

The Star Therapy and Application Research Effect

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Hospice of Dayton, Inc.

Medications are not always effective for controlling symptoms

| | | |
|------------------|-------------------|------------------|
| | alprazolam | |
| PAIN | | NAUSEA |
| methadone | INSOMNIA | morphine |
| Dilaudid | | ANXIETY |
| Ativan | RESTLESSNESS | versed |
| | fentanyl | AGITATION |
| DYSPNEA | Haldol | Thorazine |

Other Modalities That Might Effect These Symptoms

- Music
- Massage
- Acupuncture
- Aroma therapy

Realizing How Much Peace The Night Sky Brings Me



Wondering How We Can Bring The "Night Sky" Into Our Patient's Rooms

- Projector
- Painting
- Apply stickers to ceiling
- Cut hole in roof

Online Research To Find The Right Projector

- Motion
- Stars
- Appropriate colors
- Projector size
- Clouds
- Universe



Patient and Family Reactions



"This is so beautiful, it helps me relax while I'm sitting at my husband's bedside."



After the patient died, the family donated 5 Star Projectors stating, "we don't want a patient or their family to go without being able to enjoy a Star Gazer."

"It's so peaceful and beautiful when the Star Gazer is on."

peace.

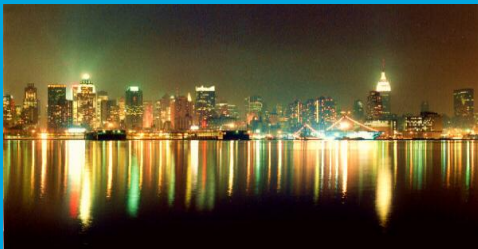
It does not mean to be in a place where there is no noise, trouble or hard work. It means to be in the midst of those things and still be calm in your heart.

(unknown)

"I have to buy one of these for my house."



"It reminds me of my Manhattan skyline."



"It's like having my own personal universe."



"I like to focus on one falling star and watch it travel; it's like watching your life journey, knowing it's coming to an end. You don't know exactly when or where, but it's beautiful and peaceful."



"God does love me."



"God has been here."

"It reminds me of a movie theater in New York I used to take my wife to."



"It reminds me of camping when I was young."



Control of Patient's Symptoms

- Decreased pain
- Decreased anxiety
- Decreased agitation
- Decreased restlessness
- Increased sleeping

Prior to, and upon admission to the inpatient unit, a patient is assessed for any symptom that might be alleviated by the Star Gazer.

Current Hospice of Dayton patients are assessed frequently during each shift for onset of symptoms such as:

- anxiety
- restlessness
- sleep issues
- pain

Once symptoms are identified, a Star Gazer is placed in the room and patients responses are evaluated.

Patient Case Applying “The Star Effect”

| | |
|-------------------------------|--|
| Patient | 81 y/o male |
| Diagnosis | Septicemia – unspecified, renal failure |
| Comorbidities | Recurrent UTI's, pneumonia, diabetes, COPD, dementia |
| Symptoms | Restless, anxious, agitation, sleep issues |
| Situation prior to Star Gazer | Haldol 1 mg Television on Lights on No family Personal alarm |

| Timeline | |
|---|---|
| TV, lights turned off / room darkening blinds | |
| 1300 | Resps: 30 / heart rate: 108 / agitated, restless, trying to get OOB |
| 1310 | Star Gazer turned on |
| 1330 | Patient sleeping / did not respond to touch / resps: 18 / heart rate: 78 |
| 1500 | Patient given mouth and pericare, reposition for comfort / back to sleep / resps: 14 / heart rate: 86 |

The Star Therapy and Application Research Effect

Mary Murphy, RN, MS, ACHPN, AOCN
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Evidenced Based Practice

- Based on best available evidence to effect best possible patient outcomes
- Defines cases that integrate best scientific evidence with clinical expertise, knowledge of pathophysiology, knowledge of psychosocial issues, and decision making preferences of patients

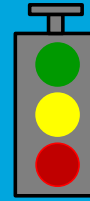
(Rutledge Gant 2002)

Why Should Nursing Be Concerned With Measurements?

- Patient safety
- Patient satisfaction

Measurement Issues

- Identify appropriate tool
- Consider symptom clusters, clinical utility and barriers to measurement



Green = GO!

