PATIENT SAFETY

Quality of care

- **Safe.** Delivering health care that minimizes risks and harm to service users, including avoiding preventable injuries and reducing medical errors.
- **Effective.** Providing services based on scientific knowledge and evidence-based guidelines.
- **Timely.** Reducing delays in providing and receiving health care.
- **Efficient.** Delivering health care in a manner that maximizes resource use and avoids waste.
- **Equitable.** Delivering health care that does not differ in quality according to personal characteristics such as gender, race, ethnicity, geographical location or socioeconomic status.
- **People-centred.** Providing care that takes into account the preferences and aspirations of individual service users and the culture of their community.

https://www.who.int/maternal_child_adolescent/topics/quality-of-care/definition/en/

Patient safety

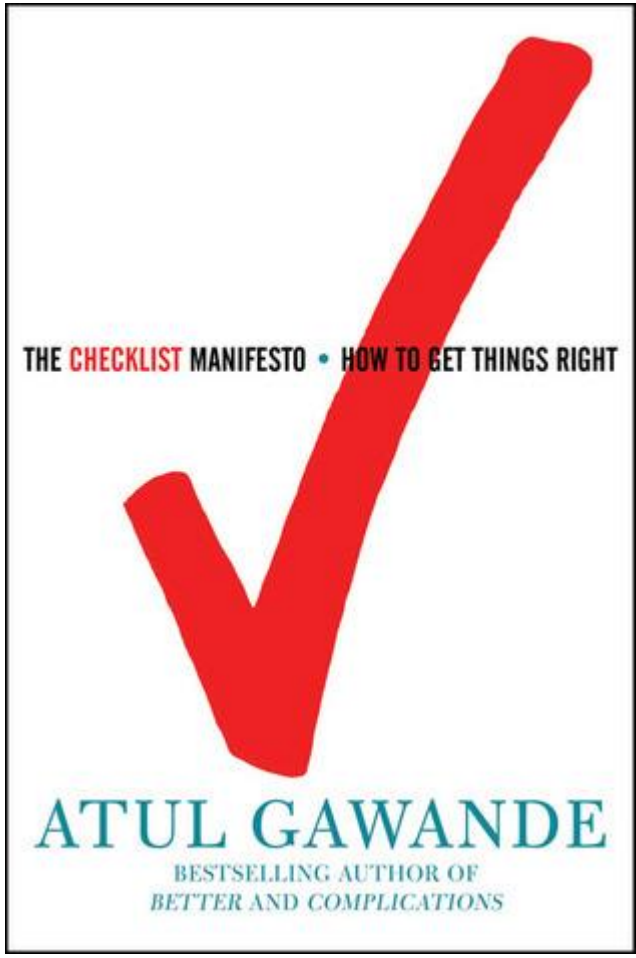
- is the absence of preventable harm to a patient during the process of health care and reduction of risk of unnecessary harm associated with health care to an acceptable minimum

The logical process to improve patient safety in health care systems

1. Identify current issues regarding patient safety
2. Revise systems, education, and training to address known patient safety issues
3. Educate health care professionals about the importance of patient safety concepts. Establish a system of checks and balances to reduce medical errors. Ensure practical application of patient safety concepts (training)
4. Enhance patient interaction to reduce error

The WHO launched its second Global Patient Safety Challenge: Safe Surgery Saves Lives (SSSL) in 2006 in response to the global need to improve outcomes in surgery.

Harvard surgeon, public health physician, and writer, Dr Atul Gawande led a team of experts in surgery, anaesthesia, nursing, infection control, human factors, and quality improvement and considered interventions to improve safety for patients receiving surgical care.



Four challenges were considered—

- ✓ the global need for surgery,
- ✓ the paucity of data from many regions,
- ✓ how to make sure that known evidence-based interventions are completed reliably,
- ✓ and how to address the problem of non-technical skills and human error in the face of increasing complexity in surgical care.

WHO's 10 objectives for

Safe Surgery

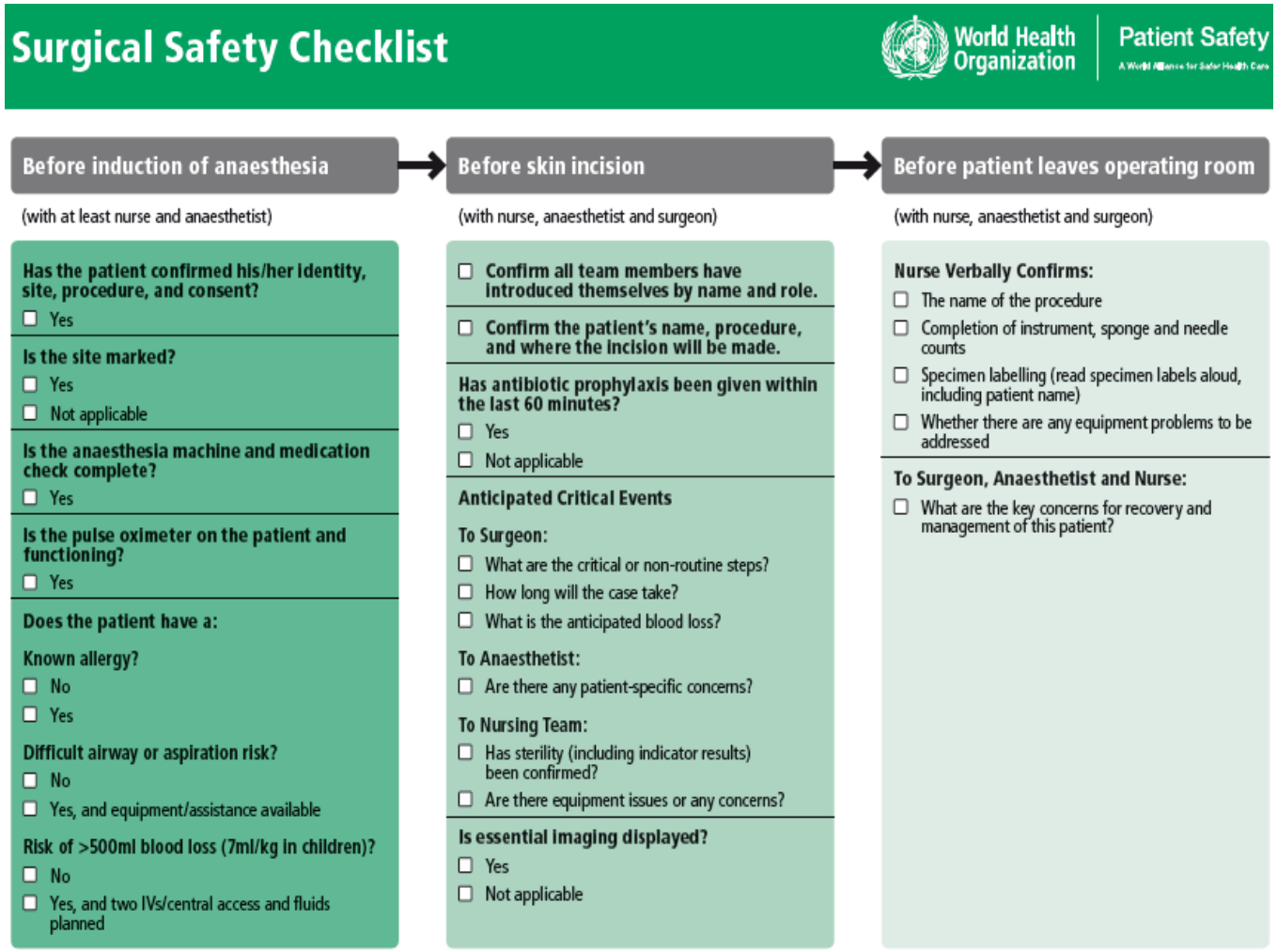
1. The team will operate on the correct patient at the correct site.
2. The team will use methods known to prevent harm from administration of anaesthetics, while protecting the patient from pain.
3. The team will recognize and effectively prepare for life-threatening loss of airway or respiratory function.
4. The team will recognize and effectively prepare for risk of high blood loss.
5. The team will avoid inducing an allergic or adverse drug reaction for which the patient is known to be at significant risk.

WHO's 10 objectives for Safe Surgery (cont.)

6. The team will consistently use methods known to minimize the risk for surgical site infection.
7. The team will prevent inadvertent retention of instruments or sponges in surgical wounds.
8. The team will secure and accurately identify all surgical specimens.
9. The team will effectively communicate and exchange critical information for the safe conduct of the operation.
10. Hospitals and public health systems will establish routine surveillance of surgical capacity, volume and results.

What is this tool

that addresses the 10 objectives?



