Resilient Health Care: The Way Forward

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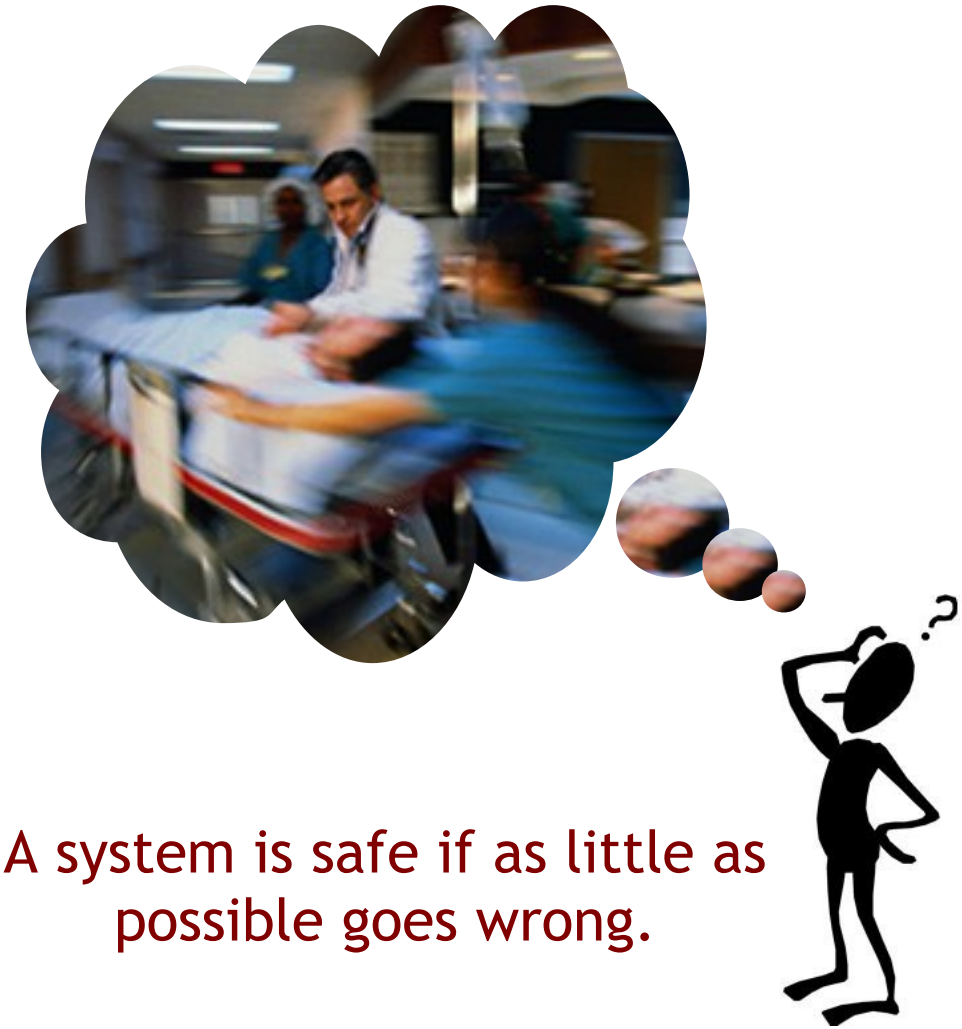
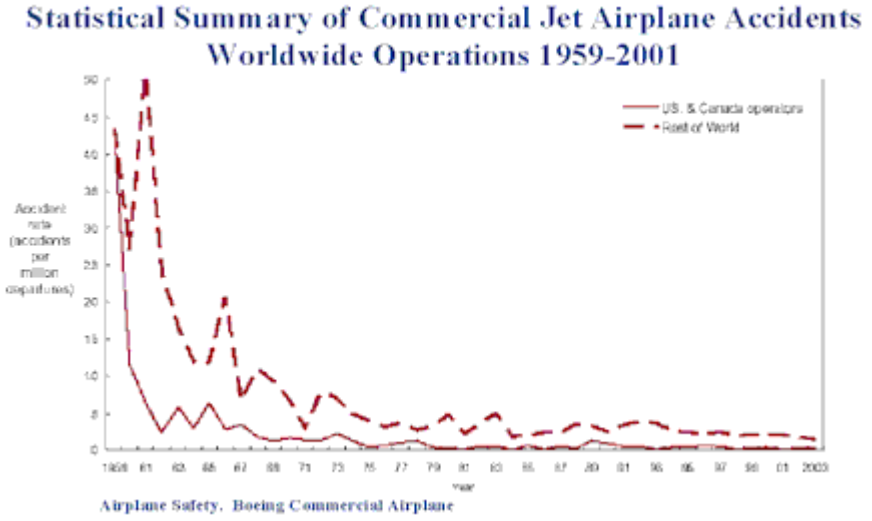
Thinking about safety

