Literature Review:

Outbreak Response and Incident Management: SHEA Guidance and Resources for Healthcare Epidemiologists in United States Acute Care Hospitals

Literature Review Table

Topic	Subtopic	Questions
A. Incident Management	1. Incident Management Organizational Structures	What organizational structures are most commonly used by governmental organizations, healthcare organizations, and other responders to manage incident response?[1]
A. Incident Management	1. Incident Management Organizational Structures	How should coordination of outbreak management staff and services occur?[2]
A. Incident Management	1. Incident Management Organizational Structures	What approaches should be considered by a healthcare organization for all-hazards preparedness for infectious diseases outbreaks and how can the adequacy of these approaches be assessed?[3]
A. Incident Management	4. Stakeholders in Preparedness and Response	Who are the key stakeholders required in a facility outbreak response and what are their roles?[4]
A. Incident Management	4. Stakeholders in Preparedness and Response	Who are the key stakeholders required in an emerging pathogen outbreak response and what are their roles?[5]
A. Incident Management	5. Communication Strategies	What are effective internal and external communication strategies during an outbreak and who should be responsible for their delivery?[6]

[1] IDO+IM

[2] IDO+IM

[3] IDO + IM + (((((hazards[All Fields] AND ("Assessment"[Journal] OR "assessment"[All Fields])) OR hazards[All Fields]) OR ("civil defense"[MeSH Terms] OR ("civil"[All Fields] AND "defense"[All Fields]) OR "civil defense"[All Fields] OR ("emergency"[All Fields] AND "preparedness"[All Fields]) OR "emergency preparedness"[All Fields])) OR ("Assessment"[Journal] OR "assessment"[All Fields])) AND hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang]) NOT ("civil defense"[MeSH Terms] OR ("civil"[All Fields] AND "defense"[All Fields]) OR "civil defense"[All Fields]) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])

[4] IDO + HE + F

[5] IDO + HE + EP

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A. Incident Management	6. Legal, Ethical, and Regulatory Requirements	What are the legal, ethical, and regulatory requirements associated with outbreak investigation and incident management?[7]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	1. Leadership Role of the HE in Incident Management	What is the leadership role of a hospital epidemiologist in response to a facility outbreak?[8]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	1. Leadership Role of the HE in Incident Management	What is the leadership role of a hospital epidemiologist in response to a facility outbreak?[9]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	2. Activities and Responsibilities of the HE in Incident Management	In order to optimize healthcare facility incident management, what activities are hospital epidemiologists (HEs) involved in during the mitigation, preparedness, response, and recovery phases?[10]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	2. Activities and Responsibilities of the HE in Incident Management	What are key components of a healthcare organization's emergency operations plan and how can HEs assess adequacy of these plans for infectious diseases outbreaks?[11]
B. Roles and Responsibilities of the	2. Activities and Responsibilities of the HE in	What can HEs do to prepare for investigation and management of a facility outbreak, including written protocols and other steps?[12]

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[6] IDO + IM + ((("communication"[MeSH Terms] OR "communication"[All Fields]) OR media[All Fields]) OR ("public relations"[MeSH Terms] OR ("public"[All Fields] AND "relations"[All Fields]) OR "public relations"[All Fields])) OR (public[All Fields] AND information[All Fields]) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])

[7] IDO + IM + (legal[All Fields] OR ("morals"[MeSH Terms] OR "morals"[All Fields] OR "ethical"[All Fields])) OR regulatory[All Fields] AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])

[8] IDO + HE + F

[9] IDO + HE + EP

[10] IDO + IM

[11] IDO + IM

[12] IDO + HE + F

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Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	Incident Management	
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	2. Activities and Responsibilities of the HE in Incident Management	What can HEs do to prepare for management of an emerging pathogen outbreak, including written protocols and other steps[13]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	3. Role of HE in Coordination with Stakeholders	What is the role of the HE in coordination with internal and external partners, including local, state and regional public health authorities, during a facility outbreak?[14]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	3. Role of HE in Coordination with Stakeholders	What is the role of the HE in coordination with internal and external partners, including local, regional, and national public health authorities, during an emerging pathogen outbreak?[15]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	4. Clinical and Support Activities	What are the recommended clinical and support activities needed to respond to a facility outbreak?[16]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	4. Clinical and Support Activities	What safety and security concerns should be addressed in the investigation and management of a facility outbreak?[17]
B. Roles and Responsibilities of the	4. Clinical and Support Activities	Are there pathogen-specific issues that would require different levels of clinical and support activities in a facility outbreak?[18]

