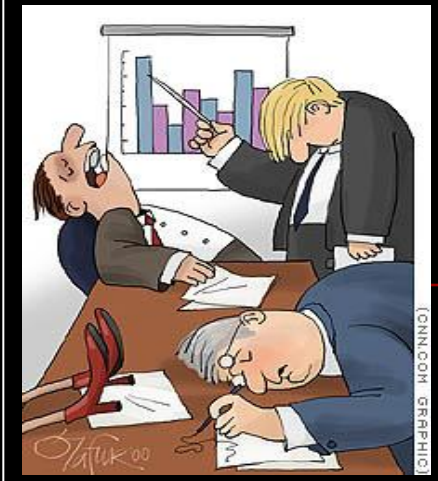
How I went to sleep and what I found there

M Majurey EN RPSGT M.Sc.M. (Sleep Medicine)
Charge Clinical Physiologist

Laugh and the world laughs with you



Snore and you snore alone !

Waikato Hospital Sleep Lab

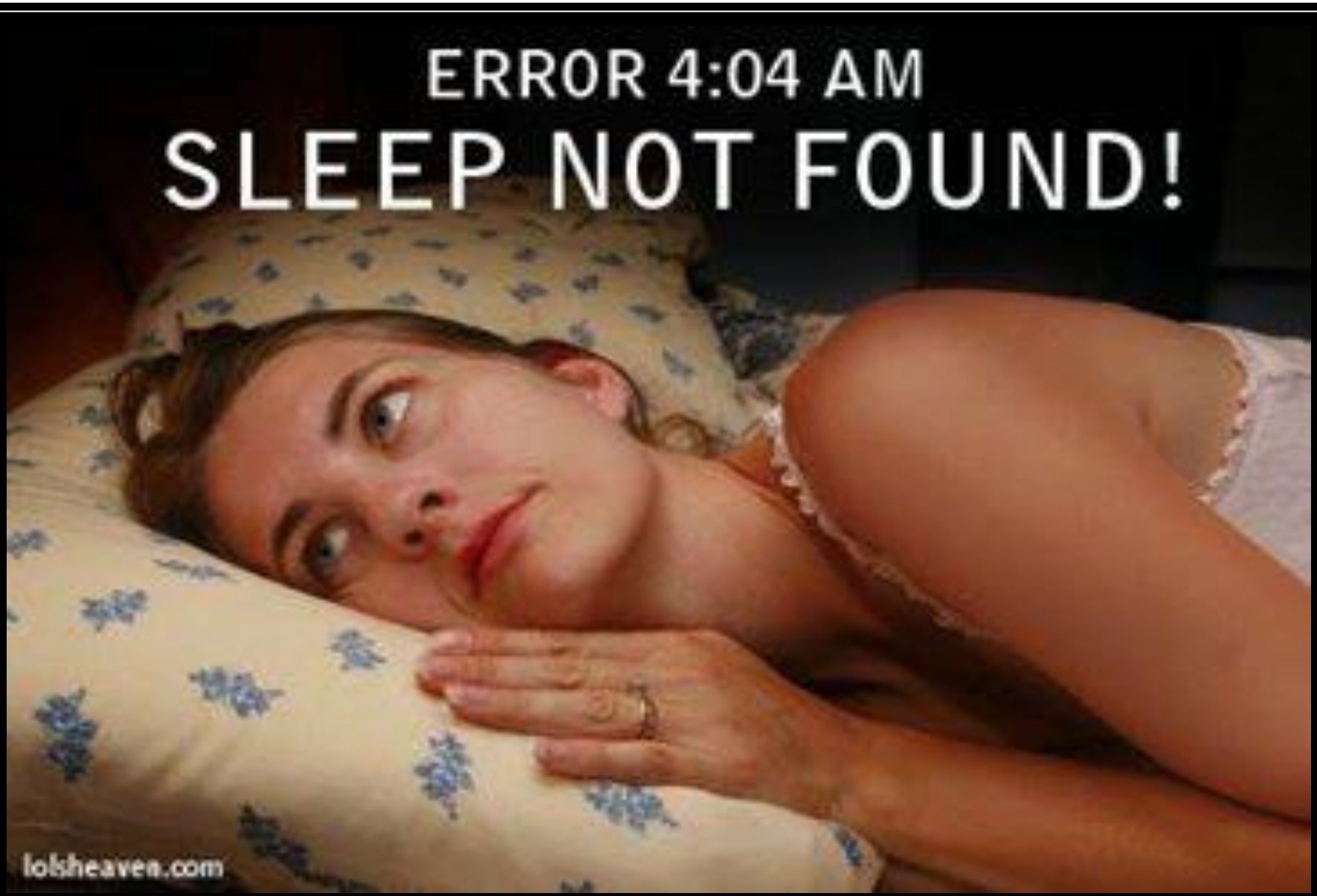
- Dr Cat Chang – Resp/Sleep Physician
- Adele Jack – Clinical Physiologist
- Emie Garcia – Clinical Physiologist
- Ella Paez – Clinical Physiologist
- Belle Miguel – Clinical Physiologist
- Nelson Pacis – Clinical Physiologist
- Receptionists – Jacky and Raewyn


NOT TO BRAG, BUT I'M SO DAMN GOOD AT SLEEPING
I CAN DO IT WITH BOTH EYES CLOSED.


Do you know that awesome feeling when you get into bed, fall right to sleep, stay asleep all night, and wake up feeling refreshed?
Me neither


Coffee!
If you're not shaking,
you need another cup.
https://www.facebook.com/NowThatsFunnyStuff

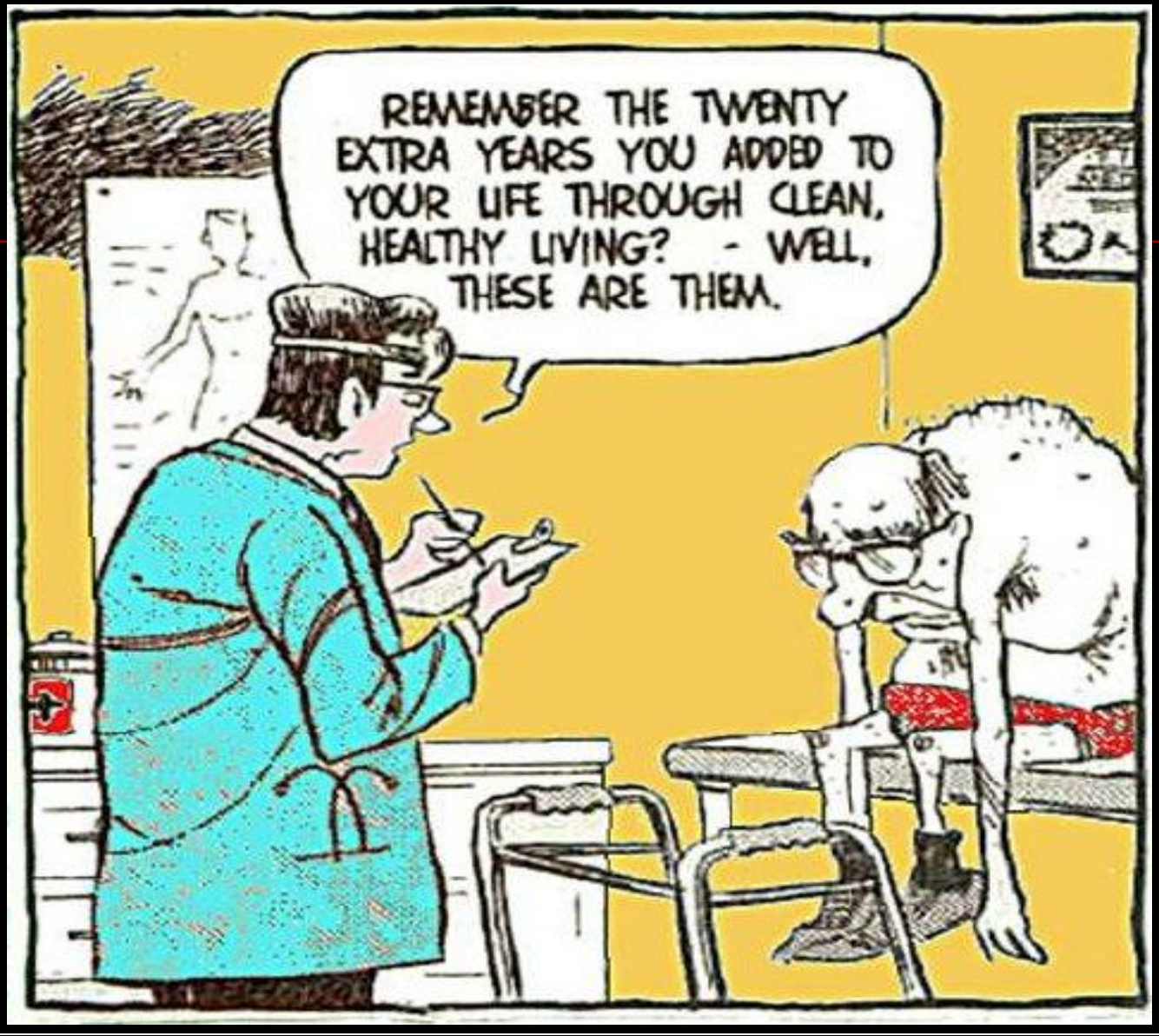

THERE ARE ONLY
TWO TIMES
I FEEL STRESS:
DAY AND NIGHT.

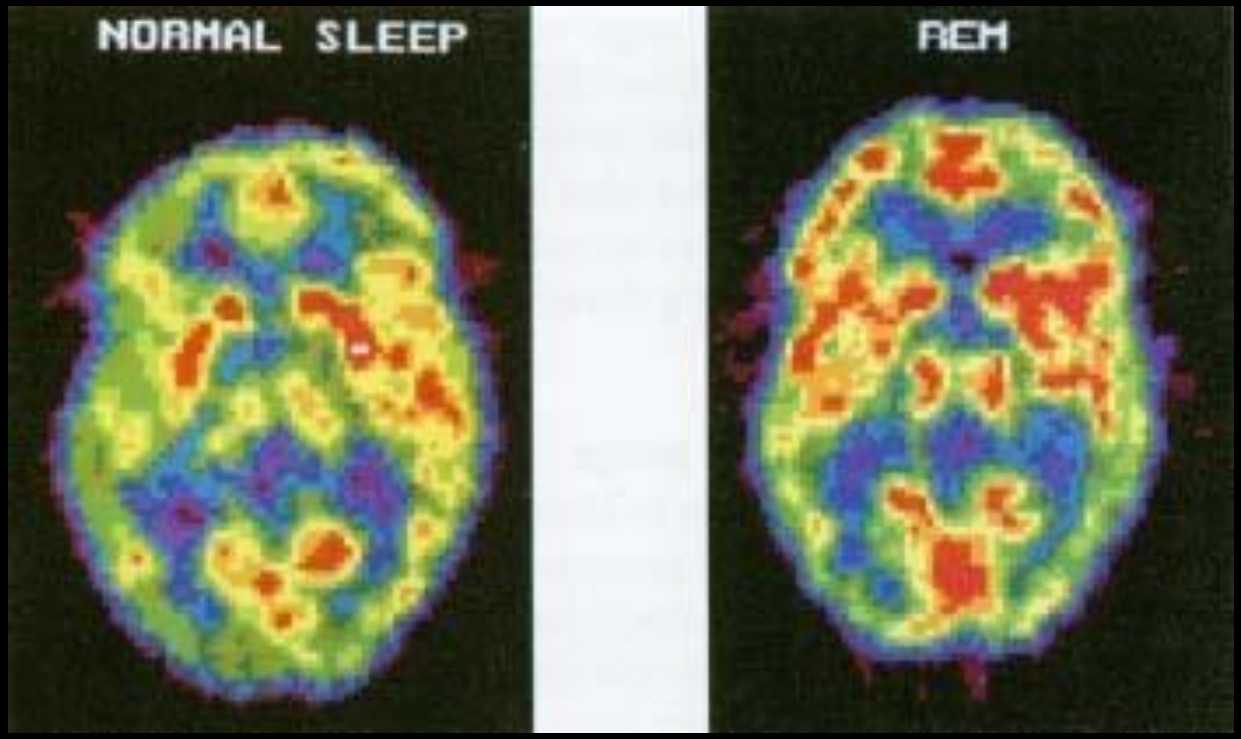

ERROR 4:04 AM
SLEEP NOT FOUND!
lolsheaven.com

Do you know that awesome moment when you wake up in the morning and you are full of energy?

