OUTBREAK RESPONSE AND INCIDENT MANAGEMENT

SHEA Guidance and Resources for Healthcare Epidemiologists in United States Acute-Care Hospitals

Overview of Incident Management

Introduction to Incident Management and the Role of the Healthcare Epidemiologist

While outbreak management is a major area of responsibility for healthcare epidemiologists (HEs), many do not have formal education in incident management or preparation to work within an emergency response framework in scenarios that require enhanced preparedness and response efforts, e.g. when pathogens associated with outbreaks are characterized poorly (source, means of transmission, and/or disease outcome) or when outbreaks require additional interventions including, but not limited to, healthcare personnel (HCP) education, enhanced infection prevention and control measures, added staffing, supplies, and resources, adjustments to clinical and support activities, and external communications.

"Incident management" describes the activities an organization takes to prepare for, respond to, and learn from an event or hazard, including service interruptions (e.g. telecommunication), local events (e.g. municipal flood or fire), and larger events (e.g. mass casualty or international epidemic). Incident management is handled by federal, state/territorial/regional, and facility-based structures.

In order to provide high-level guidance and context for incident management, the authors of the SHEA Guidance and Resources for Outbreak Response specify recommendations for the HE, as well as involvement and responsibilities of the facility and other HCP. The term "facility," when used in the recommendations, refers to facility leaders' assignments of responsibilities to appropriate individuals or groups. Roles may vary depending on the facility.

Incident Management Terminology

| Term(s)	Acronym(s) and/or Similar Term(s)	Definition	Resource(s)
Hospital All-Hazards Preparedness **All-Hazards Continuity of Operations Plan**	Needs assessment HAH COOP	Identifies potential gaps in facility's plan(s).	https://www.cdc.gov/phpr/healthcare/hospitals.htm https://www.cdc.gov/phpr/healthcare/documents/DSNS-HAH_Portfolio.Final.pdf https://www.cdc.gov/phpr/readiness/healthcare/documents/hah_508_compliant_final.pdf http://www.euro.who.int/__data/assets/pdf_file/0008/268766/Hospital-emergency-response-checklist-Eng.pdf https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/Survey-and-Cert-Letter-14-12.pdf
CDC's Crisis and Emergency Risk Communication	CERC	Centers for Disease Control and Prevention (CDC) communications program based on public health research, psychology, and emergency risk communication. Provides manuals, trainings, tools, and other resources to help health communicators, emergency responders, leaders.	https://emergency.cdc.gov/cerc/index.asp
Common Operating Picture	COP Common Operational Picture	Single, identical display of relevant operational information for situational awareness for on-scene and off-scene personnel for effective decision making, rapid staff actions, and mission execution.	https://www.fema.gov/pdf/emergency/nims/imp_hos.pdf https://www.fema.gov/pdf/emergency/nims/imp_hos.pdf

Term(s)	Acronym(s) and/or Similar Term(s)	Definition	Resource(s)
Crisis Standards of Care	CSC	Framework for state and local public health officials, health-sector agencies, and institutions to use to establish and implement standards of care that should apply in disaster situations under scarce resource conditions, defined as a substantial change in usual healthcare operations and the level of care it is possible to deliver due to a pervasive or catastrophic disaster. Change formally declared by state government. Enables specific legal/regulatory powers and protections. Developed by Institute of Medicine on request of ASPR.	https://www.nap.edu/read/12749/chapter/2#3
Emergency Management Program	EMP	Facility/institutional program to assist facility(s) in continuing efforts to meet and maintain readiness for emergencies. Includes plans, policies, contingencies, potential solutions.	https://asprtracie.hhs.gov/technical-resources/84/emncy-operations-plans-emncy-management-program/1 https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/Survey-and-Cert-Letter-14-12.pdf https://www.calhospitalprepare.org/post/hospital-emergency-management-program-checklist-0
Emergency Operations Plan	EOP	Explains the management and coordination of public information with healthcare partners and jurisdictional authorities such as local public health, EMS, emergency management and others as appropriate.	https://asprtracie.hhs.gov/technical-resources/84/emncy-operations-plans-emncy-management-program/1 https://www.fema.gov/pdf/about/divisions/npd/CPG_101_V2.pdf https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/Survey-and-Cert-Letter-14-12.pdf https://www.cdc.gov/phpr/healthcare/hospitals.htm
Emergency Support Function	ESF	Federal resources and capabilities into functional areas most frequently needed in a national response to a crisis.	http://www.fema.gov/NRF

