Det Dagkirurgiske Landkort

Safety versus Efficiency
Is Day Case Surgery still safe?
And what do we do to keep it that way?

Ian Jackson
Doug McWhinnie

DANSK SELSKAB FOR DAGKIRURGI

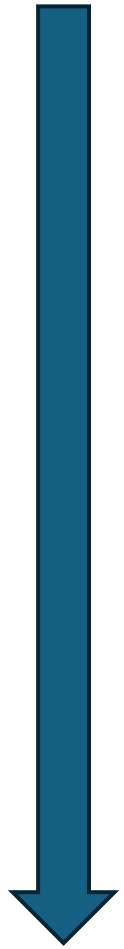
April 4-5 2025

Risk of Harm

1 in 1000000

1 in 250000

1 in 124000



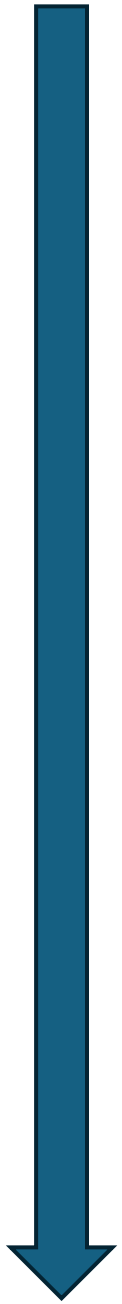
Risk of Harm

1 in 1000000

1 in 250000

1 in 124000

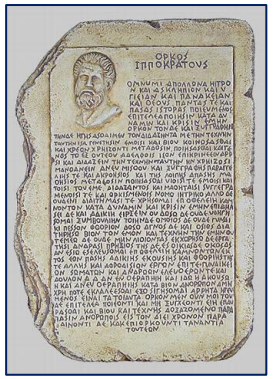
1 in 300



What is Patient safety ?

‘To abstain from doing harm’’

Hippocratic Oath



‘The prevention of harm to patients’

Institute of Medicine : Aspden P, Corrigan J, Wolcott J, et al., editors. Patient safety: achieving a new standard for care. Washington, DC: National Academies Press; 2004.

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

‘Is the absence of preventable harm to a patient during the process of health care’

WHO 2004

World Health Organization

Is Day Surgery Safe ?

acta Anaesthesiologica Scandinavica
An international journal of anaesthesiology, intensive care, pain, and critical emergency medicine
ssai

GENERAL ANAESTHESIA

Is day surgery safe? A Danish multicentre study of morbidity after 57,709 day surgery procedures

B. MAJHOLM ✉, J. ENGBÆK, J. BARTHOLDY, H. OERDING, P. AHLBURG, A.-M. G. ULRIK, L. BILL, C. S. LANGFRITS, A. M. MØLLER

First published: 15 February 2012 | https://doi.org/10.1111/j.1399-6576.2011.02631.x | Citations: 97

57709 procedures

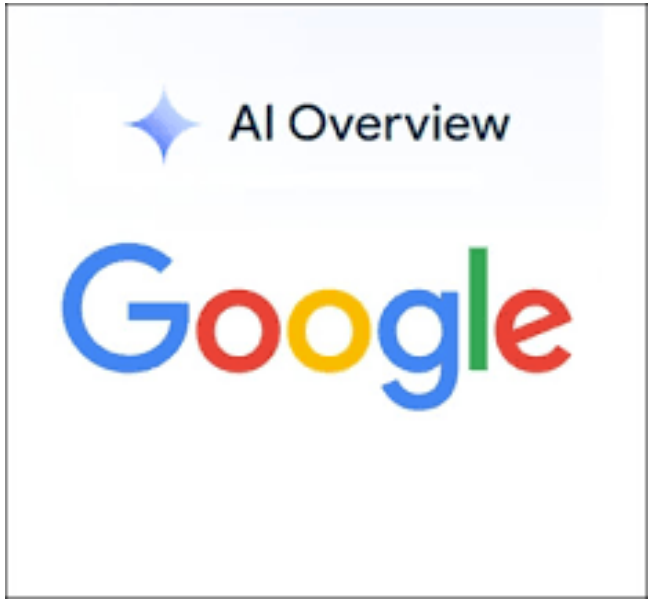
3 year period

8 centres

No deaths directly related to Day Surgery

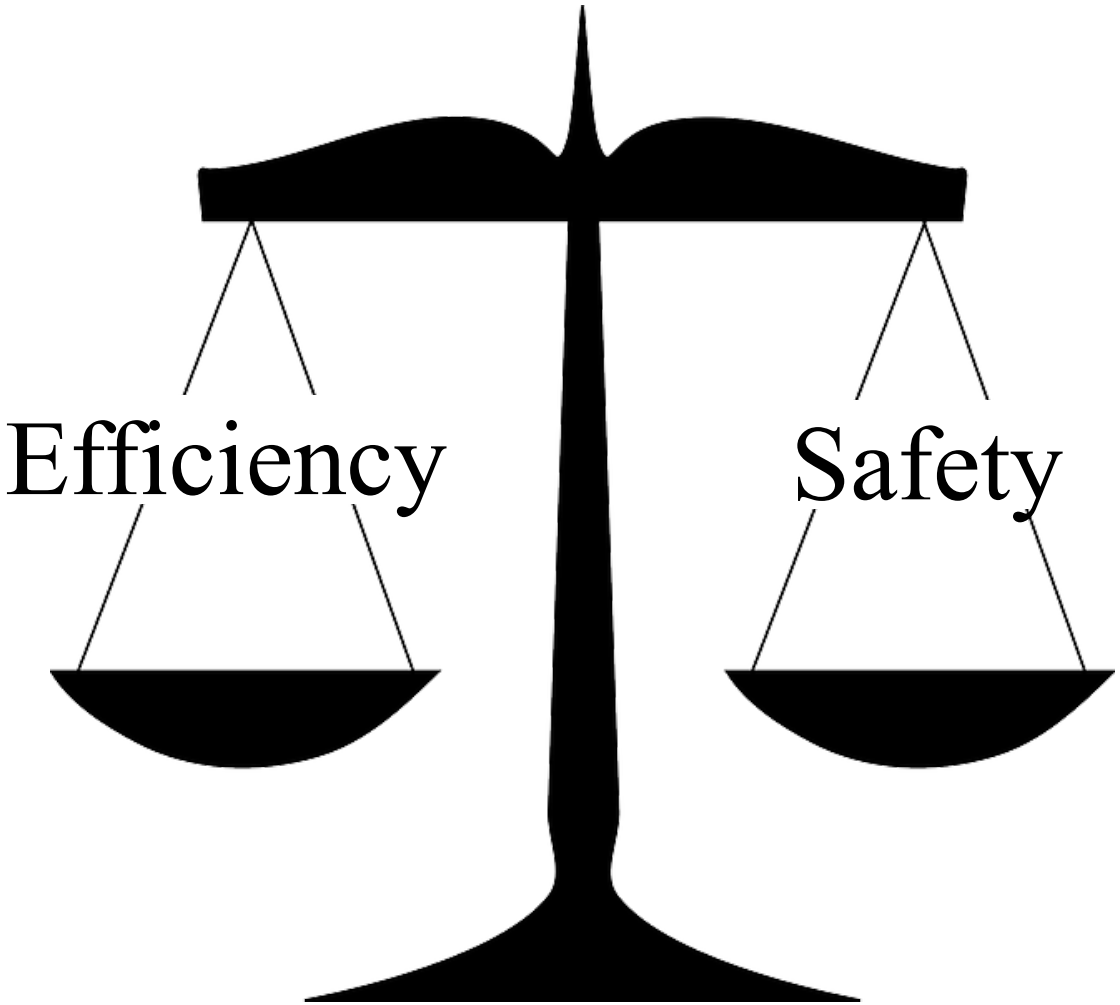
Readmission	1.21%
Haemorrhage	0.50%
Infection	0.44%

