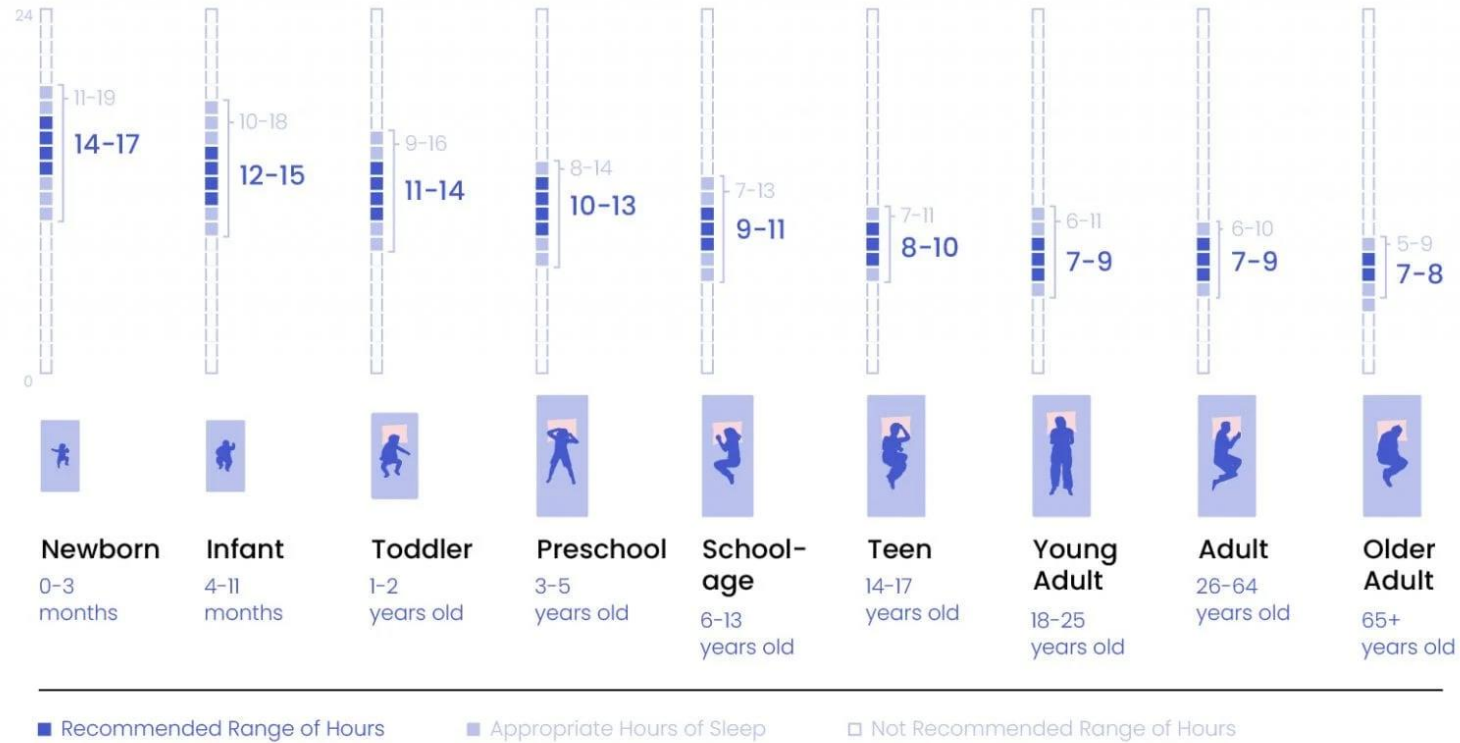


THE MANY DIMENSIONS OF SLEEP

The background is a dark blue field filled with numerous small white dots. Overlaid on this are several layers of abstract elements: a dense field of small blue and yellow dots, some of which are connected by thin, wavy yellow lines; a series of overlapping, slightly tilted rectangular outlines in blue and yellow; and a few larger, solid blue and yellow circles scattered throughout.

