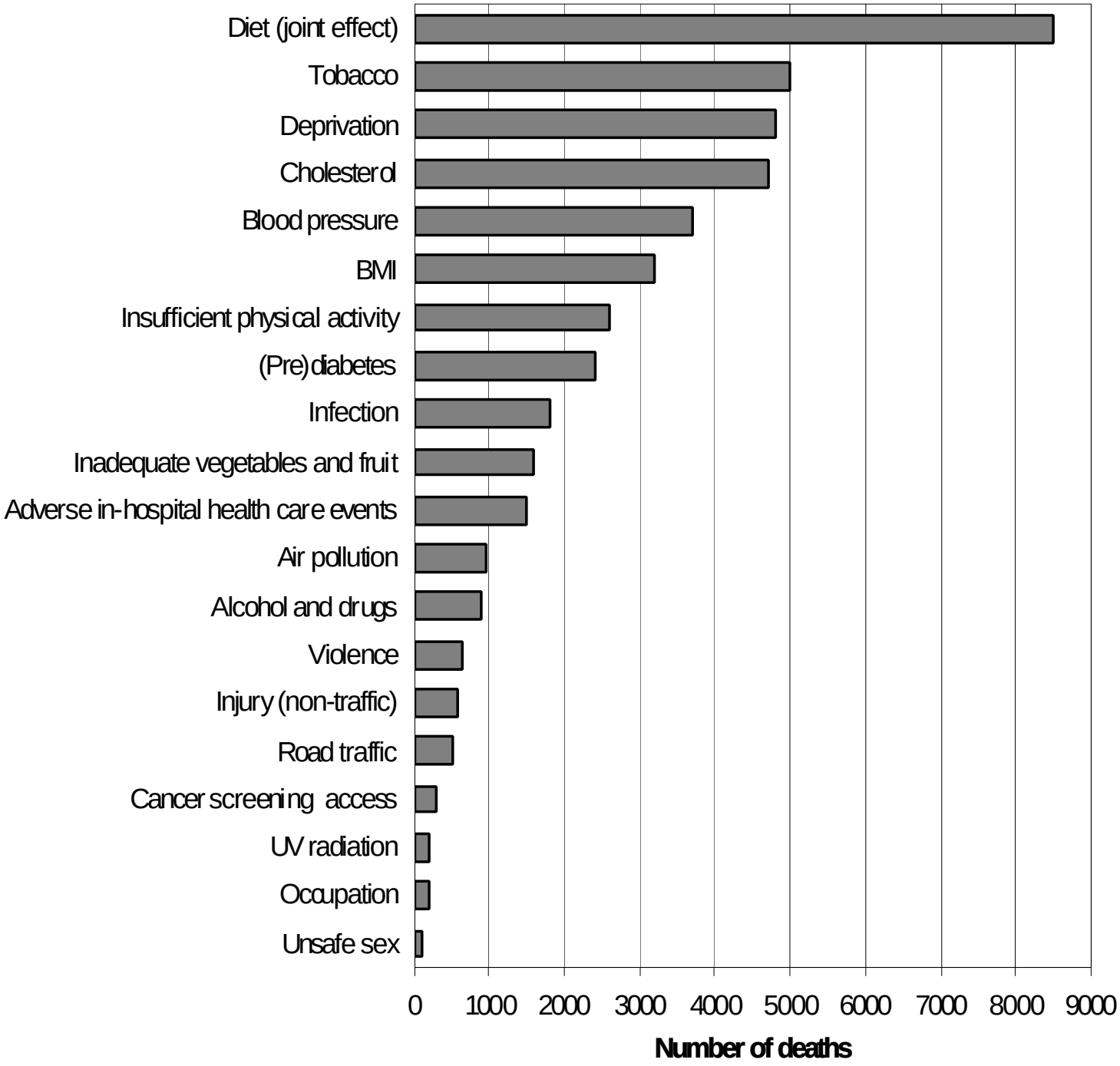
“Patient Safety and Quality of Care”

Peter Davis PhD
Professor of Public Health

Presentation to IV/V Year Group,
Rolleston Lecture Theatre
2 - 3.30 p.m.
Thursday, 25 March 2004

Safety and Quality - Take-Home messages

- Safety (a sub-set of quality)
  - **NZ hospitals - safe and good quality**
  - **But - growing evidence of safety issues**
- Adverse events (significant burden)
  - **Many preventable, and systemic**
  - **Infection, drugs, IT - 3 key areas**
- Response underdeveloped
  - **Inadequate information systems**
  - **Professionalism and efficiency integral**
- ACC and H&DC give NZ an edge


Diet (joint effect)
Tobacco
Deprivation
Cholesterol
Blood pressure
BMI
Insufficient physical activity
(Pre)diabetes
Infection
Inadequate vegetables and fruit
Adverse in-hospital health care events
Air pollution
Alcohol and drugs
Violence
Injury (non-traffic)
Road traffic
Cancer screening access
UV radiation
Occupation
Unsafe sex
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
Number of deaths

Safety and Quality - Outline

- Background
  - **Safety & quality - always controversial**
  - **Chronic and acute sectors**
  - **On the public agenda**
- NZ Quality of Healthcare Study
- Policy & Professional Implications
  - **Monitoring of health activity**
  - **Prevention - EBM, QI, IT, HM**
  - **Medico-legal issues - ACC, H&DC**
  - **Accountability - public and personal**

Florence Nightingale - 1863

"It may seem a strange principle to enunciate … in a Hospital that it should do the sick no harm. … (T)he actual mortality *in* hospitals … is very much higher than any calculation founded on the mortality of the same class of diseases among patients treated *out* of hospital."

(Introduction, Notes on Hospitals)

Sir James Simpson - 1871

“The man laid on the operating table in one of our surgical hospitals is exposed to more chances of death than the English soldier in the fields of Waterloo.”

Beecher and Todd - 1954

"Anaesthesia might be likened to a disease which afflicts 8,000,000 persons in the United States each year. More than twice as many citizens … die from anaesthesia as die from poliomyelitis. Deaths from anaesthesia are certainly a matter for public health concern."

(Annals of Surgery, vol. 140: 1-34)

1950s: therapeutic optimism, but ethical complacency?

Barr (1956), Journal of the American Medical Association, ‘Hazards of modern diagnosis and therapy - the price we pay’.

[life-threatening and fatal reactions in one out of 20 hospitalised patients]

Moser (1959), New England Medical Journal, ‘Diseases of medical progress’.

[potent new therapeutic agents and improved surgical procedures]

1960s-1980s: exposure of cause celebres - chronic care

- **UK - ten national inquiries**
- **How are standards subverted?**
  - other organisational goals dominant (e.g. staff convenience)
- **How is abuse and neglect not prevented?**
  - Isolation:
    - geographic, professional, supervisory, organisational, intellectual, privacy
- (Martin, Hospitals in Trouble, 1985)

1990s: exposure of cause celebres - acute care

"The problem of patient safety has been repeatedly identified in the medical literature since the mid-1950s. … Only recently has the medical profession made a systematic effort … .(T)he public shaming of the profession … as a result of stories that appeared in the news media."

(Millenson, 2002, Quality and Safety in Health Care)

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Study Goals

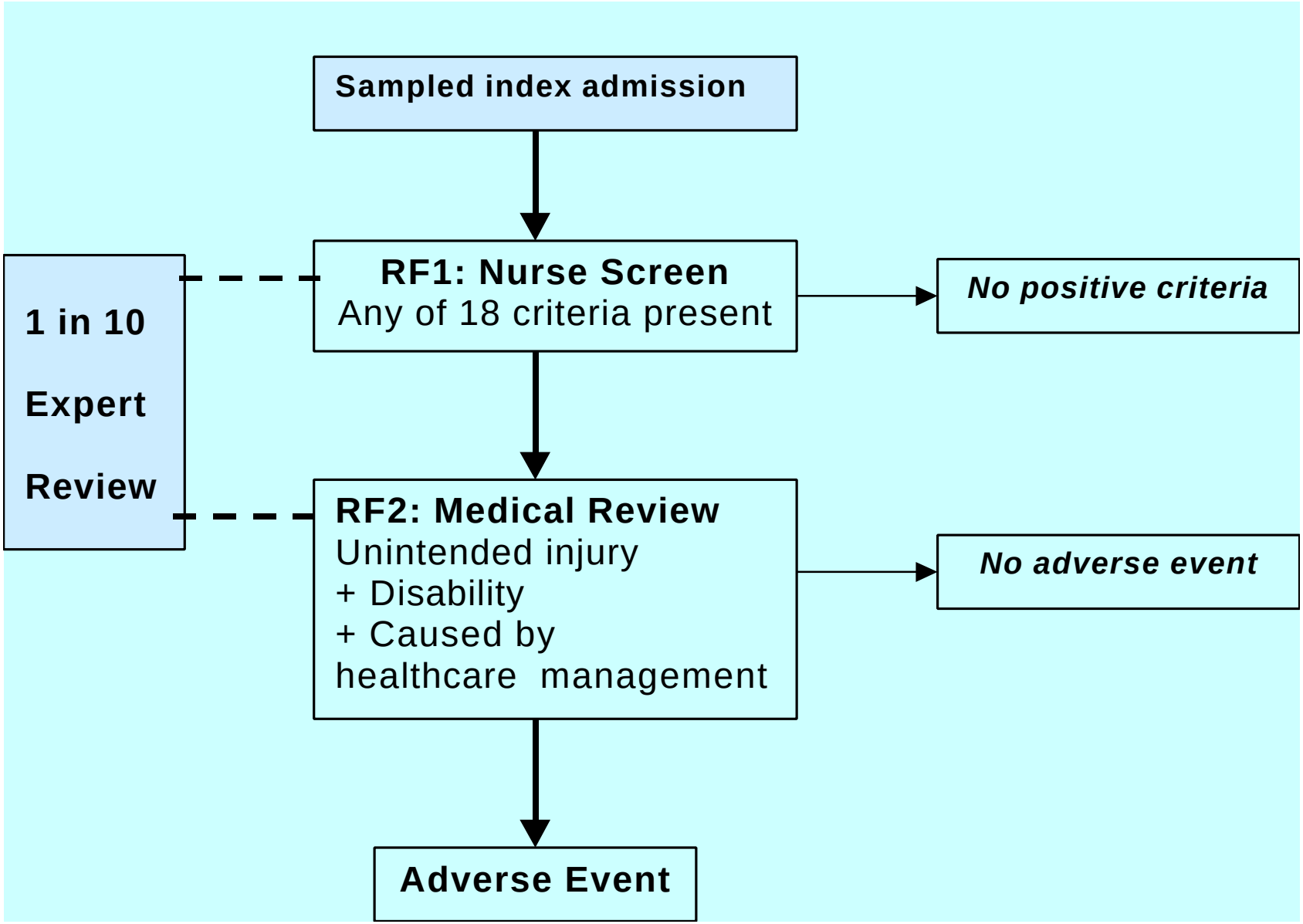
To assess adverse events

- occurrence and impact
- causation and preventability

To provide

- baseline data on adverse events
- guidance for quality improvement

Record Review Process



Sample of Admissions

Patient characteristics	Sample (screened)	New Zealand
Number of inpatient admissions	6,579	699,095
Mean age (years)	42.6	40.3
Males (%)	45.1 %	43.5 %
Maori (%)	15.4 %	14.3%
Routine discharge (%)	91.6 %	92.1%
Deaths (%)	1.8 %	1.7%
Mean hospital stay (days)	5.1	6.9

