Patient Safety:
Epidemiology of adverse events

To Err is Human

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Patient safety

- To learn
  - Key outcomes of published data on adverse events nationally and internationally
  - Epidemiology of paediatric patient safety
  - Definitions of harm

Medical expert, manager, advocate

PATIENT SAFETY

- Patient safety is the practice of medicine that prevents harm or injury to patients

Institute of Medicine Report

published 2000

44,000- 89,000 patients die yearly from adverse events

Equivalent to 1 jumbo jet going down every 2 days

25-50% are preventable

NATIONAL STEERING COMMITTEE ON PATIENT SAFETY
COMITÉ DIRECTEUR NATIONAL SUR LA SÉCURITÉ DES PATIENTS

Building a Safer System:

A National Integrated Strategy for Improving Patient Safety in Canadian Health Care

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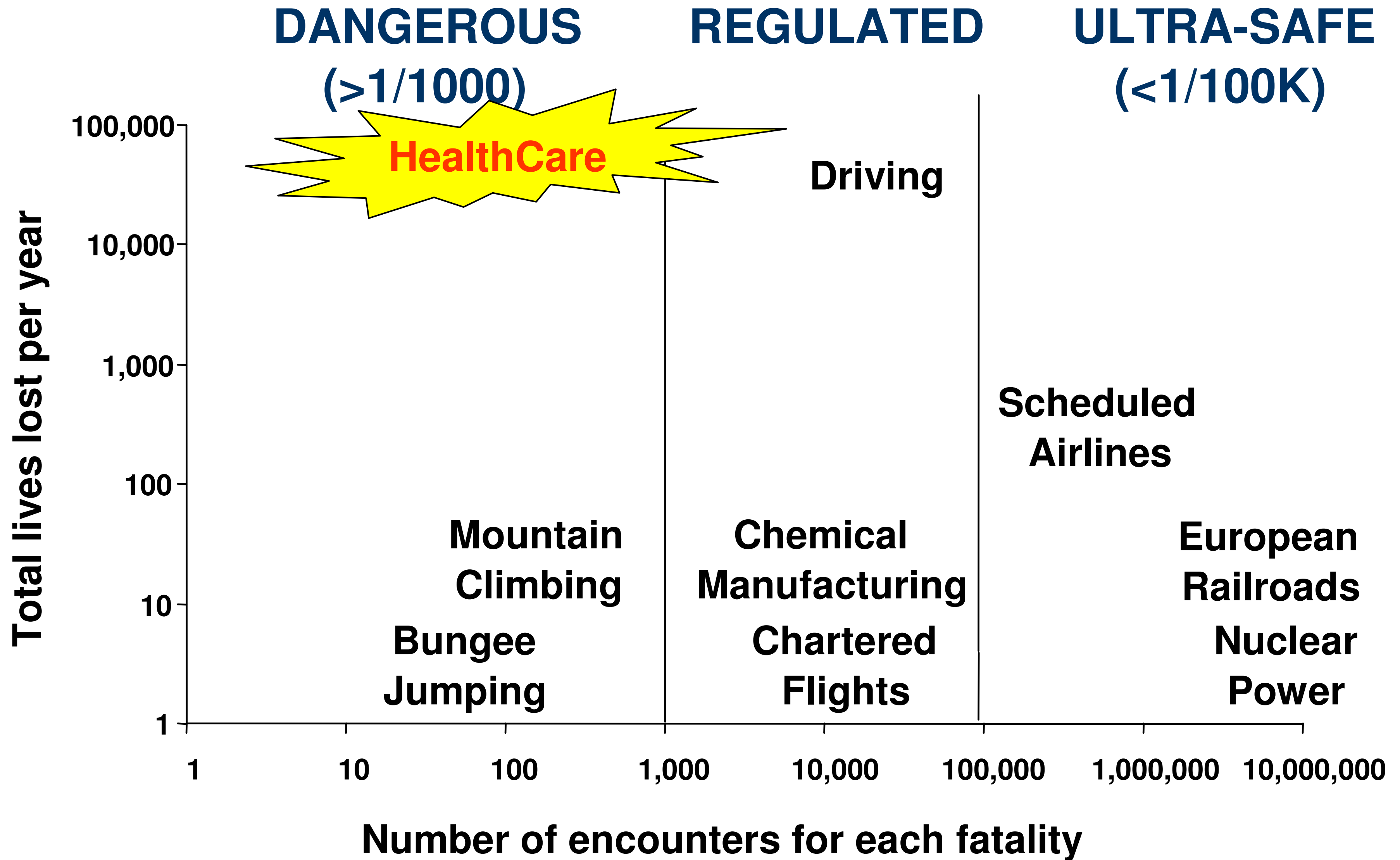
How Common Are Adverse Events?