LINA FINE, MD

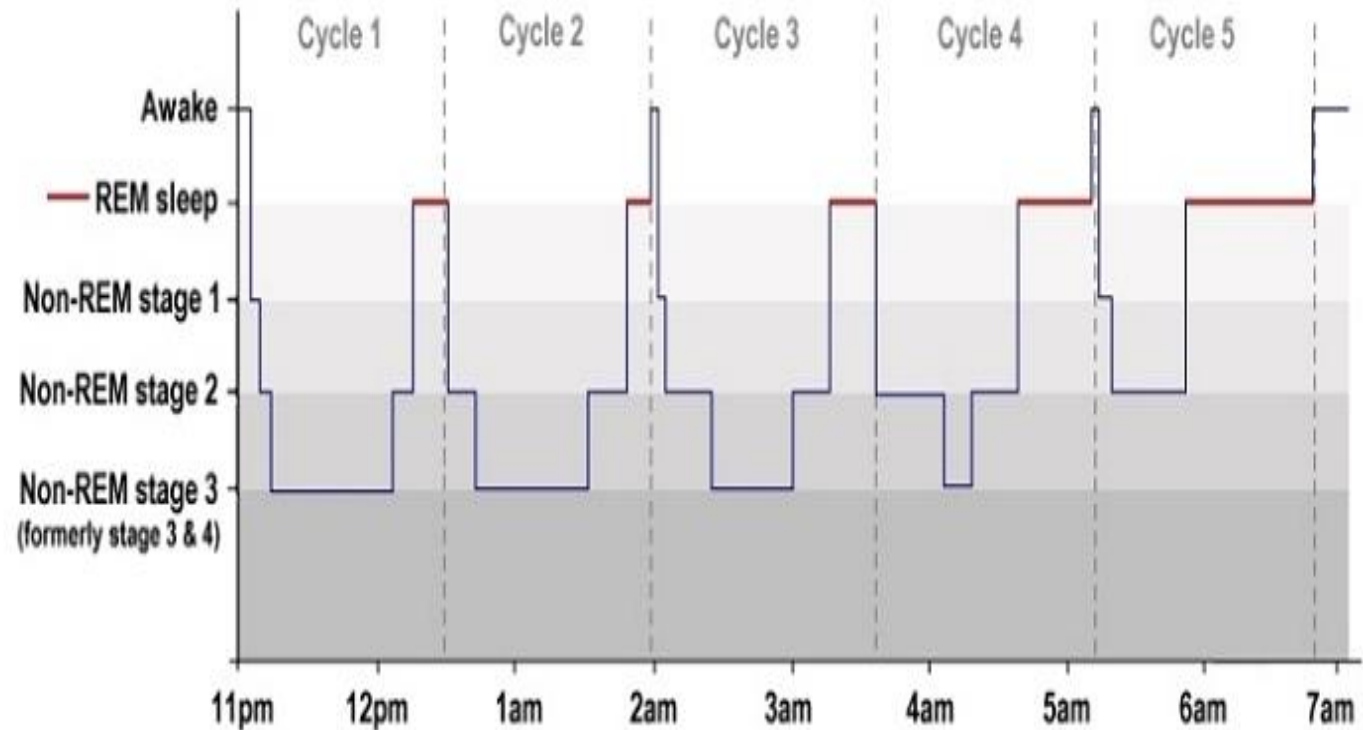
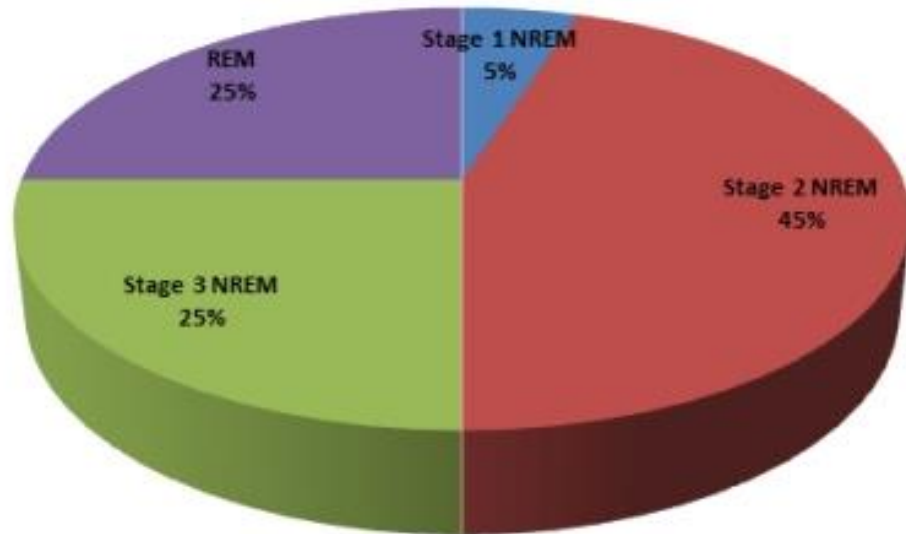
Recommended Hours of Sleep



