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Disaster Alternate Care Facilities: The Old, The New & The Difficult

**Emergency Preparedness –
Standards of Care During
Prolonged Health Emergencies**

**Connecticut Hospital Association
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Surge Capacity

- Ability to manage a sudden, unexpected increase in patient volume that would otherwise severely challenge or exceed the current capacity of the health care system
 - Facility based
 - Community based
 - Extrinsic





Part of the Problem: Loss of Surge Capacity

- ED overcrowding
- Inpatient bed loss: 38,000 (4.4%)
between 1996 and 2000
- ICU capacity loss: 20% between 1995
and 2001
- Most health care is in the private sector
not under governmental or municipal
authority

Facility Based Surge Capacity

- Expedited discharges
- Adaptation of existing capacity
 - Single rooms become doubles
 - Establish internal alternate care sites
 - Classrooms
 - Offices
 - Lobbies
 - Hallways

DHMC Disaster Contingency Discharge Drill – 1/05

- Services participating: Internal Medicine, Surgery, Pediatrics
- 26% of patients could be transferred off-site to lower care facility (alternate care facility)
- 28% of patients could be discharged home
- 14% could be transferred from ICU to ward
- Patients transferred with Problem List and Kardex

Community Based Surge Capacity: Alternate Care Facilities

- Requires close planning and cooperation amongst diverse groups who have traditionally not played together
 - Hospitals
 - Offices of Emergency Management
 - Regional planners
 - State Department of Health
 - EMS
 - Law Enforcement

Some of the Current Jargon

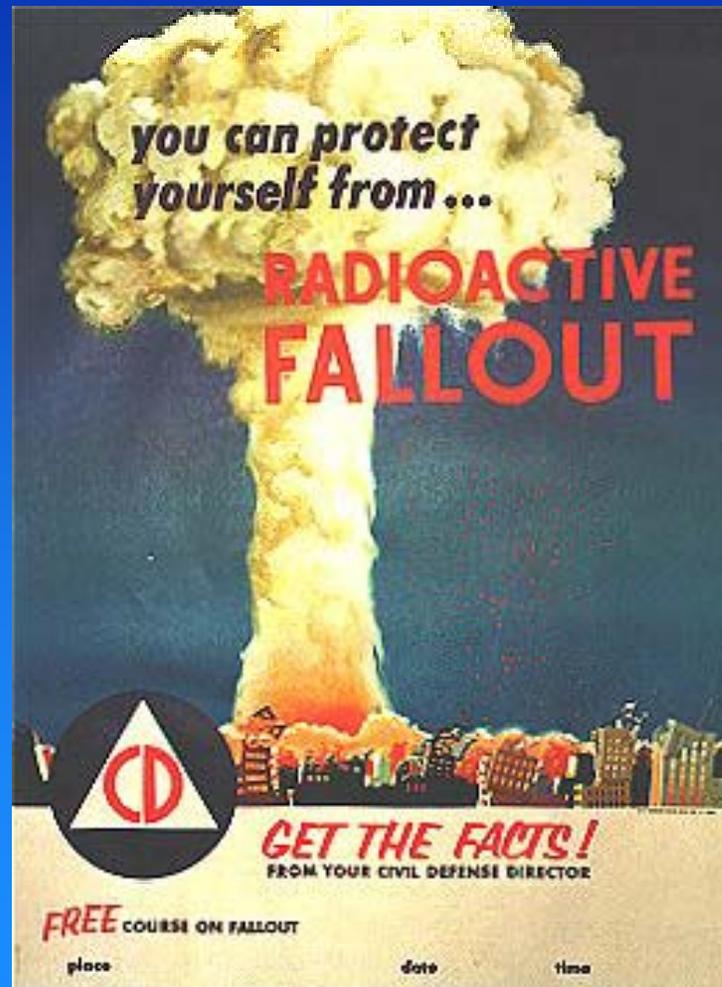
- MEMS: Modular Emergency Medical System
 - Developed under auspices of the Department of Defense
 - An expanded “system” of care
 - A framework for a massive medical response
 - Never implemented

Some of the Current Jargon

– Alternate Care Facilities

- A non-hospital based location where non-ambulatory (and ambulatory) care can be provided
- AKA:
 - ◆ Acute Care Center (ACC)
 - ◆ Alternative Care Center
 - ◆ Alternative Care Site
 - ◆ Alternate Treatment Sites (ATS)
 - ◆ Alternate Care Sites (ACS)
 - ◆ Alternate Treatment Facility (ATF)
 - ◆ Alternate Medical Treatment Sites (AMTS)
 - ◆ Alternate Treatment Centers (ATC)
 - ◆ Temporary Alternative Healthcare Facilities (TAHCF)

Where Have We Been?



Hospital Reserve Disaster Inventory

- Developed in 1950's-1960's
- Designed to deal with trauma/nuclear victims
- Developed by US Dept of HEW
- Hospital-based storage
- Included rotated pharmacy stock items

Packaged Disaster Hospitals

- Developed in 1950's-1960's
- Designed to deal with trauma/nuclear victims
- Developed by US Civil Defense Agency & Dept of HEW
- 2500 deployed
- Modularized for 50, 100, 200 bed units
- 45,000 pounds; 7500 cubic feet

Packaged Disaster Hospitals

- Last one assembled in 1962
- Adapted from Mobile Army Surgical Hospital (MASH)
- Community or hospital-based storage



Packaged Disaster Hospital: Multiple Units

- Pharmacy
- Hospital supplies / equipment
- Surgical supplies / equipment
- IV solutions / supplies
- Dental supplies
- X-ray
- Records/office supplies
- Water supplies
- Electrical supplies/equipment
- Maintenance / housekeeping supplies
- Limited oxygen support

Packaged Disaster Hospital



Packaged Disaster Hospitals

- Congress refused to supply funds needed to maintain them in 1972
- Declared surplus in 1973
- Dismantled over the 1970's-1980's
- Many sold for \$1

The Re-Emergence of a Concept

- Medical Armory (Medical Cache)
 - Think of the National Guard Armory
- Driving Forces:
 - Loss of institutional flexibility
 - “Just-In-Time” Everything
 - Loss of physical surge capacity
 - Denver has 1000 fewer physical beds that it did 10 years ago

The Re-Emergence of a Concept: Alternate Care Facilities

- Issues:
 - Augmentation vs Alternate Facility?
 - Inclusion of actual structure / Physical Space
 - Cost
 - Storage
 - Ownership
 - Organizational Structure
 - Staffing: Medical/Ancillary
 - Supplies/Equipment
 - Pharmaceuticals
 - Support (Nutrition, mental health, etc)
 - Other resources
 - Level of care provided?