Examples of Adverse Events

Examples of Common Occurrences

POST-OPERATIVE:

- Wound infection and breakdown
- Post operative pneumonia
- Infection in prosthetic joints
- Infection in I.V. cannulae
- Bleeding following surgery

DRUG RELATED:

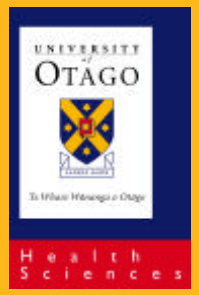
- Gastrointestinal bleed from non-steroidal anti-inflammatory drugs
- Low blood pressure and collapse from high blood pressure drugs
- Antibiotic-induced diarrhoea

SYSTEM RELATED:

- Falls in care causing fractures
- Recurrence of gall bladder inflammation and pain while on waiting list for gall bladder surgery

PROCEDURE RELATED:

- Post lumbar puncture headache
- Bleeding following childbirth
- Lung congestion from I.V. fluid overload
- Fractures not uniting, or losing position before union



Adverse events in New Zealand public hospitals I: occurrence and impact

NZMJ 13 December 2002, Vol 115 No 1167
URL: http://www.nzma.org.nz/journal/115-1167/271/

Example 1: Not an adverse event; outcome of disease

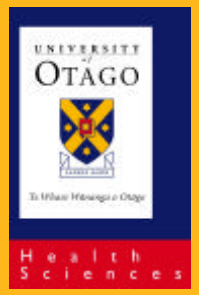
An 80-year-old man presented with a myocardial infarction, with three hours of chest pain. He was treated promptly with streptokinase, heparin and aspirin. On day three he had further chest pain, with new ECG changes, and he died 12 hours later of cardiogenic shock.

No adverse event = no medical causation, outcome of disease

Example 2: Adverse event, operative(fracture management); low preventability*

Young, right-handed man sustained a fracture of the radius within the wrist joint. It required operative reduction, K-wire fixation and bone grafting. At the 10-day check, the position had shifted, and re-operation was required. The end result was very good.

Adverse event = operative, low preventability, moderate disability



Adverse events in New Zealand public hospitals II: preventability and clinical context

NZMJ 10 October 2003, Vol 116 No 1183
URL: http://www.nzma.org.nz/journal/116-1183/624/

Example of outside-hospital adverse event with high preventability

A fit, elderly man presented with blood in his urine. For 3 years had been on warfarin anticoagulant for his heart condition and blood tests to monitor the dose; had been stable. The admission test showed marked loss of clotting ability, INR* over 20. It was found that he had been prescribed his usual dose of warfarin 4 x 1 mg tablets daily, but dispensed as 4 x 5 mg. Problem settled with temporary withdrawal of warfarin; there were no longer term consequences.

Adverse event = medication dispensing error;
Preventability = high; Disability = low, 3 days in hospital

Example of in-hospital adverse event with low preventability

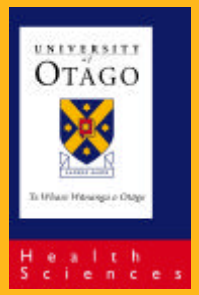
A 40-year-old woman with heavy vaginal bleeding, not responding to medication, had an elective vaginal hysterectomy with appropriate antibiotic cover. At 10 days post-operation she developed pelvic pain and fever, ultrasound showed a collection; assumed to be abscess, treated with intravenous antibiotic.

Adverse event = complication of medicated operation
Preventability = low; Disability = moderate (recovery in 1 to 12 months)

Example of in-hospital adverse event with high preventability

A known substance abuser with recent history of self-harm was admitted to hospital with pneumonia. A 24-hour watch was ordered, but not supplied. On day 2 the patient walked out of hospital and attempted suicide. He was returned to hospital and transferred to Psychiatry when pneumonia settled.

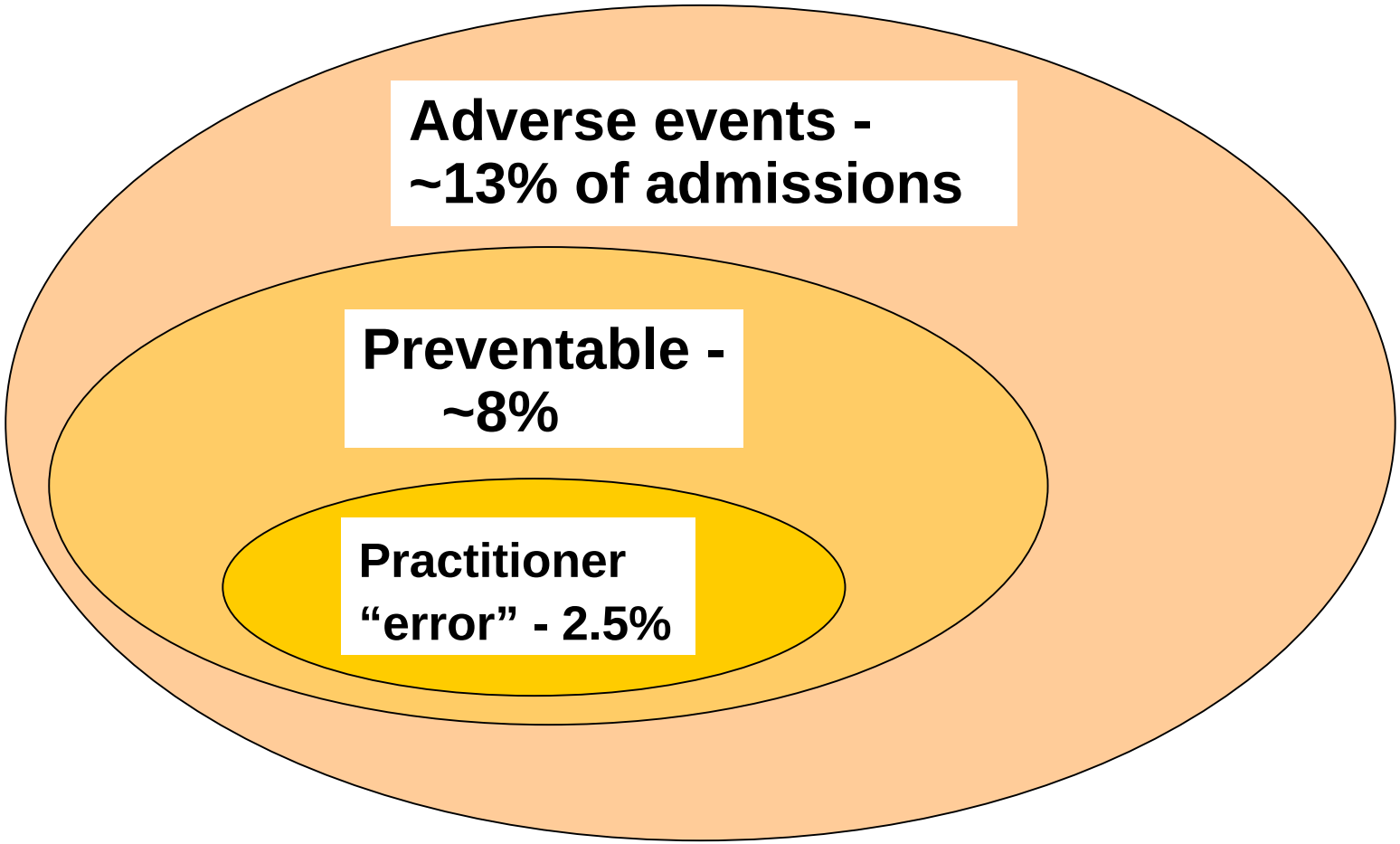
Adverse event = system failure; Preventability = high; Disability = low