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[13] IDO + HE + EP

[14] IDO + HE + F

[15] IDO + HE + EP

[16] IDO + HE + F

[17] IDO + HE + F

[18] IDO + HE + F

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Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks		
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	4. Clinical and Support Activities	What are the recommended clinical and support activities needed to respond to an emerging pathogen outbreak?[19]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	4. Clinical and Support Activities	What safety and security concerns should be addressed in the management of an emerging pathogen outbreak?[20]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	4. Clinical and Support Activities	Are there pathogen-specific issues that would require different levels of biohazard containment, handling, and decontamination?[21]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	5. Resources and Assets for Outbreak Response	What resources and assets (institutional and external) may be available to the HE when approaching a facility outbreak?[22]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging	5. Resources and Assets for Outbreak Response	What resources and assets (internal and external) may be available to the HE when approaching an emerging pathogen outbreak?[23]

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[19] IDO + HE + EP

[20] IDO + HE + EP

[21] IDO + EP + (((hazmat[All Fields] OR ("hazardous substances"[Pharmacological Action] OR "hazardous substances"[MeSH Terms] OR ("hazardous"[All Fields] AND "substances"[All Fields]) OR "hazardous substances"[All Fields] OR "biohazard"[All Fields])) OR ("containment of biohazards"[MeSH Terms] OR ("containment"[All Fields] AND "biohazards"[All Fields]) OR "containment of biohazards"[All Fields] OR "containment"[All Fields])) OR ("decontamination"[MeSH Terms] OR "decontamination"[All Fields])) OR ("personal protective equipment"[MeSH Terms] OR ("personal"[All Fields] AND "protective"[All Fields] AND "equipment"[All Fields]) OR "personal protective equipment"[All Fields]) AND (("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms])

[22] IDO + HE + F

[23] IDO + HE + EP

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Pathogen Outbreaks		
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	6. Role of HE in Experimental Vaccines, Therapeutics, and Clinical Research during an Emerging Pathogen Outbreak	What is the role of the HE in working with partners, including industry and the FDA, regarding experimental vaccines or therapeutics and clinical research during an emerging pathogen outbreak?[24]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	7. Role of Infection Prevention Staff and Direct Care HCP	What is the expectation for direct patient care providers and infection prevention staff regarding their knowledge and preparedness of outbreak procedures at their facility?[25]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	7. Role of Infection Prevention Staff and Direct Care HCP	What is the expectation for direct patient care providers and infection prevention staff regarding their knowledge and preparedness of outbreak procedures for emerging pathogens?[26]
B. Roles and Responsibilities of the Hospital Epidemiologist in Facility and Emerging Pathogen Outbreaks	8. Equipment and Supplies for Management of an Emerging Pathogen Outbreak	What equipment and supplies are likely to be required to manage an emerging pathogen outbreak?[27]
C. Special Considerations for Resource-Limited Facilities and Special Patient Populations	1. Resource-Limited Facilities	How do healthcare facility characteristics (e.g. size, resource limitation, referral vs. community-based) impact the approach to incident management for infectious diseases outbreaks?[28]
C. Special Considerations for Resource-Limited	1. Resource-Limited Facilities	Which resources should hospitals access if they are unable to enact the recommended clinical and support activities?[29]

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[24] IDO + HE + EP + ((experimental[All Fields] OR ("vaccines"[MeSH Terms] OR "vaccines"[All Fields])) OR ("J Pathol Clin Res"[Journal] OR ("clinical"[All Fields] AND "research"[All Fields]) OR "clinical research"[All Fields] OR "Clin Res"[Journal] OR ("clinical"[All Fields] AND "research"[All Fields]) OR "clinical research"[All Fields])) OR ("research"[MeSH Terms] OR "research"[All Fields]) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])

