**SUPPLEMENTAL APPENDIX 1**

Table 1. Data Characteristics

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **First author and year** | **Country requiring response** | **Type of hazard** | **Study Design** | **Year of hazard/ disaster** | **Participant(s)** | **Type of response team** | **Knowledge/skill(s) discussed** | **Role(s) discussed** |
| Adane 202223 | Sudan | Meteorological & Hydrological; Societal | Field report | 2022 | Pharmacist | INGO | No | Yes |
| AHCMedia 200524 | USA | Meteorological & Hydrological | Field report | 2005 | Pharmacist | EMT | Yes | Yes |
| Ahmerraza 202125 | USA, China, Canada, Middle East | Meteorological & Hydrological; Geohazards; Environmental; Biological | Review | All | Pharmacist | EMT; NGO; UN Agency | Yes | Yes |
| Alkhalili 201726 | Canada | All | Review | 2017 | Pharmacist; Pharmacy student | EMT | Yes | Yes |
| Angelo 201127 | Haiti; USA; Peru | Meteorological & Hydrological; Geohazards; Biological | Review | All | Pharmacist; Pharmacy student | EMT | Yes | Yes |
| Baig 202028 | India | All | Observational; Review | 2020 | Pharmacist | EMT | Yes | Yes |
| Baldi 201929 | Bahamas | Meteorological & Hydrological | Field report | 2019 | Pharmacist | INGO | No | Yes |
| Bratberg 200530 | USA | Meteorological & Hydrological | Descriptive | 2005 | Pharmacist | EMT | Yes | Yes |
| Burnweit 201131 | Haiti | Geohazards | Descriptive | 2010 | Pharmacist | INGO | No | Yes |
| Cohen 200332 | USA | Biological | Descriptive | 2010 | Pharmacist | EMT | Yes | Yes |
| Currier 200633 | USA | Meteorological & Hydrological | Descriptive | 2005 | Pharmacist | NGO | Yes | Yes |
| Feret 201234 | USA | Biological | Descriptive | 2001 | Pharmacist | EMT | Yes | Yes |
| Gaudette 200235 | USA | Societal | Descriptive | 2001 | Pharmacist | EMT | Yes | Yes |
| Gershgol 20084 | USA | Environmental | Field Report | 2007 | Pharmacy student | EMT | Yes | Yes |
| Haffer 200236 | USA | Biological | Brief Report | 2001 | Pharmacist | EMT | Yes | Yes |
| Hassali 201637 | Malaysia | All | Review | 2016 | Pharmacist | EMT | Yes | Yes |
| Hortman 202038 | Bahamas | Meteorological & Hydrological | Field Report | 2019 | Pharmacist | INGO | No | Yes |
| Kawataba 201339 | Japan | Geohazards | Descriptive | 2011 | Pharmacist | EMT | Yes | Yes |
| Kobayashi 201240 | Japan | Geohazards | Presentationreport | 2011 | Pharmacist  | NGO; INGO | Yes | Yes |
| Montello 200241 | USA | Biological | Descriptive | 2001 | Pharmacist | EMT | Yes | Yes |
| Rasheed 201942 | USA; Africa; Sierra Leone; Pakistan; Afghanistan; Iraq; Sudan; Serbia; India; Lithuania; Bosnia Herzegovina; Armenia; Indonesia; Sri Lanka; Jordan; Germany; Canada | All | Review | All | Pharmacist | EMT; NGO; INGO | Yes | Yes |
| Risoldi 201243 | Indonesia | Meteorological & Hydrological; Geohazards | Field Report | 2012 | Pharmacist | INGO | No | Yes |
| Setlak 200444 | USA | Biological | Review | 2001 | Pharmacist; Pharmacy student | EMT | Yes | Yes |
| Shrestha 201945 | Nepal | Geohazards | Descriptive | 2015 | Pharmacist | EMT | Yes | Yes |
| Thompson 200446 | USA | All | Commentary | All | Pharmacist; Pharmacy student | EMT | Yes | Yes |
| Thompson 201047 | USA | Meteorological & Hydrological | Brief Report | 2009 | Pharmacist | EMT | Yes | Yes |
| Traynor 200848 | USA | Meteorological & Hydrological | Commentary | 2005 | Pharmacist | EMT | Yes | Yes |
| Traynor 201749 | USA | Meteorological & Hydrological | Commentary | 2017 | Pharmacist | EMT | Yes | Yes |
| Vardanyan 201850 | Brazil; Kenya; Sub-Saharan Africa; Afghanistan | All | Review | All | Pharmacist | INGO | Yes | Yes |
| Velazquez 200613 | USA | Meteorological & Hydrological | Descriptive | 2005 | Pharmacist | EMT | Yes | Yes |
| Villacorta-Linaza 200951 | Afghanistan; Pakistan | Geohazards; Societal | Descriptive | 2005; 2007 | Pharmacist | INGO | Yes | Yes |
| Watson 201952 | Australia; New Zealand; UK; ISA; Europe | All | Review | All | Pharmacist; Pharmacy student | EMT; NGO; INGO | Yes | Yes |
| Young 200353 | Saudi Arabia; Afghanistan; USA | Meteorological & Hydrological; Societal | Field Report | All | Pharmacist | EMT | Yes | Yes |
| Young 200554 | USA | Meteorological & Hydrological | Research Letter | All | Pharmacist; Pharmacy student | EMT | No | Yes |
