ADVANCES IN PHARMACOLOGICAL MANAGEMENT OF INSOMNIA

WISCONSIN SLEEP SOCIETY

ALEXANDER VILLAREAL, MD - 3/31/2015
DISCLOSURES

• I AM A FULL TIME SLEEP PHYSICIAN AND AN EMPLOYEE OF THE SLEEP WELLNESS INSTITUTE.

• I AM NOT RECEIVING DIRECT OR INDIRECT PAYMENT FROM A COMMERCIAL ENTITY FOR HONORARIUM, TRAVEL OR OTHER EXPENSES
EDUCATIONAL OBJECTIVES

1. TO DESCRIBE COMMONLY USED HYPNOTICS
2. TO IDENTIFY BEHAVIORAL MEASURES THAT COMPLEMENT PHARMACOLOGICAL THERAPY OF INSOMNIA
3. TO RECOGNIZE COMMONLY FOUND PHARMACOLOGICAL PITFALLS IN THE MANAGEMENT OF INSOMNIA
75 Y/O WIDOW WITH OSTEOPOROSIS & A FIB ON WARFARIN PRESENTS TO YOUR CLINIC

CHIEF COMPLAINT: “I CAN’T SLEEP AT NIGHT, PLEASE GIVE ME A SLEEPING PILL”.

THE PATIENT IS OTHERWISE A HEALTHY ELDERLY WOMAN.

“I AM NOT INTERESTED IN SLEEP HYGIENE”

“I AM TOO OLD TO CHANGE MY WAYS”
WHAT DO YOU DO NEXT?
SLEEP

• SPECIES SPECIFIC BEHAVIOR CHARACTERIZED BY A STATE OF IMMOBILITY WITH GREATLY REDUCED RESPONSIVENESS.

• DISTINGUISHED FROM COMA OR ANESTHESIA BY ITS RAPID REVERSIBILITY.

• THE TIMING AND DURATION OF SLEEP ARE SPECIES SPECIFIC AND DETERMINED BY A CIRCADIAN PROCESS AND A HOMEOSTATIC SLEEP PRESSURE.

Siegel J. Nature 2005
SLEEP HYPNOGRAM
CHRONIC INSOMNIA

• SLEEP DISTURBANCE > 30 DAYS:
  1. DIFFICULTY IN INITIATING SLEEP
  2. DIFFICULTY IN MAINTAINING SLEEP
  3. WAKING UP TOO EARLY

• ADEQUATE OPPORTUNITY AND CIRCUMSTANCES FOR SLEEP

• DAYTIME DISTURBANCES

Schutte-Rodin et al. JCSM. 2008
EPIDEMIOLOGY

- **INCIDENCE**: 19 – 30 PER 1000 PER YEAR
- **PREVALENCE**: 10 – 15%
- **WOMEN**: 1.2–1.5 : 1 MAN
- ↑ **PREVALENCE**
  1. DIVORCED
  2. WIDOWED
  3. UNEMPLOYED
  4. POOR

Ohayon M. Sleep Med Rev 2002
Johnson E. Sleep Med Clin 2006
MORE PREVALENT IN OLDER WOMEN

Insomnia across the life span

% Reporting insomnia

15-19  |  20-99  |  30-39  |  40-49  |  50-59  |  60-69  |  >70
Males  |        |        |        |        |        |    
Females |        |        |        |        |        |    

Ohayon. Sleep. 1997

(Based on data and adopted from Ohayon MM, Caulet M, Guilleminault C; How a general population perceives its sleep and how this relates to the complaint of insomnia. Sleep 20[6]:716–723, 1997.)
ECONOMIC BURDEN

- ANNUAL LOSSES IN WORK PERFORMANCE (USA)
- NET ANNUAL COSTS OF INSOMNIA
  - $63.2 BILLION
  - 252.7 MILLION DAYS
- PRESENTISM (I.E., ATTENDING WORK WHILE ILL)
  - 2/3 OF THE LOST WORK PERFORMANCE
- ABSENTEEISM (I.E., MISSED WORK DUE TO ILLNESS)
  - 1/3

Kessler et al. Sleep. 2011
TYPES OF INSOMNIA

Types of Insomnia

- secondary insomnia
- primary insomnia
- hypnotic-dependent insomnia
SECONDARY INSOMNIA: IMPLICATIONS

• CAUSAL INFERENCE
• PRIMARY PATHOLOGY (PP) ALWAYS PRECEDES INSOMNIA
• RESOLUTION PP → CESSATION OF INSOMNIA
• MAGNITUDE OF INSOMNIA MIRRORS PP
• DENIES ROLE OF PERPETUATING FACTORS
• NO NEED TO TREAT INSOMNIA
• HARM TO THE PATIENT

Lichstein K. Sleep Med Rev 2006
WHY COMORBID INSOMNIA?

