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Review Article

Still Unsafe Human Error New Prospective

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Abstract

The concept of human "error" was central to patient safety rise to prominence.

Unfortunately, health care developed only a very limited understanding of complex body of work that itself has been evolving over time.

Its limited view was characterized by a pair of ideas.

First: The rational deliberation was not only fundamental but also normative. [Means the best way to perceive the world and choose actions in it]. This was accompanied by a metaphorical view of the mind as an information-processing computer.

Second: The human beings are typically not very good at rational thinking, they are fundamentally flawed as information processors.

Exploring the development of the concept of "error" demonstrates the narrowness of patient safety understanding.

Keywords: *Error; Patient Safety; Flawed*

Introduction

What is patient safety?

It is the avoidance, prevention and amelioration of adverse outcomes, or injuries stemming from the process of health care.

What is the adverse event?

It is an unexpected medical problem, that happens during the patient treatment. Apart from a disease complications. But be careful that not all adverse events are due to medical error and so preventable.

Example: Patient with no history of allergy to any drug, develop urticarial rash after taking amoxicillin.

Health care organizations are considered as complex systems.

So, what is a complex system?

It is

1. A specialized, interdependent system.
2. A non linear system (means that small changes can lead to big effects).
3. Unpredictable.
4. Tightly coupled: means no buffer between actions and difficult to change.

Example: "One action quickly give rise to other action".

Discussion

There are a 3 views of human error.

Psychological views

Human reasoning is fundamentally flawed.

Question: Whether there are more words that begin with "r" "rabbit" or that have "r" as their third letter. "Tired".

[Heuristic shortcut] depends on the availability of information would produce the answer of more words beginning with "r" while in reality (from tedious dictionary) there are actually more words whose third letter is "r" so the intuitive answer is wrong while the calculated answer is correct.

Human incompetence: People have a list of decision flaws so lengthy it would demoralize Solomon.

Conclusion: Heuristic and biases call attention to flaws and failures of those creating errors whose judgement is in question.

Hindsight and outcome bias: The more unlikely the event was, or the more serious the outcome → the greater the bias.

Hindsight bias call attention to imperfections in observer's abilities to understand those perhaps unforeseeable failures and ultimately led to the view in the safety sciences that performance cannot be understood, much less judged apart from its context.

Sociological views

Technical and judgmental errors could be forgiven if not repeated.

Like delayed recognition of internal hemorrhage or inexpert dissection [were considered normal in surgical work and addressable through education and exhortation].

But normative errors were in excusable because they reflected on the character of the agent.

Like saying [the laboratory test had been ordered, when it actually hadn't].

Carried a moral burden that couldn't be tolerated.

Paget argued that things go wrong in medical work as a matter of course (_) but that mistakes only become apparent as events unfold. Saying "An act isn't a mistake, it becomes a mistaken".

A non-trivial frequency of medical mistakes was by now fairly common knowledge.

In this view we essentially replacing trust-based control of professional work with hierarchical control of bureaucratic work.

James Scotts said that most revolutions end by creating a regime more powerful and oppressive than the ones they overthrew.

Organizational view

Hospitals is a complex working system, so that approach toward accidents and safety are moved from linear models "causal chain of events" to view an accident as emerging from the interaction of a multitude of events, process and relationship in a complex system.

So, we shifted form the focus on eliminating error to enhancing adaptive capabilities.

Nick Pidgeon: Analyze a series of large-scale disasters and found that they originated not so much in the mistakes of frontline workers, but rather in those of the higher-ups-managers and senior leaders who misunderstood, ignored or were uninformed about accumulating risk posed by small problems building up over time.

Blending the views

- It is meaningless to talk about mechanisms that produce error, instead we must be concerned with the mechanisms that are behind normal action [because] the very same mechanisms must also account for the correct performance which is the rule rather than the exception.
- Inventing separate mechanisms for every single kind of Human Error may be great fun, but isn't very sensible from a scientific point of view.
- The social context which remains following an accident affects the "facts" presented by accident investigations, such that it is impossible to produce an account of what really happened.

It tells us about the groups and organizations involved in the accident, rather than accidents themselves.

So, we shift to a general understanding of human behavior and social interaction in cognitive terms in complex, dynamic environments not on fragments of behavior called error.

Swiss cheese model of James Reason's tell us that human error is a consequence of flawed organizing, rather than a major cause of accidents but now considered to be severely limited even by its originator.

