



UNIVERSITY OF GOTHENBURG

Uppvakning och hembgång “RECOVERY” Hur utifrån publikationer?

Metha Brattwall MD

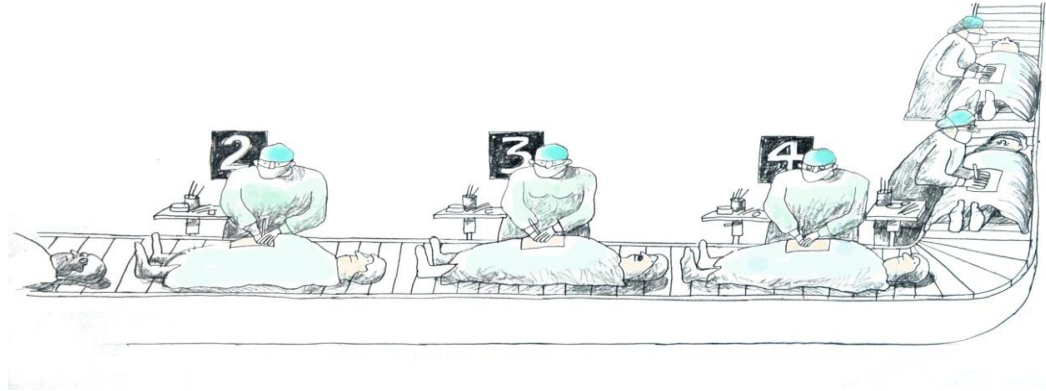
Sahlgrenska University Hospital
Gothenburg, Sweden

The Sahlgrenska Academy

Innehåll

1. Bakgrund
2. Förväntningar
3. Recovery - definition
4. Problem
5. Hur ska vi göra
6. Sammanfattning

1) Bakgrund



Dagkirurgi ökar

Inte längre bara unga, friska

Allt mer komplicerad och avancerad kirurgi

Hur vi gjort dagen för operationen kan ha betydelse lång tid för patienten

Advantages for day surgery



Minimal invasive teknik

Litet trauma

Liten blodförlust

Kortverkande anestesi

Förebyggande behandling

DS benefits....

Safety

Patients satisfaction

Economy

Decreased morbidity:

- Few infections
- Few thrombosis
- Less anxiety, for children and elderly

DS readmissions first month...

1,21 % (n=57.709)

due to haematoma, infections,
thromboembolic events (after 5 days)

Morbidity rare

Most: Tonsillectomy (11,4%)

Least: Shoulder surgery (0,2%)

Ref: Majholm B et al. Is day surgery safe? A Danish multicentre study. Acta Anaesth Scand 2012;56:323-331.

.... is DS safe? -first month

Low morbidity!

No deaths: 5 cases, other reasons

(Danish multi-centre study)