The evidence supports the consideration of these interventions in practice.

Yellow = CAUTION!

There is not sufficient evidence to say whether these interventions are effective or not.

Red = STOP!

The evidence indicates that these interventions are either ineffective or may cause harm.

(ONS PEP Weights of Evidence Stop Light Analogy)
Putting Evidence Into Practice. Eaton, L, Tipton, J, Oncology Nursing Society 2009

Background & Significance

Pilot work with patients receiving hospice care at Hospice of Dayton has revealed that Star Therapy (projection of moving and twinkling stars in a dark blue/green indigo background on the ceiling above the patient in a darkened room) resulted in significant reduction in agitation and restlessness and promoted sleep and rest.

Theoretical Considerations

Are the outcomes of the Star Therapy pilot study (reduced agitation and rest) a function of increased melatonin production in response to low lighting required to see the star field?

or

The Snoezelen effects of experiencing comforting and pleasurable visual stimulation or a combination of both?

or

Factors related to color and motion which are unknown but warrant investigation?

Are star therapy outcomes the function of increased melatonin production and/or Snoezelen effects?

Is color and movement a part of the response or not related to the outcome?

Snoezelen Therapy

Utilized to assess physiological, cognitive and behavioral changes in children recovering from traumatic brain syndrome (TBS)

Snoezelen therapy uses an entire sensory buffet of auditory, visual, tactile, gustatory, olfactory and kinetic modes to facilitate neuronal healing, relaxation and provide a sense of relief after traumatic brain injury. The therapy is reported as pleasurable and perceived as a humane approach to (TBI).

The light therapy portion has been described as interactive lights on a wall or ceiling using a mirror ball with projection light with shimmering light curtains and glow in dark stars (beneficial to decrease agitation).

(Hotz G, Castelblanco A, Lara I, Weiss A, Duncan R, Kuluz J. Snoezel: A controlled multi-sensory stimulation therapy for children recovering from severe brain injury. Brain Injury. 2006; 20(8): 879-888.)

Color Therapy

A difficult therapy to research but something so often talked about.

Color

(1998) Discovery of a photoreceptor in the eye is very sensitive to blue light and improved auditory reaction and decreased lapses in memory attention.

Other non-studied areas in color psychology:

- Green associated with nature, health, abundance
- Blue associated with peaceful, tranquil; causes body to produce calming chemicals
- Red associated with increased heart rate and breathing

Melatonin Therapy

Pathophysiology

Melatonin is a synthesized and secreted by the pineal gland (located in the 3rd ventricle of the brain) during night hours and normal environmental conditions. The pineal gland transduces photic environmental information and secretion is accomplished through the hypothalamus responding to the light and dark circle.

(Claustrat B, Brun J, Chazot G. The basic physiology and pathophysiology of melatonin. Sleep Med Rev. 2005; 9: 11-24.)

Because melatonin regulation is complex using central and autonomic pathways, many pathophysiological events and environmental conditions can alter melatonin production.

Besides modulation of sleep/wake cycles, melatonin may significantly modulate cortisol levels which affect immunity, blood pressure, cell work and bone metabolism.

- Melatonin secretion is a function of the duration of darkness. Evidence suggests that melatonin may be an endogenous synchronizer which can stabilize circadian rhythms
- The disturbed sleep-wake cycle observed in patients with Alzheimer disease is significantly correlated with decreased melatonin levels

(Claustrat, 2005)

