

Light is healing  
Improving patient outcome  
in healthcare facilities



# Preventative care for improved patient outcome and efficient operations

Aging populations and skyrocketing medical costs are driving dramatic changes in healthcare delivery models, creating competition among facilities. Hospitals must not only keep abreast of the latest diagnostic technologies, but must have the most efficient operations, too. Well-designed lighting systems support both efficiency goals and evidence-based design principles, so that caregivers have the greatest chance of delivering the best wellness outcomes.

## **Patient experience**

Providing excellent healthcare to the community is very challenging. Not only are there often several hospitals to choose from, but patients also have the option to visit outpatient facilities, clinics, or even caregivers at their local drug store or retail outlet. A positive experience is one of the main reasons why one facility is selected over another, and keeping stress and anxiety levels low has been shown to improve healing rates. With patient experience surveys, such as HCAHPS\* and Press Ganey, being used to benchmark performance and impacting financial reimbursement, personal interactions, facility appearance, convenience and comfort are critical factors to be evaluated for profitable operations.

## **Staff retention**

The competition in healthcare is not limited to patients. Having the most knowledgeable and compassionate physicians, nurses, and support staff contributes to creating

the ideal environment for the best patient outcomes. A facility that enables the staff to perform their tasks effectively, yet also offers an opportunity to relax periodically throughout their demanding day will be a more preferable workplace.



\* Hospital Consumer Assessment of Healthcare Providers and Systems

### Operational cost reduction

Hospitals spend more on energy per square foot than any other commercial building type. While energy may only be 1-2% of the overall operating expenses, every dollar in energy that is saved is equivalent to an additional fifty dollars in revenue earned. In addition, any maintenance event, planned or unexpected, is disruptive to the healthcare mission and may result in the cancellation of procedures. On top of the basic labor expense, considerable containment or sterilization measures may have to be taken as part of the process, depending on the location within the facility.

### Infection control

Healthcare facilities are challenged not only with caring for patients, but also with making sure that ailments don't spread to the healthy population. Hospital-acquired infections (HAIs) are responsible for many extended patient stays and re-admissions after discharge. Being able to control the cleanliness of patient and treatment environments, as well as to limit unnecessary contact with exposed surfaces, improves the likelihood of maintaining a sterile environment where necessary.

### Reliability

Maintaining facility operations in good working order improves the chances that procedures will go as planned. This minimizes the chances of errors that may occur due to inadequate equipment function or distractions during crisis management, or safety and security issues that may arise during disruptions.

### Sustainability

In the field of health and wellness, sustainability goals encompass many different dimensions. Green building rating systems, such as LEED for Healthcare, embrace topics such as the efficient use of water and energy, use of renewable or recycled materials, and indoor air quality. A heightened emphasis is placed on elements that have been shown to impact wellness and healing rates, such as daylight views, connection to nature, air quality, and exposure to hazardous materials. Energy-efficient and well-designed lighting systems are excellent targets for performance improvement measures in sustainability programs. A smart lighting control strategy can greatly improve energy performance scores, such as those measured by the ENERGY STAR® Portfolio Manager tool.



# Lighting considerations

Designing lighting for healthcare facilities is an exercise in choosing illumination appropriate to the tasks performed in each area. The Illuminating Engineering Society (IES) recommends illumination requirements tailored to address the needs of patients, caregivers, visitors and staff in all areas of the hospital environment. Regardless of the space being illuminated, employ a layered approach and incorporate lighting controls where necessary to provide flexible and comfortable lighting.

## Patient rooms

Lighting in a patient room is very complex and must address a wide variety of needs. Illumination levels must be controllable from high levels required for examinations to lower levels for watching television, reading or sleeping. Luminaires should be zoned and switched to allow for caregivers to check vitals or for families to be present without disturbing a sleeping patient. Luminaires at low mounting heights assist in wayfinding at night and help to avoid falls. Warmer color temperature lamps should be used to create a more comfortable environment. The right lighting can make patients feel at ease and help with the healing process.