[25] IDO + HE + F

[26] IDO + HE + EP

[27] IDO + HE + EP

[28] IDO + IM

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Facilities and Special Patient Populations		
C. Special Considerations for Resource-Limited Facilities and Special Patient Populations	1. Resource-Limited Facilities	Which resources should hospitals access if they are unable to enact the recommended clinical and support activities?[30]
C. Special Considerations for Resource-Limited Facilities and Special Patient Populations	2. Special Patient Populations	In the acute care setting, are there situations or patient populations that warrant modification of policies and procedures?[31]
C. Special Considerations for Resource-Limited Facilities and Special Patient Populations	2. Special Patient Populations	If the parents are sick at an outside adult facility, how can we support their sick children, and maintain contact with their parents?[32]
C. Special Considerations for Resource-Limited	3. Long-Term Care	For adults with suspected/confirmed emerging pathogen infection transitioning to a LTCF, what information should be required during transfer and should there be any additional precautions taken prior to transfer?[33]

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[29] IDO + HE + F

[30] IDO + HE + EP

[31] IDO + (EP OR F) + ((("parents"[MeSH Terms] OR "parents"[All Fields]) OR ("family"[MeSH Terms] OR "family"[All Fields])) OR ("child"[MeSH Terms] OR "child"[All Fields] OR "children"[All Fields])) OR visitors[All Fields] AND (("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms]) + (((gowns[All Fields] OR ("gloves, protective"[MeSH Terms] OR ("gloves"[All Fields] AND "protective"[All Fields]) OR "protective gloves"[All Fields] OR "gloves"[All Fields])) OR (("Contact"[Journal] OR "contact"[All Fields] OR "Contact"[Journal] OR "contact"[All Fields]) AND precautions[All Fields])) OR ("isolation and purification"[Subheading] OR ("isolation"[All Fields] AND "purification"[All Fields]) OR "isolation and purification"[All Fields] OR "isolation"[All Fields])) OR ("personal protective equipment"[MeSH Terms] OR ("personal"[All Fields] AND "protective"[All Fields] AND "equipment"[All Fields]) OR "personal protective equipment"[All Fields]) AND (("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms]) + (("Acute Care"[Journal] OR ("acute"[All Fields] AND "care"[All Fields]) OR "acute care"[All Fields]) OR ("hospitals"[MeSH Terms] OR "hospitals"[All Fields] OR "hospital"[All Fields])) OR ("intensive care units"[MeSH Terms] OR ("intensive"[All Fields] AND "care"[All Fields] AND "units"[All Fields]) OR "intensive care units"[All Fields] OR "icu"[All Fields]) AND (("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms])

[32] IDO + (EP OR F) + HE + pediatric filter

[33] IDO + (EP OR F) + ((("long-term care"[MeSH Terms] OR ("long-term"[All Fields] AND "care"[All Fields]) OR "long-term care"[All Fields] OR ("long"[All Fields] AND "term"[All Fields] AND "care"[All Fields]) OR "long term care"[All Fields]) OR (post[All Fields] AND ("Acute Care"[Journal] OR ("acute"[All Fields] AND "care"[All Fields]) OR "acute care"[All Fields]))) OR ("nursing homes"[MeSH Terms] OR ("nursing"[All Fields] AND "homes"[All Fields]) OR "nursing homes"[All Fields] OR ("nursing"[All Fields] AND "home"[All Fields]) OR "nursing home"[All Fields])) OR ("rehabilitation"[Subheading] OR "rehabilitation"[All Fields] OR "rehabilitation"[MeSH Terms]) AND (("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms])

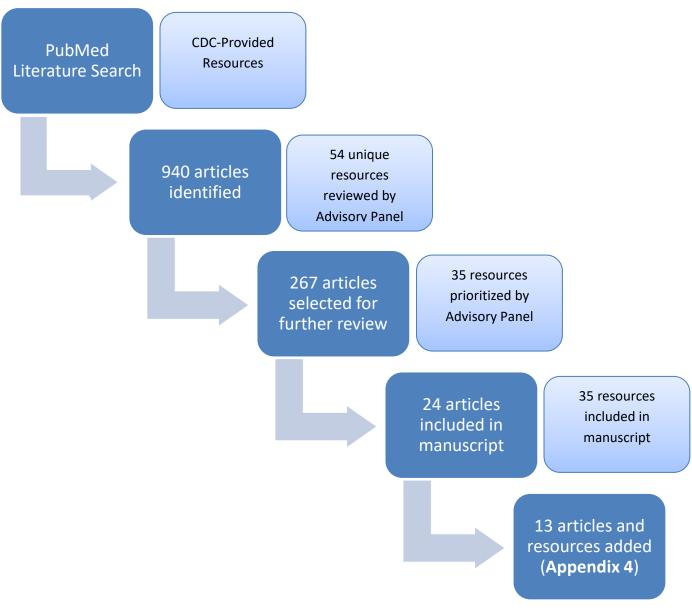| Facilities and Special Patient Populations		
C. Special Considerations for Resource-Limited Facilities and Special Patient Populations	3. Long-Term Care	What adaptation of policies and procedures designed for the acute care setting should be made in long-term and post-acute care settings/facilities?[34]
Removed	Removed	How can hospitals manage increased staffing needs when higher ratios are required (1:1 or 2:1)?[35]