Level I Cache: Hospital Augmentation

- Bare-bones approach
- Physical increase of 50 beds
- Would rely heavily on hospital supplies
- Stored in a single trailer
- About \$20,000
- Within the realm of institutional ownership
- Readily mobile - but needs vehicle

Level I Cache: Hospital Augmentation

- Trailer
- Cots
- Linens
- IV poles
- Glove, gowns, masks
- BP cuffs
- Stethoscopes

Used During Katrina Evacuee Relief



Level II Cache: Regional Alternate Care Facility (ACF)

- Significantly more robust in terms of supplies
- Designed by one of our partners, Colorado Department of Public Health and Environment

Level II Cache: Regional Alternate Care Facility

- Designed for initial support of 500 patients
 - Per HRSA recommendations of 500 patient surge per 1,000,000 population
 - Modular packaging for units of 50-100 pts
- Regionally located and stored
- Trailer-based for mobility
- Has been implemented
- Approximate price less than \$100,000 per copy

Level II: Level I Plus:

- Ambu bags
- Bed pans / Urinals
- Medical ID bracelets
- Chairs
- Cribs
- Emesis basins
- Forms for documentation
- IV sets
- Oxygen masks
- Ice packs
- Pillows
- Privacy screens
- Soap
- Tables
- Duct tape
- Adhesive tape
- Thermometer strips
- Tongue depressors
- (Still No Drugs)

Level III Cache: Comprehensive Alternate Care Facility

- Adapted from work done by US Army Soldier and Biological Chemical Command
- 50 Patient modules
- Most robust model
- Closest to supporting non-disaster level of care, but still limited
- More extensive equipment support

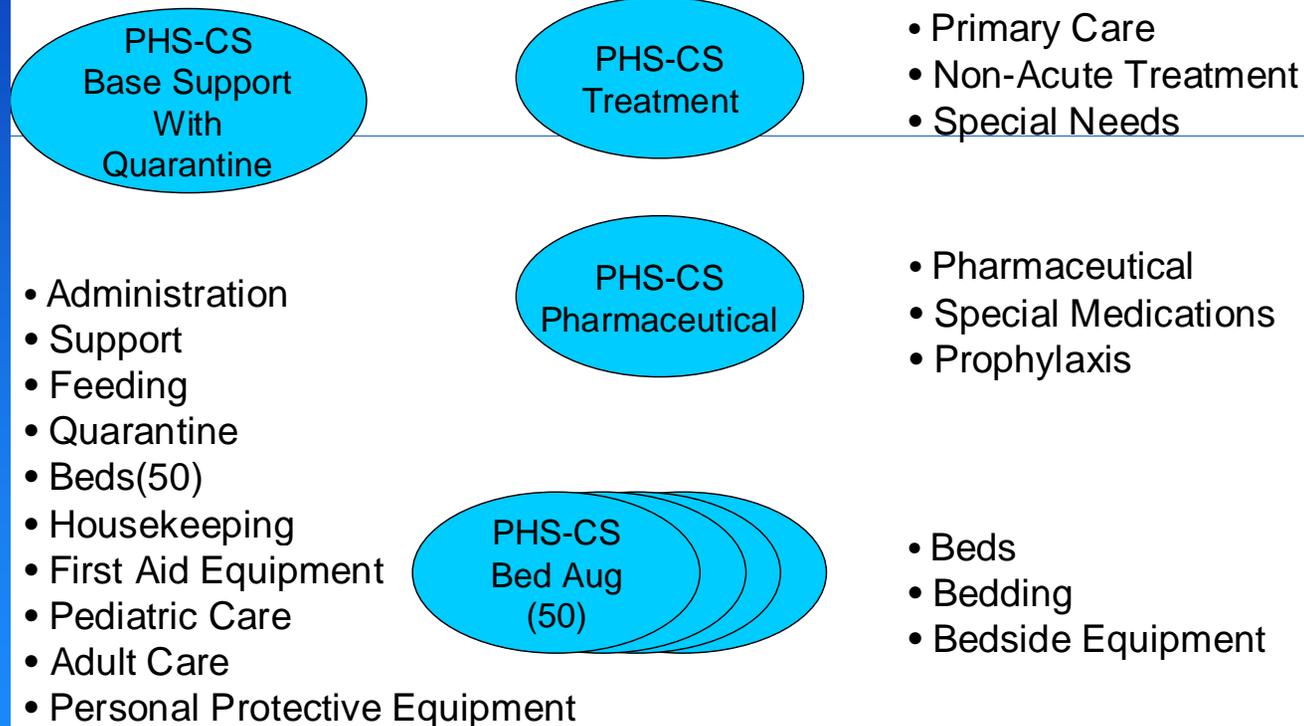
Work at the Federal Level

- DHHS: Federal Medical Stations (FMS)
 - 250 beds in 50 bed units
 - Quarantine or lower level of care
 - For use in existing structures
 - Multiple copies to be strategically placed
 - Owned and operated by the federal government
 - Operational in 2005
 - Used during Katrina, Rita & subsequent disasters

Basic Concept: HHS Federal Medical Stations

“PHS-CS” 250 Bed Module

Configuration









House Support Area

- The House Support Area will be used to store cleaning supplies for the CS custodians.
- It will be staffed by 2 full-time and 1 part-time custodians.
- The Medical Logistician will manage the custodian staff and develop the cleaning schedule.

Medical Support Area

- The Medical Support Area will be staffed with one Medical Logistician and two Medical Supply Technicians who will provide 24 hour coverage.
- The Medical Support Area will be responsible for requisitioning and distribution of supplies within the Contingency Station (CS).
- The Medical Logistician will develop procedures for each CS area to request and receive supplies.
- Specific forms will be used by each CS area to track requests, orders, and turn in of supplies.

Medical Support Area (cont.)

- The Medical Support Area will maintain a complete inventory of all medical supplies in house for each room, unit, and ward.
- The Medical Support Area will maintain a complete inventory of all medical supplies in house for each room, unit, and ward.
- Supply requisitioning will utilize a standard form.
- Inventory will be maintained in a secure location.

CDC 10166 SP

B

HANDLE WITH CARE
REUSABLE CONTAINER

PT





Chief Relief
Produced in
USA

Chief Relief
Produced in
USA

Patient Wash
and Latrine
Area





Additional Work at the Federal Level

- DHS: Critical care unit
 - Contains ED/OR/ICU
 - Single copy implemented
 - No sustaining funding
- Specialty care units
 - Not yet implemented

AHRQ Task Order

- Revise Alternate Care Facility (ACF) Site Selection Tool
 - Expert opinion
 - Experience from Katrina/Rita ACF's
- Development of ACF Facility Operations Template (Concepts of Operations)
- Development of ACF staffing guidelines
- Development of hospital "Early Discharge / Transfer Algorithm"
- Presentation of prototype lists of supplies and equipment for an ACF

ACF Issues and Decision Points

- “Ownership”, command and control
 - HICS is a good starting structure
- Who decides to open an ACF?
- Scope of care to be delivered?
 - Offloaded hospital patients
 - Primary victim care
 - Nursing home replacement
 - Ambulatory chronic care / shelter

ACF Issues and Decision Points

- Operational support
 - Meals
 - Sanitary needs
 - Infrastructure
- Documentation of care
- Security

ACF Issues and Decision Points

- Communications
- Relations with EMS
- Rules/policies for operation
- Exit strategy
- Exercising the plan