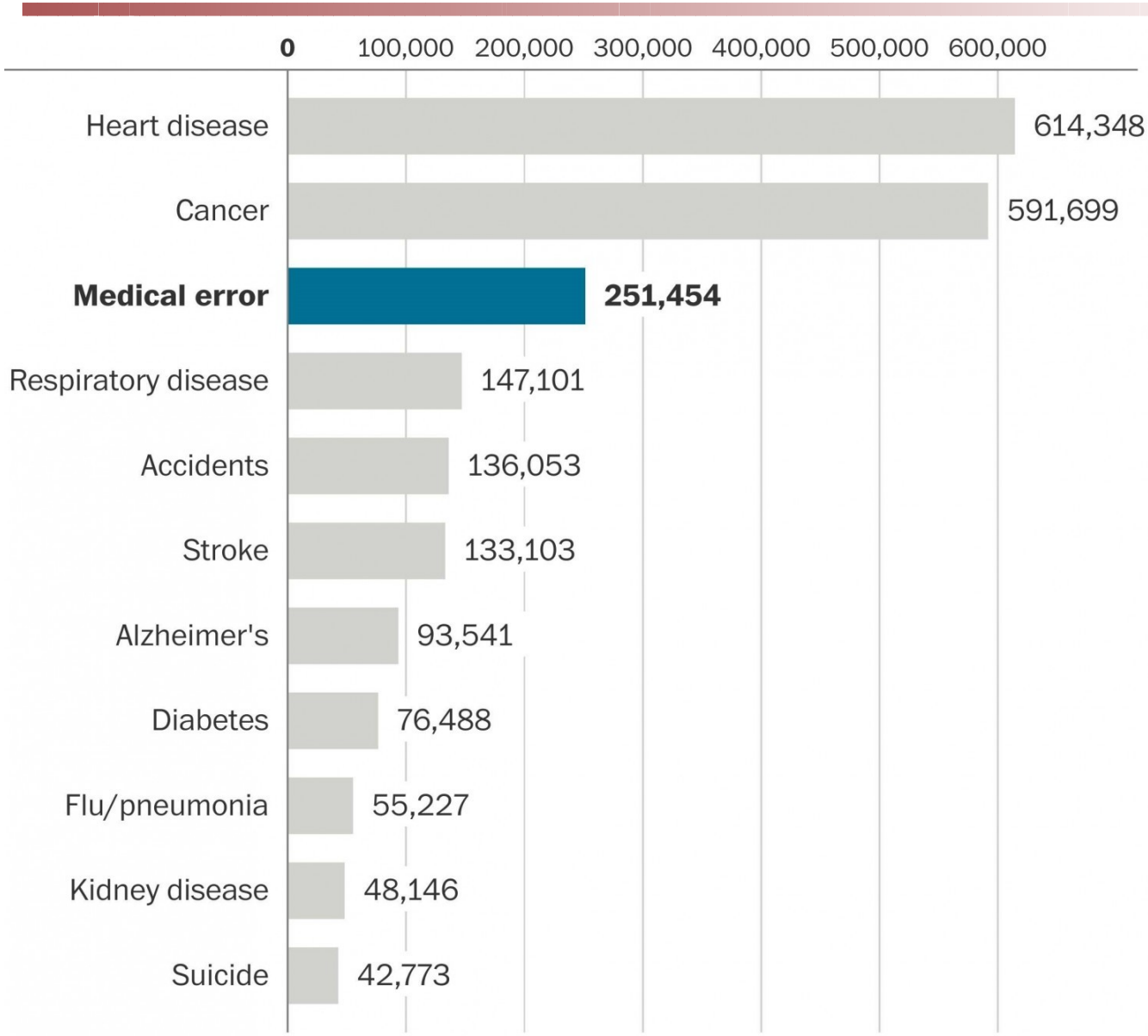


When we think about safety, we usually think about accidents – about (low probability) events with adverse outcomes.

A system is safe if as little as possible goes wrong.



Medical error: 3rd leading cause of death



Source: National Center for Health Statistics, BMJ

THE WASHINGTON POST

Johns Hopkins University researchers estimate that medical error is now the third leading cause of death in the USA (2000-2008).
251.000 lives per year or one 747 jet per day.

Struggling to keep pace

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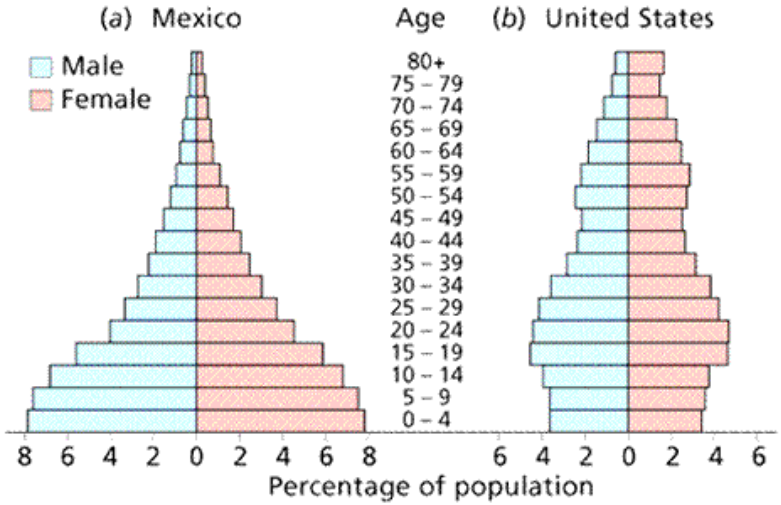
Rising demands: because of population ageing, because provision of care is increasingly intense and complicated due largely to inter-linked technological, diagnostic and therapeutic advances.



Performance pressure and workload: Ability to provide the right care to the right patient at the right time suffer from work pressures and increasing demands, made worse by workforce shortages and ageing staff.

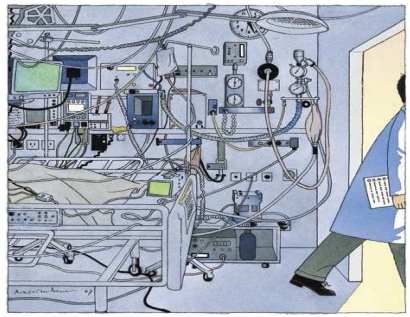
Rising costs: 2010 health care expenditure ranged from 6.28% of GDP in Mexico to 17.6% of GDP in the US. The OECD average was 9.5% – with 4% annual growth rate.

NASA's budget in 2011 was $18.4 billion. Cost of dialysis > $20 billion.

To be safe and to feel safe

A need to be safe

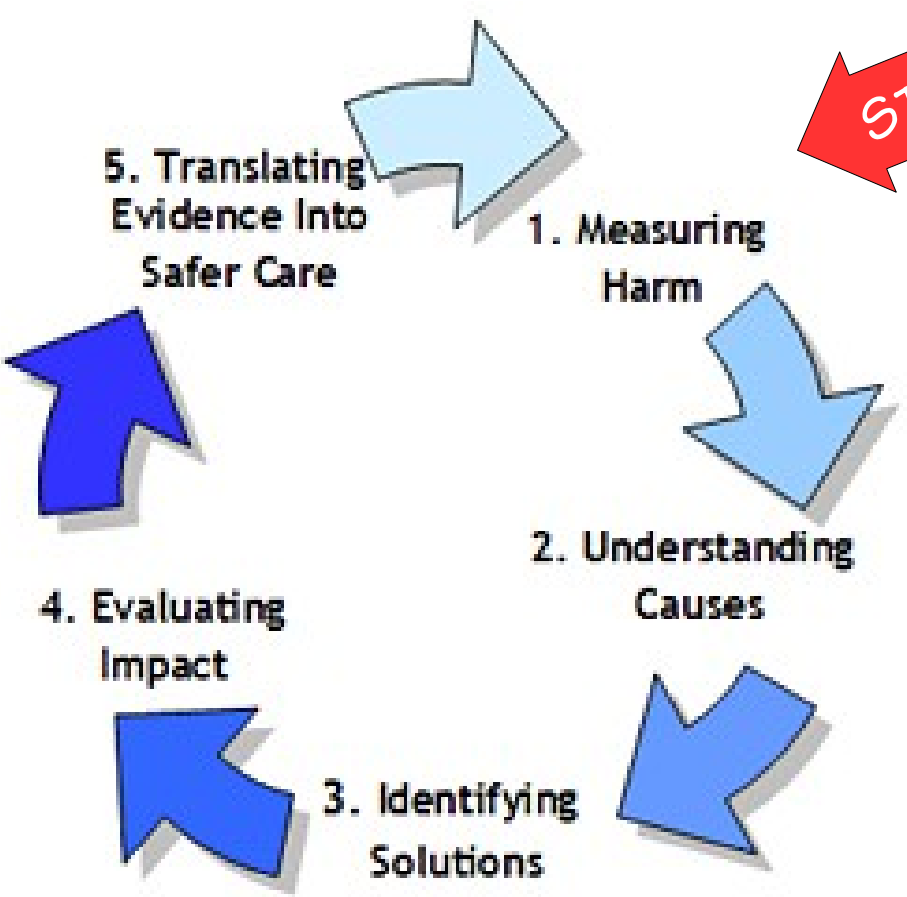
A need to feel safe



"Act of god" → Technical failure → Human factor → Organisational culture → Complex systems

The types of causes have changed over time, but we still believe in causality

Patient safety



Measuring what goes wrong in health care involves counting how many patients are harmed or killed and from what type of adverse events.