Me neither!

"All I remember is the smell of melted butter,
and then I woke up with my heart racing."


REMEMBER THE TWENTY EXTRA YEARS YOU ADDED TO YOUR LIFE THROUGH CLEAN, HEALTHY LIVING? - WELL, THESE ARE THEM.


NORMAL SLEEP
REM

One of only 4 public sleep investigation units in NZ performing full polysomnography.

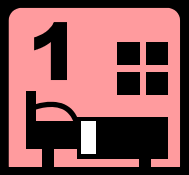
Under utilised

Long waitlist – funding issues

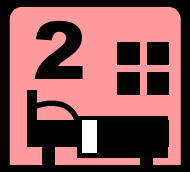
Level 01
Waiora
Waikato
Building

No windows

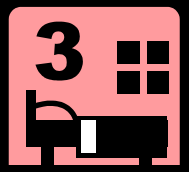
Little noise



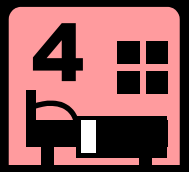
Four Sleep Beds



- Bed 1 > Full Polysomnography with ABGs, TcCo2 monitoring. Used for Respiratory or Cardiac Failure, Motor Neurone Disease, Duchennes Muscular Dystrophy, morbidly obese and Paediatric patients.
- Bed 2 > TcCo2. Is used for less unwell patients, MSLT - used to diagnose Narcolepsy and MWTs
- Both have BiPAP and oxygen available



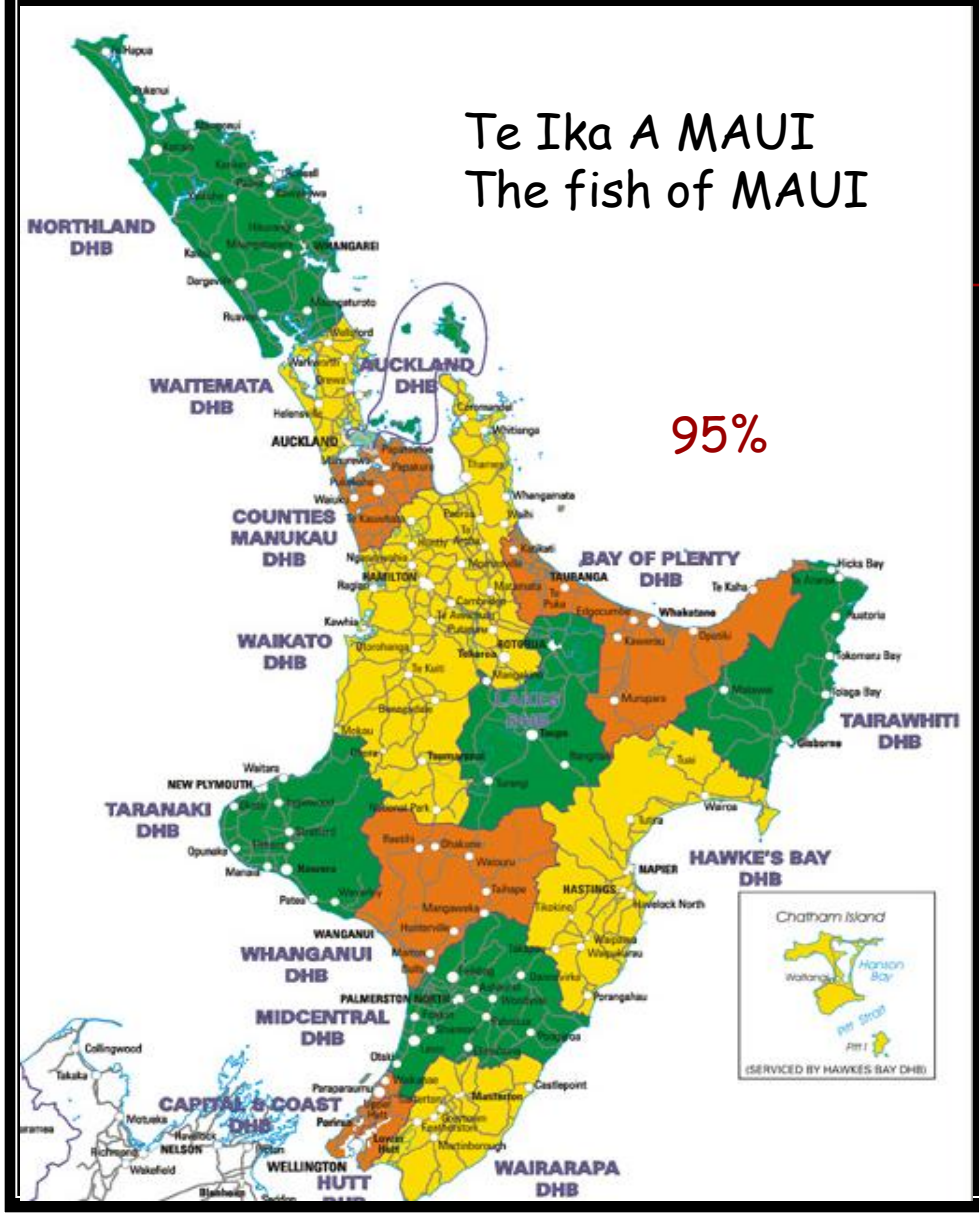
Beds cont'd



- Bed 3 and bed 4 full PSG for walking well
- Beds 1 to 4 are fully attended and 3 of them can have video recording done if required
- Bed 5 > a virtual bed. In lab set up for home or outside room > oximetry or Autoset T.

GP or Hospital Dr Presentation

- Often under threat from spouse / employer
- Near miss driving / work accident
- Grumpy/Depressed
- Denial / Uncooperative



