



Best Practices for Healthcare Lighting

Cardiac Cath & EP Labs



CHAD

National Sales Manager



RICHARD

Regional Manager - West



SCOTT

Regional Manager - Central



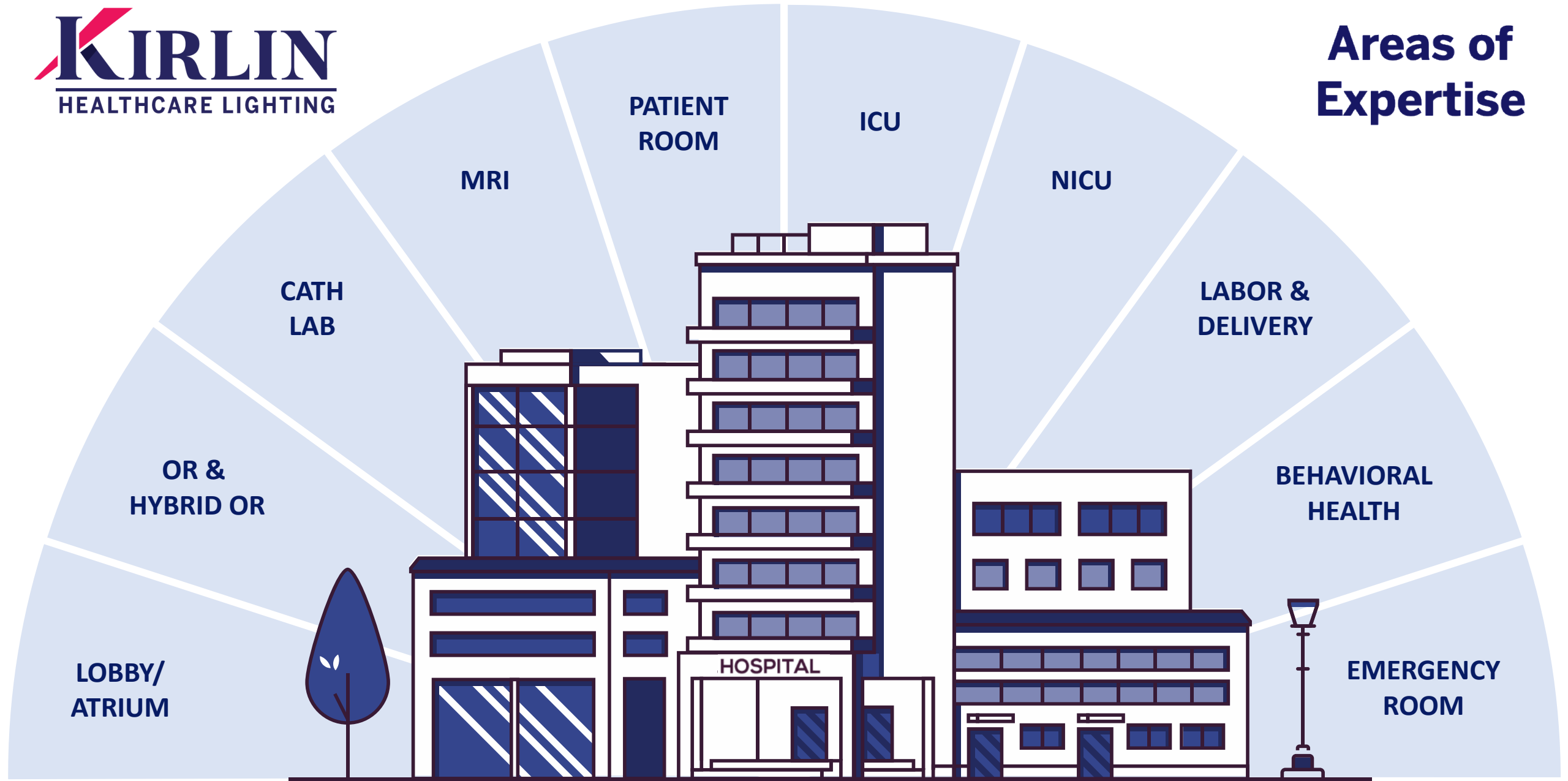
CHRIS

VP Sales & Marketing

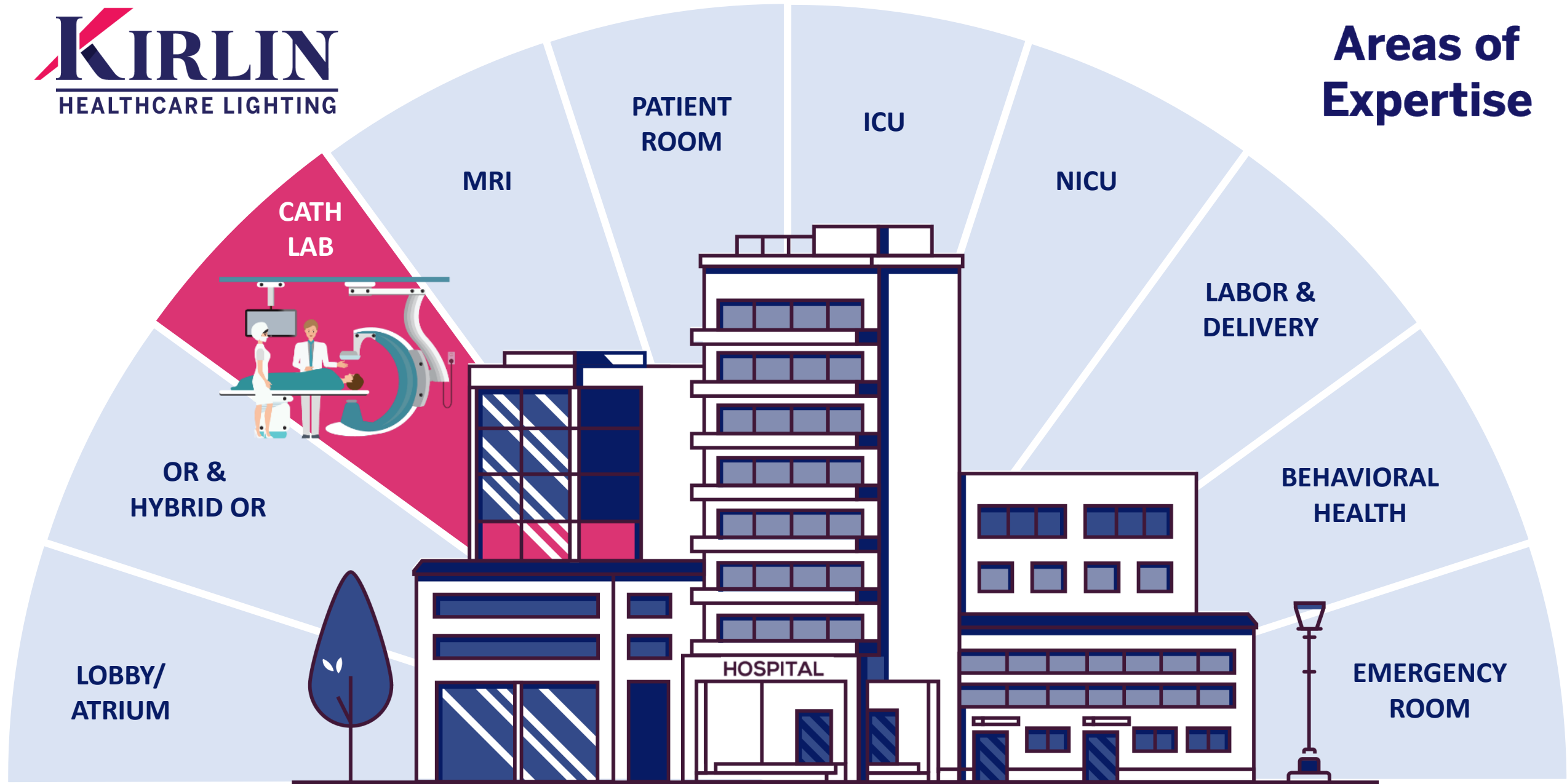
