

Sleep and Chronic Illness

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Disclosure

- Speaker's bureau for American Physician's Institute
- Research grant with Dymedix, Corp.



Outline

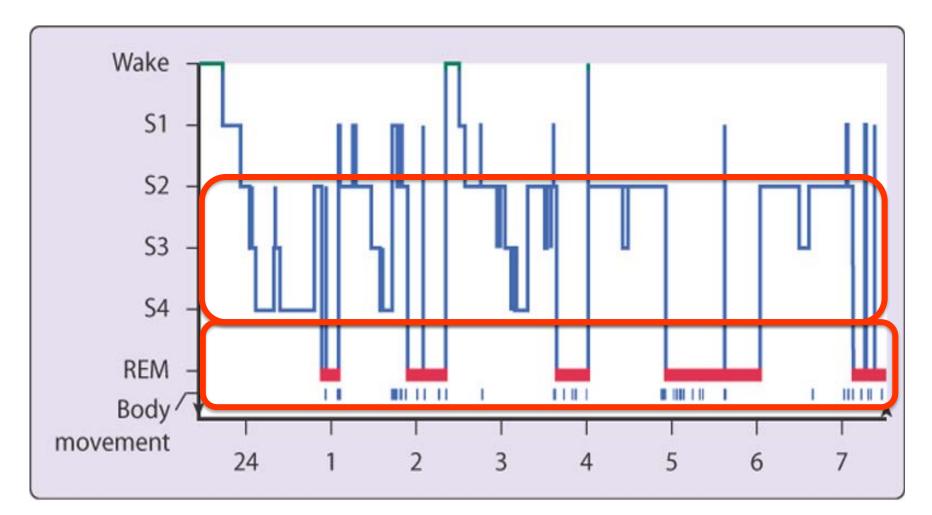
- Normal sleep
- Chronic diseases and sleep
- Impact of poor sleep
- Treatment