[Linear rather than complex model].

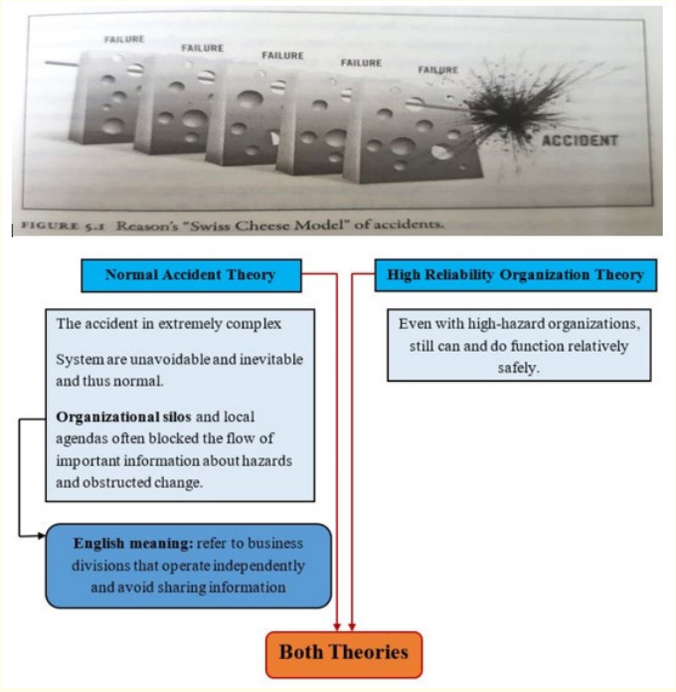


Figure 1

Share focus on the social and organizational underpinnings of system safety and accident causation/prevention, paying much less attention to technical and engineering aspects.

To err is human but that the fault lies not with the humans, but with designs that ignore human psychology, and no special error mechanisms to be discovered and eliminated and this led to what safety scientists called “paradigm shift”.

Safety cannot simply be technically engineered into a system, but that supporting the human operators, especially in their ability to adapt to unfamiliar or unanticipated abnormal conditions is even more important.

As long as we see organizational failures as the result of individual actions, our strategies for control will be ineffective and dangerously so.

Perrow (Sociologist) he said since designs equipment, procedures supplies, operators and work environment all must contain hidden flaws, so that small failures are inevitable and complex interactions will make these failures both unexpected and incomprehensible to the operators. So, in systems with little slack, these small incidents will occasionally turn into large accidents “because of the nature of the system itself”.

Question: Do we actually have adequate models of accidents causation in the present dynamic society?

Under the stress of pace of technological change and increasingly aggressive competitive environment and by changing regulatory practices and public pressure.

Reason Said:

Safety is a guerilla war that you will probably lose but you can still do the best you can.

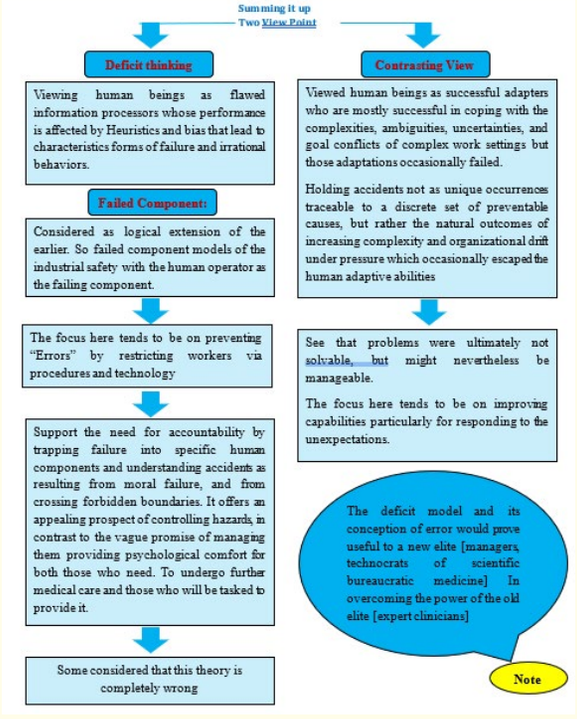


Figure 2

Error criteria

- First: There must be a set of rules or standards either explicity defined or at least implied and accepted in that environment.
- Second: There must be some kind of failure or performance short fall.
- Third: The person involved didn't intend this, and must at least potentially, have been able to act indifferent way.