Surgical Safety Checklist

World Health Organization | Patient Safety

A World Alliance for Safer Health Care

Before induction of anaesthesia → **Before skin incision** → **Before patient leaves operating room**

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?
- ☐ Yes

Is the site marked?
- ☐ Yes
- ☐ Not applicable

Is the anaesthesia machine and medication check complete?
- ☐ Yes

Is the pulse oximeter on the patient and functioning?
- ☐ Yes

Does the patient have a:

Known allergy?
- ☐ No
- ☐ Yes

Difficult airway or aspiration risk?
- ☐ No
- ☐ Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?
- ☐ No
- ☐ Yes, and two IVs/central access and fluids planned

(with nurse, anaesthetist and surgeon)

- ☐ **Confirm all team members have introduced themselves by name and role.**
- ☐ **Confirm the patient's name, procedure, and where the incision will be made.**

Has antibiotic prophylaxis been given within the last 60 minutes?
- ☐ Yes
- ☐ Not applicable

Anticipated Critical Events

To Surgeon:
- ☐ What are the critical or non-routine steps?
- ☐ How long will the case take?
- ☐ What is the anticipated blood loss?

To Anaesthetist:
- ☐ Are there any patient-specific concerns?

To Nursing Team:
- ☐ Has sterility (including indicator results) been confirmed?
- ☐ Are there equipment issues or any concerns?

Is essential imaging displayed?
- ☐ Yes
- ☐ Not applicable

(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:
- ☐ The name of the procedure
- ☐ Completion of instrument, sponge and needle counts
- ☐ Specimen labelling (read specimen labels aloud, including patient name)
- ☐ Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:
- ☐ What are the key concerns for recovery and management of this patient?

Before induction of anaesthesia

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?

- [ ] Yes

Is the site marked?

- [ ] Yes
- [ ] Not applicable

Is the anaesthesia machine and medication check complete?

- [ ] Yes

Is the pulse oximeter on the patient and functioning?

- [ ] Yes

Does the patient have a:

Known allergy?

- [ ] No
- [ ] Yes

Difficult airway or aspiration risk?

- [ ] No
- [ ] Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?

- [ ] No
- [ ] Yes, and two IVs/central access and fluids planned

Before skin incision

(with nurse, anaesthetist and surgeon)

- [ ] **Confirm all team members have introduced themselves by name and role.**
- [ ] **Confirm the patient's name, procedure, and where the incision will be made.**

Has antibiotic prophylaxis been given within the last 60 minutes?

- [ ] Yes
- [ ] Not applicable

Anticipated Critical Events

To Surgeon:

- [ ] What are the critical or non-routine steps?
- [ ] How long will the case take?
- [ ] What is the anticipated blood loss?

To Anaesthetist:

- [ ] Are there any patient-specific concerns?

To Nursing Team:

- [ ] Has sterility (including indicator results) been confirmed?
- [ ] Are there equipment issues or any concerns?

Is essential imaging displayed?

- [ ] Yes
- [ ] Not applicable

Before patient leaves operating room

(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:

- ☐ The name of the procedure
- ☐ Completion of instrument, sponge and needle counts
- ☐ Specimen labelling (read specimen labels aloud, including patient name)
- ☐ Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:

- ☐ What are the key concerns for recovery and management of this patient?

Advantages
of using a Checklist

- **Customizable** to local setting and needs
- **Supported** by evidence
- **Evaluated** in diverse settings around the world
- **Promotes** adherence to established safety practices
- **Minimal resources** required to implement a far-reaching safety intervention

What problems
does this Checklist address?

Before induction of anaesthesia:

Has the patient confirmed his/her identity, site, procedure, and consent?

☐ Yes

Is the site marked?

Before skin incision:

☐ **Confirm the patient's name, procedure, and where the incision will be made.**

Before patient leaves operating room:

Nurse Verbally Confirms:

☐ The name of the procedure

Correct patient, operation and operative site

- There are between 1500 and 2500 wrong site surgery incidents every year in the US.[1]
- In a survey of 1050 hand surgeons, 21% reported having performed wrong-site surgery at least once in their career.[2]

[1] Seiden, Archives of Surgery, 2006.
[2] Joint Commission, Sentinel Event Statistics, 2006.

What problems
does this Checklist address? (cont.)

Before induction of anaesthesia:

Is the anaesthesia machine and medication check complete?

☐ Yes

Is the pulse oximeter on the patient and functioning?

☐ Yes

Before skin incision:

To Anaesthetist:

☐ Are there any patient-specific concerns?

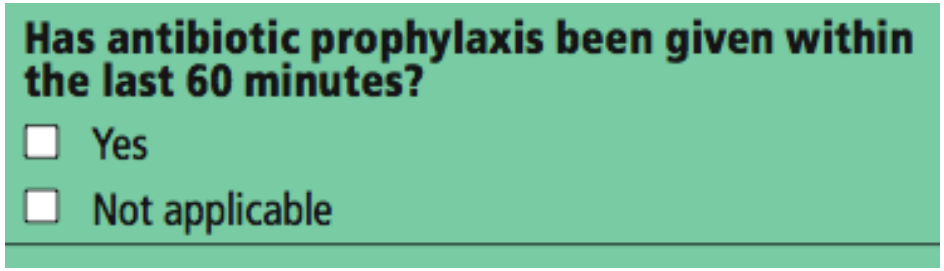
Safe Anaesthesia and Resuscitation

- An analysis of 1256 incidents involving general anaesthesia in Australia showed that pulse oximetry on its own would have detected 82% of them.[1]

[1] Webb, Anaesthesia and Intensive Care, 1993.

What problems
does this Checklist address? (cont.)

Before skin incision:



Minimize risk of infection

- Giving antibiotics within one hour before incision can cut the risk of surgical site infection by 50%[1, 2]
- In the eight evaluation sites, failure to give antibiotics on time occurred in almost one half of surgical patients who would otherwise benefit from timely administration.

[1] Bratzler, The American Journal of Surgery, 2005.
[2] Classen, New England Journal of Medicine,1992.

What problems
does this Checklist address? (cont.)

Before skin incision:

- ☐ **Confirm all team members have introduced themselves by name and role.**

Before patient leaves operating room:

To Surgeon, Anaesthetist and Nurse:

- ☐ What are the key concerns for recovery and management of this patient?

Effective teamwork

- Communication is a root cause of nearly 70% of the events reported to the Joint Commission from 1995-2005.[1]
- A preoperative team briefing was associated with enhanced prophylactic antibiotic choice and timing, and appropriate maintenance of intraoperative temperature and glycemia.[2, 3]

[1] Joint Commission, Sentinel Event Statistics, 2006.
[2] Makary, Joint Commission Journal on Quality and Patient Safety, 2006.
[3] Altpeter, Journal of the American College of Surgeons, 2007.

HELSINKI

Declaration on patient safety in Anaesthesiology 2009

1.All institutions providing perioperative anaesthesia care to patients (in Europe) should comply with the minimum standards of monitoring recommended by the EBA both in operating theatres and in recovery areas.

2.All such institutions should have protocols and the necessary facilities for managing the following

1. Preoperative assessment and preparation
2. Checking Equipment and drugs
3. Syringe labelling
4. Difficult/failed intubation
5. Malignant hyperpyrexia
6. Anaphylaxis
7. Local anaesthetic toxicity
8. Massive haemorrhage
9. Infection control
10. Postoperative care including pain relief

3.All institutions providing sedation to patients must comply with anaesthesiology recognised sedation standards for safe practice.