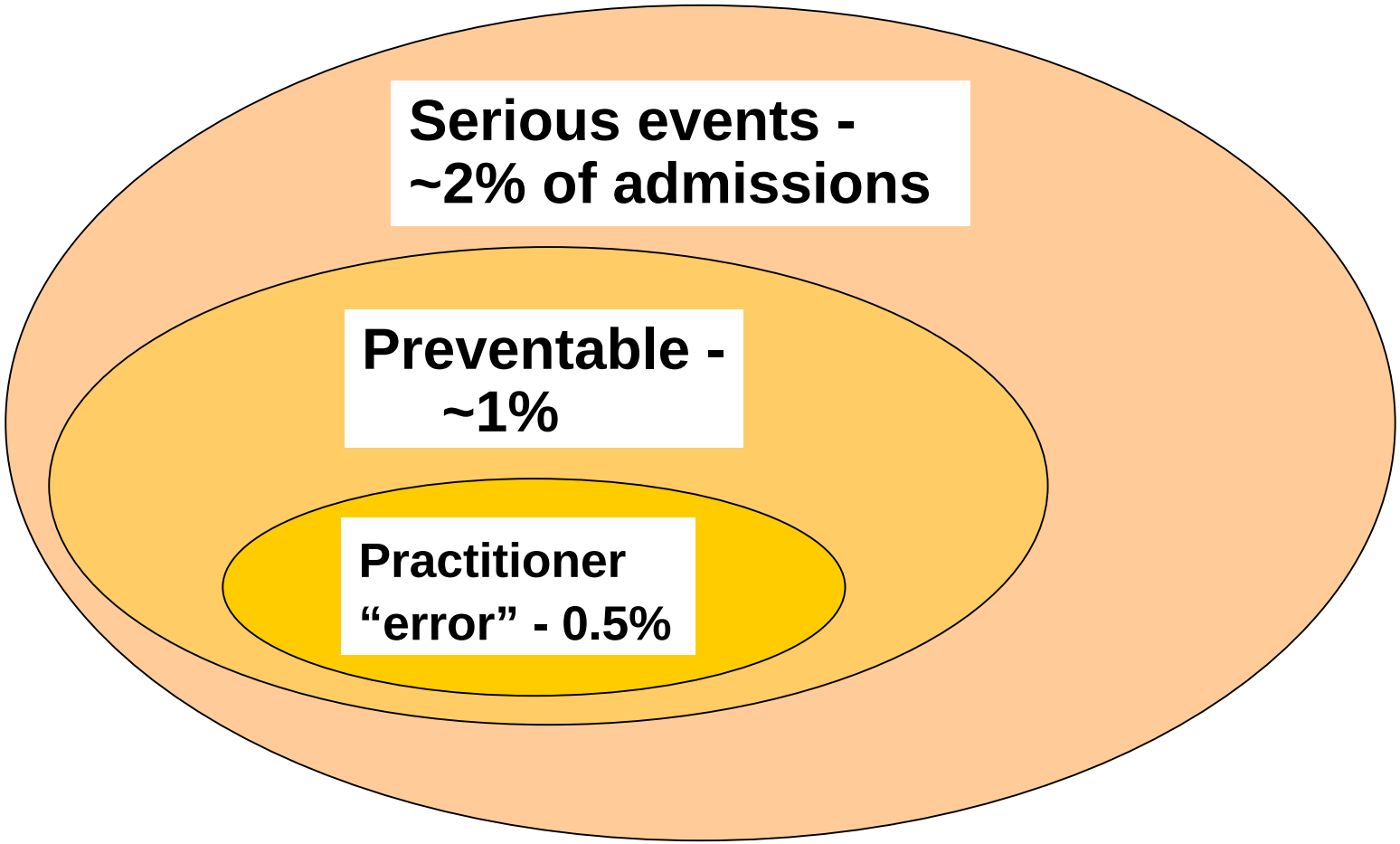


Representative case series from public hospital admissions 1998 I: drug and related therapeutic adverse events

NZMJ 30 January 2004, Vol 117 No 1188
URL: http://www.nzma.org.nz/journal/117-1188/747/

Occurrence of Adverse Events


Adverse events -
~13% of admissions
Preventable -
~8%
Practitioner
“error” - 2.5%


Serious events -
~2% of admissions
Preventable -
~1%
Practitioner
“error” - 0.5%

Comparison of outside versus inside hospital adverse events (AEs).

	AEs that occurred inside hospital % or mean*	AEs that occurred outside hospital % or mean
Proportion of all sampled admissions that were related to an AE	683/6579 10.6%	167/6579 2.6%
Proportion of AEs related to adverse drug events	10.1%	36.3%
Proportion of AEs related to systems issues	29.6%	29.5%
Proportion of AEs occurring among patients aged 65 years and over	36.4%	56.3%
Mean attributable bed days	8.9	9.8
AEs that were highly preventable	34.2%	45.5%
AEs that were associated with death or permanent disability	14.4%	16.8%

Impact of Adverse Events

For nearly half of all affected patients, entire hospital stay was due to the AE.

Most suffered minimal impairment; but extra average 9 days (median 4 days) in hospital due to the AE.

Impact of AEs -
Disability Status by Hospital stay

Disability	Percentage of AEs	% Entire hospital stay due to AE	Attributable bed days per AE mean (median)
Minimal <1 month	61.6		4.7
Moderate 1-12 months	19.0		13.8
Permanent <=50%	7.9		23.8
Permanent >50%	2.3		38.7
Death	4.5		11.5
Unable to determine from medical record	4.7		11.6
All AEs (n=850)	**100%**	**47.2%**	**9.3 (4)**

Preventability of AEs

In a third of cases reviewers identified virtually no evidence of preventability.

Attribution of Preventability - Percentage Distribution

Preventability Score	Percent
1. Virtually no evidence	37.5
2. Slight to modest evidence	16.8
3. Close call, < 50:50	8.6
4. Close call, > 50:50	15.9
5. Moderate/strong evidence	15.5
6. Virtually certain evidence	5.6
Total Adverse Events	**100% (n=850)**

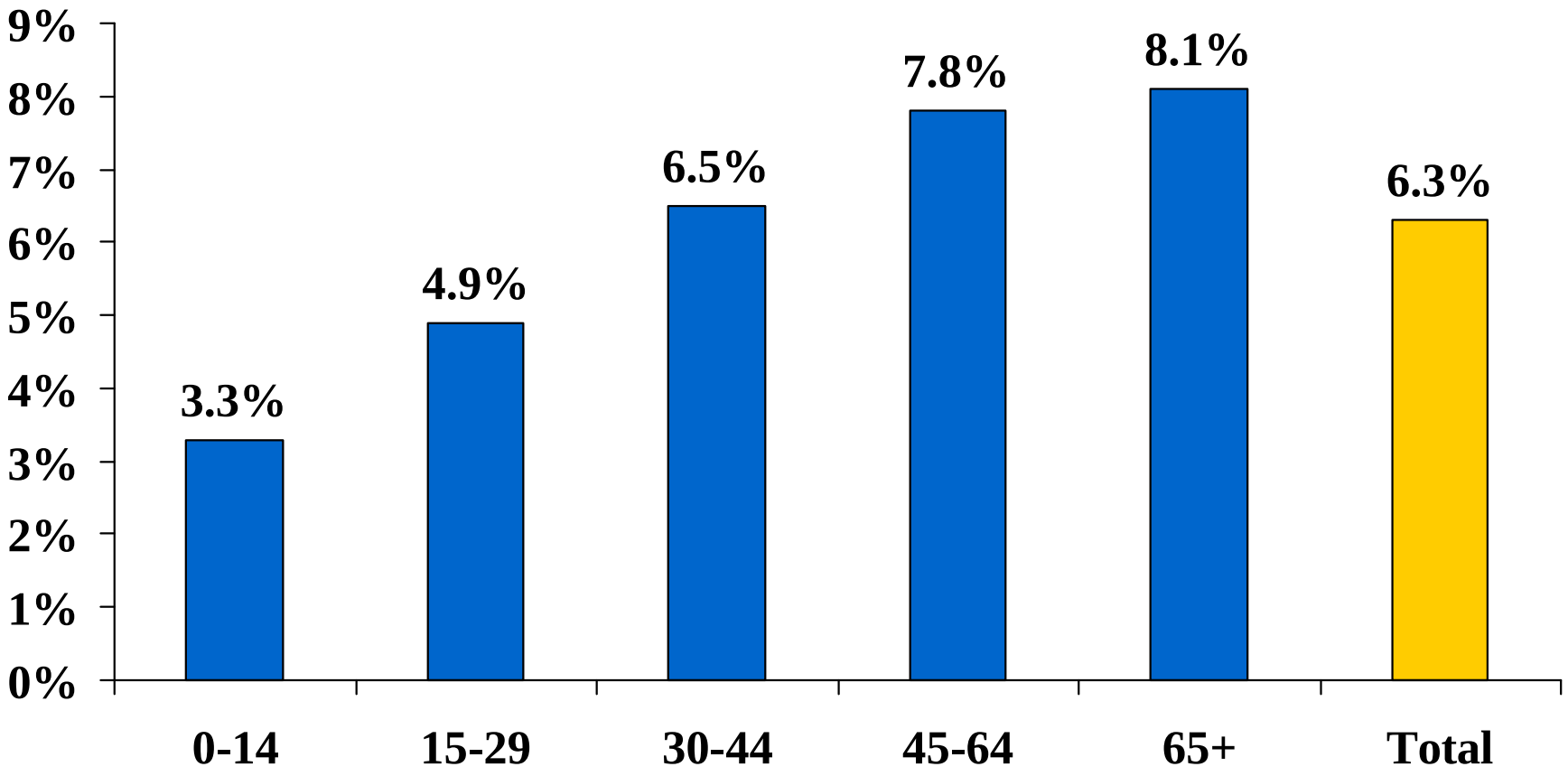
Preventable, in-hospital

Associated with age and with particular clinical conditions.

Half with element of system failure.

Routinely collected administrative data little help in predicting AEs.

In-hospital preventable AEs - by Age Group(n=413)



Prevention of Recurrence - Areas of Effort

Area for Attention	% All AEs (n=413)
System	49.2%
Consultation	35.6%
Education	27.1%
Resources	15.3%
Quality assurance	12.4%
Other	21.8%

Epidemiological Conclusion

- **Epidemiology**
  - Rate internationally comparable
  - "Out-patient" events notable
  - High workload impact
- **Elements of predictability**
  - Vulnerability of older patients
  - Patterns by specialty, clinical area
  - Importance of system factors

Clinical Conclusions 1

Poor work environment in hospital wards:

- crowded and noisy
- nowhere to sit
- can't access PC
- can't access guidelines easily
- many patients not on home ward
- team structure not maintained
- many different medical staff and rounds per ward

Clinical Conclusions 2

- Infection remains the number one contributor to adverse events
- There is a tension between achieving the benefits of powerful modern medicines and their potential for adverse effects
- Many of the identified adverse events are the result of the interaction between an intervention and serious underlying disease

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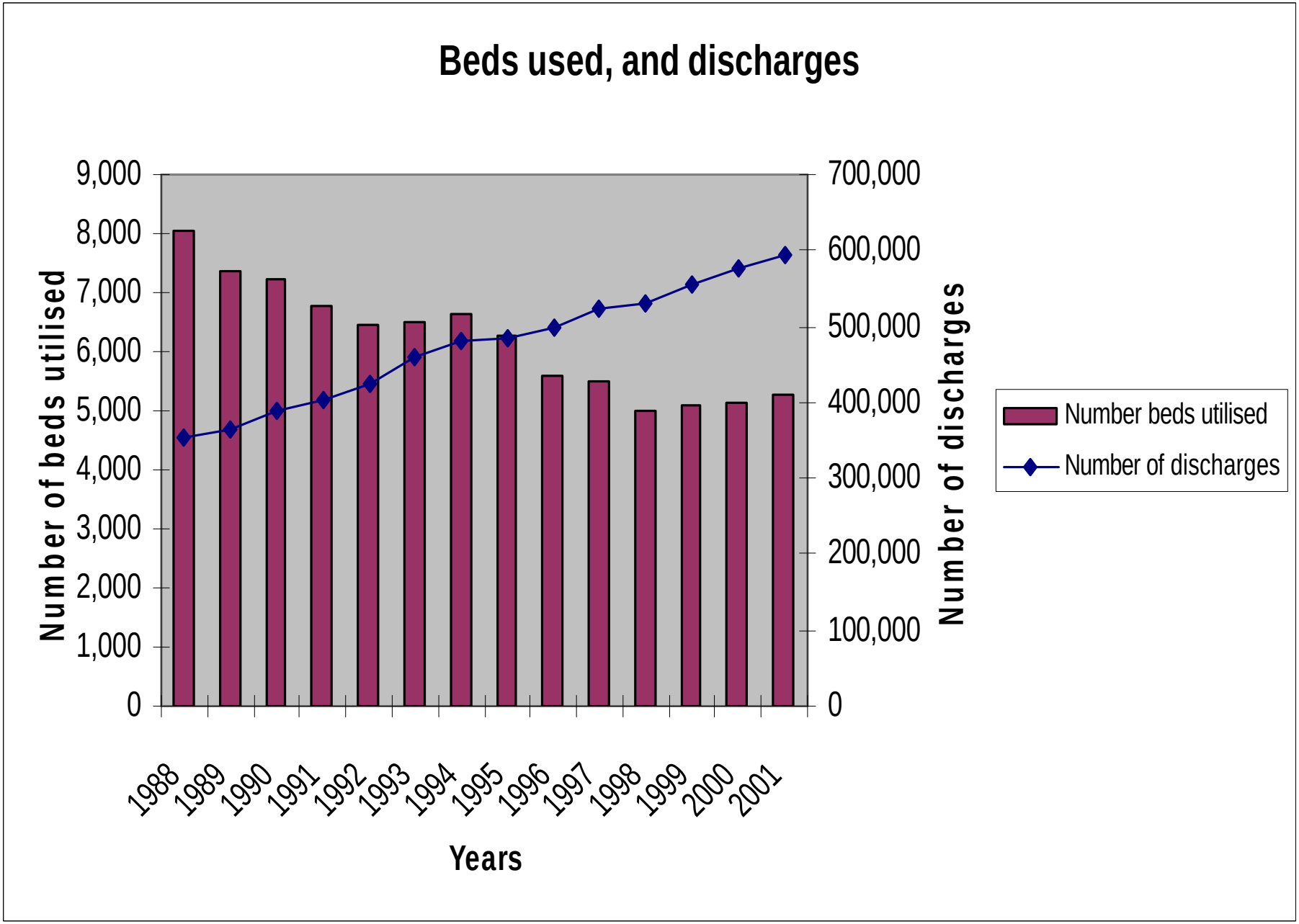
Measuring errors and AEs