Te Ika A MAUI
The fish of MAUI

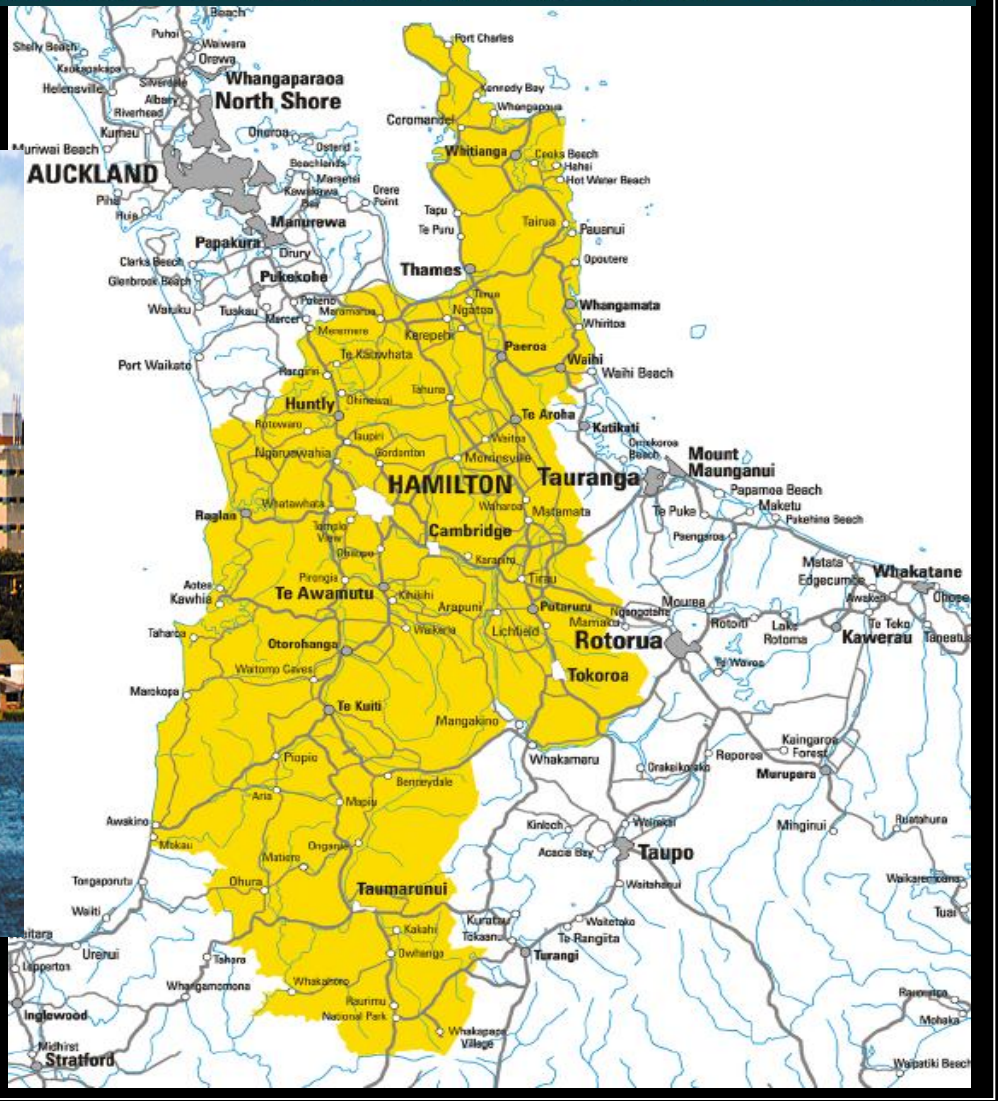
95%

500,000 Maori

Waikato District Health Board

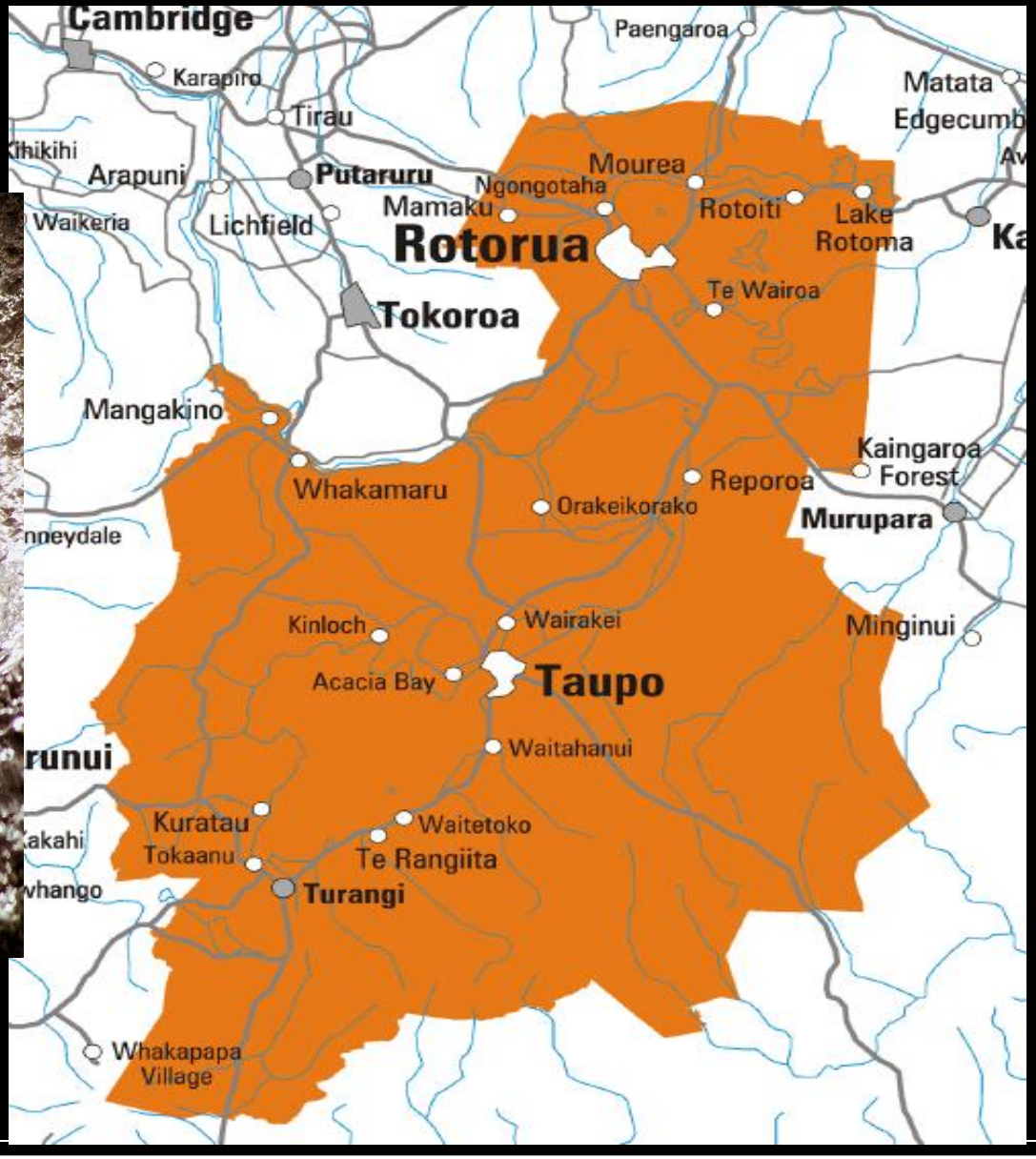
Waikato 330,000 22% Maori

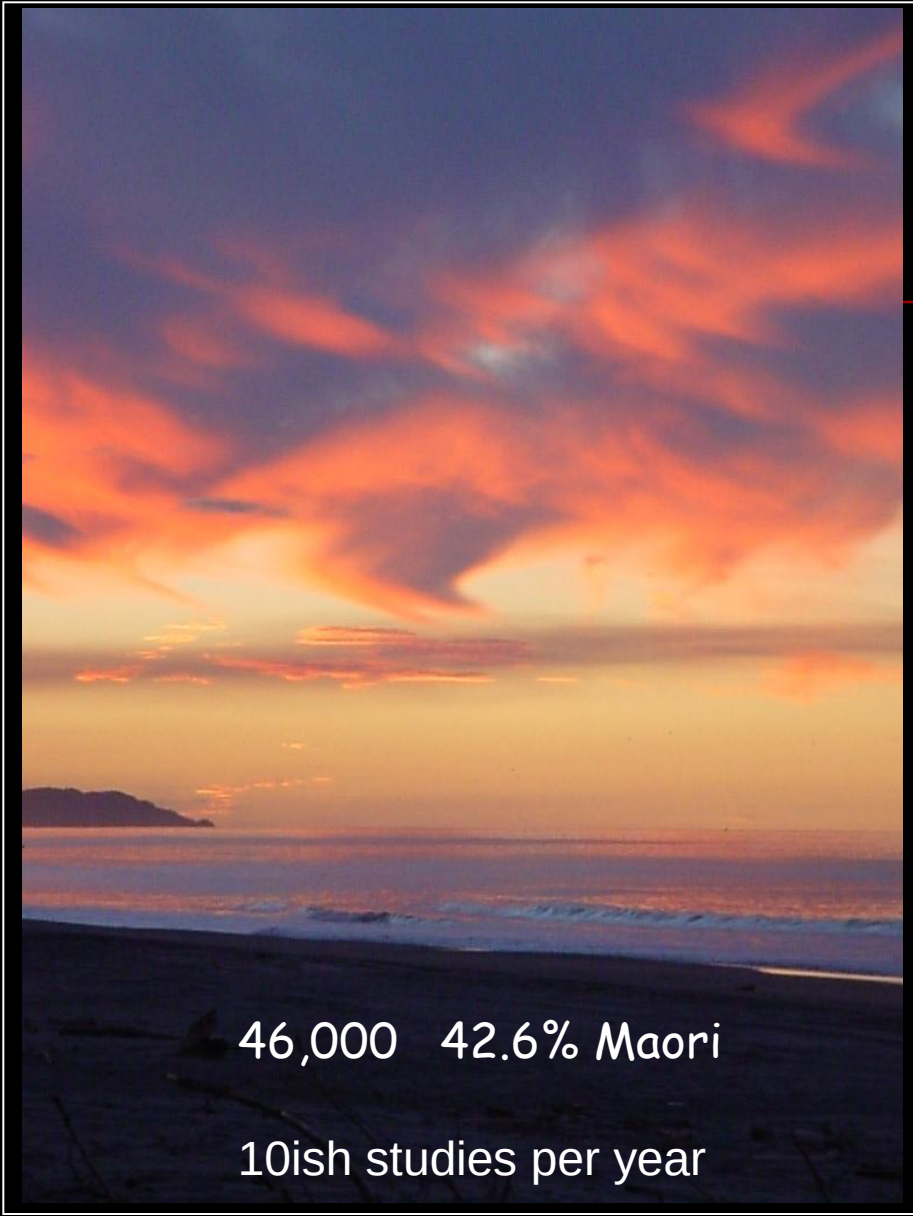
5 beds 4.25 FTE
Everything supplied



100,000 30% Maori

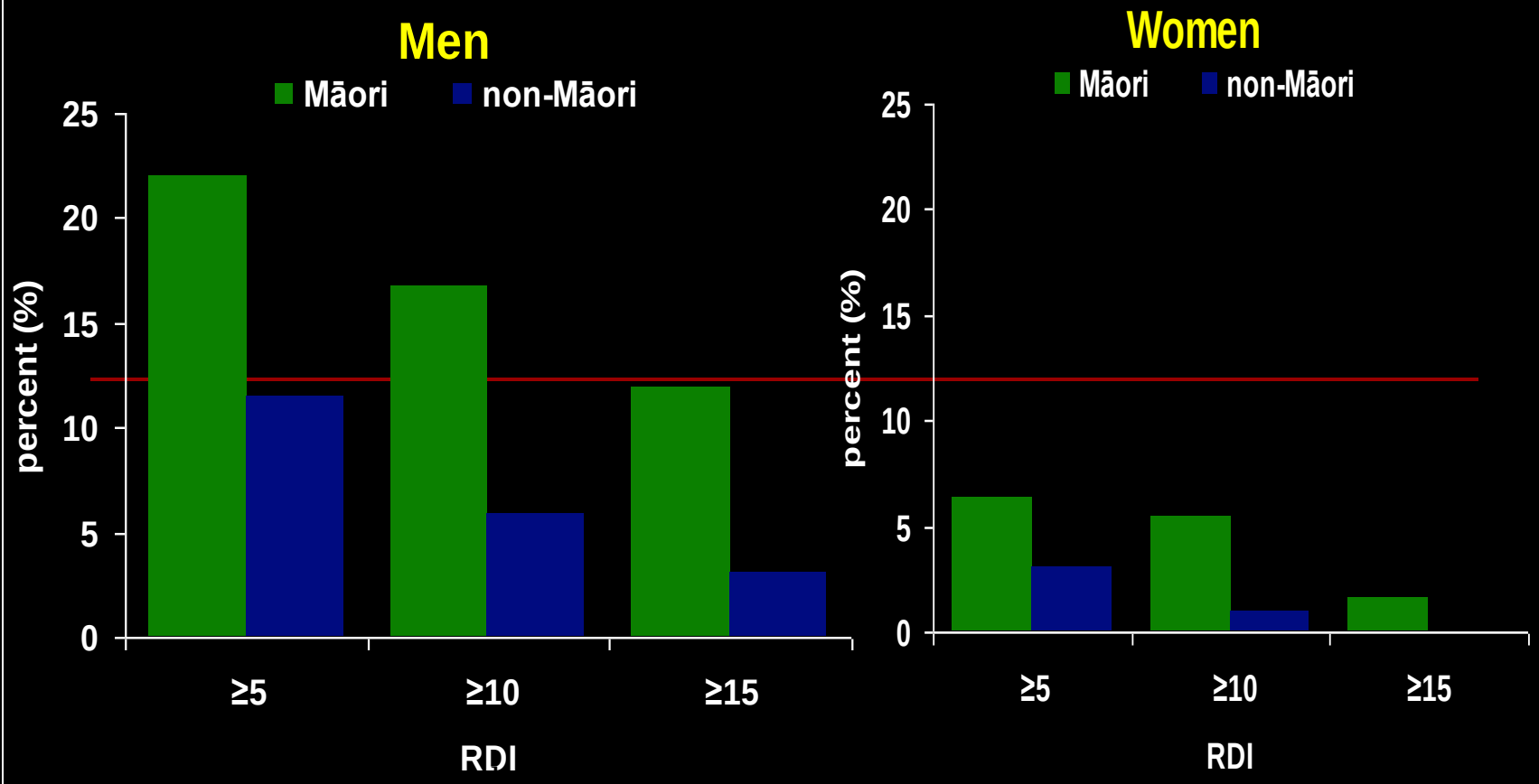
Level 4 studies beds 2 FTE
we do 70ish studies a year




46,000 42.6% Maori
10ish studies per year


TAIRAWHITI DISTRICT HEALTH BOARD
Waihau Bay
Whanarua Bay
Hicks Bay
Te Araroa
Te Kaha
Omaio
Tikitiki
Whakatane
Ohope
Opotiki
Ruatoria
Taneatua
Waipiro Bay
Te Puia Springs
Tokomaru Bay
Motu
Matawai
Tolaga Bay
Whatatutu
Te Karaka
Ormond
Patutahi
Gisborne
Manutuke
Waikaremoana
Waingake
Wainui
Tiniroto
Muriwai
Tuai
Te Reinga
Frasertown
Wairoa
Nuhaka
Raupunga
Opoutama
Mohaka
Mahia Beach

Prevalence of Obstructive Sleep Apnoea Maori cf other New Zealand adults



K Mihaere, P Gander, P Reid, W Hla, R Grunstein, A M Neill. 2003
Sleep/Wake Research Centre, Wellsleep, Eru Pōmare Maori Health Research Centre

Why bother about sleep disorders?

- Sleep disorders are *common*
- Sleep disorders are *serious*
- Sleep disorders are *treatable*
- Sleep disorders are *underdiagnosed*

The Problem of Sleepiness

- Disrupts daily life
- 0.5 – 5% + of population
- Road accidents
- Occupations
- Marital
- Caused by lifestyle factors and
- Sleep disorders


WHAT IS THIS
"SLEEP" YOU
SPEAK OF??