Key Focus Areas



Areas of Expertise



Areas of Expertise



LOBBY/
ATRIUM

OR &
HYBRID OR

CATH
LAB

MRI

PATIENT
ROOM

ICU

NICU

LABOR &
DELIVERY

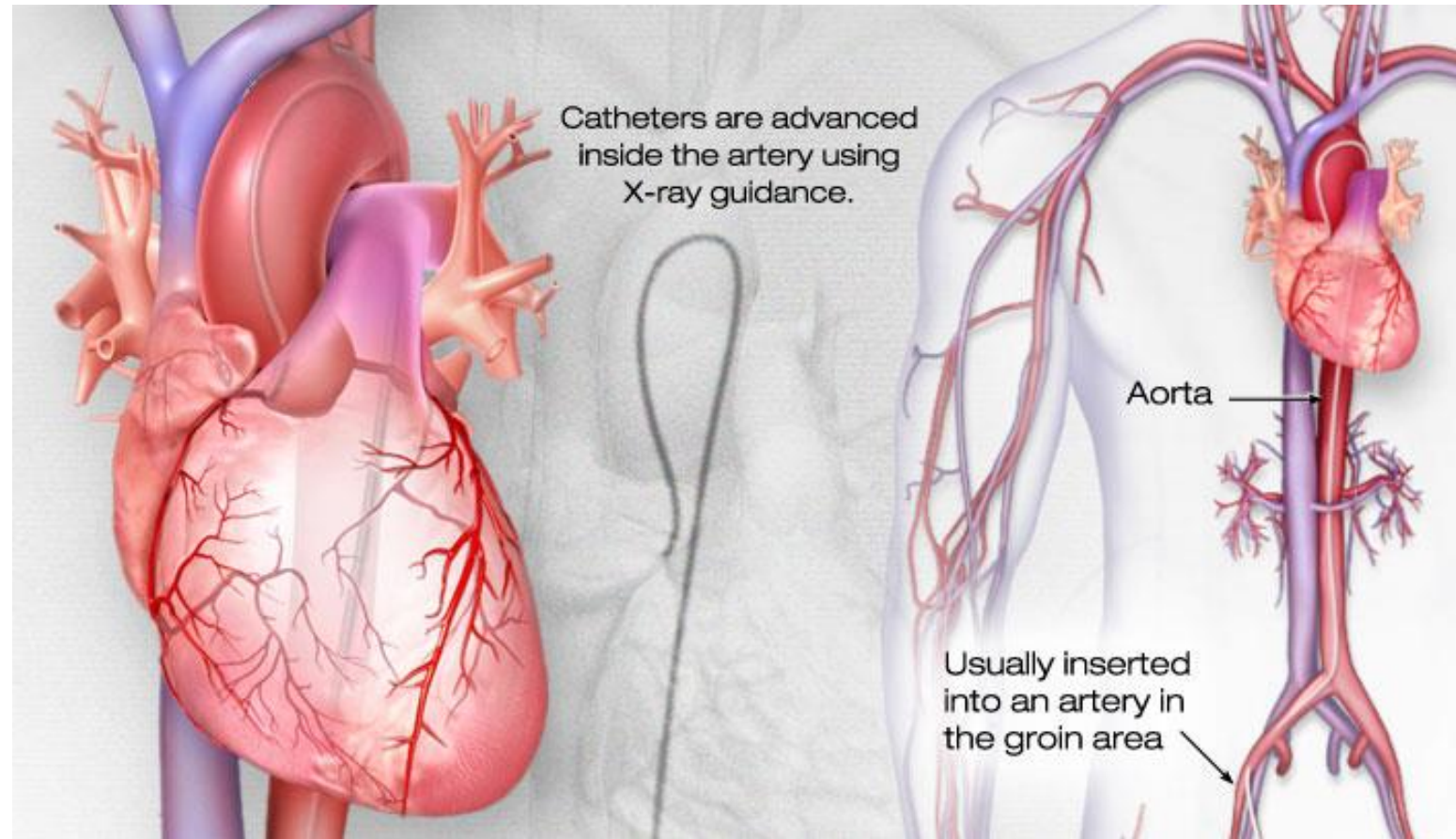
BEHAVIORAL
HEALTH

EMERGENCY
ROOM

HOSPITAL

What is a Cardiac Cath Lab?