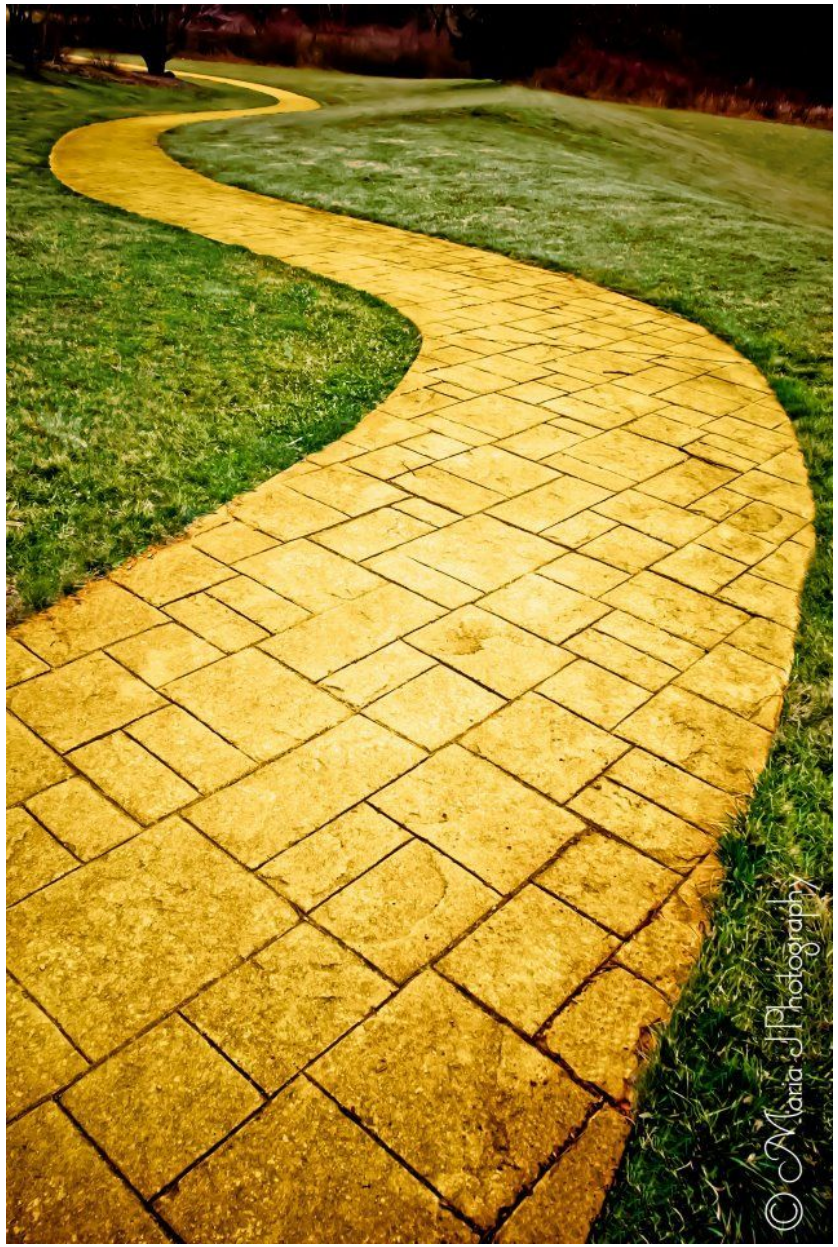
Day Surgery



Effektiviteten kan forbedres ved at reducere aflysninger, forbedre patientflowet og bruge informationsteknologi til at spore patientrejsen

Efficiency can be improved by reducing cancellations, improving patient flow, and using information technology to track the patient journey


Efficiency
Safety

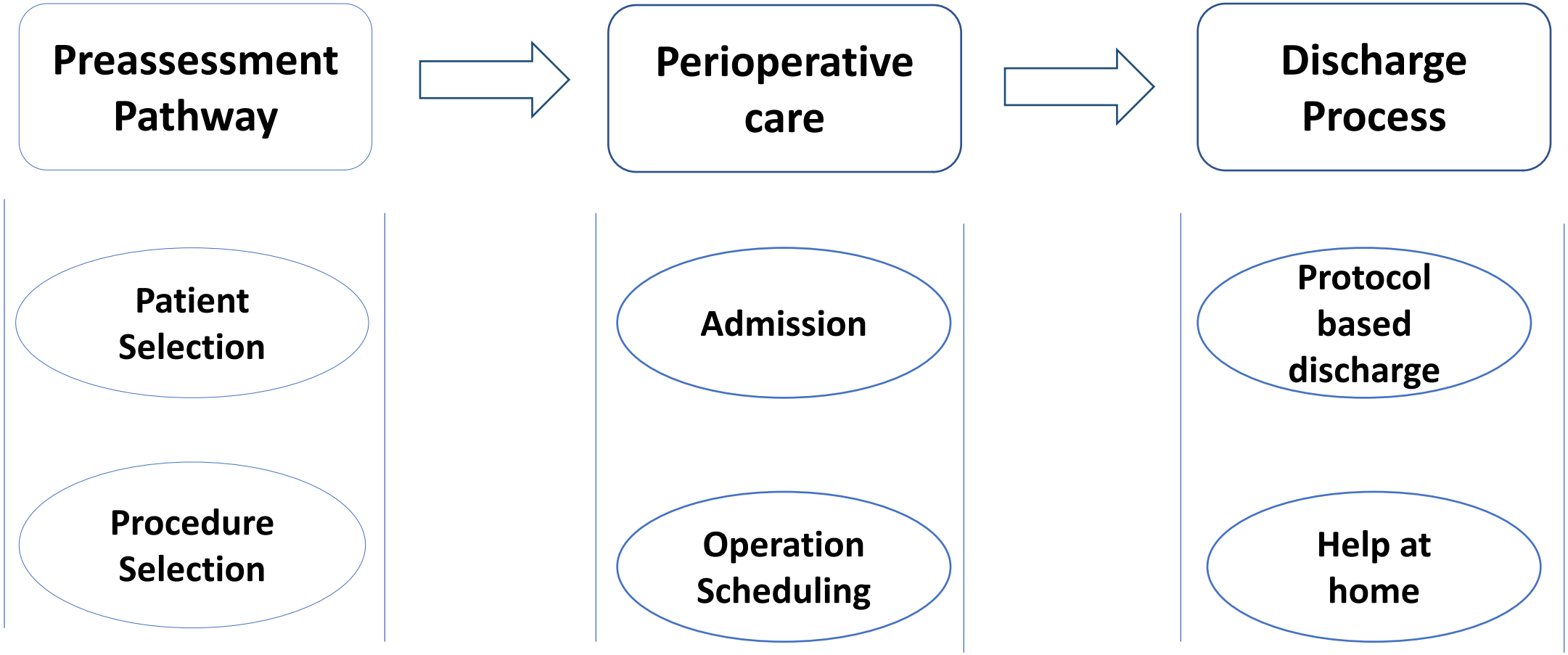


Ambulatory Surgery is a Pathway…..

The surgical procedure is the same whether inpatient or ambulatory admission

Patient Pathway

Safety vs Efficiency : where are the danger points?



Safety vs Efficiency

12 Areas of Concern

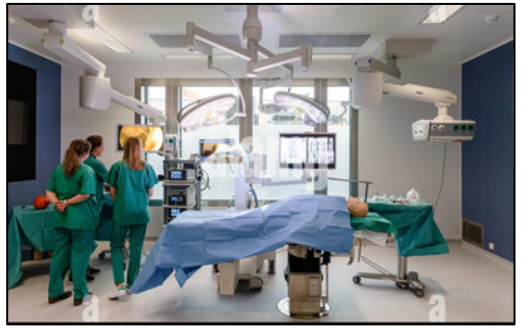
1

The Model of Care

Type of Ambulatory Unit

Stand Alone

- ✓ Efficient and cost effective
- ✓ No emergency admissions
- ✗ Restricted patient and procedure selection
- ✗ Limited medical backup
- ✗ Transfer unplanned admissions

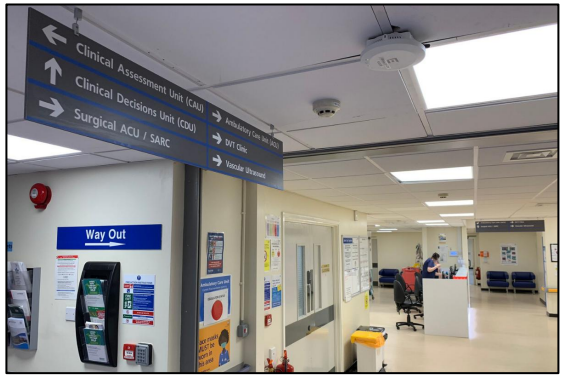


Type of Ambulatory Unit

Integrated Hospital

Dedicated Ward and Operating Facilities

- ✓ Independent function within Hospital Campus
- ✓ Mimimal patient and procedure restrictions
- ✓ Full medical backup
- ✓ Unplanned admissions easily transferred
- ✗ Possible emergency admissions