We have two kinds or error:

1. An act of commission: Doing something wrong.

Example: Ordering a medication for a patient with a documented allergy to that medication.

2. An act of omission: Failing to do the right thing.

Example: Not giving a low dose of unfractionated heparin as prophylaxis for VTE for a patient after hip replacement surgery.

Error of omission are more difficult to recognize, but likely represent a larger problem.

Types of error

Slips and lapses

The plane is correct but the execution is wrong.

Example: You want to intubate the trachea and instead you intubate the esophagus.

Slip: Is an observable action.

Example: You put a wrong medication in an infusion pump

Laps: Represent a memory failure.

Example: A nurse wants to insert an NGT, but fails to follow all of the steps of the policy.

Slips and lapses: Occur during autonomic performance of some routine task, they invariably associated with some form of distraction either from the person's surrounding or their own preoccupation with something in mind.

Example: A trainee doctor working on a surgical ward is prescribing an antibiotic for a patient after a ward round. Just as she opens the patient drug chart on the computer, a nurse interrupts because he is concerned about a patient with very low BP. The doctor goes with the nurse forgetting to complete the prescription. Other tasks follow and there is a substantial delay in delivery of antibiotic and the patient becomes profoundly septic.

Mistakes

The plan is wrong but execution is correct, the failure lies at higher level:

- Mental processes involved in planning.
- Formulating intentions, judging and problem solving.

Mistakes have three “3” kinds either Rule-based mistakes: by applying the wrong rule:

Or the procedure itself is faulty: by deficient clinical guidelines

Or a knowledge-based mistakes: a doctor may simply be unfamiliar of a particular disease, or the surgeon may have to guess at the source of the bleeding in a considerable stress and uncertainty.

Example: A patient deteriorates rapidly after extubation on ICU and ETT cannot be repositioned in the usual way. The team involved hasn’t faced such a challenging situation before and the opportunity to site a surgical airway (tracheostomy) at an early stage is missed. The challenges of making decisions about the choice of airway are compounded by the high levels of stress in this situation.

Violations

Are deliberate deviations from safe operating practices, procedures standards or rules [without intend to cause harm] and differ from an error.

1. Error are primarily due to our human limitations in thinking and remembering.
2. Violations are more closely linked to attitude, motivation and the work environment, here the social context of violations is very important and requires attention to the culture of the wider organization (rules violations are an early signals of system design flaws).

There are three types of violations:

1. Routine violation is basically cutting corners for one reason or another. Perhaps to save time or simply to get on to another urgent task.
2. Unnecessary violation occurs when person flouts a rule because it seems the only way to get the job done.

Example: A nurse gives a high alert drug without double check by another nurse. The nurse knowingly violating procedure but hoping that this is in the patient interest.

Also, this one can be named as at risk behavior (normalize deviance work around, drift shortcuts).

Here the risk is mistakenly believed to be justified.

So, what is the best action to treat this behavior?

a. Coach the provider.
b. He is accountable “Just culture”.
c. System modification.
d. Should participate in teaching others the lesson learned.

3. Optimizing violations “which are for personal gain, either to get off work early or alleviate boredom for kicks.

Example: Junior surgeon do a difficult operation at mid night without a senior surgeon’s instructions [when the case could easily wait until morning].

[Excitement of sailing close to the mind]

Also, this one can be named as Reckless behavior.

Here the person knows that the risk is unjustifiable.

But no intention to cause harm

So, what is the best action to treat this behavior?

a. Discipline the provider (Just culture).
b. He is accountable (Just culture).
c. Need retraining.
d. System study and modification.
e. Should participate in teaching others lesson learned.

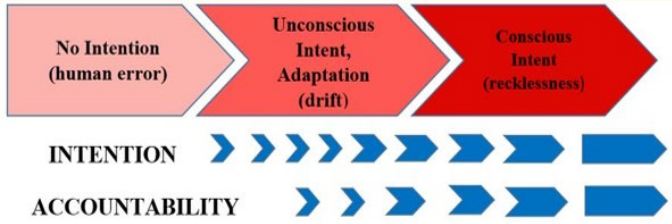


Figure 3

Example:

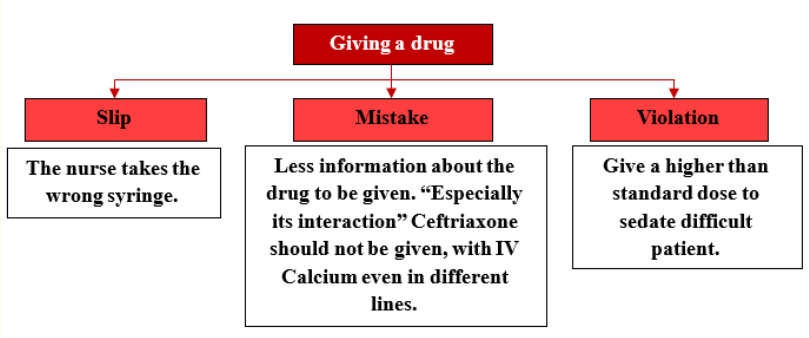


Figure 4

Error categories

Note that an error is a process.

While harm is an outcome.

Definition of harm: Is an impairment of physical, emotional or psychological function and/or impairment of body structure with/ without pain resulting from.

- Category A: Circumstances or events that have the capacity to cause error.
- Category B: Near miss or close call or averted event or good catch is an error occurred but didn't reach the patient.
- Category C: Or risk thereof is an error occurred, and reach the patient but didn't cause a patient harm.
- Category D: An adverse event that cause a patient harm, requiring monitoring.
- Category E: An adverse event that cause a patient harm, requiring intervention.
- Category F: An adverse event that cause a patient harm, requiring initial or prolonged hospitalization.
- Category G: Adverse event that cause a permanent patient harm (more than one year)
- Category H: Adverse event that a patient harm, requiring intervention to sustain life or ICU admission.
- Category I: An adverse event that cause a patient death.
- Category G-H-I called Sentinel event.

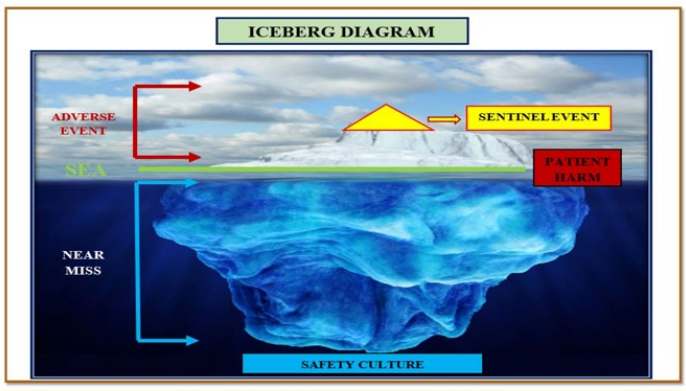


Figure 5

How to measure error?

1. By incident reporting

We have many types of reporting

- Voluntary reporting and mandatory reporting.
- Concurrent Surveillance: Review of patients record to evaluate for an error which manifested as changes in signs and symptoms.
- Automated Surveillance: Is considered ideal for detecting events that require antidotes or specific laboratory monitoring.

Example: An order for Naloxone trigger for an error in opiate dosing.

2. Chart review for evidence or error

Both of the above (1 and 2) need a trigger tools which have a sensitivity of 95% and specificity of 100%.

Example:

- Care model trigger: Like abrupt drop of HCT of > 25%.
- Surgical model trigger: Like return to surgery.
- Intensive care trigger: Like reintubation within 48 hours of extubation.
- ED trigger: Readmission to ED within 48 hours.

3. Patient safety indicators.
4. Hospital standardized mortality ration.
5. Ask patient to identify instances of harm or error (Patient for patient safety).

Understanding the influence of the wider system

Rather than being the instigator of the accidents operators tend to be the inheritors of system defects.

Their part is usually that of adding the final garnish to a lethal brew whose ingredients have already been long in the cooking.

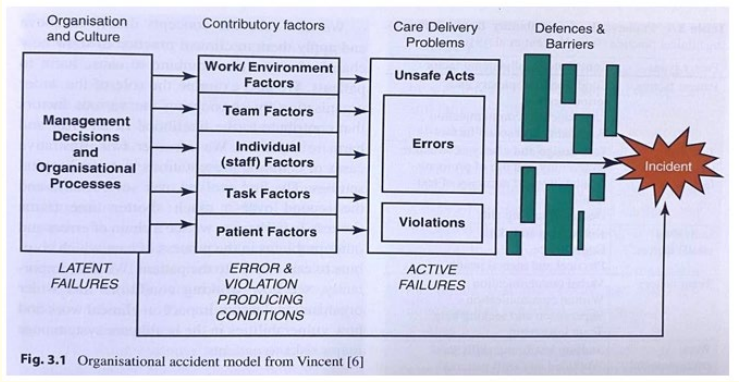


Figure 6

Organizational processes:

- Planning
- Scheduling
- Forecasting
- Design
- Maintenance
- Strategy
- Policy.