- **Latent errors**:
  - Voluntary incident reporting
  - Autopsies, morbidity/mortality conferences
- **Monitoring outcomes**:
  - Chart review (retrospective audit)
  - Administrative data analysis and IT (real time?)
- **Active errors**:
  - Direct observation
- **Clinical surveillance:**
  - Follow up (e.g. registers; prospective cohorts)

“Were hospital patients adversely affected by the health ‘reforms’?: NZHIS data, 1988-2001”

Peter Davis PhD
Professor of Public Health

Presentation to
Christchurch Hospitals’ Clinical Meeting
Friday, 19 March 2004

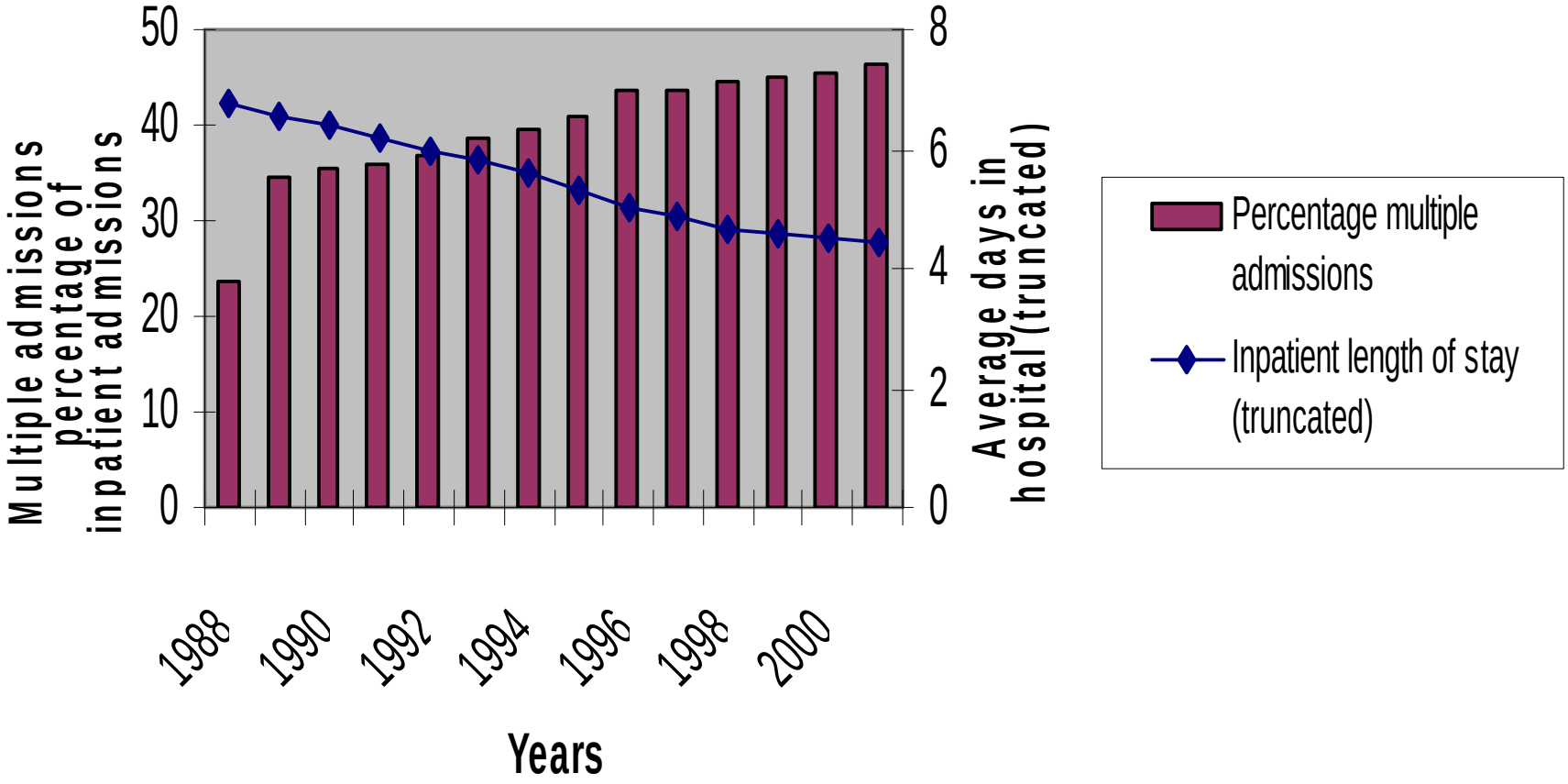

Beds used, and discharges
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Number of beds utilised
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Number of discharges
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
Years
Number beds utilised
Number of discharges

Data and Variables

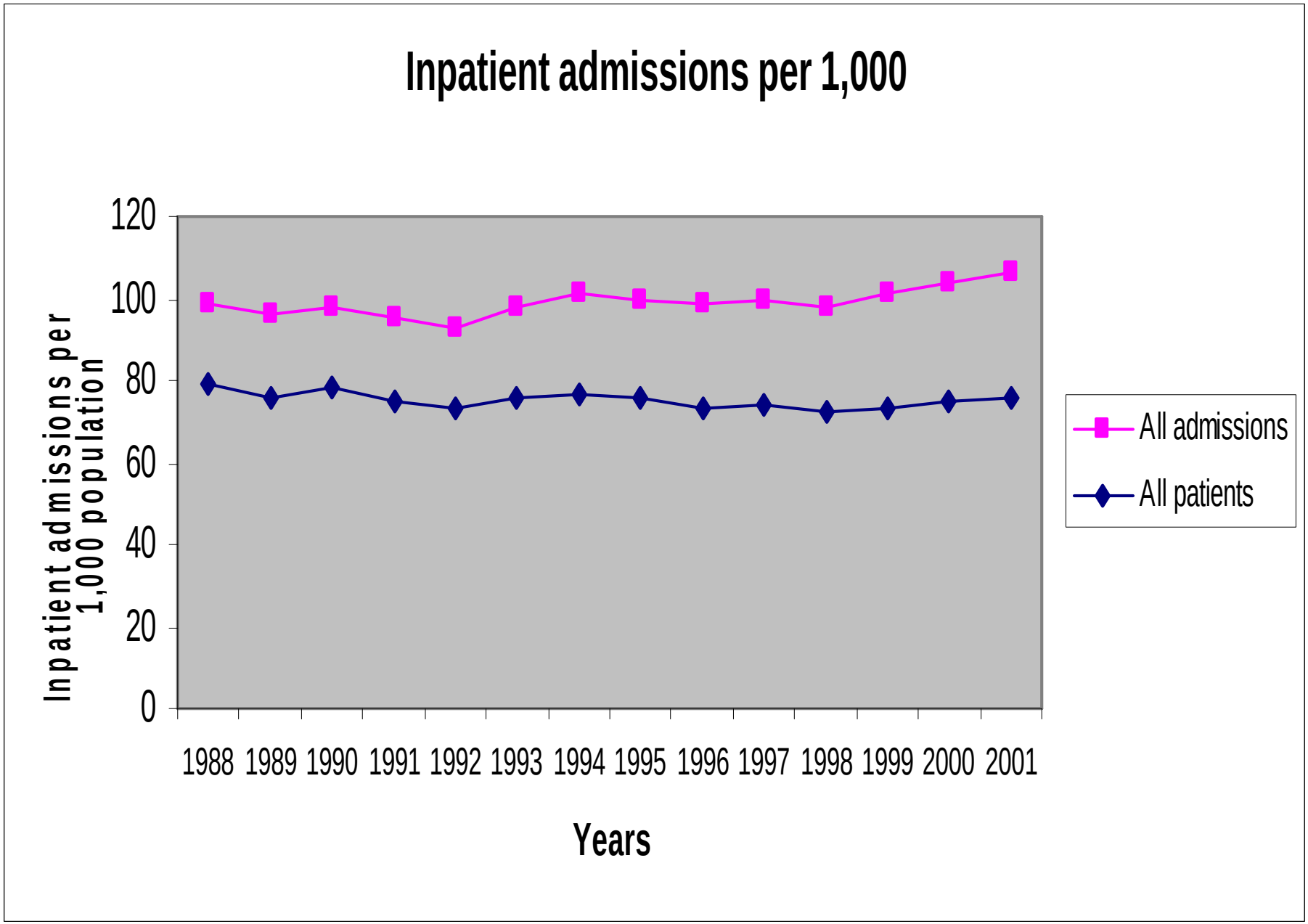
- **Data (32-34 hospitals)**
  - National Minimum Data Set (NZHIS)
- **Selected Variables**
  - availability and use of beds
  - discharges - inpatient, day stay
  - length of stay
  - admissions - multiple, emergency
  - patient characteristics, diagnoses
  - mortality - inpatient, post-discharge

Bed closures - what was the impact on patterns of care?