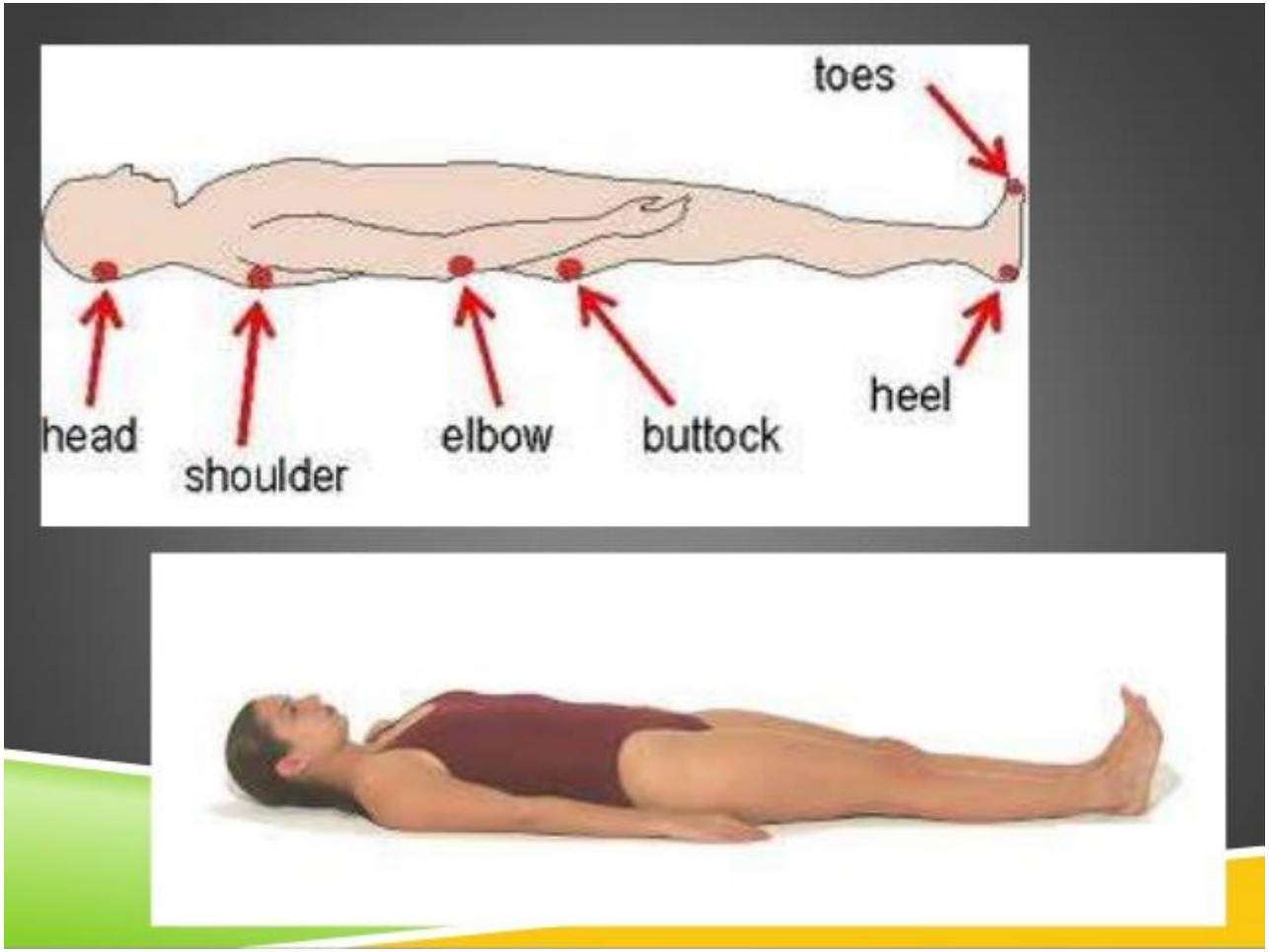
4.All institutions should support the WHO Safe Surgery Saves Lives initiative and Checklist.

5.All departments of anaesthesiology in Europe must be able to produce

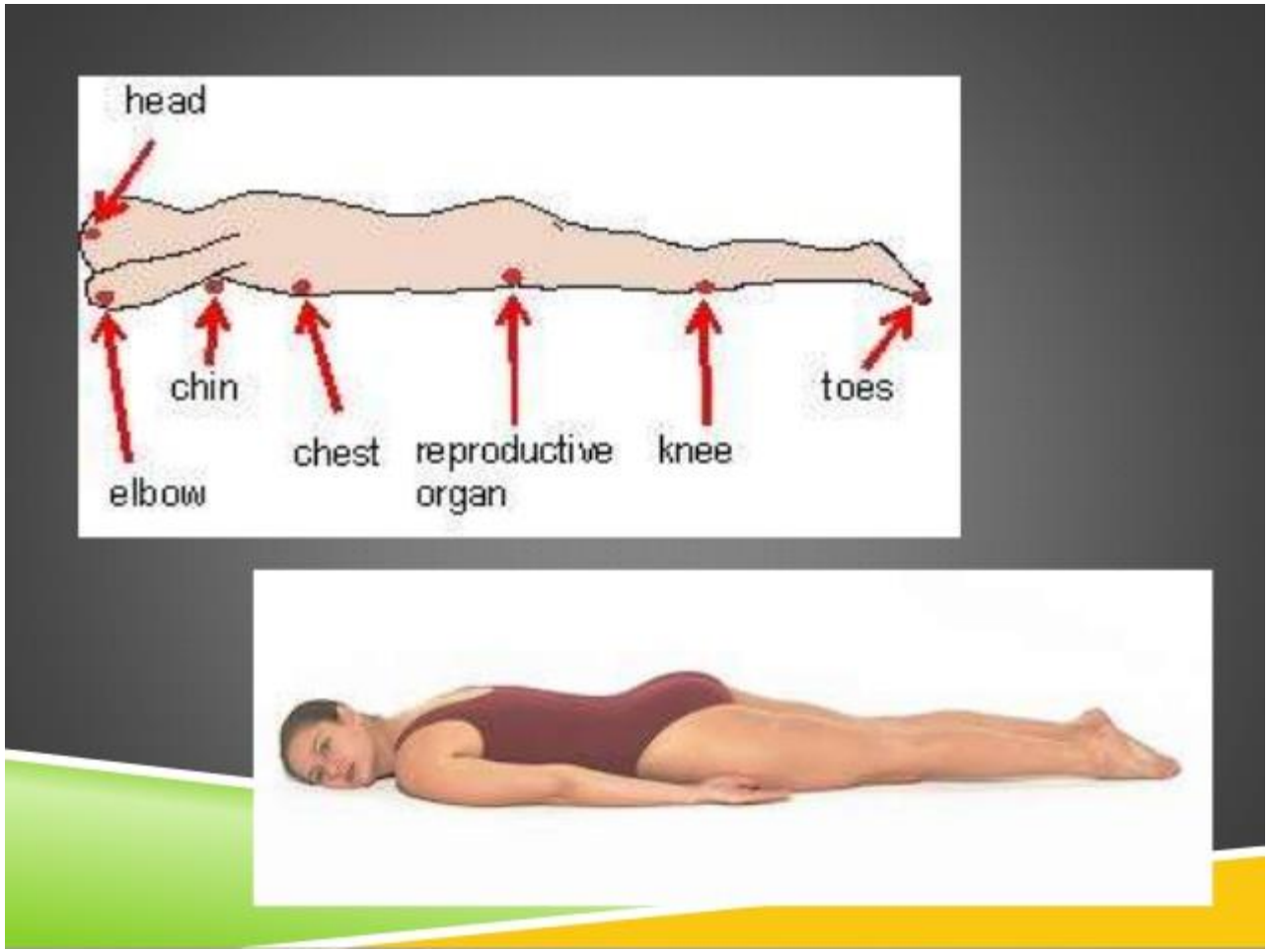
1.All institutions providing sedation to patients must comply with anaesthesiology recognised sedation standards for safe practice.

2.All institutions should support the WHO Safe Surgery Saves Lives initiative and Checklist.
3.All departments of anaesthesiology in Europe must be able to produce an annual report of measures taken and results obtained in improving patient safety locally.
4.All institutions providing anaesthesiological care to patients must collect the required data to be able to produce an annual report on patient morbidity and mortality.
5.All institutions providing anaesthesiological care to patients must contribute to the recognised national or other major audits of safe practice and critical incident reporting systems. Resources must be provided to achieve this.