| Young 200555 | USA | Meteorological & Hydrological | Commentary | 2005 | Pharmacist | EMT | Yes | Yes |
| Young 200656 | USA | Meteorological & Hydrological | Field Report | 2005 | Pharmacist | EMT; NGO | No | Yes |

Table 2. Data extraction table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Study ID | Hazard resulting in disaster | Type of EMT | Roles and Requirements theme | Roles and Requirements Subtheme | SKILLS AND KNOWLEDGE THEMES | SKILLS AND KNOWLEDGE SUBTHEMES |
| Adane 2022 23 | * Meteorological & Hydrological
* Societal
 | * INGO
 | * Supply chain management
 |  |   |  |
| AhcMedia 2005 24 | * Meteorological & Hydrological
 | * EMT
 | * Supply chain management
 |  |  |   |
| * Direct patient care
 | * Management and assessment of diseases and health conditions
 | * Knowledge of diseases and health conditions
 |  |
| Ahmer-Raza 2021 25 | * Meteorological & Hydrological
* Geohazards
* Environmental
* Biological
 | * EMT
* NGO
* United Nations Agency
 | * Supply chain management
 | * Uphold and ensure policy, legal and financial legislation.
 |  |  |
| * Direct patient care
 | * Medicine administration
* Patient counselling & education
* Management and assessment of diseases and health conditions
* Psychosocial support
 | * Knowledge of diseases and health conditions
 | * Vaccination
* CBRN & toxicology
* First response training
 |
| * Stakeholder collaboration and liaison
 | * SOP procedure development and consultation.
* Liaison with government organizations, NGOs and private-for-profit organizations
 |  |   |
| Alkhalili 2017 26 | * All
 | * EMT
 | * Supply chain management
 | * Mass dispensing
* Uphold and ensure policy, legal and financial legislation.
* Database management
 | * Good use and knowledge of IT systems
* Knowledge of national and international legislation and policies related to pharmacists and medicines.
 |  |
| * Direct patient care
 | * Patient counselling & education
* Psychosocial support
* Public health promotion
* Management and assessment of diseases and health conditions
* Consultation with MDT on patient care plans
 | * Knowledge of diseases and health conditions
 | * Infectious disease medicine
* Critical care medicine
* CBRN & toxicology
* First response training
* Vaccination
 |
| * Stakeholder collaboration and liaison
 | * SOP development and consultation.
 |  |  |
| * Establishment and operationalisation of pharmacy
 | * Management and leadership of a team
 | * Management and leadership skills
 |   |
| * Response management and coordination (ICS)
 | * Situational analysis and risk assessments
 | * Disaster and emergency medicine training
 |   |
| Angelo 2011 27 | * Meteorological & Hydrological
* Geohazards
* Biological
 | * EMT
 | * Supply chain management
 | * Mass dispensing
 | * Knowledge of national and international legislation and policies related to pharmacists and medicines
 |  |
| * Establishment and operationalisation of pharmacy
 | * Management and leadership of a team
 | * Management and leadership skills
 |  |
| * Patient care
 | * Medicine administration
* Prescribing medicines
* Management and assessment of diseases and health conditions
* Patient counselling & education
* Public health promotion
 | * Knowledge of diseases and health conditions
* Disaster and Emergency Medicine training
 | * Dermatology
* Infectious disease medicine
* Wound care
* Respiratory medicine
* Psychiatric medicine
* Public health medicine
* CBRN & toxicology
* Laboratory result monitoring
* Vaccination
* First response training
 |
| Baig 2020 28 | * All
 | * EMT
 | * Supply chain management
 | * Mass dispensing
* Uphold and ensure policy, legal and financial legislation
 |  |  |
| * Response management and coordination (ICS)
 |  |  |  |
| * Patient care
 | * Public health promotion
* Patient counselling & education
* Management and assessment of diseases and health conditions
 | * Knowledge of diseases and health conditions
* Disaster and emergency medicine training
 | * CBRN & toxicology
* First response training
 |
| * Stakeholder collaboration and liaison
 | * Liaison with government organizations, NGOs and private-for-profit organizations
* SOP development and consultation.