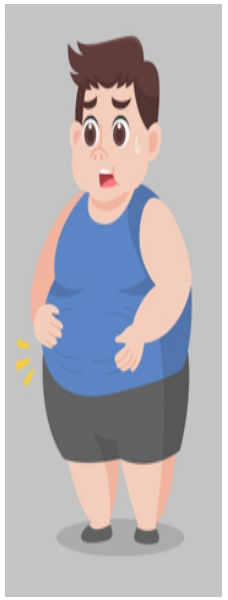
2

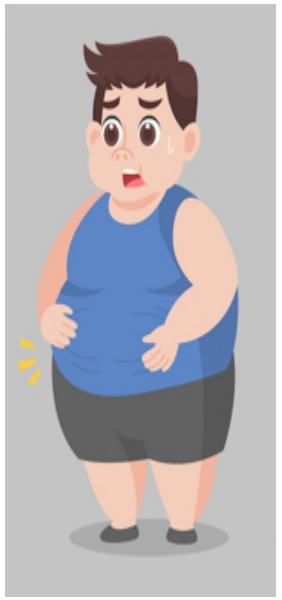
Patient selection

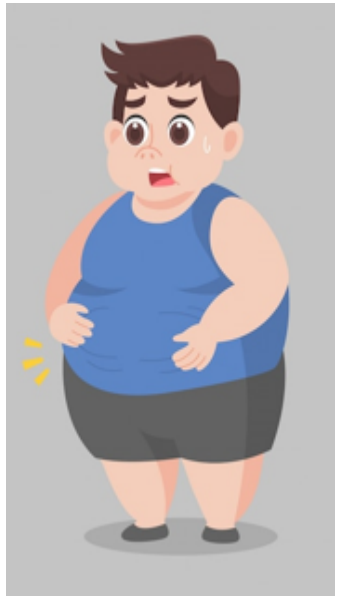
Regular Review of Patient Selection

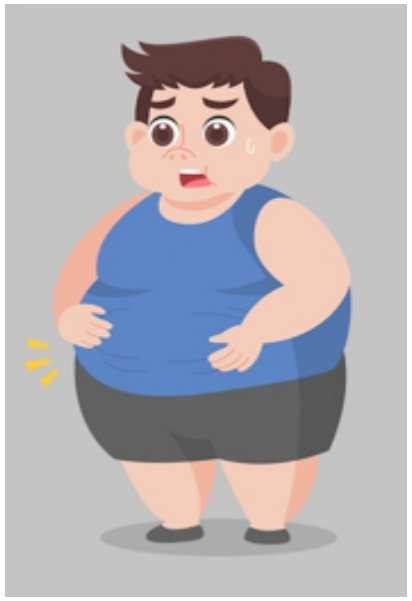
Criteria constraints for selection

Review Body Mass Index 30-33-35-38+









WEIGHT lbs	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215
kgs	45.5	47.7	50.0	52.3	54.5	56.8	59.1	61.4	63.6	65.9	68.2	70.5	72.7	75.0	77.3	79.5	81.8	84.1	86.4	88.6	90.9	93.2	95.5	97.7
HEIGHT in/cm	Underweight						Healthy					Overweight					Obese							Extremely obese
5'0" - 152.4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
5'1" - 154.9	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	36	37	38	39	40
5'2" - 157.4	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	33	34	35	36	37	38	39
5'3" - 160.0	17	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	32	32	33	34	35	36	37	38
5'4" - 162.5	17	18	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	31	32	33	34	35	36	37
5'5" - 165.1	16	17	18	19	20	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	34	35	35
5'6" - 167.6	16	17	17	18	19	20	21	21	22	23	24	25	25	26	27	28	29	29	30	31	32	33	34	34
5'7" - 170.1	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	33	33
5'8" - 172.7	15	16	16	17	18	19	19	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	32	32
5'9" - 175.2	14	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	31
5'10" - 177.8	14	15	15	16	17	18	18	19	20	20	21	22	23	23	24	25	25	26	27	28	28	29	30	30
5'11" - 180.3	14	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28	28	29	30
6'0" - 182.8	13	14	14	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29
6'1" - 185.4	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28
6'2" - 187.9	12	13	14	14	15	16	16	17	18	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27
6'3" - 190.5	12	13	13	14	15	15	16	16	17	18	18	19	20	20	21	21	22	23	23	24	25	25	26	26
6'4" - 193.0	12	12	13	14	14	15	15	16	17	17	18	18	19	20	20	21	22	22	23	23	24	25	25	26

Regular Review of Patient Selection

Criteria constraints for selection

Review Co-Morbidities

Respiratory

Cardiovascular

Diabetes

Are ASA and BMI good selection criteria ?

ASA Status and BMI :

Poor predictors of safety in day surgery

Possible higher risk of perioperative complications

Verma et al. Anaesthesia 2011;66(5):417-34

ASA 1 Normal healthy
ASA 2 Mild systemic disease
ASA 3 Severe systemic disease
ASA 4 Threat to life
ASA 5 Moribund

3

Procedure Selection

Procedures Suitable for Day Surgery : Principles

Replace open procedure with minimally invasive technique

Use of regional anaesthesia rather than general anaesthesia

Post-operative pain controlled by oral rather that injectable analgesics

No ongoing requirements for IV fluids

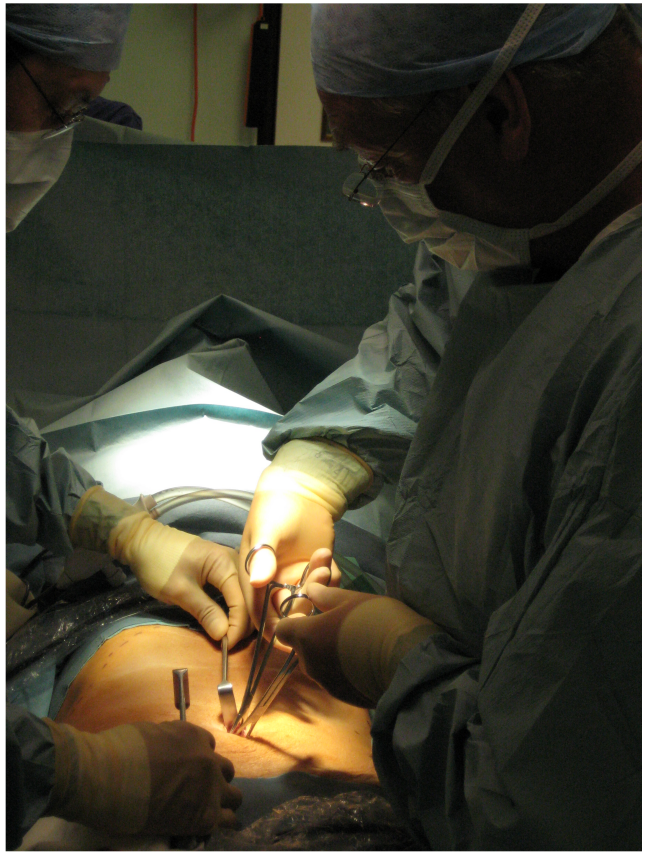
Operating time less than 2 hours

Procedures Suitable for Day Surgery : Principles

Gentle handling of tissues minimises post op pain

Small incisions and minimal dissection

Degree of surgical trauma is more important than the duration of the procedure



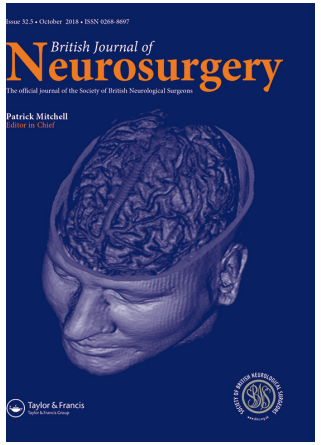
Expand Procedures for Ambulatory Surgery

Advise through directories or lists of proscribed procedures

Consider new procedures as ambulatory from the start

When introducing a new procedure, try first with overnight stay

Expand Procedures for Ambulatory Surgery



Br J Neurosurg. 2008 Jun;22(3):360-7. doi: 10.1080/02688690801961858.

Day-case neurosurgery for brain tumours: the early United Kingdom experience

P L Grundy [1], C Weidmann, M Bernstein

Affiliations + expand

PMID: 18568724 DOI: 10.1080/02688690801961858

Craniotomy

Journal of Endourology > VOL. 25, NO. 4 | Laparoscopy and Robotic Surgery

Day Case Laparoscopic Nephrectomy

Cristian P. Ilie, Christopher J. Luscombe, Ian Smith, Jane Boddy, Dan Mischianu, and Anurag Golash

Published Online: 7 Apr 2011 | https://doi.org/10.1089/end.2010.0503

Laparoscopic Nephrectomy

Expand Procedures for Ambulatory Surgery

Hip and Knee Replacement

Bone Jt Open. 2021 Nov; 2(11): 900–908. PMCID: PMC8636294
Published online 2021 Nov 3. doi: 10.1302/2633-1462.211.BJO-2021-0106.R1 PMID: 34729998

Introducing a day-case arthroplasty pathway significantly reduces overall length of stay

Paul Saunders, MSc, Research Assistant & Enhanced Recovery Program Lead, [1] Nick Smith, PhD, MSc, BMBS, Orthopaedic Consultant Surgeon, [2] Farhan Syed, MBBS, MS (Ortho), MRCSEd, FRCS (Tr&Orth), Orthopaedic

Robotic Radical Prostatectomy

J Urol. 2019 Nov;202(5):959-963. doi: 10.1097/JU.0000000000000353. Epub 2019 Oct 8.

