Assessor Concerns & Experiences with Healthcare Projects
Representative types of Healthcare concerns that have been assessed.

- VA Hospital, Newington, CT
- Blind Rehab Center, VA, Biloxi, MS
  - Mental Health Center
  - Community living Center
- Outpatient Clinic, Anchorage, AK
- Assisted Living Nursing Home, Seabury, CT
- Grandview Medical Center, Birmingham, AL
  - Grandview POB/Doctors building
What aspects of Healthcare Projects need special attention?

- Lighting
- Recycling
- Air Filtration (Indoor Environment)
  - Green Purchasing
  - Thermal Comfort
How Does the Building Affect Healthcare patients use of the Space

Patient Outcomes
- Circadian Rhythms
- Healthcare Associated Infections
- Consistent visual presentation
- Radiation vs. conduction in the OR
- Asthma from airborne particulates
- Carcinogens and toxic byproducts
Patient Safety

- Fire – waste heat and circuit loading
- Reliability – e-power/transformers
- Maintenance focus – FTE efficacy
- Visibility – security and falls

On May 15, 1939, the main building of the Cleveland Clinic caught fire. The fire began when an exposed light bulb was too close to some nitro-cellulose x-ray film, igniting the film. In the end, 123 people lost their lives. Eighty of the dead were either patients or visitors at the clinic, and the rest were employees. One of the Cleveland Clinic's founders, Dr. John Phillips, was among the dead. Most of the victims died from inhaling poisonous gases produced by the burning x-ray film.
Patient Experience

- Patient control of lighting
- Natural light & quality artificial light
- Quiet at night

“Although lighting should serve the demands of the medical staff, it should also permit patient/visitor comfort. Patients feel comfortable when they can control the lighting in the space and participate in defining their own level of personal privacy.”

ANSI/IESNA RP-29-06, Lighting for Hospitals and Health Care Facilities
RP-28 ORIGINS AND DEVELOPMENT

History of lighting recommendations by the IESNA

1947 – first Lighting Handbook


Recognition that aging impacts vision and light has other photobiological effects


Updated research included.
Recommendations refined to include new findings.
# NEW STANDARDS

**ASHRAE/IES 90.1 - 2013**

Higher LPD's provided for **Visually Impaired**:

**Table 9.6.1 (Pages 95 - 99)**

<table>
<thead>
<tr>
<th>Space Type</th>
<th>Typical</th>
<th>Visually Impaired</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dining/Activity Areas</strong></td>
<td>.65</td>
<td>2.65</td>
</tr>
<tr>
<td><strong>Corridors</strong></td>
<td>.66</td>
<td>.92</td>
</tr>
<tr>
<td><strong>Lobbies</strong></td>
<td>.90</td>
<td>1.80</td>
</tr>
<tr>
<td><strong>Restrooms</strong></td>
<td>.98</td>
<td>1.21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Typical</th>
<th>Visually Impaired</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Living Room/Recreation</strong></td>
<td>.73</td>
<td>2.41</td>
</tr>
<tr>
<td><strong>Chapel</strong></td>
<td>1.53</td>
<td>2.21</td>
</tr>
</tbody>
</table>
The objective of this document is to provide context, define challenges, and identify recommended lighting design practices for healthcare-specific environments. This document is not prescriptive but is intended to provide guidance and to inspire by identifying possibilities that enable designers to develop the appropriate solutions for complex situations and spaces.
Types of recycling to be addressed and verified in Healthcare facilities

- Cardboard, white paper, mixed paper, newspaper.
- Aluminum cans
- Pharma Plastic Bottles
- Miscellaneous metals
- Solvents
- Computers and peripherals
- Batteries
- Automobile tires
- X-Ray film for silver recovery
- Sharps
- Bio Hazard
- Contaminated Soiled waste
Air Filtration

- **MERV filter**
  Minimum Efficiency Reporting Value (MERV). The higher the MERV rating on a filter, the fewer dust particles and other contaminants that can pass through it.

- **Building Flushout**
  Baseline IAQ testing, after construction ends and prior to occupancy using testing protocols consistent with the EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air.

- **ICRA Standards**
  ICRA stands for *Infection Control Risk Assessment*. The term refers to a procedure that all healthcare facilities must engage during any construction project within occupied spaces. This procedure helps to establish appropriate infection control measures based upon the nature of the project.
Thermal Comfort

ASHRAE STANDARD

Thermal Environmental Conditions for Human Occupancy

Latest version is 2017
Thermal Comfort

Occupants in health care facilities can be categorized into three main groups: medical and support staff, patients, and visitors.

Table 1. Health Care Thermal Comfort Factors

<table>
<thead>
<tr>
<th>Thermal Comfort Factors</th>
<th>Staff</th>
<th>Patients</th>
<th>Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>air temperature, radiant</td>
<td>Medical/support service specific</td>
<td>Medical service specific</td>
<td>Common seasonal thermal adaptation</td>
</tr>
<tr>
<td>temperature, air speed, humidity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>metabolic rate, clothing</td>
<td>Medical/support service specific</td>
<td>Medical service specific</td>
<td>Common seasonal thermal adaptation</td>
</tr>
<tr>
<td>insulation</td>
<td>Limited adaptation/required clothing</td>
<td>Gowning/bedding adaptation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Activity: steady–transient</td>
<td>Standing, sitting, lying, sleeping, immobilized</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>psychological, work related, health-condition related, etc.</td>
<td>Mental stress, fatigue, workload, performance, arousal, health condition, well-being</td>
<td>Anxiety, length of stay, health/wellness condition, age, medication impact, healing, overall comfort</td>
<td>Anxiety, short stay</td>
</tr>
</tbody>
</table>

Helpful Resource:

Using Thermal Comfort Models in Health Care Settings: A Review

Rodrigo Mora, PhD, PE
Associate Member ASHRAE

Michael Metoyer, PE
Member ASHRAE