Contributory factors: Seven levels of safety

Table 3.1 Framework of contributory factors influencing clinical practice (from Vincent et al. [9])

Factor types	Contributory influencing factor
Patient factors	Condition (complexity and seriousness) Language and communication Personality and social factors
Task and technology factors	Task design and clarity of structure Availability and use of protocols Availability and accuracy of test results Decision-making aids
Individual (staff) factors	Knowledge and skills Competence Physical and mental health
Team factors	Verbal communication Written communication Supervision and seeking help Team leadership
Work environmental factors	Staffing levels and skills mix Workload and shift patterns Design, availability, and maintenance of equipment Administrative and managerial support Physical environment
Organisational and management factors	Financial resources and constraints Organisational structure Policy, standards, and goals Safety culture and priorities
Institutional context factors	Economic and regulatory context National health service executive Links with external organisations

Figure 7

Two examples

Case 1: An avoidable patient fall

Day 1

Box 3.1: An Avoidable Patient Fall

Day 1

An 88-year-old man was brought to the emergency department (ED) in the early afternoon by his wife and daughter. He had been becoming increasingly confused at home and was not taking care of himself as he normally would. His past medical history included chronic obstructive pulmonary disease, aortic valve replacement for stenosis, a laminectomy for sciatic nerve decompression, and benign prostatic hypertrophy. His presenting complaint was worsening confusion and hallucinations, disturbed sleep, poor appetite, and increased shortness of breath.

He was clerked in by a trainee doctor at 16:20 and seen by a consultant physician at 17:15 when a provisional diagnosis of sepsis of unknown origin was made. A bed was found on a medical ward (MW) and was transferred from ED at 21:00.

A falls risk assessment was undertaken in ED and he was found to be at high risk, unfortunately no falls action plan was made and the level of risk was not adequately handed over to the staff on MW. The family spoke to members of staff in ED and on MW about their concerns that the patient may fall and injure himself particularly as the bed on MW was in a bay at the end of the ward where the patient would not be easy to observe.

The ward was busy and it was staffed to agreed levels but the dependency of the patients was high. The nurse looking after this patient decided that he was settled and did not need 1:1 care but asked the care support worker (CSW) to review him regularly. The patient was being cared for on a bed with side rails (not recommended in high risk patients as they can become entangled in the rails if they are confused) and not on a low level bed with "crash mattresses" either side as recommended for patients at risk of falling.

At approximately 21:45 the patient was found on the floor by the bed having fallen. He was confused and complaining of pain in the right hip and thigh. He was reviewed by the trainee doctor on call whose note read (sic)

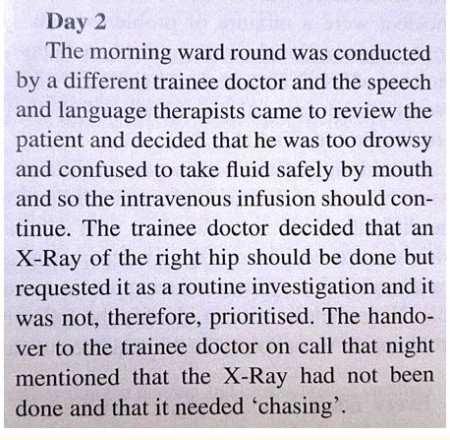
Asked to see patient as unwitnessed fall, found by nursing staff alert but very confused, admitted with confusion and urinary tract infection. Plan for ECG, review of right hip in the morning for development of swelling/bruising, close observation to prevent further falls, day team to consider if further imaging is required.

The patient was moved to a bay where he could be closely observed, the ECG was reviewed (nothing acute was seen) and the nursing notes recorded an otherwise uneventful night with no obvious pain.