Same Day Discharge after Robotic Radical Prostatectomy

Ronney Abaza [1] [2], Oscar Martinez [1], Matthew C Ferroni [1], Aya Bsatee [2], Robert S Gerhard [1]

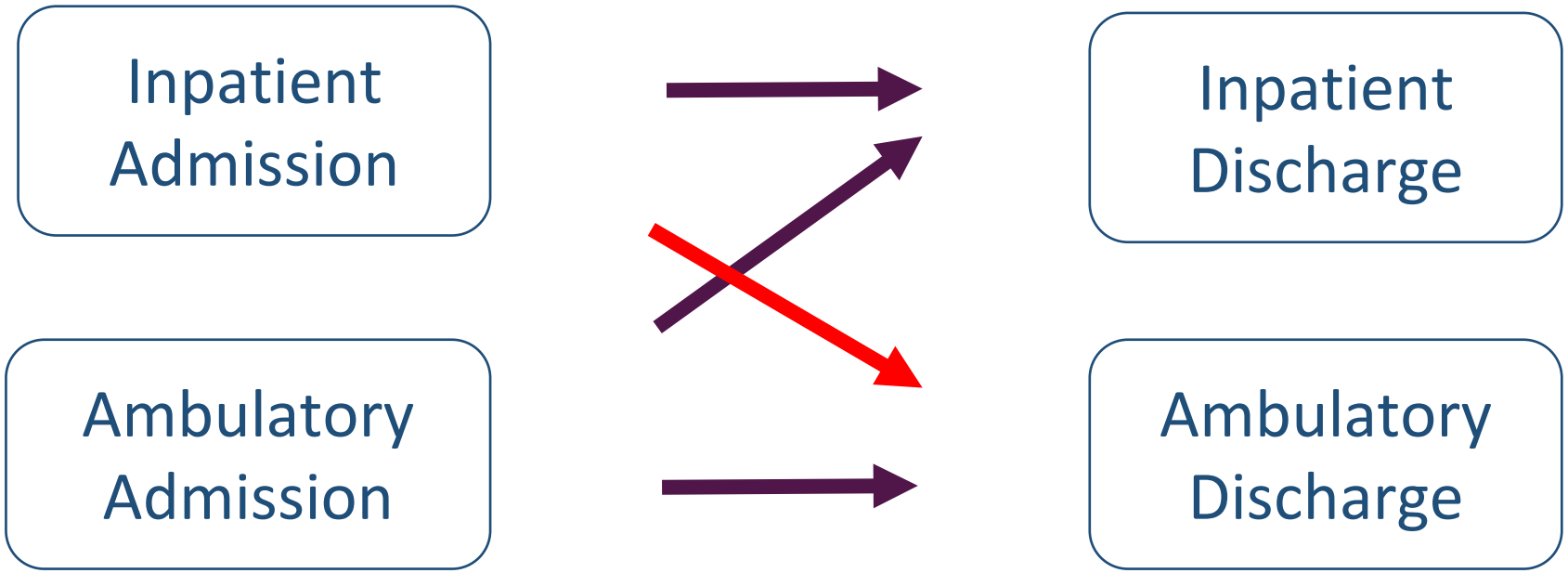
Affiliations + expand

PMID: 31112102 DOI: 10.1097/JU.0000000000000353

4

Changing the Pathway

Stay on the Pathway



Intention to Treat dictates the pathway

Do not use inpatient beds for day surgery

Stay on the Pathway

Unplanned overnight admissions
Ambulatory Unit – 1.0 %
In-Patient Ward – 17.0 %

Day Surgery in Different Guises.Fehrmann K, Matthews CM, Stocker ME
J One-Day Surgery 2011; 19;39-47

Ambulatory patients are perceived to require less attention and are often neglected

5

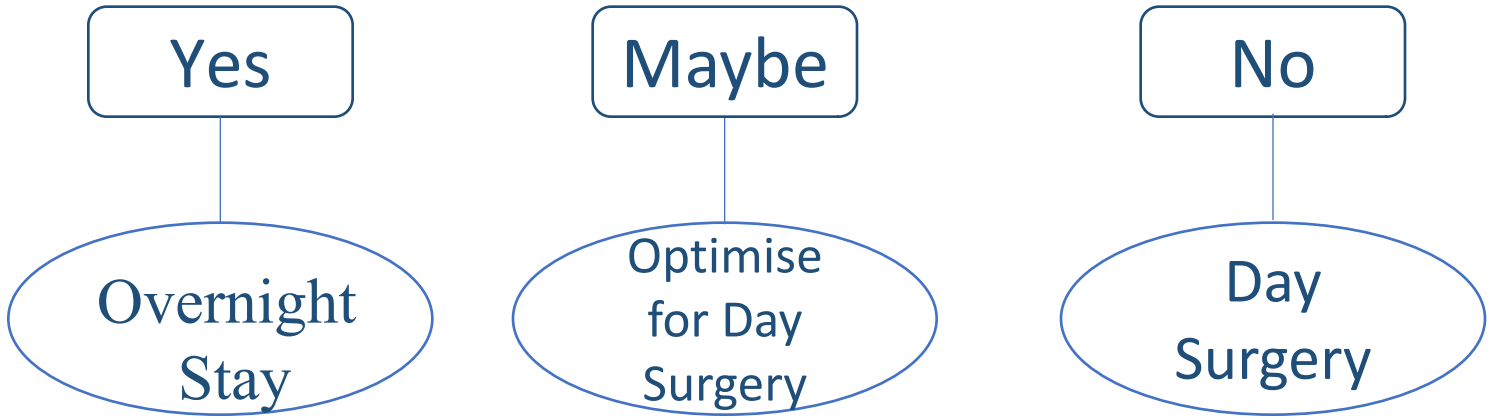
Default to Ambulatory Surgery

Default to Ambulatory Surgery Philosophy

Do not ask whether this patient CAN be a day case

↓

Ask whether there is any reason this patient CANNOT be a day case



6

Preassessment

Preoperative Assessment

Purpose

- Identify Co-Morbidities
- Optimise Patient Health
- Ensure Social Support
- Provide Information
- Manage Patient Expectations
- Reduce Cancellations on the Day
- Order Relevant Investigations
- Patient Safety

Preoperative Assessment Format

One-stop at Surgical Clinic

Interval Preassessment

- Face-to-Face
- Telephone
- On-line

Specific Anaesthetic Assessment

Right Patient for Right Assessment
Requires Triage

Preassessment Team

- Dedicated preassessment team
  - Nurses
  - Anaesthetic sessions
- Empowered
  - Decide day case or overnight stay
- Preassessment
  - Valid for limited time

Macarthur AJ, Macarthur C, Bevan JC. Preoperative assessment clinic reduces day surgery cancellations. Anesthesiology 1991;**75**:A1109.

Anesthesiology
The Journal of the American Society of Anesthesiologists, Inc

Timing of Preassessment

Too early

Preassessment validity
Patient relocates
Patient changes mind
Procedure not required

Too late

Patient availability
Unforeseen comorbidities
Unable to optimise

Late Cancellation or Suboptimal Preparation

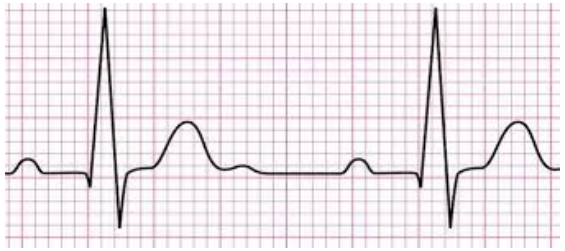
7

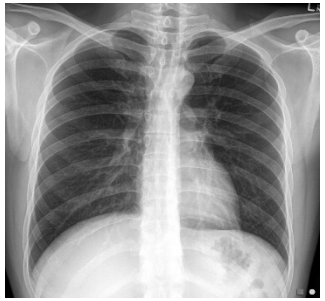
Preassessment Investigations

Preassessment Investigations

Routine preassessment investigations on healthy patients is unnecessary (and costly)

Czoski-Murray C et al Health Technol Assess 2012 Dec;16(50):i-xvi, 1-159.