Added Resources and Articles

1. IOM. Emerging Infections: Microbial Threats to Health in the United States. Washington, DC: National Academy Press; 1992. Available from: https://www.nap.edu/read/2008/chapter/1.
2. SHEA. The Society for Healthcare Epidemiology of America (SHEA) Handbook for SHEA-Sponsored Guidelines and Expert Guidance Documents 2017 [cited 2017 January]. 2:[Available from: http://www.shea-online.org/images/docs/2017_Handbook.pdf.
3. StanfordHealthCare. The Hospital Incident Command System: A Guide for Hospital Personnel 2015 [cited 2017 January]. Available from: https://www.youtube.com/watch?v=14SGKLZM5c0&feature=youtu.be.
4. NCIRD, CDC. Updated norovirus outbreak management and disease prevention guidelines. MMWR Recomm Rep. 2011;60(RR-3):1-18. PubMed PMID: 21368741.
5. NCEZID, DHQP, CDC. Guidance for Control of Carbapenem-resistant Enterobacteriaceae (CRE). 2012 CRE Toolkit2012.
6. SanFranciscoBayAreaAdvancedPracticeCenter, NACCHO, APC. Infectious Disease Emergency Response Toolkit (IDER) [toolkit]. 2011. Available from: http://apc.naccho.org/Products/APC20102190/Pages/ider_intro.aspx.
7. CMS. Medicare and Medicaid Programs; Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers 2016 [cited 2016 November]. Available from: https://www.federalregister.gov/documents/2016/09/16/2016-21404/medicare-and-medicaid-programs-emergency-preparedness-requirements-for-medicare-and-medicaidAvailable from: https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertEmergPrep/Emergency-Prep-Rule.html
8. CMS. Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers Final Rule 2016 [cited 2016 November]. Available from: https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertEmergPrep/Emergency-Prep-Rule.html
9. Bearman G, Bryant K, Leekha S, Mayer J, Munoz-Price LS, Murthy R, et al. Healthcare personnel attire in non-operating-room settings. Infect Control Hosp Epidemiol. 2014;35(2):107-21. doi: 10.1086/675066. PubMed PMID: 24442071.
10. Bryant KA, Harris AD, Gould CV, Humphreys E, Lundstrom T, Murphy DM, et al. Necessary Infrastructure of Infection Prevention and Healthcare Epidemiology Programs: A Review. Infect Control Hosp Epidemiol. 2016;37(4):371-80. Epub 2016/02/01. doi: 10.1017/ice.2015.333. PubMed PMID: 26832072.

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[34] IDO + (EP OR F) + HE + ((("long-term care"[MeSH Terms] OR ("long-term"[All Fields] AND "care"[All Fields]) OR "long-term care"[All Fields] OR ("long"[All Fields] AND "term"[All Fields] AND "care"[All Fields]) OR "long term care"[All Fields]) OR (post[All Fields] AND ("Acute Care"[Journal] OR ("acute"[All Fields] AND "care"[All Fields]) OR "acute care"[All Fields]))) OR ("nursing homes"[MeSH Terms] OR ("nursing"[All Fields] AND "homes"[All Fields]) OR "nursing homes"[All Fields] OR ("nursing"[All Fields] AND "home"[All Fields]) OR "nursing home"[All Fields])) OR ("rehabilitation"[Subheading] OR "rehabilitation"[All Fields] OR "rehabilitation"[MeSH Terms]) AND (("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms])