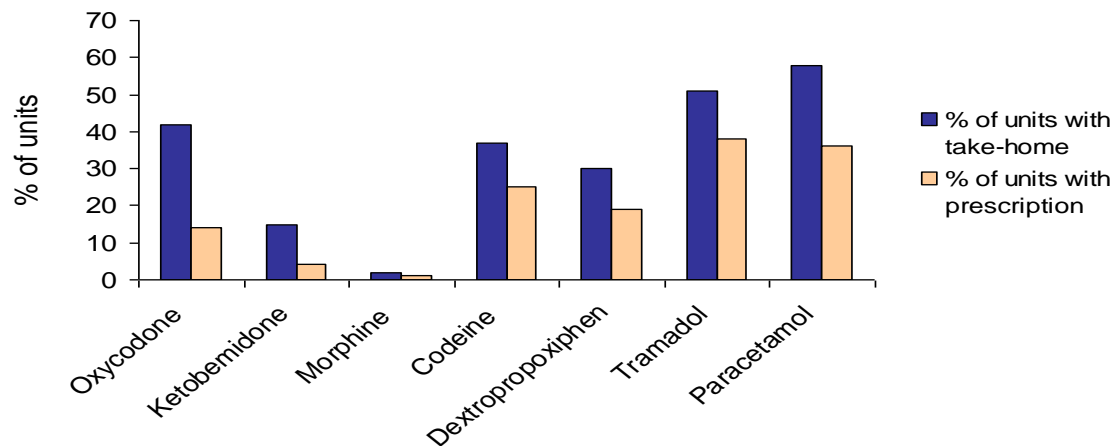
The Swedish survey

2005

27 / 88 units accepted ASA 3-4

Pain most common complaint

Strong opioids unusual

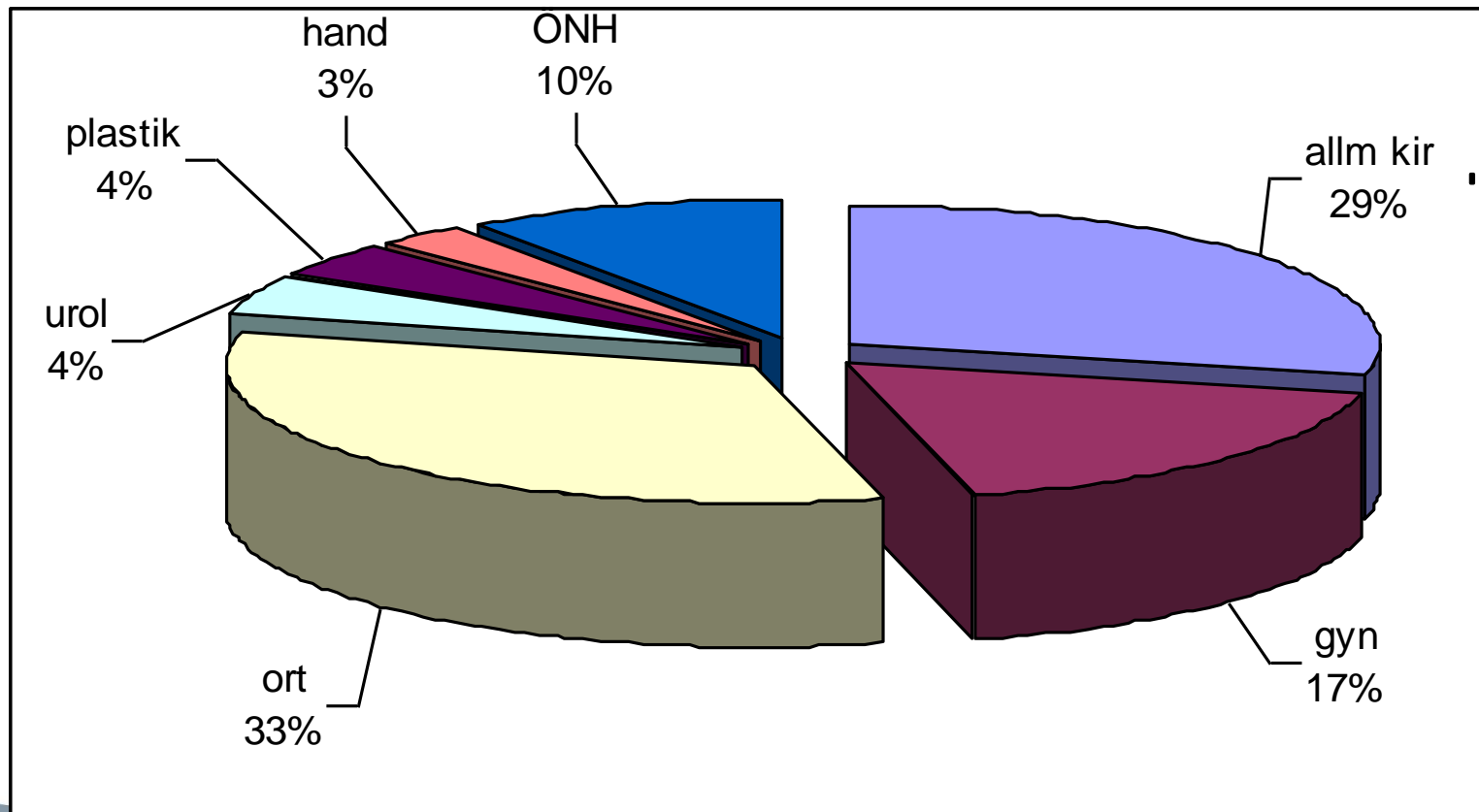


higher learning...

Ref: Clinical practice and routines for day surgery in Sweden: Results from a nation-wide survey. Segerdahl, Warrén-Stomberg, Rawal, Brattwall, Jakobsson,

Acta Anaest.Scand 2008;52:117-124

Specialities



Results from all hospitals

>90% underwent preoperative assessment by an anaesthesiologist

87% used self-assessment questionnaires

70% used risk-stratification for PONV

95% started analgesics preop orally (15% coxibs)

<40% follow-up by telephone

”Comparing ” 2005 - 2010

“No” inclusion limits

Same routines

Evidence-based

Multimodal analgesia

Decreased telephone follow-up

“No” contacts with primary care....

2) Expectations: Profession or Patient



Pain?

PONV?

Immobility?

Dizziness?

Anxiety

Satisfaction

QoL!

Profession/Dr's expectations



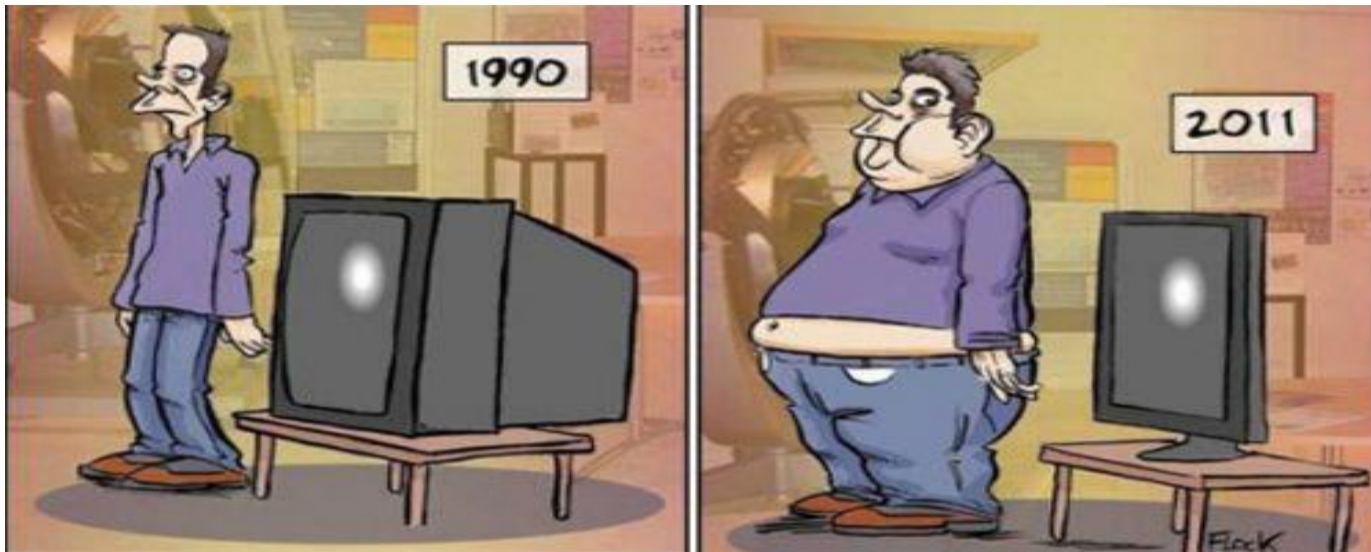
Everything is good
as long as we see
the patient.....

Safety

Patient's expectations

Quality, Satisfaction

Mobility, Activity, Alertness, Pain, Nausea



“low mobility and activity”

Information before discharge- verbal and written

Amnesia?- 23 % in early phase,
wait > 40 minutes

Older adults, special needs? – barriers
to pain reporting

Ref: Blandford CM et al. Ability of patients to retain new information... Anaesthesia 2011;66(12):1088-92.

Girdhari S et al. Assisting older adults with orthopaedic outpatient acute-pain management. Orthop nurs. 2006;25(3):188-95.

Information about pain treatment

Patient stop analgesics despite pain
due to poor information about
how to use and adverse events.

Ref: Watt-Watson J, Chung F et al. Pain management following discharge after ambulatory same-day surgery. J Nurs Manag. 2004;12(3):153-61.

Perioperative dialogue PD – childrens stress

- Information to parents and child before procedure
- 3 groups'
- ↓↓ conc. salivary cortisol
- ↓↓ morphine consumption

Ref: Wennström B et al. The perioperative dialogue reduces postoperative stress in children... *Pediatr Anaesth.* 2011;21(10):1058-65.

