‘OPERATION NO DOZE’

Koli Ali, CSC High Dependency Unit
Division of Surgical & Specialty Services

Government of South Australia
SA Health

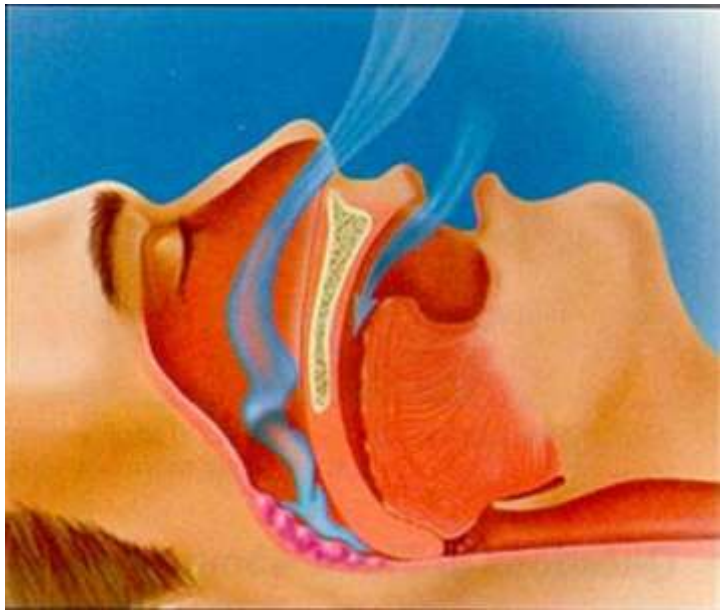
FLINDERS MEDICAL CENTRE

Flinders Medical Centre

- **500 bed tertiary hospital**
- **Co-located private hospital and Flinders University**
- **60,000 ED attendances per year**
- **6,000 elective admissions per year**

Obstructive Sleep Apnoea (OSA)

- A condition characterised by periodic, partial or complete obstruction of the upper airway during sleep.
- Prevalence of symptomatic OSA is estimated at 2% in women and 4% in men and is increasing



http://koifishcommunications.com/blog/wp-content/uploads/2009/02/sleep_apnea_small.jpg

Aim of Project

- **To standardise the assessment and the post-operative management of patients with Obstructive Sleep Apnoea (OSA)**
- **To safely manage appropriate patients with OSA outside the High Dependency Unit**