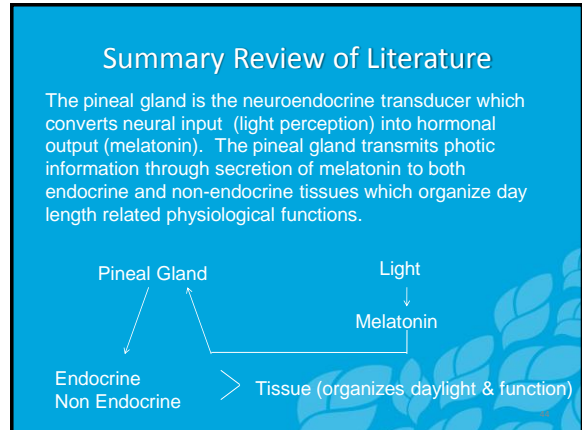
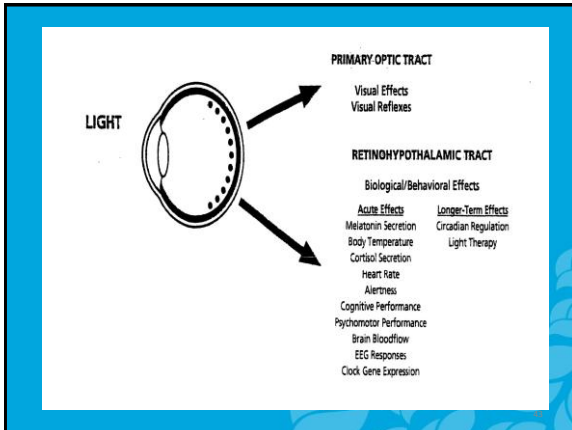
Previous study examining the efficacy of melatonin in treatment of sleep & cognitive disorders.

Controlled lighting to stabilize melatonin production and circadian cycles to reduce delirium in older persons has demonstrated benefits as well.

(Brusco LI, Marques M, Cardinali D. Melatonin treatment stabilizes chronobiologic and cognitive symptoms in alzheimers disease. Neuroendocrinology Letters. 2000; 21:39-42. Inouye S. Delirium in Older Persons. N. Eng. J. Med 2006;354: 1157-65 St. James J. 'Snoezelen' rooms soothe patients at Mesquite retirement facility. Available at: E:\'Snoezelen' rooms soothe patients at Mesquite retirement facility wfaa_com Dallas - Forth Worth.mht. Accessed Sept. 23, 2011.)

- Way of life and the environment significantly influence melatonin secretion and genetic controls may exist as well
- Evaluation of melatonin secretion can be accomplished through blood sampling and temperature measurement with strictly controlled study conditions
- The long term toxicity of melatonin is unknown

- Levels of Lighting
- Increasing melatonin production
- Pleasure and relaxation



The Star Therapy and Application Research Effect

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- ### Study Demographics
- Type of Care Patient Receiving
 - Hospice Care
 - Palliative Care
 - Rehabilitative Care
 - Chemotherapy
 - Subjects
 - Adults & Children
 - Male & Female
 - Multi-sites
 - Hospice of Dayton, Dayton, Ohio
 - Miami Valley Hospital, Dayton, Ohio
 - VA Medical Center, Dayton, Ohio
 - Children's Medical Center Dayton, Ohio

- ### Phase I Original Tool Development
- Research for the best tool
 - Journal of Hospice & Palliative Medicine, volume 22, Number 4, July/August 2005. Page 277-282.
 - Jones, L. (1998) "Development of an instrument to measure terminal restlessness, Palliative Medicine, 12: 99-104
 - Adapt tool to be similar to symptom scales in the Allscripts computer system

Phase I Questionnaire Initiating Starlight Therapy

QUESTIONNAIRE FOR STAR MACHINE
Directions: Please complete this questionnaire when first starting the Star Machine.

Name of Patient _____ VA Patient Identifier _____
 Medical Record Number _____ Date _____ Time _____ Sex: M F Age _____
 Diagnosis _____
 CoMorbilities _____

Symptoms which prompted STAR machine use:
 Agitation _____
 Anxious _____
 Restlessness _____
 Sleep Issues _____
 Dyspnea _____
 Pain _____

Other treatments used to treat symptoms **BEFORE** starting the Star Machine? (Please note time other treatments initiated) Example: Medications (list drug, dose, time), turned lights off, music, etc. _____

Situation in the room, what is the environment like (family over stimulating patient, loud noise, bright lights) _____

Phase I

Questionnaire 30 Minutes Post Starlight Therapy

QUESTIONNAIRE FOR STAR MACHINE
Directions: Please complete this questionnaire 30 minutes after starting the Star Machine.

Name of Patient _____
 Medical Record Number _____ VA Patient Identifier _____
 Date _____ Time _____

Any other treatments used to treat symptoms **DURING THE TIME** the Star Machine in use? (Please note time other treatments initiated) Example: Medications (list drug, dose, time), turned lights off, music, etc.

