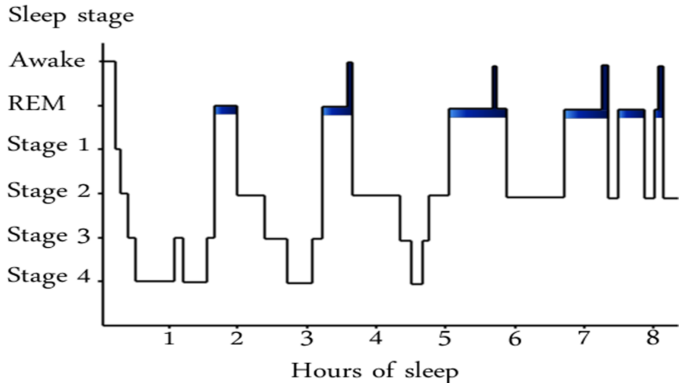
Sleep and Acromegaly

Guest Speaker Dr Alex Bartle. Report written by Catherine Chan

Dr Alex Bartle is a general medical practitioner and has done extensive research and special training and has a Masters qualification in Sleep Medicine. He established the Sleep Well Clinic in year 2000 which now has clinics nationwide.

Sleep comprises various stages including light (stage 1/2) & deep sleep (stage 3/4), and REM rapid eye movement phase when most dreaming occurs. It takes around 20 mins to get into deep sleep, and each sleep cycle lasts 90-100 minutes. Therefore the most effective way to nap is to keep it shorter than 20 mins for maximum effect, as anything longer than that you'll be waking up in deep sleep and you will feel groggy. Alternatively nap for 90 mins ie. a full sleep cycle.



Most adults need 7-8 hours sleep, with the amount of sleep required reducing as we age. There is no need to panic if you don't get 8 hours per night, but the "line in the sand" is 6 hours per night. Dr Bartle said those who claim to sleep less than 6 hours per night are kidding themselves, it is extremely rare for someone to need less than 6 hours sleep per night.

Sleep can be affected either in quantity or quality. The most common sleep disorders affecting sleep quantity is insomnia & circadian rhythm disorders. Circadian rhythm disorders are common in shift workers, and in young adults as they naturally have 'delayed sleep phase' often falling asleep late at night with difficulty getting up in the morning. There is evidence that delayed sleep phase in teenagers is sometimes related to depression.

Insomnia affects >15% of adults and chronic severe insomnia can affect daytime functioning. Those with insomnia have trouble falling asleep, they feel fatigued during the day but are not able to nap even if given the chance. There are a multitude of products on the market to treat insomnia, the only herbal product with some evidence of benefit is valerian, 5HTP has not been shown to be useful. Melatonin may help especially in the elderly as it has a calming effect. Out of the medications for insomnia Dr Bartle said zopiclone is the safest, with low addictive potential and does not worsen snoring. Benzodiazepines (e.g. temazepam, lorazepam, diazepam) worsen snoring and have high addictive potential. Zopiclone is a 'quick fix', and people who take it regularly will find they cannot sleep without it. While many look for a 'quick fix', behavioural treatments carry far greater long term benefits as up to 60% of insomnia is the result of anxiety and stress.

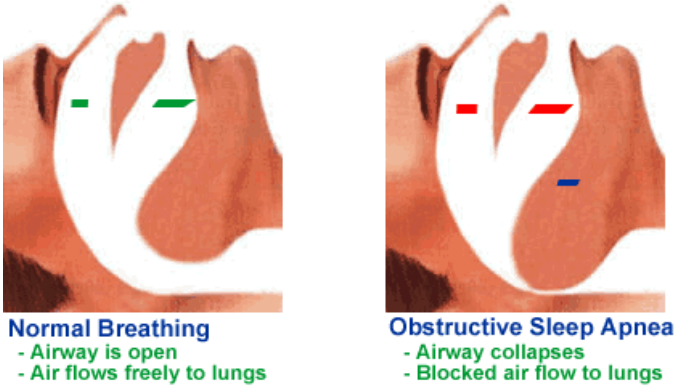
Cognitive behavioural therapy for insomnia (CBTi) includes sleep hygiene, stimulus control (strengthening the relationship between bed & sleep) and bed restriction therapy. Sleep hygiene is important as a baseline, but is not effective as a sole strategy for more severe insomnia and should be combined with other

treatments. Sleep hygiene includes avoiding stimulants, maintaining a regular sleep/wake schedule, keeping the bedroom comfortable, quiet & dark. Dr Bartle advised to stop clock watching, as it creates anxiety and it is better to just ignore the clock. It is normal to wake up a few times a night and one must learn to go back to sleep, just like teaching a baby to self-soothe and go back to sleep themselves when they wake up at night!