The next step is to understand the underlying causes that lead to patient harm. Because of the complex nature of health care, there is no single reason why things go wrong.

Increasing safety by reducing failures

Safety Synthesis

Function (work as imagined) → Success (no adverse events) → Acceptable outcomes

Hypothesis of different causes: Things that go right and things that go wrong happen in different ways and have different causes

Safety-I – when nothing goes wrong

Safety is a condition where the number of adverse outcomes (accidents / incidents / near misses) is as low as possible.

Safety-I is defined by its opposite – by the lack of safety (accidents, incidents, risks).

The premise for Safety-I is the need to understand why accidents happen.

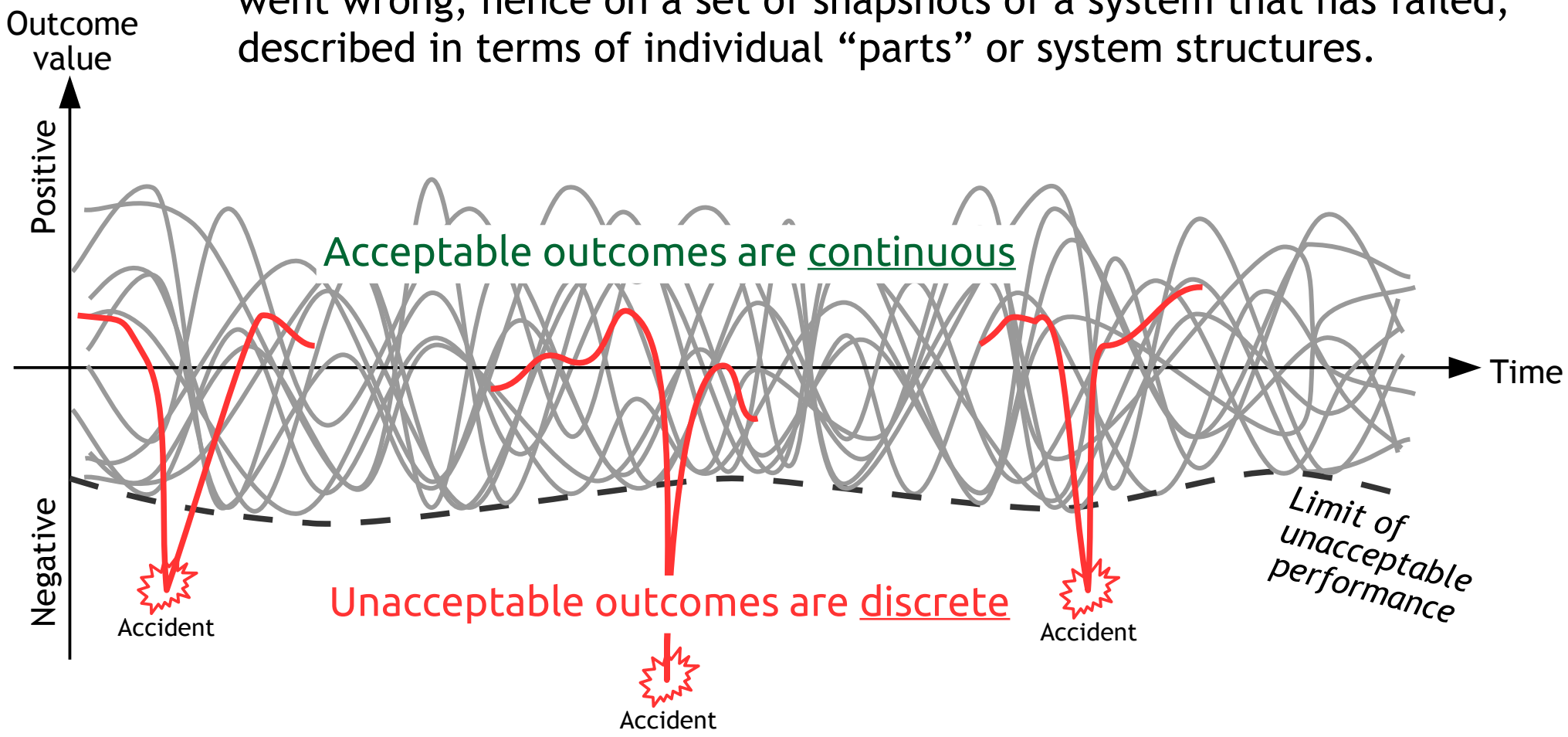
Accidents and incidents represent a lack of safety.

If we want something to increase, why do we use a proxy measure that decreases?

How can we learn about safety by studying situations where it isn't there?

Protective safety management

Safety management is based on analysing situations where something went wrong, hence on a set of snapshots of a system that has failed, described in terms of individual "parts" or system structures.



Managing safety by snapshots

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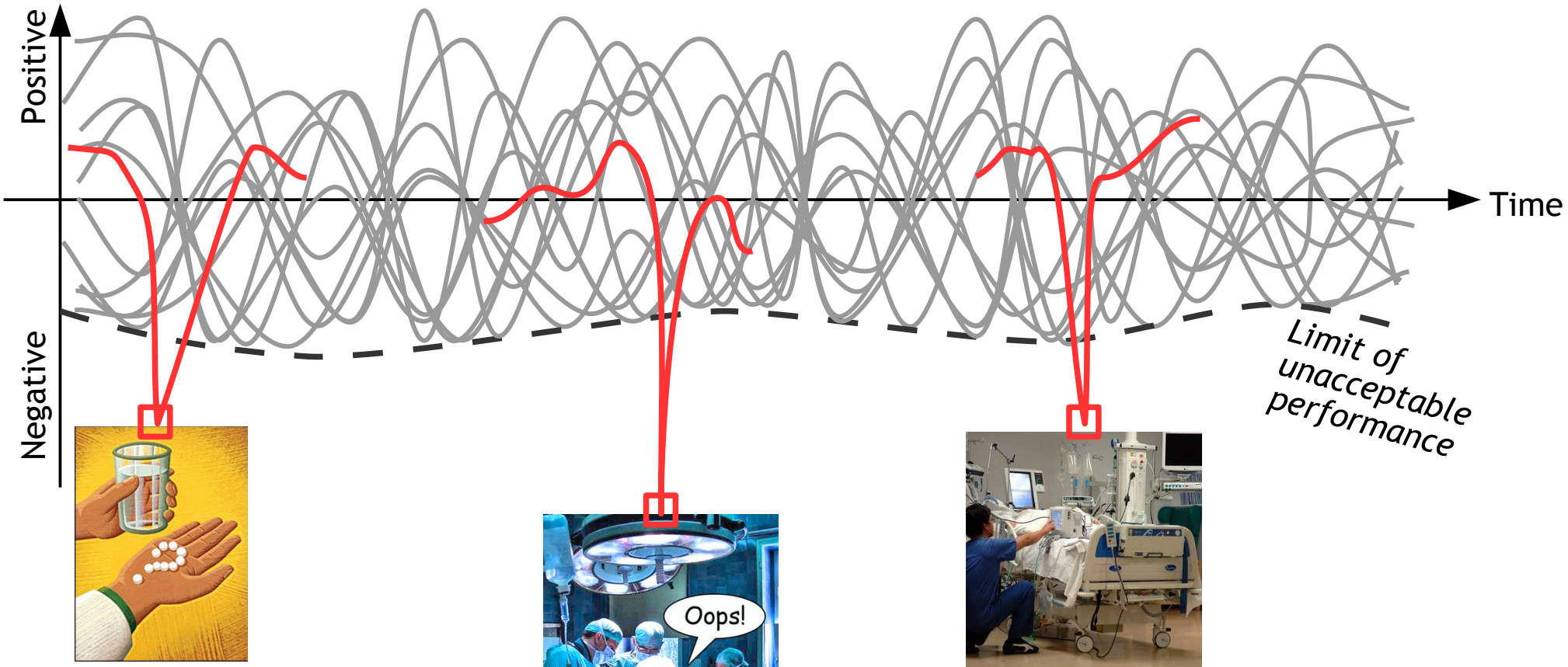