Structured history and targeted examination performed by experienced nursing staff required

www.nice.org.uk/guidance/ng45

Relevant Investigations

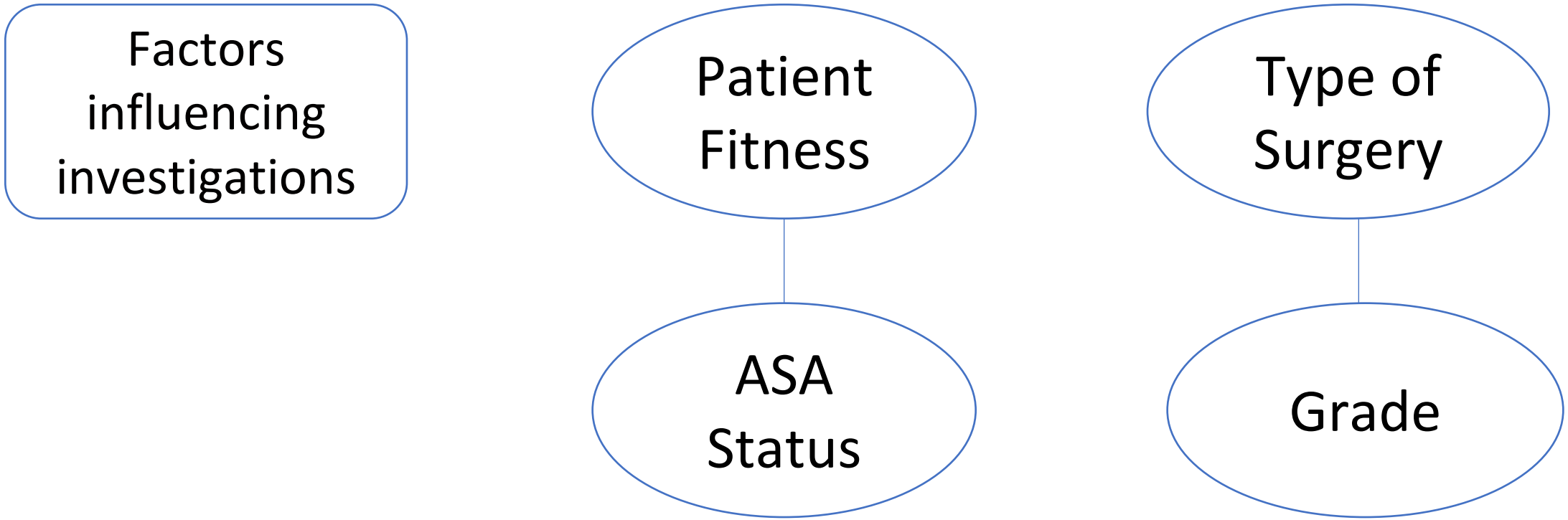
Pregnancy Test	Premenopausal Fertile Women
Urine Tests	Not Routinely
Full Blood Count	Not Routinely
Kidney Function	Diabetes and Kidney Disease
HbA1c	Diabetes
Haemostasis	Not routinely
Electrocardiography	Not routinely
Echocardiography	Heart Murmur
Chest X-Ray	Not routinely

Many patients are over-investigated before surgery

Relevant Investigations

Defensive Medicine versus Economic Considerations

Guidelines essential



Relevant Investigations

ASA 1: A normal healthy patient
ASA 2: A patient with mild systemic disease
ASA 3: A patient with severe systemic disease
ASA 4: A patient with life-threatening severe systemic disease

Most patients undergoing Ambulatory Surgery are ASA 1 or 2

Relevant Investigations

Examples

Minor	Intermediate	Major
Excision skin lesion	Primary repair inguinal hernia	Abdominal hysterectomy
Abscess Drainage	Varicose veins interventions	Endoscopic resection of prostate
Cataract removal	Tonsillectomy	Laparoscopic Cholecystectomy
	Knee arthroscopy	Thyroidectomy
		Joint replacement

Increasingly more Major Procedures are included

Recommendations for Surgery Grades and ASA Status

Minor Surgery

Test	Full Blood Count	Haemostasis	Kidney function	ECG
ASA 1	Not Routinely	Not Routinely	Not Routinely	Not Routinely
ASA 2	Not Routinely	Not Routinely	Not Routinely	Not Routinely

Intermediate Surgery

Test	Full Blood Count	Haemostasis	Kidney function	ECG
ASA 1	Not Routinely	Not Routinely	Not Routinely	Not Routinely
ASA 2	Not Routinely	Not Routinely	Risk of Acute Kidney Injury	Diabetes, Kidney or Heart Comorbidities

Recommendations for Surgery Grades and ASA Status

Major Surgery

Test	Full Blood Count	Haemostasis	Kidney function	ECG
ASA 1	Yes	Not Routinely	Yes	Yes
ASA 2	Yes	Not Routinely	Yes	Yes