What to expect after discharge

Probability for needing closer follow-up –
surgical incapacity is a predictor

Pain control – hasten return to normal
activity

Relationship: preop- and postop anxiety –
Yes, but no relationship to
postoperative recovery

Ref: Vinales J et al. Predicting recovery.... BMC Health S R. 2011;13;11:269.

Pavlin DJ et al. A survey of pain and.... J Clin Anaesth. 2004;16(3):200-6.

McIntosh S et al. Anxiety.... Int J Nurs Pract. 2011;17(1):85-92.

Postoperative Pain Experience: Results from a National Survey Suggest Postoperative Pain Continues to Be Undermanaged

Jeffrey L. Apfelbaum, MD*, Connie Chen, PharmD†, Shilpa S. Mehta, PharmD†, and Tong J. Gan, MD‡

*Department of Anesthesia and Critical Care, The University Chicago Hospitals, Chicago, Illinois; †Pharmacia Corp., Skokie, Illinois; and ‡Department of Anesthesiology, Duke University Medical Center, Durham, North Carolina

Postoperative pain can have a significant effect on patient recovery. An understanding of patient attitudes and concerns about postoperative pain is important for identifying ways health care professionals can improve postoperative care. To assess patients' postoperative pain experience and the status of acute pain management, we conducted a national study by using telephone questionnaires. A random sample of 250 adults who had undergone surgical procedures recently in the United States was obtained from National Family Opinion. Patients were asked about the severity of post-surgical pain, treatment, satisfaction with pain medication, patient education, and perceptions about postoperative pain and pain medications. Approximately 80% of patients experienced acute pain after surgery. Of these patients, 86% had moderate, severe, or extreme

pain, with more patients experiencing pain after discharge than before discharge. Experiencing postoperative pain was the most common concern (59%) of patients. Almost 25% of patients who received pain medications experienced adverse effects; however, almost 90% of them were satisfied with their pain medications. Approximately two thirds of patients reported that a health care professional talked with them about their pain. Despite an increased focus on pain management programs and the development of new standards for pain management, many patients continue to experience intense pain after surgery. Additional efforts are required to improve patients' postoperative pain experience.

(Anesth Analg 2003;97:534-40)

In the United States, more than 73 million surgeries are performed annually (1), and up to 75% of patients experience pain after surgery (2-4). During the past decade, because of changes to incentives in

and psychological changes that increase morbidity and mortality as well as costs and that decrease quality of life (6). Negative clinical outcomes resulting from ineffective postoperative pain management include deep vein

Consensus Guidelines for Managing Postoperative Nausea and Vomiting

Tong J. Gan, MD*, Tricia Meyer, MS, FASHP†, Christian C. Apfel, MD‡, Frances Chung, FRCPC§, Peter J. Davis, MD||, Steve Eubanks, MD¶, Anthony Kovac, MD#, Beverly K. Philip, MD**, Daniel I. Sessler, MD††, James Temo, CRNA, MSN, MBA‡‡, Martin R. Tramèr, MD, DPhil§§, and Mehernoor Watcha, MD|||

Departments of *Anesthesiology and †Surgery, Duke University Medical Center, Durham, North Carolina; ‡Departments of Pharmacy and Anesthesiology, Scott and White Memorial Hospital, Texas A&M University System HSC College of Medicine, Temple, Texas; ‡Outcomes Research™ Group and Department of Anesthesiology, University of Wuerzburg, Wuerzburg, Germany; §Department of Anesthesia, University of Toronto, Toronto, Canada; ||Departments of Anesthesiology and Pediatrics, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania; #Department of Anesthesiology, University of Kansas Medical Center, Kansas City, Kansas; **Department of Anaesthesia, Harvard Medical School, Boston, Massachusetts; ††Outcomes Research™ Institute and Departments of Anesthesiology and Pharmacology, University of Louisville, Louisville, Kentucky; ‡‡Duke University Nurse Anesthetist Program, Durham, North Carolina; §§Division of Anaesthesiology, Geneva University Hospital, Geneva, Switzerland; and |||Department of Anesthesia, Children's Hospital of Philadelphia, Philadelphia, Pennsylvania

Postoperative nausea and vomiting (PONV) continues to be a common complication of surgery. It is a limiting factor in the early discharge of ambulatory surgery patients and is a leading cause of unanticipated hospital admission (1,2). PONV can lead to increased recovery room time, expanded nursing care, and potential hospital admission—all factors that may increase total health care costs. Equally important are the high levels of patient discomfort and

dissatisfaction associated with PONV. Patients report that avoidance of PONV is of greater concern than avoidance of postoperative pain (3) and are willing to spend up to US\$100 out of pocket for an effective antiemetic (4), yet more than a quarter of patients continue to experience PONV within 24 h of surgery (5,6). Among high-risk patients, the incidence of PONV can be as frequent as 70% to 80% (7). Published evidence suggests that universal PONV prophylaxis is not cost-effective. Although some advocate prophylactic antiemetic therapy for high-risk patients and rescue antiemetic treatment for episodes of PONV, the optimal approach to PONV management remains unclear to many clinicians. Guidelines for prevention

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Pain

Dexamethasone - enhance
postdischarge quality of recovery,
nausea, pain and fatigue.

Prescription of analgesic during the pre-
anaesthetic consultation: No effect?

NSAID's / Coxibs – benefit versus risk,
gives satisfactory pain relief

Ref: Murphy GS et al. Preoperative dexamethasone...Anaesthesiology.
2011;114(4):882-90.

Lemarie M et al. Evaluation of the impact of prescription...Ann Fr Anaesth
Reanim. 2011;30(12):883-7.

Wickerts et al. Coxibs... Minerva Anaesth. 2011;77(11):1084-98.

PONV

1/3 at PACU

It lasts for 3 days

Patients are willing to pay a lot to avoid PONV

Ref: Parra-Sanchez et al. A time-motion economic analysis of PONV.
Can J Anaesth. 2012; Epub

3) Recovery



Definition?

Recovery

1. **Improved** = better than before surgery
2. **Recovered** = symptoms < X
3. **Fully recovered** = no more surgery related symptoms

...”our studies”

3 different typical day surgery procedures:

- Inguinal hernia
- Arthroscopy procedures
- Cosmetic breast augmentation

Follow-up until 6 months postoperatively

Preoperative health profile: EQ5d, 8 items

Pain

Analgesic use

Immobilisation

Depressed mood

Self-care disturbances

Social inactivity

Sleep disturbances

Difficulties having sex

Results:Proportion of patients (%) reporting impairment in health related quality of life related to their surgical procedure, specific for each item, all patients.