- A specialized laboratory where doctors **diagnose** and **treat** heart conditions using **catheters** rather than surgical techniques
- The catheter is inserted into the patient's **groin, arm, or neck**.
- Often, a coronary angiogram is performed, using contrast dye injected via the catheter, which enables the doctors to take special X-Ray images

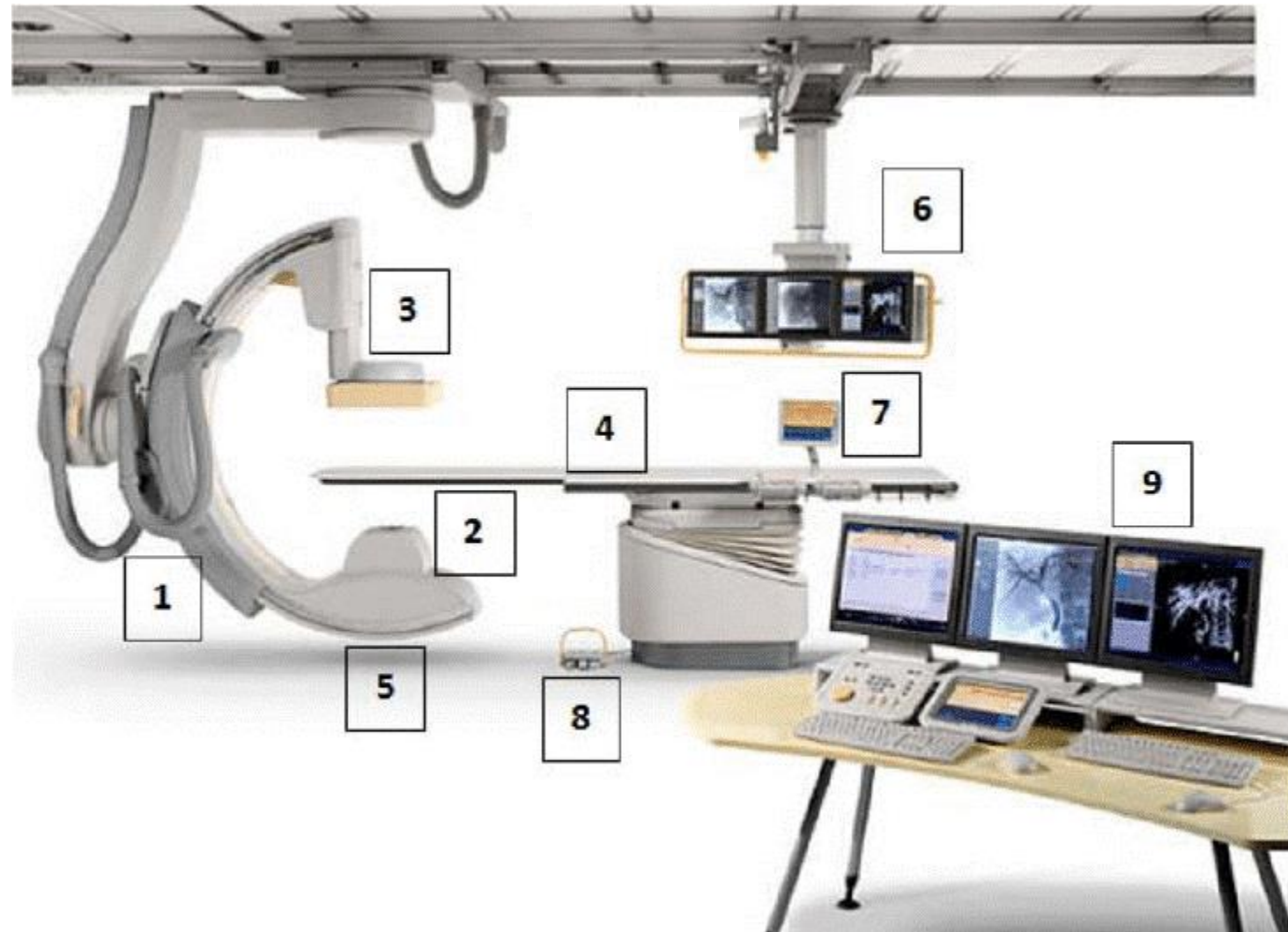


