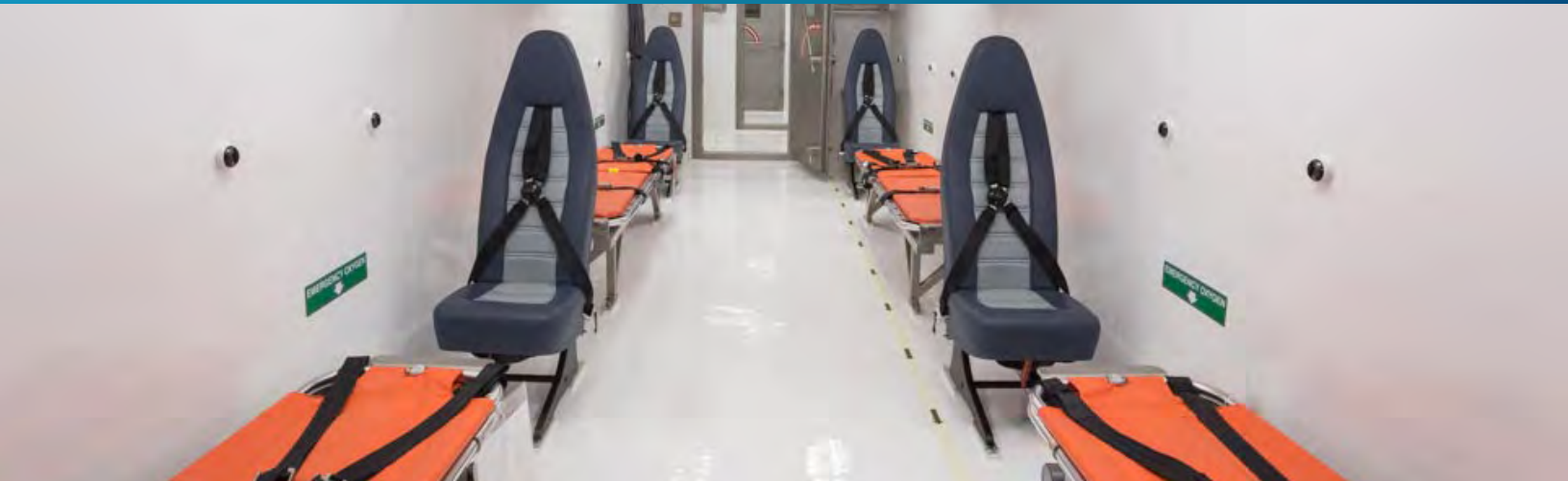




THE PAUL G. ALLEN
EBOLA PROGRAM



INTRODUCING THE NEXT GENERATION OF BIOCONTAINMENT:



CBCS

Containerized
Bio-
Containment
System

Medical staff caring for patients with highly contagious pathogens no longer need to worry about how they would be evacuated if they were to become ill while working in the field.

CBCS is a flyable medical transport with full biocontainment:

The Containerized Bio-Containment System (CBCS) supports and facilitates a critical care treatment environment, allowing for the transport and treatment of four critically ill patients infected with a highly contagious pathogen while maintaining full biocontainment. The units also accommodate four caregivers with additional space for two in an off-shift rest area—all in the safety of full biocontainment.



Size: 8 ft. tall, 8 ft. wide, 44 ft. long

Weight: 22,000 lb.

Contract initiated December 15, 2014

Start to finish: 191 calendar days

Designed in Kansas City, Missouri
by MRIGlobal

Fabricated in Ogden, Utah
by HHI Corporation

Delivered to Dobbins ARB June 22

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Flight-Ready Medevac System

CBCS units improve on existing U.S. medevac capabilities, allowing for the safe transport of multiple people, infected with a highly-contagious disease, to clinical centers of excellence for life-saving treatment.

The CBCS is ready for the next big challenge. It is designed and built to address new world realities such as increased population density, new environmental factors, and new disease outbreaks.