[35] IDO + (EP OR F) + HE + pediatric filter

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11. Kaye KS, Anderson DJ, Cook E, Huang SS, Siegel JD, Zuckerman JM, et al. Guidance for infection prevention and healthcare epidemiology programs: healthcare epidemiologist skills and competencies. Infect Control Hosp Epidemiol. 2015;36(4):369-80. doi: 10.1017/ice.2014.79. PubMed PMID: 25998192.
12. DHQP, CDC. Investigation and Control of Vancomycin-Resistant *Staphylococcus aureus* (VRSA): 2015 Update 2015 [cited 2016 November]. Available from: https://www.cdc.gov/hai/pdfs/vrsa-investigation-guide-05_12_2015.pdf.
13. ASPR, HHS. Technical Resources, Assistance Center, and Information Exchange (TRACIE) 2015 [cited 2017 January]. Available from: https://asprtracie.hhs.gov/.

Appendix 1: Article and Resource Selection

PubMed
Literature Search

CDC-Provided
Resources

940 articles
identified

54 unique
resources
reviewed by
Advisory Panel

267 articles
selected for
further review

35 resources
prioritized by
Advisory Panel

24 articles
included in
manuscript

35 resources
included in
manuscript

13 articles and
resources added
(**Appendix 4**)

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Appendix 2: Abbreviations

1. PICO: population, intervention, comparison, outcome

2. HE: hospital epidemiologist

3. Search Terms (**Footnotes; Appendix 3**):

    a. IDO: Infectious Diseases Outbreaks

    b. IM: Incident Management

    c. HE: Hospital Epidemiologist

    d. EP: Emerging Pathogens

    e. F: Facility Outbreaks

    f. COP: Components of Preparedness

Appendix 3: Literature Search Terms

Filters
AND ("1990/01/01"[PDat] : "2016/10/01"[PDat]) AND Humans[Mesh] AND English[lang])) AND (hasabstract[text] AND ("1990/01/01"[PDat] : "2016/10/01"[PDat]) AND Humans[Mesh] AND English[lang]

- 1/1/1990-10/1/2016
- English
- Has abstract
- Humans

Infectious Diseases Outbreaks (IDO)
("communicable diseases"[MeSH Terms] OR ("communicable"[All Fields] AND "diseases"[All Fields]) OR "communicable diseases"[All Fields] OR ("infectious"[All Fields] AND "diseases"[All Fields]) OR "infectious diseases"[All Fields]) AND ("disease outbreaks"[MeSH Terms] OR ("disease"[All Fields] AND "outbreaks"[All Fields]) OR "disease outbreaks"[All Fields] OR "outbreak"[All Fields]) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])

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Incident Management (IM)

((((((("organisation"[All Fields] OR "organization and administration"[Subheading] OR ("organization"[All Fields] AND "administration"[All Fields]) OR "organization and administration"[All Fields] OR "organization"[All Fields] OR "organizations"[MeSH Terms] OR "organizations"[All Fields]) AND ("organization and administration"[MeSH Terms] OR ("organization"[All Fields] AND "administration"[All Fields]) OR "organization and administration"[All Fields] OR "administration"[All Fields])) AND ("emergencies"[MeSH Terms] OR "emergencies"[All Fields] OR "emergency"[All Fields])) OR ("disasters"[MeSH Terms] OR "disasters"[All Fields] OR "disaster"[All Fields])) OR incident[All Fields]) AND hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])

Hospital Epidemiologist (HE)

(((((((("physicians"[MeSH Terms] OR "physicians"[All Fields] OR "doctor"[All Fields])) OR (("hospitals"[MeSH Terms] OR "hospitals"[All Fields] OR "hospital"[All Fields]) AND epidemiologist[All Fields])) OR ("infection control practitioners"[MeSH Terms] OR ("infection"[All Fields] AND "control"[All Fields] AND "practitioners"[All Fields]) OR "infection control practitioners"[All Fields] OR ("infection"[All Fields] AND "control"[All Fields] AND "practitioner"[All Fields]) OR "infection control practitioner"[All Fields])) OR (("infection"[MeSH Terms] OR "infection"[All Fields]) AND preventionist[All Fields])) OR (("infection control"[MeSH Terms] OR ("infection"[All Fields] AND "control"[All Fields]) OR "infection control"[All Fields]) AND committee[All Fields])) AND department[All Fields])) AND hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang]) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])

Emerging Pathogens (EP)