Harmful events attract attention. But they are rare and isolated.

Events are analysed step-by-step and part-by-part.
Prevention/responses are developed for each problem found.

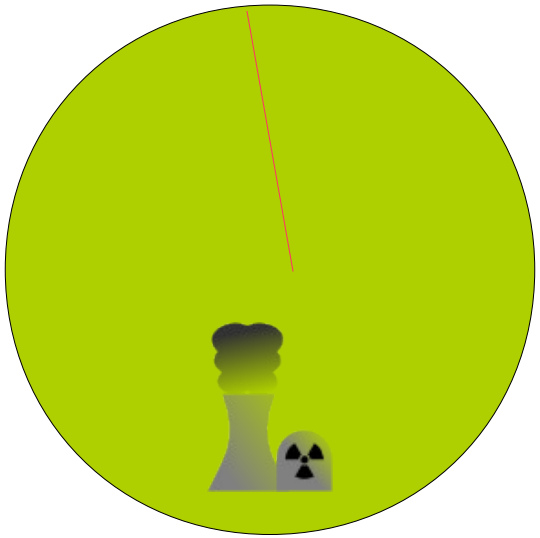
Various risks in practice

Likelihood of being in a fatal accident on a commercial flight.

1 : 7,000,000

1.4×10^{-7}

Core Damage Frequency for a nuclear reactor (per reactor year).



1 : 20,000

5.0×10^{-5}

Likelihood of iatrogenic harm when admitted to a hospital.

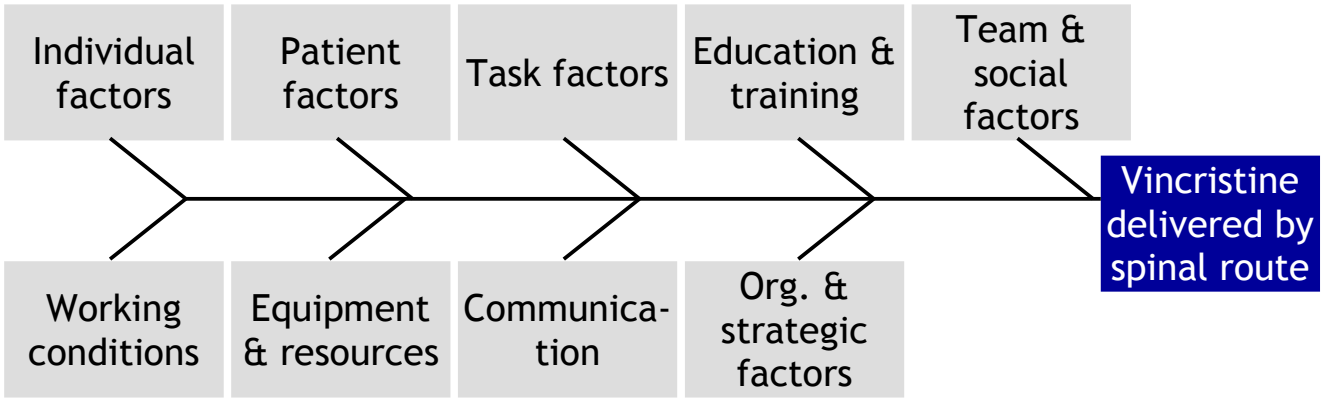
1 : 10

1.0×10^{-1}

Vincristine accidents

Vincristine should only be administered intravenously. Many patients also receive other medication via a spinal route as part of their treatment. This has led to errors (n=55) where vincristine has accidentally been administered via a spinal route.

ROOT CAUSE ANALYSIS



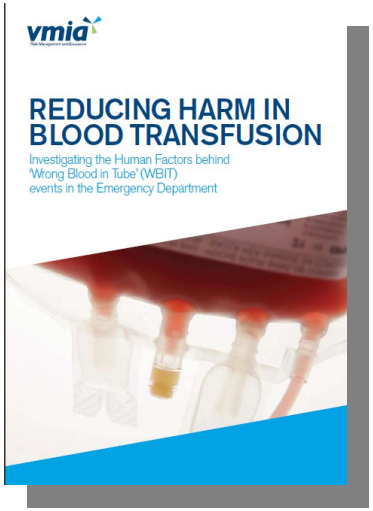
FACTORS CONTRIBUTING TO ERROR

standard operating procedures and guidelines;
ensuring valid and up-to-date training;
effective communication;
medication safety; and
patient engagement.

Wrong Blood in Tube (WBIT)

WBITs are estimated to occur at a rate of approximately 1 in 2.000 samples. Main causes are:

- labelling of sample tubes away from the bedside
- failure to check patient identity
- similar names (together with incorrect identity checks)
- use of pre-printed labels
- confusion of patient notes and/or request forms
- inaccurate verbal instructions/no request form



Environment	(3 recommendations)
Staff	(9 recommendations)
Equipment	(12 recommendations)
Patient	(2 recommendations)
Procedure	(6 recommendations)
Culture	(8 recommendations)

Altogether 40 recommendations.

www.vmia.vic.gov.au

(These recommendations) will provide input for those responsible for reducing errors related to mislabelling and miscollection of blood samples.
The implementation … should be considered in the broader context of the organisational culture of Australian healthcare.

What should we be looking for?

