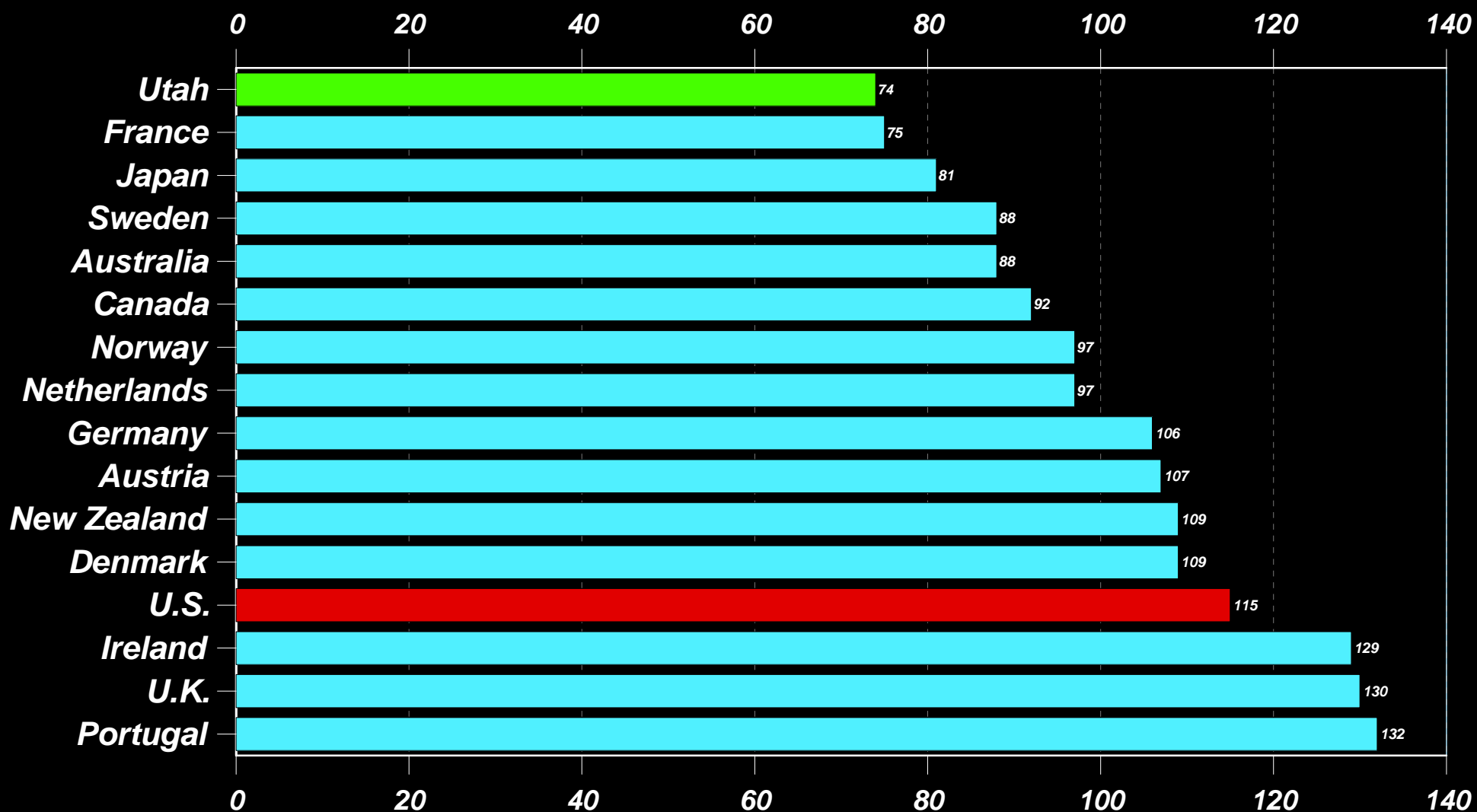


Community acquired pneumonia

| | <u>without protocol</u> | <u>with protocol</u> | |
|--|-----------------------------|--------------------------|-----------------|
| "Outlier" (complication) DRG at discharge | 15.3% | 11.6% | ↓ 24.7% p<0.001 |
| In-hospital mortality | 7.2% | 5.3% | ↓ 26.3% p=0.015 |
| Relative resource units (RRUs) per case | 55.9 | 49.0 | ↓ 12.3% p<0.001 |
| Cost per case | \$5211 | \$4729 | ↓ 9.3% p=0.002 |

Mortality amenable to health care

Deaths per 100,000 population



Source: World Health Organization, Nolte and McKee, Rutgers Center for State Health Policy Standardized for age (1998)
Utah from 2003, normalized for general US change from 1998