Normal sleep



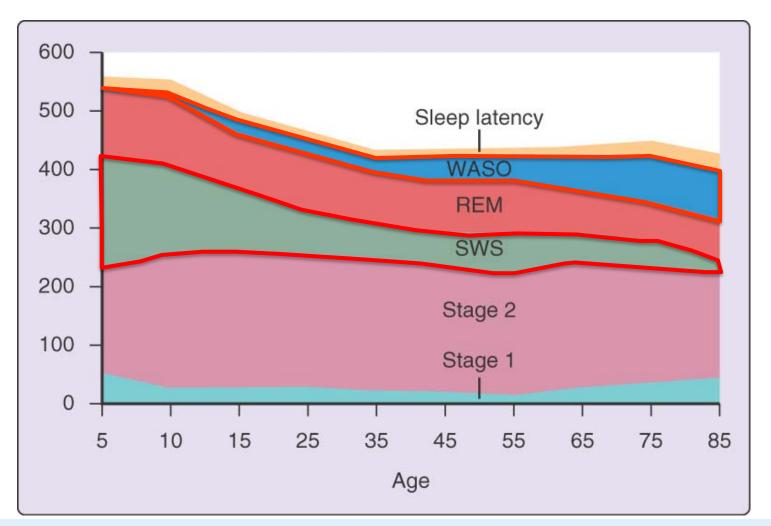
Normal Sleep Architecture



Principles and Practice of Sleep Medicine, 5th Ed



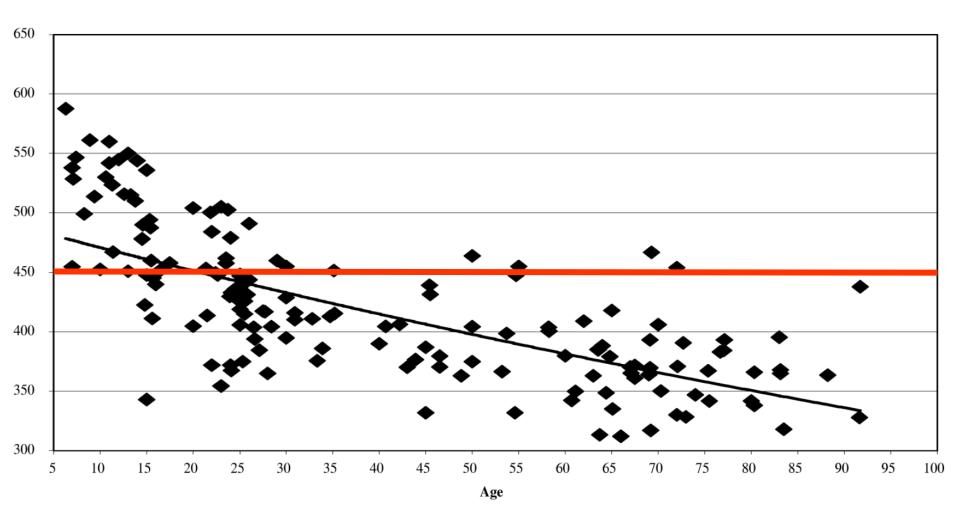
Normal Sleep



MAYO CLINIC Principles and Practice of Sleep Medicine, 5th Ed

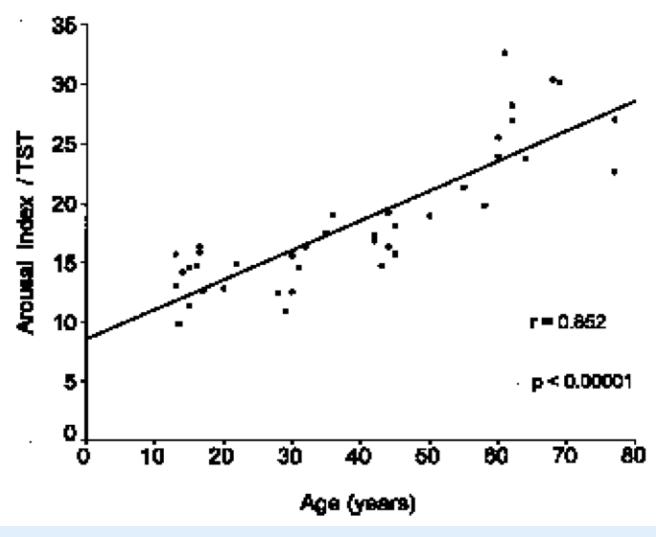
Total Sleep

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Sleep 2004;27:1255

Arousals During Sleep

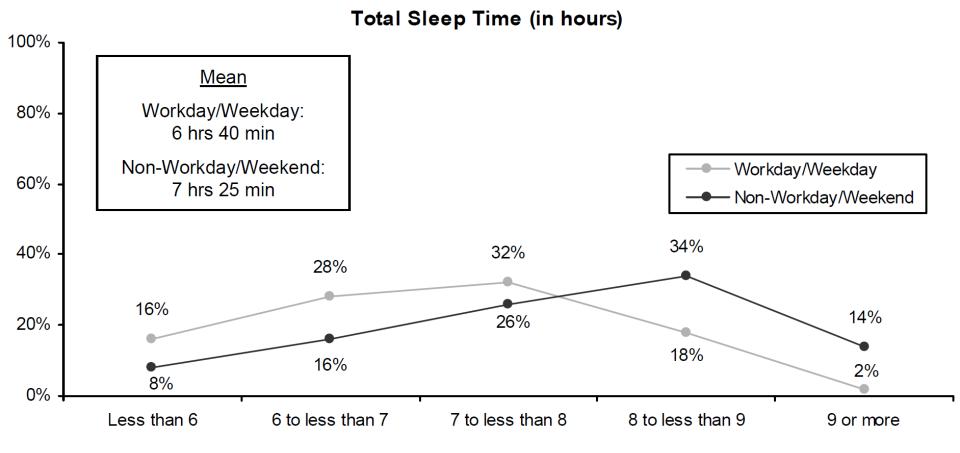




Sleep 1998;21:361

Sleep Duration

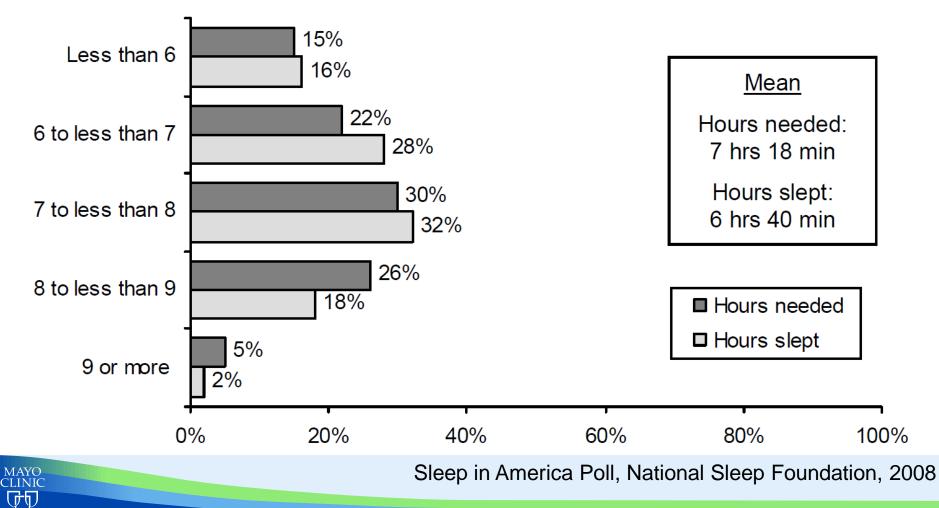
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Sleep in America Poll, National Sleep Foundation, 2008

Sleep Needed

Hours of Sleep Needed to Function at Best During Day vs. Hours Slept on Workdays/Weekdays



Normal Sleep: Summary

- Most probably need about 7 7.5 hours of sleep
- Most get about 6.5 hours of sleep during the week
- Normal to have about 20 30 minutes of wake time after falling asleep
- Normal to see up to 15 20 arousals/hour of sleep



Chronic Disease and Sleep



Sleep Deprivation

- Insufficient sleep duration to support full level of functioning the next day (in alertness or performance)
 - Insufficient sleep
 - Most common
 - Sleep debt is cumulative
 - Poor quality of sleep
 - Due to sleep disturbances

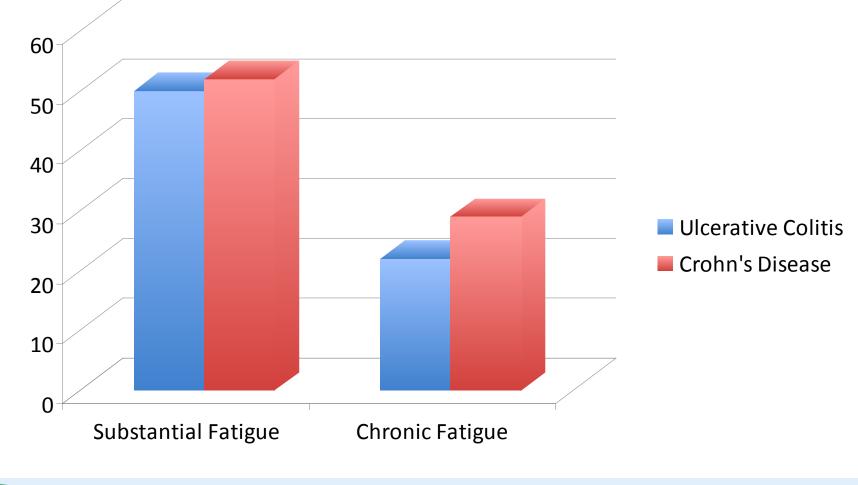


Fatigue

- Different from sleepiness
- Types:
 - Difficulty in initiating activity due to weakness without objective causes
 - Difficulty in maintaining activity
 - Difficulty in concentrating or recall