Why do we sleep?

Not known!

- Total sleep deprivation in animals
  → Death in 40 days
- Unethical in humans, but:
  - Impaired thinking and memory
  - Impaired mood
  - Increased risk taking
  - Immune / hormonal effects

Clues to Lack of Sleep

- “Normal” range is 5 – 10 hours/night
- Alarm clock use
- Weekend catch-up
- Sleep loss α number of jobs & kids

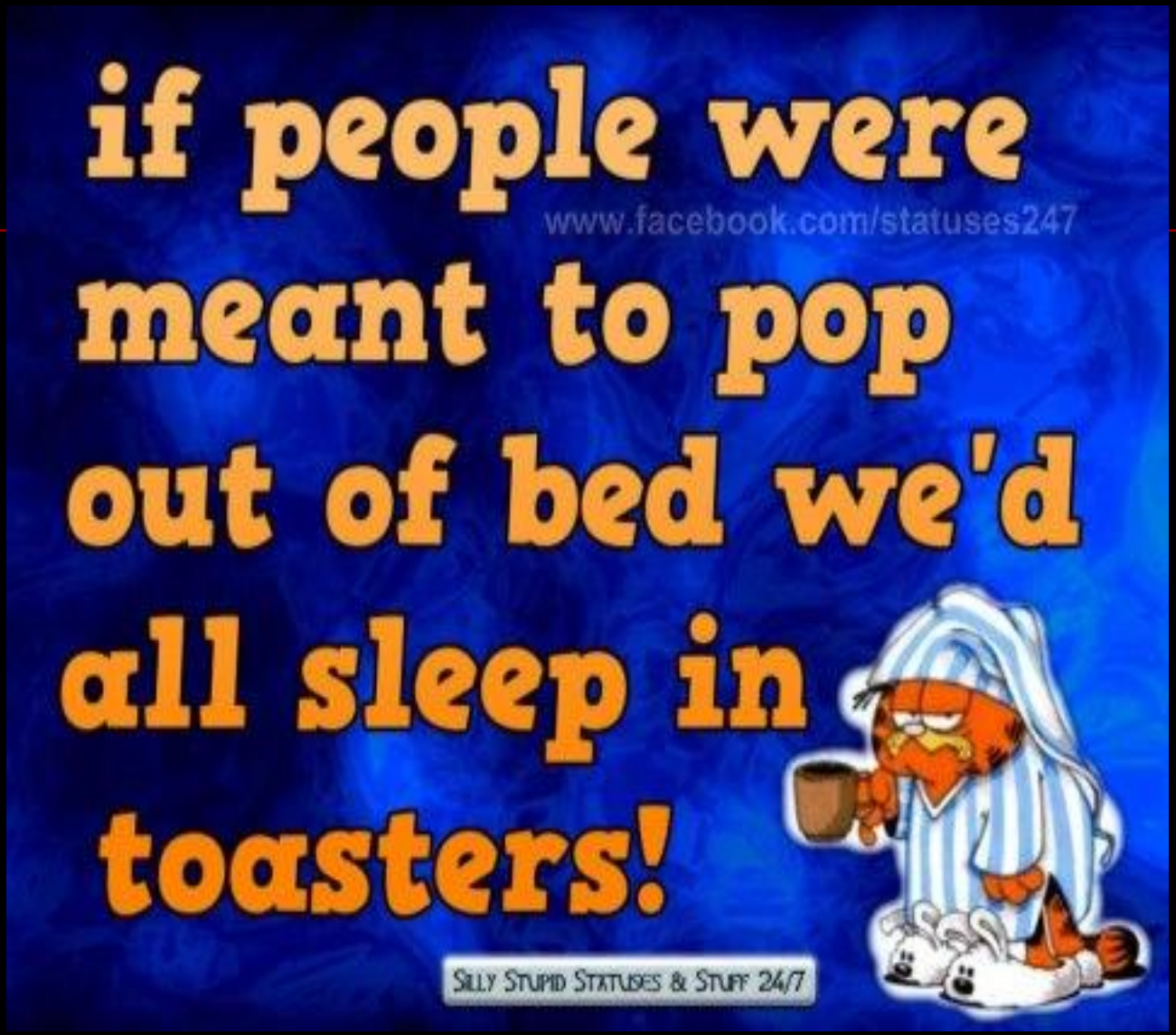
OSAS - Epworth Score.

How likely are you to doze off or fall asleep (in contrast to just feeling tired) in the following situations?
Even if you have not done some of these things recently, try to work out how they would have affected you.
Use the following scale to choose the most appropriate number for each situation.

SITUATION	CHANCE OF DOZING
Sitting and reading	
Watching TV	
Sitting inactive in a public place (theatre or meeting)	
As a passenger in a car for an hour without a break	
Lying down to rest in the afternoon when circumstances permit	
Sitting and talking to someone	
Sitting quietly after a lunch without alcohol	
In a car, while stopped for a few minutes in traffic	
TOTAL	

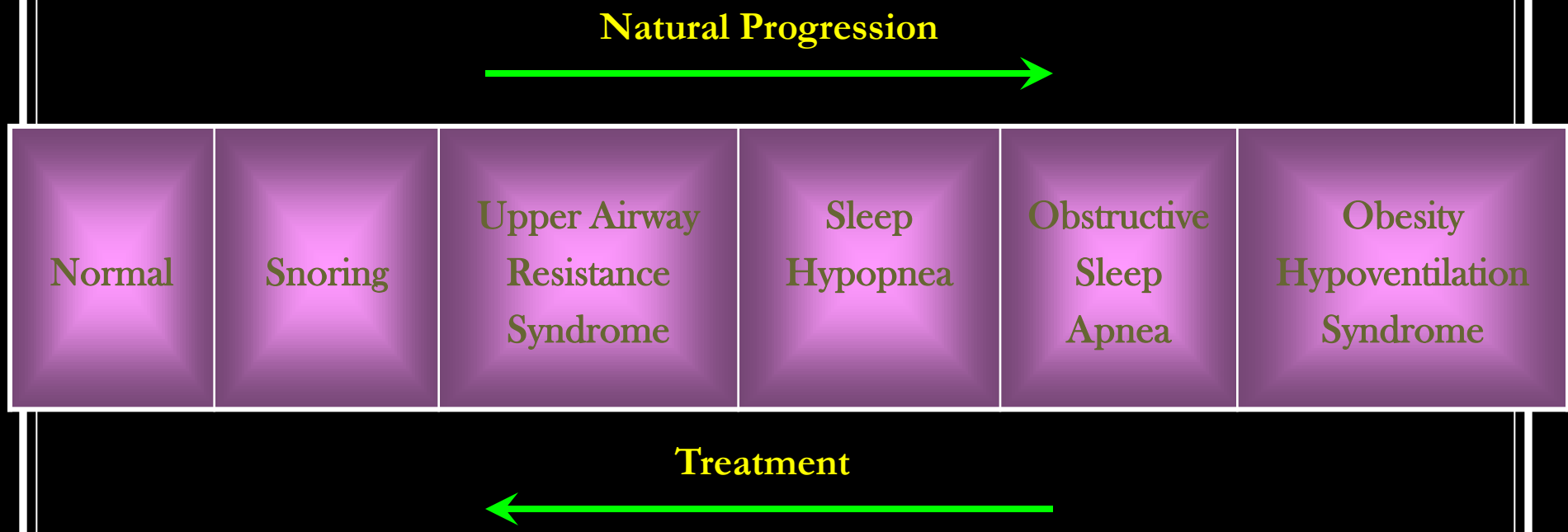
0 = no chance of dozing
1 = slight chance of dozing
2 = moderate chance of dozing
3 = high chance of dozing

Refer:
Epworth > 10
Snorer
Overweight
Witnessed apnoeas.

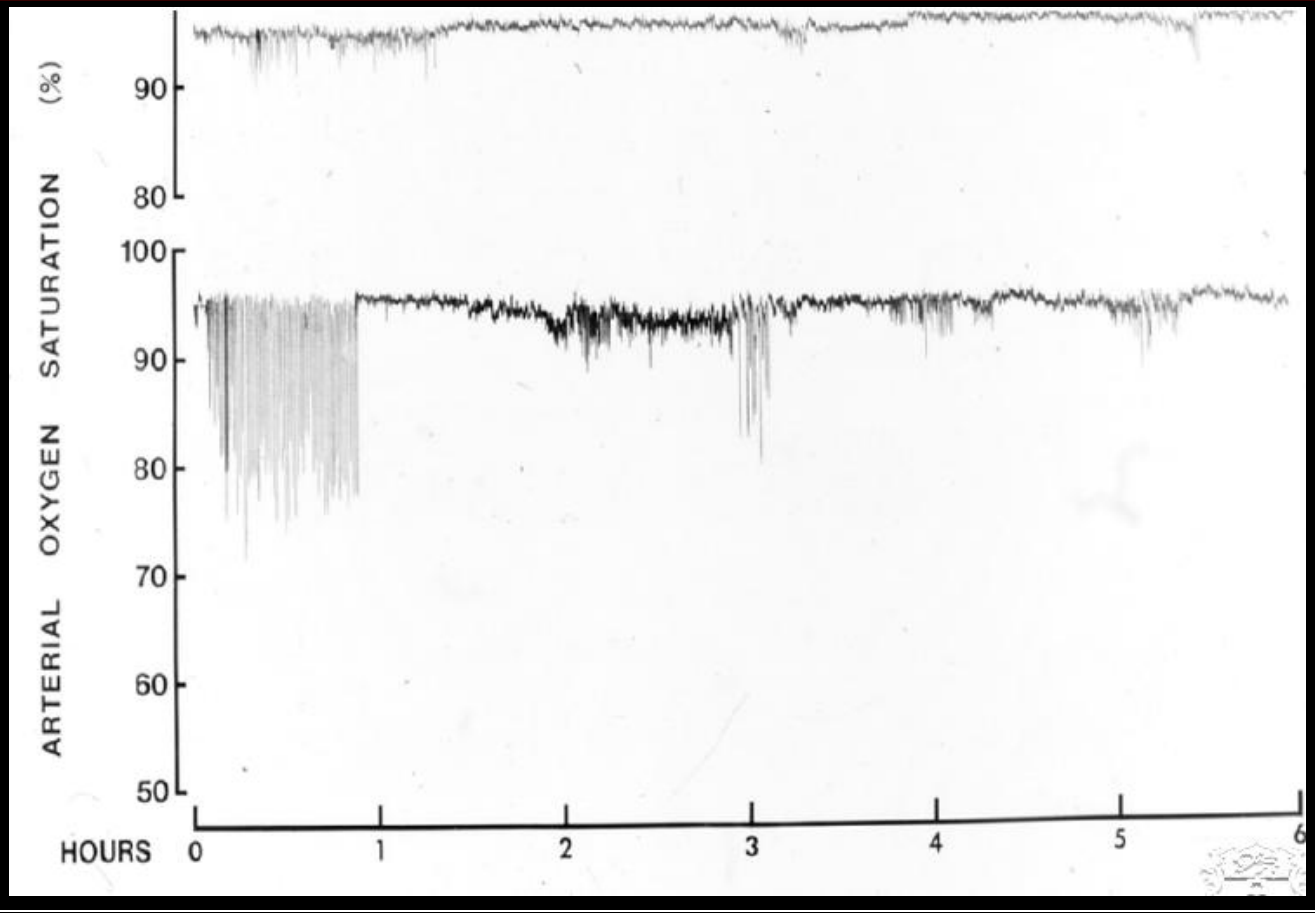

if people were
www.facebook.com/statuses247
meant to pop
out of bed we'd
all sleep in
toasters!
Silly Stupid Statuses & Stuff 24/7