Figure 8

- Patient is elderly, confused and possible sepsis and multiple comorbidities (Patient factor).
- Inadequate use of protocol for patient at high risk of fall (Task factor) (R-BM Rule based mistake).
- No standard approach to recording fall risk, electronic record in ER but paper records on Medical Ward (Organizational factor).
- Patient's family express concern about risk of falling handover to staff on ward inadequate (lapse) (Team factor).
- The patient is in bed with side rails up, inadequate use of protective measures for patient at high risk of fall (Task factor) (R-BM).
- The patient in bed at end of busy medical ward, no measures for close observations of patient in place (Task/technology Factor) (R-BM).
- Trainee doctor doesn't order direct x-ray, failure to detect fracture in confused patient (Knowledge-BM) (Individual/staff factor) and no senior doctor on ward round (Team factor).

Day 2



Day 2

The morning ward round was conducted by a different trainee doctor and the speech and language therapists came to review the patient and decided that he was too drowsy and confused to take fluid safely by mouth and so the intravenous infusion should continue. The trainee doctor decided that an X-Ray of the right hip should be done but requested it as a routine investigation and it was not, therefore, prioritised. The handover to the trainee doctor on call that night mentioned that the X-Ray had not been done and that it needed 'chasing'.

Figure 9

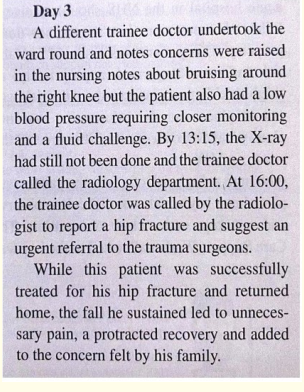
A different trainee doctors review patient and orders hip x-ray.

Failure to escalate concerns to senior doctor, and failure to detect fracture in confused patient

(Individual/Staff Factor) (K-BM).

No senior review (Team factor).

Day 3



Day 3

A different trainee doctor undertook the ward round and notes concerns were raised in the nursing notes about bruising around the right knee but the patient also had a low blood pressure requiring closer monitoring and a fluid challenge. By 13:15, the X-ray had still not been done and the trainee doctor called the radiology department. At 16:00, the trainee doctor was called by the radiologist to report a hip fracture and suggest an urgent referral to the trauma surgeons.

While this patient was successfully treated for his hip fracture and returned home, the fall he sustained led to unnecessary pain, a protracted recovery and added to the concern felt by his family.

Figure 10

Different team on ward round, No senior review

(Team factor) (K-BM)

Patient has a low BP (Patient factor)

Trainee doctor delays chasing hip x-ray whilst treating BP

(Individual/Staff) (K-BM) → Fracture diagnosed 2 days after fall

Case 2: An avoidable emergency laparotomy

In case of ectopic pregnancy

Box 3.2: An Avoidable Emergency Laparotomy in a Case of Ectopic Pregnancy

A 28-year-old woman with abdominal pain and lethargy arrived in the busy emergency department (ED) at 16:19 and was seen by a triage nurse who recorded some baseline observations and referred the patient to the ED trainee doctor, stating that she was "not worried" about the patient. The protocol for the investigation and management of early pregnancy in ED was inadequate, and there was a delay in sending the necessary blood samples for diagnosis. The track and trigger score was incorrectly calculated and follow-up observations (for heart rate and blood pressure) were, therefore, not increased in frequency resulting in a delay in calling for an expert opinion from a gynaecologist. The ED trainee doctor did not recognise the urgency of the situation and when the referral was made to gynaecology the handover did not emphasise the seriousness of the situation adequately. The trainee gynaecologist, therefore, advised that the patient be sent to the gynaecology ward for further assessment without coming to ED to see the patient.

When the patient arrived on the ward, the senior trainee gynaecologist diagnosed an ectopic pregnancy and recognised that the patient's condition was deteriorating (her haemoglobin had dropped significantly to 99 g/L, her blood pressure was falling, and she was now complaining of shoulder tip pain). The decision was made to take the patient to theatre for emergency laparoscopic surgery and because it was now after 18:00, theatres in the main hospital were informed and the case was booked with the on-call anaesthetist. Audits had revealed that very few gynaecological emergencies came to theatre after normal working hours and consequently gynaecological patients were transferred to main theatres out of hours.

When the consultant surgeon was called (there was a 30 min delay in locating him), he agreed to come in and assist with the procedure. The patient arrived in theatre 5 h after the initial presentation with a very low blood pressure and a haemoglobin of 67 g/L. The WHO pre-list briefing was completed without the consultant gynaecologist who did not arrive until the patient was anaesthetised and being prepared for surgery by the senior trainee gynaecologist and after the 'time out' section of the WHO checklist.