Fatigue and Inflammatory Bowel Disease





Percent

Inflamm Bowel Dis 2011;17:1564

Fatigue and Inflammatory Bowel Disease

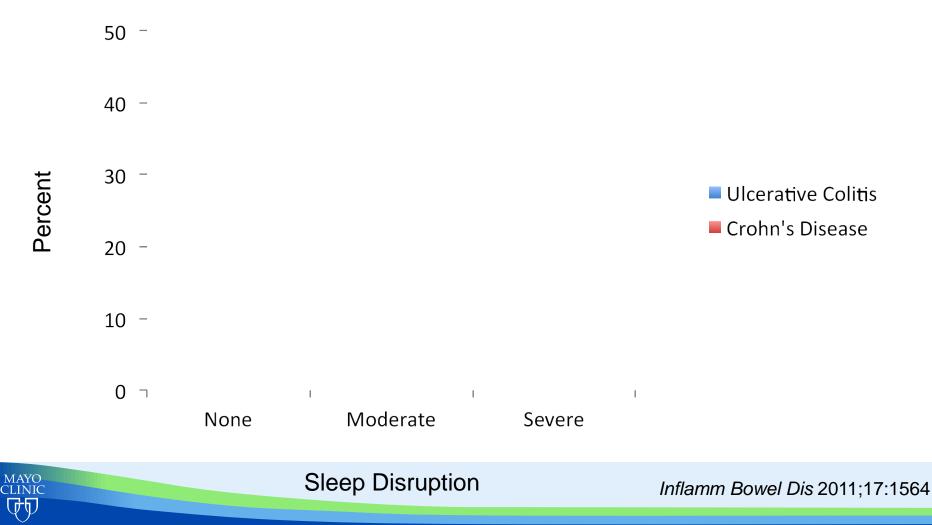
Factors affecting fatigue

- Disease symptoms
- Hemoglobin
- Altered sleep
- Smoking
 - Crohn's disease
 - Correlated with physical fatigue scores
- Perceived stress



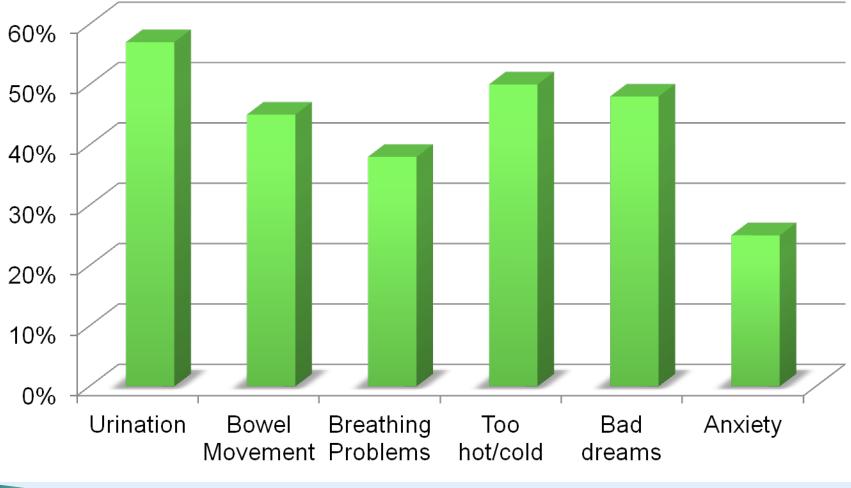
Inflamm Bowel Dis 2011;17:1564 Inflamm Bowel Dis 2011;17:1882

Sleep and Inflammatory Bowel Disease



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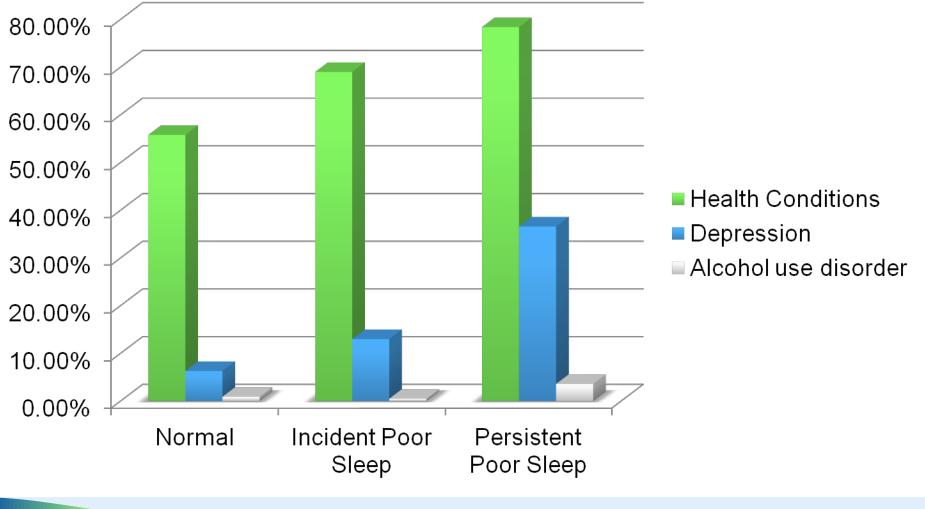
Sleep Disturbance and IBD





