The Importance of Nature to Health & Well-being

Dr. Joanne Westphal, PhD, M.D.
Background

- Medicine
- Landscape Architecture
Background

- Medicine
  - effects of nature on human health
    - Conscious—sensory input

- Landscape Architecture
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- **Medicine**
  - effects of nature on human health
    - Conscious—sensory input
    - Subconscious—endocrine system

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  - effects of nature on human health
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    - Subconscious—endocrine
    - Unconscious—bio-rhythms

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■ Medicine
  – effects of nature on human health
    » Conscious—sensory input
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■ Landscape Architecture
  – effects of built environments on human health
Background

- **Medicine**
  - effects of nature on human health
    - Conscious—sensory input
    - Subconscious--endocrine
    - Unconscious--bio-rhythms

- **Landscape Architecture**
  - effects of built environments on human health
    - Learned behavior
Current Situation

■ Medicine
  – Art → Science
  – Evidence Based Practice
    » Cause & effect
    » Predictability factor
    » Best practices
    » Well-defined outcomes
Current Situation

**Medicine**
- Art → Science
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**Landscape Architecture**
- Art
- Intuitive design
- Historic absence of research
  - No predictability
  - Performance standards for materials & construction
  - Outcomes poorly defined
Problem

- How Do You Convert an Art to a Science?
Therapeutic Site Design

Therapeutic Site Design

- Study measured these parameters:
  - blood pressure
  - post-surgical days to discharge
  - nature & amounts of analgesics (pain killers)
  - number of complaints
Therapeutic Site Design

- Significant difference in patients who had a window looking out to a natural setting vs. patients who looked out to a roof top with no natural features
Therapeutic Garden Design: Martin Luther Alzheimer Garden

- Julie Galbraith, San Diego Recreation and Parks Department, San Diego, California

- Joanne M. Westphal, MSU, Landscape Architecture Program, E. Lansing, Michigan
Martin Luther Alzheimer Garden: Site, User Group, & Resources

- Holt, MI
- Third Stage Alzheimer’s Type Dementia Unit
  - Approximately 18 patients
- Standard Nursing Records
Figure 1. Original site design for the Senile Dementia Garden, Martin Luther Nursing Home, Holt, MI (USA) by Nancy Dawson and Amy Jackson (1999).
Martin Luther Alzheimer Garden: Study Parameters

- Garden: constructed in Fall, 1999
- First summer of use: 2000
- Data collection for two years (1999, 2000)
  - Two months in April & May (pre-garden use)
  - Two months in July & August (high garden use)
Martin Luther Alzheimer Garden: Variables of Interest

- Examined nursing records for eight variables
  - Behavior (aggressive and non-aggressive)
  - Medications (physician ordered and as needed)
  - Pulse rate
  - Blood pressure (diastolic and systolic)
  - Weight change
Martin Luther Alzheimer Garden: Experimental Design

- Compared these eight variables with the amount of time the resident spent in the garden
  - 0-5 minutes
  - >5 minutes but less than 10 minutes
  - >10 minutes

- April/May records versus July/August records
Martin Luther Alzheimer Garden: Findings-Low Use

- Residents who spent 0-5 minutes on average during the summer months
  - Deteriorating parameter on five criteria*
    » (blood pressure [systolic], aggressive behavior, non-aggressive behavior, pulse, weight)
  - Improved performance on two criteria
    » (blood pressure [diastolic], medication [as requested]),
  - Stayed the same on one parameter
    » (physician ordered medication)

*Pulse Pressure increased (BP sys-BP dia= Pulse Pressure)
Martin Luther Alzheimer Garden: Findings-Moderate Use

- Residents who spent >5-10 minutes on average during the summer months
  - Deteriorating parameter on four criteria*
    » (blood pressure [systolic], non-aggressive behavior, pulse, weight)
  - Improved performance on three criteria
    » (blood pressure [diastolic], aggressive behavior, medication [as requested])
  - Stayed the same on one parameter
    » (physician ordered medication)

*Pulse pressure increased (BP sys-Bp dia=Pulse Pressure)
Martin Luther Alzheimer Garden: Findings-Highest Use

- Residents who spent >10-15 minutes on average during the summer months
  - Deteriorating parameter: none
  - Improved performance on seven criteria*
    » (blood pressure [systolic], blood pressure [diastolic], non-aggressive behavior, aggressive behavior, medication [as requested], pulse, weight)
  - Stayed the same on one parameter
    » (physician ordered medication)

*Pulse Pressure decreased
Therapeutic Garden Design: Martin Luther Alzheimer Garden

- **Conclusions**
  - Significant improvements with as little as 10 minutes in a garden area
  - Garden activity does not appear to require programming
  - Substantial savings in medications, staff stress, etc. possible
Martin Luther Alzheimer Garden: Post-Occupancy Evaluation of Site

- Positive Attributes
  - 8 foot wide, brushed concrete
  - Strong edge delineation (color, texture)
  - Simple returning path system
  - Ample seating (shade & sun)

- Non-poisonous/toxic plants
- Planting/work area near entrance with water & storage (ADA accessible)
- Minimum annual plantings, maximum perennial species, small amount of grass
MSU Landscape Architecture Program
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- Negative Attributes
  - Off-white paving--too bright
  - Upward, bevel-edge along walk perimeter needed
  - Bounce light off of structure
  - Annuals present annual problems

- Shadows problems
- Planter materials harbor yellow-jackets, wasps
- Annual staff education program for garden use needed
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Health by Design

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Questions?