Team members & role

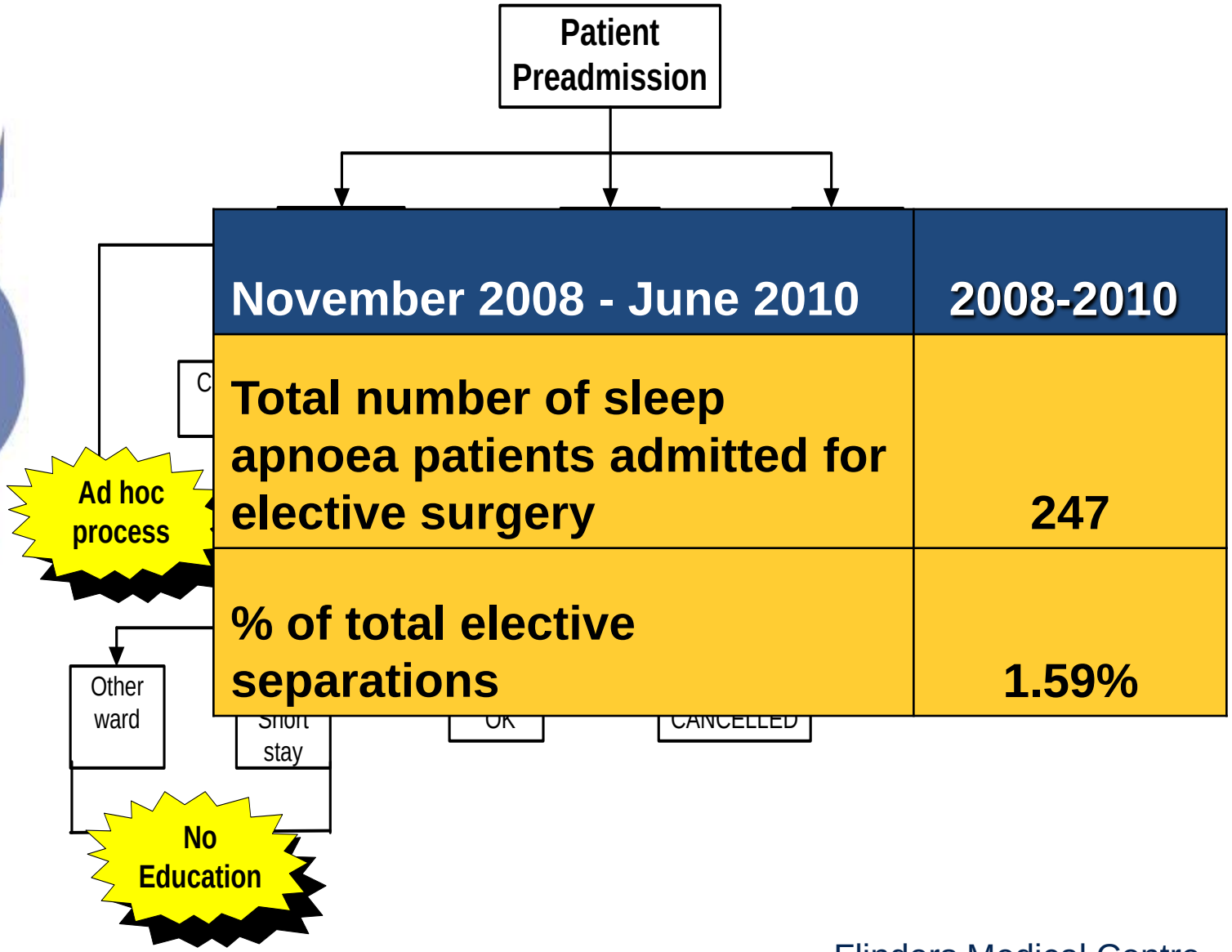
Guidance team members:

- Rob Padbury (Divisional Director)
- Margaret Martin (Deputy Director)
- Annette Boonen (Nursing Director)
- Margaret Walker (Project Manager)

Project team members with fundamental knowledge and who worked on the project:

- Koli Ali (CSC High Dependency Unit)
- Bronwyn Glitheroe (CSC Short Stay Ward)
- Angie Tomlin (CSC Preadmission)
- Mark Markou (Deputy Director Anaesthesia)
- Alistair Walker (Anaesthetist)
- Gill Baker (Elective Surgery Co-ordinator)

A problem worth solving?



November 2008 - June 2010	2008-2010
Total number of sleep apnoea patients admitted for elective surgery	247
% of total elective separations	1.59%

Evidence for there being a problem worth solving

- **No standardised management across hospital in how these patients are being managed**
- **Patients assessed in Pre- admission Clinic as likely to have OSA are either:**
  - cancelled for further investigation
  - booked into a HDU or ICCU bed
  - Kept in overnight (Day Cases)
- **Inappropriate use of HDU beds**
- **Cancellation of surgery due to patients having OSA and there being no bed capacity in HDU.**
- **Variability in Anaesthetic practices re decision making about most suitable post op area**

Priority areas for Interventions

- **Development of Protocol for managing patients with OSA**
  - Indication but no formal diagnosis
  - Formal diagnosis OSA +/- CPAP
- **Risk stratification to identify most appropriate post-operative bed**
  - Highest Risk : HDU or ICCU
  - Intermediate Risk:
    - Mandatory 2 Hours in Recovery as minimum
    - General ward if managing if stable and managing own CPAP
  - Low Risk: General Ward or Home
- **Identify equipment required and staff competency**
- **Staff Education**

Interventions

May 2007

- OSA Project began with a CPI project led by ENT Surgeon and Consultant Anaesthetist to identify patients with OSA preoperatively.
- A screening tool was trialled, but there was no capacity to implement further.