NICE accredited

www.nice.org.uk/accreditation

Efficient Preoperative Assessment

All patients - Health Screen Questionnaire

Stratify patients

Minor/Intermediate surgery and healthy patients – Telephone

Major Surgery and patients with comorbidities – Face to face

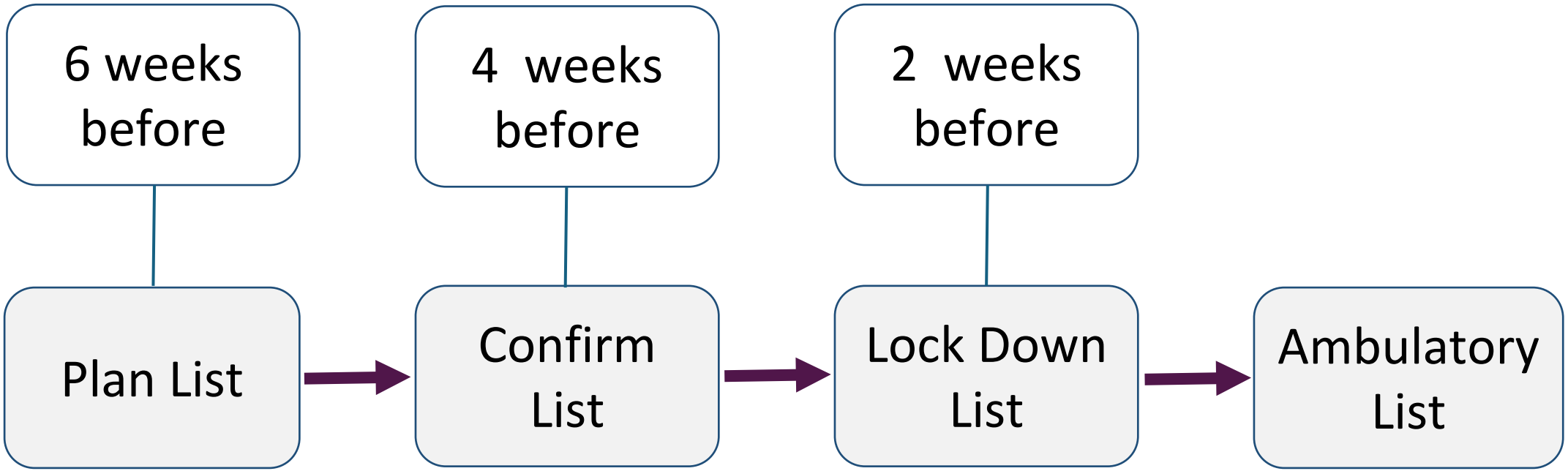
8

Scheduling

Scheduling of Surgery

Ambulatory Surgery independent of Emergency Surgery

Confirm staff, operating theatre and patient availability



9

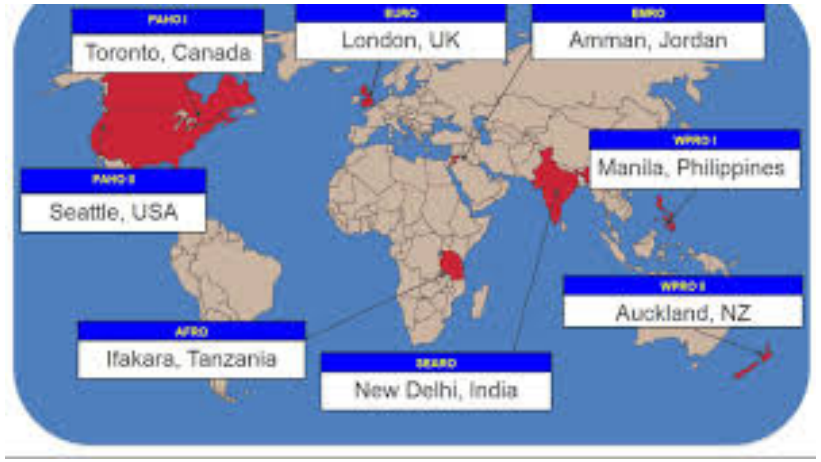
Operating Theatre

Operating Theatre Efficiency



Costs – 20 Euro per Minute

WHO Checklist Pilot Study



The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population

Alex B. Haynes, M.D., M.P.H., Thomas G. Weiser, M.D., M.P.H., William R. Berry, M.D., M.P.H., Stuart R. Lipsitz, Sc.D., Abdel-Hadi S. Breizat, M.D., Ph.D., E. Patchen Dellinger, M.D., Teodoro Herbosa, M.D., Sudhir Joseph, M.S., Pascience L. Kibatala, M.D., Marie Carmela M. Lapitan, M.D., Alan F. Merry, M.B., Ch.B., F.A.N.Z.C.A., F.R.C.A., Krishna Moorthy, M.D., F.R.C.S., Richard K. Reznick, M.D., M.Ed., Bryce Taylor, M.D., and Atul A. Gawande, M.D., M.P.H., for the Safe Surgery Saves Lives Study Group*

Haynes AB, et al. A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population. New England Journal of Medicine, 2009; 360:491-9

Before checklist introduced

3733 patients > 16 years
Mortality 1.5%
Complications 11%

After checklist introduced

3955 patients > 16 years
Mortality 0.8%
Complications 7%

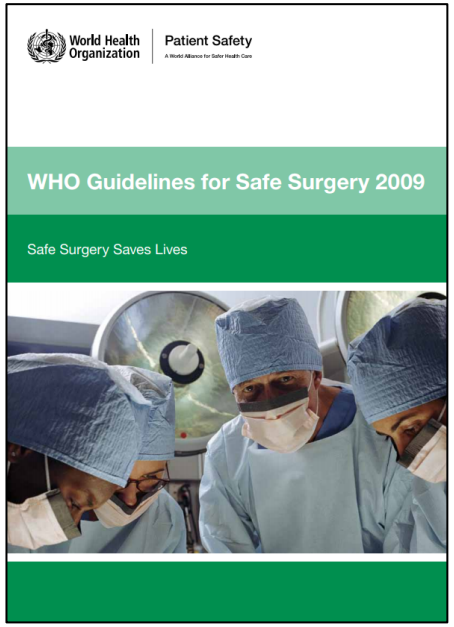
Safe Surgery Saves Lives Campaign 2009

World Health Organization

WHO Briefing and Checklist

Hospitals do **MOST** of the right things on **MOST** patients **MOST** of the time

The checklist helps us do **ALL** the right things on **ALL** the patients **ALL** of the time



WHO Operating Room Briefing and Checklist

Team briefing

Before start of list

Safety checklist

Before start of each procedure

Improves efficiency…….and patient safety

Preoperative Fasting

6 hours for solids

2 hours for clear fluids

(water, pulp-free fruit juice, black coffee or tea)

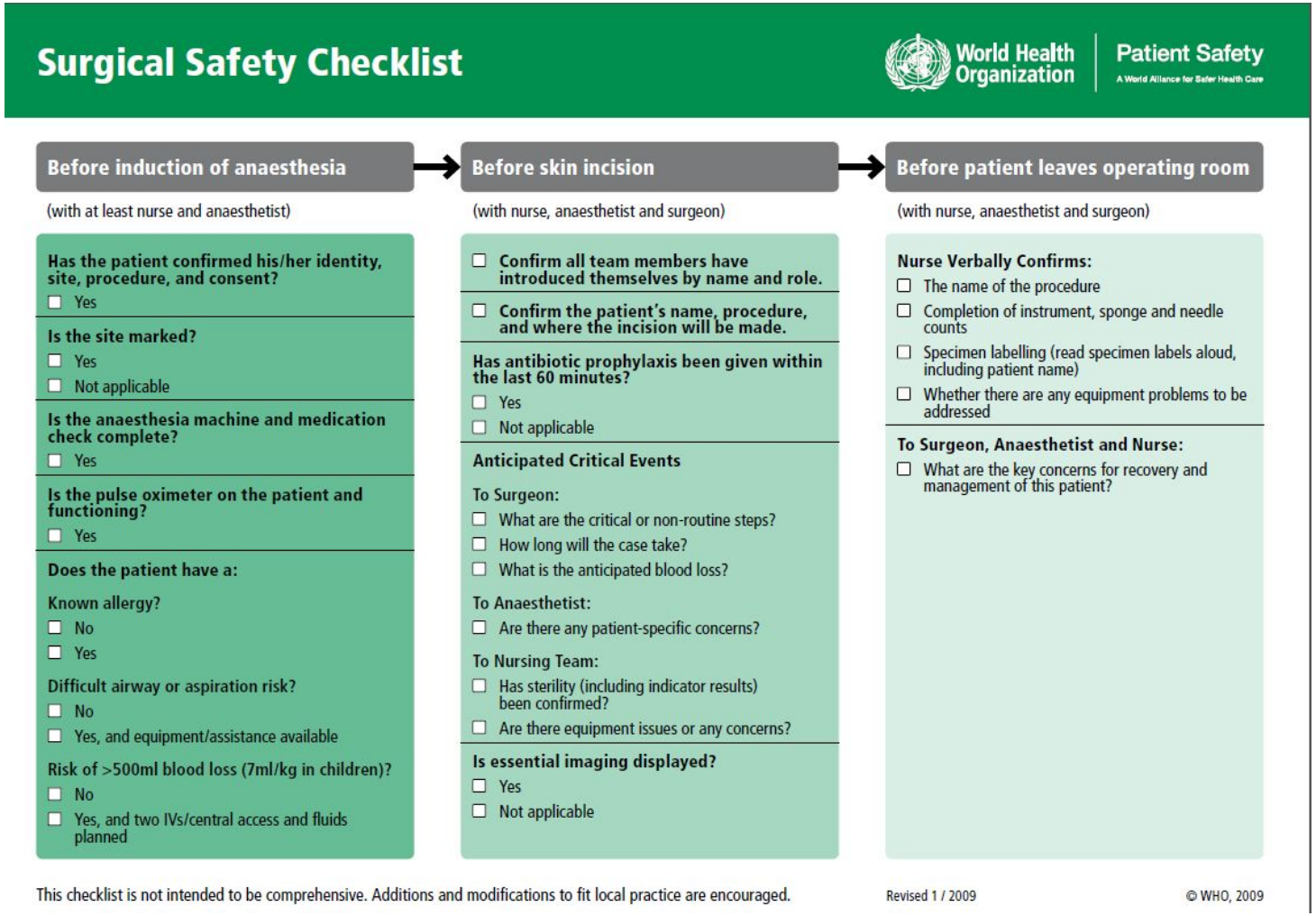
Sips until sending for patient

Perioperative fasting in adults and children: guidelines from the European Society of Anaesthesiology. Eur J Anaesthesiol 2011;28:556–569

Sign in

Time out

Sign out



Surgical Safety Checklist

World Health Organization | Patient Safety
A World Alliance for Safer Health Care

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?

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Revised 1 / 2009

Check COVID test results

Check VTE assessment

Basic Operating Theatre Metrics

Measurement	Outcome
Number operating Lists Operating time Number of procedures Start Time	Scheduled Utilisation % Total and Mix Start on Time %

Basic metrics only simple audit

Is Start Time a Good Indicator of Efficiency ?

Easy to measure

Considered a surrogate measure of theatre efficiency

Causes include:

- Delays in patients arriving in theatre
- Incomplete presurgical checks
- Late changes in the order of the operating list

Is Start Time a Good Indicator of Efficiency ?

A late departing train will arrive late

Operating list start times do not predict finish time !

