# Symptom Management Guidelines: SLEEP- WAKE DISTURBANCES

## Definition(s)
**Sleep – Wake Disturbance:** Perceived or actual alterations in night sleep resulting in daytime impairment. Includes sleep disorders such as: insomnia, sleep apnea, and sleep – related movement disorders (e.g. restless leg)

**Insomnia:** Difficulty falling asleep, staying asleep and/or early awakening or non-restorative sleep that causes significant distress and impairs function

## Appendix A: Sleep-wake Disturbances-Parameters below

### Contributing Factors

#### Cancer Treatment
- Chemotherapy (especially antimetabolites e.g. Methotrexate and 5FU)
- Radiation therapy
- Biotherapy (e.g. Interferon)
- Bone marrow transplant
- Surgery
- Hormones: Antiestrogens (e.g. Tamoxifen) and Antiandrogens (e.g. Leuprolide)

#### Cancer Related & Cancer Treatment Related
- Cytokine production is associated with cancer development and growth. Changes in cytokines are linked to clinical depression and mood changes, associated with sleep-wake disturbances
- Bone and liver metastases or ascites in advanced illness
- Hormone level changes:
  - Antiestrogens and Antiandrogens- may cause night sweats and hot flashes
  - Cortisol - shortened irregular sleep periods, daytime sleepiness
  - Melatonin production - changes in body temperature and sleep regulation
- Presence of other symptoms (e.g. diarrhea, nausea, dyspnea, pain, fatigue, etc)

#### Psychological
- Depression, anxiety, mood disorder, post-traumatic stress syndrome
- Stressful life events
- Maladaptive cognitions (e.g. unrealistic sleep expectations, false perceptions of sleep time and quality)

#### Medications
- Corticosteroids (e.g. Dexamethasone)- linked to erratic circadian patterns
- Antiemetics (e.g. Granisteron)-may cause drowsiness, decreased REM sleep, restless leg
- Analgesics (e.g. opioids)-may cause decreased REM sleep, altered thermoregulation
- Anti-convulsants
- Beta-blockers
- Insomnia related to withdrawal of medications:
  - Hypnotics and sedatives
  - CNS depressants (e.g. opioids, alcohol, anti –histamine sedatives)
  - Anti-depressants (e.g. Tricyclic and Monamine Oxidase Inhibitors)
  - Illicit drugs

#### Other
- Female
- Maladaptive behaviors (e.g. spending too much time in bed, frequent changes to sleep-wake patterns, daytime napping, decreased daytime activity)
- Substances that cause arousal:
  - Caffeine - blocks adenosine (a sleep enhancing factor)
  - Smoking - nicotine is a CNS stimulant
  - Alcohol consumption - produces sympathetic arousal
  - Red ginseng – increases effects of stimulants
- Sleep environment (e.g. room temperature, excess noise and light exposure)
- Hospitalized patients (e.g. frequent sleep interruptions)
### Consequences

- Emotional consequences: distress, irritability, depression, decreased pleasure in work and social activities
- Physical effects: fatigue, increased daytime sleepiness, pain tolerance and decrease immune functioning
- Cognitive impairment: concentration, memory and judgment
- Compromised role function: functional, social and occupational abilities

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### Focused Health Assessment

<table>
<thead>
<tr>
<th>General Assessment</th>
<th>Symptom Assessment</th>
<th>Physical Assessment</th>
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</table>

**Contact and General Information**
- Physician name: oncologist, family physician
- Pharmacy
- Home health care
- Other healthcare providers
- Allergies

**Consider Contributing Factors**
- Cancer diagnosis
- Cancer treatment(s) – note type and date of last treatment(s), concurrent treatments
- Medical history (e.g. Sleep disorders)
- Medication profile
- Recent lab or diagnostic reports (e.g. Hormone levels)
- Fatigue
- Pain
- Depression and anxiety

**Normal – Establish sleep patterns**
- What are your normal sleep patterns?
- What time do you go to bed at night? What time do you get up? How long does it take you to fall asleep?

**Onset** - When did the change(s) in sleep patterns begin? How often is sleep disturbed? Number and duration of awakenings? Early morning awakenings?

**Provoking / Palliating**
- Assess sleep hygiene habits
  - What brings it on? Makes it better? Worse?
- Explore possible barriers to sleep (e.g. environmental factors, exercise patterns, napping, use of stimulants, ruminating about stressful events prior to sleep)

**Quality**
- What is your main sleep complaint? (e.g. too much sleep, trouble falling or staying asleep, non restorative sleep, excessive sleepiness in day)

**Region / Radiation** – N/A

**Severity / other Symptoms**
- How bothered are you by this symptom? (on a scale of 0 – 10, with 0 being not at all to 10 being the worst imaginable)
- Have you had any other symptoms? (e.g. pain, fatigue, anxiety, worry, depressed mood)

**Treatment**
- What medications or sleeping strategies have you tried? Has this been effective?
- Have you used any medications or sleep strategies in the past that have been effective?