Term(s)	Acronym(s) and/or Similar Term(s)	Definition	Resource(s)
Hazard Vulnerability Analysis	HVA Risk assessment	Multidisciplinary process, with representatives from all services involved in an emergency situation. The Joint Commission has, since 2001, required member hospitals to complete an annual hazard vulnerability analysis (HVA), which is expected to provide a foundation for emergency planning efforts. Process includes assessing the probability of each type of event, the risk it would pose, and the organization's current level of preparedness. Takes into account nearby community resources likely to be affected or called upon for assistance.	https://www.calhospitalprepare.org/hazard-vulnerability-analysis https://asprtracie.hhs.gov/technical-resources/3/hazard-vulnerability-risk-assessment/1
Hospital Incident Command System	HICS	Incident command system designed for hospital and intended for use in emergency and non-emergency situations.	**HICS** http://www.emsa.ca.gov/hics/ http://training.fema.gov/EMIWeb/IS/ICSResource/index.htm http://www.hicscenter.org/ http://www.lhaonline.org/displaycommon.cfm?an=1&subarticlenbr=258 **Medical and Health Incident Management (MaHIM)** http://www.gwu.edu/~icdrm/publications/ **Nursing Home Incident Command System (NHICS)** http://www.fhca.org/emerprep/ics.php
Hospital Incident Management Team	HIMT	Command staff for HICS	http://www.calhospitalprepare.org/sites/main/files/file-attachments/hics_207-hospital_incident_managment_team_himt_chart.pdf
Interoperability		Ability of emergency management/ response personnel to interact and work well together, being linked to the same system, interfacing effectively with national standards, and sharing data throughout the incident management process	https://emilms.fema.gov/IS700aNEW/NIMS0103summary.htm
Hospital Command Center	HCC	Location of command staff as defined by HICS. Should have specific characteristics and resources to maximize functionality.	https://www.calhospitalprepare.org/post/hospital-incident-command-system-hics

| Term(s)	Acronym(s) and/or Similar Term(s)	Definition	Resource(s)
Health Care Coalition	HCC	Group of healthcare organizations in a specified geographic area that agree to work together to support emergency response of institutions by connecting them through an information processing and communications system to share incident and emergency response information. Framework developed under HHS/ASPR Medical Surge Capacity and Capability Handbook.	https://www.phe.gov/Preparedness/planning/mscc/healthcarecoalition/chapter1/Pages/healthcarecoalition.aspx#1.3.1 https://www.phe.gov/Preparedness/planning/mscc/healthcarecoalition/chapter2/Pages/overview.aspx https://www.phe.gov/Preparedness/planning/mscc/healthcarecoalition/Pages/introduction.aspx
Hospital Preparedness Program	HPP	ASPR office that supports regional healthcare system preparedness through education, grants, research, guidance, tools, and other resources and opportunities.	https://www.phe.gov/Preparedness/planning/hpp/Pages/default.aspx
Incident Command System	ICS Unified Command (UC)	Standardized approach across agencies/organizations to command, control, and coordination of emergency response.	https://www.fema.gov/incident-command-system-resources
Job Action Sheet	JAS	Outline responsibilities, reporting structures, and actions for command positions in HICS, allowing for personnel to document each action and record decision timeframes. Can be adjusted or combined to respond to scenario.	http://hicscenter.org/Shared%20Documents/HICS2006/Guidebook_Glossary.pdf https://emsa.ca.gov/wp-content/uploads/sites/47/2017/09/HICS_Guidebook_2014_11.pdf
Laboratory Response Network	LRN	CDC division tasked with maintaining an integrated network of state and local public health, federal, military, and international laboratories that can respond to public health emergencies.	https://emergency.cdc.gov/lrn/index.asp
National Disaster Medical System	NDMS	Under ASPR, teams of healthcare professionals who can be activated to respond to a disaster or emergency to provide expert care and services in challenging conditions, or to be ready for healthcare crises at large public events or other scenarios.	https://www.phe.gov/Preparedness/responders/ndms/ndms-teams/Pages/default.aspx