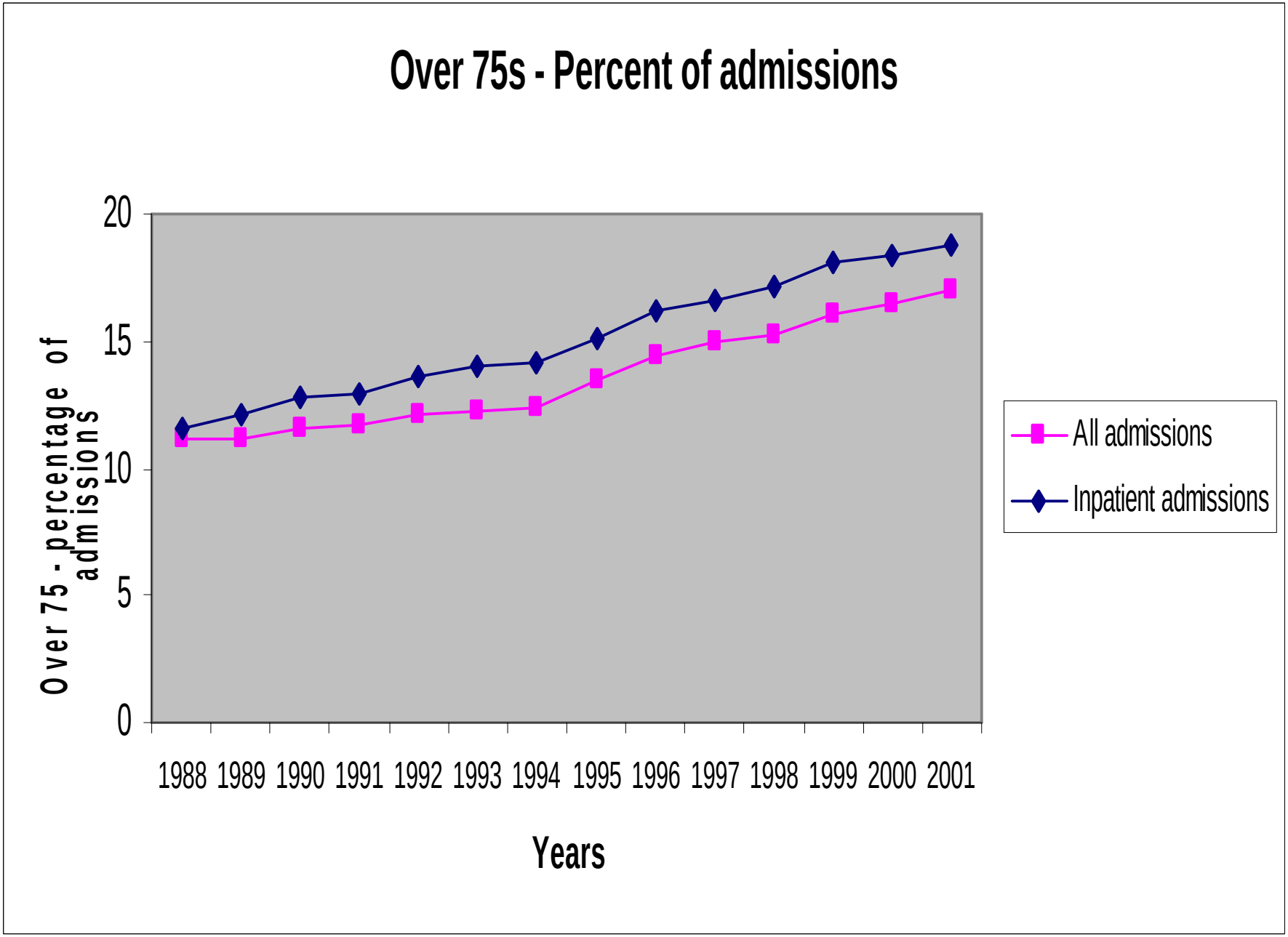
Multiple admissions, length of stay



What was the effect on activity and access?

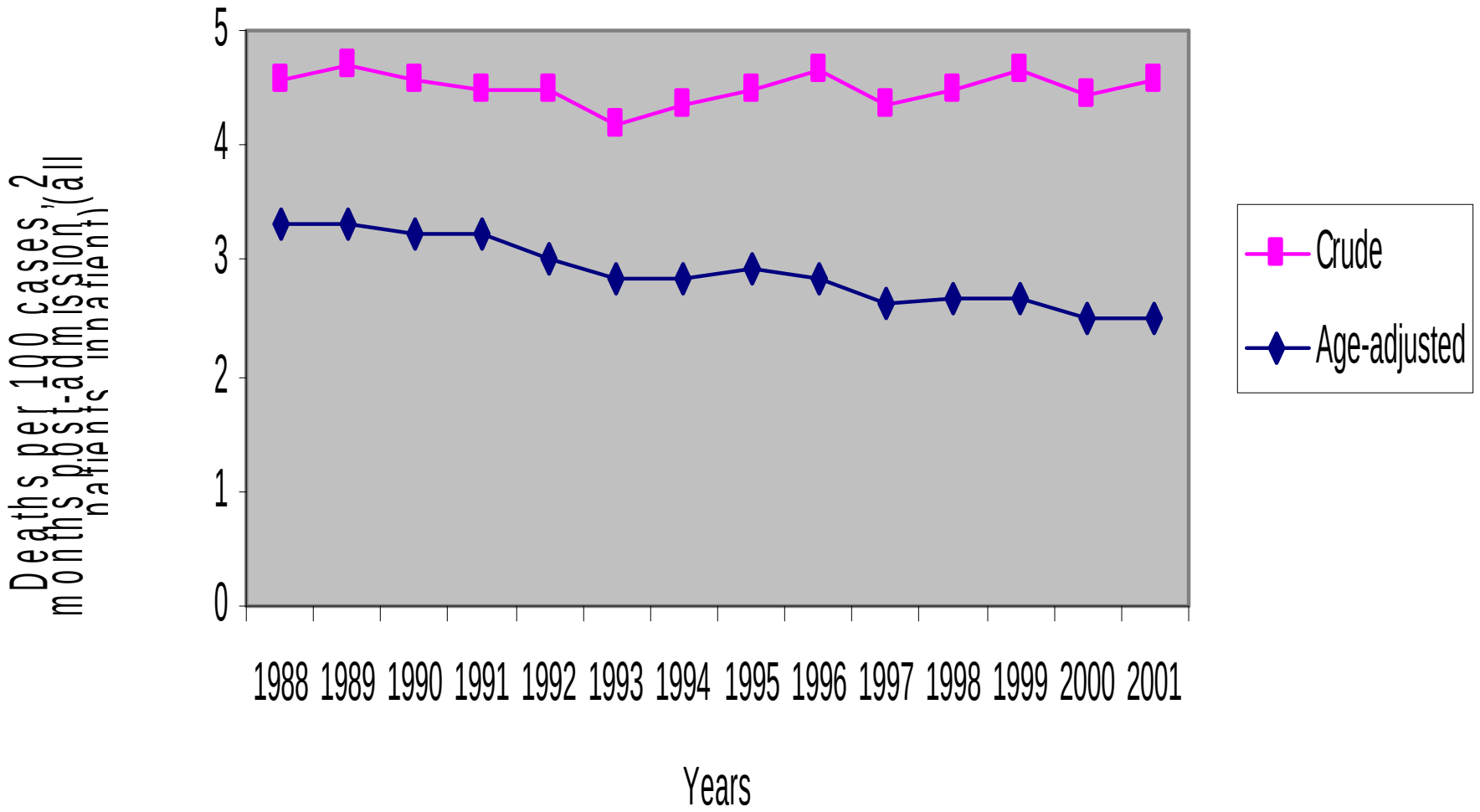

Inpatient admissions per 1,000
Inpatient admissions per 1,000 population
120
100
80
60
40
20
0
1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001
Years
All admissions
All patients

Vulnerable groups - was their access diminished?


Over 75s - Percent of admissions
Over 75 - percentage of admissions
20
15
10
5
0
1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001
Years
All admissions
Inpatient admissions

Quality - were patient outcomes compromised?

Deaths per 100 cases, all inpatients



Summary - 1988-2001 Trends

- **Supply**: bed numbers in use down by a third
- **Activity**: overall levels of access maintained and doubling of patient throughput

- **Pattern of care**: compensated by more day stay, shorter bed stay, more readmissions

- **Access:** maintained for vulnerable groups
- **Quality**: declining post-admission death rates (but higher levels of readmission)

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Reflections on the NZ Solution

Patient Safety and the Law
September, 2003

Ron Paterson
Health and Disability Commissioner

What is the problem?

Unacceptably high levels of patients harmed by health care

12.9% hospital admissions associated with adverse event (Davis, 2001)

How is NZ tackling the problem of iatrogenic harm?

- Acknowledgment of the problem
- Constructive regulatory responses
- Shift from a culture of blame
- Beginnings of open disclosure

What is the solution?

- National focus on patient safety
- Improved compensation for iatrogenic harm
- Greater openness with patients and the public
- Sharing comparative quality data
- Credentialling clinical staff
- Fix the real medico-legal problems

Greater openness with patients and the public

Open disclosure of adverse events by DHBs is a positive sign, and did not result in media beat-up

Waitemata DHB, February 2003,

Canterbury DHB, August 2003

Sharing comparative quality data

There is good research evidence of quality improvement at organisational level from publication of comparative quality data (Marshall, *JAMA*, 2000),

yet we know more about the comparative debt levels than quality in NZ public hospitals.