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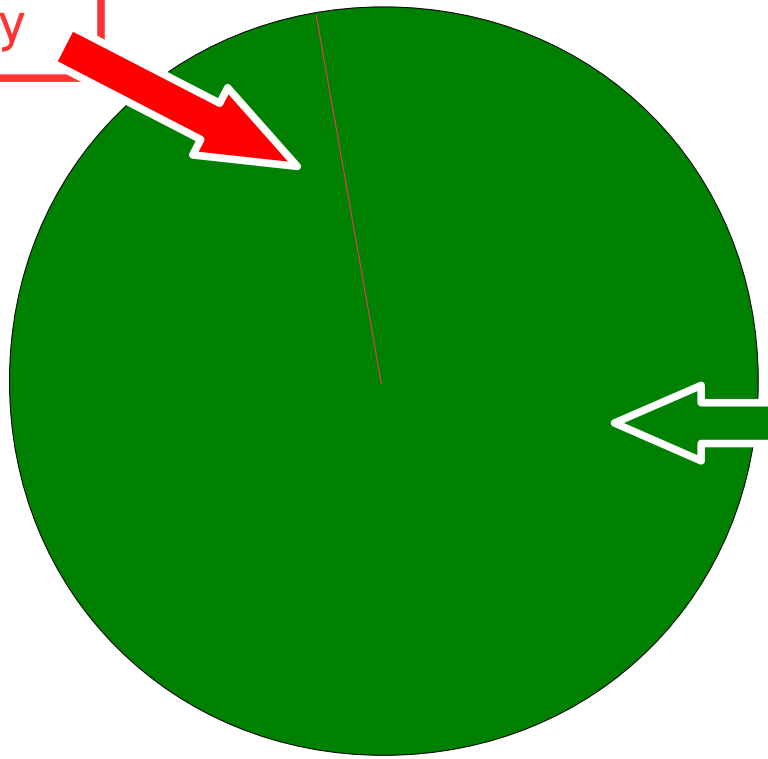
10^{-4} := 1 failure in 10.000 events

Adverse outcomes =
Absence of safety

Easy to see
Complicated aetiology
Difficult to change
Difficult to manage



'Difficult' to see
Uncomplicated aetiology
Easy to change
Easy to manage

Intended outcomes =
Presence of safety

1 - 10^{-4} := 9.999 "successes"
in 10.000 events

Why don't people bump into each other?

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When we move in a crowd, we continuously adjust to what other people do.

Just as others continuously adjust to what we do – or will do.

Everyday clinical work must be flexible

Resources (time, manpower, materials, information, etc.) may be limited and uncertain.

People adjust what they do to match the situation.

Performance variability is inevitable, ubiquitous, and necessary.

Because of resource limitations, performance adjustments will always be approximate.

Performance variability is the reason why everyday work is safe and effective.

Performance variability is the reason why things sometimes go wrong.

"Work-as-imagined" and "work-as-done"

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Design (tools, roles, environment)

Work-As-Imagined

Work & production planning ("lean" - optimisation)

Work-As-Imagined

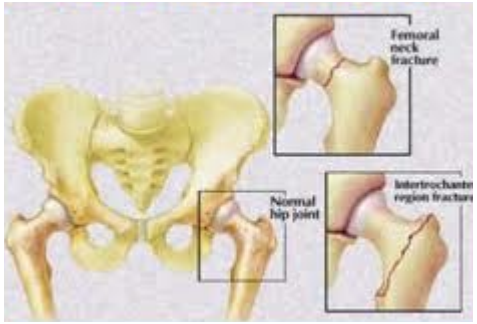
Safety management, investigations & auditing

Work-As-Imagined

Work as imagined – follow the rules!

Box 1: Professional bodies and national agencies who publish guidelines for anaesthetists

- Association of Anaesthetists of Great Britain and Ireland
- Academy of Medical Royal Colleges
- Association of Cardiac Anaesthetists
- Association of Paediatric Anaesthetists
- British Association of Day Surgery
- *British National Formulary*
- British Pain Society
- Department of Health
- Difficult Airway Society
- European Society of Anaesthesiology
- Faculty of Pain Medicine
- General Medical Council
- Health and Safety Executive
- Intensive Care Society
- Medicines and Healthcare Products Regulation Authority
- National Patient Safety Agency
- National Institute for Health and Clinical Excellence
- Obstetric Anaesthetists Association
- Resuscitation Council (UK)
- Royal College of Anaesthetists
- Scottish Intercollegiate Guidelines Network



Emergency surgery on a fractured neck of femur involves app. 75 clinical guidelines and policies.

UK Government guideline on "Working Together to Safeguard Children" is 390 pages long!

Carthey et al (2011). Breaking the rules: understanding non-compliance with policies and guidelines. BMJ

Medication's 30-minute rule

The "30-minute rule" is a requirement in the Centers for Medicare & Medicaid Services (CMS) Conditions of Participation Interpretive Guidelines to administer scheduled medications within 30 minutes before or after the scheduled time.

Responses from 17,500 front-line nurses (USA) showed that most nurses felt that the 30-minute rule was unsafe, unrealistic, impractical, and virtually impossible to follow. For 70% of the nurses, their organization enforces the 30-minute rule. Of these nurses, only 5% were always able to comply with the policy, while 59% were infrequently or only sometimes compliant.

For paper Medication Administration Record systems, nurses often initial the medication entry or document the drug as being administered at the scheduled time, not the actual time.
For eMAR systems, many nurses documented drug administration at the scheduled time, not the actual time.

Work as imagined – follow the rules!

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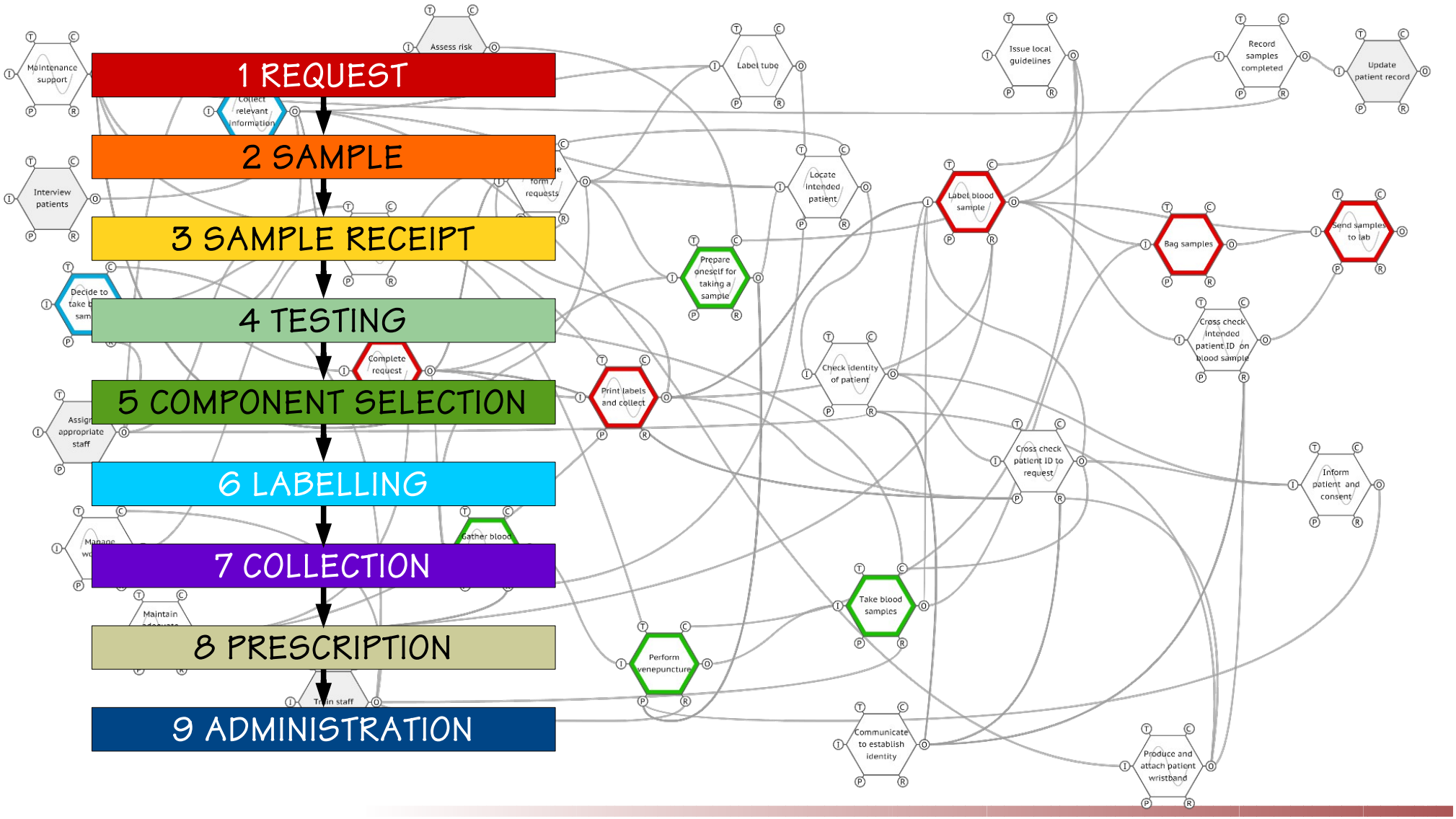
CMS.gov
Centers for Medicare & Medicaid Services