Sheath & Catheter Insertion via the Groin



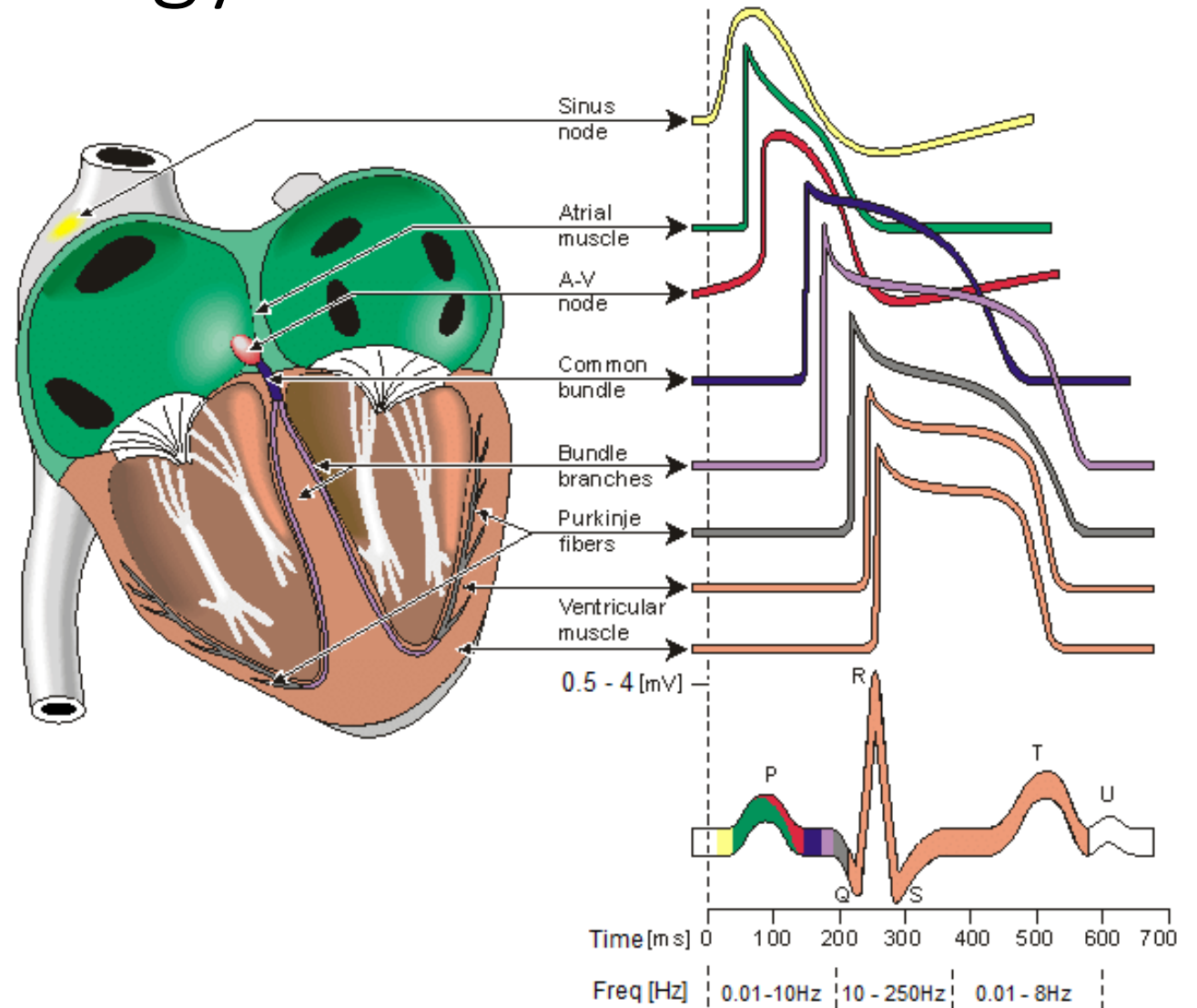
Equipment in the Cardiac Cath Lab

1. C-Arm
2. X-Ray Source Tube
3. Detector/Camera
4. Moving Catheterization Table
5. X-Ray Generator
6. Monitors
7. Control Handle
8. Control Pedal
9. Control Station / Room

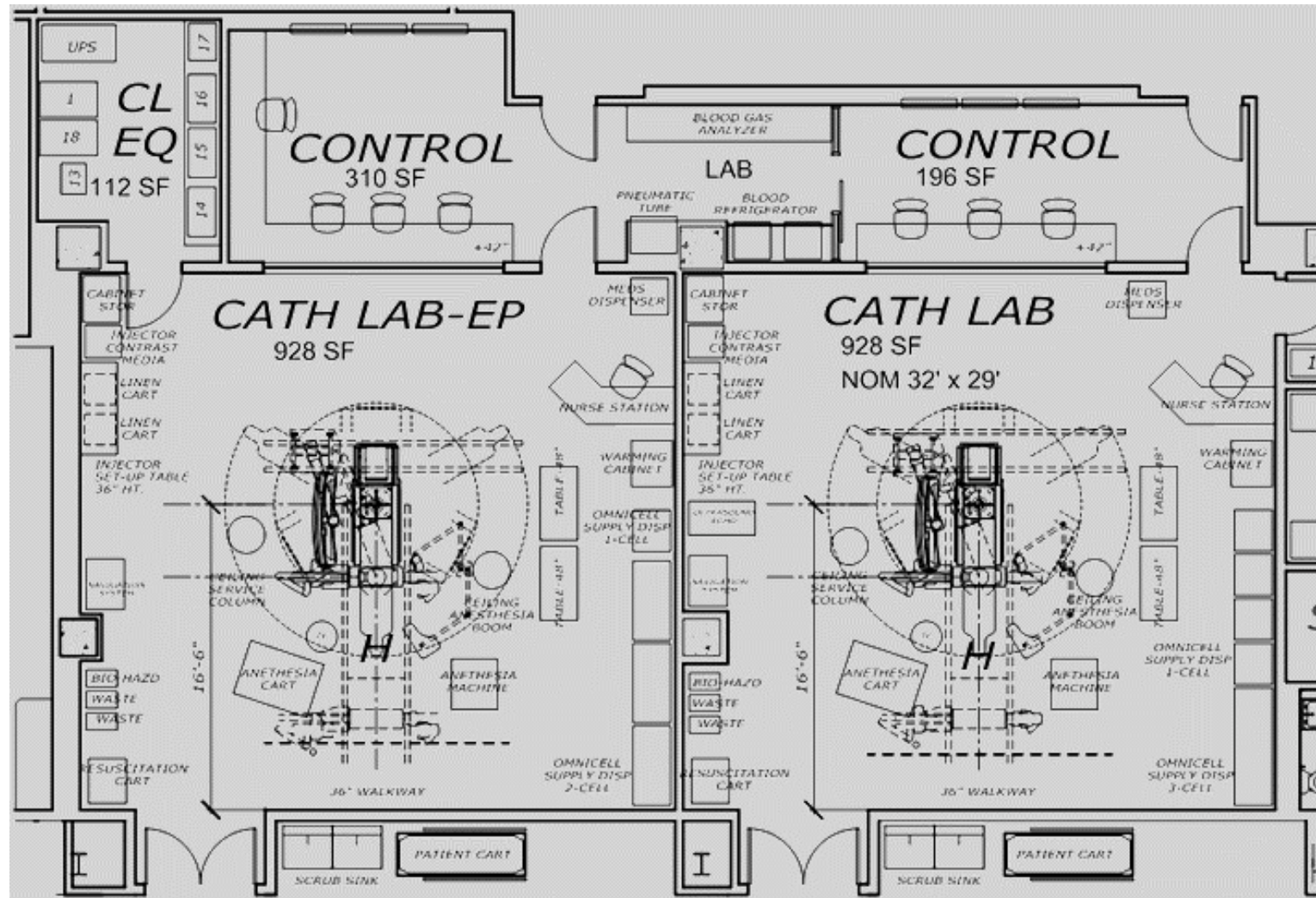


What is an Electrophysiology Lab?