Term(s)	Acronym(s) and/or Similar Term(s)	Definition	Resource(s)
National Incident Management System	NIMS	Single, comprehensive national incident management system. Systematic, proactive approach that guides all levels of government, the private sector, and NGOs to prepare for, prevent, respond to, recover from, and mitigate the effects of incidents regardless of cause, size, location, or complexity in order to reduce the loss of life, property, and harm to the environment. Homeland Security Presidential Directive 5 requires all federal departments/agencies adopt NIMS and healthcare organizations implement NIMS in order to receive preparedness funding from ASPR HPP grant program.	http://www.phe.gov/Preparedness/planning/hpp/reports/Documents/nims-implementation-guide-jan2015.pdf
National Response Framework	NRF	How the United States conducts all-hazards response, linking all levels of government, NGOs, and the private sector. Based on NIMS. Provides guidance as to specific authorities and best practices for managing incidents.	https://www.fema.gov/pdf/emergency/nrf/nrf-core.pdf http://www.fema.gov/NRF http://training.fema.gov/emiweb/is/is800b.asp
Office of the Assistant Secretary for Preparedness and Response	ASPR	HHS agency created under the Pandemic and All Hazards Preparedness Act to lead the nation in preventing, preparing for, and responding to adverse health effects of public health emergencies and disasters.	https://www.phe.gov/about/aspr/pages/default.aspx https://www.phe.gov/emergency/Pages/default.aspx
Office of Public Health Preparedness and Response, CDC	PHPR	CDC office established in 2002 to build and strengthen national preparedness for public health emergencies, comprised of the Division of Emergency Operations, Division of State and Local Readiness, Division of Strategic National Stockpile, Division of Select Agents and Toxins.	https://www.cdc.gov/phpr/about.htm