Sleep-Disordered Breathing

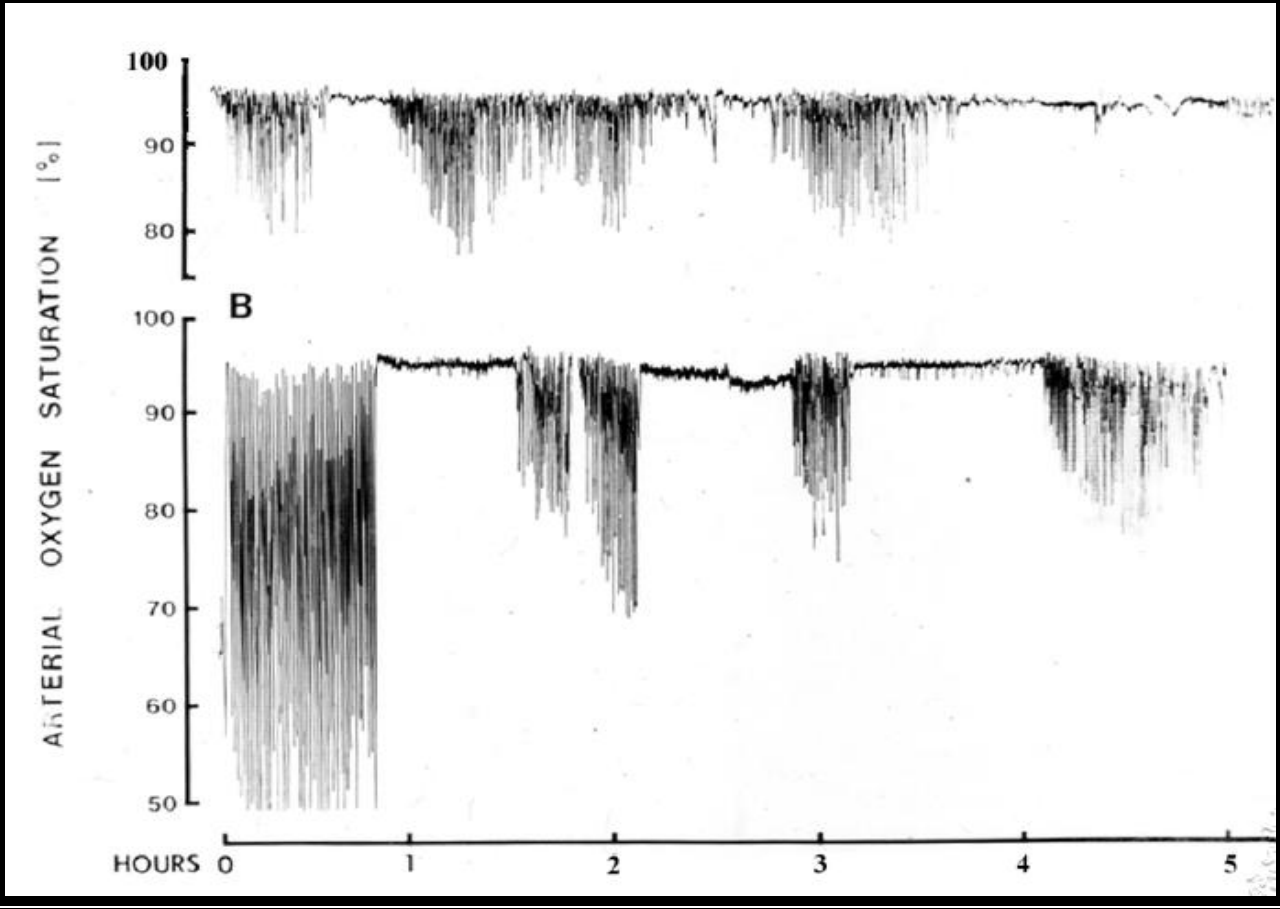
A Spectrum of Abnormality



Take snoring - add 4 cans of beer



Take OSA and add 4 cans of beer

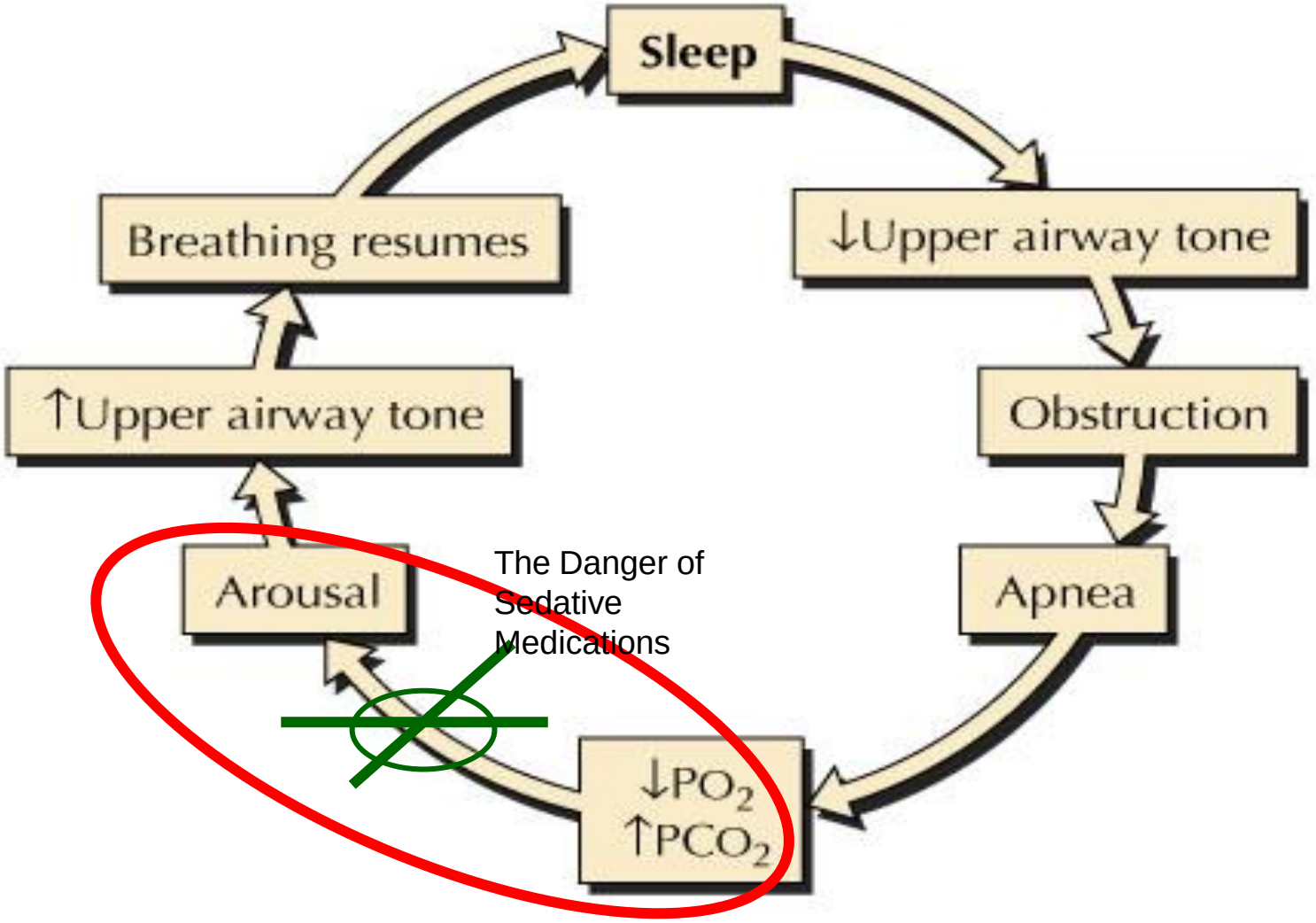


Alcohol

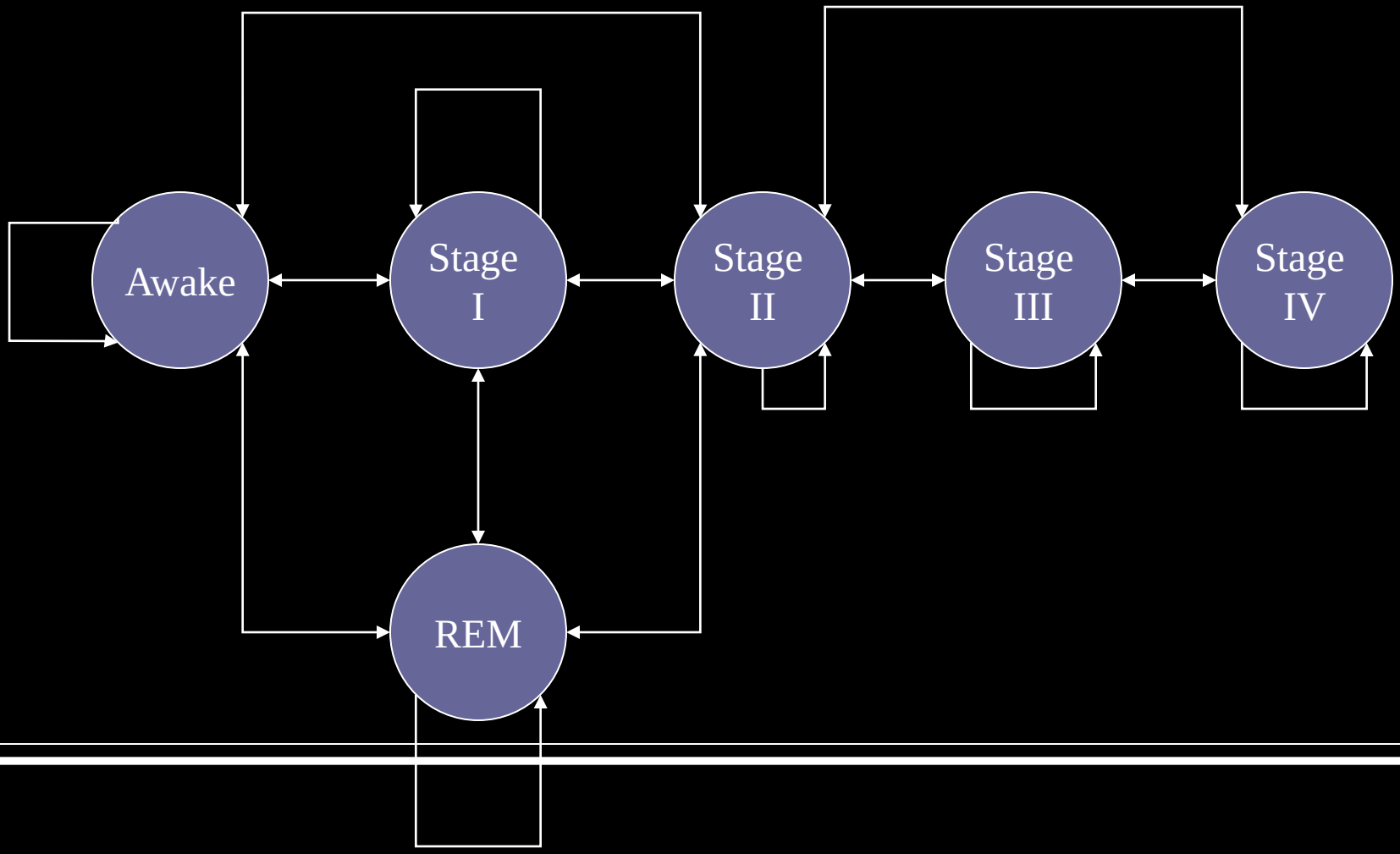
- Non Maori more likely to be alcohol drinkers and to drink more often
- Maori more likely to drink more in one session
- Maori have higher mortality rate with more alcohol related deaths