For more info on insomnia treatments, visit our website to view Dr Bartle's Powerpoint presentation.
Other resources include:

- Online paid course www.sleepio.com
- CBTi Coach app https://goo.gl/DDu6Ry
- Insomnia Handout https://goo.gl/y8nVDf

We sped through the slides on insomnia and went onto the topic of snoring. Snoring affects the quality of sleep and can have widespread social effects. People all laugh at snorers but unfortunately it is not a laughing matter for them. Snoring can drive spouses from the bedroom, people avoid trips away so friends can sleep! Snoring happens when air moves through narrow airways causing an increased air speed, thus making the surrounding tissues vibrate. An obstructive apnoea episode is when the tongue falls back whilst asleep and breathing stops for more than 10 seconds, this causes oxygen levels in the blood stream to drop, in turn triggering a pulse of adrenaline to wake the body up to take a breath. Apnoea episodes affect metabolic hormones as the person doesn't go into deep sleep. The number of people with sleep apnoea is increasing as the condition become more recognised and talked about.



Risk factors for obstructive sleep apnoea OSA include male gender (males are twice as likely to have sleep apnoea than females), BMI body mass index >30, neck circumference >42cm, smoker, alcohol >2 units per night etc. But 20% of those with sleep apnoea are not overweight. Sleep apnoea causes poor quality sleep resulting in excessive daytime sleepiness, impaired cognitive function, microsleeps, poor concentration, learning & memory difficulties, depression & personality changes, and hyperactivity in children. When children who snore are tired in the daytime, they become irritable & hyperactive. Treating children's snoring by removing their adenoids & tonsils may help. People with sleep apnoea are sleepy during the day and they will fall asleep anywhere, and the worst consequence of sleep apnoea is road accidents.

Sleep apnoea also causes medical consequences such as hypertension, insulin resistance (prediabetes), heart arrhythmias (40% of patients with atrial fibrillation have sleep apnoea), heart attacks, strokes, night time reflux, and night time urination. Sleep apnoea can cause reduction in antidiuretic hormone production and thereby increasing night time urination.

Conservative treatments for OSA includes losing weight, stopping smoking & reducing alcohol intake, avoiding sleeping tablets, and avoiding sleeping on your back. Devices that can be used include

mandibular advancement splints, these pull the jaw forward and stop the tongue flopping back to obstruct the airway. A well made splint can cost thousands. The 'gold standard' treatment for OSA is a CPAP (continuous positive air pressure) machine. A nasal mask is most commonly used as it is more comfortable than a full face mask, which is only used in mouth 'leakers'. Modern machines are very compact and completely quiet. Palate surgery is best for those who snore without apnoeas.

People with acromegaly can have excessive daytime sleepiness due to several reasons: sleep apnoea, high growth hormone promoting sleepiness, co-existing hypothyroidism (low thyroid hormones) & hypogonadism (low sex hormones), effects of radiotherapy, plus all the other regular causes of sleepiness. People with acromegaly are not exempt from daily stressors, shift work etc!

It was interesting to learn that people with acromegaly are more likely to have restless legs syndrome (RLS) and periodic limb movement in sleep (PLMS). RLS keeps the patient awake, whereas PLMS occurs when the patient is already asleep. Movement starts in the lower legs, but can occur in the thighs & lower arms, and may move to the lower trunk. Both can affect quality of sleep and thereby affect quality of life. In this study by Cannavo et al. 2011 (*www.ncbi.nlm.nih.gov/pubmed/21328081*), restless legs syndrome was present in 21% of people with acromegaly (36% in active acromegaly and 12% with controlled acromegaly), compared to only 4% in the control group! Treatment of RLS & PLMS includes adequate brain iron by ensuring blood serum ferritin is >50 (ideally 80-100). However, if iron levels are above 50 and they have RLS then other treatments are more likely to be helpful, such as dopamine receptor agonists (e.g. ropinirol tablets).