(((((((((((("severe acute respiratory syndrome"[MeSH Terms] OR ("severe"[All Fields] AND "acute"[All Fields] AND "respiratory"[All Fields] AND "syndrome"[All Fields]) OR "severe acute respiratory syndrome"[All Fields] OR "mers"[All Fields]) OR SARS[All Fields]) OR (("virology"[MeSH Terms] OR "virology"[All Fields] OR "viral"[All Fields]) AND hemorrhagic[All Fields])) OR ("culicidae"[MeSH Terms] OR "culicidae"[All Fields] OR "mosquito"[All Fields])) OR ("zika virus"[MeSH Terms] OR ("zika"[All Fields] AND "virus"[All Fields]) OR "zika virus"[All Fields] OR "zika"[All Fields] OR "zika virus infection"[MeSH Terms] OR ("zika"[All Fields] AND "virus"[All Fields] AND "infection"[All Fields]) OR "zika virus infection"[All Fields])) OR (respiratory[All Fields] AND ("viruses"[MeSH Terms] OR "viruses"[All Fields] OR "virus"[All Fields]))) OR ("hemorrhagic fever, ebola"[MeSH Terms] OR ("hemorrhagic"[All Fields] AND "fever"[All Fields] AND "ebola"[All Fields]) OR "ebola hemorrhagic fever"[All Fields] OR "ebola"[All Fields] OR "ebolavirus"[MeSH Terms] OR "ebolavirus"[All Fields]) OR lassa[All Fields]) OR ("pandemics"[MeSH Terms] OR "pandemics"[All Fields] OR "pandemic"[All Fields])) OR H1N1[All Fields]) OR H5N1[All Fields]) OR (resistant[All Fields] AND ("tuberculosis"[MeSH Terms] OR "tuberculosis"[All Fields]))) OR ("measles"[MeSH Terms] OR "measles"[All Fields])) OR ("influenza in birds"[MeSH Terms] OR ("influenza"[All Fields] AND "birds"[All Fields]) OR "influenza in birds"[All Fields] OR ("avian"[All Fields] AND "influenza"[All Fields]) OR "avian influenza"[All Fields]) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])

Facility Outbreaks (F)

(((((((((("methicillin-resistant staphylococcus aureus"[MeSH Terms] OR ("methicillin-resistant"[All Fields] AND "staphylococcus"[All Fields] AND "aureus"[All Fields]) OR "methicillin-resistant staphylococcus aureus"[All Fields] OR "mrsa"[All Fields]) OR CRE[All Fields]) OR ("acinetobacter"[MeSH Terms] OR "acinetobacter"[All Fields])) OR ("gramme negative bacteria"[All Fields] OR "gram-negative bacteria"[MeSH Terms] OR ("gram-negative"[All Fields] AND "bacteria"[All Fields]) OR "gram-negative bacteria"[All Fields] OR ("gram"[All Fields] AND "negative"[All Fields] AND "bacteria"[All Fields]) OR "gram negative

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bacteria"[All Fields])) OR (catheter-associated[All Fields] AND ("urinary tract infections"[MeSH Terms] OR ("urinary"[All Fields] AND "tract"[All Fields] AND "infections"[All Fields]) OR "urinary tract infections"[All Fields] OR ("urinary"[All Fields] AND "tract"[All Fields] AND "infection"[All Fields]) OR "urinary tract infection"[All Fields]))) OR ("sepsis"[MeSH Terms] OR "sepsis"[All Fields])) OR (("blood circulation"[MeSH Terms] OR ("blood"[All Fields] AND "circulation"[All Fields]) OR "blood circulation"[All Fields] OR "bloodstream"[All Fields]) AND ("infection"[MeSH Terms] OR "infection"[All Fields]))) AND ("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms] AND English[lang]) OR ("norovirus"[MeSH Terms] OR "norovirus"[All Fields])) OR ("legionella"[MeSH Terms] OR "legionella"[All Fields]) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms] AND English[lang]) + ((((("bronchoscopy"[MeSH Terms] OR "bronchoscopy"[All Fields]) OR ("chimaera"[All Fields] OR "chimera"[MeSH Terms] OR "chimera"[All Fields])) OR ("endoscopes"[MeSH Terms] OR "endoscopes"[All Fields] OR "endoscope"[All Fields])) OR ("legionella"[MeSH Terms] OR "legionella"[All Fields])) OR ("meningitis"[MeSH Terms] OR "meningitis"[All Fields])) AND ((("communicable diseases"[MeSH Terms] OR ("communicable"[All Fields] AND "diseases"[All Fields]) OR "communicable diseases"[All Fields] OR ("infectious"[All Fields] AND "diseases"[All Fields]) OR "infectious diseases"[All Fields]) AND ("disease outbreaks"[MeSH Terms] OR ("disease"[All Fields] AND "outbreaks"[All Fields]) OR "disease outbreaks"[All Fields] OR "outbreak"[All Fields]) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])) AND ((((((("physicians"[MeSH Terms] OR "physicians"[All Fields] OR "doctor"[All Fields]) OR (("hospitals"[MeSH Terms] OR "hospitals"[All Fields] OR "hospital"[All Fields]) AND epidemiologist[All Fields])) OR ("infection control practitioners"[MeSH Terms] OR ("infection"[All Fields] AND "control"[All Fields] AND "practitioners"[All Fields]) OR "infection control practitioners"[All Fields] OR ("infection"[All Fields] AND "control"[All Fields] AND "practitioner"[All Fields]) OR "infection control practitioner"[All Fields])) OR (("infection"[MeSH Terms] OR "infection"[All Fields]) AND preventionist[All Fields])) OR (("infection control"[MeSH Terms] OR ("infection"[All Fields] AND "control"[All Fields]) OR "infection control"[All Fields]) AND committee[All Fields])) AND department[All Fields]) AND hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang]) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang]))