Some ACF Site Issues:

- Private sites vs Public sites
- Who can grant permission to use?
- Need for decontamination after use to restore to original function

Possible Alternative Care Facilities

Hotel



Stadium



Recreation Center



School



Church



Potential Non-Hospital Facilities

- ✓ Aircraft hangers
- ✓ Churches
- ✓ Community/recreation centers
- ✓ Convalescent care facilities
- ✓ Fairgrounds
- ✓ Government buildings
- ✓ Hotels/motels
- ✓ Meeting Halls
- ✓ Military facilities
- ✓ National Guard armories
- ✓ Same day surgical centers/clinics
- ✓ Schools
- ✓ Sports Facilities/stadiums
- ✓ Trailers/tents (military/other)
- ✓ Shuttered Hospitals
- ✓ Detention Facilities
- **Consider potential previous use obligations**

Factors to Weigh in Selection of an Alternative Care Facility

- ✓ Ability to lock down facility
- ✓ Adequate building security personnel
- ✓ Adequate lighting
- ✓ Air conditioning
- ✓ Area for equipment storage
- ✓ Biohazard & other waste disposal
- ✓ Communications
- ✓ Door sizes
- ✓ Electrical power (backup)
- ✓ Family Areas
- ✓ Floor & walls
- ✓ Food supply/prep area
- ✓ Heating
- ✓ Lab/specimen handling area
- ✓ Laundry
- ✓ Loading Dock
- ✓ Mortuary holding area
- ✓ Oxygen delivery capability
- ✓ Parking for staff/visitors
- ✓ Patient decon areas
- ✓ Pharmacy areas
- ✓ Toilet facilities/showers (#)
- ✓ Two-way radio capability
- ✓ Water
- ✓ Wired for IT and Internet Access

Factors Categorized Into:

- Infrastructure
- Total Space and Layout
- Utilities
- Communication
- Other Services

Original ACF Selection Tool - 2004

..	
..	<i>Rating System</i>
..	5 = Equal to or same as hospital.
..	4 = Similar to that of a hospital, but has SOME limitations (i.e. quantity/condition).
..	3 = Similar to that of a hospital, but has some MAJOR limitations (i.e. quantity/condition).
..	2 = Not similar to that of a hospital, would take modifications to provide.
..	1 = Not similar to that of a hospital, would take MAJOR modifications to provide.
..	0 = Does not exist in this facility or is not applicable to this event.

Original ACF Selection Tool - 2004

Wired for IT and Internet Access																		
Other Services																		
Ability to lock down facility																		
Accessibility/proximity to public transportation																		
Biohazard & other waste disposal																		
Laundry																		
Ownership/other uses during disaster																		
Oxygen delivery capability																		
Proximity to main hospital																		
Total Rating/Ranking (Largest # indicates best site)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

5 = Equal to or same as a hospital
 4 = Similar to that of a hospital, but has SOME limitations (i.e. quantity/condition)
 3 = Similar to that of a hospital, but has some MAJOR limitations (i.e. quantity/condition)
 2 = Not similar to that of a hospital, would take modifications to provide
 1 = Not similar to that of a hospital, would take MAJOR modifications to provide
 0 = Does not exist in this..

ACF Site Selection Tool Additions

■ Infrastructure:

- Parking area lighting
- Elevators
- Material handling equipment
- Adequate ambulance/bus access
- Split out showers
- Generators/Backup power
- Helipad/LZ
- ADA accessible
- Hand washing stations
- Ventilation/HVAC

ACF Site Selection Tool Additions

■ Total Space and Layout:

- Family waiting area
- Patient isolation area
- Pharmacy security
- Service animal/Pet area

■ Utilities:

- Lights controllable for sleeping
- Video monitoring
- Alarm systems

ACF Site Selection Tool Additions

■ Communication:

- Overhead paging
- WiFi access
- Available computers for staff use

■ Other Services:

- Environmental supplies/services

Augmented ACF Site Selection Tool

- Factors – by category
- “Necessity Level” option 0 – 5
 - Allows users to indicate importance of specific capabilities/factors
 - 0 – Not necessary
 - 3 – Desirable
 - 5 – Absolutely required
- Factor Scoring: 0-2
 - 0 – Not present
 - 1 – Not present but easily accommodated
 - 2 - Present
- “Weighted Ranking” automatically computed and summed by category and for entire facility

Augmented ACF Site Selection Tool

Alternate Care Facility Site Selection Matrix																			
GENERAL INFORMATION:				Intended Use: (mark all that apply)				Based upon initial evaluation, this could be used for:											
ACF Name:				<input type="checkbox"/> Hospital Decompression <input type="checkbox"/> Ambulatory Care Center <input type="checkbox"/> Chronic Care Center <input type="checkbox"/> Shelter / Quarantine				<input type="checkbox"/> No health care potential <input type="checkbox"/> Outpatient Care <input type="checkbox"/> Inpatient Care <input type="checkbox"/> Critical Care <input type="checkbox"/> Other (specify):											
Address:				Latitude:				Longitude:											
Contact Person:				Total Square Feet: 0				Patient Care Sq Ft: 0											
"Necessity Level" (0-5) 5 = Required 3 = Desired 0 = Not Necessary	"Necessity Level" 0-5	Site Rating	Weighted Ranking	Site Rating 2 = Present 1 = Reasonably Accommodated 0 = Not Present	"Necessity Level" 0-5	Site Rating	Weighted Ranking	"Necessity Level" 0-5	Site Rating	Weighted Ranking	"Necessity Level" 0-5	Site Rating	Weighted Ranking						
Site Infrastructure				Total Space and Layout				Utilities				Communication				Other Services			
Door sizes adequate for gurneys (48")			0	Auxiliary spaces (Rx, counselors, chapel)			0	Air Conditioning/Ventilation/HVAC			0	Communication (# phones, local/long distance)			0	Ability to lock down facility			0
Floors (OK for wheeled stretchers)			0	Equipment/supply storage area			0	Electrical power (backup/generator)			0	Intercom / Overhead Paging			0	Accessibility/proximity to public transportation			0
Loading Dock			0	Family Waiting Area			0	Heating			0	Two-way radio capability to main facility			0	Biohazard & other waste disposal			0
Material Handling Equipment			0	Separate areas for Isolation / Palliative Care			0	Lighting			0	Wired for IT and Internet Access			0	Laundry			0
Parking for staff and visitors			0	Food supply and prep area			0	Lighting controllable for sleeping			0	WiFi Access			0	Environmental Supplies/Services			0
Parking area lighting			0	Lab specimen handling area			0	Refrigeration			0	Computers available for staff use			0	Ownership/other uses during disaster			0
Adequate ambulance/ bus access			0	Mortuary holding area			0	Water (cold/hot)			0				0	Oxygen delivery capability			0
Adequate Weather Protection			0	Patient decontamination areas			0	Video Monitoring / Alarm systems			0				0	Proximity to main hospital			0
Toilet facilities			0	Pharmacy area (securable)			0												
Showers			0	Staff support/rest break areas			0												
Hand washing stations			0	Area for service animals / pets			0												
ADA accessible			0																
Elevators			0																
Helipad/LZ			0																
Fire protection safety and equipment			0																
Site Infrastructure Rating/Ranking		0	0	Space & Layout Rating/Ranking		0	0	Utilities Rating/Ranking		0	0	Communication Rating/Ranking		0	0	Other Services Rating/Ranking		0	0
Total ACF Site Rating/Ranking:												0	0						