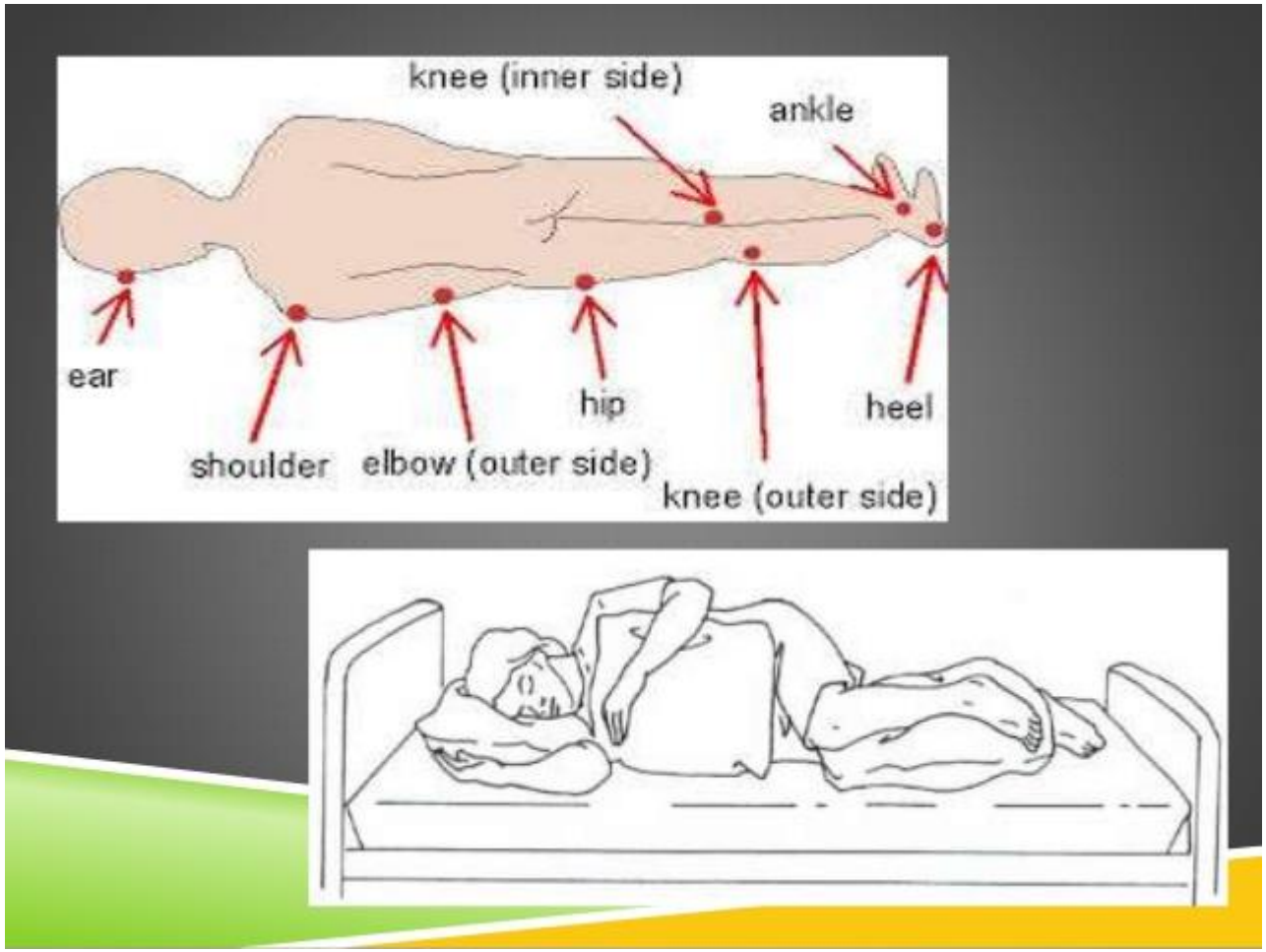
Supine position



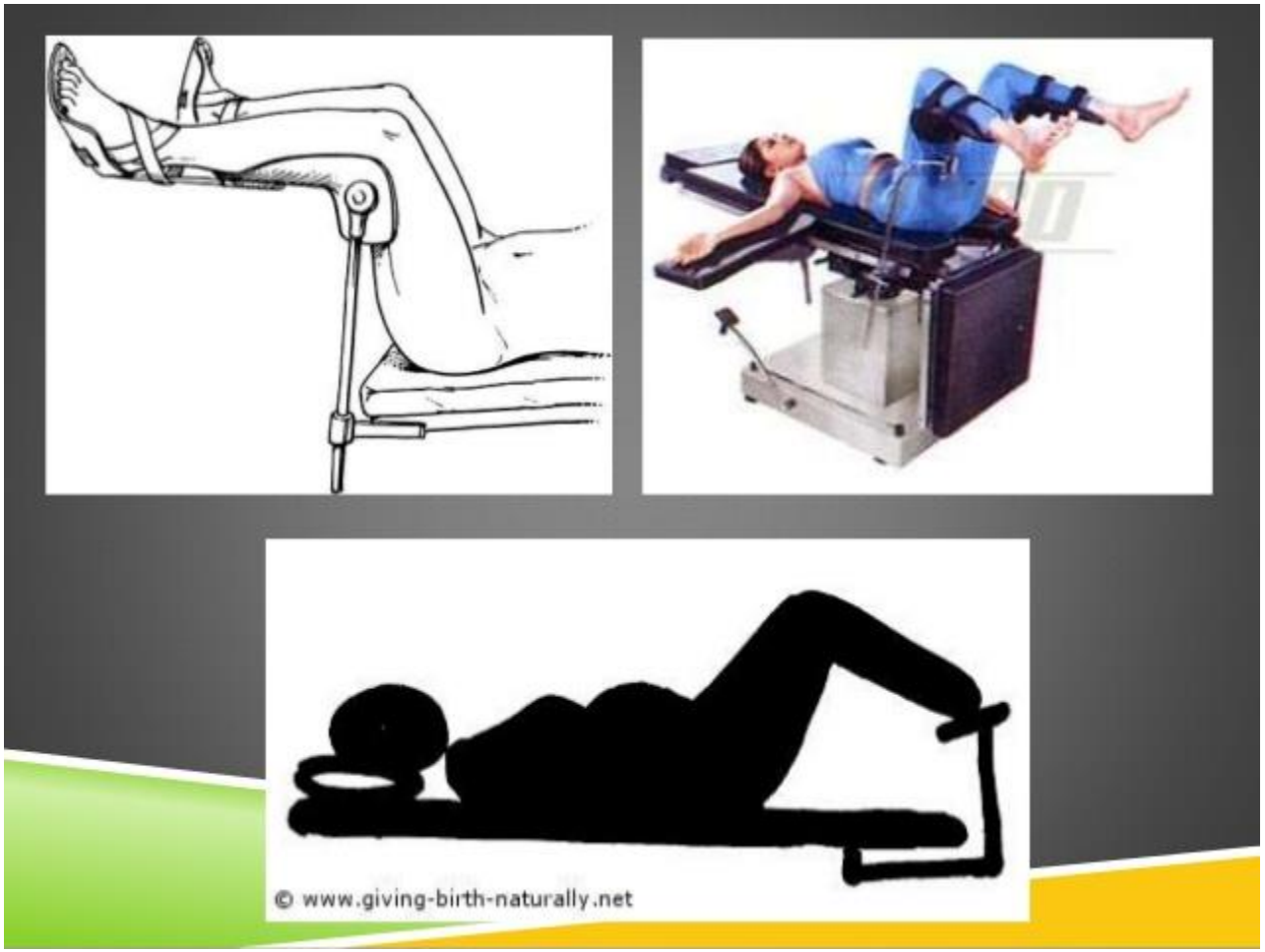
Prone position

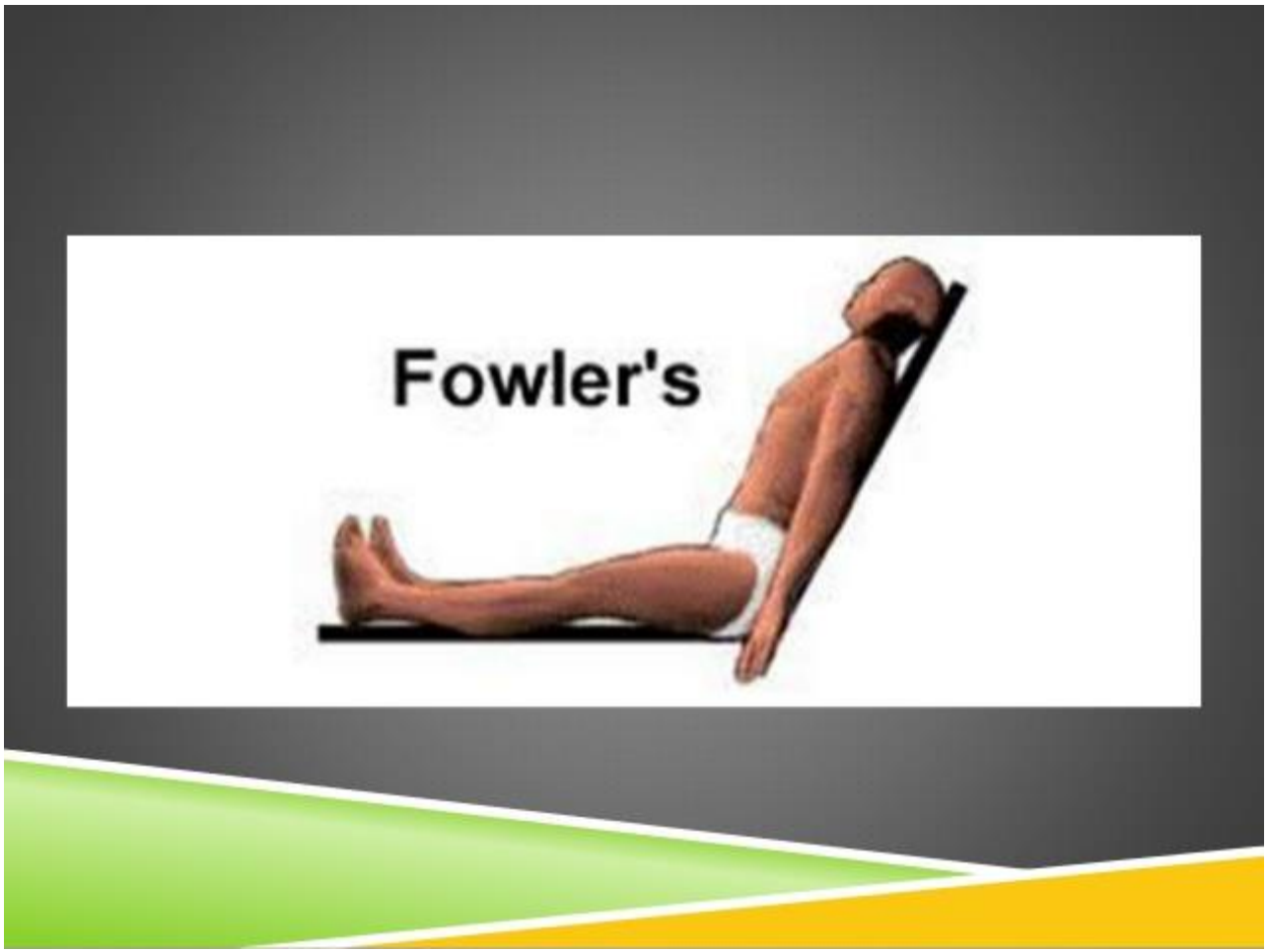


Lateral position

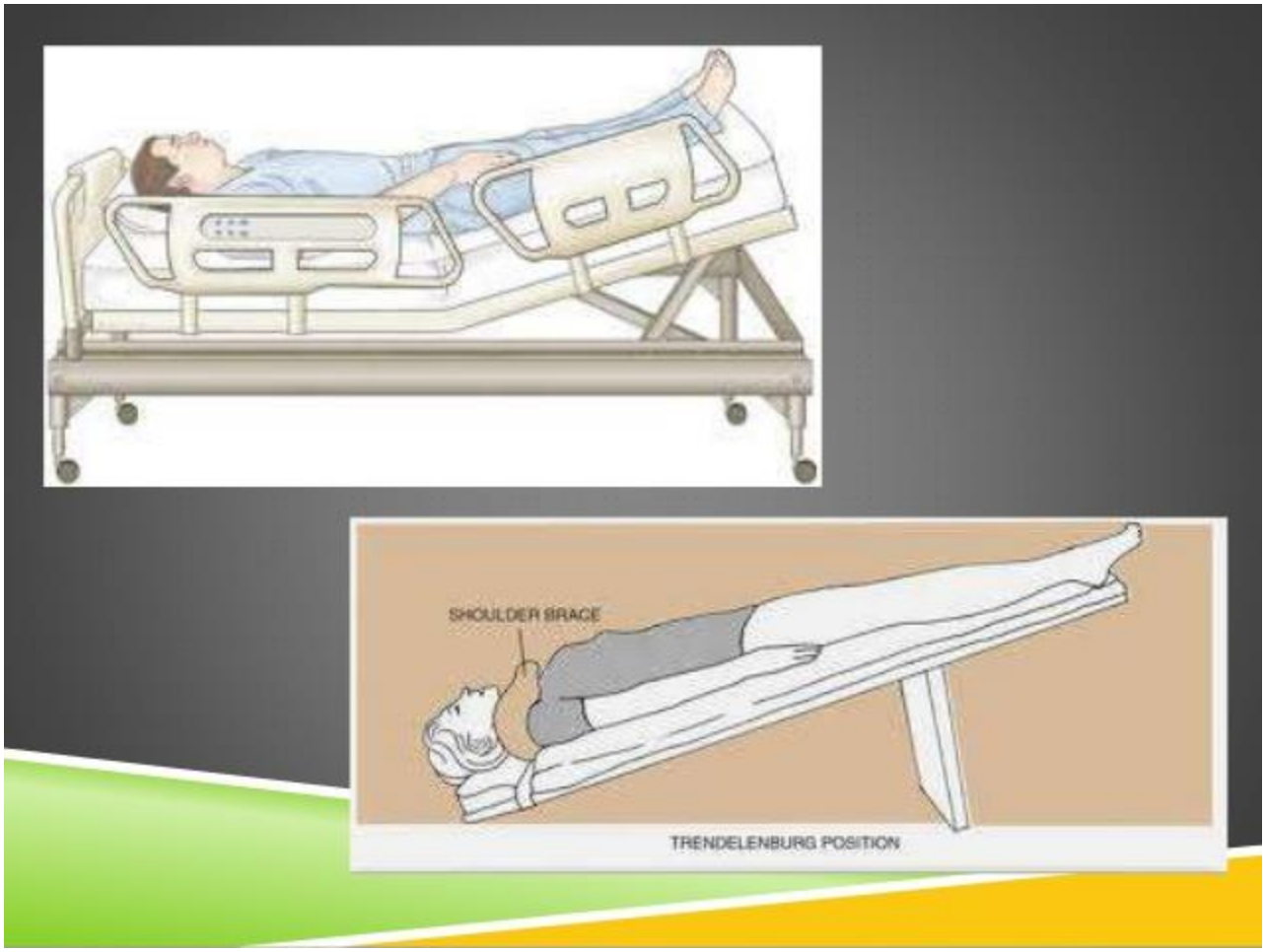


Lithotomy position




Fowler's

Trendellemburg



EYE PROTECTION

- During the peri-operative period 20% of corneal abrasions occur as a result of direct trauma or chemical injury, but the majority are associated with lagophthalmos (failure of the eyelids to close properly) leading to corneal drying .
- The eye may be injured by face-masks, the anaesthetist's hands, watch strap, name badge and laryngoscope during intubation, surgical drapes, surgical instruments, skin preparation solutions, or the direct irritant effect of inhalational anaesthetic agents .
- In the postoperative recovery period the eye may be injured by face masks, the patient's fingers or the bed linen, especially if the patient is in the lateral position

E. White
M. M. Crosse
The aetiology and prevention of peri-operative corneal abrasions. 06 April 2002
https://doi.org/10.1046/j.1365-2044.1998.00269.x

Case: Unexplained Apnea

A 15-year-old boy with no past medical history underwent elective right knee arthroscopy and debridement under general anesthesia. After uneventful induction of anesthesia, the surgeons requested antibiotic prophylaxis with cefazolin 1 gram, which the anesthesiology team administered.