Dr Bartle quoted a study done in 1991 by Gruenstein & Sullivan, which found 70% of acromegaly patients had sleep disordered breathing (SDB) (http://annals.org/aim/fullarticle/705034)

Sleep Disordered Breathing SDB = Obstruction sleep apnoea (OSA) and Central sleep apnoea (CSA)
70% of acromegaly patients have sleep disordered breathing

Of the acromegaly patients with suspected sleep apnoea 93% had SDB. Of those not suspected of SDB, that is those without risk factors, it turned out 60% still had SDB. Most had OSA, but central sleep apnoea was predominant in 33%. This study showed sleep disordered breathing is significantly underdiagnosed in acromegaly.

In acromegaly, OSA can be caused by an enlarged tongue (macroglossia), hypertrophy of soft tissue around the neck, dysfunction of neuromuscular control in the upper airway dilators, and obesity. Central sleep apnoea (CSA) results from abnormalities in breathing control, with the brain saying don't breathe. CSA results from the effect of growth hormone on the respiratory centre in the brain, and from dysfunction of central brain pathways. CSA is also associated with left heart ventricular dysfunction and congestive heart failure.

After surgery for acromegaly, sleep disordered breathing often improves
but persists in at least 40% of acromegaly patients.
Therefore Dr Bartle recommended regular assessment even after acromegaly is treated.

Dr Bartle went on to discuss simple assessment tools used by medical professionals to give a subjective assessment of excessive daytime sleepiness. The best known are the Epworth Sleepiness Scale (ESS), and the Stop-Bang questionnaire. It is recommended the ESS questionnaire be completed with partner present, to ensure greater accuracy! Also interestingly people with insomnia may score less than 2, as they have a 'buzzy brain' and cannot sleep in any situation!

Epworth Sleepiness Scale

How likely are you to doze off or fall asleep in the following situations, in contrast to just feeling tired?
This refers to your usual way of life in recent times.
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:

0 = would never doze
1 = slight chance of dozing
2 = moderate chance of dozing
3 = high chance of dozing

Situation	Chance of dozing
Sitting and reading	
Watching TV	
Sitting, inactive in a public place (e.g. a theatre or a 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 the traffic	
Total	

Score:

1 – 2 Often associated with insomnia
2 – 8 Considered normal
8 - 10 Mild degree of excessive daytime sleepiness
11- 15 Moderate degree of excessive daytime sleepiness
16 – 19 Severe degree of excessive daytime sleepiness
> 20 Very Severe. Consider narcolepsy

Another commonly used questionnaire in assessing excessive daytime sleepiness is called Stop-Bang:

Stop-Bang

S - Snoring - Loud enough to disturb partner)
T - Tired - ESS > 8 Affecting the daytime
O - Observed pauses in breathing or Gasping
P - Pressure - High Blood Pressure
B - Body Mass Index >35kg/m2
A - Age >50yrs
N - Neck circumference >42cm men; >38cm women)
G - Gender - Male

Score 0 – 2 = low risk
3 - 4 = Intermediate risk
5 – 8 = High risk

Based on your scores from the above questionnaires, bearing in mind 70% of people with acromegaly have sleep apnoea, consider asking your doctor to refer you for sleep testing. Through the public health system, sleep testing is free of charge but unfortunately the waiting list is very long, around 9 months in Auckland, and up to 18 months in Whangarei. Therefore only people at high risk of OSA with severe symptoms will be accepted onto the public waiting list.

Another option is getting sleep testing privately. A full polysomnogram (level 2 test) can be done at home, which records multiple signals with 24 leads including brainwaves, eye movement, airflow from nose, chest movements, oxygen levels, heart rate etc, and costs ~$1500. Due to cost & practicalities it is more common to do level 3 or level 4 testing at home. Dr Bartle recommended doing overnight pulse oximetry at home (level 4 test) measuring desaturation events, this costs $500 including a consultation after the test, and maybe covered by your health insurance.

Thank you so much to Dr Alex Bartle for sharing with us so much valuable information. For more information visit his website: www.sleepwellclinic.co.nz