• CAUSAL EFFECT DIFFICULT TO PROVE
• RESOLUTION OF PP ≠ INSOMNIA CURE
• RESOLUTION OF INSOMNIA MAY IMPROVE COMORBIDITY
• PATIENT’S INSOMNIA IS ADDRESSED
• COMORBIDITIES:
  1. SLEEP
  2. MEDICAL
  3. PSYCHIATRIC

Lichstein K. Sleep Med Rev 2006
SPIELMAN’S BEHAVIORAL MODEL OF INSOMNIA

Lichstein K. JCSM 2005
PERPETUATING FACTORS

Dysfunctional Cognitions
- Worry Over Sleep Loss
- Rumination Over Consequences
- Unrealistic Expectations
- Misattributions/Amplifications

Arousal
- Emotional
- Cognitive
- Physiologic

INSOMNIA

Maladaptive Habits
- Excessive Time in Bed
- Irregular Sleep Schedule
- Daytime Napping
- Sleep-Incompatible Activities

Consequences
- Mood Disturbances
- Fatigue
- Performance Impairments
- Social Discomfort

Morin C. Sleep Med Clin 2006
INITIAL EVALUATION

• INSOMNIA HISTORY

• IDENTIFY / RULE OUT SLEEP COMORBIDITIES

• REVIEW PAST HISTORY
  • MEDICAL / PSYCHIATRIC
  • PHARMACOLOGICAL
  • SOCIAL / OCCUPATIONAL / FAMILY

• PHYSICAL EXAM

• DIAGNOSTIC TESTS

Schutte-Rodin et al. JCSM. 2008
DIAGNOSTIC TESTS

• INSOMNIA / SLEEP QUESTIONNAIRES
• PSYCHIATRIC SCREENING
• SLEEP LOGS (DIARY)
• ACTIGRAPHY
• POLYSOMNOGRAM – NOT STANDARD
• SEROLOGIC / IMAGING – NOT STANDARD

Schutte-Rodin et al. JCSM. 2008
FUNCTIONS OF A SLEEP DIARY

• SLEEP / HABIT PATTERN RECOGNITION
• DIMINISHED RECALL BIAS
• EDUCATE THE PATIENT
• DOCUMENTATION OF BASELINE & PROGRESS
• HELPS TO PREDICT ADHERENCE
• RESEARCH

Morin. 2004 - Perlis. 2005
GOALS OF THERAPY

• ↑ SLEEP QUALITY / TIME
• ↓ INSOMNIA-RELATED DAYTIME IMPAIRMENT
• FORMATION OF A POSITIVE AND CLEAR ASSOCIATION BETWEEN THE BED AND SLEEPING
• ↓ SLEEP RELATED PSYCHOLOGICAL DISTRESS

Schutte-Rodin et al. JCSM. 2008
PATIENT CENTERED THERAPEUTIC PLAN

- THERAPEUTIC CHOICE
  - PHARMACOLOGICAL
  - BEHAVIORAL W/ O HYPNOTIC TAPERING
  - BOTH*
- PATIENT READINESS TO START RX
- SLEEP DIARIES
- OTHER QUESTIONNAIRES
COGNITIVE BEHAVIORAL THERAPY
FOR INSOMNIA (CBTI)

• NON-PHARMACOLOGICAL & PSYCHOLOGICAL RX

• THREE COMPONENTS:
  1. EDUCATIONAL
  2. COGNITIVE
  3. BEHAVIORAL

• AIMED TO MODIFY BEHAVIORS & COGNITIONS THAT PERPETUATE INSOMNIA

Morin C. J Clin Psychiatry 2004
EFFECTIVENESS

- 70-80% OF INSOMNIACS BENEFIT
- EFFECTIVE: PRIMARY & COMORBID
- LARGE THERAPEUTIC EFFECT ~50%
  - SLEEP ONSET LATENCY
  - SUBJECTIVE QUALITY OF SLEEP
- MODERATE FOR OTHER SLEEP PARAMETERS