## Procedure and treatment areas

Advancements in medical technology have led to the influx of a variety of electronic equipment and other diagnostic tools in surgical and treatment environments. Lighting in these areas must be selected so that there is no interference with the operation of this equipment. Excellent color rendering sources ensure quick and accurate observation of tissues. Glare-free sources improve viewing comfort and diminish fatigue of caregivers throughout extended procedures. Long life, reliable lighting systems limit facility downtime and reduce the need for containment and resterilization in conjunction with maintenance events. Luminaires should be selected to withstand frequent cleaning and disinfection requirements.

## Laboratory and pharmacy

Many tasks in laboratory and pharmacy areas have intense visual requirements due to small print characters and markings. Diffuse ambient lighting supplemented by adjustable task lighting is ideal to avoid glare on labels or glassware. Ample vertical illumination on shelves enables accurate reading of labels to avoid prescription and dosage errors. High color rendering light sources are required to distinguish between medication colors and dyes used in testing procedures.

## Nursing stations and corridors

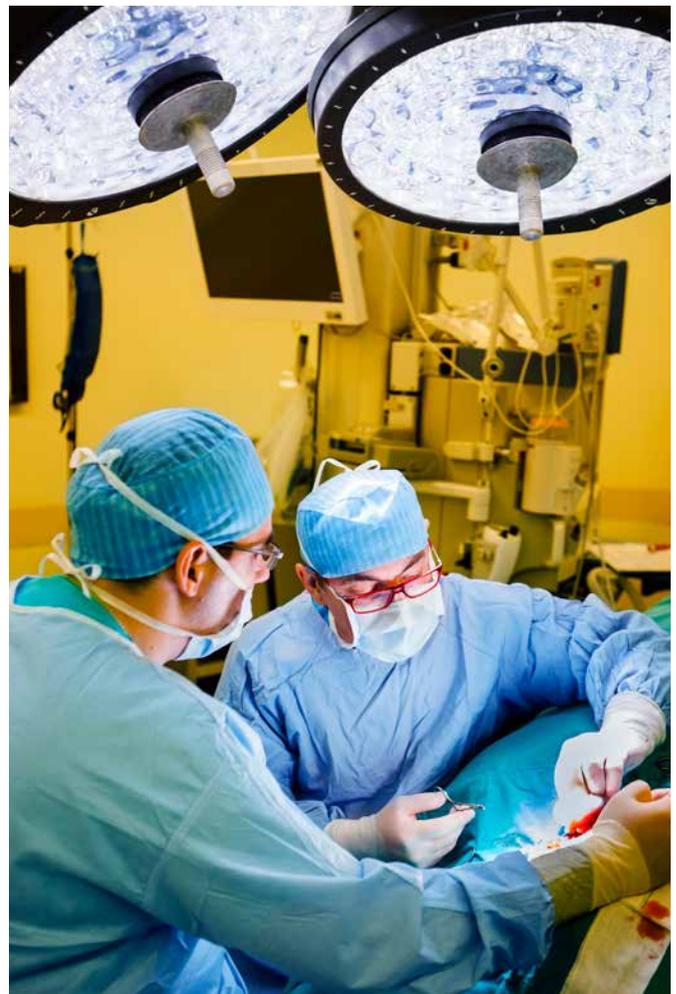
The focal point of patient wards, lighting around nursing stations may be used to draw attention to the area as a source of information for visitors. Illumination must support a variety of tasks, such as note-taking, medication dispensing, and private conversations with caregivers and family. Electric lighting should be reduced in nursing stations and adjacent corridors to take advantage of available daylight, and should be lowered during evening hours to encourage lower speaking volumes.

## Exterior areas

As facilities with 24/7 operations, hospitals must consider safety, security and maintenance issues in perimeter and parking areas around the clock. The reliability of long life, glare-free lighting options creates a more inviting environment. Landscaped grounds and healing gardens serve as places of respite for patients, staff and families throughout their day and into evening hours. Light trespass and sky glow should be considered to minimize environmental impact and maintain good community relations.