At this time, the patient was extremely unwell and there was significantly heightened pressure to get on with the procedure. Tensions were high and when problems arose with the laparoscopy equipment (an accidentally de-sterilised light source and diathermy forceps which were incompatible with the electrical lead) behaviour deteriorated and exacerbated the stress felt by staff in theatre. The delays caused by the equipment problems necessitated a decision to convert to an open procedure which the Consultant made promptly in order to gain control of the bleeding. Once the haemorrhage was controlled and additional blood products were given the operation to remove the fallopian tube was completed uneventfully and the patient was stabilised and transferred to recovery with no further complications.

This case is similar to the one described above in that it contains the same types of contributory factors and errors that led to the eventual adverse event. The patient recovered well but had to stay in hospital longer to recover because the procedure was converted to a more invasive surgical approach.

Figure 11

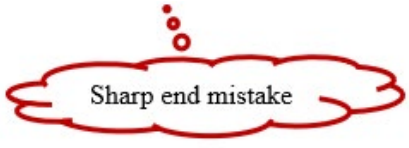
- Young, fit women admitted to ED with abdominal pain-good early compensation of shock (Patient factor).

Urgency not recognized by ED trainee doctor nurse calculated track and trigger score incorrectly both are (Individual/Staff factor)-Slip.

- Delayed transfer to Gynecology, with inadequate handover (Team factor) (R-BM).

Protocols for managing early pregnancy inadequate (Task factor).

- Delayed diagnosis of ectopic pregnancy, senior Gynecology trainee working on another site (Organizational factor).
- Due to delay surgery has to be done in main theaters - all emergency Gyne surgery after duty hours takes place in main theaters (Organizational Factors).
- Variance in equipment not picked up (R-BM) whole team not present for WHO briefing (Team factor).
- Problems with equipment for surgery "Staff in main theatres unfamiliar with laparoscopic equipment, and Consultant surgeon unfamiliar with main theatres" slip (Work/Environmental factor) failure to speak up about concerns re unfamiliarity (Team factor).
- Patient condition deteriorates (Patient factor) conversion to open procedure required (Work/Environmental factor) (R-BM) high stress level in a team which doesn't normally work together (Team factor) Consultant Gynecologist unaware of instrument problems (Individual/Staff factor).



Conducting your own incident investigation

The best way is the USA one which called RCA, and considered a retrospective approach.

Also, there is a London protocol, the approach name is Systems Analysis.

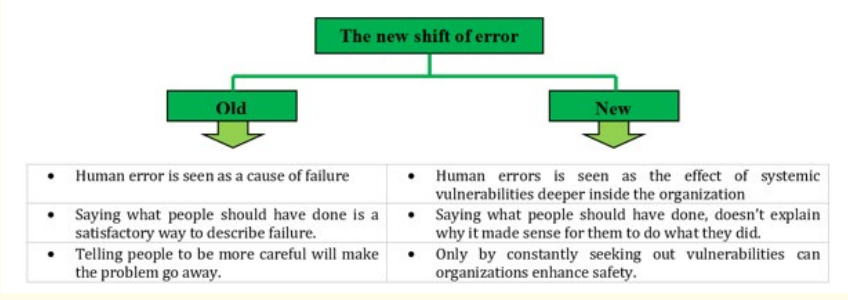


Figure 12

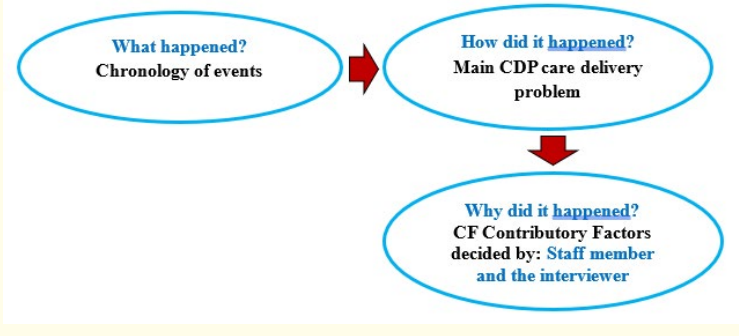


Figure 13

From analysis to meaningful action

- Some incident need an immediate action like replacement of faulty equipment, or updating of misleading or inconsistent guidelines.