Edinger J. Clin Psychol Rev 2005
MODALITIES OF CBTI

• SLEEP HYGIENE
• STIMULUS CONTROL
• SLEEP RESTRICTION
• RELAXATION TRAINING
• BIOFEEDBACK
• PARADOXICAL INTENTION
• COGNITIVE THERAPY
• COGNITIVE-BEHAVIOR THERAPY

Morin C. Sleep 2006
INTERNET BASED CBTI

• SHUTI - HTTP://SHUTI.ME/
  • $132 – 156 FOR 16 – 20 WEEKS

• SLEEPIO - HTTPS://WWW.SLEEPIO.COM/
  • $2.99 WEEKLY (1 YEAR) - 9.99 WEEK (WEEKLY)

• SOMNIO - HTTP://WWW.SOMNIO.ORG/
  • $149 FOR 8 WEEKS

• RESTORE - HTTP://WWW.RESTORECBT.COM/
  • N/A - CANADIAN

• CBTI COACH - HTTP://WWW.PTSD.VA.GOV/PUBLIC/MATERIALS/APPS/CBTI-COACH-APP.ASP
  • FREE / VA DEVELOPED – TO BE USED WITH A THERAPIST*

Cheng SK. Psychother Psychosom. 2012
Adapted from Morin C. Sleep Med Clin. 2006
BEHAVIORAL SLEEP MEDICINE CAPACITATION

• AMERICAN ACADEMY OF SLEEP MEDICINE (AASM)
  • HTTP://WWW.AASM.NET.ORG/

• PESI
  • HTTP://WWW.PESI.COM/INSOMNIA/

• CBT FOR INSOMNIA
  • HTTP://WWW.CBTFORINSOMNIA.COM/
FUNCTIONAL NEUROANATOMY OF WAKEFULNESS & SLEEP

A. Ascending Wakefulness/Arousal Promoting Regions

- Basal forebrain
- Lateral hypothalamic area
- Tubermammillary nuc
- Substantia nigra & ventral tegmental area
- Dorsal raphe nuc
- Locus coeruleus nuc

B. Slow Wave Sleep Promoting Regions

- Ventrolateral preoptic area
- Tubermammillary nuc
- Substantia nigra & ventral tegmental area
- Dorsal raphe nuc
- Locus coeruleus nuc

C. REM Sleep Promoting Regions

- Tubermammillary nuc
- Dorsal raphe nuc
- Locus coeruleus nuc

Key: Structures and connections are color-coded by neurotransmitter

- Acetylcholine
- Histamine
- Serotonin
- GABA & galanin
- Orexin/hypocretin
- Dopamine
- Norepinephrine

Taber K. J Neuropsychiatry Clin Neurosci. 2006
MEDICATIONS THAT MAY CAUSE INSOMNIA

- CNS STIMULANTS
- A-BLOCKERS
- B-BLOCKERS
- β-AGONISTS
- THEOPHYLLINE
- CHEMOTHERAPY
- DECONGESTANTS
- CORTICOSTEROIDS
- THYROID MEDICATIONS

- PSYCHOTROPICS
- ATYPICAL ANTIDEPRESSANTS
- MAOI
- SSRI / SNRI
- OTHER ILLICIT DRUGS
- ALCOHOL
- CAFFEINE
- NICOTINE

Pagel. 2005
CAN YOU IDENTIFY THE PROBLEMS IN THIS CASE?

• 43 Y/O WOMAN COMPLAINING OF DIFFICULTY INITIATING AND MAINTAINING SLEEP FOR THE PAST 10 YEARS.

• HISTORY OF ASTHMA, HYPERTENSION AND DEPRESSION.

• TAKES THEOPHYLLINE, PREDNISONE, METOPROLOL, FLUOXETINE AND BUPROPION AT BEDTIME

• DRINKS TEA WITH EVERY MEAL AND BEFORE BEDTIME
WOULD YOU FALL ASLEEP AND STAY ASLEEP IF YOU TOOK A HYPNOTIC NOW?

• PROBABLY NOT FOR MOST OF THE AUDIENCE…

• YOUR CIRCADIAN RHYTHM AND HOMEOSTATIC SLEEP NEED WOULD OPPOSE THE ACTION OF THE HYPNOTIC.