J Gastroenterol Hepatol 2007;22:1748

Predictors of Poor Sleep

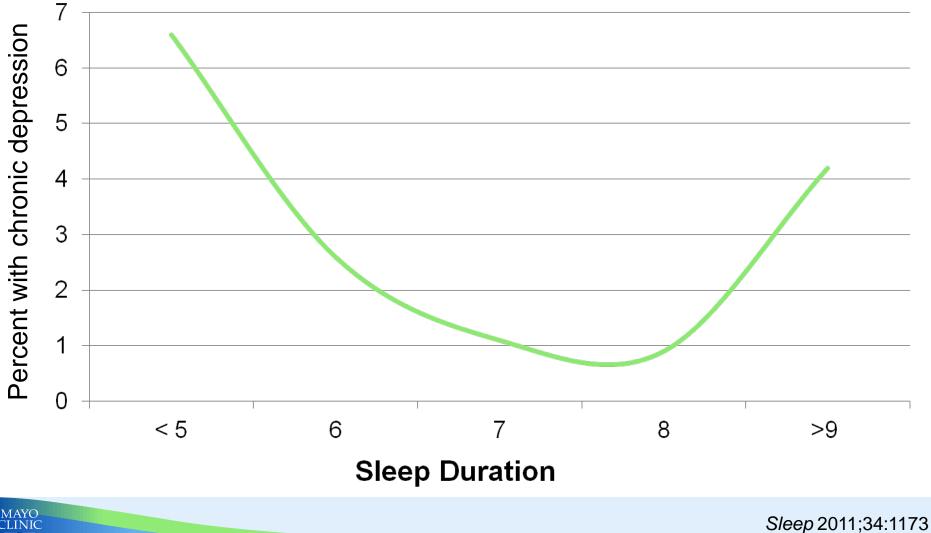


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Sleep 2012;35:689

Sleep and Depression





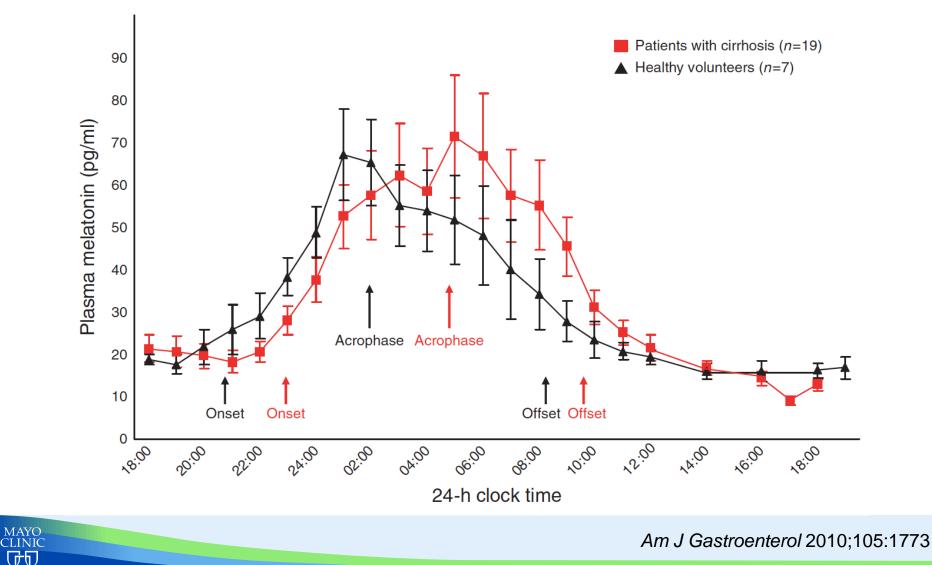
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Fatigue and PSC

- Sense of well being, fatigue and depression was worse if you had inflammatory bowel disease in addition to PSC
- Fatigue was was not related to severity of the liver disease but was related to gastrointestinal symptoms (reflux, abdominal pain, constipation, indigestion, and diarrhea) and depression



Delayed Circadian Rhythm in Cirrhosis



Chronic Disease and Sleep

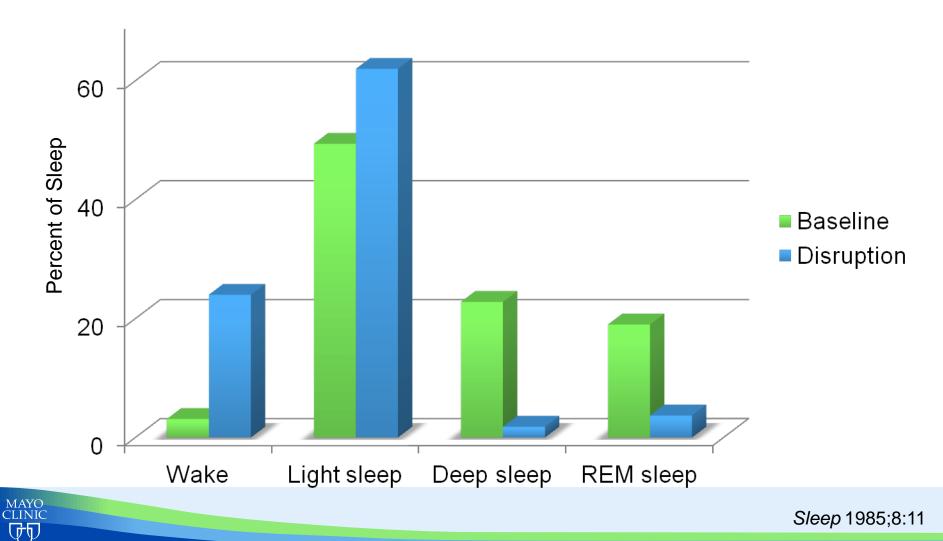
- Disease states, hemoglobin, and altered sleep are among main contributors of fatigue
- Disease itself often cause interrupted sleep
- Co-existing depression will also impact sleep
- There may be a delay in circadian rhythm in cirrhosis