State Operations Manual
Appendix A - Survey Protocol,
Regulations and Interpretive Guidelines for Hospitals

Survey Protocol - Introduction
(Rev. 37, Issued: 10-17-08; Effective/Implementation Date: 10-17-08)
Hospitals are required to be in compliance with the Federal requirements set forth in The Medicare Conditions of Participation (CoP) in order to receive Medicare/Medicaid payment. The goal of a hospital survey is to determine if the hospital is in compliance with the CoP set forth at 42 CFR Part 482. Also, where appropriate, the hospital must be in compliance with the PPS exclusionary criteria at 42 CFR 412.20 Subpart B and the swing-bed requirements at 42 CFR 482.66.
Certification of hospital compliance with the CoP is accomplished through observations, interviews, and document/record reviews. The survey process focuses on a hospital's performance of patient - focused and organizational functions and processes. The hospital survey is the means used to assess compliance with Federal health, safety, and quality standards that will assure that the beneficiary receives safe, quality care and services.

Internet Only Manual (IOM)
Contains 1164 'Regulations and Interpretive Guidelines' on 457 pages.

Blood transfusion: WAI ≠ WAD



What happens when work is interrupted?

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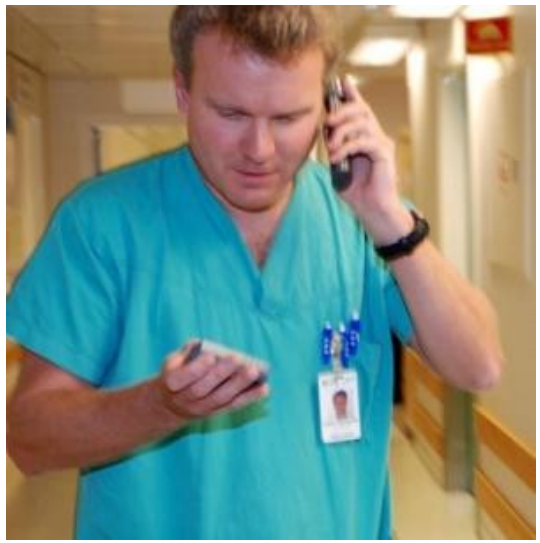
In an Australian study 210 hours of observation (131 sessions) found the following:



Doctors were interrupted 6.6 times/h.

11% of all tasks were interrupted, 3.3% more than once.

Doctors multitasked for 12.8% of time.

The mean TOT was 1:26 min. Interruptions were associated with a significant increase in TOT. When accounting for length-biased sampling, interrupted tasks were unexpectedly completed in a shorter time than uninterrupted tasks.

Doctors failed to return to 18.5% of interrupted tasks.

Average task time (min) for Emergency physicians	
Direct care	2.88 (2.34 to 3.42)
Indirect care	1.44 (1.29 to 1.60)
Professional communication	0.99 (0.90 to 1.09)
Documentation	2.28 (1.74 to 2.81)

Westbrook, J. I. et al. (2010). The impact of interruptions on clinical task completion. Qual Saf Health Care, 19(4).

How are adjustments made?

AVOID

anything that may have negative consequences for yourself, your group, or organisation

MAINTAIN/CREATE

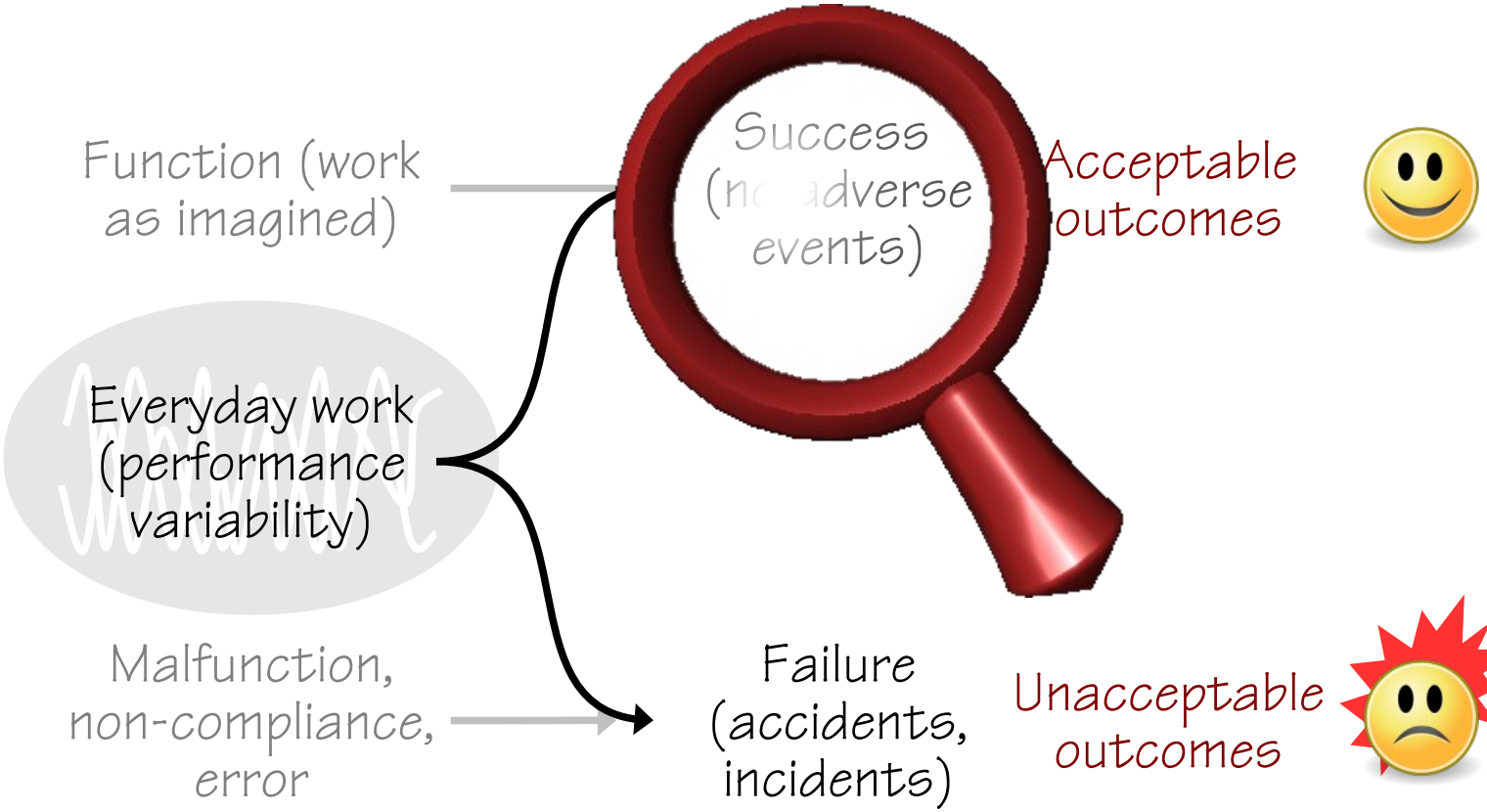
conditions that are necessary to carry out the work.

