ED Planning & Design / Thinking Through Safety in EDs of all Sizes
Learning Objectives

• Understanding models of care for different patient types
• Understand how these models of care affect staff interaction
• Evaluate potentially dangerous situations for staff and patients
• Evaluate decontamination protocols
Presenters

Tatiana Escobar, AIA
Healthcare Leader
Perkins and Will

James Woody, AIA
Senior Project Architect
Perkins and Will

Marvina Williams, RNBSN
Healthcare Specialist
Perkins and Will
Operational objectives / Planning the ED project
Goals and Considerations for EDs
Operational Objectives / Trends and Strategies

Deter Inappropriate Utilization
   Alternate Venues
   Mini-Clinics / Urgent Care / Primary Care

Streamline patient front-end processing
   Rapid Assessment Team
   Combine Fast Track and Triage Area

Remove Compartmentalization
   Staff and space grows and shrinks to respond to workload and acuity shifts

Remove longer-stay cases to secondary areas
   CDU
   RAU
   Observed Waiting

Resolve Downstream Issues
   Patient Logistics / Inpatient Bed Availability
Operational Objectives / Staff Engagement

Lean Operational Planning

Observational Study

Process Mapping

Visioning / Guiding Principals

TELL ME…
I’ll Forget

SHOW ME…
I’ll Remember

INVOLVE ME…
I’ll Understand
Hospital staff collaborate with facilitators to map out the current workflow for processing patients in the ED.

Each step is mapped and opportunities for improvement are designated with yellow starbursts.
Hospital staff collaborate with facilitators to map out the current workflow for processing patients in the ED.

Each step is mapped and opportunities for improvement are designated with yellow starbursts.

A future state process map is developed to depict the desired method for operating in the future area.
Key Issues in the Emergency Department

- Decontamination & Isolation
- ED Design Trends
- Patient Rooms
- ED Entry Portals
- Behavioral Health
- Team Stations
- ED Planning and Design Case Studies
ED Design Trends
Design Objectives / Planning

- Space Flexibility / Operational Efficiency
- Focus on patient and staff safety
- Increased Visualization / Decreased travel distance for staff
- Quicker patient throughput / Acuity Separation
- Fast track
- Pediatric & Geriatric Considerations
- Modules, Pods, Racetrack – size appropriate configurations
- Private rooms versus bays

Modules allow visibility to adjacent modules to improve communication and the ability to expand and contract with changing demands.
ED Floor Plan
Lancaster General Health Expansion

- Modular concept
- Medical Imaging incorporated in the ED
- Separate Pediatric and Behavioral Health Modules
- Satellite Pharmacy
ED Floor Plan - Level G
UHS San Antonio

- Modular concept
- Medical Imaging incorporated in the ED
- Separate Pediatric and Behavioral Health Modules
- Satellite Lab
- Sally Port
- Separate Walk-in
Design / Pods / On-stage/off-stage Design
ED Entry Portals
ED Entry

Metal Detectors

Tempered water connections for Mass Decontam
Team Stations
ED Corridor / Team Station
Patient Rooms
Design / Patient Rooms
Behavioral Health
Design / Behavioral Health Flex Room

Flex ED Exam with roll-down screen
Design / Behavioral Health
Decontamination and Isolation
Decontamination Units

- At front entrance for walk-ins and near ambulance area
- Mass casualty space and storage for staff to change and prepare for disasters
- No national designation for Disaster Centers
- Facilities can designate themselves as Alternate Care Sites and are usually designated informally through the community
- Mass casualty space and storage for staff to change and prepare for disasters
Decontamination Units

Ambulance Bay:

• Drop-down showers / curtains from canopy of ambulance deck

• Tempered water connections for Mass Decontam

• Electricity in columns and ceiling for connection to ambulance generators

• Separation of waste streams (Storm vs. Decontam Tank)
Decontamination Shower

- Minimum of two shower heads
- Two doors: Dirty (Hot) and Cold (Clean)
- Minimum 30 ft from any other entry to prevent contamination
- View window into shower from isolation room for staff safety
- Potential for multiple ambulatory patients / multiple shower heads
- Horizontal patients on stretchers
Isolation Rooms / Standard

- Distinctive Room Features
  - Incorporated into the ED Triage area
  - Connected to Decontamination in smaller facilities
  - Anterooms – potential for two rooms to prevent cross-traffic

- Negative Air Pressure
  - 20 air changes / hour
  - HEPA filter, laminar flow

- Staff use masks, face shields and impermeable protective equipment
A Culture of Safety

In an ED near you!
A Culture of Safety

How many people can you fit in one space?
ED Planning and Design Case Studies
Case Study
University of Virginia: University Hospital Expansion
PROJECT FACTS

EMERGENCY DEPARTMENT (LEVEL 01):
- 80 Exam / Treatment rooms
- (12 dedicated pediatric)
- 75,000-80,000 visits per year
- (69,250 projected by 2023)

INTERVENTIONAL PLATFORM (LEVEL 02):
- 4 new ORs
- 6 new Cath/EP Rooms
- 7 new Interventional Radiology Rooms
- 3 new Minor Procedure Rooms

INPATIENT TOWER (LEVEL 03-08):
- 28 beds per floor
- Universal patient rooms may be ICU or Acute Care rooms
- 3 floors built out; 3 floors shell

FAÇADE:
- Stone: 10,000 SF
- Metal Panel: 4,500 SF
- Curtain Walls: 85,000 SF:
  - Thermally-broken
  - High-performance glass
  - Exterior shading devices
  - Manages solar heat gain and glare while preserving views

SUSTAINABLE DESIGN:
- LEED 2009 for Healthcare, Silver
- Mechanical + Electrical efficiency:
  - Energy recovery
  - Solar hot water
  - Chilled beams
  - LED Lighting
- Cyclist accommodations:
  - Covered bicycle storage (76)
  - Bicycle repair station
  - On-site showers
- Water Conservation:
  - 50,000 gallon cistern collects air handler condensate and storm water filtered by green roof
  - Grey water reuse system offsets majority of potable water consumed by the building
- Material health:
  - Local, low-VOC and recycled materials
- Green Roof: 25,000 SF

CONSTRUCTION:
- 440,000 SF: New Construction
- 90,000 SF: Renovation
- Total concrete: 17,632 cubic yards
- Total steel: 4,000 tons
- Total auger cast piles: 774 (avg. length 39')
- Total miles of electrical work: 327
Site plan
UVA University Hospital Expansion
ED Floor Plan
UVA University Hospital I
ED Floor Plan
UVA University Hospital Expansion

UVA UHE Plinth

Explore 3D Space

POWERED BY
matterport
Questions?