Impact of Poor Sleep



Effect of Sleep Disruption



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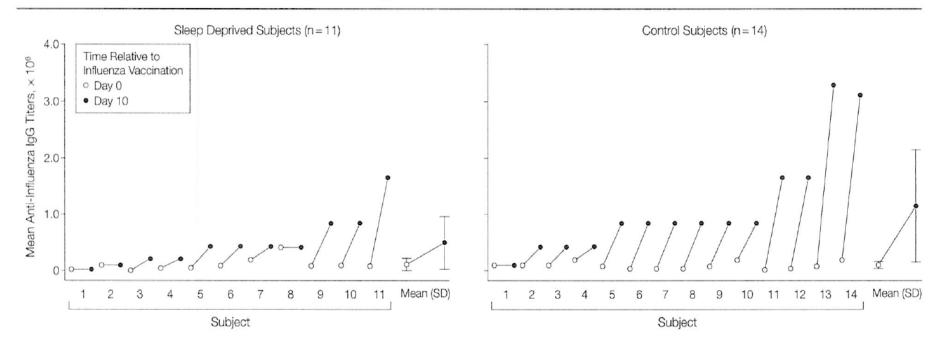
Effects of Sleep Deprivation

- Mood
- Cognitive function
- Accidents
- Quality of life
- Immune function
 - Poor immune response
 - Increased cytokines
- Appetite
- Effect on the heart



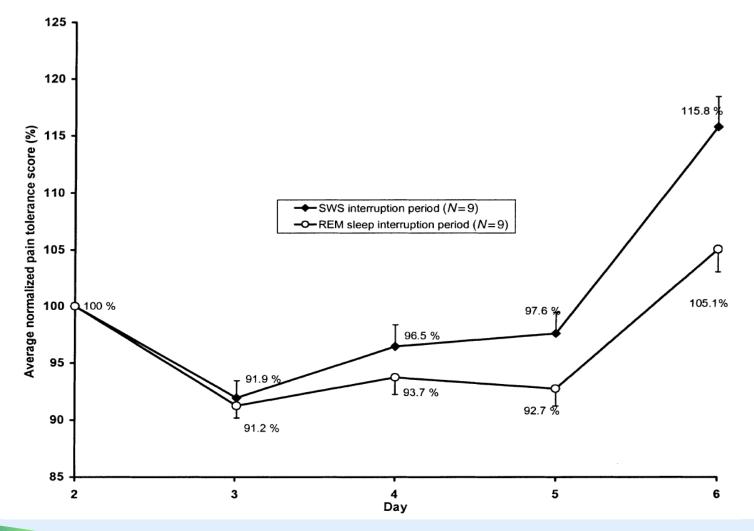
Sleep Deprivation Antibody Response

Figure. Antibody Titers at Baseline and 10 Days Following Influenza Vaccination





Pain and Sleep





J Sleep Res 2001;10:35

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Conservative Management

- Maintain adequate sleep hygiene
 - Preparation for sleep
 - Slow down and dim the lights
 - Avoid mentally or physically stimulating activities
 - Use of thinking time
 - Caffeine and alcohol
 - Sleep environment
 - TV off or at least on a timer
 - Noise and light reduction in the room
 - Temperature adjustment
 - Bootzin technique
 - Stimulus control



Conservative Management

- Adequate bedtime
 - Goldilocks of sleep
 - Naps
- Watch your routine during your "sleep time"
 - Snacking, smoking, internet/working
- Avoid clock watching
- Individualized approach



Exercise: Acute

Effect Size 1.5



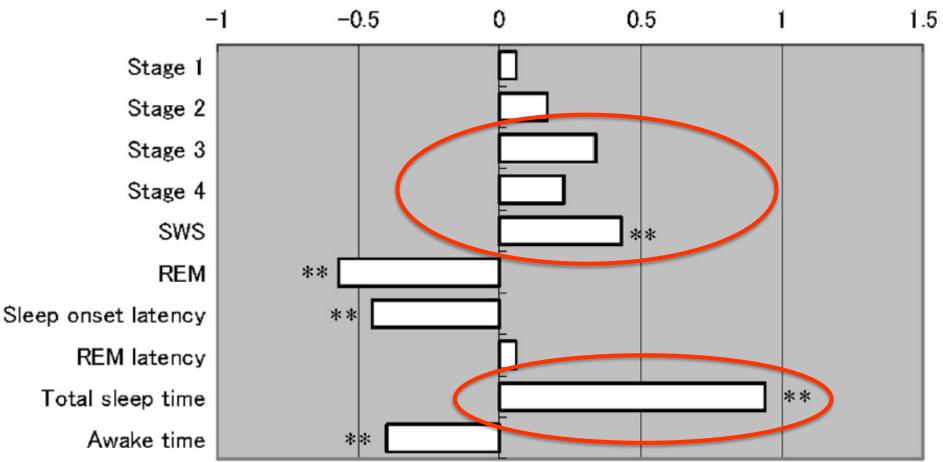
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Front Neurol 2012:3:1