General Features

- Air Ready
 - Compatible with government/civilian aircraft (C-17; 747-400; AN124; IL-76)
- Speedy loading and unloading onto aircraft
 - Intermodal shipping container lift points
- Safely transports medical team (four) and patients (four)
 - Seamless, sealed interior maintains biocontainment
 - Multiple tie down points to aircraft
 - Designed to survive crash loads and rapid decompression per DoD Safe-to-Fly standards
 - Emergency oxygen for medical staff
 - Room pressure monitoring with configurable audio/visual alarms
 - Two-hour battery back-up; LED lighting with emergency back-up
- Complete air handling and decontamination capability (12 air exchanges per hour)
 - Three-room pressure cascade with filtered supply
 - Air flows from clean air in staff rest area through warm zone (prep area) to hot zone (patient area)
- Communication systems
 - Visual monitoring throughout unit



Unique Design

- CBCS medevac units are the first of their kind
- Novel approach and design
- Engineered for extreme durability and safety—will survive extreme pressure changes and crash loads
- Equipped to contain any and all highly infectious diseases

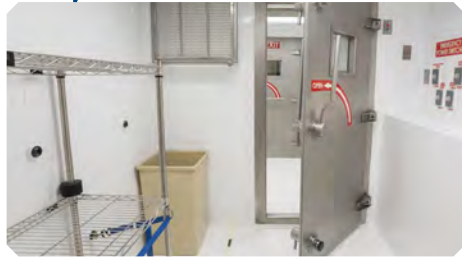


Medical Treatment Capabilities

- Oxygen capacity for four patients for up to a 16-hour period each
- Vitals monitoring
- Fluids delivery
- Respiratory therapy
- Medication delivery



CBCS Exterior



Patient Treatment Area

Contains litters and basic medical equipment for patients and supports strict biosafety best practices.

- Patients are loaded directly into this area
- Surfaces and components designed with decontamination in mind
- Negative air pressure to outside environment
- Environmental air safety controls with HEPA filtration
- CCTV and intercom
- Waste management
- Decontamination during treatment and during transition between sections
- Toilets with removable privacy curtains
- Lowest air pressure region of the CBCS
- Video monitoring fed to Medical Staff Room and outside of the CBCS
- Epoxy coating compatible with multiple decontamination approaches (VHP, ClO₂)
- Removable seating, litters, and all equipment racks allow for rapid installation and removal of medical monitoring/treatment equipment
- Gasket sealed doors (airlock)

Anteroom

Provides medical staff working in pairs the ability to don and doff personal protective equipment (PPE). Includes facilities for decontamination and clean-up as well as storage for medicines and therapeutics, medical devices, and supplies.

- Transition area for staff to enter/exit patient treatment area
- Intermediate level pressure region of the CBCS
- Epoxy coating compatible with multiple decontamination approaches (VHP, ClO₂)
- Supplies for donning/doffing of PPE, medical supplies available, and staff decontamination equipment to allow transition
- Gasket sealed doors (airlock)
- Power switches to switch from aircraft power to battery
- Emergency lights in each room
- Glow-in-the-dark signage

Medical Staff Room

Clean area for medical staffers upon exiting the hot and warm chambers, while still maintaining biosecurity for the remainder of the aircraft. Medical staffers have access to communications equipment as well as food, water, and other essentials.

- Seating for two staff
- Toilet
- Highest level pressure region of the CBCS (still negative to aircraft)
- Staff are able to operate without PPE in this area, and rest off-shift



INTRODUCING THE NEXT GENERATION OF BIOCONTAINMENT:



Exterior Features

- Custom-designed structure
 - Meets ISO container standards (lift points)
 - Withstands crash loads and rapid decompression
- Inner steel wall, insulation, aluminum outer panels
- Power compartment
 - Powered by aircraft 115/200 VAC, 3Ø, 400 Hz
 - Five TrueBlue 44 amp-hour advanced lithium-ion batteries
 - Provides minimum of two hours' operation
- Exhaust fans set at 12 air exchanges per hour
 - Can be isolated using bubble tight dampers
- Medical oxygen rack
 - Holds up to six bottles to provide 40 liters per minute (10 lpm per patient) for 16 hours
- Audible and visual alarm to notify flight crew if differential pressure containment is lost
- Video screen and intercom for communication between flight crew and medical staff
- Custom-designed doors
 - Meet biocontainment standards and withstand crash loads and rapid decompression
 - Swing inward to maintain seal during rapid decompression event

CBCS supports and facilitates a critical care treatment environment, allowing for the movement and treatment of four critically ill patients infected with a highly contagious pathogen while maintaining biocontainment.