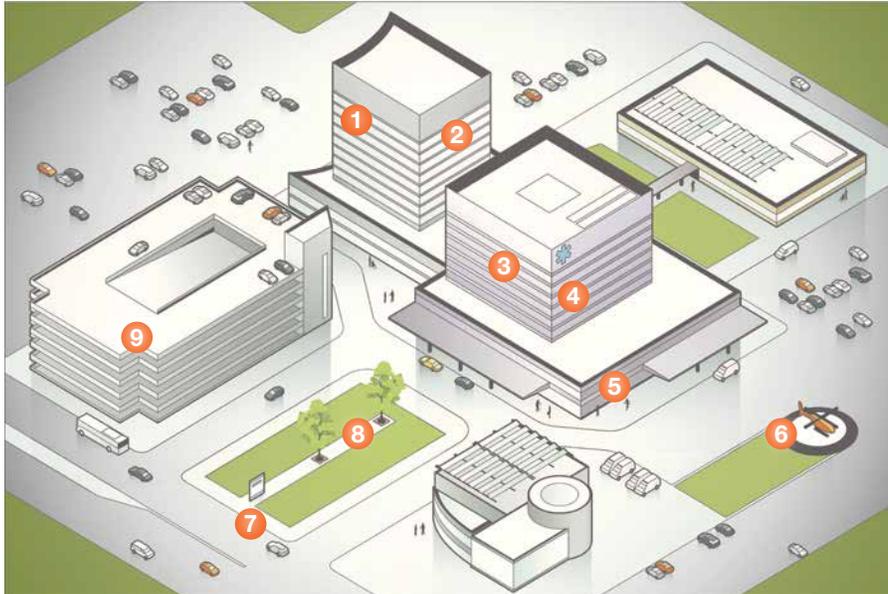
## Signage and wayfinding

Healthcare facilities often create a maze of buildings in an expansive campus. Clearly visible signage and other visual cues help to reduce the stress often associated with a visit to the hospital, helping with wayfinding for patients, staff and visitors.



# SYLVANIA products and solutions

Your prescription for better lighting



- 1 Patient rooms
- 2 Nursing stations
- 3 Surgical areas
- 4 Examination and treatment
- 5 Laboratory and pharmacy
- 6 Helipad
- 7 Signage and wayfinding
- 8 Healing gardens
- 9 Parking facility

## SYLVANIA product portfolio



### LED Lamps

- ULTRA PRO™ & ULTRA PRO™ HD LED PAR
- ULTRA LED™ PAR, R/BR, MR16
- ULTRA LED A-line, B10, G25
- ULTRA LED High Lumen
- SubstiTUBE® IPS LED T8



### LED Retrofit Systems & Kits

- ULTRA LED RT & ULTRA LED SE™ RT Downlight Kits
- SubstiTRONIC™ LED T8 Systems
- LEDVANCE 2X2 & 2X4 Retrofit
- SYLVANIA Smart LED Lamps and Luminaires



### LED Luminaires

- LEDVANCE Edge Lit Panel
- LEDVANCE Surface
- LEDVANCE Vapor Tight
- LEDVANCE High Bay
- LEDVANCE Wall Packs
- LEDVANCE Canopy



### Fluorescent Lamps & Ballasts

- OCTRON® & OCTRON XL T8
- PENTRON® T5, T5 HO, T5 HO XL
- DULUX® & DULUX XL CF
- SYLVANIA Mini Twist CFL
- OSRAM QUICKTRONIC® Ballasts



### HID Lamps & Ballasts

- METALARC® MH
- METALARC® Pulse Start
- METALARC® POWERBALL® MH
- LUMALUX® & LUMALUX XL HPS
- OSRAM QUICKTRONIC® MH



### Incandescent/Halogen Lamps

- CAPSYLITE® PAR
- TRU-AIM® MR16
- SYLVANIA R/BR, A-line
- SYLVANIA B10/B12, G25

# Developing the right treatment for your facility

## Light quality

The delivery of excellent patient care depends on quick and accurate observation of patients at all times. The ability to detect subtle changes in skin tone may have a critical impact on urgent diagnoses. All modern SYLVANIA lighting technologies are capable of delivering excellent quality light with color rendering index (CRI) values of 80 or better. For applications where distinguishing between subtle variations in color is critical for improved task performance, select higher CRI sources that are most stable over the life of the lighting system.