HDC's quality focus

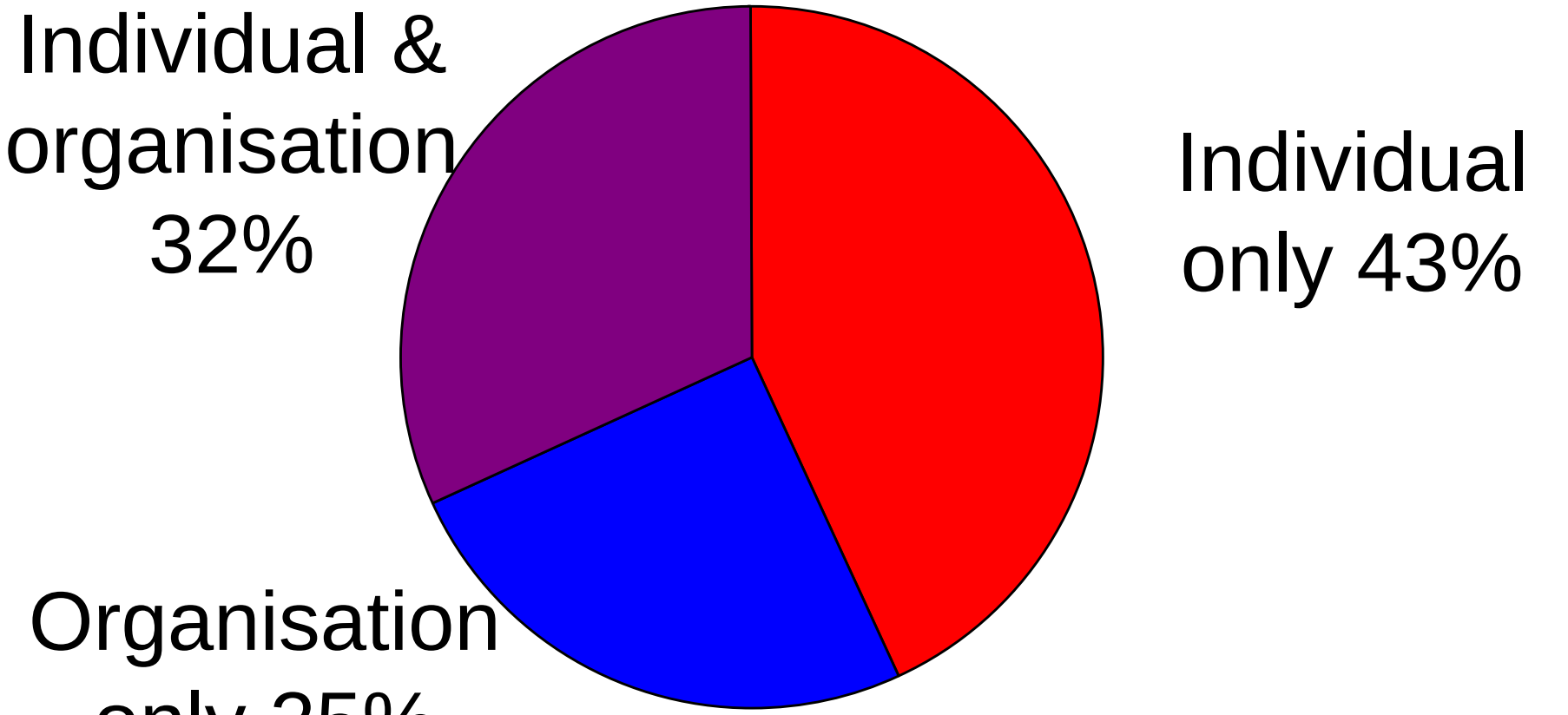
- A systems approach

  HDC's Gisborne Hospital Report "looked beyond the culpability of individual practitioners to the system"

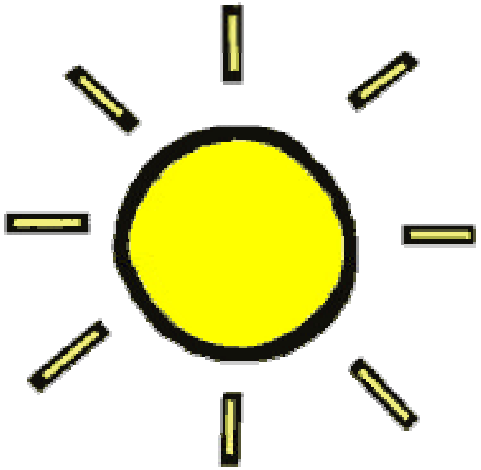
  (Adams, *NZMA Newsletter*, 2002)

- No naming and shaming
- Use of HDC reports for educational purpose

Organisational breach identified in > 50% of HDC hospital breach reports



HDC data (2003)



Creating a culture of learning

HDC plays a role in creating an environment where we can learn from mistakes – protecting patients *and* supporting doctors.

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The New Zealand Experience

Ron Paterson
NZ Health and Disability Commissioner

Shipman Inquiry

January 2004

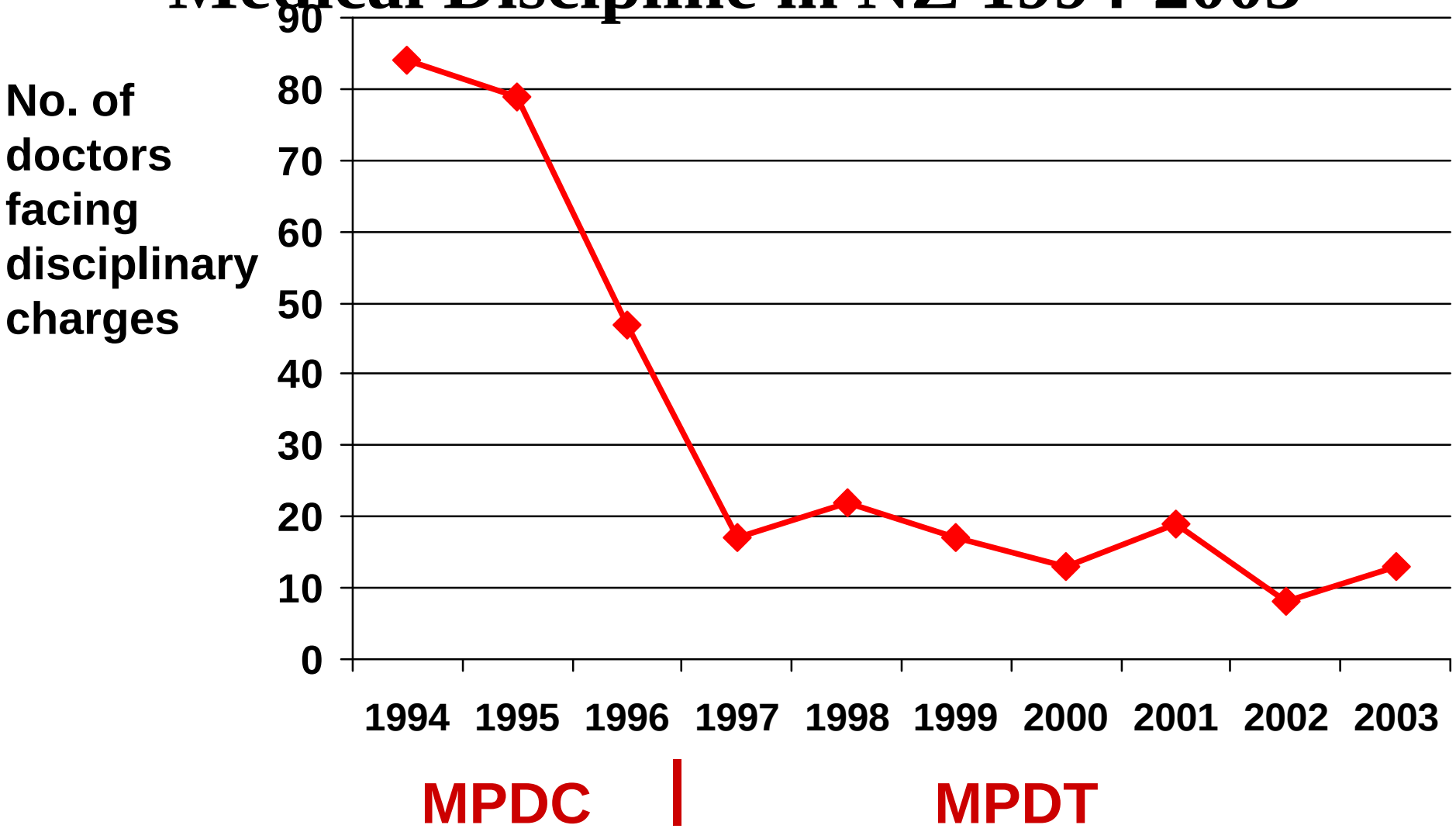
No greener pastures

"New Zealand remains the safest place in the world to practise medicine."

Professor Peter Skegg

1998, Medico-legal Conference, Wellington

Medical Discipline in NZ 1994-2003



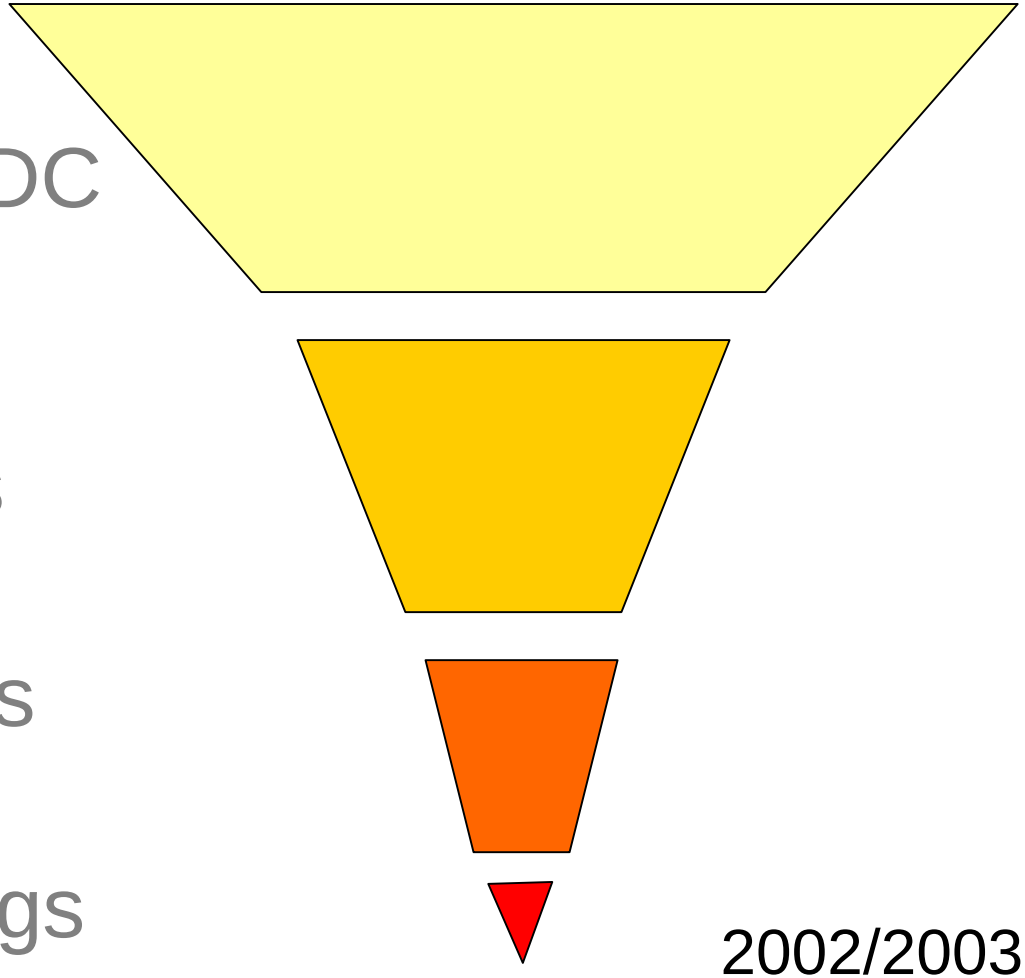
Few complaints about doctors end in discipline