How much sleep

STAGES OF SLEEP

Duration of Sleep Stages



CHANGES IN STAGES THROUGH AGES

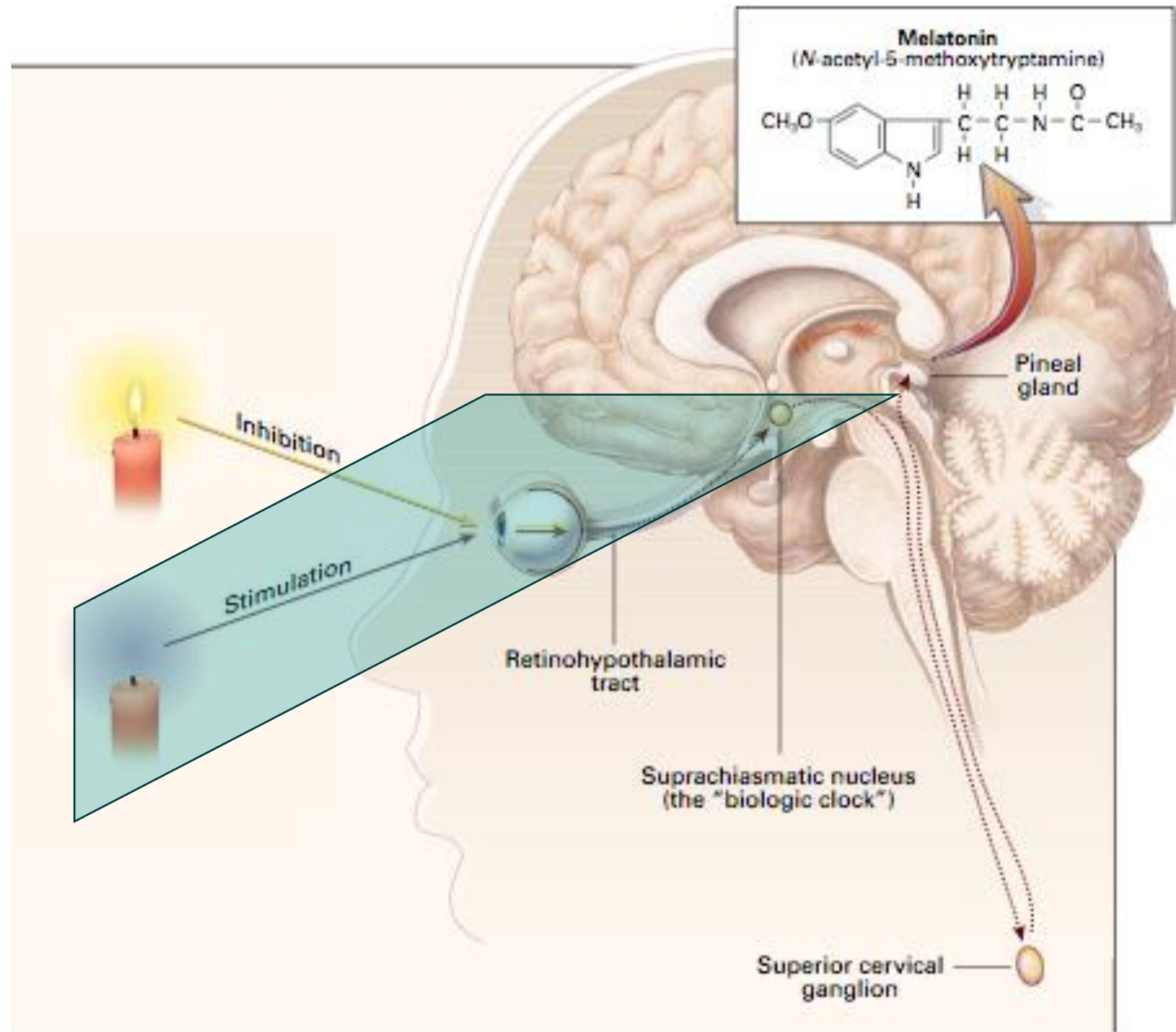
Age Group	% REM Sleep	% Stage 3 (N3) Sleep	Key Notes
Young Adult (20–30 yr)	~20–25%	~15–20%	Peak sleep consolidation, stable architecture
Middle Age (40–60 yr)	~18–22%	~5–10%	Decline in N3; more fragmented sleep
Older Adult (70+ yr)	~15–20%	<5%	Marked loss of N3; lighter, more disrupted sleep