Country	N	Year	Incidence of AE	Preventable?
Canada	3,745	2000	7.5%	37%
USA (U&C)	14,700	1992	2.9%	Not reported
Australia	14,179	1992	16.6%	51%
UK	1,014	1999	10.8%	48%
New Zealand	1,326	1998	12.9%	37%
USA (NY)	30,195	1984	3.7 %	Not reported

How Hazardous Is Healthcare?



Data on adverse events in Canada

The Canadian Adverse Events Study:

The incidence of adverse events among hospital patients in Canada

Baker GR et al CMAJ 2004; 170 (11): 1678-86

Data on adverse events in Canada

- Results
  - Adverse events were detected in 255 of 3745 charts
  - Adverse event rate was 7.5 per 100 hospital admissions
  - Events judged to be preventable occurred in 36.9% of patients with AEs
  - Death occurred in 20.8% of patients with AEs
  - AEs were associated with 1521 additional hospital days
  - Patients who had AEs were significantly older than those who did not

Baker GR et al The Canadian Adverse Events Study:
The Incidence of Adverse Events among Hospital Patients in Canada CMAJ 2004;170 (11): 1678-86

Etiology of adverse events

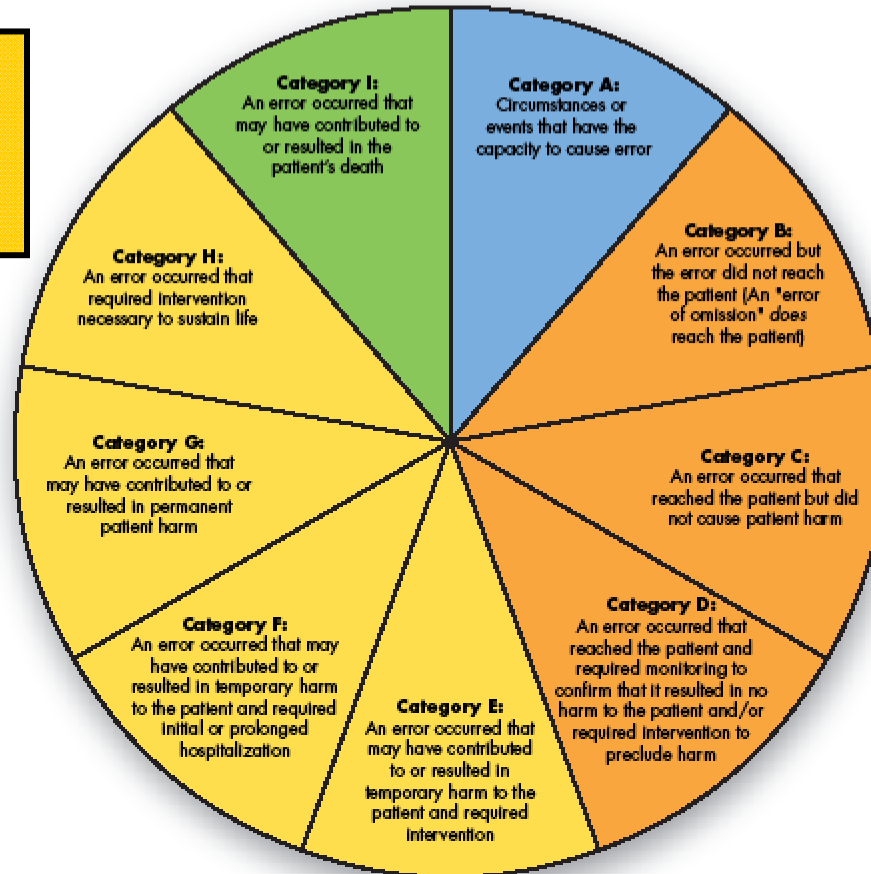
- Surgical Procedures: 33-50%
- Drug treatments
- Therapeutic mistakes
- Diagnostic errors

Data from New York (HMS), Australia and Canada

Definitions of Harm

NCC MERP Index for Categorizing Medication Errors

Serious Safety Event
Category G-I
Self reporting believed to be effective



- No Error
- Error, No Harm
- Error, Harm
- Error, Death

Definitions

Harm
Impairment of the physical, emotional, or psychological function or structure of the body and/or pain resulting therefrom.

Monitoring
To observe or record relevant physiological or psychological signs.

Intervention
May include change in therapy or active medical/surgical treatment.

Intervention Necessary to Sustain Life
Includes cardiovascular and respiratory support (e.g., CPR, defibrillation, intubation, etc.)