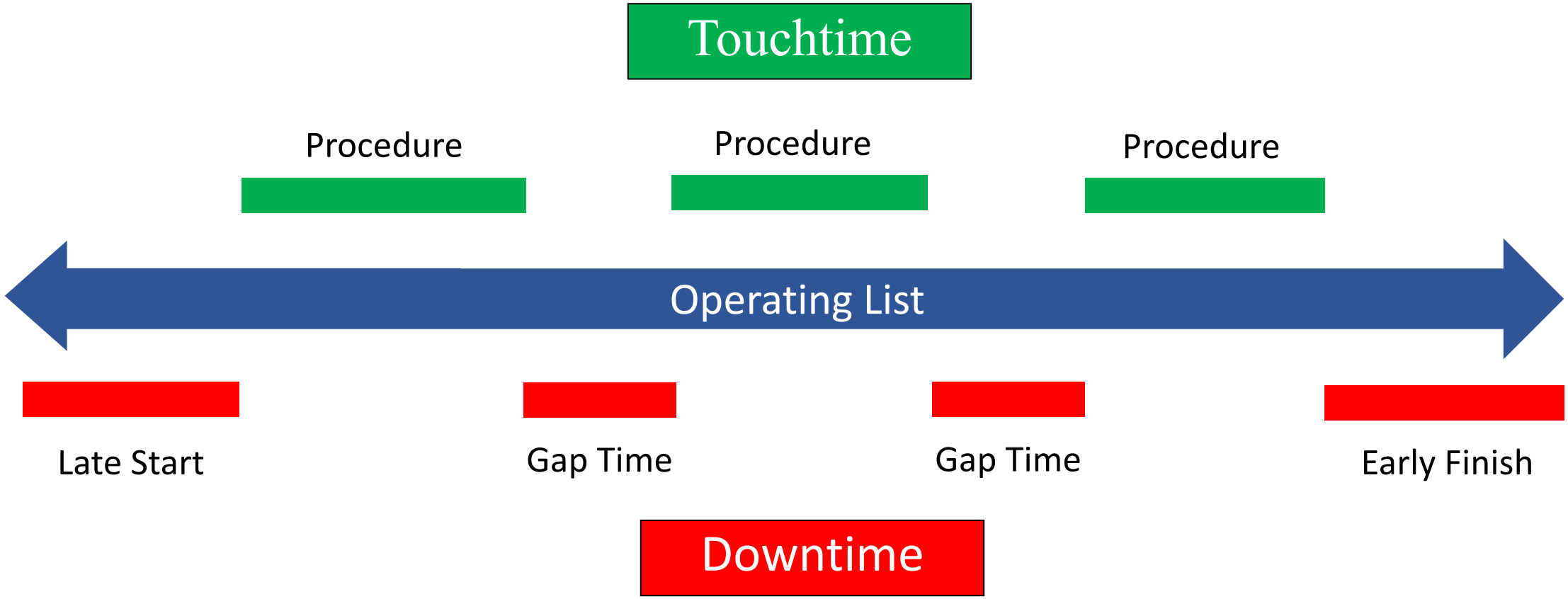
Late start underbooked list finishes on time

Late start overbooked list finishes late

Early start overbooked list finishes on time or less late

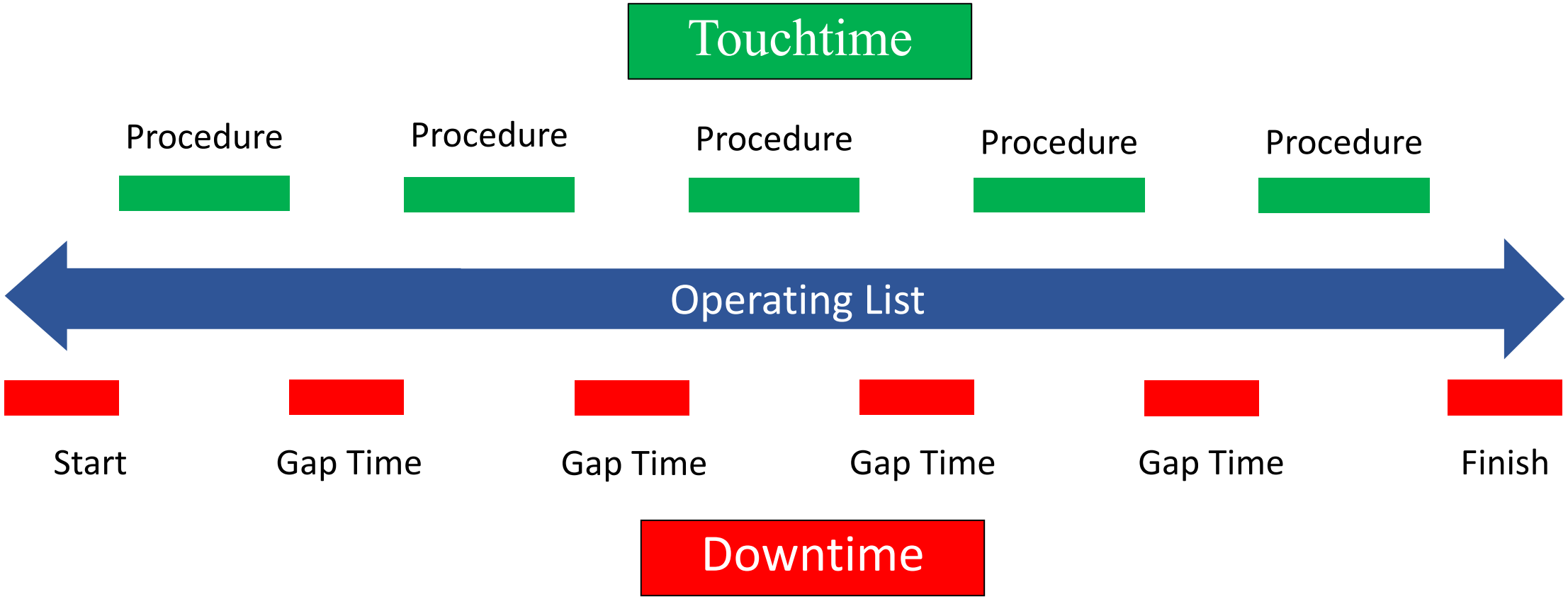
Accurate list scheduling influences efficiency

Useful Operating Theatre Metrics



Operating theatres: opportunities to reduce waiting lists
NHS Improvement, London 2019

Is Gap Time a Good Indicator of Efficiency ?



Day Surgery List

Is Gap Time a Good Indicator of Efficiency ?

Sum of gap times rarely exceeds 15% of list time

Poor correlation between gap times and list efficiency

Underbooking / overbooking more important than gap time

Gap times influence efficiency only if list accurately scheduled

How to Measure Operating List Efficiency

Principle

An efficient operating list utilises all its allocated time (without under- or over-run) and has no cancellations.

Efficiency =

[(fraction of scheduled time used) - (fraction of scheduled time over-running)]

x (fraction of scheduled procedures completed)

Efficiency versus Productivity

Orthopaedic Team A — 2 Hip Replacements

Orthopaedic Team B — 3 Hip Replacements

Both start and finish on time
Equal gap times

No under- or over-runs
No cancellations

Which Team is More Efficient ?

10

Discharge

Protocol-Based Discharge

Verma R, Alladi R, Jackson I et al. Day case and short stay surgery. Anaesthesia 2011;**66**:417-34.

