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Breakout Session 7: Design and Construction

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Brief Report

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Abstract

Establishing leadership and management structures for alternate care facilities (ACFs) presented governance challenges distinct from those of conventional hospital operations and were frequently shaped as much by political and inter-organizational dynamics as by clinical need. Symposium participants summarized operational lessons from leading ACFs across multiple jurisdictions and partnership models. Effective ACFs typically mirrored hospital executive structures while operating under hybrid governance models that distributed authority, liability, and resources across multiple hospital systems and state agencies. Hospital Incident Command System frameworks provided necessary scaffolding but were insufficient on their own; success depended on pre-existing inter-agency relationships and on credible leaders with the gravitas to mobilize resources across organizational boundaries. Persistent challenges included credentialing and electronic medical record access delays, political directives that superseded clinical judgment, and severe interpersonal conflict. Recommended best practices include pre-identifying ACF leaders, embedding human resources and behavioral health support, and clearly defining the ACF mission throughout activation.

Introduction

The Design and Construction breakout session focused on participants' real-world experience with design and construction of their alternate care facilities (ACFs), including what was done to augment or alter the selected site to meet patient care needs. Participants were encouraged to discuss considerations like architect engagement, medical gas management, and infection prevention measures. Since a separate breakout session focuses specifically on-site selection, this section will not include these details. The focus was on what drove participants' experiences and actions, rather than proposing new solutions or solving theoretical problems.

Facilitators used the following questions to prompt and guide participants:

- Describe your approaches to ACF design
  - Include specific examples
- Describe some of the successes with your ACF design and construction process
  - How did you sustain these?
- Describe some of the challenges with your ACF design and construction process
  - How were these addressed?
- Do you have any best practice recommendations for ACF design and construction?

To encourage further detailed discussions, additional questions were available for facilitators:

- What did you need to add to your permanent or temporary structure to meet patient care needs?
- What did you need to remove?
- Who was involved in the design process?
- Were medical gases incorporated? If so, how?
- What challenges did you encounter after your ACF was operational that you did not anticipate as they related to the design and construction?
- How much of the design needed to be modified once construction started?
- Were there cultural considerations incorporated during the design and construction process?
- If tents or trailers were used, how many? Where were they set up? Who set them up?
- Did you work with disaster behavioral health experts and/or patient experience and/or cultural community leaders to ensure access and functional needs of patients were built into and considered in the design of the space?
  - What challenges did you experience in that process?
  - What best practices would you recommend from that experience?
  - How did you plan for the access and functional needs of patients and their visitors?

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Theme 1: What Was Done

- **Core Construction Requirements and Unforeseen Failures**: ACF design had to compensate for inadequate building infrastructure to accommodate comprehensive medical care, with seemingly small details becoming major logistical and safety barriers.
- **Fire and Containment Failures**: Hotel fire incidents confirmed that the sprinkler system often caused extensive damage and floor collapse due to overwhelming water volume, underscoring the risk of standard suppression in non-hospital settings.
- **Safety and Regulatory Partnership**: Collaborative walkthroughs with the Fire Marshal were mandatory, not only for compliance but also for pre-training on evacuation protocols and planning for the specific consequences of fire suppression and safety barriers. Legal and regulatory agencies having jurisdiction are integral to evaluating waivers and variances that ensure safety with adaptation.
- **Improving Patient Experience in Austere Environments**: Design elements, while temporary, aimed to enhance patient recovery, moving beyond basic medical functionality.
- **Dignity and Accessibility**: Retrofits and construction focused on basic patient dignity, including widening doorways for accessibility, and planning for segregated, functional toilets and showers (i.e., utilizing mobile shower trailers with ramp access).
- **Comfort and Morale**: Temporary measures were taken to combat the "stark white, depressing" environment of large ACFs, including providing books, art, and eye masks to patients.
- **Modular and Staged Construction**: The fastest solutions often involved staged or modular construction (i.e., quickly erecting tents or converting trailers), which provided necessary speed, but introduced challenges related to long-term plumbing and weather resistance.

Theme 2: Success and Sustainment

- **Temporary Infection Control**: Highly flexible, temporary containment solutions (i.e., plastic sheeting and painter's tape on floors) proved essential for establishing unidirectional flow and segregating clean/dirty zones in open areas like convention centers.
- **Leveraging Expertise and End-User Input**: Successful designs integrated the knowledge of clinicians, facilities managers, and engineering/construction partners with specialized knowledge of health care facilities from the earliest stages of planning.
- **Multidisciplinary Design Review**: Design success hinged on early involvement of end-users (i.e., nursing staff) to physically mockup spaces and confirm workflow. This process led to essential modifications (i.e., reconfiguring nurse stations for maximal patient visibility).
- **Facility Management Knowledge**: Facilities managers and hotel engineers were critical partners who identified hidden infrastructure capacity (i.e., available utility conduits) and prevented expensive and time-consuming construction alterations.

Theme 3: Challenges and Mitigation Efforts

- **Environmental Control Deficits**: Facilities struggled to manage basic comfort and safety, including achieving adequate temperature control, especially in large open spaces, and establishing a visual day/night cycle to prevent patient delirium.
- **Power Infrastructure Mismatches**: Sites were plagued by electrical load capacity issues (i.e., "tripping circuits all the time" from oxygen concentrator use), requiring redundant generators and monitoring systems to sustain basic medical functions.

Theme 4: Potential Future Directions

- **Pre-Activation Walkthroughs**: ACF planning should incorporate pre-activation walkthroughs of potential sites to identify physical and logistical constraints completed by a preidentified team of personnel to include engineers, clinical operations leads, legal/regulatory counsel, emergency management, etc., based on experiences during ACF rollout.
- **Maintain Multidisciplinary Design Reviews**: Early in the process, integrating clinical staff with facilities management and engineering/construction specialized in health care facility design to leverage combined expertise improves the likelihood of successful rollout and achieving design goals for the ACF.

Summary

Converting non-medical facilities into functional ACFs presented significant engineering and logistical challenges that were frequently underestimated during initial planning. Symposium participants emphasized that seemingly minor design details, electrical capacity, environmental controls, and basic sanitation, often became major operational barriers. Success required early involvement of multidisciplinary teams including clinicians, facilities managers, engineers, and safety officials. While conversions were temporary, effective designs prioritized patient dignity, staff workflow, and basic comfort alongside functional medical requirements.

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