October 2007

- Development of HDU Booking Diary

December 2008

- Development of Protocol for management in elective surgery using OSA Scoring system
- Protocol was developed to facilitate better postoperative management and reduce unnecessary admissions to HDU

Identified 2 patient groups

1. Diagnosed with OSA and on CPAP (could go to the ward depending on comorbidities)
2. Diagnosed with OSA but no CPAP or identified as likely to have OSA but no formal diagnosis)

Interventions

December 2009

- Education of nursing staff related to OSA and CPAP
- Identified equipment needs and staff competencies.

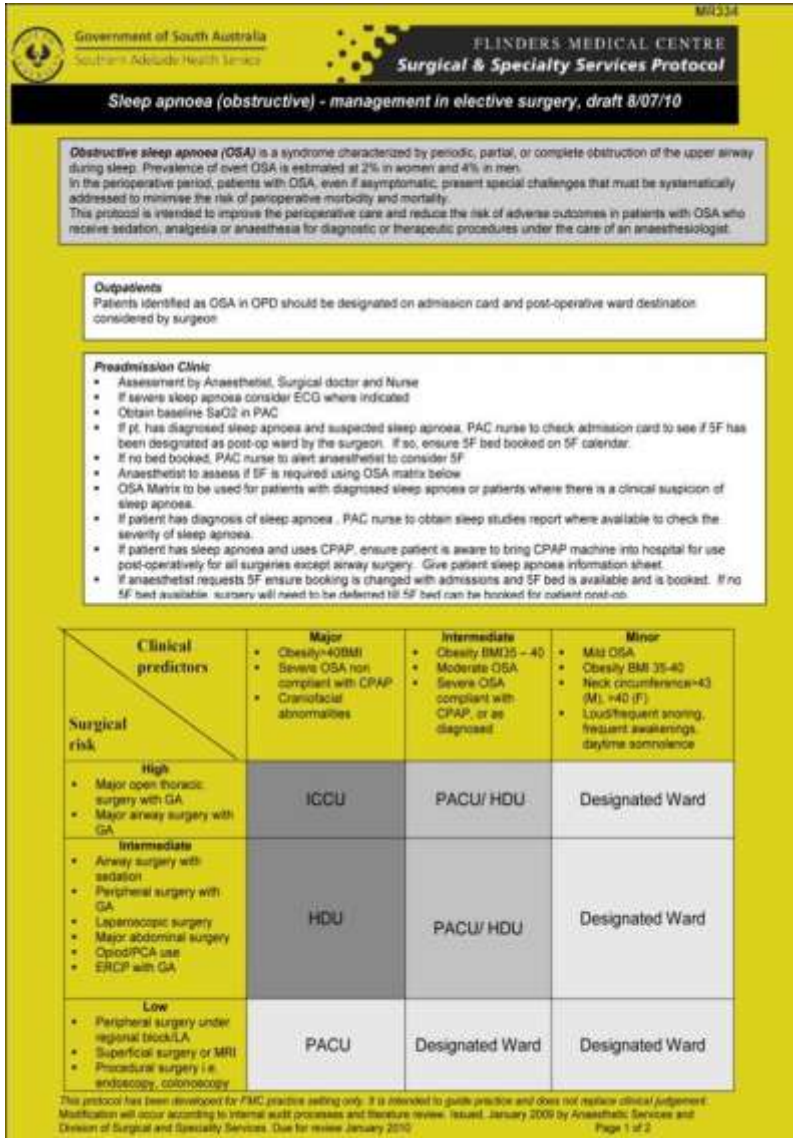
- FMC Research and Development Department developed an alarm to attach to the nurse call bell system to support safe postoperative monitoring in the general ward