Augmented ACF Site Selection Tool - 1

Alternate Care Facility Site Selection Matrix																							
GENERAL INFORMATION:					Intended Use: (mark all that apply)					Based upon initial evaluation, this could be used for:													
ACF Name:					<input type="checkbox"/> Hospital Decompression <input type="checkbox"/> Ambulatory Care Center <input type="checkbox"/> Chronic Care Center <input type="checkbox"/> Shelter / Quarantine					<input type="checkbox"/> No health care potential <input type="checkbox"/> Outpatient Care <input type="checkbox"/> Inpatient Care <input type="checkbox"/> Critical Care <input type="checkbox"/> Other (specify):													
Address:																							
Latitude:			Longitude:																				
Contact Person:																							
Total Square Feet: 0			Patient Care Sq Ft: 0																				
<i>"Necessity Level" (0-5)</i> 5 = Required 3 = Desired 0 = Not Necessary			"Necessity Level": 0-5	Site Rating	Weighted Ranking	<i>Site Rating</i> 2 = Present 1 = Reasonably Accommodated 0 = Not Present			"Necessity Level": 0-5	Site Rating	Weighted Ranking				"Necessity Level": 0-5	Site Rating	Weighted Ranking				"Necessity Level": 0-5	Site Rating	Weighted Ranking
Site Infrastructure			Total Space and Layout			Utilities			Communication			Other Services											
Door sizes adequate for gurneys (46")			Auxiliary spaces (Rx, counselors, chapel)			Air Conditioning/Ventilation/HVAC			# Communication (# phones, local/long distance)			Ability to lock down facility											
Floors (OK for wheeled stretchers)			Equipment/supply storage area			Refrigeration			Intercom / Overhead Paging			Accessibility/proximity to public transportation											
Loading Dock			Family Waiting Area			Lighting controllable for sleeping			Two-way radio capability to main facility			Biohazard & other waste disposal											
Material Handling Equipment			Separate areas for Isolation / Palliative Care			Refrigeration			Wired for IT and Internet Access			Laundry											
Parking for staff and visitors			Food supply and prep area			Water (cold/hot)			WiFi Access			Environmental Supplies/Services											
Parking area lighting			Lab specimen handling area			Video Monitoring / Alarm systems			Computers available for staff use			Ownership/other uses during disaster											
Adequate ambulance/ bus access			Mortuary holding area									Oxygen delivery capability											
Adequate Weather Protection			Patient decontamination areas									Proximity to main hospital											

Necessity Level
 The "Necessity Level" can be a value from 0 to 5, with 5 being the highest/most important, and represents how necessary this factor is to this specific incident and facility.

Augmented ACF Site Selection Tool - 2

access																					
Adequate Weather Protection	1	2	2	Patient decontamination areas	1	0	0	Video Monitoring / Alarm systems	3	0	0							Proximity to main hospital	3	1	3
Toilet facilities	5	1	5	Pharmacy area (securable)	5	2	10														
Showers	5	1	5	Staff support/rest break areas	2	1	2														
Hand washing stations	5	2	10	Area for service animals / pets	1	1	1														
ADA accessible	1	1	1																		
Elevators	1	0	0																		
Helipad/LZ	1	0	0																		
Fire protection safety and equipment	5	2	10																		
Site Infrastructure Rating/Ranking		18	68	Space & Layout Rating/Ranking		10	30	Utilities Rating/Ranking		10	46	Communication Rating/Ranking		5	18	Other Services Rating/Ranking		6	21		
													Total ACF Site Rating/Ranking:			49		183			

Customizing the Site Selection Matrix

A facility and/or factor can be added as a new row to excel spreadsheet.

Augmented ACF Site Selection Tool - Instructions

	Instructions for Use of Alternate Care Facility (ACF) Site Selection Tool
1	
2	
3	This tool is intended to assist institutions and communities in the selection of non-standard locations for the provision of medical care
4	during times of markedly increased. This spreadsheet tool is constructed to allow the entry of data points for multiple facilities with
5	the automated production of a summary which may be of help in comparing the suitability of different potential sites for a specific
6	incident type.
7	
8	For each potential site, begin by entering the general information in the top left-hand box. Latitude and longitude are requested in case
9	of possible helicopter transfers or if the ACF is to be listed on a GIS system showing its location. The intended use(s) for the site
10	should then be indicated by an "X" in the top-center box.
11	
12	
13	The actual characteristics of the potential ACF are divided into five categories: infrastructure, total space and layout, utilities,
14	communication, and other services. Prior to entering site-specific data, the "Necessity Level" should be entered for each characteristic
15	for the specific incident type for which the facility is being considered. This value may range from 0 (not needed at all) to 5
16	(required/extremely important). This serves as a weighting factor for each characteristic. These values need be filled out only on the
17	worksheet for "ACF Site 1", as they are automatically propagated to the worksheets for the other sites.
18	
19	After completing the "Necessity Level", the Site Rating for the characteristic for a site may then be entered. For this value, a 2
20	implies that the characteristic is present; a 1, that it could be reasonably accommodated; a 0, that it is not present and not possible to
21	supply. The spreadsheet will automatically compute a "Weighted Ranking" for each characteristic (Site Rating times "Necessity
22	Level").
23	
24	
25	The spreadsheet will automatically calculate a cumulative site ranking and weighted ranking for each category and for the ACF
26	overall. The category and overall data are automatically placed on the "ACF Site Summary" worksheet, allowing quick overall
27	comparison of up to 6 sites.
28	
29	After entry of the data for each of the characteristics for the site, the user may then, based upon this initial evaluation, indicate the
30	potential uses for the site by checking the appropriate boxes in top right-hand box.
31	
32	Although the automatic calculation feature of this tool enhances its utility, the site selection tool may also be used in a manual or hard
33	copy mode by printing out the basic site selection matrix.
34	
35	Notes:
36	
37	1. Excel macros must be enabled for this tool to work correctly
38	2. This spreadsheet contains suggestions only and its design may be altered to include other desired characteristics. It should be noted,
39	however, that this must be done with care and be done by an individual conversant in Excel and Visual Basic to preserve the automatic
40	calculation feature.