**Understanding / Impact on You**
- How has your sleep disturbance impacted on your normal daily activity (ADLs)?
  - Do you have trouble staying awake while driving, eating meals, working, or socializing?
  - What activities are you still able to participate in?
- Do you have a partner or roommate? If so, how does it affect them?
  - Have they noticed any unusual behaviors while you sleep (e.g. snoring, sleep walking, interrupted breathing or leg movements?)

**Value**
- What is your comfort goal for this symptom (0 – 10 scale)?
- Are there any other views or feelings about this that are important to you or your family?
- What do you believe is causing your symptom(s)?

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## INSOMNIA GRADING SCALE
Adapted NCI CTCATE (Version 4.03)

<table>
<thead>
<tr>
<th>Normal</th>
<th>Grade 1 (Mild)</th>
<th>Grade 2 (Moderate)</th>
<th>Grade 3 (Severe)</th>
<th>Grade 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymptomatic</td>
<td>Mild difficulty falling asleep, staying asleep or waking up early</td>
<td>Moderate difficulty falling asleep, staying asleep or waking up early</td>
<td>Severe difficulty in falling asleep, staying asleep or waking up early</td>
<td>__________</td>
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## MANAGEMENT OF SLEEP- WAKE DISTURBANCE:
Prevention, support, teaching, & follow-up as clinically indicated

### Patient Care and Assessment
- Collaborate with physician:
  - Rule out other causes or concomitant causes of insomnia and determine need for further assessment at cancer centre or with GP
  - If patient requires new or change in prescription (e.g. pain and sleep medications)
- Assessment and management of contributing factors

### Sleep Hygiene
- **Encourage:**
  - Regular exercise
  - Dark and quiet sleep environment with a comfortable room temperature
  - Soothing activities before bedtime
  - Maintaining consistent bedtime
  - Removing bedroom clock
  - Limiting naps to less than 1hr and not too close to bedtime
  - For patients in hospital, reduce disturbances (adjust timing of night time checks, administration of medications and consolidate patient care activities)
- **Avoid the following close to bedtime:**
  - Intake of stimulants (e.g. caffeine-within 6hr, nicotine, alcohol)
  - Going to bed hungry
  - Heavy, spicy, or sugary foods
  - Fluids (e.g. more than 1 cup of fluid within 4hr)
  - Stimulating activities (e.g. vigorous exercise within 2-4hr)

### Stimulus Control
Goal: To re-associate the bed and bedroom with sleeping

**Principles:**
- Go to bed and wake up at regular times
- Go to bed only when sleepy
- Use bed for sleep and intimacy only, not as an office or place to watch television
- Avoid spending more than 20-30 minutes awake in bed. If awake more than 20-30 minutes go to another room and engage in a relaxing activity (e.g. reading), avoid stimulating activities (e.g. watching television). Return to bed when sleepy and repeat process as necessary

### Sleep Log
- Encourage patient and/or family to maintain a sleep log and record the following for 2 weeks:
  - Total sleep time per night
  - Time required to fall asleep
  - Number, duration and trigger of nighttime awakenings
  - Subjective reports of sleep quality and daytime impairment
  - Nap times (frequency, times, durations)
  - Timing and consumption of medications (including herbal supplements), caffeine and alcohol for each 24hr period

### Relaxation Techniques
- Encourage the following:
  - Progressive muscle relaxation, massage, yoga
  - Guided imagery, mindfulness, meditation
  - Breathing techniques (e.g. diaphragmatic breathing, focused breathing)
  - Aromatherapy

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Pharmacological Management

- Medications prescribed should be related to type of sleep-wake disturbance and pharmacological properties of the medication
- Consider a short-acting sleep medication for difficulties falling asleep and a longer-acting medication for difficulties staying asleep
- Sleep medications are generally recommended only for short-term and intermittent use
  - Prolonged use of medications for persistent insomnia can cause:
    - Altered physiologic function and impair natural sleep patterns
    - Tolerance, abuse, dependence and withdrawal

Appendix B: Sleep-wake Disturbances-Pharmacological Management below

Follow-up

- Instruct patient/family to contact healthcare providers if symptoms worsen or do not improve
- If indicated, arrange for nurse initiated follow-up or physician follow-up