Case (cont.): Unexplained Apnea

Before the first incision, 50 mcg of Fentanyl was administered. About 2 minutes later, the patient became apneic. The surgeon and anesthesiologist assumed the patient's apnea was due to opiate sensitivity and assisted ventilation by hand for 30 minutes. However, despite a rise in the end-tidal CO2 to 70mm Hg, spontaneous respirations did not return.

Case (cont.): Unexplained Apnea

Because the apneic episode lasted longer than 30 minutes, the anesthesia team began to question their initial assumption that the apnea was due to opiate sensitivity.

They had obtained the cefazolin from the medication drawer of the anesthesia cart.

*The anesthesia team examined the drawer and found vials of **cefazolin and vecuronium** in adjacent medication slots.*

Case (cont.): Unexplained Apnea

The vials were of the same size and shape, with similar red plastic caps.

The team realized that the patient had received vecuronium 10 mg, not cefazolin 1 g, and that the observed apnea was therefore due to unrecognized muscle relaxation.

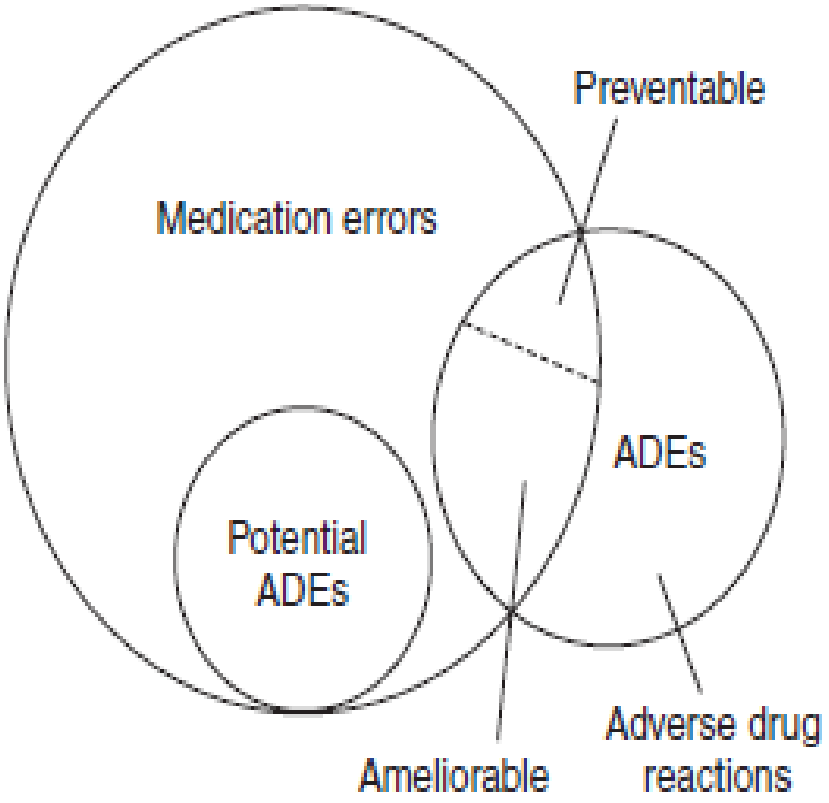
IS MEDICATION ERROR A REAL PROBLEM?