Augmented ACF Site Selection Tool

Site Comparison Matrix

Alternate Care Facility Site Selection Matrix					
Site Evaluation Summary					
		Weighted Score		Weighted Score	
Site 1	Site Infrastructure	68	Site 4	Site Infrastructure	0
	Space and Layout	30		Space and Layout	0
	Utilities	46		Utilities	0
	Communication	18		Communication	0
	Other Services	21		Other Services	0
	Total ACF Score	183		Total ACF Score	0
Site 2	Site Infrastructure	0	Site 5	Site Infrastructure	0
	Space and Layout	0		Space and Layout	0
	Utilities	0		Utilities	0
	Communication	0		Communication	0
	Other Services	0		Other Services	0
	Total ACF Score	0		Total ACF Score	0
Site 3	Site Infrastructure	0	Site 6	Site Infrastructure	0
	Space and Layout	0		Space and Layout	0
	Utilities	0		Utilities	0
	Communication	0		Communication	0
	Other Services	0		Other Services	0
	Total ACF Score	0		Total ACF Score	0

WHO needs this tool?

- ✓ Incident commanders
- ✓ Regional planners
- ✓ Planning teams including: fire, law enforcement, Red Cross, security, emergency managers, hospital personnel
- ✓ Public works / hospital engineering should be involved to know what modifications are needed.

WHEN should you use this tool?

- ✓ Before an actual event.
- ✓ Choose best site for different scenarios so have a site in mind for each “type”.

ACF Facility Operations Template

Table of Contents:

1. Introduction
2. Alternate Care Facility Concept Overview
3. Assumptions
4. ACF Basic Functions
5. Description of an ACF
6. Staffing Framework
7. ACF Command and Control
8. ACF Site Selection and Infrastructure Requirements
9. ACF Operations and Logistics

ACF Facility Operations Template

- Designed as a stand-alone unit
- Easily pulled from the report for alteration/customization
- Extensive instruction and explanation of (NIMS compliant) Incident Command System
- Used FMS ConOps as a starting point
- Glossary of terms included

Staffing Recommendations

- General paucity of recommendations in the literature
- Some initial guidance from the Modular Emergency Medical Systems Document (MEMS) developed by SBCCOM
- Questionnaire data surprisingly incomplete

MEMS Acute Care Center

50 bed unit per 12 hour shift

Position	Number
Physician	1
Physician Assistant (PA) or Nurse Practitioner (NP)	1
Registered nurses (RN) and/or Licensed Practical Nurses (LPN)	6
Nursing Assistants and/or nursing support technicians	4
Medical clerks (unit secretaries)	2
Respiratory therapist	1
Case manager	1
Social worker	1
Housekeepers	2
Patient transporters	2
TOTAL	21

MEMS Acute Care Center

50 bed unit per 12 hour shift - Minimum

Position	Number
Physician	1
Physician Assistant (PA) or Nurse Practitioner (NP)	1
Registered nurses (RN) and/or Licensed Practical Nurses (LPN)	6
Nursing Assistants and/or nursing support technicians	4
TOTAL	12

Enhanced: 50 bed unit per 12 hour shift: 32.5

- Physician [1]
- Physician extenders (PA/NP) [1]
- RNs or RNs/LPNs [6]
- Health technicians [4]
- Unit secretaries [2]
- Respiratory Therapists [1]
- Case Manager [1]
- Social Worker [1]
- Housekeepers [2]
- Lab [1]
- Medical Asst/Phlebotomy [1]
- Food Service [2]
- Chaplain/Pastoral [1]
- Day care/Pet care
- Volunteers [4]
- Engineering/Maintenance [.25]
- Biomed [.25]
- Security [2]
- Patient transporters [2]

Most Prominent Deficiency in all of these proposals:

- Lack of pharmacists and pharmacy technicians

Summary of Questionnaire Staffing Responses

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
Function	Pediatric shelter support	General shelter support	Ambulatory and inpatient healthcare replacement	Ambulatory healthcare replacement	Ambulatory and surgical healthcare replacement	Special-needs inpatient care	Ambulatory healthcare replacement	Inpatient special-needs care
Structure	Fixed facility	Fixed facility	Fixed facility	Fixed facility	Mobile	Fixed facility	Fixed facility	Fixed facility
Inpatient Capability	Y	N	Y	N	Y	Y	N	Y
Days of Operation	13	16	NDA	NDA	10	NDA	NDA	NDA
Total Patients	>3,500	>10,000	>6,000	>20,000	7400	200	400	340
Daily Average Census	NDA	619 (+/- 301)	NDA	NDA	25-300	NDA	NDA	NDA
Peak Daily Census	400	1,125	NDA	NDA	500	NDA	NDA	NDA
Shift Length (hours)	8, 12, or 24	4, 8, or 12	8 for most, 12 for nurse managers	12	12	12	NDA	8
Day/Night Staffing Difference	Y	Y	Y	N	Y	Y	NDA	Y
Total Staff	NDA	7 common staff / 1000 volunteers	"several hundred"	50	60-100	100	300 at various times; daily total not listed	200
Physicians	6	16 AM / 4 PM	25	NDA	11	4	7	2-3
Midlevel Providers (PA/NP)	Present but number not recorded	N	20	NDA	1-2	5	3	2-3
Nurses	5	20	50+	NDA	8-10	20	10	20-30
LPN/EMT	N	N	50+	NDA	8-10	NDA	1-2	10
Pharmacists	1	2/1	6+	2-3	2-3	2	1-2	1-2
Clerks/Administrative	1	5 AM / 1 PM	50+	1-2	1-2	NDA	6	20

Y=yes or present but number unknown

N= no

NDA = No Data Available

Fields that have two numbers listed in a "x/y" format indicate a difference in staffing between day & night

Due to difficulties with record keeping and in light of day to day variations in staffing, all numbers should be viewed as estimates

Summary of Questionnaire Staffing Responses: Staffing Ratios: Staff / # Patients

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
Days of Operation	13	16	13*	13*	10	13*	13*	13*
Total Patients	3,500	10,000	6,000	20,000	7,400	200	400	340
Daily Average Census	269*	625*	462*	1538*	740*	15*	31*	26*
<i>Numbers below reflect the ratio of a given category of provider to the number of patients seen on an average day</i>								
Physicians	1:45	1:39	1:18	NDA	1:67	1:4	1:4	1:9
Midlevel Providers (PA/NP)	NDA	NP	1:23	NDA	1:493	1:3	1:10	1:9
Nurses	1:54	1:31	1:9	NDA	1:82	1:1	1:3	1:1
LPN/EMT	NP	NP	1:9	NDA	1:82	NDA	1:16	1:3
Pharmacists	1:269	1:313	1:77	1:513	1:246	1:8	1:16	1:13
Clerks/ Administrative	1:269	1:125	1:9	1:1025	1:493	NDA	1:5	1:1
NP = Type of provider Not Present								
NDA = No Data Available								
* Estimated; see text for details								

Staffing Considerations

- Requires significant pre-planning
 - State {S}
 - Local {L}
 - Institutional {I}
- Unclear who would volunteer
- Contained vs Population-based Surge event

Facilitation of Emergency Staffing

- Establish legal authority to utilize out-of-state licensed personnel {S}
- Establish supervision criteria for volunteer and out-of-state licensed personnel {S}
- Establish/maintain list of retired individuals who could be called upon to staff {S L I}
- Availability of prophylaxis for employees and volunteers (? and their families) to guarantee workforce availability {S L I}

Facilitation of Emergency Staffing

- Communication of institutional workforce plan in advance to employees {I}
- Develop, test and maintain emergency call-in protocol {L I}
- Expectation and capacity for flexibility in roles {S L I}
- Establish linkages with community resources (ie. hotel housekeeping) {L I}

Facilitation of Emergency Staffing

- Address specific needs of employees (transportation, single mother, pets) {I}
- Implement a reverse 911 or notification system for all employees {S L I}
- Establishment of institutional policies for credentialing of non-employees {S L I}

Surging with Limited Staff

- Database of retired healthcare personnel and former trainees
- Limit non-essential patient care
- Use of phone triage to free up providers
- Restructuring/reassigning HCW tasks daily through incident command
- Use of family members (bathing, bathroom, vital signs, meals)
- Maximize protection of current personnel: vaccines, prophylaxis, infection control
- Day care center for employee families?