Diagram of Incident Management Preparedness Structures
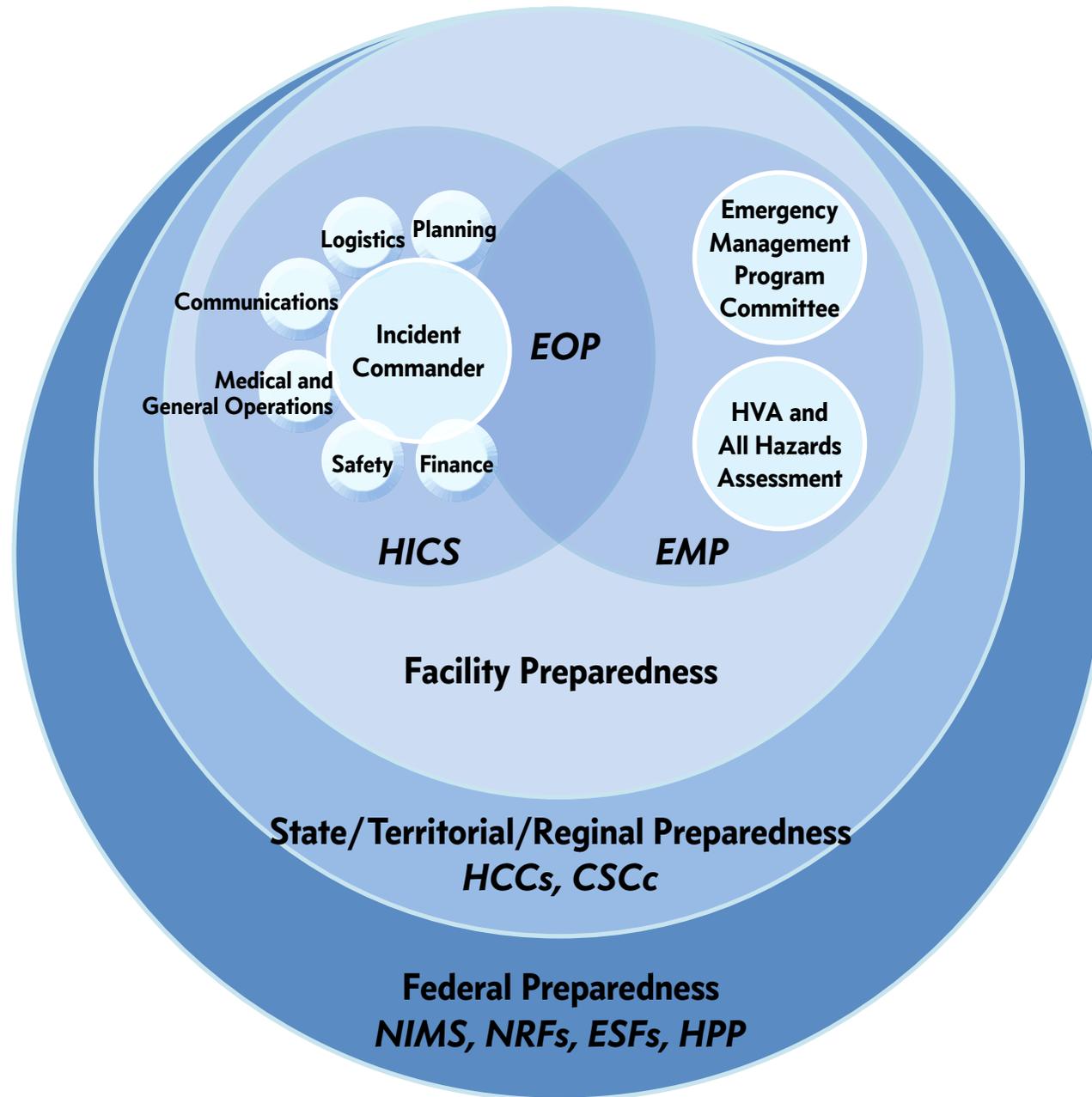
Legend: National Incident Management System (NIMS), National Response Framework (NRF), Emergency Support Function (ESF), Hospital Preparedness Program (HPP), Health Care Coalition (HCC), Crisis Standards of Care (CSC), Hospital Incident Command System (HICS), Emergency Management Program (EMP), Emergency Operations Plan (EOP)