- There is an increasing recognition that medication errors are causing a substantial global public health problem, as many result in harm to patients and increased costs to health providers.
- However, study of medication error is hampered by difficulty with definitions, research methods and study populations.
- Few doctors are as involved in the process of prescribing, selecting, preparing and giving drugs as anaesthetists, whether their practice is based in the operating theatre, critical care or pain management.
- Anaesthesia is now safe and routine, yet anaesthetists are not immune from making medication errors and the consequences of their mistakes may be more serious than those of doctors in other specialties.

Wheeler S. J., Wheeler D. W., Medication errors in anaesthesia and critical care, Anaesthesia, 2005, 60, pages 257–273

DEFINITIONS

- A medication incident (MI) includes any irregularity in the process of medication use
- MI may represent an adverse drug event (ADE), potential ADE, medication error
- An incident can occur at any point in the medication use process (ordering, transcribing, dispensing, administrating, and monitoring).



T Morimoto, T K Gandhi, A C Seger, T C Hsieh, D W Bates, Adverse drug events and medication errors: detection and classification methods
Qual Saf Health Care 2004;13:306–314

PRINCIPLES OF CLASIFFICATION OF INCIDENTS

- actual vs potential
- preventible vs non-preventible
- ameliorablevs non- ameliorable
- error vs non-error

- A medication error become medication incident only when the patient is harmed.

- Not all incidents related to medication are caused by medication errors (ex. annafilactic reaction, toxicity)

SEVERITY CATEGORIES FOR INCIDENT CLASSIFICATION

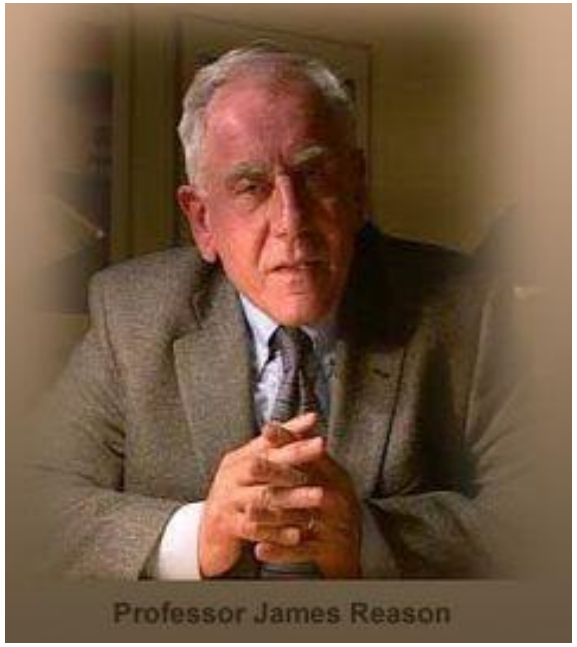
Fatal	Patient died due to the incident
Life threatening	Patient transferred to ICU. Respiratory failure requiring intubation. Mental status change: patient falls and gets intracranial hemorrhage Tongue swelling/anaphylactic shock due to medication
Serious	Gastrointestinal bleeding. Altered mental status/excessive sedation due to medication Increased creatinine due to medication. Decrease in blood pressure, Allergic reaction: shaking chills/fever.
Significant	Rash. Diarrhea due to antibiotics. Thrombocytopenia due to histamine type 2 antagonist. Nausea resulting from oral potassium. Nausea and vomiting due to erythromycin

DEFINITION AND CLASSIFICATION OF ERROR

An error is a failure to perform an action as intended.

- There is no universally agreed classification of human error; indeed, many who have published in the field have developed their own taxonomy.

Many investigators have adopted James Reason's classification, which draws widely from the aviation and nuclear industries as well as medicine [*Reason J. Human Error. Cambridge: Cambridge University Press, 1990*.].

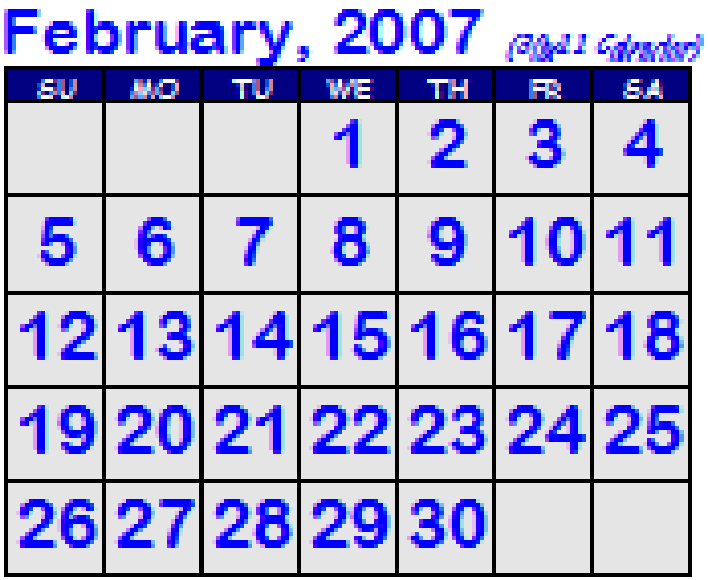

Professor James Reason

He divides errors into:

- **Slips,**
- **lapses,**
- **mistakes**
- **violations.**

SLIPS

- results from a failure in the execution of an action, whether or not the plan behind it was adequate to reach its objective
- skill-based, occurring during the execution of smooth, automated and highly integrated tasks that do not require conscious control or problem solving
- For example, writing the year incorrectly in the date shortly after New Year is a slip



Reason J. Human Error. Cambridge: Cambridge UniversityPress, 1990.

LAPSES

- involve memory failure, and may only be

apparent to the person who experiences them

- forgetting to administer antibiotic prophylaxis prior to tourniquet inflation

Reason J. Human Error. Cambridge: Cambridge UniversityPress, 1990.

MISTAKE

- happen when a plan proves inadequate
- The operator is aware of the problem and begins to use rules or knowledge to solve it.
- When **knowledge or rules** are lacking, a mistake occurs

"An error doesn't become a mistake until you refuse to correct it".

Orlando A. Batista

Reason J. Human Error. Cambridge: Cambridge UniversityPress, 1990.

RULE-BASED MISTAKE

- is due to the failure to apply or the misapplication of normally good rules, or the application of bad rules
- an anaesthetist who intubated a child orally with a nasotracheal tube and did not recognise that it had become kinked. The child became profoundly hypoxic and died; the anaesthetist was convicted of manslaughter

  (Merry AF, McCall Smith A. Errors, Medicine and the Law. Cambridge: Cambridge University Press, 2001.)

KNOWLEDGE-BASED MISTAKES

- can be considered errors of judgement, occurring during ‘on the hoof’ problem solving when all prepackaged solutions are exhausted, a highly error prone endeavour, especially if an individual lacks knowledge or judgement
- anaesthetist convicted of manslaughter after failing to recognise a disconnected tracheal tube for a prolonged period, until the patient suffered a cardiac arrest and died [*Regina respondent and Adornako appellant. House of Lords Appeal Cases 1995; 1: 171–90]*

VIOLATION

- when rules of correct behaviour are consciously ignored
- Ex. Rapid administration of intravenous boluses

INCIDENCE

- #1 cause of adverse and preventable patient events
- 7000 deaths annually
- 45% of adverse drug events are caused by errors

Leape LL, et al. New Eng J Med. 1991;324:377-384.
IOM Report (1999)—To Err is Human.