Credentialing

- A major issue
- Emergency Systems for Advance Registration of Volunteer Health Professionals (ESAR-VHP) not well developed at time in question
 - Unclear how useful it will be
- EMAC used by several sites

Summary Credentialing Data

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
Method of credentials verification for health professionals	County Health Department Oversight	Inspection of identification badge from home institution.	Handled by U.S. Public Health Service	>90% were Federal so came credentialed.	Credentialed through sponsoring healthcare system.	All Federal employees; arrived credentialed.	Credentials not verified due to rapid need for response.	Combination of local hospitals, local medical society, state medical board
Were identification cards created?	Sponsoring hospital ID cards used. Others tried for outside staff with little success	Yes, with a make-shift badge maker	Special wrist bands provided by local University.	No; most had federal identification cards.	Home state office of EMS ID cards.	Federal ID card.	N	N
If so, was a commercially available product used?	NA	NA	NA	NA	NA	NA	NA	NA
Suggested future changes in the credentialing process?	Early credentialing; ideally prior to the event	N	N	NA	N	Develop a standardized credentialing system.	NA	Credential providers prior to an event
Did anyone impersonate a provider to gain access?	One individual tried to impersonate a physician.	N	Impersonator from the media to gain access. No one falsified credentials to provide care.	N	N	N	N	Y
Steps taken at the State level to facilitate out-of-state providers?	State allowed instant licensure with sponsorship of the primary hospital.	State was not involved.	NA	NA	EMAC	NA	EMAC	Out of state nurses screened through state RN association
Were providers from different healthcare systems working side by side?	Y	Y	Y	Y	Y	Y	Y	Y
If so, did this create any command and control(C2) issues?	No significant issues. Sponsoring hospital retained control.	N	No, too busy to have any turf battles.	No; used clear command system.	N	Minor issues while establishing C2 system.	N	N (Public health authority maintained control)
Were there any challenges dealing with out of state licensing issues?	Y	N	No, handled through U.S. Public Health Service.	Difficulty writing prescriptions for controlled substances.	Y	Y	N	N
Y= yes or present but number unknown								
N = no								
NA = Not Applicable								

Transfer / Discharge Algorithm Process

- Establishment of expert panel
 - Conference calls
- Literature review – not much there!
- Development of algorithm
 - Quantify capability of ACF
 - Reassess each patient's needs
 - Establish potential match with tool

Transfer/Discharge Algorithm

Step 1:

- Determine the capabilities of the Alternate Care Facility (ACF) to which you are considering transferring patients and so indicate on the Transfer Matrix

Indicate Capabilities of ACF

- Minimum Age of patients
- Non-ambulatory care
- Maximum frequency of vital signs
- Oral meds: non-scheduled/scheduled
- IV hydration
- IV meds: non-scheduled / scheduled
- Glucose determination
- Daily CBC, BMP
- Supplemental Oxygen (L/m per patient)
- Cardiac monitoring
- Radiology access
- Dressing changes
- Mental health care
- Ostomy care
- Tube feedings
- Others, as appropriate
 - 5 user-defined

Indicate Capabilities of ACF

Alternate Care Facility Patient Transfer Matrix

- * Mark the ACF capability where indicated (see row 4)
- * For each patient, mark an X (or a numeric value, if required) in the appropriate column to indicate a specific patient need; leave blank otherwise.
- Do not skip lines between patient names!
- * If a patient is generally unsuitable for transfer or has a specific need not otherwise listed, mark an X by the patient's name where indicated (see column B)
- * Click on any cell in Column A. Press CTRL + J to run the program.
- * Patients suitable for transfer to the ACF will be highlighted in green. Patients not suitable for transfer will be highlighted in red. Patients whose names have no color may be evaluated by a clinician for possible discharge.

ACF Capabilities: -----▶	PT CLINICALLY NOT SUITABLE FOR TRANSFER	Minimum Pt Age (Yrs)	Non-ambulatory care	Vital Signs every [X] hours	Non-controlled oral meds	Controlled oral meds	Non-Controlled IV meds	Controlled IV meds	Glucose	CBC (daily or less)	BMP (daily or less)	Other Labs (daily or less)	O2 flow rate needed	Cardiac monitoring	Radiology access	Dressing Changes	Mental Health Care	Secure	Ostomy Care (Non-Tube Feedings)	User-Defined 1	User-Defined 2	User-Defined 3	User-Defined 4	User-Defined 5	
In this row, enter the capability of the ACF using either an 'X' to indicate a capability or a numerical value as appropriate		6	12	X	X		X	X					X	X											
Patients																									
Patient Name A																									
Patient Name B																									
Patient Name C																									
Patient Name D																									

Transfer/Discharge Algorithm

Step 2:

- For each patient, review their current level of care in terms of the following and determine the absolute minimum level of care necessary:
 - Determine that patient is clinically stable enough for potential discharge/transfer.
 - Determine the minimum frequency of vital signs that are necessary for the ongoing care of this patient.
 - If the patient is currently on supplemental oxygen, can this be discontinued or decreased?
 - If the patient is currently on cardiac monitoring, can this be discontinued?

Transfer/Discharge Algorithm

Step 2:

- If this patient is on IV meds, can these be discontinued or changed to comparable oral meds?
- If the patient has an IV, can it be discontinued?
- Determine if any oral medications may be discontinued.
- Review current standing laboratory orders.
 - Determine the absolute minimum frequency and number of laboratory tests that are necessary for this patient's ongoing care.
- Review all other ongoing therapies for this patient.
 - Determine which of these may be discontinued or decreased in frequency.

Transfer/Discharge Algorithm

Step 3:

- Now, based upon the established minimum level of care for each patient, review the following:
 - Is this patient now suitable for discharge with follow-up as an outpatient? If so, commence the discharge process. If not and an ACF is available for possible patient transfer, continue below. If no ACF is available, move on to next patient.
 - Are there any therapies or monitoring required for this patient that cannot be supplied by the available ACF? If so, this patient is not suitable for transfer to the available ACF. Move on to next patient. If not, consider this patient for transfer to your available Alternate Care Facility.