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Exercise: Chronic

Effect Size

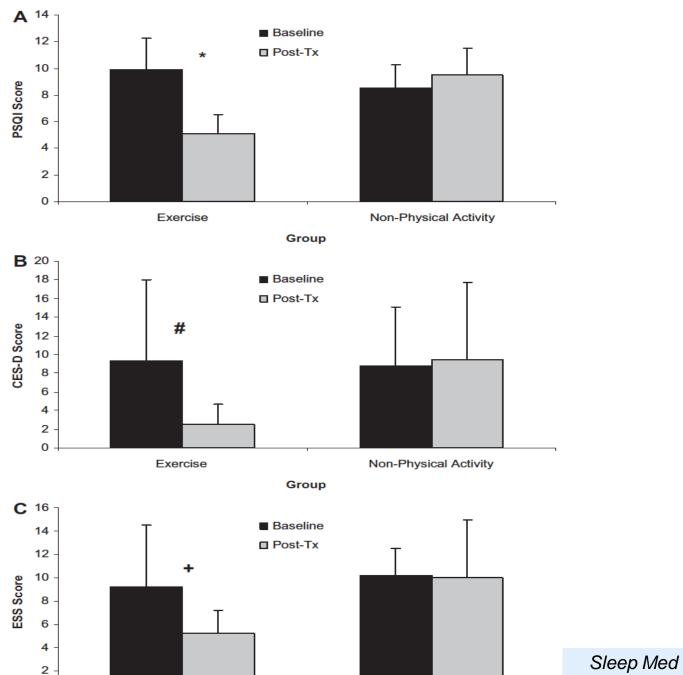




Front Neurol 2012:3:1

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Exercise





0

Exercise

Non-Physical Activity

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2010;11:934

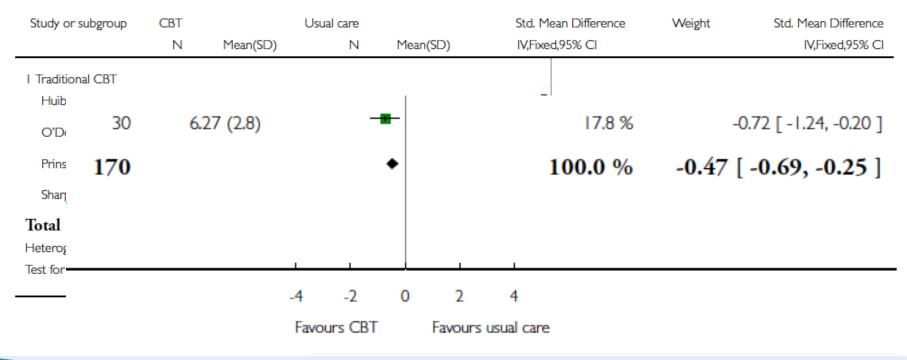
Exercise

- Moderate intensity
 - 30 60 minutes few days a week
 - Strength training
 - Start slow and gradually build up to target
 - If pain or symptoms worsen, reduce the intensity and slowly increase



Cognitive Behavior Therapy: Fibromyalgia

- Corrections of thoughts, behaviors, and beliefs that may negatively impact disease
- Many programs combine graded increase in activity





Cochrane Database of Systematic Review 2008

Treat Co-existing Sleep Disorders

- Restless leg syndrome
 - Periodic limb movement disorder
- Obstructive sleep apnea
- Depression/anxiety disorder



Gabapentin and Pregabalin

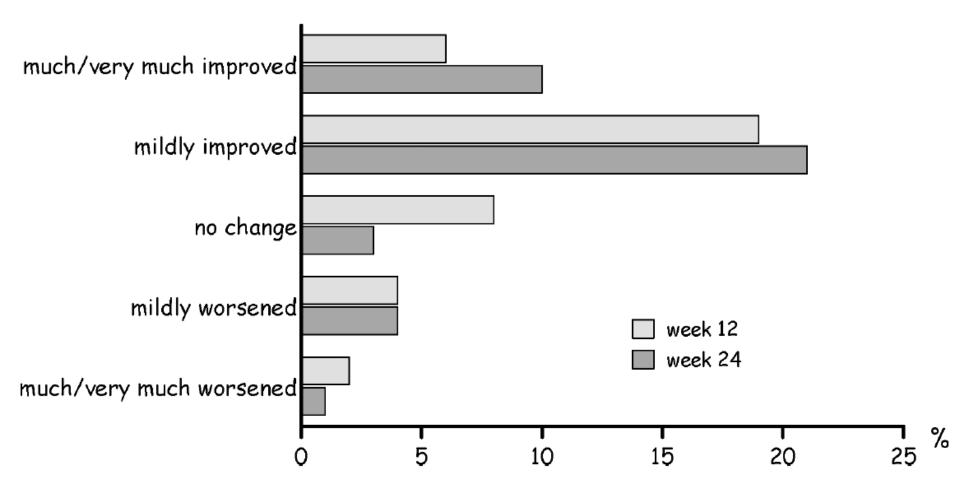
Pregabalin is FDA indicated for fibromyalgia

• Both have shown to:

Study	Imnr	PGB and GBT	n	Placebo	SMD (random)	Weight	CND (rendem)
or sub-category	Ν	Mean (SD)	N	Mean (SD)	95% Cl	Weight %	SMD (random) 95% Cl
02 Sleep - Mean							
Crofford Prega300mg	123	45.26(19.20)	121	54.16(19.20)	-	8.90	-0.46 [-0.72, -0.21]
Crofford Prega450mg	122	40.44(19.20)	121	54.16(19.20)	-	8.68	-0.71 [-0.97, -0.45]
Crofford Prega150 mg	123	45.66(19.30)	121	54.16(19.20)	-	8.92	-0.44 [-0.69, -0.19]
Arnold Gabapentin	57	33.40(19.50)	62	47.80(20.90)		5.22	-0.71 [-1.08, -0.34]
Subtotal (95% CI)	425		425		•	31.72	-0.56 [-0.71, -0.42]
Test for heterogeneity: Chi2 =	= 3.35, df = 3 ((P = 0.34), I ² = 10.4%			-		
Test for overall effect: Z = 7.5	54 (P < 0.000	01)					
03 Sleep - Mean change							
Arnold Prega 300 mg	183	-11.39(18.80)	180	-6.65(18.78)	-	11.32	-0.25 [-0.46, -0.05]
Arnold Prega 450 mg	185	-12.85(18.63)	180	-6.65(18.78)	-	11.31	-0.33 [-0.54, -0.12]
Arnold Prega 600 mg	188	-15.09(18.92)	180	-6.65(18.78)	+	11.30	-0.45 [-0.65, -0.24]
Mease Prega 300 mg	184	-19.14(20.07)	187	-14.32(20.10)	-	11.45	-0.24 [-0.44, -0.04]
Mease Prega 450 mg	183	-20.45(20.16)	187	-14.32(20.10)	+	11.41	-0.30 [-0.51, -0.10]
Mease Prega 600 mg	187	-19.52(20.23)	187	-14.32(20.10)	-	11.49	-0.26 [-0.46, -0.05]
Subtotal (95% CI)	1110		1101		•	68.28	-0.30 [-0.39, -0.22]
Test for heterogeneity: Chi ² = Test for overall effect: Z = 7.1							
Total (95% CI)	1535		1526		•	100.00	-0.39 [-0.48, -0.29]
Test for heterogeneity: Chi ² = Test for overall effect: Z = 7.9							
					-4 -2 0 2	4	
					Favours treatment Favours cor	ntrol	



Trazodone and Pregabalin: Fibromyalgia



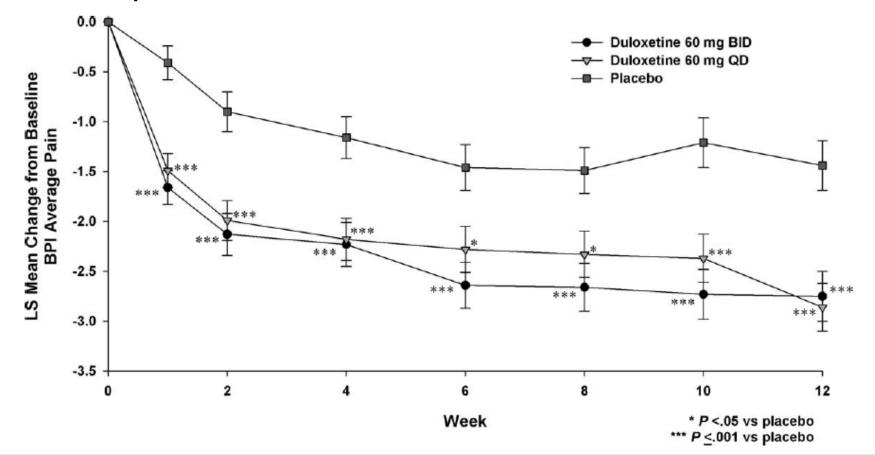


BMC Musculoskelet Disord 2011;12:95

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Duloxetine

Antidepressant

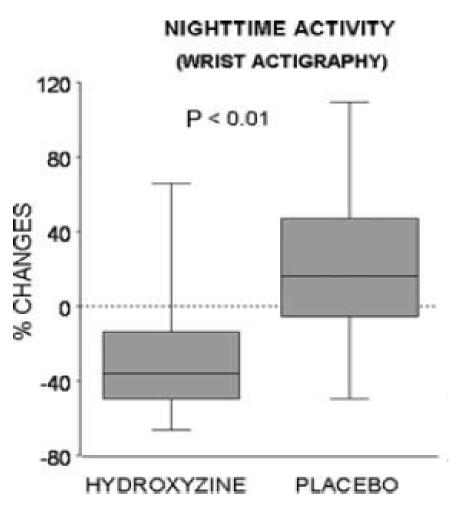


Pain 2005;119:5



Hydroxyzine in Cirrhosis

- Histamine blocker
- Caution in those with overt hepatic encephalopathy

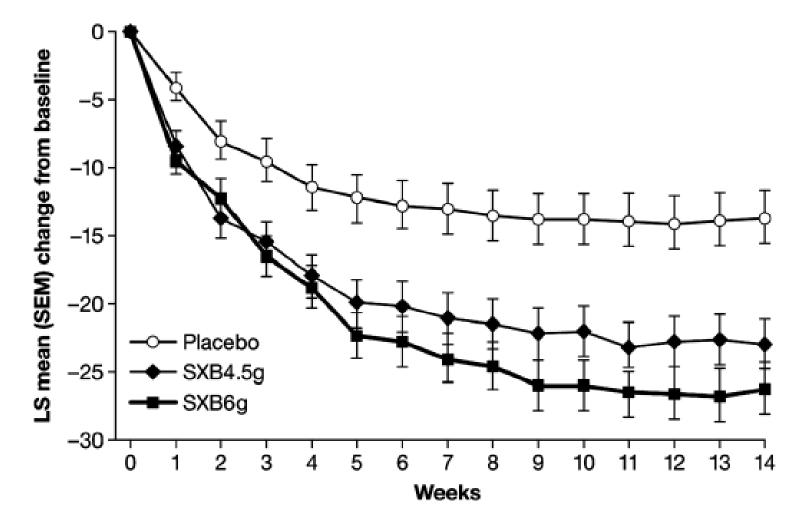


Am J Gastroenterol 2007;102:744



Sodium Oxybate

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Ann Rheum Dis 2012



Alternative Medicine: Insomnia

- Acupuncture and Acupressure: Insomnia
 - May improve sleep quality
 - Limited in size of the study and some inconsistencies in different studies