• ASK AT WHAT TIME YOUR PATIENT TAKES THEIR SLEEPING PILL IN RELATION TO THEIR BEDTIME

• THINK ABOUT THE PATIENT WHO TAKES HER MEDICATION 4 HOURS BEFORE BEDTIME SO THAT THE MEDICATION CAN “KICK IN”.
OTC MEDICATIONS

• **ALCOHOL**
• VALERIAN
• MELATONIN
• DIPHENHYDRAMINE
• CYCLOBENZAPRINE
• HYDROXYZINE

Feren et al. 2006
HOW DOES YOUR ALCOHOLIC PATIENT LOOK LIKE?

NOT ALWAYS OBVIOUS…

OFTEN LIKE THIS
MEDICATIONS USED FOR INSOMNIA
COMMONLY USED OFF LABEL

BENZODIAZEPINES
• LORAZEPAM
• CLONAZEPAM
• ALPRAZOLAM

ANTIDEPRESSANTS
• MIRTAZAPINE
• TRAZODONE
• AMITRIPTYLINE
• DOXEPIN (HIGH DOSE)

ANTIPSYCHOTICS
• OLANZAPINE
• QUETIAPINE
• RISPERIDONE

Feren et al. 2006
# FDA APPROVED HYPNOTICS

<table>
<thead>
<tr>
<th>Generic</th>
<th>Trade Name</th>
<th>Mechanism of Action</th>
<th>Dose (mg)</th>
<th>Metabolic enzymes</th>
<th>Half-life (hours)</th>
<th>Tmax (hours)</th>
<th>DEA Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estazolam</td>
<td>ProSom</td>
<td>BzRA</td>
<td>1, 2</td>
<td>CYP3A4</td>
<td>10-24</td>
<td>0.5-6</td>
<td>IV</td>
</tr>
<tr>
<td>Flurazepam</td>
<td>Dalmane</td>
<td>BzRA</td>
<td>15, 30</td>
<td>CYP3A4 (probable)</td>
<td>47-100</td>
<td>0.5-1</td>
<td>IV</td>
</tr>
<tr>
<td>Temazepam</td>
<td>Restoril</td>
<td>BzRA</td>
<td>7.5, 15, 22.5, 30</td>
<td>Conjugation with glucuronic acid</td>
<td>3.5-18.4</td>
<td>1.2-1.6</td>
<td>IV</td>
</tr>
<tr>
<td>Triazolam</td>
<td>Halcion</td>
<td>BzRA</td>
<td>0.125, 0.25</td>
<td>CYP3A4</td>
<td>1.5-5.5</td>
<td>2</td>
<td>IV</td>
</tr>
<tr>
<td>Quazepam</td>
<td>Doral</td>
<td>BzRA</td>
<td>7.5, 15</td>
<td>CYP3A4 (minor: CYP2C9, YP2C19)</td>
<td>39-73</td>
<td>2</td>
<td>IV</td>
</tr>
<tr>
<td>Zolpidem</td>
<td>Ambien</td>
<td>BzRA</td>
<td>5, 10</td>
<td>CYP3A4, CYP2C9</td>
<td>1.4-4.5</td>
<td>1.6</td>
<td>IV</td>
</tr>
<tr>
<td>Zolpidem CR</td>
<td>Ambien CR</td>
<td>BzRA</td>
<td>6.25, 12.5</td>
<td>CYP3A4, CYP2C9</td>
<td>2.8</td>
<td>1.5</td>
<td>IV</td>
</tr>
<tr>
<td>Zolpidem SL*</td>
<td>Intermezzo</td>
<td>BzRA</td>
<td>1.75, 3.5</td>
<td>CYP3A4, CYP2C9</td>
<td>1.4-3.6</td>
<td>0.5-1.25</td>
<td>IV</td>
</tr>
<tr>
<td>Zaleplon</td>
<td>Sonata</td>
<td>BzRA</td>
<td>5, 10, 20</td>
<td>aldehyde oxidase (minor: CYP3A4)</td>
<td>1</td>
<td>1</td>
<td>IV</td>
</tr>
<tr>
<td>Eszopiclone</td>
<td>Lunesta</td>
<td>BzRA</td>
<td>1, 2, 3</td>
<td>CYP3A4, CYP2E1</td>
<td>6</td>
<td>1</td>
<td>IV</td>
</tr>
<tr>
<td>Ramelteon</td>
<td>Rozerem</td>
<td>MtRA</td>
<td>8</td>
<td>CYP1A2 (minor: CYP2C, CYP3A4)</td>
<td>1-2.6</td>
<td>0.75</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Tasimelteon</strong></td>
<td>Hetlioz</td>
<td>MtRA</td>
<td>20</td>
<td>CYP1A2, CYP3A4</td>
<td>1.3 ± 0.4</td>
<td>0.5 to 3</td>
<td>n/a</td>
</tr>
<tr>
<td>Doxepin</td>
<td>Silenor</td>
<td>H1Ant</td>
<td>3, 6</td>
<td>CYP2C19, CYP2D6 (minor: CYP1A2, CYP2C9)</td>
<td>15.3-31</td>
<td>3.5</td>
<td>n/a</td>
</tr>
<tr>
<td>Suvorexant</td>
<td>Belsomra</td>
<td>OX1R &amp; OX2R (Ant)</td>
<td>5, 10, 15, 20</td>
<td>CYP3A</td>
<td>12</td>
<td>1.5-2</td>
<td>IV</td>
</tr>
</tbody>
</table>
FREE-RUNNING CIRCADIAN RHYTHM SLEEP DISORDER