- A specialized laboratory with electrical monitoring equipment and X-Ray machinery used to **monitor** and **map** the heart's electrical system
- Three primary procedures in the EP Lab are:
 - Cardiac Mapping
 - Cardiac Ablation
 - Insertion of Pacemaker or ICD (Implantable Cardioverter Defibrillator)



Additional Equipment in the EP Lab



- The primary imaging system in the Cath and EP Labs will be similar or identical
- Often the rooms have the same footprint or floor plan, but the EP Lab requires:
 - 3D mapping system
 - Cardiac stimulator
 - RF generator
 - More carts & monitors
 - Greater cable management

Single-Plane vs. Bi-Plane

- Bi-Plane equipment uses detectors on two axes, for faster 3D imaging, which is helpful in neurovascular and cardiac procedures
- Heavier bi-plane systems require a floor mount and a unistrut ceiling, with greater structural support
- There is no clinical consensus that the bi-plane set-up results in improved outcomes, and we often encounter both

Single-Plane Equipment



Bi-Plane Equipment



Three Core Principles for Healthcare Lighting

1



Enhanced Visual
Acuity

2



Improved Patient
Comfort

3



A Safer
Environment

Cath & EP Lab Lighting Needs

1



Enhanced Visual Acuity

- Provide precise surgical illumination of insertion site(s)
- Delivery high levels of ambient light for clinicians and staff when needed
- Enable variable light levels and static color options for enhanced monitor viewing

2



Improved Patient Comfort

- Minimize imposing equipment over the patient (Cath Lab patients are **awake** for most procedures)
- Reduce glare for the patient with thoughtful lighting layout

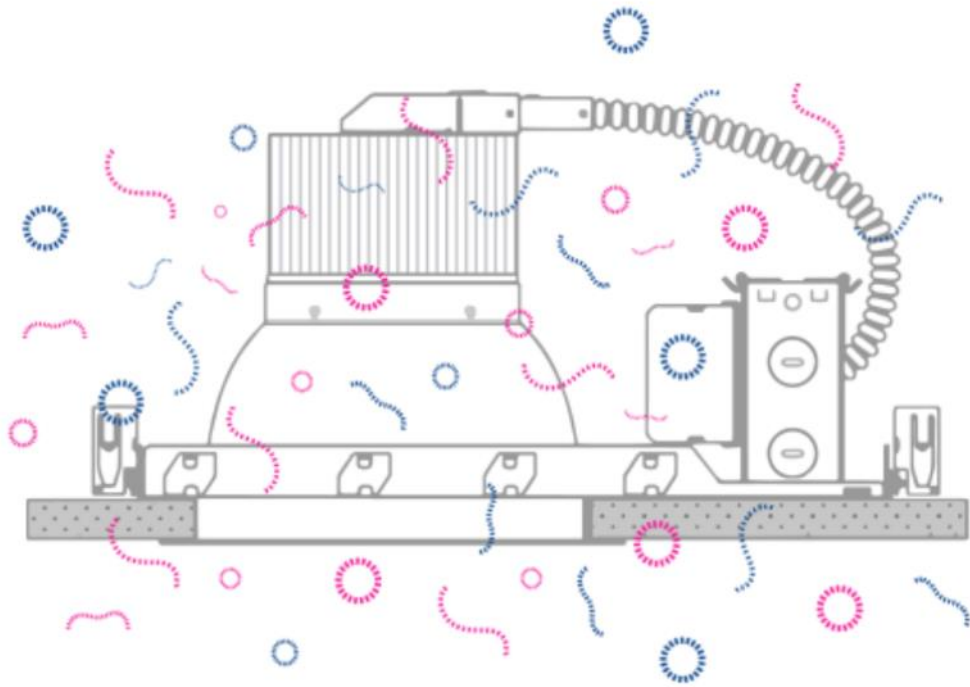
3



A Safer Environment

- Reduce infection risk with sealed IP65 or IP66 fixtures
- Eliminate physical hazards associated with boom mounted exam lights

Infection in the Hospital

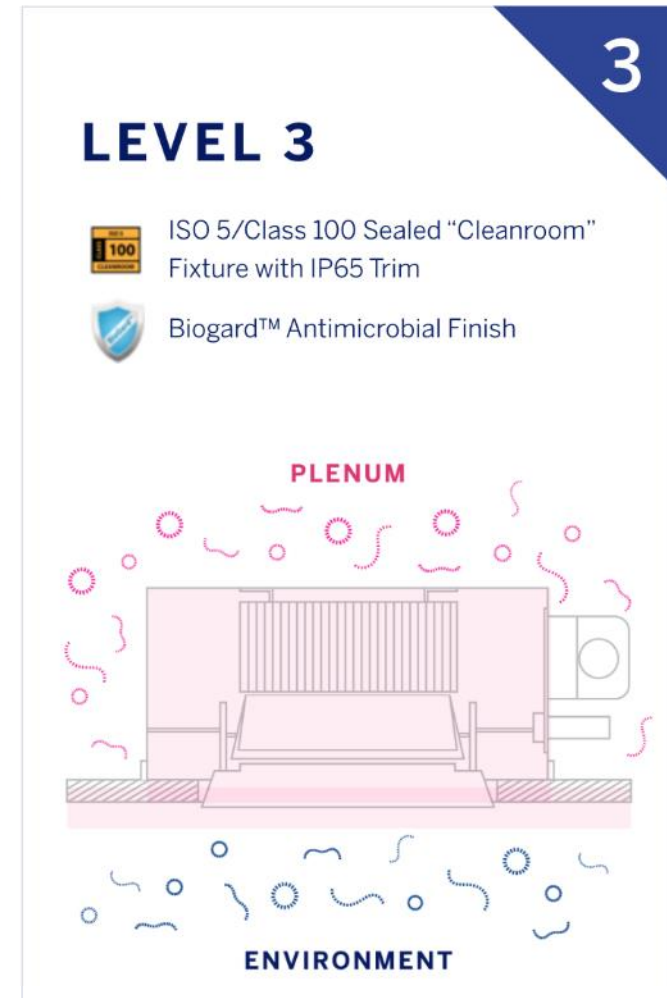
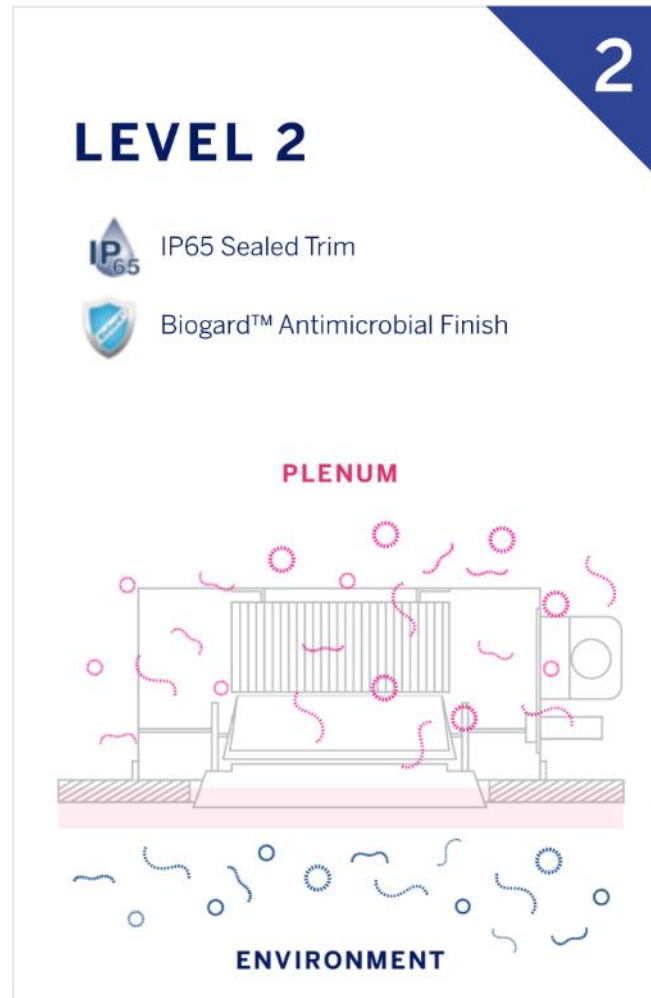
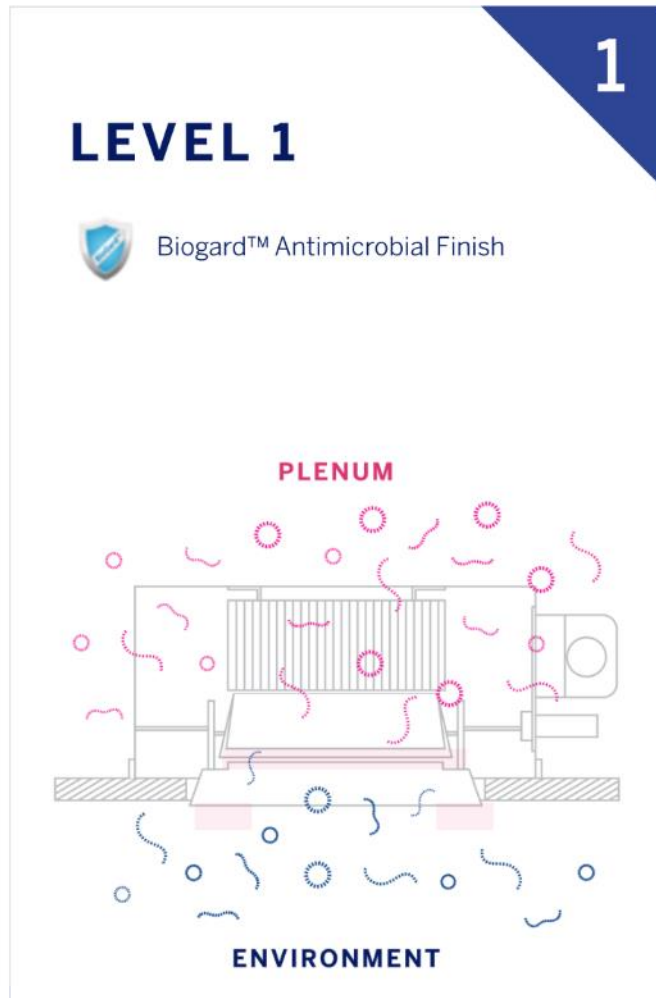