Hospital Incident Management Team (HIMT) for the Hospital Incident Command System (HICS)
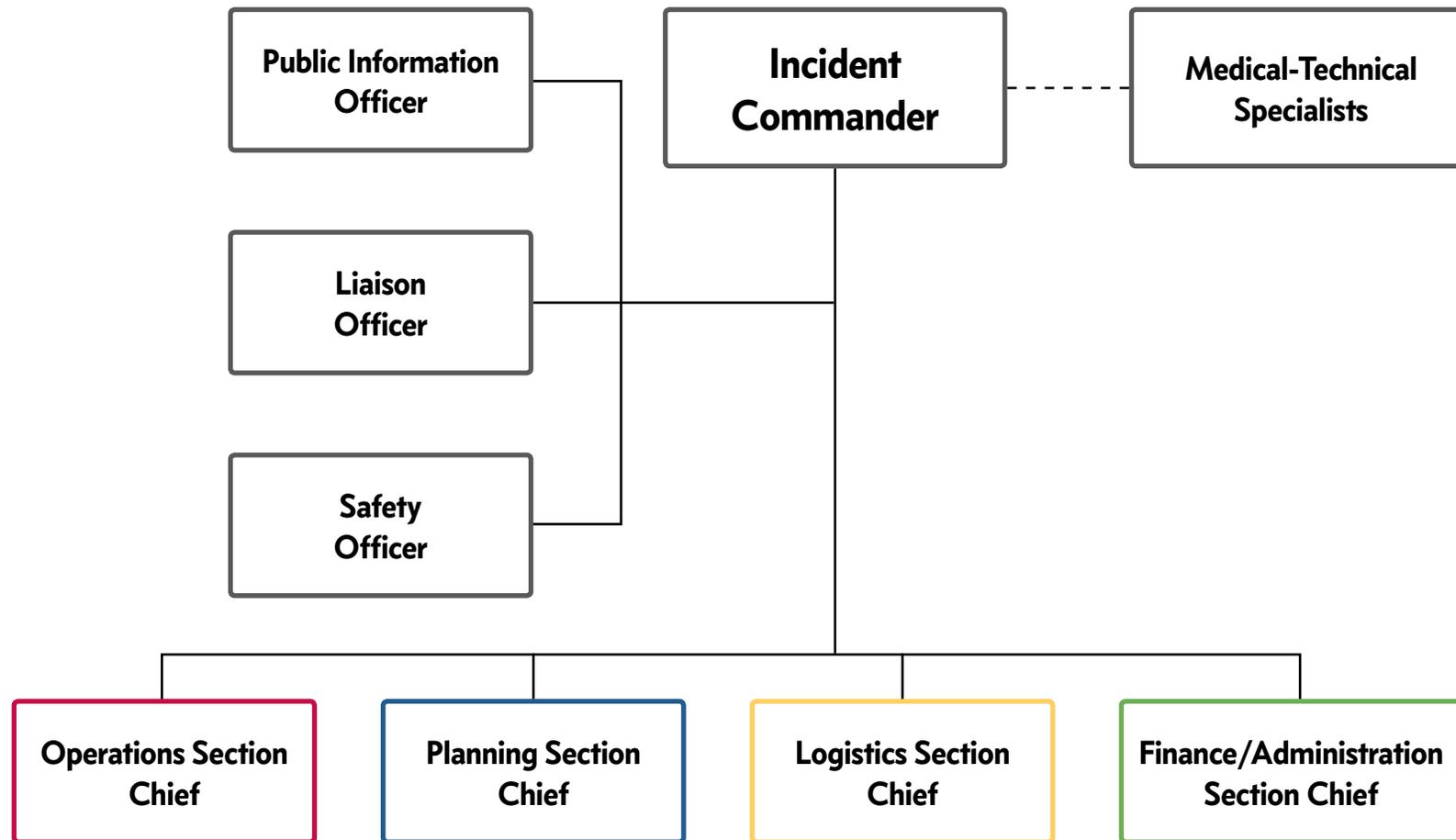
Incident Commander (IC): oversees operation; determines which parts of the plan will be activated

Public Information Officer (PIO): provides information updates to internal and external stakeholders

Liaison Officer (LO): conduit between hospital and outside agencies

Safety Officer (SO): responsible for safety of hospital staff, visitors, and patients; monitors response and anticipates hazardous conditions or situations

Medical-technical Specialist (likely role of HE): assists the IC by providing event-specific advice and counsel

Operations Section Chief: develops and implements strategies and tactics carried out by IC (staging, medical care, infrastructure, security, hazardous materials, business continuity)

Planning Section Chief: oversees incident related data gathering and analysis and develops alternatives for tactical operations and preparing the Incident Action Plan for each operational period

Logistics Section Chief: obtains necessary resources needed by operations and planning; supervises damage reporting and control, sanitation, supply, transport, and nutrition

Finance/Administration Section Chief: monitors cost related to the incident; accounting, procurement, and analyses