714 complaints to HDC

337 investigations

106 breach findings

8 disciplinary hearings

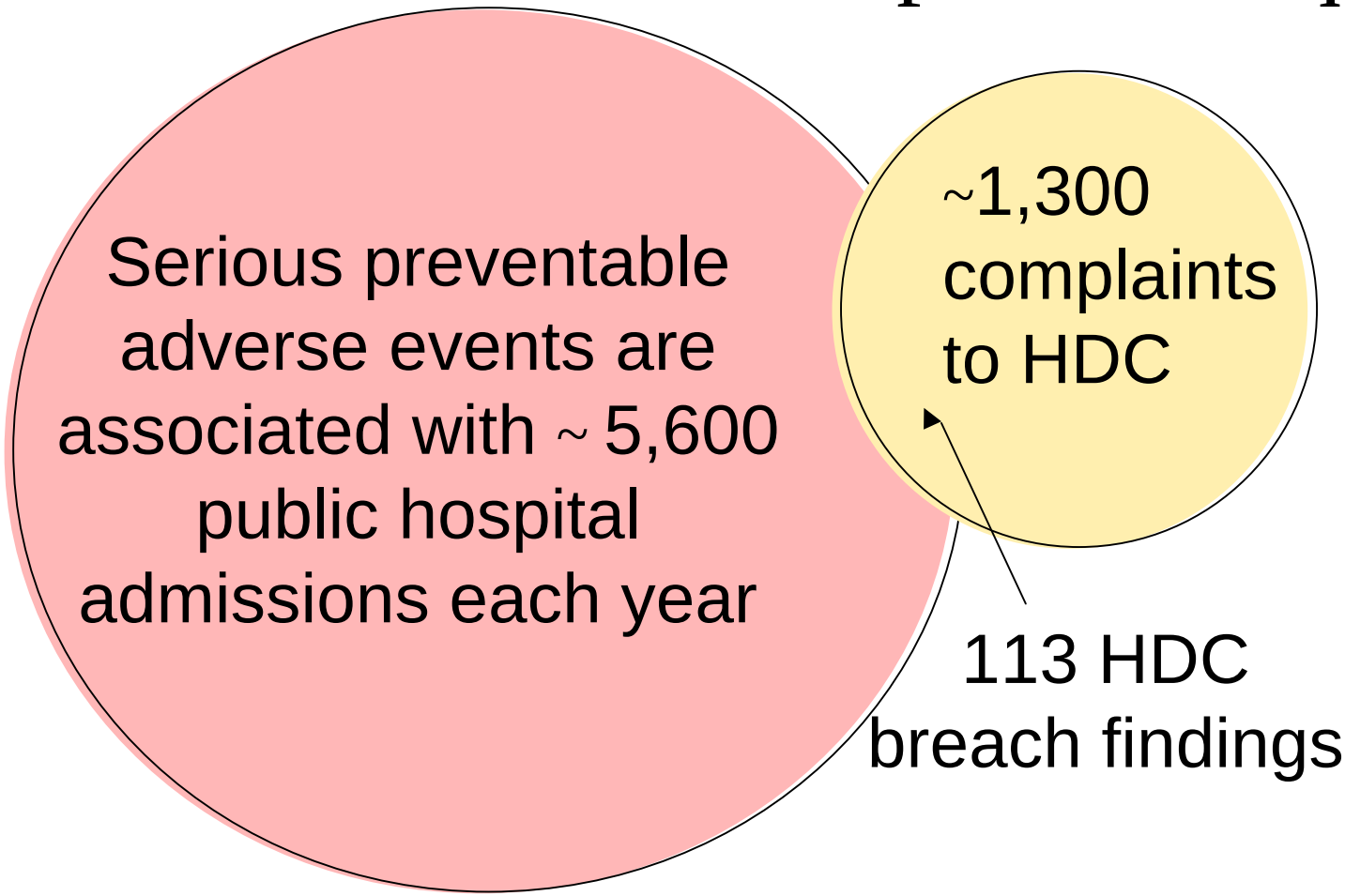


2002/2003

Code of Rights

- Ten rights cover quality of care
  - respect, dignity, fairness
  - appropriate standards
  - communication, informed choice, consent
  - support, complaints
- Consumers and providers widely defined

Link between complaints & quality



For every HDC finding of a breach of the Code, there are around 50 serious preventable adverse events associated with public hospital admissions alone

Overview

2) How does HDC investigate complaints?

Low-level resolution

- HDC supports low-level complaints resolution
- Many concerns resolved by enquiries staff
- Advocacy and mediation are often successful

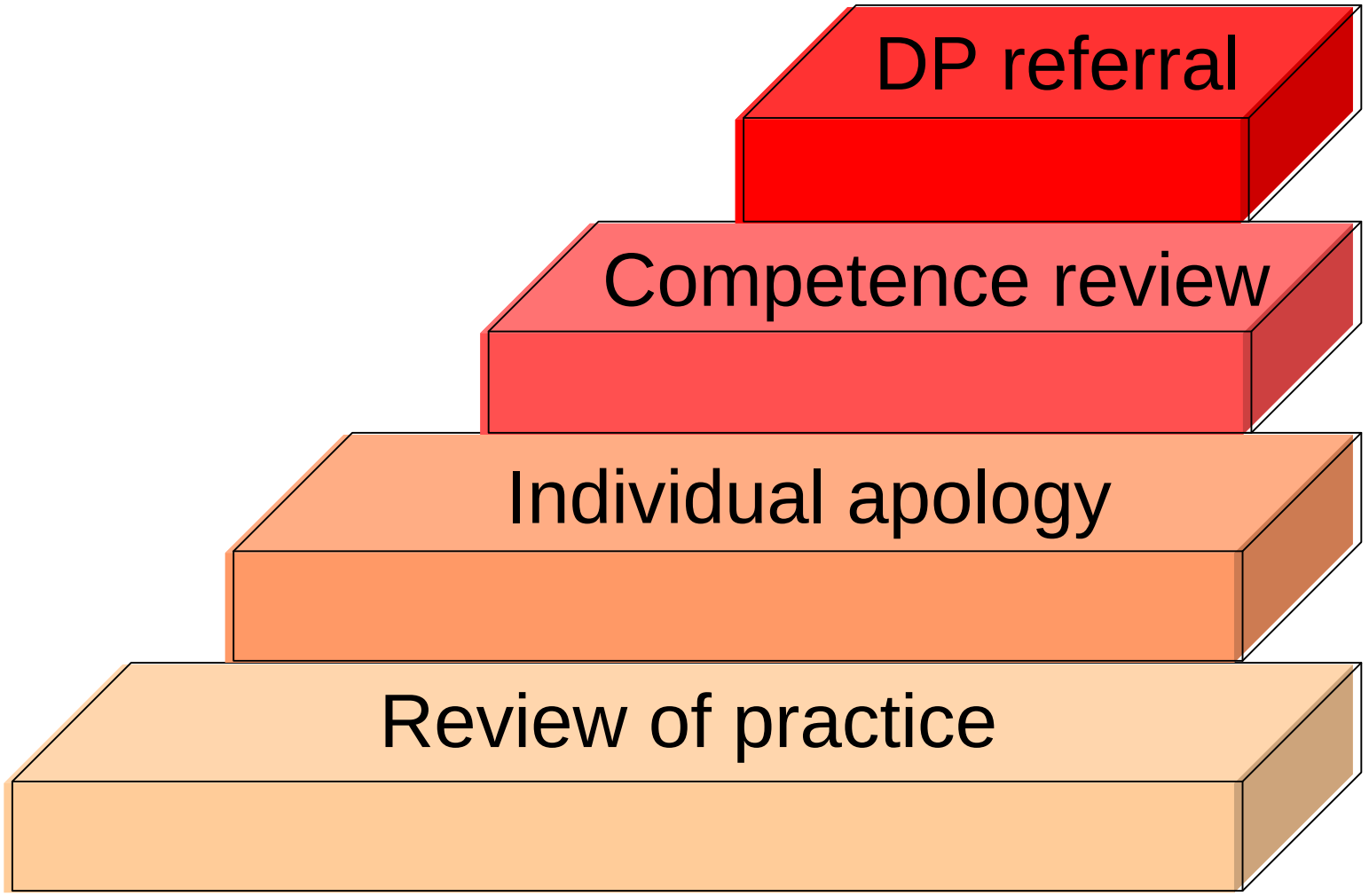
Investigation process

- Inquisitorial, not adversarial
- Independent and impartial
- Can examine systems issues