## High reliability

Installing long life lighting systems means less downtime in a hospital, which means increased revenue particularly with procedures utilizing very expensive diagnostic equipment. With OCTRON® XP® XL T8 fluorescent systems up to 84,000 hours average rated lamp life and LEDVANCE LED lens troffer retrofits up to 82,000 hours life, the burden on facility maintenance groups and infection control procedures can be minimized. LED light sources and luminaires have long life ratings, typically delivering 70% of initial lumen output ( $L_{70}$ ) at up to 150,000 hours. Systems designed with high efficiency OSRAM QUICKTRONIC® electronic ballasts or high efficiency LED power supplies ensure most reliable and efficient performance.

## Illumination efficiency

The efficiency of a lighting system depends on both the ability of the source to generate light and the luminaire delivering the light to the task. Today's source technologies have efficiencies in the 85-110 lumens per watt (LPW) range. Selecting the appropriate luminaire for the application should pair the photometric distribution with the layout of the space. Care must be taken to address visual comfort and avoid glare, particularly in patient areas, where occupants are often flat on their backs and looking directly at luminaires in the ceiling.

## Sustainability

Minimizing environmental impact and lowering greenhouse gas emissions is a priority. Through development of SYLVANIA long life, energy-efficient lighting products that minimize or eliminate the use of hazardous materials, such as mercury and lead, our portfolio strives to reduce waste going into landfills and into air via power generation emissions. Selecting luminaires that minimize light trespass and sky glow further lessens the impact on the environment and supports your wellness mission.

## Environmental conditions

Some areas of healthcare facilities have unique environmental requirements that impact the selection of light sources or luminaires. Compatibility with non-ferrous environments, pressurized interiors, or washdown areas will affect fixture construction requirements. Certain technologies are more temperature sensitive than others, although proper luminaire design can mitigate those characteristics. The output of fluorescent systems tends to decrease at very low or very high temperatures. LED sources thrive in cold environments, making them ideal for laboratory storage areas, but exhibit diminished performance in hot ambient conditions.

## Controllability

A good lighting design should incorporate a discussion about controls strategy. While some lighting technologies, like fluorescent and LED, respond immediately with no warm-up time or hot restrike concerns, HID systems have limitations in these areas. The large amount of fenestration typically found in hospitals presents an excellent opportunity for daylight harvesting. Selection of OSRAM QUICKTRONIC® ballasts and sensors and switches should complement the controls strategy to optimize system life.

## Why install controls?

A smart control strategy can tailor the lighting of a healthcare facility to the needs of each space, and offer a tremendous opportunity to save energy and money. Evidence-based design research indicates that patients who have control over their environment have reduced stress and anxiety levels, which leads to improved outcome. Light levels may also be adjusted to impact noise level, encourage rest, and restore a normal wake-sleep cycle. Energy management systems can be easily programmed to reinforce a lighting scheme that coincides with the natural cycle of the day, as well as facility operations. Many systems have easy-to-use software offering consumption monitoring and reporting to notify you of outages or malfunctions, saving on maintenance costs and down time.

## Life cycle cost and TCO

A modern lighting system will (1) extend the useful life of your facility, (2) reduce energy consumption and waste, (3) improve the appearance of your space, and (4) add to your bottom line profitability and patient experience.

**Facility-wide analysis**

A thoughtful approach to developing a smart lighting concept marries energy-saving products and the latest in lighting controls with the operation schedule, task requirements and an analysis of space utilization. As experts in lighting systems and applications, we can help your company customize a solution with the latest technologies to maintain or improve light quality, reduce energy consumption, and ultimately save you money.



To capitalize on this opportunity, schedule a lighting design audit with your SYLVANIA representative.





Product licensee of  
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