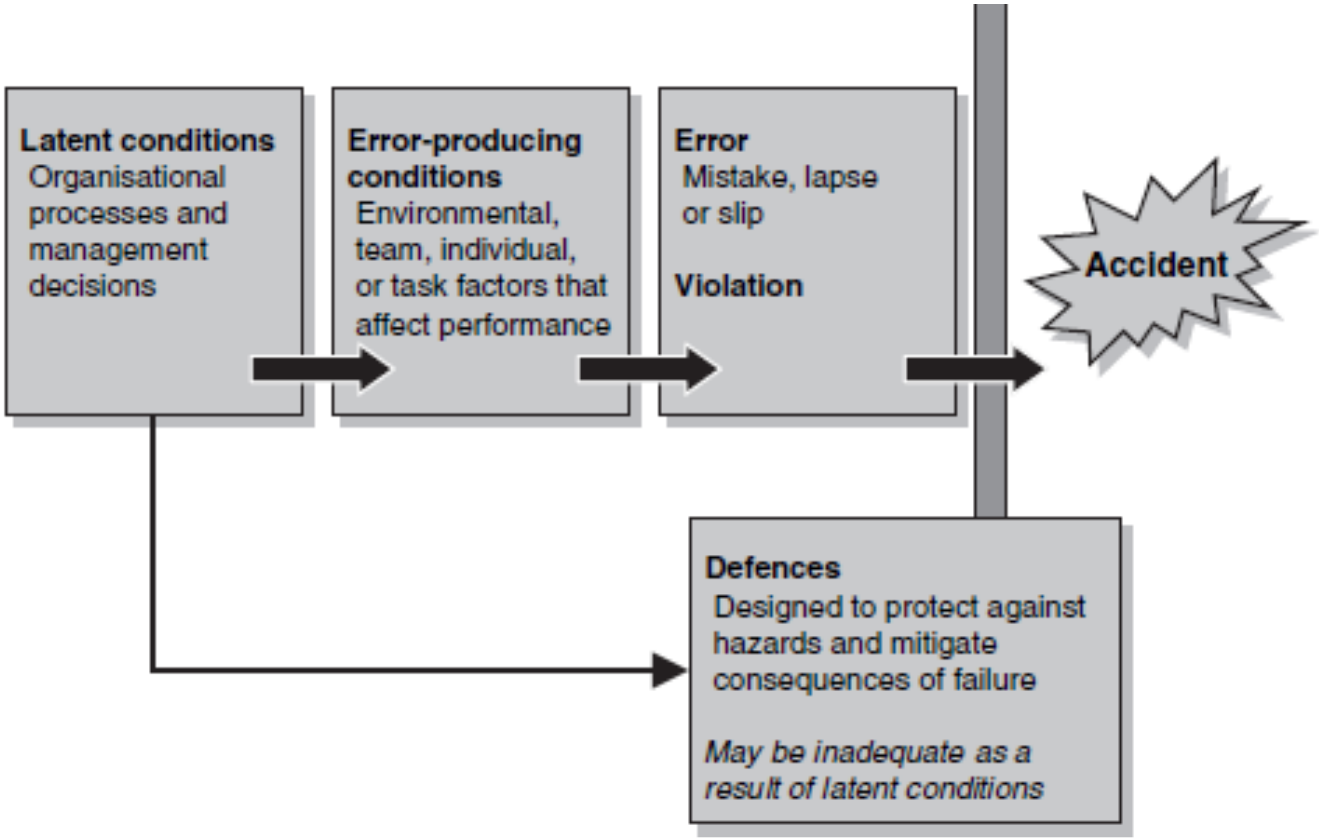
HOW COMMON ARE MEDICATION ERRORS AND ADE IN CRITICAL CARE?

- An observational study conducted on a Canadian paediatric critical care unit detected 147 errors made in 18 12-h shifts.
- The vast majority (84.4%) involved drugs with a high potential for serious consequences.
- The total error rate was 17.4% in the high dependency unit and 38.0% in the ICU, falling to 7.1% and 11.7%, respectively, when timing errors were excluded

Tisdale JE. Justifying a pediatric critical-care satellite pharmacy by medication-error reporting. American Journal of Hospital Pharmacy 1986; 43: 368–71.]

THE CAUSES OF ERROR: THE PERSON APPROACH VS. THE SYSTEM APPROACH

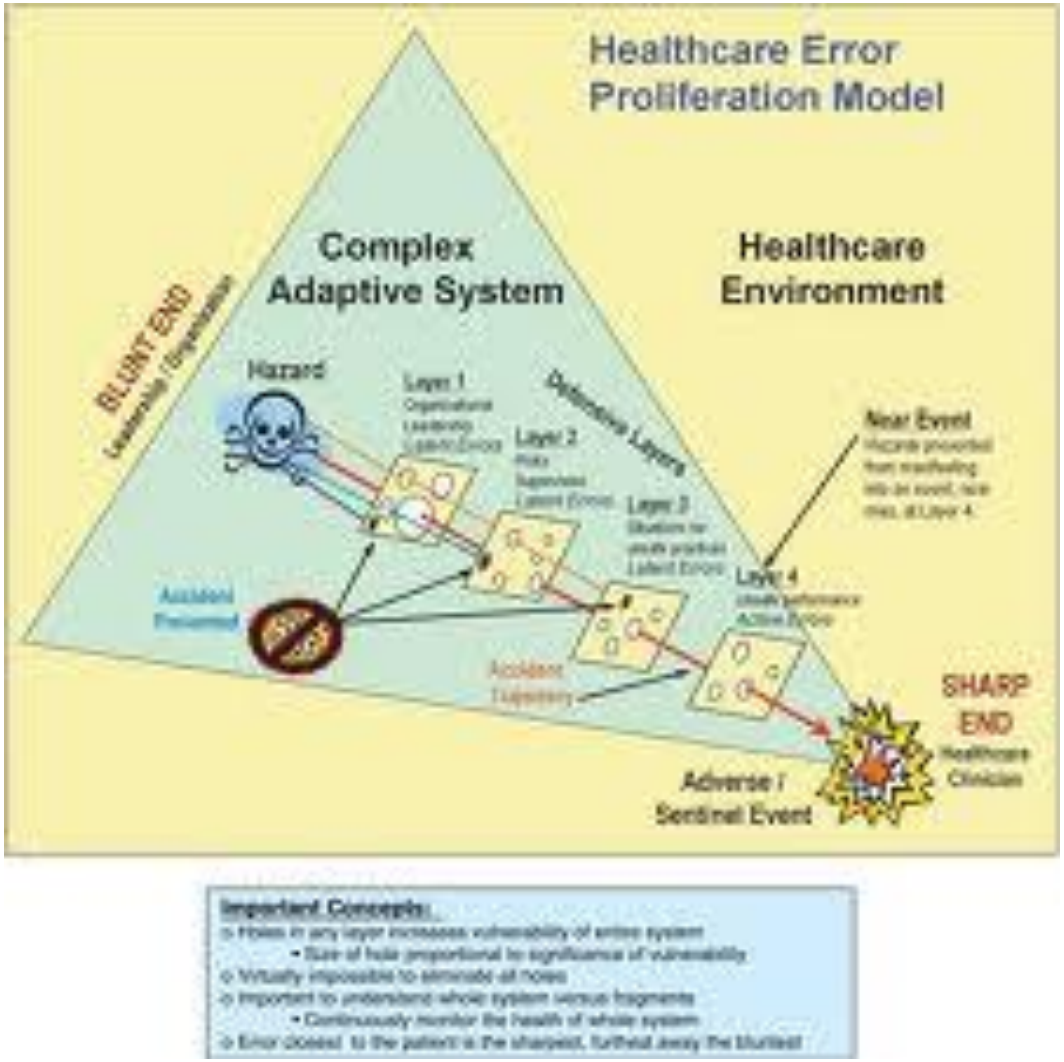
- the chain of error causation when a series of seemingly minor events combine by chance and result in an accident
- The prescriber, the person giving the drug, lack of communication, environment, formulation and presentation of drugs, or patient may contribute towards a medication error despite seemingly adequate defences



The Lancet 2002; 359: 1373–8)

THE PERSON APPROACH VS. THE SYSTEM APPROACH

- After an error, it is easiest to blame an individual for their carelessness, inattention, recklessness or lack of education, which Reason describes as the '**person approach**'
- Cognitive psychologists believe that slips, lapses and mistakes are the price we pay for advanced higher cerebral function, and so are inevitable.
- The physicians and nurses at the end of the chain are only part of a systemic failure; what Reason describes as the '**system approach**



Reason JT. Human error: models and management. British Medical Journal 2000; 320: 768–70)

PERSON VS SYSTEM APPROACH

- The system fails when several of these factors interact by chance to cause an error

a fatality occurred when the flow rate of a patient's epidural pump was increased to 125 ml.h by a ward nurse who wished to give an intravenous fluid bolus, despite the pump being correctly labelled and the patient receiving parenteral fluids via a gravity-fed drip set. The **person approach** would be to blame the nurse.