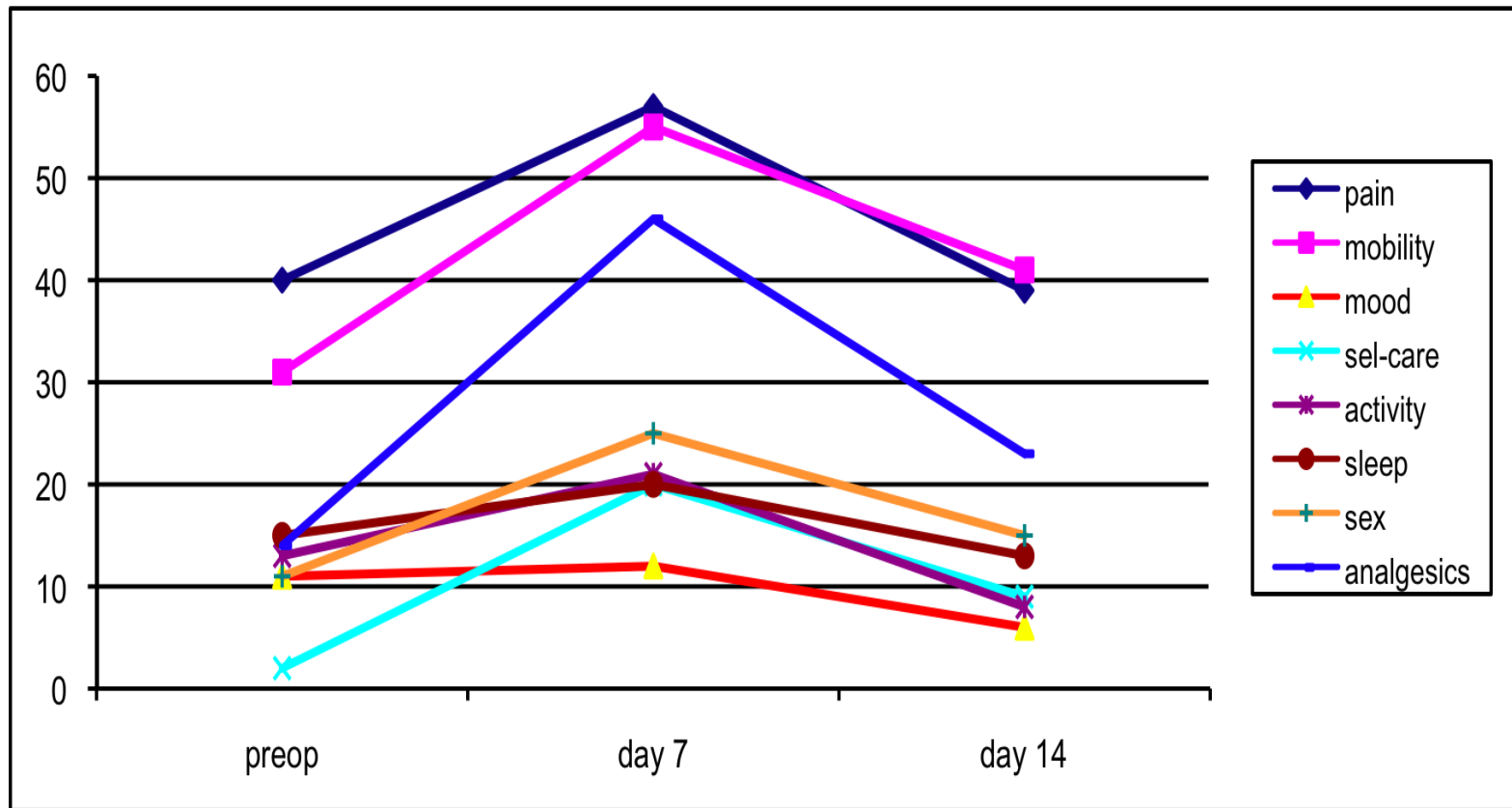
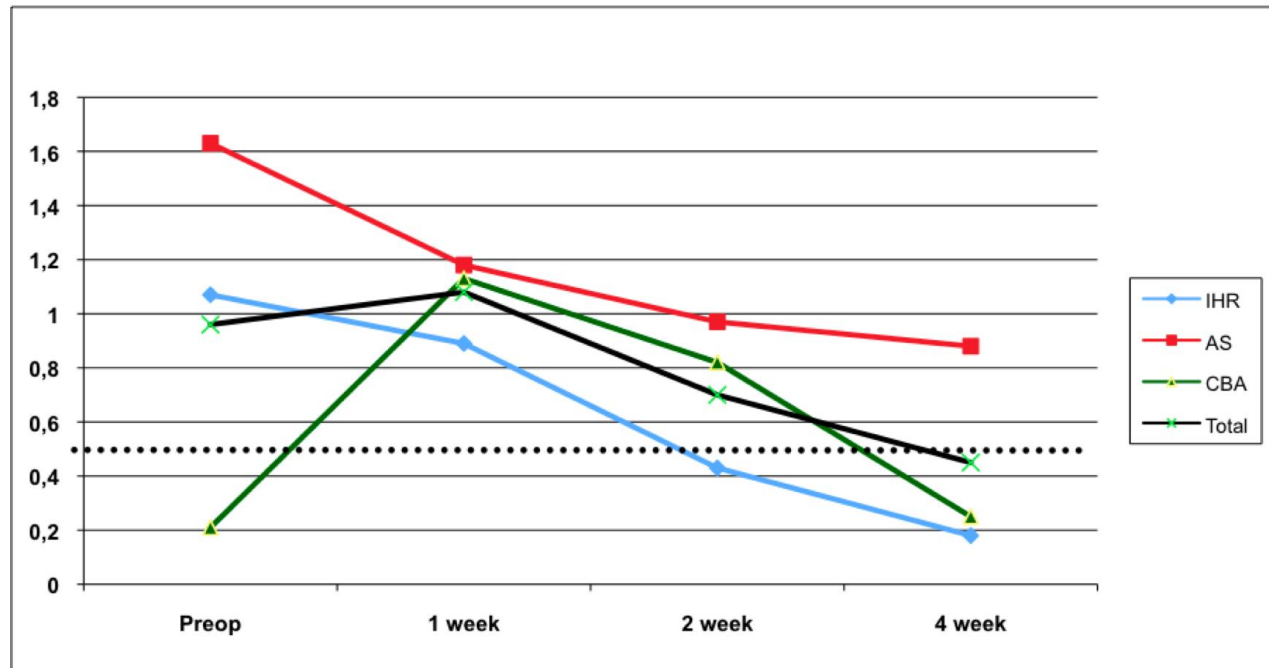