- The burden of death, disease and disability due to alcohol in New Zealand: Feb 2005

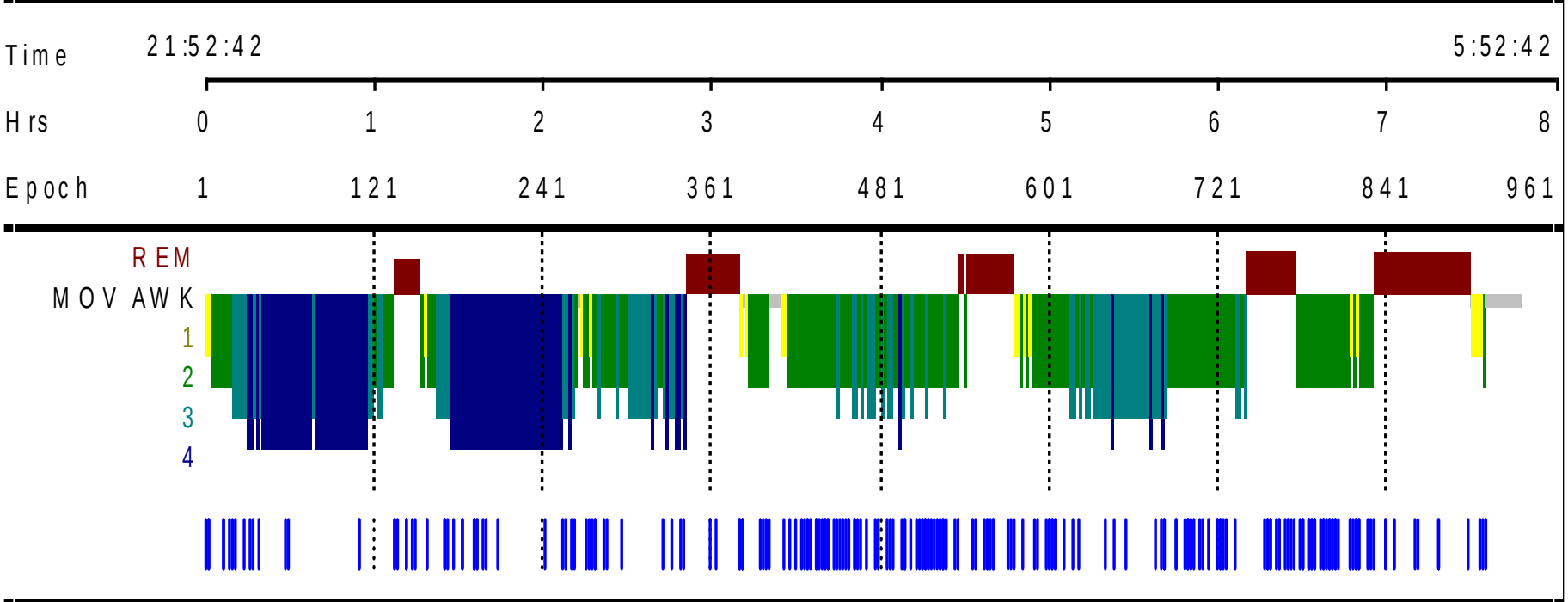
  Ricci Harris, Paparangi Reid and Phillipa Gander were involved with this paper


Sleep
↓Upper airway tone
Obstruction
Apnea
↓PO2
↑PCO2
Arousal
↑Upper airway tone
Breathing resumes
The Danger of Sedative Medications

Establish Contextual Information



Normal Sleep Architecture



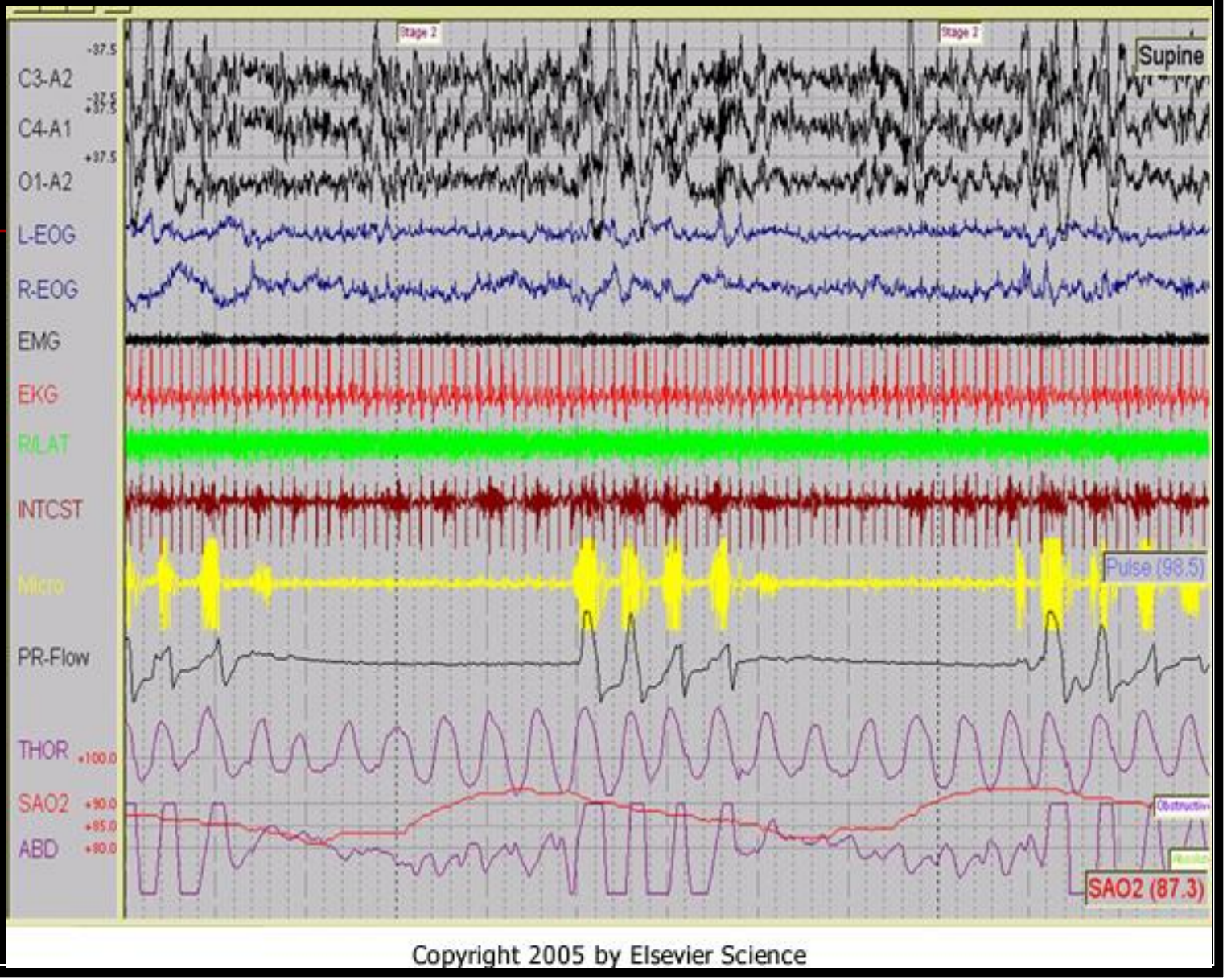
"OK, Mrs. Tully. We want you to relax, get a good night's sleep, and we'll evaluate any sleep issues that you have."

- The head is culturally sensitive
- Access to power on the Marae

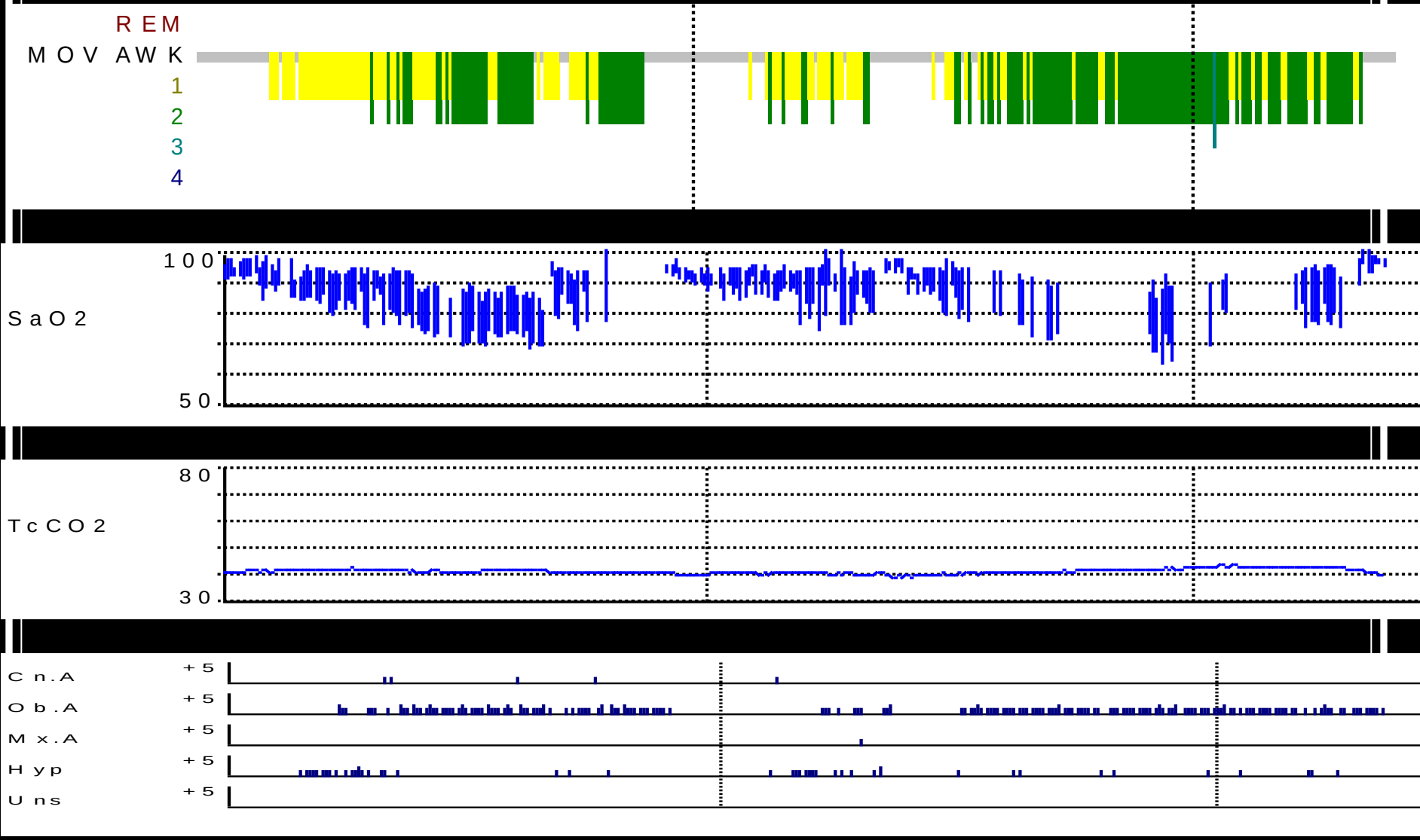
- Despite having more severe OSAS CPAP acceptance is lower in Maori and Pacific people.