October – December 2009

- Trial of monitoring low risk patients in general wards rather than HDU

Nurse Alarm Call Bell Interface

Sleep Apnoea Protocol



MR334

Government of South Australia
Southern Adelaide Health Service

FLINDERS MEDICAL CENTRE
Surgical & Specialty Services Protocol

Sleep apnoea (obstructive) - management in elective surgery, draft 8/07/10

Obstructive sleep apnoea (OSA) is a syndrome characterized by periodic, partial, or complete obstruction of the upper airway during sleep. Prevalence of overt OSA is estimated at 2% in women and 4% in men.
In the perioperative period, patients with OSA, even if asymptomatic, present special challenges that must be systematically addressed to minimise the risk of perioperative morbidity and mortality.
This protocol is intended to improve the perioperative care and reduce the risk of adverse outcomes in patients with OSA who receive sedation, analgesia or anaesthesia for diagnostic or therapeutic procedures under the care of an anaesthesiologist.

Outpatients
Patients identified as OSA in OPD should be designated on admission card and post-operative ward destination considered by surgeon

Preadmission Clinic
- Assessment by Anaesthetist, Surgical doctor and Nurse
- If severe sleep apnoea consider ECG where indicated
- Obtain baseline SaO2 in PAC
- If pt. has diagnosed sleep apnoea and suspected sleep apnoea, PAC nurse to check admission card to see if 5F has been designated as post-op ward by the surgeon. If so, ensure 5F bed booked on 5F calendar.
- If no bed booked, PAC nurse to alert anaesthetist to consider 5F
- Anaesthetist to assess if 5F is required using OSA matrix below
- OSA Matrix to be used for patients with diagnosed sleep apnoea or patients where there is a clinical suspicion of sleep apnoea.
- If patient has diagnosis of sleep apnoea , PAC nurse to obtain sleep studies report where available to check the severity of sleep apnoea.
- If patient has sleep apnoea and uses CPAP, ensure patient is aware to bring CPAP machine into hospital for use post-operatively for all surgeries except airway surgery. Give patient sleep apnoea information sheet.
- If anaesthetist requests 5F ensure booking is changed with admissions and 5F bed is available and is booked. If no 5F bed available, surgery will need to be deferred till 5F bed can be booked for patient post-op

Surgical risk \ Clinical predictors	Major • Obesity>40BMI • Severe OSA non compliant with CPAP • Craniofacial abnormalities	Intermediate • Obesity BMI35 – 40 • Moderate OSA • Severe OSA compliant with CPAP, or as diagnosed	Minor • Mild OSA • Obesity BMI 35-40 • Neck circumference>43 (M), >40 (F) • Loud/frequent snoring, frequent awakenings, daytime somnolence
High • Major open thoracic surgery with GA • Major airway surgery with GA	ICCU	PACU/ HDU	Designated Ward
Intermediate • Airway surgery with sedation • Peripheral surgery with GA • Laparoscopic surgery • Major abdominal surgery • Opiod/PCA use • ERCP with GA	HDU	PACU/ HDU	Designated Ward
Low • Peripheral surgery under regional block/LA • Superficial surgery or MRI • Procedural surgery i.e. endoscopy, colonoscopy	PACU	Designated Ward	Designated Ward

This protocol has been developed for FMC practice setting only. It is intended to guide practice and does not replace clinical judgement.
Modification will occur according to internal audit processes and literature review. Issued: January 2009 by Anaesthetic Services and Division of Surgical and Specialty Services. Due for review January 2010
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Surgical & Specialty Services Protocol

Sleep apnoea (obstructive) - management in elective surgery, draft 8/07/10

Pre op day 0 (day of surgery)
Existing CPAP – send machine to theatre with patient

Intra op
Intraoperative concerns in patients at increased perioperative risk from OSA include:-
- Choice of anaesthetic technique
- Airway management
- Patient monitoring