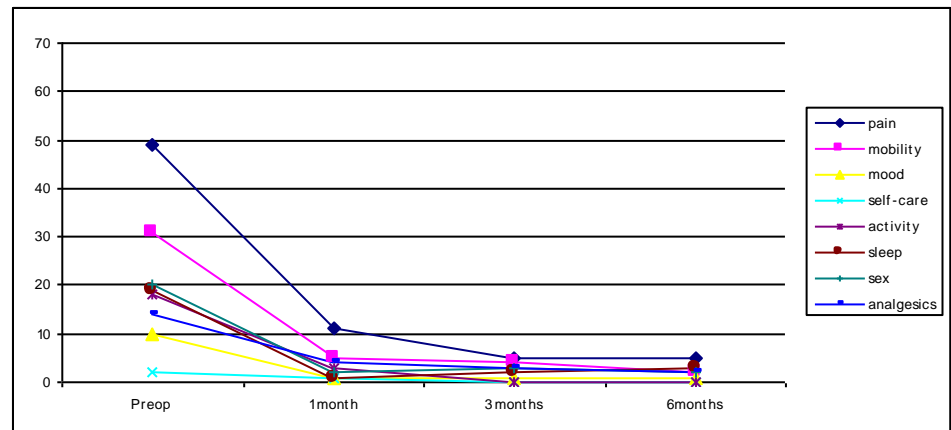
Figure 2: End-point recovered. The 4 parameters, pain, mobility, mood and sleep disturbances, mean number of composite symptoms, from all included. Recovered defined as $\leq 0,5$.



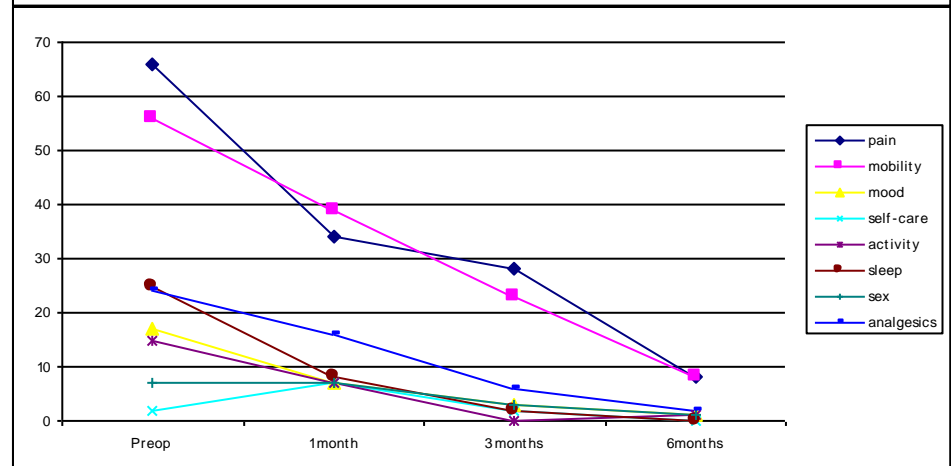
IHR: Inguinal hernia repair, AS: Arthroscopic procedures, CBA: Cosmetic breast augmentation.

8-item health profile:

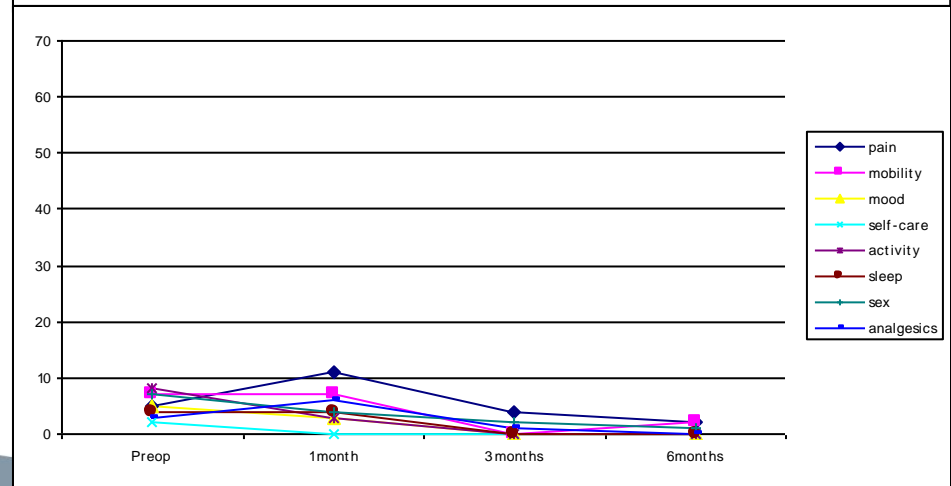
IHR



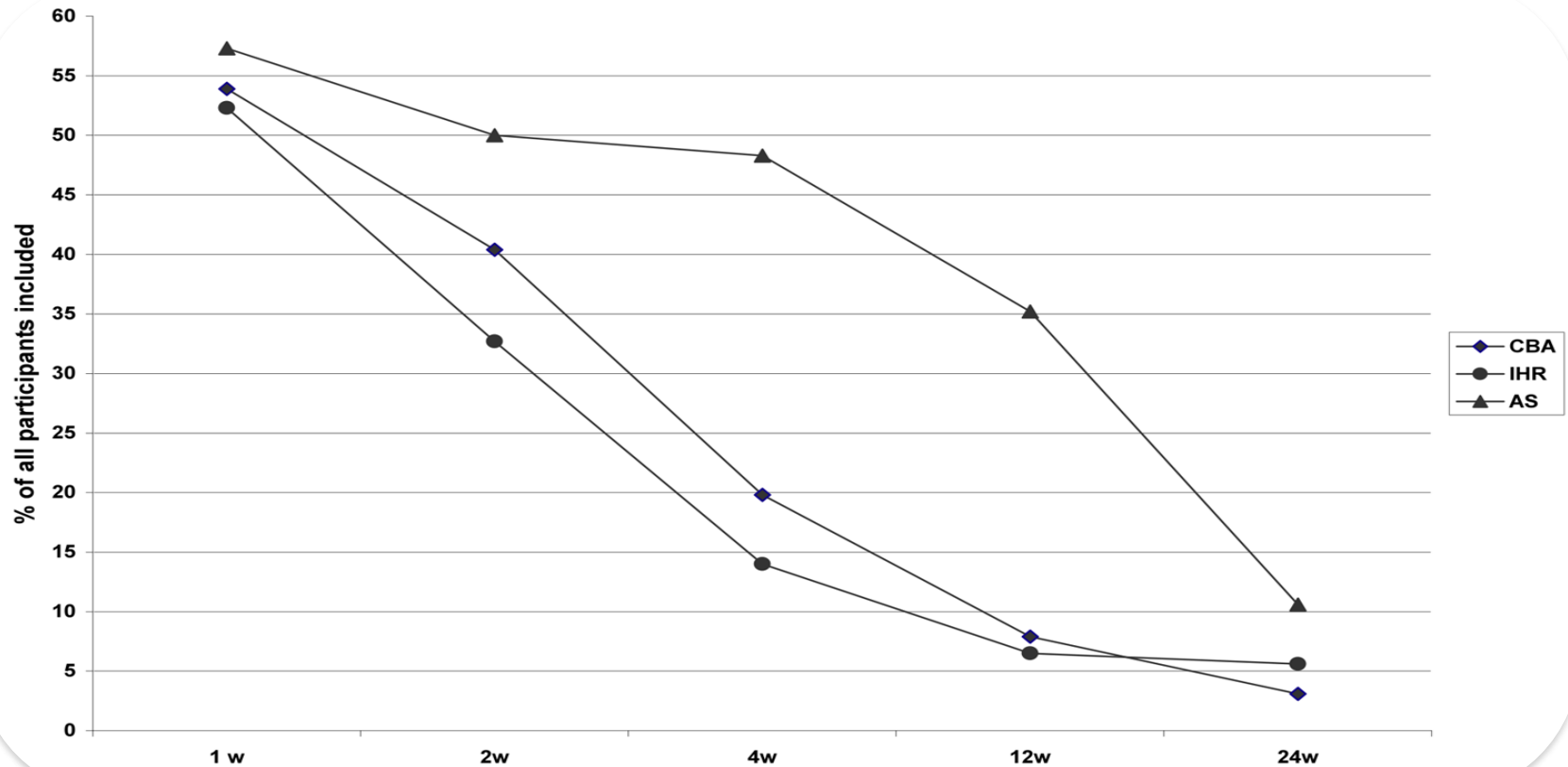
AS



CBA



Long time – discomfort



Proportions of patients reporting surgery related discomfort of any kind;

1st through 24th postoperative week

"Role of novel drugs" vid sedering

Role of novel drugs in sedation outside the operating room: dexmedetomidine, ketamine and remifentanyl

arashchanka, Aliaksandra; Schelfout, Sam; Coppens, Marc

Abstract

Purpose of review: Progress in medical technology, diagnostic procedures and imaging techniques results in a growing demand for well tolerated sedation regimens, devoid of respiratory and haemodynamic complications. Moreover, rapid turnover time dictates the need for rapid onset of effect and rapid recovery. Recent literature regarding the use of dexmedetomidine, ketamine and remifentanyl for sedation outside the operating room is reviewed. As procedural sedation is often performed by nonanaesthesiologists, articles from journals other than anaesthesiology journals are also included.

Recent findings: Dexmedetomidine seems an attractive choice for sedation, because of the lack of respiratory depression. It has been studied as a sole sedation agent or in combination with benzodiazepines or opioids. As premedication, it can be administered intranasally. Disadvantages are a rather slow onset and recovery. Bradycardia and hypotension are common. Ketamine got renewed attention mainly by nonanaesthesiologists performing procedural sedation. Psychogenic adverse effects and slow recovery limit its use. Psychiatrists are interested in its antidepressive effect. Ketamine has a potential role in lowering the risk of chronification of pain, modified by analgesic and anti-inflammatory effects. Remifentanyl as an ultra-short-acting agent is less well studied outside the operating room. Its unique pharmacology permits its use in patient-controlled analgesia and sedation, in target-controlled infusion or in a combined technique.

Summary: Recent literature is reviewed regarding dexmedetomidine, ketamine and remifentanyl for its use outside the operating room. Sedationists have to keep in mind the pharmacokinetics and pharmacodynamics of the currently used agents in adults and children.

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Considerations for the use of short-acting opioids in general anesthesia.

Mandel JE.

Author information

Abstract

Anesthesiologists play a critical role in facilitating a positive perioperative experience and early recovery for patients. Depending on the kind of procedure or **surgery**, a wide variety of agents and techniques are currently available to anesthesiologists to administer safe and efficacious **anesthesia**. Notably, the fast-track or **ambulatory surgery** environment requires the use of agents that enable rapid induction, maintenance, and emergence combined with minimal adverse effects. Short-acting opioids demonstrate a safe and rapid onset/offset of effect; that short effect is both predictable and precise. It also ensures easier titration and reduced or rapidly reversed side effects. Due to their distinct pharmacokinetic and pharmacodynamic properties, and, in one case, rapid extra-hepatic clearance of remifentanyl, these agents have several applications in general **anesthesia**.

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KEYWORDS: Alfentanil, General **anesthesia**, Propofol, Remifentanyl, Short-acting opioids, Sufentanil, Total intravenous **anesthesia**

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KEYWORDS: Alfentanil, General **anesthesia**, Propofol, Remifentanyl, Short-acting opioids, Sufentanil, Total intravenous **anesthesia**

Desflurane/fentanyl compared with sevoflurane/fentanyl on awakening and quality of recovery in outpatient surgery using a laryngeal mask airway: a randomized, double-blinded controlled trial.

De Oliveira GS Jr¹, Fitzgerald PC², Ahmad S², Marcus RJ², McCarthy RJ².

Author information

Abstract

STUDY OBJECTIVE: To compare time to awakening and upper airway morbidity between desflurane and sevoflurane using a Laryngeal Mask Airway (LMA) and a balanced anesthetic regimen inclusive of opioids.

DESIGN: Randomized, double-blinded, placebo-controlled clinical trial.

SETTING: Ambulatory surgery unit of a university hospital.