Wells Fargo inflation summary, 1988-2006

December 2006

**WELLS
FARGO**

COST OF LIVING INDEX

| | Wasatch Front | | | National | | | |
|-----------------------|------------------------|---------------------|---------------------------------|------------------------|---------------------|---------------------------------|-----------------------------|
| | Index Mar. 1988=100 | % Change 6 Mos.* | (Non-Seas. Adj.) 1 Mo. Prior | Index Mar. 1988=100 | % Change 6 Mos.* | (Non-Seas. Adj.) 1 Mo. Prior | (Seas. Adj.) 1 Mo. Prior |
| All Categories | 154.6 | -0.1% | 0.2% | 173.4 | 2.7% | 0.1% | 0.5% |
| Housing | 182.8 | 2.7 | 0.1 | 175.6 | 3.8 | 0.1 | 0.4 |
| Transportation | 120.2 | -11.4 | -1.4 | 163.9 | 0.8 | 0.9 | 1.8 |
| Health Care | 157.4 | 0.1 | -0.1 | 249.5 | 3.9 | 0.0 | 0.1 |
| Food at Home | 201.2 | 3.3 | 3.1 | 170.6 | 1.8 | 0.0 | -0.3 |
| Clothing | 113.2 | -1.6 | 0.6 | 102.9 | 0.2 | -2.5 | 0.6 |
| Food Away | 162.2 | 0.0 | 0.0 | 168.7 | 3.2 | 0.3 | 0.3 |
| Utilities | 128.7 | -1.0 | 0.0 | 175.4 | 3.1 | 1.1 | 1.2 |
| Recreation | 139.1** | 5.8 | 0.0 | 109.8 [†] | 1.3 | -0.4 | -0.3 |
| Education & Comm. | 124.6** | 5.6 | 0.0 | 116.2 [†] | 2.5 | -0.1 | 0.2 |
| Other Goods & Svcs. | 104.3** | 0.0 | 0.0 | 243.3 | 2.6 | 0.7 | 0.8 |

*Last six-month percentage change compared with same period one year ago.
 ***(Feb. 1998=100 base)

National Data Source: U.S. Bureau of Labor Statistics
 †(Dec. 1997=100 base)

The Wall Street Journal

Perverse Incentives in Health Care

April 5, 2007

John C. Goodman, President, National Center for Policy Analysis

Research at Dartmouth Medical School suggests that if everyone in America went to the Mayo Clinic, our annual health-care bill would be 25% lower (more than \$500 billion!), and the average quality of care would improve. If everyone got care at Intermountain Healthcare in Salt Lake City, our healthcare costs would be lowered by one-third.

Of course, not everyone can get treatment at Mayo or Intermountain. But why are these examples of efficient, high-quality care not being replicated all across the country? The answer is that high-quality, low-cost care is not financially rewarding. Indeed, the opposite is true. Hospitals and doctors can make more money providing inefficient, mediocre care.

Clinical QI at IHC

| <u>Clinical Project</u> | <u>Cost structure improvement (\$MM)</u> |
|---|--|
| 1. Fast-track extubation in TICU | \$ 5.5 |
| 2. Long-term ventilator management * | 4.7 |
| 3. HFOV (RDS in premature newborns) * | 3.7 |
| 4. Shock Trauma Respiratory ICU * (12 protocols) | 2.5 |
| 5. Antibiotic Assistant * | 1.2 |
| 6. Pediatric ICU * (8+ protocols) | .7 |
| 7. Infection prophylaxis in surgery * | .6 |
| 8. Adverse drug event prevention * | .5 |
| 9. Community-acquired pneumonia * | .5 |
| 10. Ventilator support for hypoxemia * | .5 |
| 11. Group B strep sepsis of newborn * | .3 |
| Subtotal: | \$20.7 |
| -- 30+ additional successful clinical projects -- | ? |

A process

... a series of linked steps, often but not necessarily sequential, designed to ...

- *cause* some set of outcomes to occur
- transform inputs into outputs
- generate useful information
- add value

Process management

- ▶ Start with knowledge of
 - Processes
 - Systems (processes interacting together)
 - Human psychology
 - Variation
 - A system for ongoing learning
- ▶ Build a rational system to *manage processes*
- ▶ What you get is *quality improvement theory*

Quality improvement
is the
science of process management

*(Health care delivery is a system made up of
thousands of interlinked processes)*

Three classes of outcomes

▶ Physical outcomes

- medical outcomes: complications and therapeutic goals
- includes functional status measures (patient perceptions of medical outcomes)

▶ Service outcomes

- satisfaction: patients and families, communities, professionals, purchasers, and employees
- includes access issues (e.g., waiting times)

▶ Cost outcomes

- just another outcome of a clinical process
- includes the cost of the burden of disease

Medical outcomes

are of four types:

- ◆ **appropriateness** (*referral and procedure indications*)
- ◆ **complications** (*process failures / defects*)
- ◆ **therapeutic goals / biologic function**
(*when stated in the negative, merges with defects*)
- ◆ **the patient's ability to function**
(*functional status, as reported by the patient*)

are process specific (*different clinical conditions have different complications, different therapeutic goals, functional status measures*)

Medical outcomes relate directly to health care costs

Service outcomes

are of two types:

- ◆ ***the clinician-patient relationship***
(bedside manner: a "caring and concerned" clinician)
- ◆ ***access issues: convenience vs. hassle***
(scheduling, travel times, registration, physical comfort, wait times, etc.)

**operate by a separate, general process
that is independent of medical outcomes**

Service outcomes directly affect market share, community perceptions and relations (that is, prestige and social status), and rates of malpractice law suits

Quality controls cost

More accurately,

*Quality and cost are two sides of
the same coin ...*

*anything you do to one affects
the other*

(similarly, cost controls access)

Health care consumers seek value

$$\text{Value} = \frac{\text{Medical outcomes} + \text{Service outcomes}}{\text{Cost outcomes}}$$

*The goal is the best possible medical outcomes
at the lowest necessary cost*

Managing clinical care

"Managed care" means

"managing processes of care" ...

not managing physicians and nurses.

Managing a process means

the right *data*

in the right *format*

at the right *time* (*and place*)

in the right *hands* (*the clinicians who operate the process*)