Components of Preparedness (COP)

(((((((((("knowledge"[MeSH Terms] OR "knowledge"[All Fields]) OR ("education"[Subheading] OR "education"[All Fields] OR "training"[All Fields] OR "education"[MeSH Terms] OR "training"[All Fields])) OR ("education"[Subheading] OR "education"[All Fields] OR "educational status"[MeSH Terms] OR ("educational"[All Fields] AND "status"[All Fields]) OR "educational status"[All Fields] OR "education"[All Fields] OR "education"[MeSH Terms])) OR ("epidemiology"[Subheading] OR "epidemiology"[All Fields] OR "surveillance"[All Fields] OR "epidemiology"[MeSH Terms] OR "surveillance"[All Fields])) OR PPE[All Fields]) OR ("equipment and supplies"[MeSH Terms] OR ("equipment"[All Fields] AND "supplies"[All Fields]) OR "equipment and supplies"[All Fields] OR "supplies"[All Fields])) OR ("social control, formal"[MeSH Terms] OR ("social"[All Fields] AND "control"[All Fields] AND "formal"[All Fields]) OR "formal social control"[All Fields] OR "regulation"[All Fields]) AND hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang]) OR ("health resources"[MeSH Terms] OR ("health"[All Fields] AND "resources"[All Fields]) OR "health resources"[All Fields] OR "resources"[All Fields]) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])) OR ("communication"[MeSH Terms] OR "communication"[All Fields])) OR staffing[All Fields] AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/31"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])