Change in Symptoms after STAR machine initiated (please be specific; time you noticed change, what change did you notice, etc)

Situation in the room (family over stimulating patient, loud noise, bright lights)

Original Tool

ASSESSING DISTRESSING SYMPTOMS

STAR Symptom Scale

Please assess patient and complete this symptom distress scale BEFORE starting the Star Machine & 30 minutes AFTER
The rating scale is as follows:

0 Does not apply to patient at all
 1-3 Applies to patient a little, to some degree, or some of the time
 4-6 Applies to patient quite a lot, to a considerable degree, or a good part of time
 7-10 Applies to patient a great deal, very much, or most of the time

Phase 2

Questionnaire Initiating Starlight Therapy

QUESTIONNAIRE FOR STAR MACHINE
Directions: Please complete this questionnaire when first starting the Star Machine.

Name of Patient _____
 Medical Record Number _____ VA Patient Identifier _____
 Date _____ Time _____ Sex: M F Age _____
 Diagnosis _____
 CoMorbidity _____

Symptoms which prompted STAR machine use:
 Agitation
 Anxious
 Restlessness
 Sleep Issues

Other treatments used to treat symptoms **BEFORE** starting the Star Machine? (Please note time other treatments initiated) Example: Medications (list drug, dose, time), turned lights off, music, etc.

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ASSESSING DISTRESSING SYMPTOMS
 STAR Symptom Scale

| |
|--|
| <p>IS THE PATIENT AGITATED? Anger, despair, combative, irritable, striking out, grimacing</p> <p>0 Not at all 1-3 A little 4-6 Quite a Lot 7-10 A great deal</p> |
| <p>IS THE PATIENT ANXIOUS? Nervous, fearful, tense, fearful, anguish, furrowed brow, no eye contact, wild-eyed look</p> <p>0 Not at all 1-3 A little 4-6 Quite a Lot 7-10 A great deal</p> |
| <p>IS THE PATIENT RESTLESSNESS? Repetitive movement, constant moving or motion, inability to be still, movement of limbs, no purposeful motor activity, thrashing/ailing, head rolling, pulling/picking at cloths and sheets</p> <p>0 Not at all 1-3 A little 4-6 Quite a Lot 7-10 A great deal</p> |
| <p>IS THE PATIENT HAVING SLEEP ISSUES? Inability to sleep, insomnia, unpaired sleep, sleep disturbance</p> <p>0 Not at all 1-3 A little 4-6 Quite a Lot 7-10 A great deal</p> |

Phase 2 - Tool Refinement

- Measure outcomes – controlled variables
 - Respiratory Rate
 - Heart Rate
 - Time Start & End
 - Opioid, sedatives, or anti-anxiety drug (dose & time) before and during
 - LUX dose at each observation point
 - Observations survey

| Period | Time | Respiratory Rate | Heart Rate | Lux Dose (Light Meter) | Agitation | Restlessness |
|---|------|------------------|------------|------------------------|-----------|--------------|
| Before application | | | | | | |
| Data collection 1- 30 min after application | | | | | | |
| Data Collection 2 2 hours after application | | | | | | |
| Drug name /dose/route | | | | | | |
| Drug name dose/route | | | | | | |
| Drug name dose/route | | | | | | |
| Drug name dose/route | | | | | | |

Hypothesis

- Hypothesis: The star therapy outcomes are the function of increased melatonin production
- Synthesis & Release of Melatonin
 - Reduces blood pressure
 - increases parasympathetic activity
 - Effects temperature

Methods

- Nurse will complete tool by observing and assessing patient for changes in:
 - Physiological
 - Cognitive
 - Behavior

Data Analysis Refinement

- Data Analysis
 - Calculate differences in outcome measures between pre and post application
 - Upon initiating star therapy
 - 30 minutes after initiating star therapy
 - 2 hours after initiating star therapy

Preliminary Results

| | Prior to Treatment | Post treatment |
|-----------|--------------------|----------------|
| Agitation | 6 | 1 |
| Anxiety | 9 | 1 |
| Restless | 12 | 2 |
| Insomnia | 9 | 2 |
| Pain | 6 | 1 |