SHEA Guidance and Resources in Outbreak Response: Executive Summary

Section	Subsection	Recommendations
A. Incident Management	A.1. Incident Management Organizational Structures	1. A facility should use an Emergency Management Program (EMP) to identify its goals and vision related to emergency management and to guide it through the incident management phases of preparedness, mitigation, response, and recovery from a crisis.
		2. The facility should use an all-hazards self-assessment to inform the EMP and determine how it can fulfill its core mission of patient care during incidents, including infectious diseases outbreaks.
		3. Within the EMP, the facility should create an emergency operations plan (EOP) that includes 6 critical components, as required by The Joint Commission's Emergency Management Standards:
		a. Communications
		b. Resources and assets
		c. Safety and security
		d. Staff responsibilities
		e. Utilities
		f. Clinical support activities
		4. The facility should assess the adequacy of the EOP by conducting drills, competency assessments, and simulation exercises.
		5. The facility should coordinate and communicate outbreak response through the Hospital Incident Command System (HICS).
	A.2. Stakeholders in Preparedness and Response	1. The healthcare epidemiologist (HE) should create, maintain, and/or have access to a list with contact information for individuals and groups/organizations relevant to his/her role in outbreak response, and establish lines of communication with these stakeholders.
		2. The HE should be familiar with facility, local, and state practices and protocols for interaction with stakeholders, which may vary depending on location.
	A.3. Communication Strategies	1. Facilities should employ communication standards described in the National Incident Management System (NIMS), which recommends common or plain language used across systems (emergency management, law enforcement, emergency medical services, fire department, and public health agencies).
		2. Facilities should adhere to the six principles of CDC's Crisis and Emergency Risk Communication (CERC): be first, be right, be credible, express empathy, promote action, show respect.
		3. The HE should be trained in CERC, which can be accomplished through in-person and online training.

Section	Subsection	Recommendations
	A.4. Legal, Ethical, and Regulatory Requirements	1. Federal, accrediting, state, and local/regional bodies set requirements/standards pertinent to infectious diseases outbreaks, which may change or be updated due to anticipated, occurring, or past outbreaks. Requirements should be identified in the facility's EMP, which should incorporate:
		a. Public health structures that influence delivery of care during an outbreak investigation and/or declared public health emergency
		b. Regulations that influence delivery of care around facility and emerging pathogen outbreaks, as well as declared public health emergencies.
		2. The facility should ensure Hospital Legal Counsel (or equivalent) as part of the HICS structure.
		3. The facility's Ethics Committee (or equivalent) should be involved in EMP and EOP reviews, especially when plans deviate from accepted standards of clinical care.
		4. The facility should be aware of its state's crisis standards of care (CSC) guidance when outbreaks limit the resources needed to provide the usual standard of care.
B. Roles and Responsibilities of the Healthcare Epidemiologist in Facility and Emerging Pathogen Outbreaks	B.1. Leadership Role of the HE in Incident Management	1. The HE should be versed and trained in basic HICS response.
		2. In most facilities, the HE serves as the medical-technical specialist in domains relevant to infection prevention and control and infectious diseases within HICS when the system is being utilized.
		3. The HE should ensure that liability coverage is provided for the duties undertaken based on his/her role in HICS.
	B.2. Activities and Responsibilities of the HE in Incident Management	1. The HE should provide input into the facility's EMP and the four phases of incident management as they relate to infectious diseases and infection prevention and control: preparedness, mitigation, response, and recovery.
		2. The HE should be involved in the development, maintenance, and evaluation of a facility's EOP as it relates to infectious diseases outbreaks.
		3. The HE should ensure that the hospital systematically monitors local, federal, and international public health advisories and alerts of emerging pathogens.
		4. The HE should ensure the existence of, or help develop when needed, a hospital-wide surveillance program that accurately and rapidly identifies exposed and infected patients and healthcare personnel (HCP), including protocols for reporting these individuals to infection prevention and control staff.
		5. The HE should interpret advisories/alerts and surveillance data to identify when the healthcare facility is faced with a potential or actual outbreak, and report this information to the Emergency Program Manager, Incident Commander, and/or appropriate leadership as established by the facility.