COMPENSATE FOR

conditions that makes work difficult or impossible.

Increase safety by doing things right

Safety must be begin by understanding the variability of everyday performance.



Constraining performance variability to remove failures will also remove successful everyday work.

Safety II – when everything goes right

Safety-II: Safety is a condition where the number of successful outcomes (meaning everyday work) is as high as possible. It is the ability to succeed under varying conditions.

Safety-II is achieved by trying to make sure that things go right, rather than by preventing them from going wrong.

Safety is defined by its presence.

→

The focus is on everyday situations where things go right – as they should.

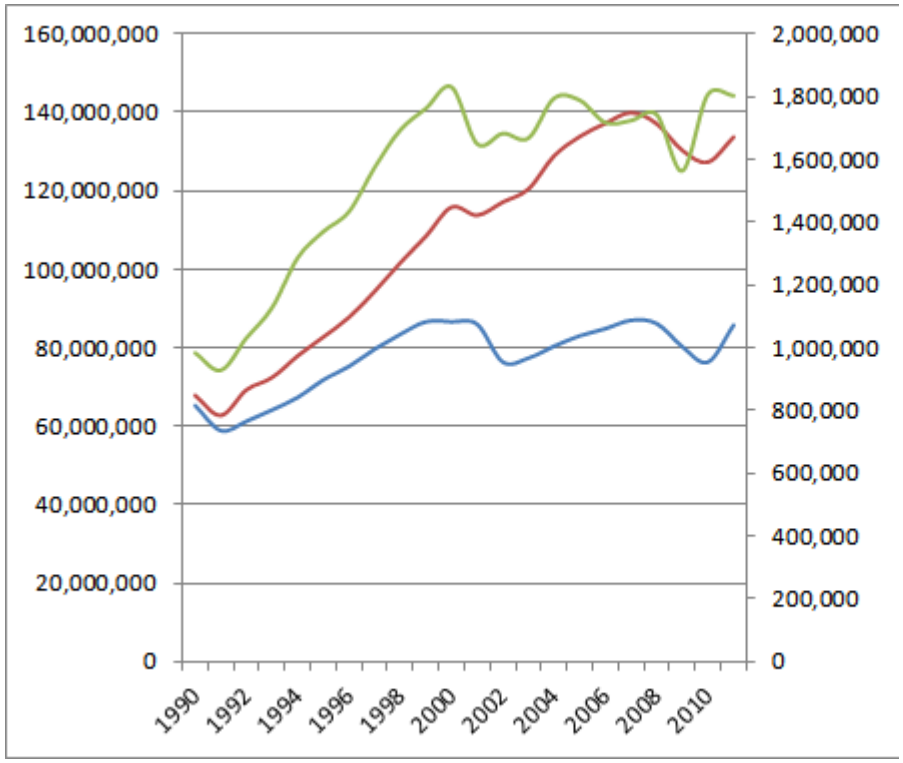
Health is 'a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity'.

"Safety" is the ability of an organisation to sustain required operations under both expected and unexpected conditions.

Thinking about safety

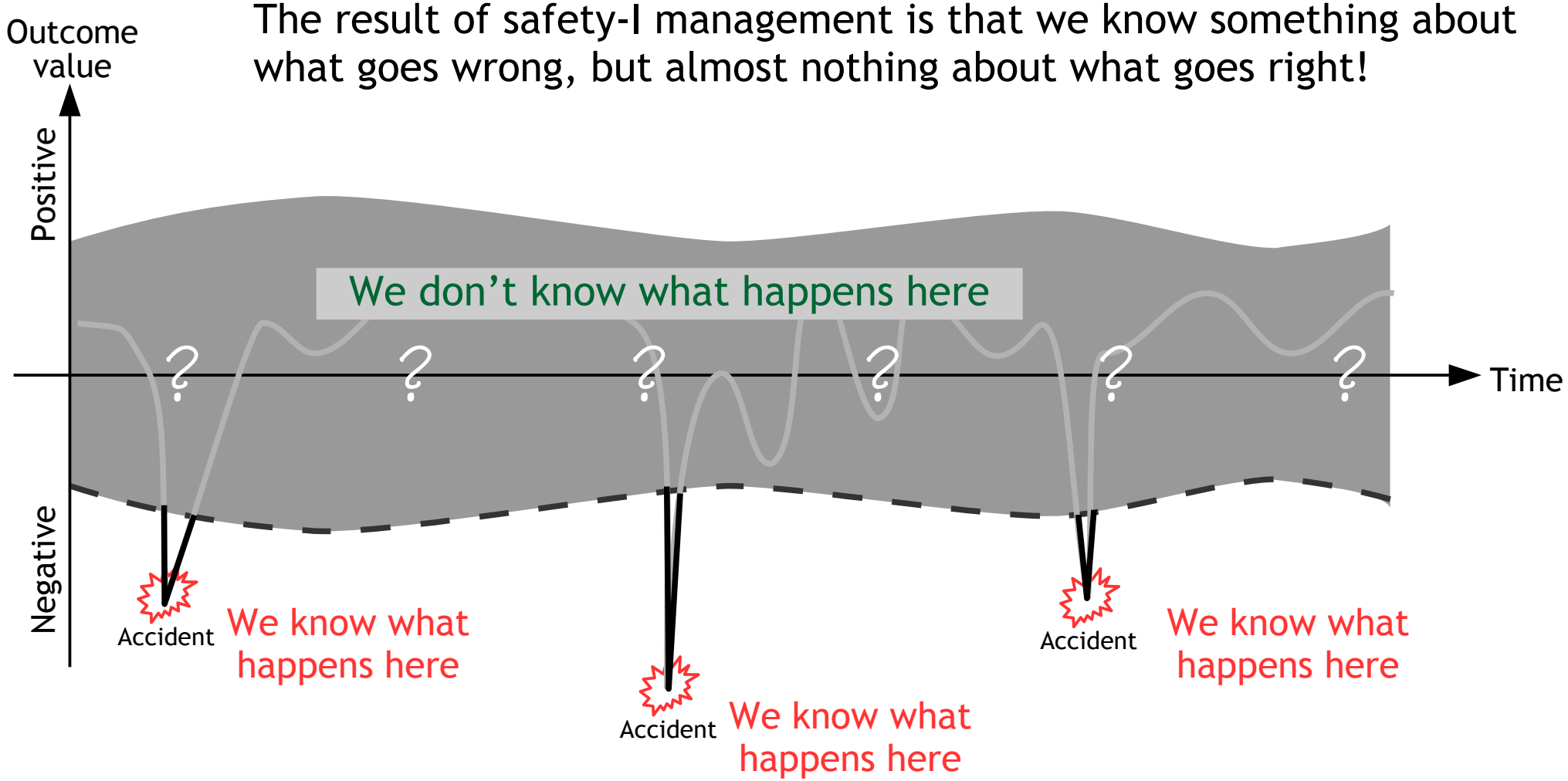
A system is safe if as much as possible goes right.