PATIENTS: 80 subjects receiving general anesthesia for outpatient gynecological surgery using a LMA.

INTERVENTIONS: Desflurane/fentanyl or sevoflurane/fentanyl were used for anesthetic maintenance.

MEASUREMENTS: Patients were randomly assigned to receive desflurane or sevoflurane. The primary outcome was time to awakening as determined by an observer who was blinded to study group allocation. Secondary outcomes included the frequency of sore throat, cough, and pain perioperatively and at 2 and 24 hours postoperatively. Quality of recovery (QoR; via QoR-40 questionnaire) at 24 hours also was determined.

Intravenous versus inhalational anaesthesia for paediatric outpatient surgery.

Ortiz AC¹, Atallah AN, Matos D, da Silva EM.

Author information

Abstract

BACKGROUND: Ambulatory or outpatient **anaesthesia** is performed in patients who are discharged on the same day as their **surgery**. Perioperative complications such as postoperative nausea and vomiting (PONV), postoperative behavioural disturbances and cardiorespiratory complications should be minimized in **ambulatory anaesthesia**. The choice of anaesthetic agents and techniques can influence the occurrence of these complications and thus delay in discharge.

OBJECTIVES: The objective of this review was to evaluate the risk of complications (the risk of postoperative nausea and vomiting (PONV), admission or readmission to hospital, postoperative behavioural disturbances and perioperative respiratory and cardiovascular complications) and recovery times (time to discharge from recovery ward and time to discharge from hospital) comparing the use of intravenous to inhalational **anaesthesia** for paediatric outpatient **surgery**.

SEARCH METHODS: We searched the Cochrane Central Register of Controlled Trials (CENTRAL) in The Cochrane Library (2013, Issue 8); MEDLINE (1948 to 1 October 2013); EMBASE (1974 to 1 October 2013); Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS) (1982 to 1 October 2013). We also handsearched relevant journals and searched the reference lists of the articles identified.

4) Problems, reality



Fatigue

Morbidity: Low

Readmissions: Low

**Contacts with health care:
More frequent**

**Wanted in hospital stay:
Few**

Chronic pain: Too many

Conclusions our studies, 355 patients...

No serious complications

-7 patients readmitted, < 2%

-5 reoperations

-70 contacts with health care first month

-17 patients with chronic pain after 6
months = 5 %

Chronic pain....

No preoperative factor can predict later outcome??

Preventing treatment!

Pain from a pre-existing problem?

Ref: Katz J. Difference in risk factor profiles for chronic postsurgical pain maintenance vs transition. Pain. 2012;153:505-6.

Problems:

Symptoms after day surgery have a duration of many weeks, procedure specific

Pain is the main problem

Need for help / escort: 83 % of patients need help from relatives

Satisfaction high but depends on information status and surgery outcome

5) Hur gör vi? Metoder Uppföljning



Telephone number

Active follow-up

Patient hotel

Primary health
system involved?

Effective postoperative pain management in children after ambulatory surgery, with a focus on tonsillectomy: barriers and possible solutions.

Dorkham MC¹, Chalkiadis GA, von Ungern Sternberg BS, Davidson AJ.

Author information

Abstract

Pain following **ambulatory surgery** is often poorly managed at home. Certain **procedures**, such as tonsillectomy, cause high levels of pain for at least 1 week postoperatively. This impacts significantly on **recovery** and postoperative morbidity with regards to oral intake, sleep, and behavior. Barriers to effective postoperative pain management at home following discharge have been investigated and incorporate: parental factors, such as the ability to recognize and assess their child's pain, and misconceptions about analgesics; child factors, such as refusal to take medication; medication factors, such as ineffective medication or inadequate formulation or dose of analgesics; and system factors, such as poor discharge instructions, difficulty in obtaining medication and lack of information provision. A number of interventions have been suggested and trialled in an effort to address these barriers, which encompass educational strategies, improved information provision, improved medication regimens, and the provision of tools to aid parents in the pain management of their children. All in all, improvements in pain outcomes have been minor, and a more holistic approach, that appreciates the complex and multifaceted nature of pain management at home, is required.

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www.tonsilloperation.se



Information till

- Barn, illustrerade sagor
- Närstående
- Vuxna

• SMÄRTBEHANDLING

• Räkna ut rätt dos



Klonidin / Catapresan

I.v. 150 microg/ml spädes till 15 microg/ml, **1 microg/kg**

Mixt 20 microg/ml, **2 microg/kg**

Tabl 75 microg, **2 microg/kg**

Minska mängden opioid med >25%

Nya riktlinjer tonsilloperation barn:

www.entqualitysweden.se

<https://kvalitet.onh.nu>

Postoperative analgesic effect of intravenous (i.v.) clonidine compared with clonidine administration in wound infiltration for open cholecystectomy

British Journal of Anesthesia, 09/12/2013

Bharti N et al. – This randomized double-blind study was designed to compare the postoperative analgesic effect of clonidine administered intravenously or in wound infiltration with bupivacaine. Clonidine $3\mu\text{gkg}^{-1}$ provided effective postoperative analgesia and reduced morphine requirement when administered intravenously or in wound infiltration with bupivacaine. However, the incidence of complications was less with wound infiltration.

Methods

- Sixty adults of ASA grade I–II undergoing open cholecystectomy were randomly allocated into three groups.
- Group 1 (control group) patients received wound infiltration with 30ml of 0.25% bupivacaine at the end of surgery.
- Group 2 patients received $3\mu\text{gkg}^{-1}$ clonidine intravenously after resection of gall bladder plus wound infiltration with 30ml of 0.25% bupivacaine.
- Group 3 patients received wound infiltration with $3\mu\text{gkg}^{-1}$ clonidine with 30ml of 0.25% bupivacaine.
- A standard general anaesthesia technique was used.
- Postoperative analgesia was provided with i.v. diclofenac and morphine on demand.
- Postoperative pain, number of patients requiring rescue analgesia and total morphine consumption during 24h after operation was recorded.

Results

- Postoperative morphine consumption was significantly less in patients receiving clonidine by either route when compared with the control group ($P < 0.0001$).



Is spinal anaesthesia a suitable technique for ultra-short outpatient procedures?

Fanelli A¹, Ghisi D, Allegri M.