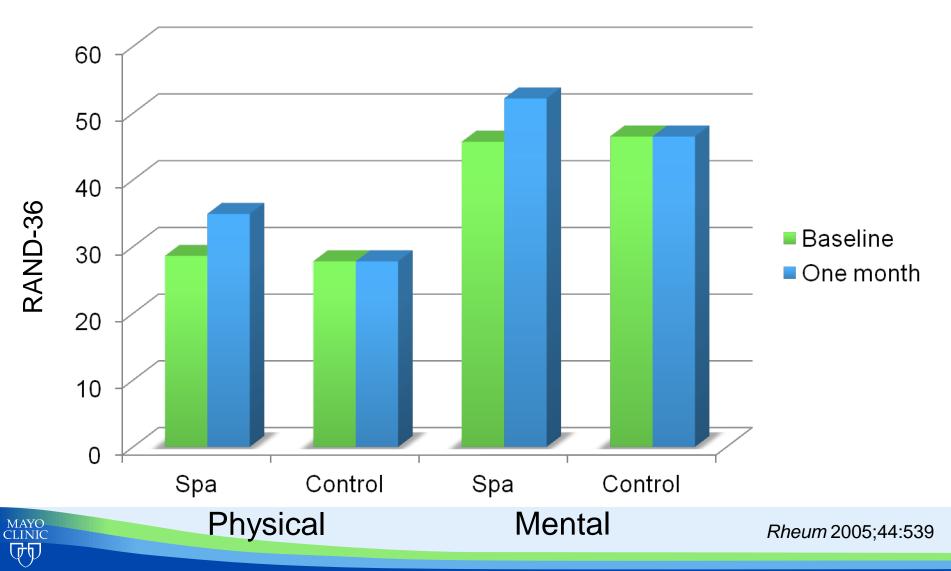
Cochrane Database of Systematic Review 2007

- Yoga: Fatigue
 - Improved fatigue and vigor among breast cancer survivors

Cancer 2011



Spa Therapy

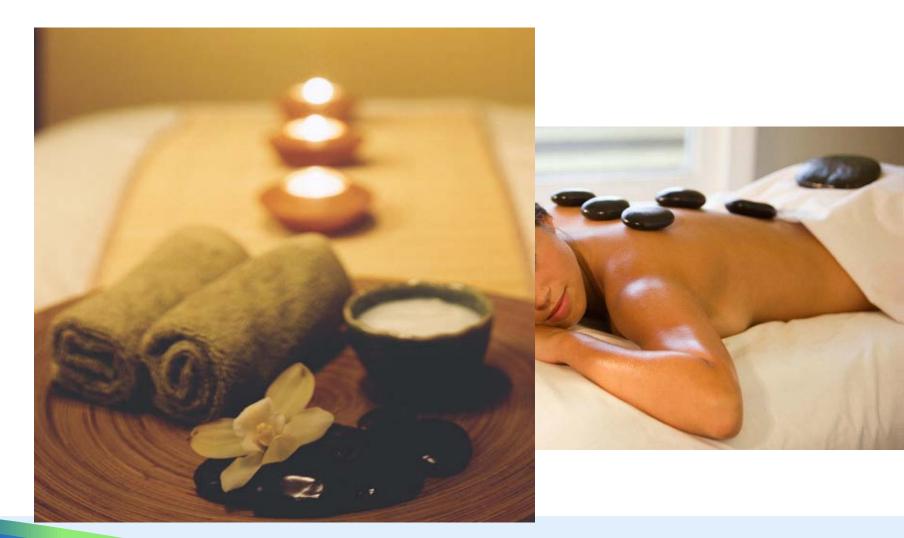


Treatments

- Treatment of underlying disease
- Conservative treatments in sleep hygiene
- Exercise
- Cognitive Behavior Therapy
- Medications: from fibromyalgia managements
 - Pregabalin
 - Duloxetine
 - Others
- Some evidence for alternative medicine



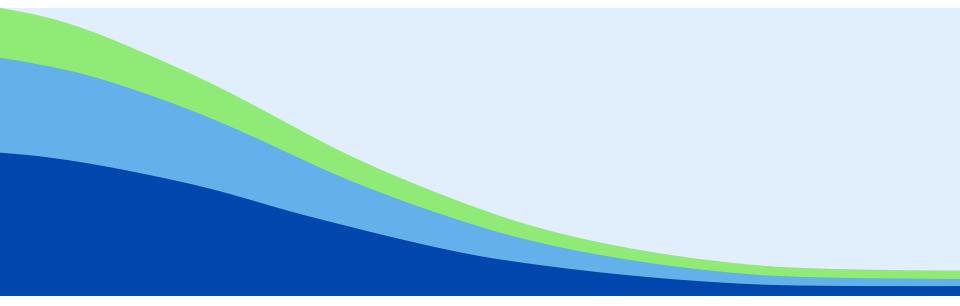
When all else fails. . .







Thank you !



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