Transfer/Discharge Algorithm

Step 4:

- The patient data are then entered into the Patient Transfer Matrix spreadsheet for the potential transfer patients.
- The embedded program is then executed by pressing CTRL+J.
- Those patients potentially suitable for transfer to the designated ACF will be highlighted in green. Those patients whose care needs exceed that available at the designated ACF will be highlighted in red.

Transfer/Discharge Algorithm

Step 4:

Alternate Care Facility Patient Transfer Matrix

- * Mark the ACF capability where indicated (see row 4)
- * For each patient, mark an X (or a numeric value, if required) in the appropriate column to indicate a specific patient need; leave blank otherwise.
- Do not skip lines between patient names!
- * If a patient is generally unsuitable for transfer or has a specific need not otherwise listed, mark an X by the patient's name where indicated (see column B)
- * Click on any cell in Column A. Press CTRL + J to run the program.
- * Patients suitable for transfer to the ACF will be highlighted in green. Patients not suitable for transfer will be highlighted in red. Patients whose names have no color may be evaluated by a clinician for possible discharge.

ACF Capabilities: -----▶	PT CLINICALLY NOT SUITABLE FOR TRANSFER	Minimum Pt Age (yrs)	Non-ambulatory care	Vital Signs every [X] hours	Non-controlled oral meds	Controlled oral meds	Non-Controlled IV meds	Controlled IV meds	Glucose	CBC (daily or less)	BMP (daily or less)	Other Labs (daily or less)	O2 flow rate (daily or less)	Cardiac monitoring	Radiology access	Dressing Changes	Mental Health Care (Non-Secure)	Ostomy Care	Tube Feedings	User-Defined 1	User-Defined 2	User-Defined 3	User-defined 4	User-defined 5
In this row, enter the capability of the ACF using either an 'X' to indicate a capability or a numerical value as appropriate		6	12	X		X		X	X					X	X									
Patients																								
Patient Name A		22	12			X			X															
Patient Name B		19	12		X				X															
Patient Name C	X	35						X						X										
Patient Name D		58	12	X				X							X									

Transfer/Discharge Algorithm Instructions

A

Transfer/Discharge Algorithm – Step 1:

Determine the capabilities of the Alternate Care Facility (ACF) to which you are considering transferring patients and so indicate on the Discharge/Transfer matrix

Transfer/Discharge Algorithm – Step 2:

For each patient, review their current level of care in terms of the following and determine the absolute minimum level of care necessary:

Determine that patient is clinically stable enough for potential discharge/transfer

Determine the minimum frequency of vital signs that are necessary for the ongoing care of this patient.

If the patient is currently on supplemental oxygen, can this be discontinued or decreased?

If the patient is currently on cardiac monitoring, can this be discontinued?

If this patient is on IV meds, can these be discontinued or changed to comparable oral meds?

If the patient has an IV, can it be discontinued?

Determine if any oral medications may be discontinued.

Review current standing laboratory orders.

Determine the absolute minimum frequency and number of laboratory tests that are necessary for this patient's ongoing care.

Review all other ongoing therapies for this patient.

Determine which of these may be discontinued or decreased in frequency.

Transfer/Discharge Algorithm – Step 3:

Now, based upon the established minimum level of care for each patient, review the following:

Is this patient now suitable for discharge with follow-up as an outpatient? If so, commence the discharge process.

If not and an ACF is available for possible patient transfer, continue below. If no ACF is available, move on to next patient.

Are there any therapies or monitoring required for this patient that cannot be supplied by the available ACF?

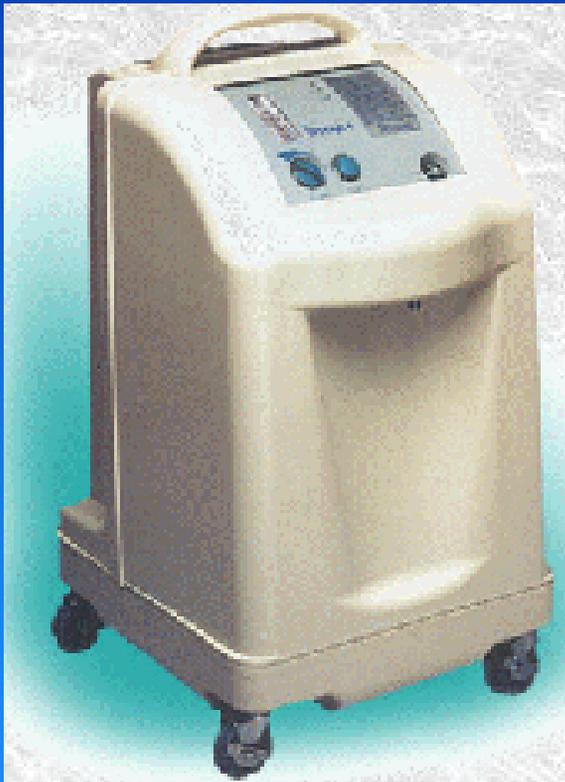
If so, this patient is not suitable for transfer to the available ACF. Move on to next patient.

If not, consider this patient for transfer to your available Alternate Care Facility.

The Supplemental Oxygen Dilemma

- Supplemental oxygen need highly likely in a bioterrorism incident
- Has been carefully researched by the Armed Forces
- Most options are quite expensive
- Many have high power requirements
- Most require training/maintenance
- All present logistical challenges
- Remains a work in progress

Oxygen Concentrator



- Up to 10 liters per min @ 7 psi
- 110V AC
- 57 lbs
- Approx \$1,400

And Then The “Other” Problems:

■ Ventilators:

- Currently in US: 105,000
- In daily use: 100,000
- Projected pandemic need:
742,500