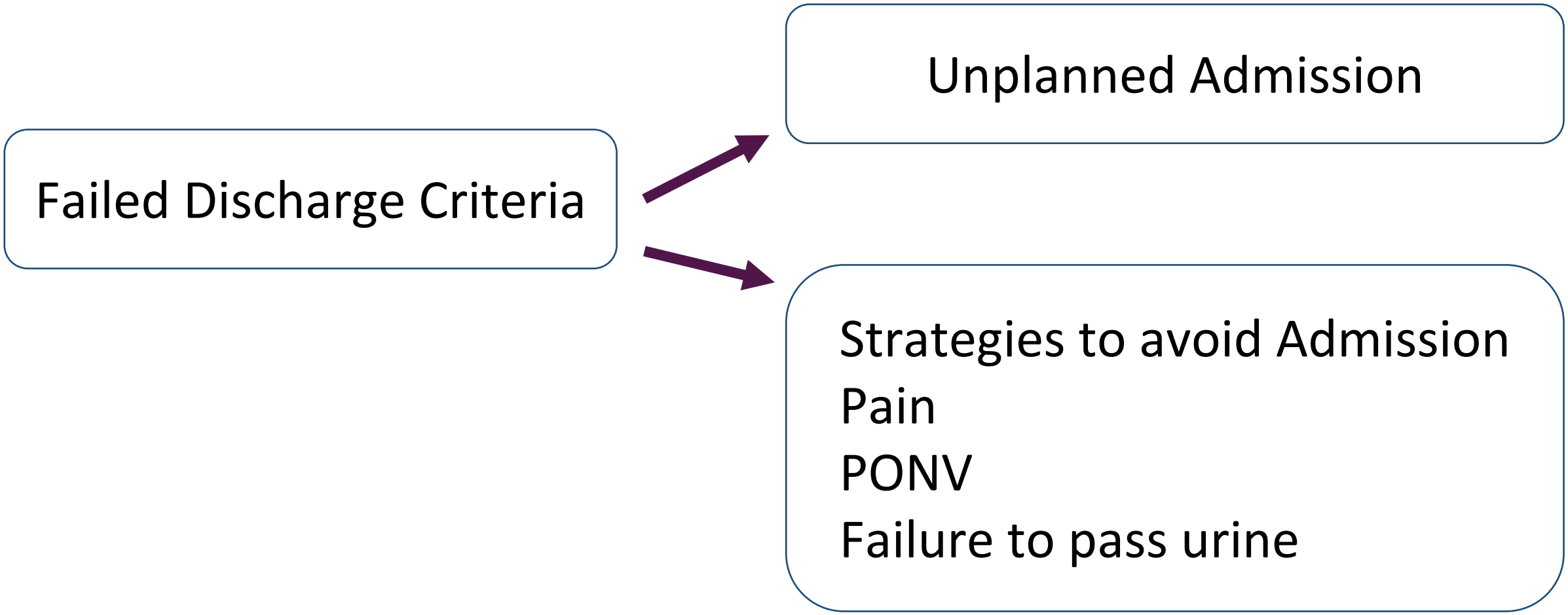
Anaesthesia

Journal of the Association of Anaesthetists of Great Britain and Ireland

Criteria for safe discharge include:

- Vital signs stable
- Orientated
- Pain controlled
- Minimal PONV
- Minimal wound bleeding
- Oral analgesics supplied
- Understands medication
- Cannula removed
- Ability to dress and walk
- Written & oral instructions
- Passed urine

Protocol-Based Discharge



Failure to pass urine

Risk Stratification

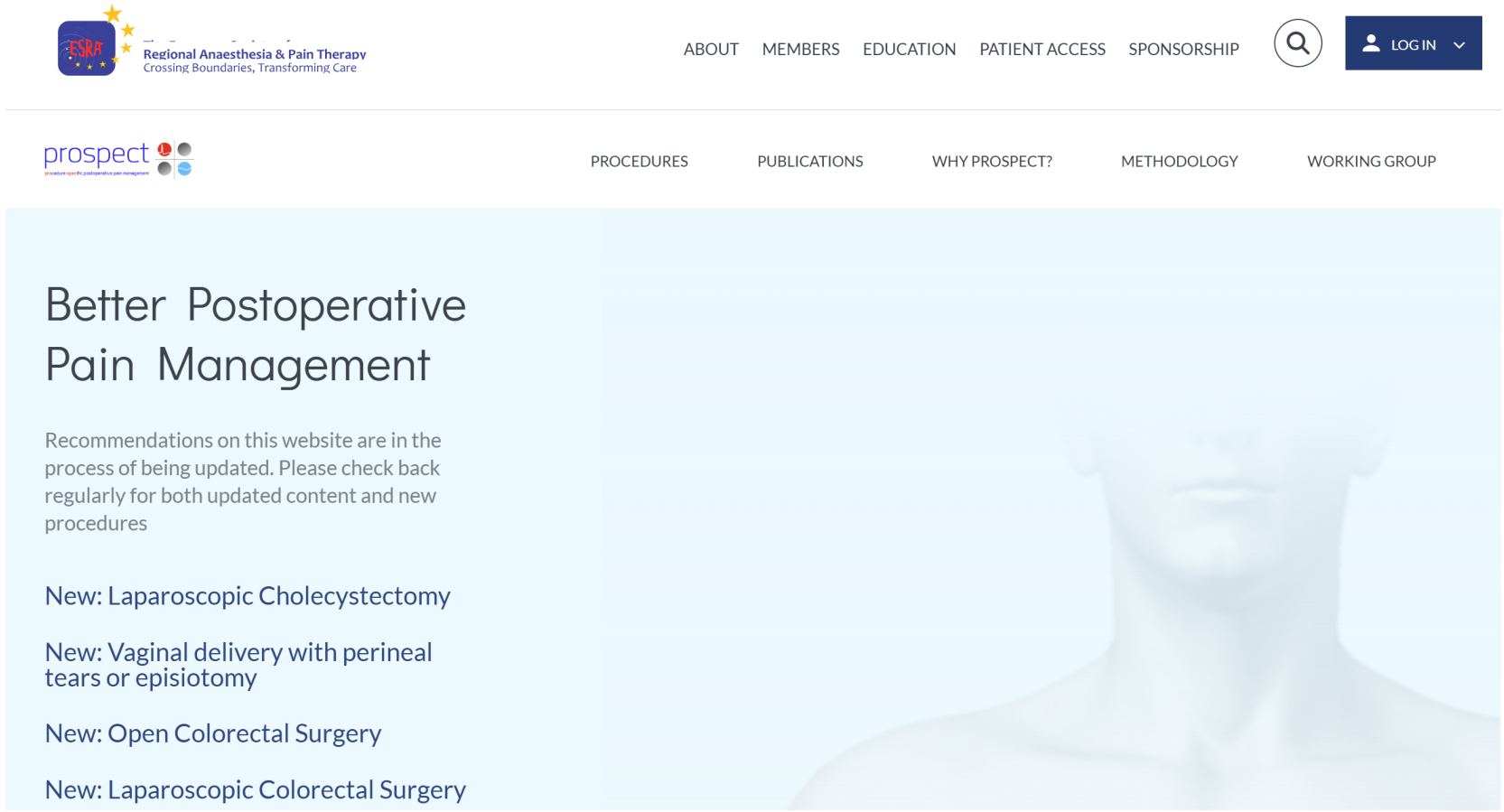
High Risk
Men >50
Inguinal hernia repair
Ano-rectal surgery
Prostatic procedures

No need to pass urine before discharge unless high risk patient

Post operative urinary retention protocol

Postoperative Urinary retention in elective day case surgical patients. Raja MH, Dunphy L, McWhinnie D, Journal One-Day Surgery. 2017:27,4.

Postoperative pain



www.esraeurope.org/prospect

Postoperative nausea and vomiting

Prevention – identify those at risk

- Choice of anaesthesia – avoid volatiles
- Minimise use of opioids
- IV fluid – 15ml/kg
- Prophylaxis – combination therapy to include dexamethasone
- Avoid anticholinesterase

Therapy

- Aggressively treat with IV fluid and antiemetic of different class

Allow to go home!

11

Help at Home

Transfer home from Hospital

Responsible Adult

ill-defined

accountable and competent

Maximum Journey Time

one hour's travel

Avoid Public transport ?

Help at Home

Official UK National Health Service guidance

www.nhs.uk/Conditions/surgery/Pages/after-surgery.aspx

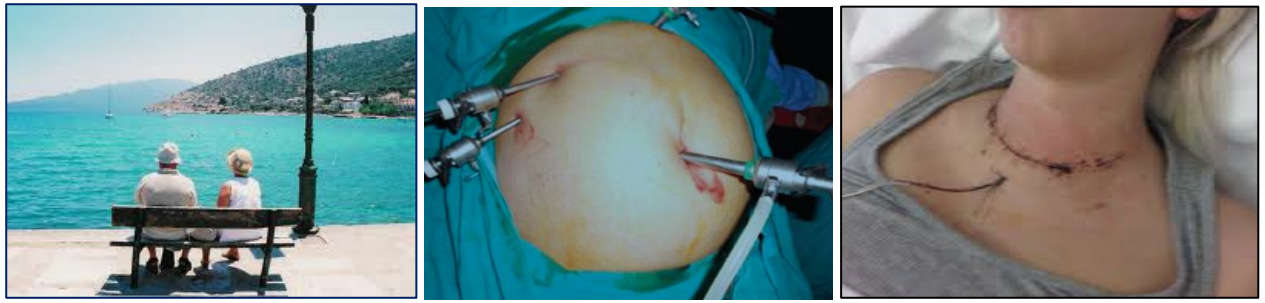
It’s a good idea to have an adult available to help you at least for 24 hours after surgery

Many patients falsely claim to have help at home to guarantee an operation

Help at Home

Essential :

- Elderly
- Invasive Surgery
- Airway at Risk



Pragmatic :

- Non-Invasive Surgery

Practice guidelines for post-anesthetic care .
Anesthesiology 2002; 96: 742-52.

Anesthesiology
The Journal of the American Society of Anesthesiologists, Inc

12

Follow up

Follow Up

Telephone follow up 24 hours after ambulatory surgery

Routine

Reassuring

Identifies minor problems

Intrusive

Admin Resource

On demand

Patient choice

Minor problems missed

Reluctant to call

Unable to contact

Safety vs Efficiency

12 Areas of Concern