Section	Subsection	Recommendations
		6. The HE should have access to contact information for, and have working knowledge of, stakeholders' roles in responding to a facility or emerging pathogen outbreak.
		7. The HE should ensure that the facility develops easily accessible and widely disseminated written multidisciplinary protocols for identifying, investigating, responding to, and containing facility and emerging pathogen outbreaks.
		8. When HICS is activated, the HE should provide the Incident Commander (IC) with situational awareness to contribute to the common operating picture (COP) of the crisis.
	B.3. Role of the HE in Coordination with Stakeholders	1. When HICS is activated, the HE should assist the IC and the PIO in creating and/or reviewing messaging for internal and external stakeholders. If HICS is not activated, the HE will assist designated facility communications leadership.
		2. The HE should work collaboratively with internal and external stakeholders to coordinate the outbreak response in accordance with his/her designated role within HIMT.
	B.4. Additional Resources and Assets for Outbreak Response	1. In coordination with the facility, the HE should know how to access and use the following resources for additional assistance:
		a. The facility's hazard vulnerability assessment (HVA)/risk assessment for most likely threats, in order to identify gaps
		b. Office of the Assistant Secretary for Preparedness and Response (ASPR) Technical Resources, Assistance Center, and Information Exchange (TRACIE)
		c. Internal and external stakeholders
		2. The HE should have knowledge of:
		a. Regional centers with specialized capabilities for managing patients with suspected or confirmed infection with the pathogen of interest
		b. Principles and processes related to transfer of care and coordination for EMS transport
	B.5. Clinical and Support Activities	1. The HE should ensure that a facility's policies and procedures address, encourage, and facilitate infection prevention and control measures, including but not limited to hand hygiene, respiratory etiquette, and transmission-based precautions.
		2. The HE should be familiar with facility resources identified in the EMP, including:
		a. Number of isolation rooms and their locations
		b. Plans and capability to adapt patient care rooms or units' airflow for surge capacity
		c. Cleaning and decontamination processes for both the environment and medical equipment

Section	Subsection	Recommendations
		d. PPE and medical supplies
		3. In collaboration with the facility's Ethics Committee (or equivalent), the HE should provide expertise to leadership, or the IC when HICS is activated, in determining whether clinical care practices warrant modification or avoidance, depending on how the pathogen is transmitted, and whether additional measures or resources are needed to protect patients and HCP.
		4. The HE should provide input to ensure the facility:
		a. Uses syndromic surveillance to detect an emerging pathogen outbreak in collaboration with and based on guidance from public health authorities
		b. Is prepared to provide a medical screening examination (MSE) of patients in clinical areas
		c. Provides critical care with appropriate PPE
		d. Is able to place PUIs in private rooms as soon as possible until transfer to an appropriate isolation room, which may be in another center that has specialized capabilities, if needed
		e. Has appropriate environmental controls available, including rooms that meet airborne infection isolation specifications when airborne transmission may be a potential mode of transmission.
	B.6. Equipment and Supplies for Management of an Emerging Pathogen Outbreak	1. As part of the EMP, the facility should:
		a. Maintain and make easily accessible an inventory of PPE and medical equipment that identifies what is on hand and what is needed for specific categories of emerging pathogen outbreaks.
		b. Designate an individual responsible for maintaining levels of equipment, managing out-of-date supplies, and determining a plan to relay critical supply shortages to the local and state emergency response centers (e.g. via the Logistics Section Chief in HIMT).
		c. Identify and coordinate communication channels with other regional medical centers regarding equipment, supplies, and capacity for a regional response to an emerging pathogen.
		d. Depending on the nature of the suspected pathogen, when possible and appropriate, utilize disposable medical equipment to minimize the need for decontamination.