Author information

Abstract

Spinal anaesthesia is an easy and reliable technique. Factors limiting its use in the **ambulatory** setting include delayed ambulation, risk of urinary retention and pain after block regression. On the contrary, general anaesthesia with fast-acting drugs provides a fast **recovery** that facilitates an early discharge. Although **recovery** after spinal anaesthesia has been improved by reducing the dose of the commonly used longacting local anaesthetics, discharge times are still prolonged compared with general anaesthesia. 2-Chloroprocaine is an amino-ester local anaesthetic with a very short half-life and a favourable evolution of spinal block for ultra-short outpatient **procedures**. Moreover, the preservative free 2-chloroprocaine solution showed a very low risk of urinary retention and transient neurological symptoms when compared with bupivacaine and lidocaine. The aim of this article is to evaluate if the neuraxial administration of short-acting local anaesthetics renders spinal anaesthesia a suitable technique for ultra-short **surgical procedures**.

Intrathecal 1% 2-chloroprocaine vs. 0.5% bupivacaine in ambulatory surgery: a prospective, observer-blinded, randomised, controlled trial.

Camponovo C¹, Wulf H, Ghisi D, Fanelli A, Riva T, Cristina D, Vassiliou T, Leschka K, Fanelli G.

Author information

Abstract

BACKGROUND: This prospective, observer-blinded, randomised, multicentre study aimed at determining the non-inferiority of 50 mg of plain 1% 2-chloroprocaine vs. 10 mg of 0.5% plain bupivacaine in terms of sensory block onset time at T10 after spinal injection. The study hypothesis was that the difference in onset times of sensory block to T10 between the two drugs is ≤ 4 min.

METHODS: One hundred and thirty patients undergoing lower abdominal or lower limb **procedures** (≤ 40 min) were randomised to receive one of two treatments: 50 mg of plain 1% 2-chloroprocaine (Group C, n = 66) or 10 mg of plain 0.5% bupivacaine (Group B, n = 64). Times to sensory and motor block onsets, maximum sensory block level, readiness for **surgery**, regression of sensory and motor blocks, first analgesic requirements, unassisted ambulation, home discharge, and side effects after 24 h and 7 days were registered blindly.

RESULTS: Chloroprocaine was comparable with plain 0.5% bupivacaine in terms of time to sensory block at T10 level. Group C showed faster onsets of motor block (5 vs. 6 min), maximum sensory block level (8.5 vs. 14 min), resolution of sensory (105 vs. 225 min) and motor (100 vs. 210 min) blocks, unassisted ambulation (142.5 vs. 290.5 min), first analgesic requirement (120 vs. 293.5 min), and home discharge (150 vs. 325 min) (all comparisons, $P <$

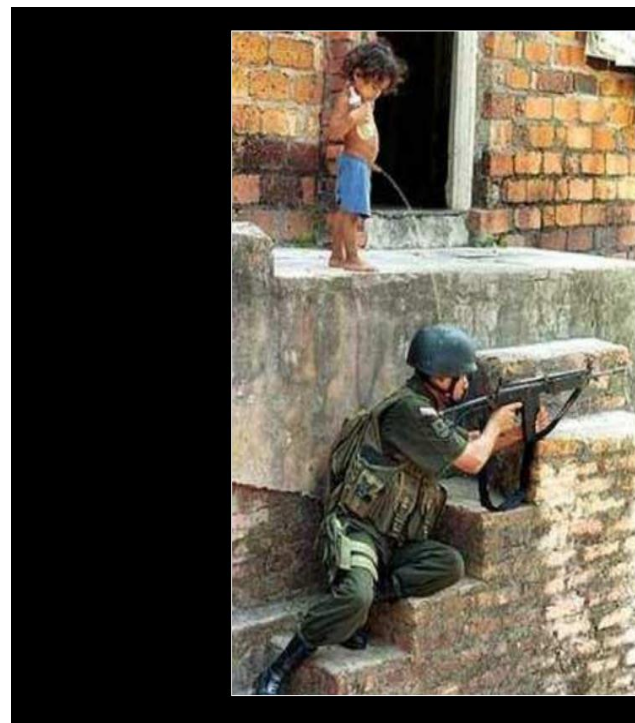
What is important at discharge?

Mobility?

Sensibility?

Urinating problems?

Pain: VAS<4?



Information and planning are central!

At home..... if....

"Bleeding?"

"Wound care?"

"What can I do? Mobilisation?!"

"if I get severe pain?"

**INFO – written and verbal and
telephone-number who to call**

Pain treatment at home?

Acetaminophene

NSAID!!!!!!

Opioid?

Have a plan!

What to do when
the block release?

Follow-up

Telephone calls

Questionnaire

All patients or only selected
cases?????

Use the results from follow-up for
improvement of your routines

Experiences from all follow up:

- Symptoms after day surgery have a duration of many weeks, procedure specific
 - Pain is the main problem
- No serious complication has been noticed
- Preoperative health profile could be a useful base for assessment

Follow-up time needed?

Improved / Recovered

Procedure-specific:

Inguinal hernia:
Arthroscopy:
Cosmetic breast:

Imp 1 week	R \leq 2 weeks
Imp 1 week	R >4 weeks
Imp 2 weeks	R \geq 2 weeks

Patient hotel

Different traditions in different countries

Primary health

Different.....

Telematic communication

Ref: Berteeli G. Anaesthesia for elderly outpatient:... Curr Opin Anaesth. 2010;23(6):726-31.

6) Summary / Improvement

Safety

Information - verbal and written

Follow-up - - - -

Routines - - - -

Team work - - - -

DaySafe – Improving patient safety of hospital care through day surgery

- Project by IAAS
- Promotion of DS best practices and standards
- Full time staff!
- “Streamlining”

Routines

Use standardized procedures

Change when needed

Prophylactics

Work in team



Prohylactics



4 x A

Analgesia

Alimentation

Alertness

Ambulation

Important issues

Preop planning

Preop visit

Health profile

Precise information

Anaesthetic technique?

Target points

→→→ Short acting anaesthesia

Good pain control

No nausea

Minimal trauma

Anaesthesia – long-term outcome

Oxygen delivery

No hypothermia

Swings in blood glucose

Ref: Cavanagh T et al. Can anaesthetic technique effect postoperative outcome? Curr Opin in Anaesth. 2010;

..... **Cancer recurrence**

Opioid use

NSAID use (COX-2-inhibitor)

Regional technique

Ref: James GB. Surgery for Cancer: Does anaesthesia matter? A & A.
2010; 110(6): 1524-6.

How to do it the best way?

To do the right things

and

To do things right