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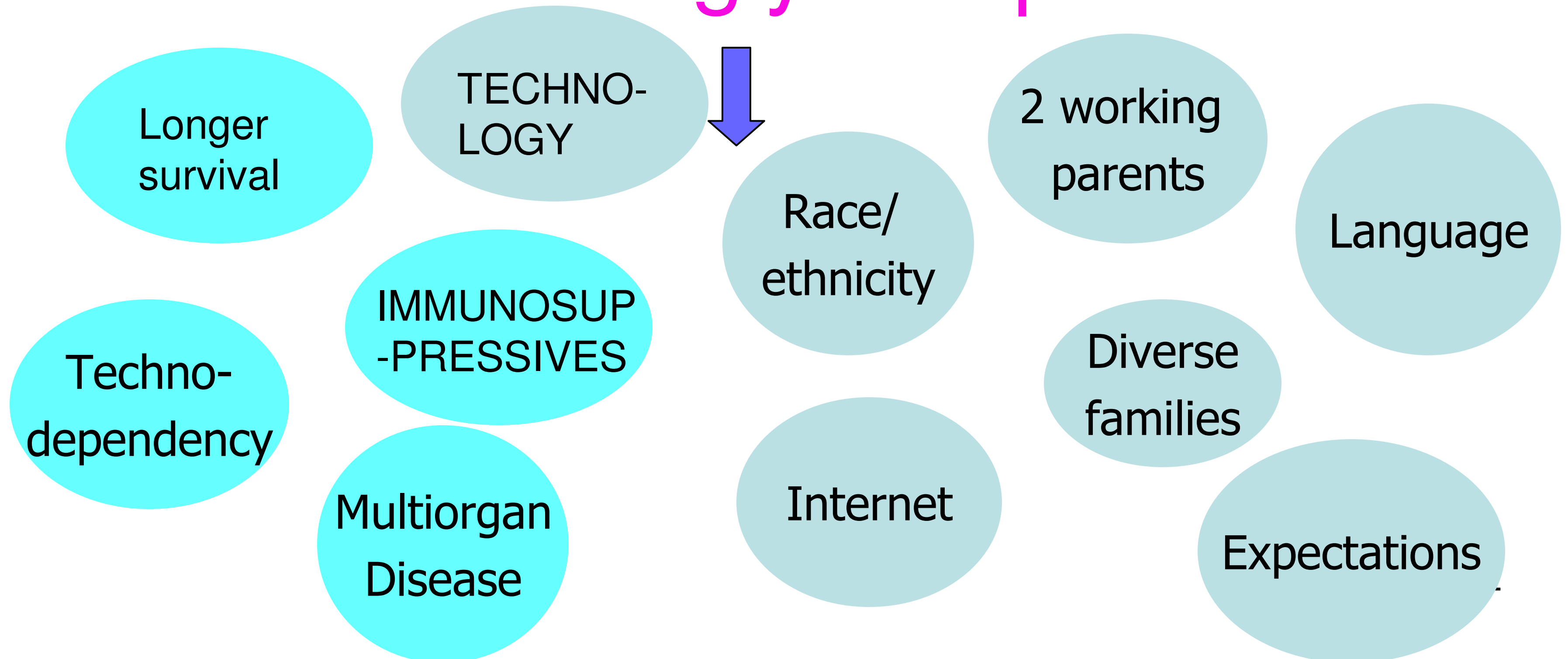
Adverse Event with harm
Category E-F
Self reporting believed to be 5-15% sensitive

4 D's of Pediatric Risk

diseases
developmental
dependency
dosing

Increasingly complex



What do we know about harm in pediatric in-patient care?

- All adverse events: ~1.0/ 100 patients

  (Woods Pediatrics 2005; Miller Pediatrics 2003 and 2004)

- Adverse drug events:
  - True: 2.3-11/ 100 admissions
  - Potential: ADE 10/ 100 admissions
  - 22-60% preventable

  (Kaushal JAMA 2001;Holdsworth APAM 2003; Takata IHI Annual Forum 2001)

- NICU: 74 AEs per 100 admissions
  - 56% preventable Sharek Pediatrics October 2006
- PICU: 59% of patients had at least 1 AE, 36% preventable

  Larsen Pediatric Critical Care Med 2007

Canadian Paediatric Trigger Tool Pilot Data

- 15% of patients had an AE
- 34 AEs/ 100 patients

	Adverse Event		
Age Group	Yes	No	Total
0 - 28 days	33 (22%)	117	150
29 – 365 days	21 (14%)	127	148
>1 - 5 years	54 (16%)	98	152
> 5 years	18 (10%)	160	178
Total	89 pat	502	591

Key messages

- Risk of harm exists in health care
- Children are no exception

Safety is a fundamental aspect of quality health care. To improve safety, the healthcare system must develop, maintain and nurture a culture of safety.

From Building a Safer System RCPSC September 2002