Post op ward destination
- Anaesthetist to determine post-operative ward destination using OSA Matrix
- UVPPP patients to HDU
- Post-operative patients should not go to general wards not equipped with OSA monitoring equipment (Nurse alarm call Interface cable, Oxygen Sensor)

Post op management
Analgesia
- Regional analgesia and opioid sparing techniques should be employed where possible

Oxygenation
- Supplemental oxygen should be administered as needed (oxygen via Nasal Specs @2Lmin0 to maintain acceptable arterial oxygen saturation and that supplemental oxygen may be discontinued when patients are able to maintain their baseline oxygen saturation while breathing room air
- CPAP or NIPPV should be administered as soon as feasible after surgery to patients with OSA who were receiving it preoperatively. Patients should have these appliances in place at all times while not ambulating.

Patient Positioning
- Nurse in the sitting position, never flat or lying on side(unless ordered by MO)

Monitoring
- Continuous monitoring of SpO2 reduces the likehood of peri operative complications among patient who are at increased risk from OSA
- Ensure patient is close to nurse's station
- Pulse Oximetry should be continuously monitored while these patients are in bed. Use of "oxygen sensor" in-situ
- Attach Nurse Alarm Call Interface to Dynamap
- Alarm to be set at 95% SpO2 on Dynamap; or determined by anaesthetist in PAC/ PACU and baseline SaO2 is documented in post-operative orders.
- If SpO2 is <95%, nurse initially completes "Sleep Apnoea Oxygen Sensor Checklist" to determine cause of problem. If Sp02 drops<95%, ensure medical review.
- Pulse oximetry should continue until room air oxygen saturation remains at or above the patient pre-operative baseline, and after medical review
- Hourly respirations
- Routine post-operative temperature, pulse and BP and any additional monitoring as per specific protocol for condition.
- Prompt response by nursing staff when call bell is initiated

Discharge ready when
- Medical staff have reviewed
- Meets Surgical discharge ready criteria

References: Practice guidelines for the perioperative management of patient with obstructive sleep apnoea Anaesthesiology 2006;104:1081-93.

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Extract page 1

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Nov 2009 - Feb 2010 : HDU Trial

- 19 patients were monitored using a OSA Intervention Form
- 2 month period where issues with cable were resolved
  - Safety checks in place from January
- 11/19 (57%) patients were diagnosed with mild OSA
- 7/19 (37%) patients used CPAP; only 2/7 brought in CPAP machine
- 2 patients with sleep studies
- 4/19 (21%) patients BMI >40
- No significant interventions were required, except for patients undergoing major ENT Surgery. None required further medical review, and day of discharge remained unchanged.

Surgery	Diagnosis of OSA / CPAP	Interventions ie. SpO2< 95%
ENT		
7 (2 major)	2	2 (Increase oxygen)
Colorectal		
4	4	No (1 PCA)
Hepatobiliary		
2	2	No
Plastics		
1	0	1
Ortho		
1	1	No
Gastro		
2	1	1 (non-compliant)
Other		
2	1	No

Outcomes

- **Improved Flow of Patient admission through Pre-admission Clinic**
- **Reduction of cancellations in surgery**
- **Decrease in competition of HDU (and ICCU) beds**
- **Reduction of variability in practice by providing a standardised approach to peri-operative management of patients with OSA**
- **Development of OSA Nursing Checklist, Patient with OSA Information Sheet, CPAP guidelines.**

Strategies for Sustaining Improvement

- **Consultant Driven**
- **Adequate Pre-operative Assessment, consultation and planning**
- **Patients own CPAP available in recovery**
- **Post-op care according to risk level and protocol driven**
- **Future Directions – carry to other wards**
- **Decrease Costs; HDU beds vs General Wards with same nursing ratio.**
- **Follow up calls for patients from SSW following surgery.**
- **GP's to carry out referrals**

Questions ?

http://koifishcommunications.com/blog/wp-content/uploads/2009/

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