NON-KIRLIN DESIGN

THE PROBLEM

Without lensing, gasketing, or a sealed housing, pathogens and bacteria from the environment mix freely with pathogens and bacteria from the plenum, increasing the risk of widespread infection throughout the hospital.

Three Levels of Infection Control



Kirlin Sealed & Antimicrobial Lighting Solutions

Motorized Exam

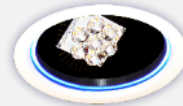
INFRALED PRO 45



INFRALED PRO 35



INFRALED PRO 25



Ambient

6" Downlight




7" Downlight, Exam Light



8" Downlight, Exam Light, Adj.



A photograph of a modern medical procedure room, likely a catheterization or electrophysiology (EP) lab. The room features a large, white, motorized exam table in the center. Above the table, there are several large, white, motorized lighting fixtures suspended from the ceiling. The room is equipped with various medical devices, including monitors and control panels. The lighting is bright and even, highlighting the clean, professional environment.

Motorized Exam Lighting in the Cath & EP Lab

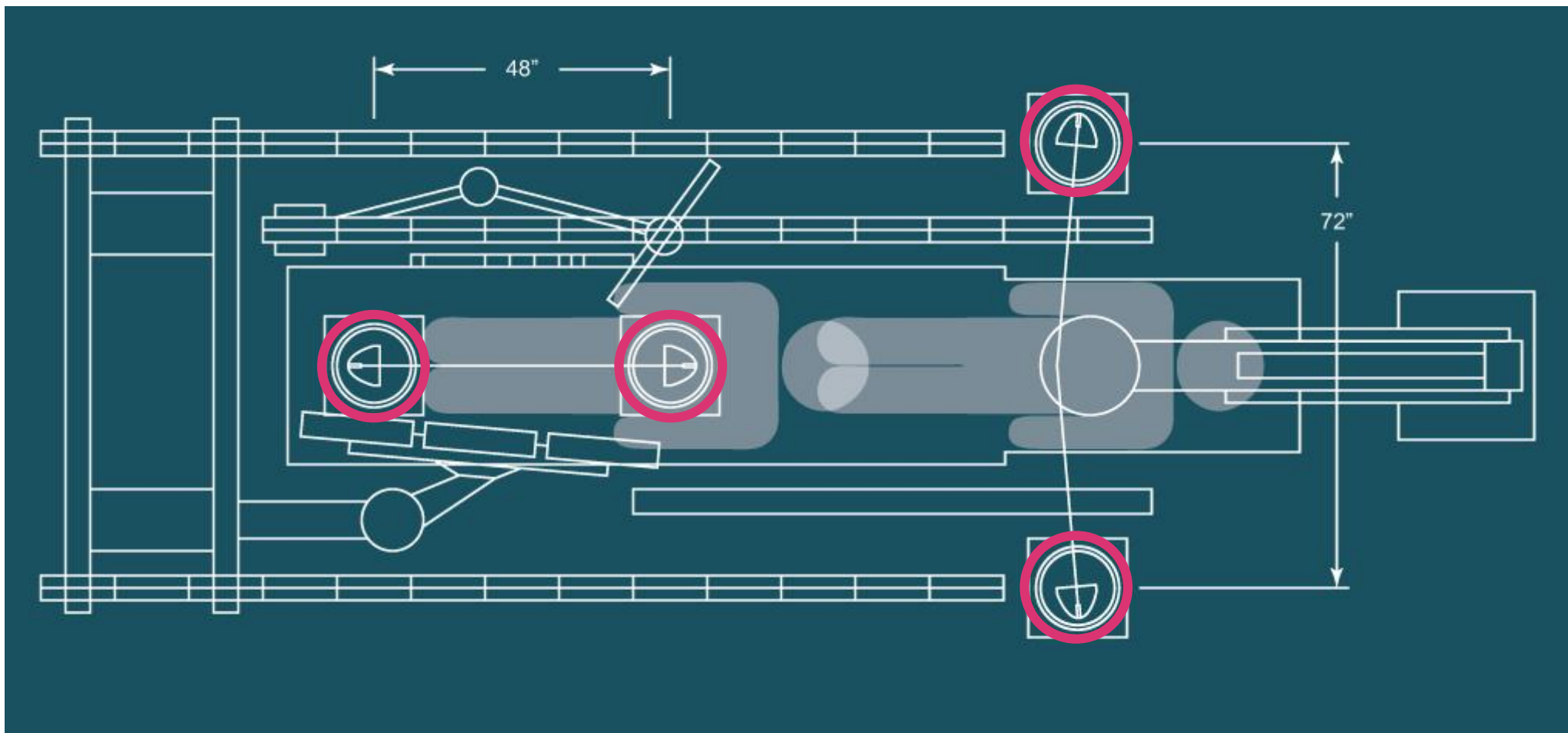
INFRALED® PRO: A Four Light System



- ❖ Up to **four lights** with one-touch intensity and direction control from remote and wall panel

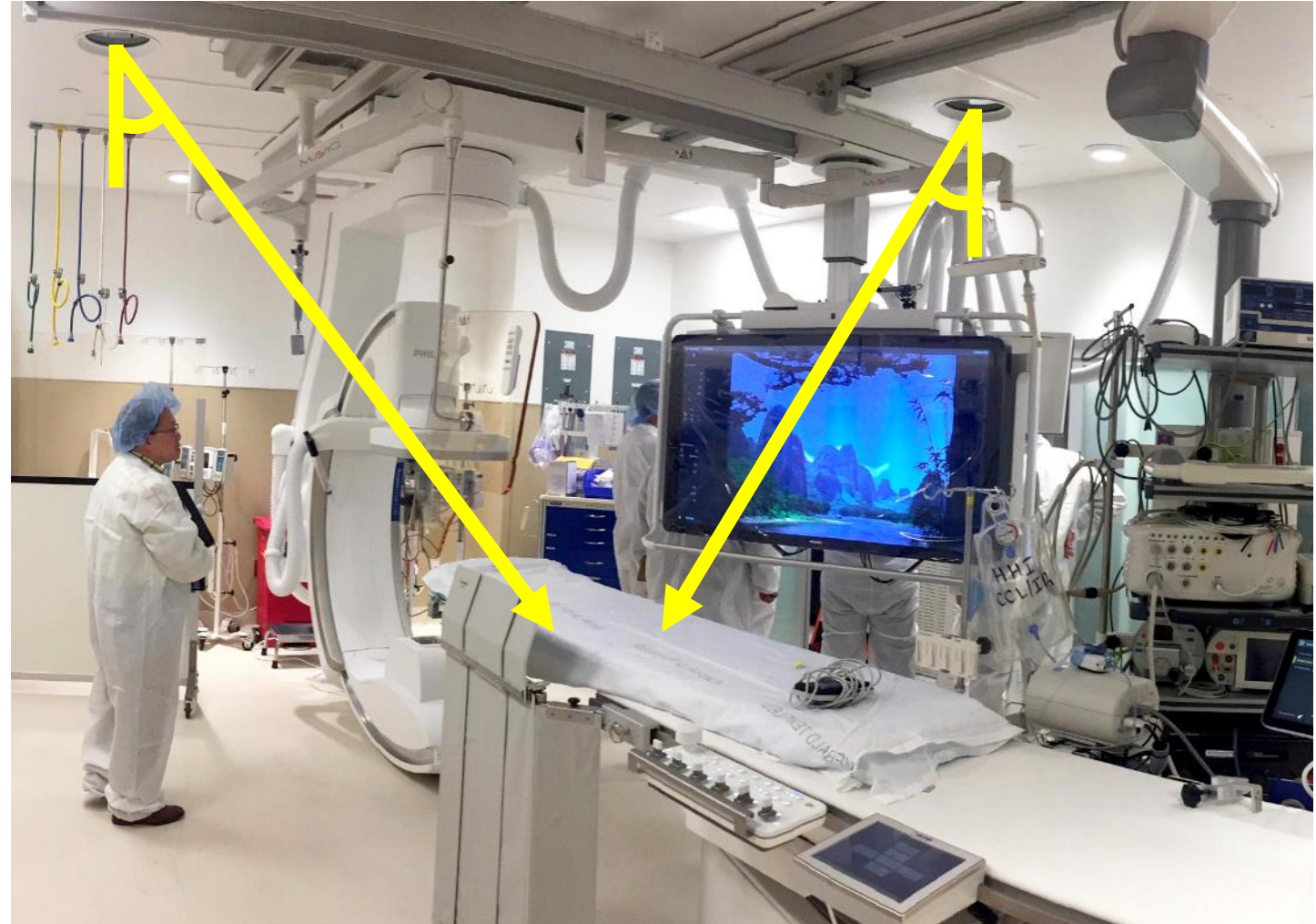


Typical Fixture Locations for Cath Labs



Fixture Placement & Beam Angle

- Restricted plenum space and competing equipment can push the recessed exam lights to the perimeter
- In some cases, particularly where the lights are mounted over the patient table, a 35 degree angle is sufficient
- Often, the 45 degrees offered by PRO 45 is the difference-maker



PRO 45: A Simple Solution for Cath Lab Lighting

Kirlin Lighting's INFRALED® PRO 45 provides ideal lighting for the Cardiac Cath & EP Lab

Enhanced Visual Acuity

- 360° rotation and up to 45° tilt for illumination of patient table
- Fully dimmable & adjustable, with 95+ CRI