Section	Subsection	Recommendations
	B.7. Role of HE in Experimental Vaccines, Therapeutics, and Clinical Research during an Emerging Pathogen Outbreak	1. A facility, depending on its structure and resources, may engage in work on experimental vaccines, therapeutics, and/or clinical research during an emerging pathogen outbreak. If the facility determines it may have a role in these activities, it should identify external partners, resources, and HCP roles during the preparedness phase and outline them in the EOP. The HE may assume a leadership role in such activities or the facility may designate another individual to assume this role, which may involve:
		a. Collaboration with external partners, including HCCs or other state/territorial/regional public health authorities, industry, the US Food and Drug Administration (FDA), and facility structures such as the Human Subjects Review Committee (or equivalent), to identify experimental vaccines or therapeutics that may be used.
		b. Conduct of clinical research, conforming to all applicable regulations
	B.8. Role of Infection Prevention Staff and Direct Care HCP	1. During all phases of incident management, infection prevention staff should:
		a. Collaborate with and support the HE
		b. Continue to perform outbreak surveillance and effectively communicate this information to the HE.
		c. Provide knowledge and skills regarding infection prevention practices.
		2. Direct care HCP should be able to:
		a. Recognize that clusters of patients or HCP with infection, or a single patient or HCP with a very unusual infection, may represent the start of an outbreak
		b. Report this to infection prevention and control staff
		c. Continue to perform standard infection prevention and control measures while awaiting further guidance from infection prevention and control.
		3. Direct care HCP designated to provide patient care during an outbreak setting should demonstrate competency in standard and special protocols to respond to and contain pathogens within their scope of practice.
C. Special Considerations for Resource-Limited Facilities and Special Patient Populations	**C.1. Resource-Limited Facilities**	1. Resource-limited facilities should use an HVA to assess their capacity to respond to outbreaks, and mitigate deficiencies through identification and training of local experts, collaboration with established infection prevention and control programs, and consultation with HEs.
		2. Resource-limited facilities should access local, state/territorial/regional, and federal EMPs and services when developing their EMP.

Section	Subsection	Recommendations
		3. Resource-limited facilities should develop JASs that combine and prioritize HIMT positions according to the facility's capabilities and needs.
		4. The HE should participate in exercises/drills, which provide experience in incident management procedures and interaction with facility leaders and staff.
	C.2. Special Patient Populations	1. Facilities should be aware that pregnant women and immunocompromised individuals may have atypical presentations of illness that could lead to delayed diagnosis, or be at higher risk for severe complications or prolonged contagiousness, all of which may lead to greater potential for cross-transmission to other patients, HCP, and visitors.
		2. The EOP should incorporate special considerations for pediatric patients:
		a. Encouragement of parental/guardian involvement in the care and support of children, whether in person or through videoconferencing technology.
		b. Safety considerations for parent(s)/guardian(s) to be at the bedside, including:
		i. Whether the parent/guardian already has been exposed to the pathogen, or is considered immune (e.g. measles)
		ii. Whether the facility has the capacity to provide care for the parent/guardian if he or she becomes ill
		iii. If the parent/guardian has a condition that places them at increased risk (e.g. pregnancy, immunocompromised)
		iv. If the parent/guardian can don/doff appropriate PPE and follow infection prevention and control policies and procedures.
		3. In staffing considerations, the facility should take into account:
		a. The added daily care and supervision tasks children require when parent(s)/guardian(s) cannot be involved
		b. The potential for increased liaising with public health departments in outbreaks involving school children, university students, childcare centers, and residential facilities.
	C.3. Long-Term Care Facilities	1. During preparedness and response to an emerging pathogen outbreak, the acute care hospital should:
		a. Develop collaborative protocols and conduct pre-planning exercises/drills to facilitate interaction
		b. Ensure clear and timely communication with LTCFs and EMS transport.
		2. This document does not provide recommendations for adapting acute care policies to other settings, such as LTC and Post-Acute Care facilities, due to the lack of literature on the topic; however, these facilities should review the resources listed below to help their preparedness and response efforts for infectious diseases outbreaks.