HOMEOSTATIC SLEEP DRIVE ADENOSINE

- Adenosine is a natural by-product of using up our internal energy stores (it forms the core of **adenosine triphosphate (ATP)**)
- Caffeine blocks!
- As glycogen stores are used up, extracellular Adenosine is built up and removed at night
- Build-up of adenosine leads to pressure to enter **NON-REM SLEEP**
- Nap = dissipation of sleep drive

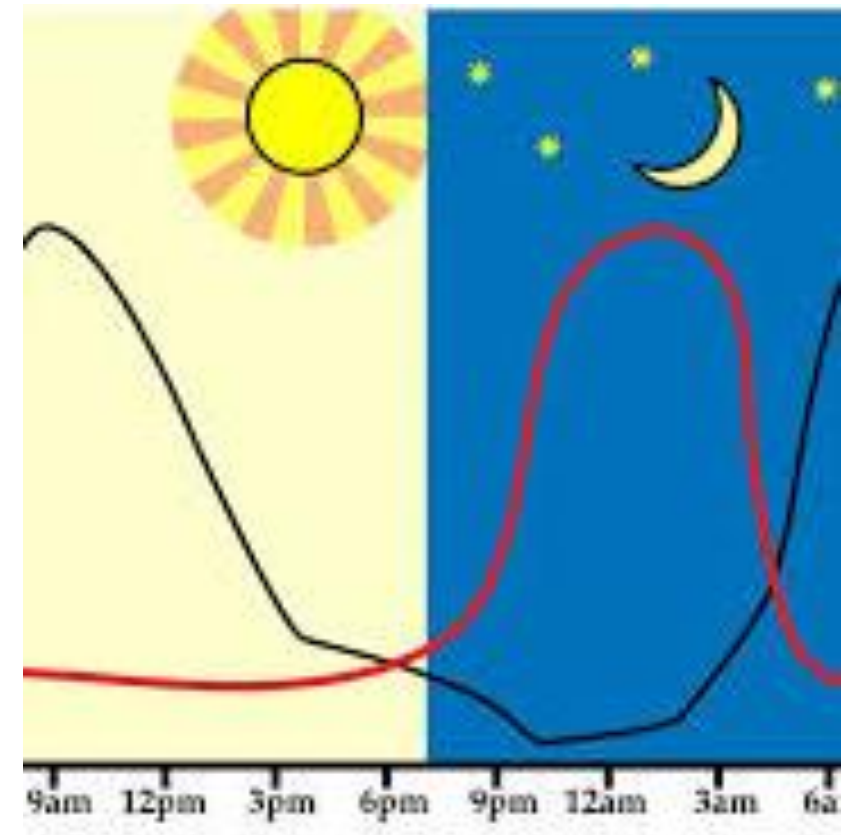


- CIRCADIAN SLEEP DRIVE



MELATONIN

- Melatonin is not influenced by sleep *per se* (NOT a sleeping pill) but by the circadian cycle
- Regulates initial FALLING asleep
- Dose: 1-3 mg
- Timing: 1-2 hours before bed (but may work faster in some people)
- Blood pressure
- Caution with nighttime asthma
- Tart cherry juice? 16 oz?



MAGNESIUM



An essential mineral involved in over 300 enzymatic reactions



Supports nervous system regulation, muscle relaxation, and melatonin synthesis



May help with sleep quality



MAGNESIUM
glycinate, threonate, citrate, oxide, malate



Dose: 200-400 mg



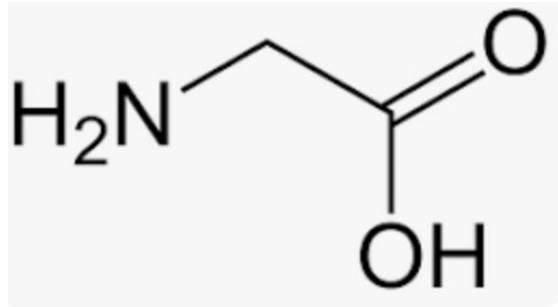