We should think about safety in terms of how many things go well and how frequently we succeed.



Do we really know how the system works?

The result of safety-I management is that we know something about what goes wrong, but almost nothing about what goes right!



What should we care about?

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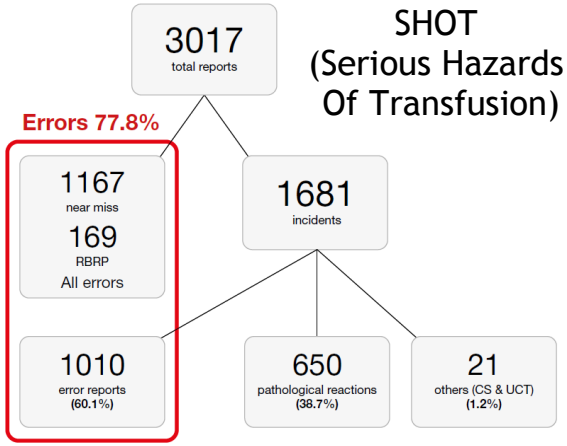
Care about what happens all the time rather than what happens rarely.

The numerator is how many there are of a type of event – accidents, incidents, etc. This number is known (with some uncertainty)



Numerator

We always count the number of times something goes wrong. We analyse the rare events.

Denominator

The denominator is how many cases something went well. This number is usually unknown.

We rarely count the number of times something goes well. We need to understand the common events.

What should we be looking for?

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Look for ‘work-as-done’ - the habitual adjustments and why they are made

In order to understand WHY this happened …

How do people create and maintain good working conditions?

How do people compensate for what is missing?

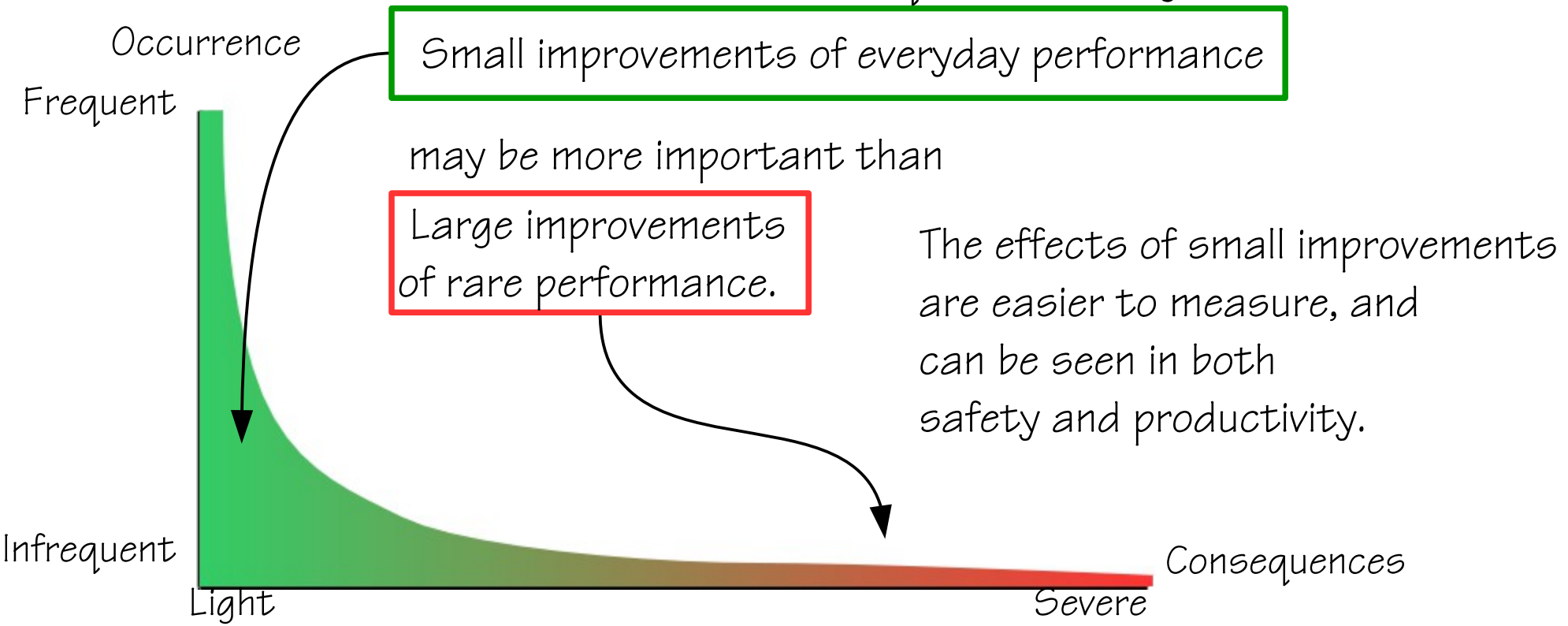
How do people prevent and avoid future problems?

… we need to understand HOW this happens!

When we notice something that has gone wrong … → … it is a safe bet that it has gone right many times before … → … and that it will go right many times in the future.

What should we learn from?

It is easier to learn from that which is frequent (and regular) than for that which is infrequent and irregular.



Adverse outcomes are more likely to be the result of usual actions under unusual conditions, than unusual actions under usual conditions.

Towards resilient health care

Safety-I:
No “lack of safety”

Prevent, eliminate, constrain.
Safety, quality, etc. are different and require different measures and methods.

Safety-II:
Resilient safety management

Support, augment, facilitate.
Safety, quality, etc. are inseparable and need matching measures and methods.

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