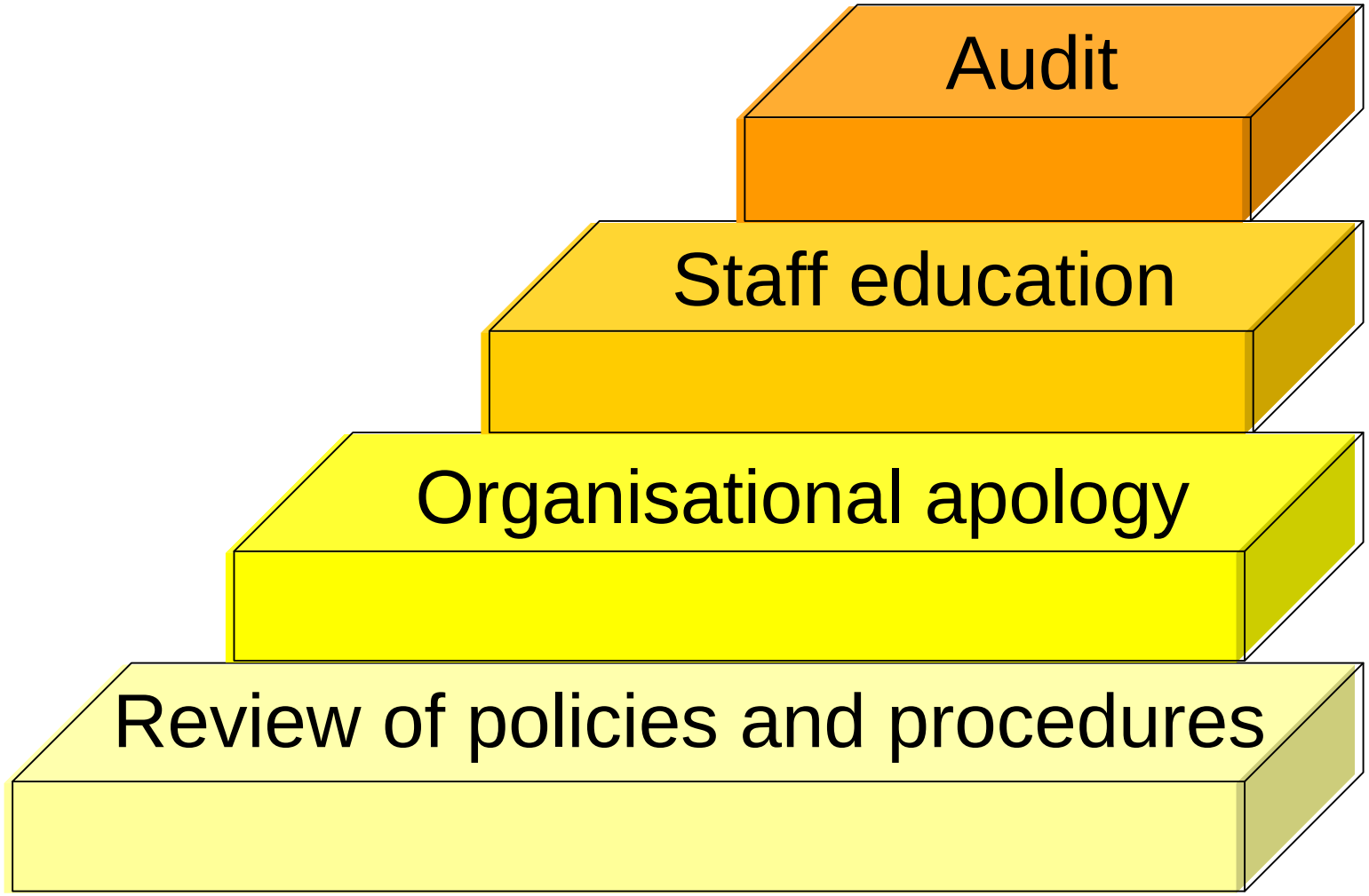
Overview

4) What sanctions are available?

Individual sanctions



Organisational sanctions



Dissemination of findings

Registration board

Professional colleges

Ministry of Health

District Health Board advisors

Other organisations, eg, ACC

HDC website: www.hdc.org.nz

The bottom line

New Zealand's 'no fault' compensation system is consistent with efforts to improve the quality of health care but needs to be complemented by a flexible and effective complaints system.

Peter Davis, Inaugural lecture, 2000

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Vignettes for practitioner error, quality improvement potential: case descriptions and likely "adjudication"

Practitioner error, minor impact, quality improvement potential

Brief case description: Extensive perineal and vaginal laceration during delivery of a big baby; no episiotomy.

Likely "adjudication": Investigate complaint. If expert advice indicates failure to provide services of an appropriate standard, find midwife in breach of the Code. Recommend the midwife apologise, review her practice, and possibly undertake a refresher course. Send opinion to the Nursing Council and the College of Midwives. Place anonymised copy of opinion on the Commissioner's website for educational purposes. Refer for consideration of disciplinary action if expert advice suggests a major departure from the appropriate standard of care.

Practitioner error, severe impact, quality improvement potential

Brief case description: Death in hospital from pulmonary embolism; patient with high-risk factors; over-reliance on negative leg ultrasound scan.

Likely "adjudication": Investigate complaint. If expert advice indicates failure to provide services of an appropriate standard, find provider/s in breach of the Code. Recommend provider/s apologise to the patient's family and review their practice. Send opinion to the Medical Council. Send anonymised copy of opinion to the Australasian College of Physicians and place on Commissioner's website for educational purposes. Refer for consideration of disciplinary action if expert advice suggests a major departure from the appropriate standard of care.

What patients want

- Admit fault
- Prevent recurrence
- Investigation
- Apology
- Make providers understand
- To be told what happened
- Attitude, money, quality, openness

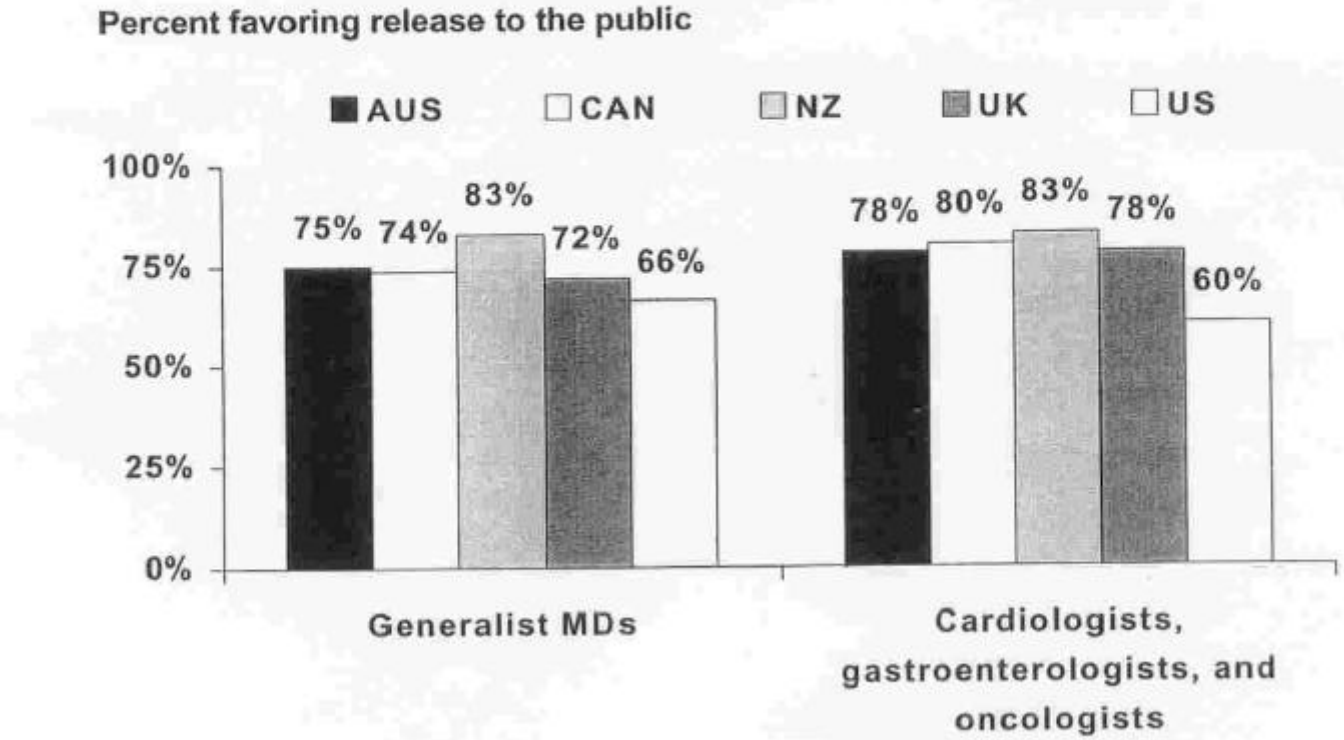
[Mulcahy, Disputing Doctors, 2003, p. 99]

Impact on Family Doctors

- More detailed record keeping
- More referrals to hospital
- Greater clinical vigilance
- More home, out-of-hours visits
- More diagnostic tests
- More advice sought
- More responsibility to patients
- Avoid certain patient types

[Allsop and Mulcahy, 1999, p. 136]

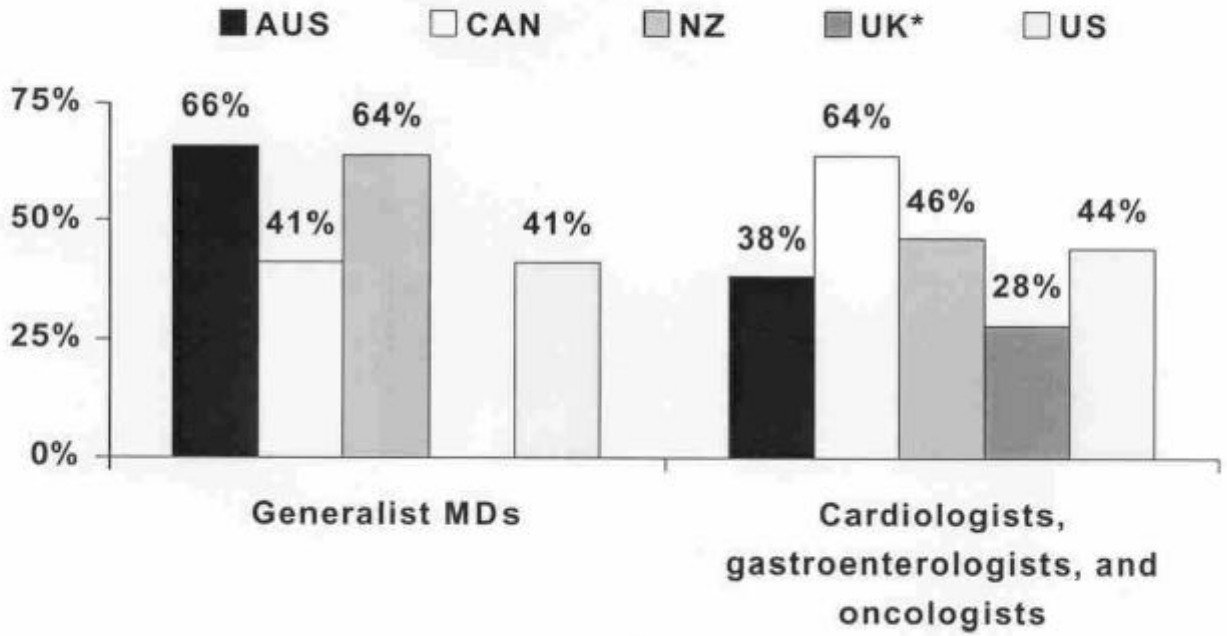
Release of Quality Information on Hospitals to the Public



Source: 2000 International Health Policy Survey of Physicians
Commonwealth Fund/Harvard/Harris

Reporting of Medical Errors

Percent who say hospital staff are discouraged or not encouraged to report medical errors



* Note: UK generalists typically are not in the hospital. Half skipped this question.

Source: 2000 International Health Policy Survey of Physicians
Commonwealth Fund/Harvard/Harris

Safety and Quality - Take-Home messages

- Safety (a sub-set of quality)
  - **NZ hospitals - safe and good quality**
  - **But - growing evidence of safety issues**
- Adverse events (significant burden)
  - **Many preventable, and systemic**
  - **Infection, drugs, IT - 3 key areas**
- Response underdeveloped
  - **Inadequate information systems**
  - **Professionalism and efficiency integral**
- ACC and H&DC give NZ an edge