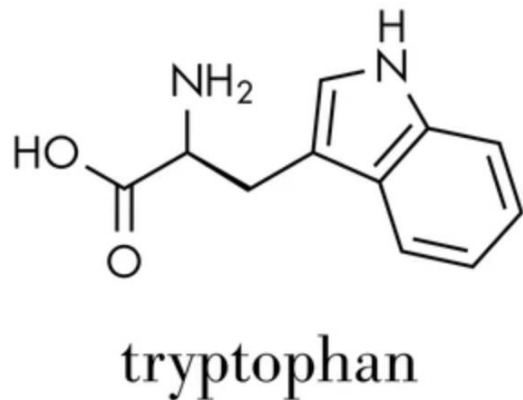
Citrate and oxide are more likely to cause GI symptoms (diarrhea)



Caution in kidney disease; higher doses may lead to cardiac arrhythmia

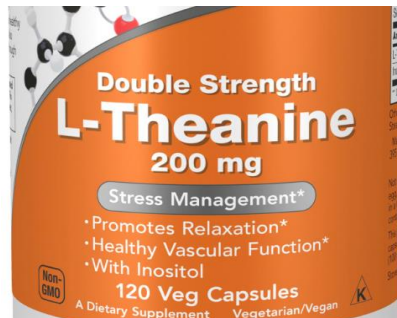
Other Supplements

- L-tryptophan (amino acid – precursor to melatonin and serotonin)
 - May help falling asleep in **mild** insomnia but does not increase total sleep
- 5-HTP – not generally helpful
- Ashwaganda – calming?
- Glycine - sleep onset
- Lemon balm – no total sleep change



Other Supplements

- GABA 500-1000 mg – very limited evidence
- L-theanine – extract of tea – calming (but also fatigue busting)
- Valerian root – calming
- Passion flower – calming
- Chamomile tea – high concentration of Apigenin (flavonoid)
 - Caution if on blood thinner



Supplements that may interfere with sleep

- High dose of Vitamin D (interference with melatonin production)
- Red yeast rice, garlic, DHEA, chromium
- High dose of Coenzyme Q10 (in the evening)
 - But it may improve sleep if you taking statin by reducing muscle pain potentially