Whyte K et al (abstract)

OSA


Stage 2
Stage 2
Supine
C3-A2
C4-A1
O1-A2
L-EOG
R-EOG
EMG
EKG
RILAT
INTCST
Micro
Pulse (98.5)
PR-Flow
THOR
SAO2
ABD
SAO2 (87.3)
Copyright 2005 by Elsevier Science

Sleep Fragmentation



Clues to Sleep Apnoea

- "Heavy" snoring
- Sleepy
- Impotence
- Witnessed apnoeas
- Hypertension
- Diabetes
- Central obesity

Thomas Nast's drawing of the fat boy in "The Pickwick Papers."

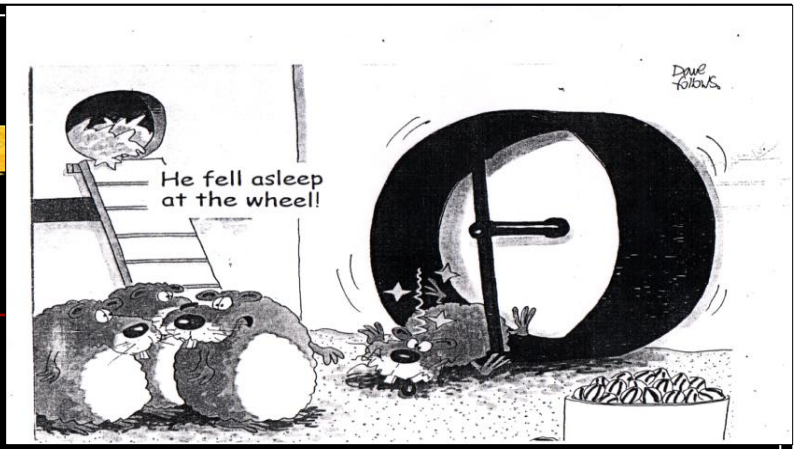
Sleep Apnoea - Consequences

- Sleepiness
  - Car accidents
  - Work
  - Family / marriage
  - Memory & concentration
  - Sex

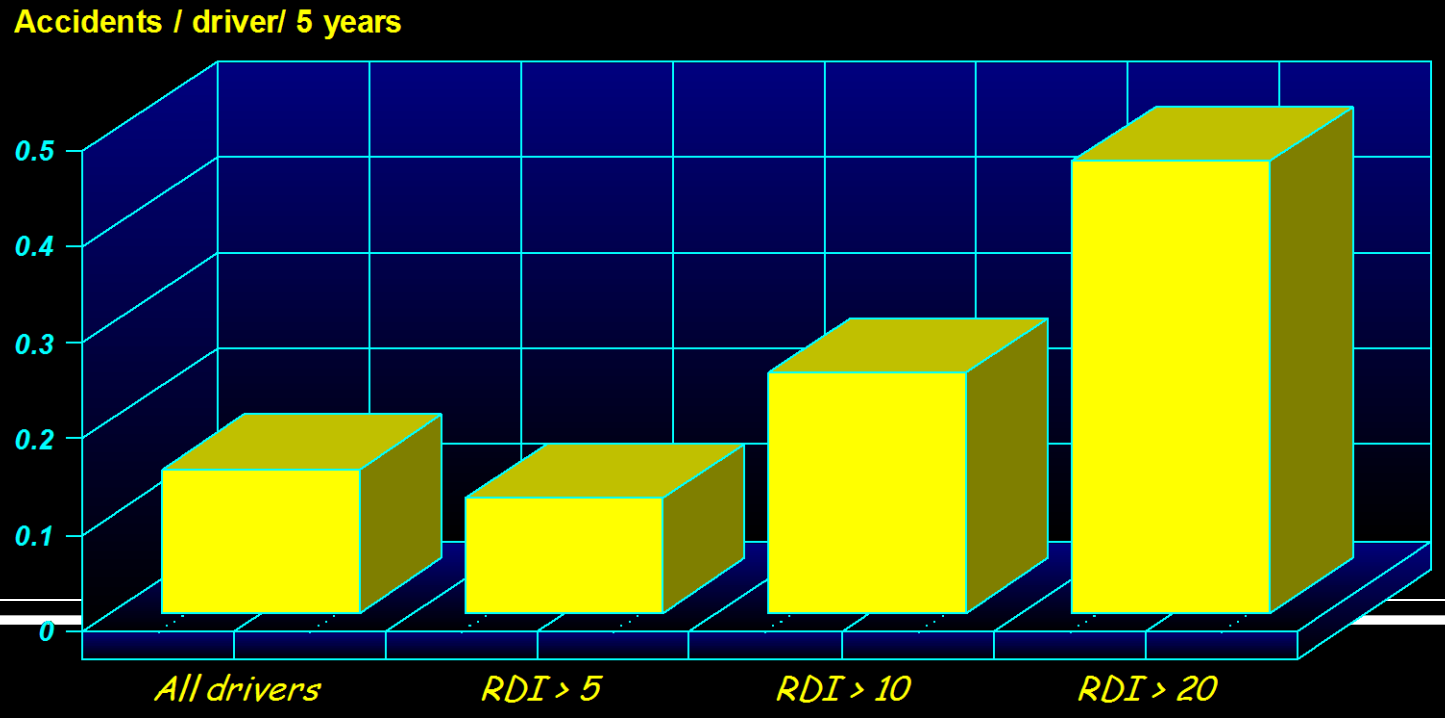
- Physical
  - Heart
  - Blood pressure
  - Strokes
  - Respiratory failure

- Medico-legal
  - Driving
  - Dangerous occupations
  - Strategic occupations
  - Diminished responsibility

OSAS and Driving



- Well validated
- Mainly ignored
- Long distance drivers
- 15 x risk of accident (Horstmann, Sleep 2000)
- Not asleep – inattention due to sleepiness



OSAS - Stroke.

- As many as 63% of stroke and TIA sufferers experience SDB

- Stroke and TIA patients are five times more likely to suffer from SDB than the general population

SDB and Post-Stroke Rehabilitation

Treating Stroke Patients with SDB

- greatly reduces the risk of a second stroke
- improves cardiac function
- lowers blood pressure
- increases life expectancy
- improves functional outcomes

Schizophrenia

- Locally high rate of referral
- Case reports of improvement

Int J Psych Med 2003 33:305

- Local case

Diabetes

- Obesity / metabolic syndrome
- Similar risks
- 595 OSA men
  - 30% type 2 diabetes
  - 20% insulin resistant ERJ 2003 22:1
- 26 non-obese DM (40-50 yrs, BMI 24)
  - > 30% OSA
- NZ: Obese, Maori, DM = 85% prob OSA

Diabetes

- DM + obesity + BP = 70% chance OSA
- CPAP in this group improved insulin responsiveness by 32% -

Brooks et al J Clin Endo Metab 1994 79:1681

Paediatric

- Syndromes
  - Pierre-Robin sequence
  - Crouzon
- Chiari malformation
- Downs
- Tonsils
- Obesity

Neuromuscular

- CSA
- Hypoventilation
  - Kyphoscoliosis
  - Muscular dystrophies
  - Motor neurone disease
- Tetraplegia (trauma) 25 – 40 % OSA

Sleep-Disordered Breathing and Hypertension

- Normal blood pressure (and heart rate response) to sleep is to decline 10% (10-20 mmHg)
  - Those who don't are "non-dippers"
  - Non-dipping carries risk of
    - Ventricular arrhythmias
    - Cardiac hypertrophy
    - Sudden cardiac death (in women)

Treatment of Hypertension in SDB

- CPAP Rx lowers BP in hypertensive sleep apnoeics
  - Compared with placebo
  - In a short time (3 to 7 days) !

Pregnancy

- OSA may develop in pregnancy
- Pre-eclampsia has nocturnal changes similar to OSA
  - Treatment of PET with CPAP reversed changes

Blyton et al Sleep 2004 27:79

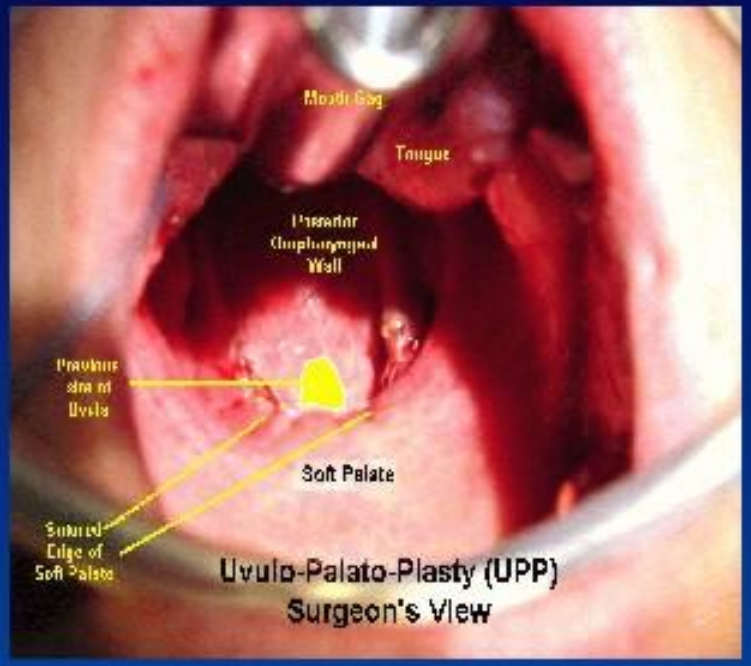
OSAS - Treatment.

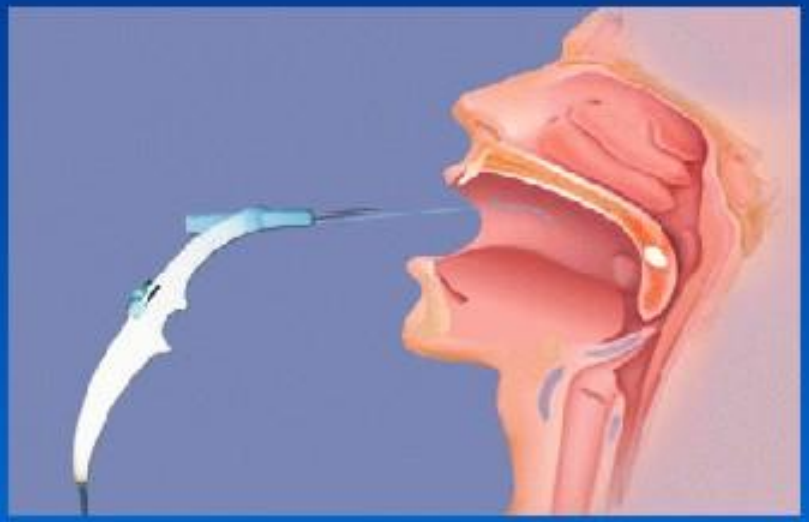
- Mandibular Advancement Splint.
  - Snoring.
  - Mild OSAS.
  - Expense.

OSAS - Treatment.

- Surgery.
  - Uvulopalatpharyngoplasty.
  - Laser Assisted Uvuloplasty.
  - Somnoplasty.
  - Tracheostomy.