- SYNONYMS: FREE-RUNNING TYPE, NON-ENTRAINED, NON 24 HOUR
- BLIND INDIVIDUALS WITHOUT LIGHT PERCEPTION (10% BLIND)
  - ~50% PREVALENCE
- RARE IN SIGHTED INDIVIDUALS
- CIRCADIAN CLOCK THAT IS NOT IN PHASE WITH, AND CANNOT BE ENTRAINDED TO, THE 24-HOUR LIGHT-DARK CYCLE
- COMMON PSYCHIATRIC COMORBIDITIES
FREE-RUNNING CIRCADIAN RHYTHM SLEEP DISORDER

[Graph showing sleep patterns with timestamps and durations]
HOW CAN YOU HELP THIS PATIENT?

• 60 Y/O MAN WITH NOCTURNAL INSOMNIA AND EXCESSIVE DAYTIME SLEEPINESS.

• NORMAL BMI, NO SNORING.

• TAKES LIBRAX THREE TIMES DAILY TO TREAT IRRITABLE BOWEL SYNDROME.
STOP LIBRAX & START A SHORT ACTING HYPNOTIC

• LIBRAX = CHLORDIAZEPoxide + CLIDINIUM
• CHLORDIAZEPoxide (LIBRiUM) HALF LIFE 5-30 HOURS
• ACTIVE METABOLITE: DESMETHYLCHLORDIAZEPoxide
  • HALF LIFE 36-200 HOURS
CAUTION! LONG ACTING AGENTS

- Therapeutic
- Impaired
WHY IS THIS MEDICATION HAVING THE OPPOSITE EFFECT?

• 24 Y/O WOMAN WITH DIFFICULTY INITIATING AND MAINTAINING SLEEP

• NOCTURNAL MEDICATIONS
  • DIPHENHYDRAMINE 200 MG (8 TABLETS)
  • INTERMITTENTLY 1-2 GLASSES OF WINE
  • MELATONIN 5 MG
DOSING MAY CHANGE DRUG EFFECT

Stahl. CNS Spect. 2008
ANOTHER EXAMPLE

Stahl. CNS Spect. 2008
SIDE EFFECTS MAY ALSO CHANGE

Doxepin 25-50 mg vs. 3 mg

Stahl. CNS Spect. 2008
HOW DO YOU HELP THIS PATIENT?

• 56 Y/O MAN WITH CHIEF COMPLAINT:
  • “THE SLEEPING PILL IS NOT WORKING”

• GOES TO BED AT 7:00 PM TO READ, WATCH TV AND SURF THE WEB

• TAKING ZOLPIDEM 10 MG AT 9:00 PM

• WAKES UP AT 5:00 AM WITH THE “MORNING NEWS”

• GETS OUT OF BED BY 6:30 AM
BEHAVIORAL MEASURES HELP PHARMACOLOGICAL TREATMENT

• THE PROBLEM:
  • TOO MUCH TIME IN BED AND POOR SLEEP HABITS
  • SLEEPING ABOUT 7.5 HOURS
  • 11.5 HOURS IN BED
  • ZOLPIDEM IS WORKING JUST FINE
DO HYPNOTICS REALLY CAUSE FALLS?

- 34,163 NURSING HOME RESIDENTS
  - 76% WOMEN
  - MEAN AGE STANDARD DEVIATION 84 ± 8
- HYPNOTIC USE DID NOT PREDICT FALLS
  - AOR 51.13, 95% ; CI 50.98, 1.30
- INSOMNIA PREDICTED FUTURE FALLS
  - AOR 51.52, 95% ; CI 51.38, 1.66.
- UNTREATED INSOMNIA
  - AOR 51.55, 95% ; CI 51.41, 1.71

Avidan AY. J Am Geriatr Soc. 2005
DOCTOR, WILL SLEEPING PILLS KILL ME?