SOMETIMES IT'S SLEEP APNEA

	Men	Women
Snoring/Apneas	***	*
Sleepiness	***	**
AM Headaches	*	***
Depressive Features	*	**
Apnea Freq.	**	*
Hypopnea Freq.	*	**

“Laugh and the world laughs with you, snore and you sleep alone”

Anthony Burgess



**NORMAL
SLEEP COMES
IN MANY
SHAPES!**

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STYLE

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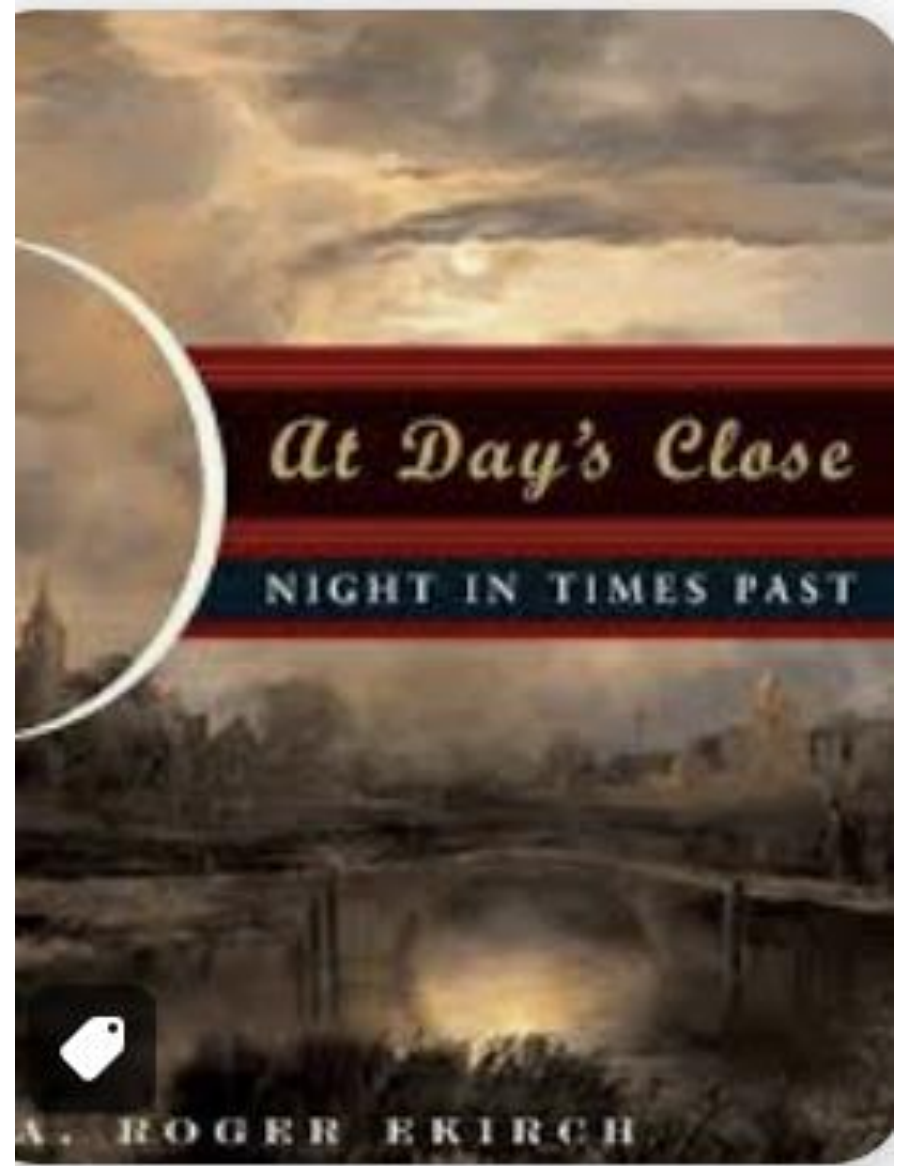
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The forgotten medieval habit of 'two sleeps'

9 January 2022

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