  - Snoring.
  - Mild OSAS.
  - Cost.
  - Complications.





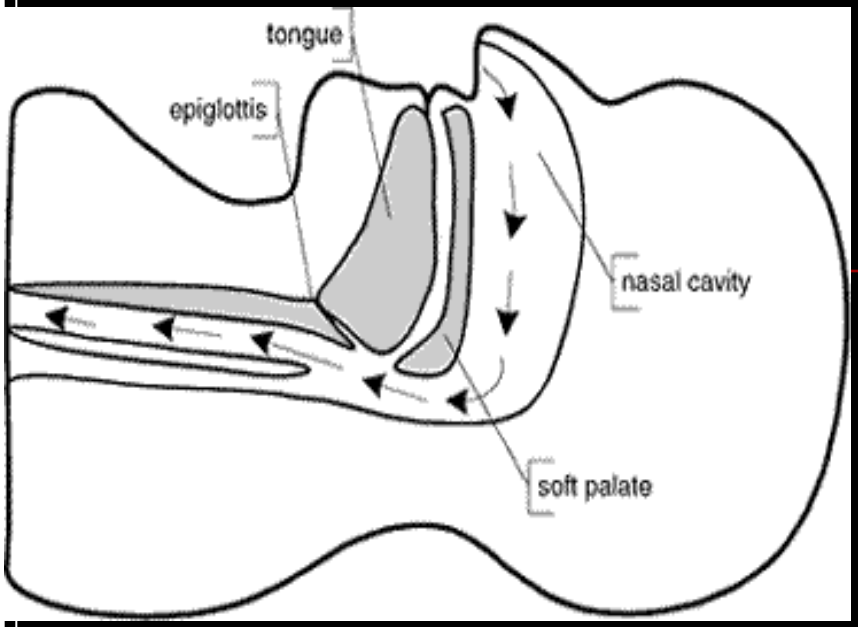
OSAS - Treatment.

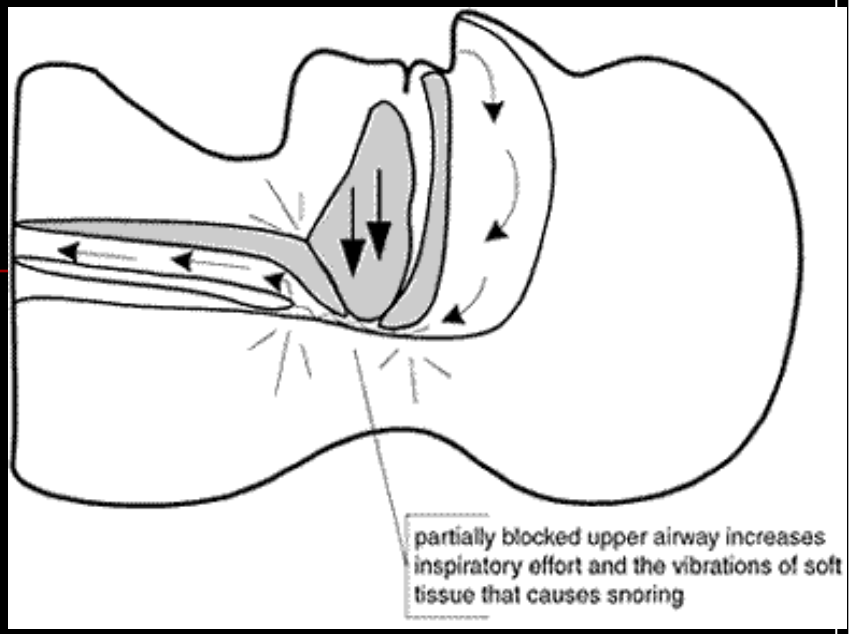
- Nasal Continuous Positive Airway Pressure (nCPAP).
  - Most effective.
  - Most common.
  - Relatively inexpensive.

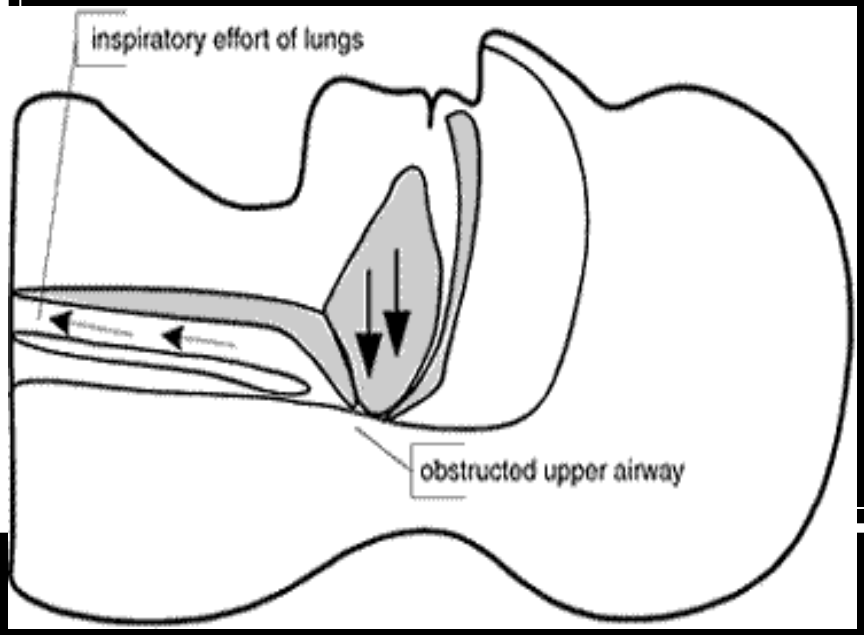
  - Compliance.
  - Mask fitting.
  - NOT A CURE.

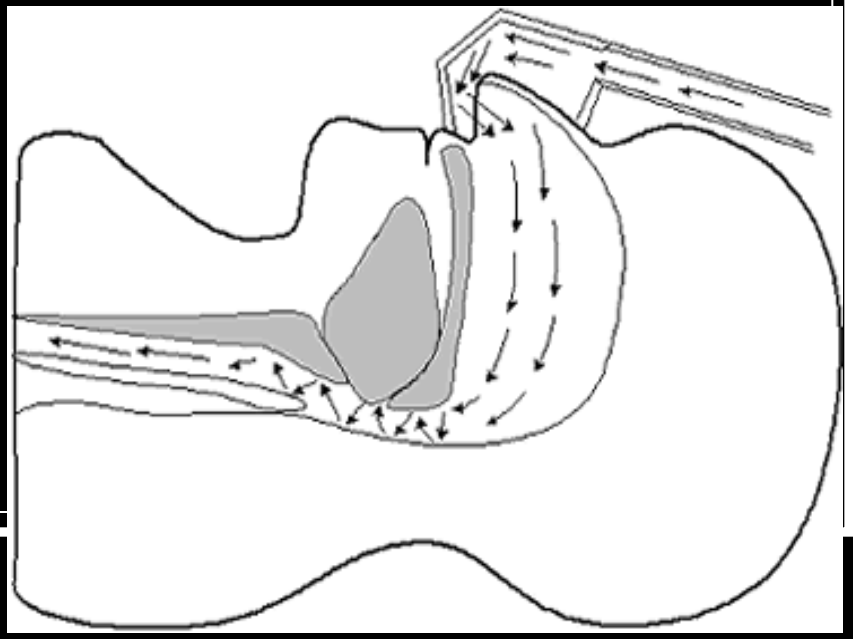

BiPAP

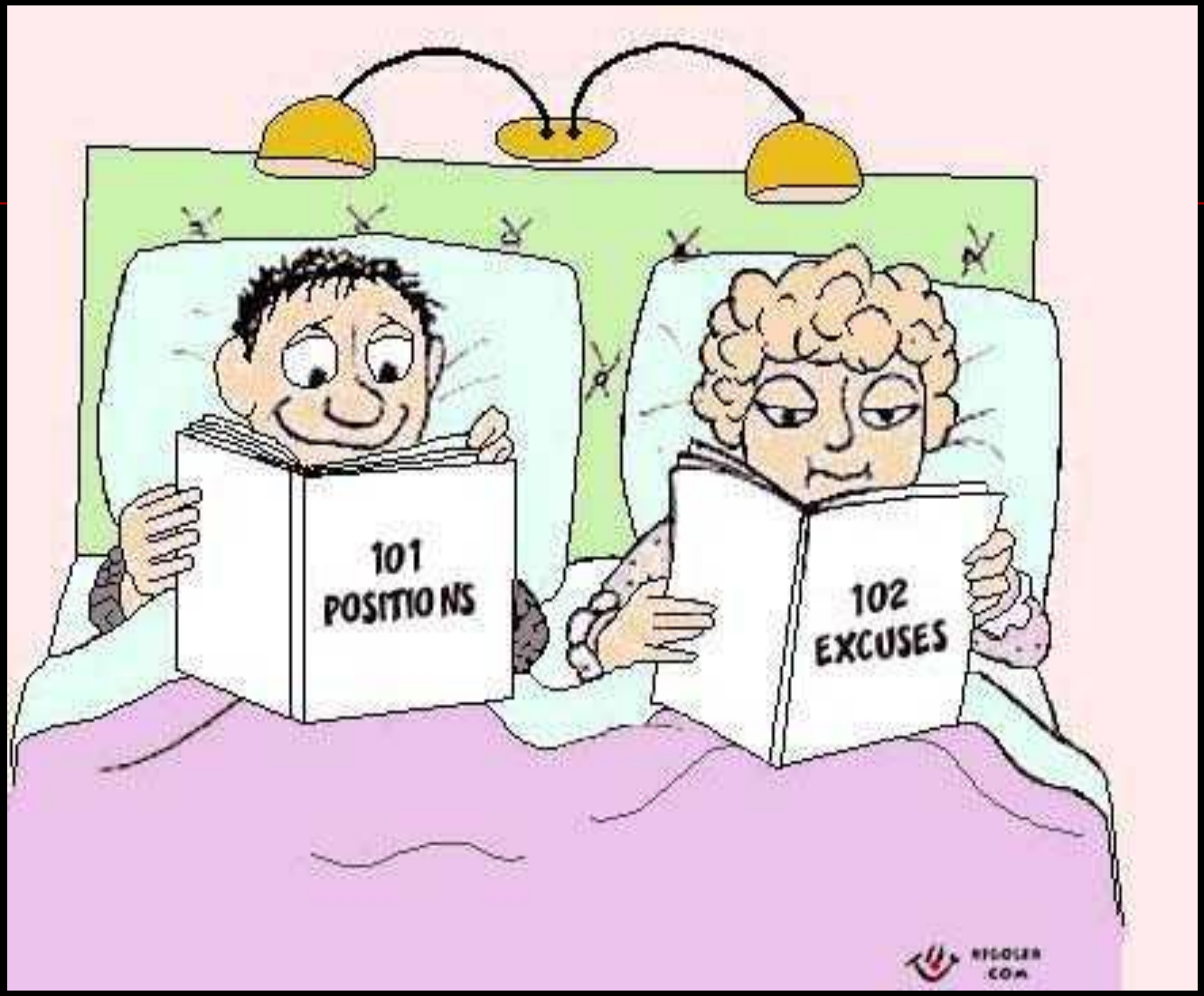

SleepStyle600
Thermo Smart
E12414
Fisher&Paykel
HEALTHCARE


tongue
epiglottis
nasal cavity
soft palate


partially blocked upper airway increases inspiratory effort and the vibrations of soft tissue that causes snoring


inspiratory effort of lungs
obstructed upper airway




101
POSITIONS
102
EXCUSES