1. Review of staffing levels and consideration of different working patterns to cover busy times more effectively.
2. Standardizing the way, fall risk assessment are recorded across all clinical areas (the use of electronic patient records can help here).

1. Scrub staff from Gynecology theatres could work on a rotational basis in the main theatres to ensure they used the environment and equipment could be standardized across sites.
2. The training to embed good practice in the use of the WHO checklist for theatres teams.
3. Regular simulation training to support staff in the management of emergencies.

Level of Interventions		
Action Strength	**Action Category**	**Example**
Stronger Actions (These tasks require less reliance on humans to remember to perform the task correctly)	Architectural/physical plant changer	Replace revolving doors at the main patient entrance into the building with powered sliding or swinging doors to reduce patient falls.
	New devices with usability testing	Perform heuristic tests of outpatient blood glucose meters and test strips and select the most appropriate for the patient population being served.
	Engineering control (forcing function)	Eliminate the use of universal adaptors and peripheral devices for medical equipment and use tubing/fittings that can only be connected to the correct way (e.g., IV tubing and connectors that cannot physically be connected to sequential compression device [SCDs].
	Simplify process	Remove unnecessary steps in a process
	Standardize on equipment or process	Standardize the make and model of medication pumps used throughout the situation. Use bar coding for medication administration.
	Tangible involvement by leadership	Participate in unit patient safety evaluations and interact with staff; support the RCA^2 process (Root Cause Analysis and Action); purchase needed equipment; ensure staffing and workload are balanced.

Intermediate Actions	Redundancy	Use two RNs to independently calculate high-risk medication dosages.
	Increase in staffing/decrease in workload	Make float staff available to assists when workloads peak during the day.
	Software enhancements, modifications	Use computer alerts for drug-drug interactions.
	Eliminate/reduce distractions	Provide quiet rooms for programming PCA pumps; remove distractions for nurses when programming medication pumps.
	Education using simulation-based training with periodic refresher sessions and observations	Conduct patient handoffs in a simulation lab/environment, with after action critiques and debriefing.
	Checklist/cognitive aids	Use pre-induction and pre-incision checklists in operating rooms. Use a checklist when processing flexible fiber optic endoscopes.
	Eliminate look-and -sound-alikes	Do not store look-alikes next to one another in the unit medication room.
	Standardize communication tools	Use read-back for all critical lab values. Use read-back or repeat-back for all verbal medication orders. Use a standardized patient handoff format.
	Enhanced documentation, communication	Highlight medication name and dose on IV bags.
Weaker Actions (these tasks require more reliance on humans to remember to perform the task correctly	Double checks	One person calculates dosage, another person reviews their calculation.
	Warnings	Add audible alarms or caution labels.
	New procedure/memorandum/policy	Remember to check IV sites every 2 hours.
	Training	Demonstrate correct usage of hand-to-use medical equipment.

Table

Supporting patients, families and staff

The impact of a medical injury differs from most other accidents in two important respects.

First: The patient has been harmed, unintentionally by people in whom they placed considerable trust, so their reaction maybe especially powerful and hard to cope with.

Second

May be more important.

They are often cared for by the same professions and perhaps the same people as those involved in the original injury, they may have been very frightened by what was happened to them, and have a range of conflicting feelings about those involved, this too can be very difficult, even when staff are sympathetic and support.

Many people harmed by their treatment suffer further trauma through the incident being insensitively and inadequately handled.

Conversely when staff come forward acknowledge the damage and take the necessary action, the overall impact can be greatly reduced.

Patient and family need support immediately after the serious incident and sometimes over long periods afterwards.

The health care organization concerned has responsibility to provide or arrange for this care. Injured patients need an explanation, an apology to know that changes have been made to prevent future incidents, and often also need practical and financial help.

The absence of any of these factors can be a powerful stimulus to complaint or litigation.

Also, staff who are the second victim "Albert Wu" emotional reactions range from guilt and crisis of confidence to anger and worry about one's career.

For example, serious complications often make surgeons more conservative or risk-adverse in the management of patients, which can be detrimental for patient care.

Conclusions and Recommendations

Nevertheless, some types of behavior deserve blame and sanctions [Just Culture].

But even the best people make honest mistakes

We learned from aviation, so that in 2017 in UK, Health Care Safety Investigation Branch was established in the NHS [www.hsib.org.uk].

With the standard purpose of improving patient safety through effective and independent investigations that don't apportion blame or liability [1-5].

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