RESOURCES & REFFERALS

<table>
<thead>
<tr>
<th>Referrals</th>
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<tbody>
<tr>
<td>Patient Support Clinic or Telephone Care Management</td>
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<tr>
<td>GP</td>
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<tr>
<td>Patient and Family Counseling</td>
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<tr>
<td>Alternative practitioners (e.g. relaxation therapy, massage)</td>
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<tr>
<td>Sleep specialist or sleep lab</td>
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<td>Promote volunteer driver for patients with severe sleep disturbance</td>
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<tr>
<th>Patient Education</th>
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<tr>
<td>Resources about managing stress, anxiety, depression deep breathing, positive thinking, etc <a href="http://www.bccancer.bc.ca/PPI/copingwithcancer/emotional/dealingemotions/factsheets.htm">http://www.bccancer.bc.ca/PPI/copingwithcancer/emotional/dealingemotions/factsheets.htm</a></td>
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<tr>
<td>Canadian sleep society <a href="http://www.canadiansleepsociety.ca">www.canadiansleepsociety.ca</a></td>
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<tr>
<td>Counseling <a href="http://www.bccancer.bc.ca/PPI/copingwithcancer/emotional/counselling.htm">http://www.bccancer.bc.ca/PPI/copingwithcancer/emotional/counselling.htm</a></td>
</tr>
<tr>
<td>Support Programs <a href="http://www.bccancer.bc.ca/PPI/copingwithcancer/emotional/supportprograms.htm">http://www.bccancer.bc.ca/PPI/copingwithcancer/emotional/supportprograms.htm</a></td>
</tr>
<tr>
<td>Complementary and Alternative Cancer Therapies (BCCA) <a href="http://www.bccancer.bc.ca/HPI/UnconventionalTherapies/default.htm">http://www.bccancer.bc.ca/HPI/UnconventionalTherapies/default.htm</a></td>
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<tr>
<th>Related Online Resources</th>
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<th>Bibliography List</th>
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Appendix A: Sleep-wake Disturbances-Parameters

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Total sleep time</td>
<td>Number of minutes of sleep while in bed</td>
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<tr>
<td>Sleep latency</td>
<td>Number of minutes between going to bed and falling asleep</td>
</tr>
<tr>
<td>Awakenings</td>
<td>Frequency of awakenings during sleep period</td>
</tr>
<tr>
<td>Time awake after sleep onset</td>
<td>Number of minutes awake after initial sleep onset</td>
</tr>
<tr>
<td>Daytime naps</td>
<td>Numbers of minutes of sleep during daytime naps</td>
</tr>
<tr>
<td>Daytime sleepiness</td>
<td>Number of episodes of falling asleep unintentionally</td>
</tr>
<tr>
<td>Quality of perceived sleep</td>
<td>Subjective assessment of sleep quality.</td>
</tr>
<tr>
<td>Circadian rhythm</td>
<td>Biobehavioural phenomenon associated with fluctuations in light, hormones, eating, and/or socializing that repeats every 24 hours</td>
</tr>
<tr>
<td>Sleep efficiency</td>
<td>Number of minutes of sleep divided by number of minutes in bed</td>
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## Insomnia - Medications that Promote Sleep

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<thead>
<tr>
<th>Group</th>
<th>Medications</th>
<th>Side Effects</th>
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| Benzodiazepines               | Clonazepam, Lorazepam                | • Variable metabolic half – lives, those with longer half– lives (e.g. clonazepam) may cause residual daytime sedation and cognitive/motor impairments  
• Risk for tolerance, dependence and withdrawal  
• Discontinuation may cause rebound insomnia  
• Recommended only for short – term or intermittent use |
| Nonbenzodiazepine Hypnotics   | Zaleplon, Zolpidem                   | • Short metabolic half – lives; therefore less residual daytime sedation  
• Not associated with tolerance, dependence, sleep cycle alterations or rebound insomnia |
| Tricyclic Antidepressants     | Amitriptyline, Nortriptyline         | • Sedative effects and high anticholinergic effects (should be avoided in elderly)  
• May boost appetite and help with neuropathic pain |
| Other                         |                                      | • Sedative effects                                                          |
| Neuroleptics                  | Chlorpromazine                       |                                                                              |
| Herbal supplements            | Melatonin, Kava, Valerian            |                                                                              |
| Melatonin receptor agonists   | Ramelteon                            |                                                                              |
| Antipsychotics (Last option) | Quetiapine, Chlorpromazine           |                                                                              |

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### Contributing Authors:
Revised by: Lindsay Schwartz, RN, MSc(A); Jagbir Kohli, RN, MN  
Created by: Vanessa Buduhan, RN MN; Rosemary Cashman, RN MSc(A), MA (ACNP); Elizabeth Cooper, RN BScN, CON(c); Karen Levy, RN MSN; Ann Syme RN PhD(C)

Reviewed by: Nancy (Surya) Absolon, RN, BA, BScN