Hypnotics’ association with mortality or cancer: a matched cohort study

Daniel F Kripke, Robert D Langer, Lawrence E Kline

Hypnotic use and age: effects on survival

Fraction surviving

Years of observation

Age 18–55: no hypnotic N=13 039
Age 55–65: no hypnotic N=4049
Age 65–75: no hypnotic N=3641
Age >75: no hypnotic N=2945
Age 18–55: had hypnotic N=5807
Age 50–65: had hypnotic N=1758
Age 65–75: had hypnotic N=1477
Age >75: had hypnotic N=1489
SICKER PATIENTS TAKE HYPNOTICS

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>Non-users</th>
<th>Any hypnotic users</th>
<th>Zolpidem</th>
<th>Temazepam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma ***</td>
<td>6.6</td>
<td>11.3</td>
<td>10.9</td>
<td>11.3</td>
</tr>
<tr>
<td>Cerebrovascular disease ***</td>
<td>3.8</td>
<td>6.2</td>
<td>5.9</td>
<td>6.1</td>
</tr>
<tr>
<td>Coronary heart disease ***</td>
<td>9.4</td>
<td>14.5</td>
<td>14.1</td>
<td>15.8</td>
</tr>
<tr>
<td>Chronic kidney disease ***</td>
<td>0.9</td>
<td>1.7</td>
<td>1.5</td>
<td>1.9</td>
</tr>
<tr>
<td>COPD ***</td>
<td>5.5</td>
<td>9.1</td>
<td>8.8</td>
<td>8.8</td>
</tr>
<tr>
<td>Cardiovascular disease, all ***</td>
<td>14.1</td>
<td>21.4</td>
<td>21.1</td>
<td>22.3</td>
</tr>
<tr>
<td>Dementia</td>
<td>0.6</td>
<td>0.6</td>
<td>0.7</td>
<td>0.2</td>
</tr>
<tr>
<td>Diabetes ***</td>
<td>14.6</td>
<td>17.9</td>
<td>17.8</td>
<td>18.5</td>
</tr>
<tr>
<td>Heart failure ***</td>
<td>3.2</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
</tr>
<tr>
<td>Hypertension ***</td>
<td>37.5</td>
<td>42.8</td>
<td>41.9</td>
<td>43.9</td>
</tr>
<tr>
<td>Obesity ***</td>
<td>6.7</td>
<td>10.5</td>
<td>9.6</td>
<td>10.0</td>
</tr>
<tr>
<td>Reflux and peptic disease ***</td>
<td>15.0</td>
<td>27.9</td>
<td>26.9</td>
<td>26.3</td>
</tr>
<tr>
<td>Peripheral vascular disease ***</td>
<td>2.1</td>
<td>3.9</td>
<td>4.0</td>
<td>3.7</td>
</tr>
</tbody>
</table>

The percentages with each class of comorbidity diagnoses are shown for non-users and users of hypnotics. Among users, specific comorbidity percentages are shown for those prescribed only zolpidem or only temazepam. Comorbidity classes are further defined in supplemental table 2. ***Indicates p<0.001, contrasting non-users versus all hypnotic users.

Kripke. BMJ. 2012
SUMMARY

- INSOMNIA = ↓ SLEEP CONTINUITY + DAYTIME SX
- INSOMNIA IS PREVALENT… SCREEN & TREAT!
- REVIEW MEDICATIONS
- ASK ABOUT ALCOHOL CONSUMPTION
- ELICIT SLEEP SCHEDULE / NAPS
- EXPLORE PATIENT’S TREATMENT PREFERENCE
INSOMNIA RESOURCES ONLINE

AMERICAN ACADEMY OF SLEEP MEDICINE
WWW.AASMNET.ORG

NATIONAL SLEEP FOUNDATION
WWW.SLEEPFOUNDATION.ORG

SLEEP EDUCATION FOR PATIENTS
HTTP://YOURSLEEP.AASMNET.ORG

SOCIETY OF BEHAVIORAL SLEEP MEDICINE
WWW.BEHAVIORALSLEEP.ORG

U.S. FOOD AND DRUG ADMINISTRATION
WWW.FDA.GOV
THANK YOU

alexander@sleepwell.org