■ Respiratory Therapists

Ventilators – Surge Supply

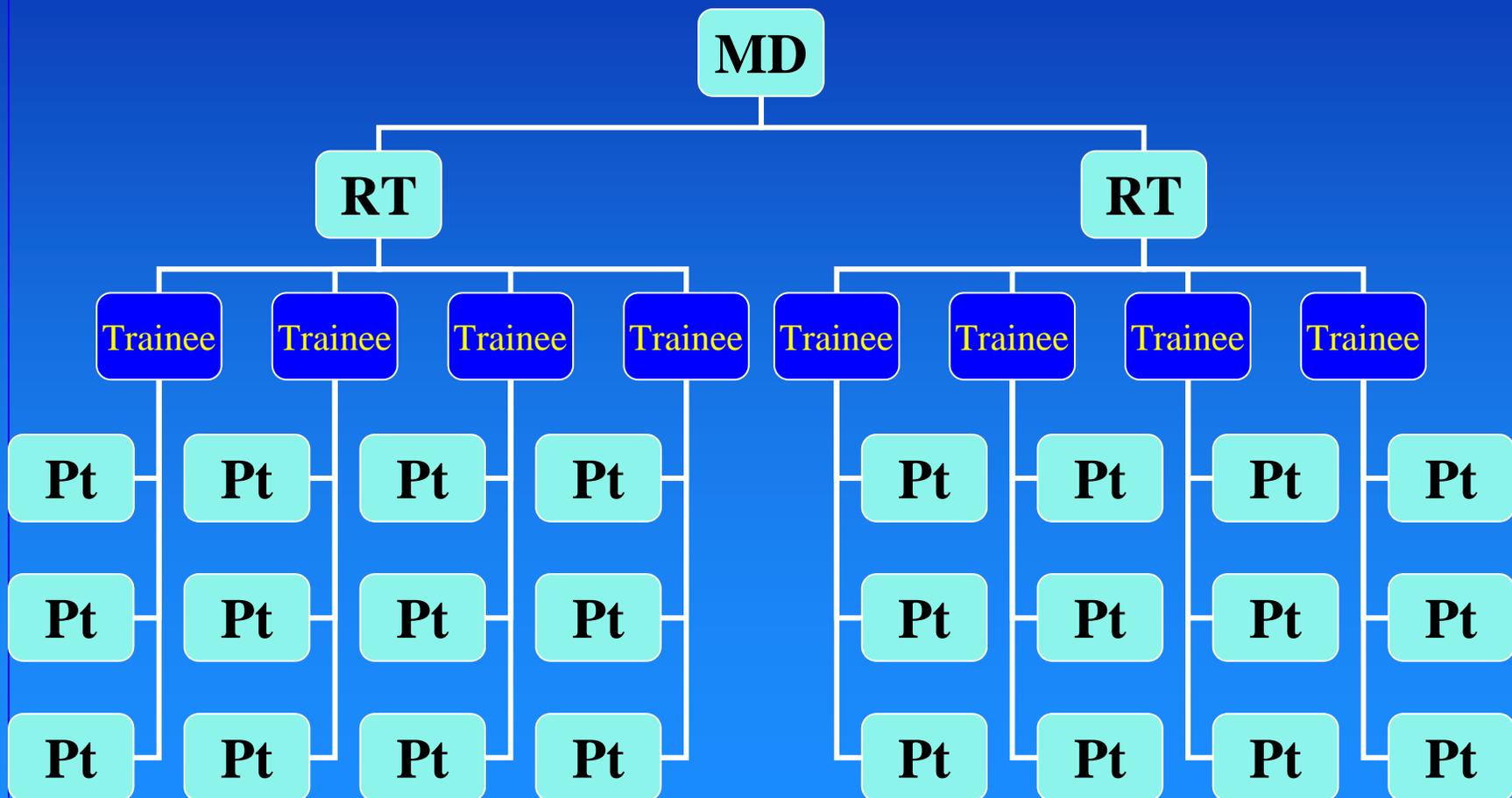
- Additional full units - \$32,000 each
- Smaller units for \$6,000 each



- Many “Disposable” Units - \$65 each



Respiratory Therapists: Just-In-Time Training



Responses: Summary of Important Issues

- Planning is best done in advance and should involve all players, including care providers
- Ideally, the role of the ACF decided in advance of an incident and will guide staffing, supply, and equipment issues:
 - “Ward” level care to decompress a hospital and provide surge
 - Ambulatory acute care – i.e., triage, minor wound care, etc.
 - Chronic care

Responses: Important Issues

- The ACF will usually have to care for the full age range of patients – pediatrics, adolescents, adults, and the elderly and must plan accordingly
- Even with the best of plans, overall flexibility is mandatory and should be maintained.

Responses: Important Issues

- If possible, a college campus would make an excellent ACF: availability of appropriate space, manpower, food service, security, bathrooms, showers, etc.
- Proximity to a hospital is desired if diagnostic tests will be needed that cannot be done at the ACF.
- Point of care clinical laboratory testing should be considered. At a minimum, glucometers should be available.
- Toilet and shower facilities both important.

Responses: Important Issues

- The nature of the disaster may dictate that nursing home patients be cared for en masse.
- Lighting control and noise control are issues that may be difficult to solve if the ACF is housed in a single large area (such as a gymnasium).
- It is usually best to try to keep families together.
- If palliative care is going to be necessary, those patients should be cohorted together, preferably in a separate area or unit.

Responses: Important Issues

- Caring for patients' pets should be considered.
- Security is extremely important. Individuals in uniforms (even if not true security) can assist with this. Law enforcement should be included in any advance planning and should be pressed for a commitment to provide security for any ACF.
- Incident command of an ACF is probably best done by a medical person (physician/nurse) who understands incident command.

Responses: Important Issues

- In most situations, pediatric patients made up about 10% of the patient load.
- Chronic-care medications (hypertension, diabetes mellitus, etc.) are extremely important, as are pain medications and antibiotics.
- Replenishing narcotics at an ACF may be an issue due to DEA regulations.

Responses: Important Issues

- Most medical providers worked 12 hour shifts.
- Chronic dialysis may become a chronic-care issue.
- Although ACF incident command usually works well, there are sometimes issues interfacing with local area command.

Responses: Important Issues

- Organized facility layout
- Importance of ICS
- Importance of public health issues
 - Safe food
 - Clean water
 - Latrine resources
 - Sanitation supplies
- The need for “House Rules”

Sample “House Rules”

- No weapons allowed on the premises
- The use of alcohol is strictly forbidden and will result in dismissal
- Wash your hands: Before and after you eat – After you use the bathroom
- Wash your hands or use hand sanitizer throughout the day; especially if you sneeze or cough into your hands
- Be respectful of others and their property
- No open food or drink in the sleeping areas
- Smoke only in the designated smoking areas
- Keep noise to a minimum
- Clean up after yourself in the bathroom, around your sleeping area, and in the dining room
- Lights on – 7:00am Lights out – 10:00pm
- No arrivals or departures after 10:00pm
- Failure to follow the rules may result in your discharge

Summary:

What we have discussed

- Revised Alternate Care Facility Site Selection Tool
- Important ACF lessons observed
- ACF Facility Operations Template (Concepts of Operations)
- Some ACF staffing guidance
- A hospital “Early Discharge / Transfer Algorithm”

CDPHE Draft Document



Colorado Department of Public Health and Environment

Guidance for Alterations in the Healthcare System
During an Influenza Pandemic

Draft as of September 2008

The Challenge

- To balance...
 - Basic standards of practice
 - The ethical obligation to provide care
 - The need to protect the public from harm
 - The need to protect self, family & friends
 - With the reality of too many ill patients and too few resources
- All of which represents an alteration in the normal standard of care

Available from AHRQ:
www.ahrq.gov/research/mce/mceguide.pdf



**Providing Mass Medical Care
with Scarce Resources:
A Community Planning Guide**

Submitted to:

AGENCY FOR HEALTHCARE RESEARCH AND QUALITY
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

JUNE 30, 2006



HEALTH SYSTEMS RESEARCH, INC.
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Washington, DC 20036

Additional Information

AHRQ Disaster Alternate Care Facility Final
Report Available at:

www.ahrq.gov/prep/acfselection/dacfrep.htm