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EP + F

((((((((((((("severe acute respiratory syndrome"[MeSH Terms] OR ("severe"[All Fields] AND "acute"[All Fields] AND "respiratory"[All Fields] AND "syndrome"[All Fields]) OR "severe acute respiratory syndrome"[All Fields] OR "mers"[All Fields]) OR SARS[All Fields]) OR (("virology"[MeSH Terms] OR "virology"[All Fields] OR "viral"[All Fields]) AND hemorrhagic[All Fields])) OR ("culicidae"[MeSH Terms] OR "culicidae"[All Fields] OR "mosquito"[All Fields])) OR ("zika virus"[MeSH Terms] OR ("zika"[All Fields] AND "virus"[All Fields]) OR "zika virus"[All Fields] OR "zika"[All Fields] OR "zika virus infection"[MeSH Terms] OR ("zika"[All Fields] AND "virus"[All Fields] AND "infection"[All Fields]) OR "zika virus infection"[All Fields])) OR (respiratory[All Fields] AND ("viruses"[MeSH Terms] OR "viruses"[All Fields] OR "virus"[All Fields]))) OR ("hemorrhagic fever, ebola"[MeSH Terms] OR ("hemorrhagic"[All Fields] AND "fever"[All Fields] AND "ebola"[All Fields]) OR "ebola hemorrhagic fever"[All Fields] OR "ebola"[All Fields] OR "ebolavirus"[MeSH Terms] OR "ebolavirus"[All Fields])) OR lassa[All Fields]) OR ("pandemics"[MeSH Terms] OR "pandemics"[All Fields] OR "pandemic"[All Fields])) OR H1N1[All Fields]) OR H5N1[All Fields]) OR (resistant[All Fields] AND ("tuberculosis"[MeSH Terms] OR "tuberculosis"[All Fields]))) OR ("measles"[MeSH Terms] OR "measles"[All Fields])) OR ("influenza in birds"[MeSH Terms] OR ("influenza"[All Fields] AND "birds"[All Fields]) OR "influenza in birds"[All Fields] OR ("avian"[All Fields] AND "influenza"[All Fields]) OR "avian influenza"[All Fields]) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])) OR (((((((((("methicillin-resistant staphylococcus aureus"[MeSH Terms] OR ("methicillin-resistant"[All Fields] AND "staphylococcus"[All Fields] AND "aureus"[All Fields]) OR "methicillin-resistant staphylococcus aureus"[All Fields] OR "mrsa"[All Fields]) OR CRE[All Fields]) OR ("acinetobacter"[MeSH Terms] OR "acinetobacter"[All Fields])) OR ("gramme negative bacteria"[All Fields] OR "gram-negative bacteria"[MeSH Terms] OR ("gram-negative"[All Fields] AND "bacteria"[All Fields]) OR "gram-negative bacteria"[All Fields] OR ("gram"[All Fields] AND "negative"[All Fields] AND "bacteria"[All Fields]) OR "gram negative bacteria"[All Fields])) OR (catheter-associated[All Fields] AND ("urinary tract infections"[MeSH Terms] OR ("urinary"[All Fields] AND "tract"[All Fields] AND "infections"[All Fields]) OR "urinary tract infections"[All Fields] OR ("urinary"[All Fields] AND "tract"[All Fields] AND "infection"[All Fields]) OR "urinary tract infection"[All Fields]))) OR ("sepsis"[MeSH Terms] OR "sepsis"[All Fields])) OR (("blood circulation"[MeSH Terms] OR ("blood"[All Fields] AND "circulation"[All Fields]) OR "blood circulation"[All Fields] OR "bloodstream"[All Fields]) AND ("infection"[MeSH Terms] OR "infection"[All Fields]))) AND ("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms] AND English[lang]) OR ("norovirus"[MeSH Terms] OR "norovirus"[All Fields])) OR ("legionella"[MeSH Terms] OR "legionella"[All Fields])) AND (hasabstract[text] AND ("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms] AND English[lang])) AND (("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms])

Isolation

(((gowns[All Fields] OR ("gloves, protective"[MeSH Terms] OR ("gloves"[All Fields] AND "protective"[All Fields]) OR "protective gloves"[All Fields] OR "gloves"[All Fields])) OR (("Contact"[Journal] OR "contact"[All Fields] OR "Contact"[Journal] OR "contact"[All Fields]) AND precautions[All Fields])) OR ("isolation and purification"[Subheading] OR ("isolation"[All Fields] AND "purification"[All Fields]) OR "isolation and purification"[All Fields] OR "isolation"[All Fields])) OR ("personal protective equipment"[MeSH Terms] OR ("personal"[All Fields] AND "protective"[All Fields] AND "equipment"[All Fields]) OR "personal protective equipment"[All Fields]) AND (("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms])

Family/Visitors

((("parents"[MeSH Terms] OR "parents"[All Fields]) OR ("family"[MeSH Terms] OR "family"[All Fields])) OR ("child"[MeSH Terms] OR "child"[All Fields] OR "children"[All Fields])) OR visitors[All Fields] AND (("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms])

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Acute Care

(("Acute Care"[Journal] OR ("acute"[All Fields] AND "care"[All Fields]) OR "acute care"[All Fields]) OR ("hospitals"[MeSH Terms] OR "hospitals"[All Fields] OR "hospital"[All Fields])) OR ("intensive care units"[MeSH Terms] OR ("intensive"[All Fields] AND "care"[All Fields] AND "units"[All Fields]) OR "intensive care units"[All Fields] OR "icu"[All Fields]) AND (("1990/01/01"[PDAT] : "2016/10/01"[PDAT]) AND "humans"[MeSH Terms])