A Safer Environment

- Fully recessed with IP66 trim and sealed housing
- Sterile and easy to clean

Improved Patient Comfort

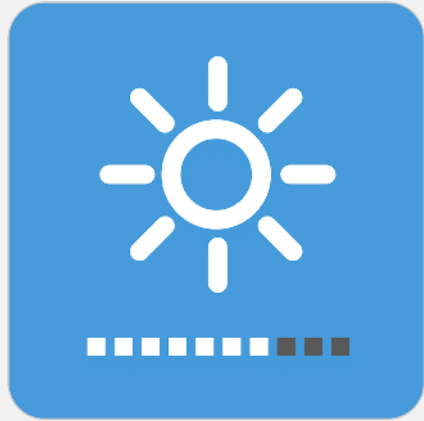
- Replaces imposing boom lights



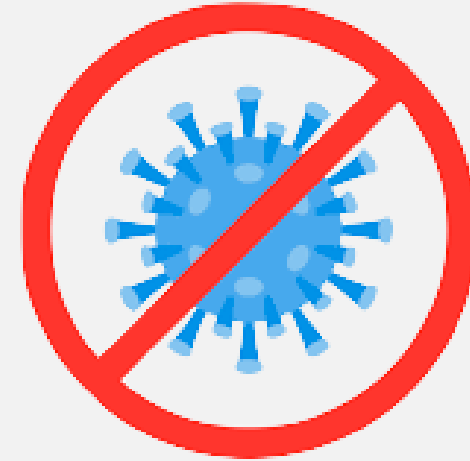


Ambient/Perimeter Lighting in the Cath & EP Lab

Ambient Lighting: Two Primary Goals



Sufficient Light
Levels for Cath & EP
Tasks (w/ Dimming!)



Sealed & Cleanroom
Rated Fixtures for
Infection Control



Sufficient Ambient Light Level

- General procedural area: 150 fc
- Scrub area: 75 fc
- Instrument Prep: 50fc



- ✓ Consistent, high light levels
- ✓ No shadow zones
- ✓ Dimmable for enhanced monitor viewing



Insufficient Ambient Light Level



- x Inconsistent light levels – bright spots and dark spots
- x Minimal illumination of patient table, other than boom lights

Cleanroom Lighting in the Cath Lab



8" Sealed Downlight

2500L to 6500L



BioGard Antimicrobial Finish



IP65 Ingress Protection



ISO 5 / Class 100 Cleanroom

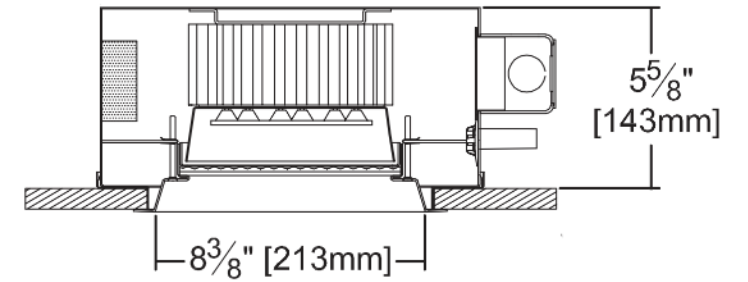


Color-Specific Wavelengths

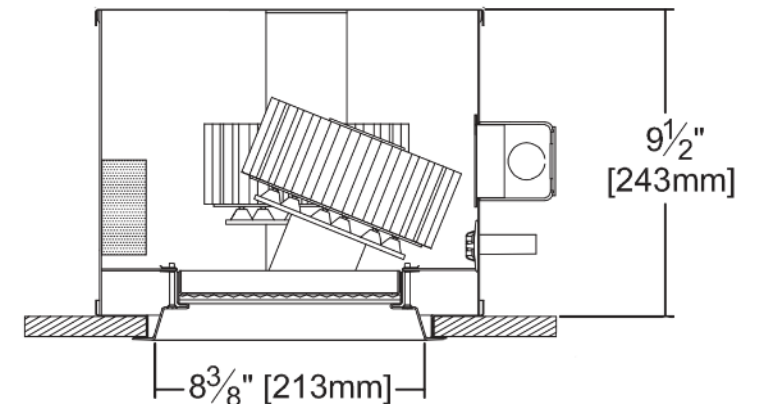
Fixed & Adjustable IP65 @ Tucson Medical Center



8" Perimeter Downlight



8" Adjustable Exam



Recessed Luminaires for Ambient Cath/EP Lighting

6"



1000L - 2500L

Downlight



7"



1000L - 2500L

Downlight



8"



2500L - 6500L

Downlight · Adjustable



A wide-angle photograph of a modern Catheterization and Electrophysiology (EP) laboratory. The room features a large, curved medical imaging system (C-arm) in the center, with a control console in the foreground. A large flat-screen monitor is mounted on the right wall. The room has wood-paneled walls and a clean, white floor. A semi-transparent dark blue banner is overlaid across the middle of the image, containing the title text.

Cath & EP Lab Project Examples

Sealed Ambient Lighting @ Cleveland Clinic



MRR-08555



Level 3 Cleanroom Downlight

3500L



Managing Scarce Ceiling Real Estate



Sealed Ambient Lighting @ Cleveland Clinic



MRR-08555



Level 3 Cleanroom Downlight

3500L



4-Light Motorized System @ Placentia Linda Hospital



INFRALED (35° Tilt)

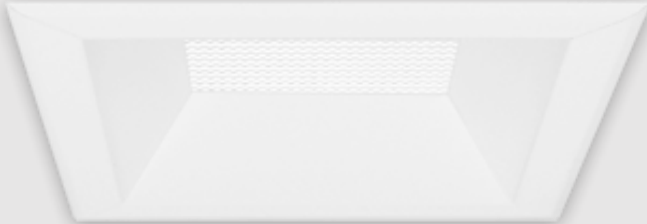


**(4) Motorized Exam Lights
with Added 15° Pan**

It's Hip to be Square @ St. Clare's Denville



LRS-04045



4" Square Lensed Downlight
2000L



Join Us Every Month, or On Demand!



ICU



September 18, 2020

Behavioral



October 16, 2020

OR/Hybrid



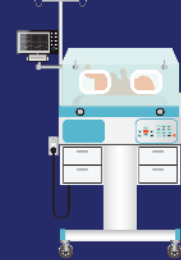
November 20, 2020

Labor & Delivery



December 18, 2020

NICU



January 15, 2021

Emergency



February 19, 2021

Cath Lab



March 19, 2021

MRI



April 16, 2021

Patient Room



May 21, 2021

Questions?