The system approach would highlight the fact that epidural pumps should have a maximum infusion rate of 20 ml.h, and that patients with epidural infusions should remain in high dependency areas where staff are more experienced.

Sayers P. Fatal epidural infusion. Anaesthesia and Intensive Care 2000; 28: 112.

WHEN TO SUSPECT WRONG DRUG ADMINISTRATION IN THE OPERATING ROOM

- Unusual response or lack of response to drug administration: pounding heart, mental status changes, apnea, muscle weakness, or visual disturbances
- Extreme or unexpected increase or decrease in blood pressure or heart rate
- Unexpected or persistent muscle relaxation
- Unexpected change or lack of change, in level of consciousness
- Incorrect ampoule found to be open in work area

STEPS IF WRONG DRUG ADMINISTRATION IN OR IS SUSPECTED

- Check the syringes and ampoules used during the case
- Check to see if unexpected low volume remains in syringe
- Inspect open ampoules
- Impound “sharps” container for inspection of ampoules and syringes at later time
- Consider drawing blood levels to ascertain drug given

STRATEGIES TO REDUCE MEDICATION ERRORS

- Standardization
- Technology
- Pharmacy
- Culture

APSF newsletter, spring 2010

STANDARDIZATION

- Standard ISO 26825:2008 (E) - *Anaesthetic and respiratory equipment - User applied labels for syringes containing drugs used during anaesthesia - colours, design and performance*
- High alert drugs (such as phenylephrine and epinephrine) should be available in standardized concentrations/diluents prepared by pharmacy in a ready-to-use (bolus or infusion) form that is appropriate for both adult and pediatric patients. Infusions should be delivered by an electronically controlled smart device containing a drug library.
- Ready-to-use syringes and infusions should have standardized fully compliant machine– readable labels.

TECHNOLOGY.
Keeping it simple – removing complexity

Every anesthetizing location should have a mechanism to identify medications before drawing up or administering them (bar code reader) and a mechanism to provide feedback, decision support, and documentation (automated information system).

"Things should be made as simple as possible, but not any simpler."
-Albert Einstein

PHARMACY/PREFILLED/PREMIXED

- Routine provider-prepared medications should be discontinued whenever possible.
- Clinical pharmacists should be part of the perioperative/operating room team.
- Standardized pre-prepared medication kits by case type should be used whenever possible

CULTURE

- Establish a *"just culture"* for reporting errors (including near misses) and discussion of lessons learned
- Establish a culture of education, understanding, and accountability via a required curriculum, CME/CE, and dissemination of dramatic stories in the *APSF Newsletter* and educational videos.
- Establish a culture of cooperation and recognition of the benefits of STPC within and between institutions, professional organizations, and accreditation agencies.

"That is true culture which helps us to work for the social betterment of all"
Henry Ward Beecher

Safe Transport of Critically Ill Patients

- **The transport of critically ill patients for diagnostic or therapeutic procedures carries a particular risk and requires therefore a careful risk-benefit assessment. Transport-related risks can be reduced by increased awareness and education, adequate staffing, proper choice and handling of equipment and the use of error-preventive tools like checklists.**

Intrahospital transfer of critically ill patient

Table 1. Questions to be Answered Before Patient Transport

Question	Domain	Responsible
What is the aim of the transport?	Organisation Medical Decision	ICU Physician
Will the results have clinical consequences?	Medical Decision	ICU Physician
Will the expected benefit outweigh the risks?	Risk Assessment	ICU Team
Is the patient stable enough? (see Fig. 1)	Medical Decision	ICU Physician
Is it the right point in time?	Organisation Medical Decision	ICU Team ICU Physician

https://healthmanagement.org/c/icu/issuearticle/safe-transport-of-critically-ill-patients

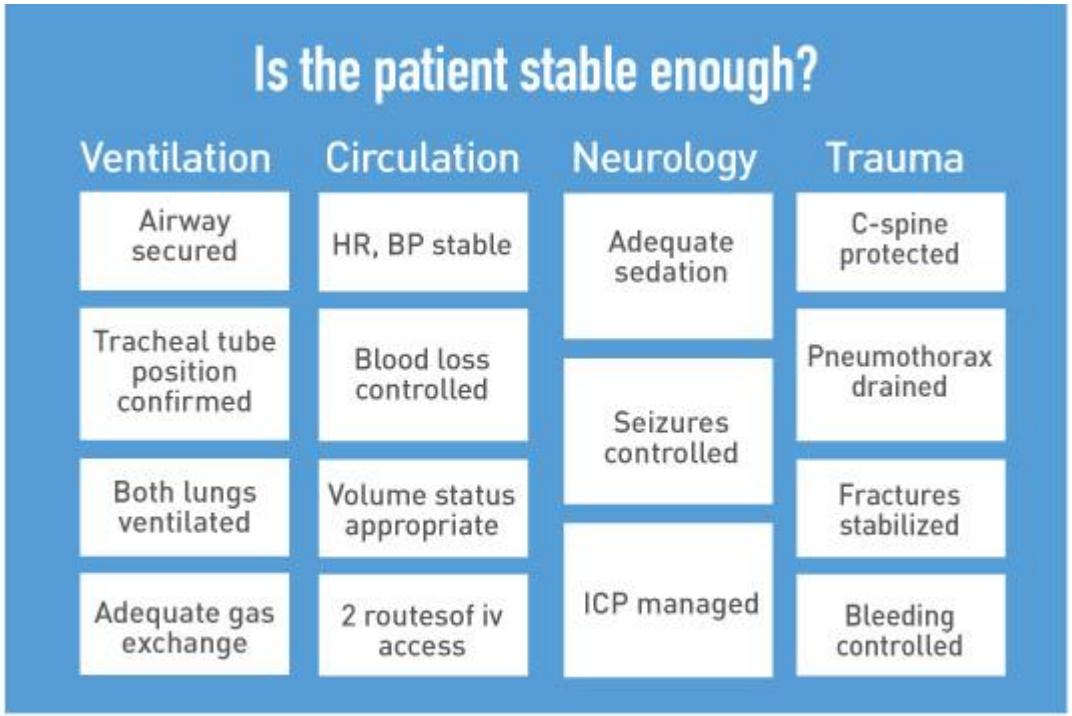


Figure 1.

https://healthmanagement.org/c/icu/issuearticle/safe-transport-of-critically-ill-patients

Considerations for safe intrahospital transfer

- ***Setting & Equipment***
- ***Staff***
- ***Route & Means of Transport***
- ***Handover***
- ***Checklists***

Safety of NORA

- refers to administration of sedation/anesthesia outside the operating room to patients undergoing painful or uncomfortable procedures
- Common procedures include radiology, gastrointestinal imaging, diagnostic/therapeutic interventions, pediatric cardiac catheterization, psychiatric treatment, and dentistry.

- Major unique challenges with NORA include those related to the patient, procedure, and environment.
- patients include pediatrics, geriatrics, and medically challenging patients who are too weak for surgical management but able to obtain some benefit from a procedure
- Unfamiliar locations, lack of monitoring devices, inadequately trained or insufficient staff, and unavailable medication or equipment in emergency situations places both patients and anesthesiologists at risk

Guidelines for Non-operating Room Anesthesia

Each location should have

- Reliable source of oxygen adequate for the length of the procedure, with a backup supply
- Adequate and reliable source of suction
- Adequate and reliable system for scavenging waste anesthetic gases
- Self-inflating hand resuscitator bag capable of administering > 90% oxygen
- Adequate anesthesia drugs, supplies, and equipment for the intended anesthesia care
- Adequate monitoring equipment to allow adherence to the "Standards for Basic Anesthetic Monitoring"
- Sufficient electrical outlets to satisfy anesthesia machine and monitoring equipment requirements

Provision for adequate illumination

- The patient, anesthesia machine, and monitoring equipment
- Battery-powered illumination other than a laryngoscope immediately available

Sufficient space

- Accommodate necessary equipment and personnel
- Allow expeditious access to the patient, anesthesia machine, and monitoring equipment

Immediate availability of an emergency cart

- Defibrillator, emergency drugs, and other equipment to provide cardiopulmonary resuscitation

Staff

- Trained anesthesiologist
- Adequate staff trained to support the anesthesiologist

Appropriate post-anesthetic management

- Adequate number of trained staff
- Appropriate equipment available to safely transport the patient to a post-anesthesia care unit

Statement on nonoperating room anesthetizing location Edited by The American Society of Anesthesiologists. 2010