 |  |  |
| * Establishment and operationalisation of pharmacy
 | * Management and leadership of a team
 |  |  |
| Baldi 2019 29 | * Meteorological & Hydrological
 | * INGO
 | * Supply chain management
 |  |  |  |
| Bratberg 2005 30 | * Meteorological & Hydrological
 | * EMT
 | * Supply chain management
 | * Medicine substitution
 |  |  |
| * Direct patient care
 | * Patient counselling & education
* Medicine administration
 | * Knowledge of diseases and health conditions
 |  |
| Burnweit 2011 31 | * Geohazards
 | * INGO
 | * Establishment and operationalization of pharmacy
 |  |  |  |
| * Supply chain management
 |  |  |  |
| Cohen 2003 32 | * Biological
 | * EMT
 | * Stakeholder liaison and collaboration
 | * Liaison with government organizations, NGOs and private-for-profit organizations
 |  |  |
| * Establishment and operationalization of pharmacy
 | * Management and leadership of a team
 |  |  |
| * Supply chain management
 |  |  |  |
| * Response management and coordination (ICS)
 | * Situational analysis and risk assessments
 | * Disaster and emergency medicine training
 |  |
| * Direct patient care
 | * Patient counselling & education
* Consultation with MDT on patient care plans
 | * Knowledge of diseases and health conditions
* Disaster and emergency medicine training
 | * Critical care medicine
* Infectious disease medicine,
* Psychiatric medicine
* CBRN & toxicology
 |
| Currier 2006 33 | * Meteorological & Hydrological
 | * NGO
 | * Supply chain management
 | * Management of donations
 |  |  |
| * Stakeholder liaison and collaboration
 | * Liaison with government organizations, NGOs and private-for-profit organizations
 |  |  |
| * Establishment and operationalisation of pharmacy
 | * Management and leadership of a team
 | * Management and leadership skills
 |  |
| * Direct patient care
 | * Patient counselling & education
* Medicine administration
 | * Disaster and emergency medicine training
 |  |
| Feret 2012 34 | * Biological
* Societal
 | * EMT
 | * Supply chain management
 |  |  |  |
| * Direct patient care
 | * Patient counselling & education
* Medicine administration
* Management and assessment of diseases and health conditions
 | * Knowledge of diseases and health conditions
 | * CBRN & toxicology
* Vaccination
 |
| * Establishment and operationalisation of pharmacy
 | * Management and leadership of a team
 |  |  |
| * Stakeholder liaison and collaboration
 |  |  |  |
| Gaudette 2002 35 | * Societal
 | * EMT
 | * Establishment and operationalisation of pharmacy
 |  |  |  |
| * Supply chain management
 | * Compounding
* Medicine substitution
 |  |  |
| * Patient care
 | * Medicine administration
 | * Knowledge of diseases and health conditions
* Disaster and Emergency Medicine training
 | * Public health medicine
* Infectious disease medicine
* Pharmacokinetic and pharmacodynamic knowledge
 |
| Gershgol 2008 4 | * Environmental
 | * EMT
 | * Supply chain management
 | * Mass dispensing
 |  |  |
| * Establishment and operationalisation of pharmacy
 | * Management and leadership of a team
 | * Leadership
 |  |
| * Stakeholder liaison and collaboration
 | * SOP development and consultation
 |  |  |
| * Direct patient care
 | * Medication reconciliation
* Management and assessment of diseases and health conditions
 | * Knowledge of diseases and health conditions
* Disaster and emergency medicine training
 | * First response training
 |
| Haffer 2002 36 | * Biological
 | * EMT
 | * Establishment and operationalisation of pharmacy
 |  |  |  |
| * Supply chain management
 |  |  |  |
| * Stakeholder liaison and collaboration
 | * SOP development and consultation.
 |  |  |
| * Direct patient care
 | * Patient counselling & education
* Management and assessment of diseases and health conditions
 | * Knowledge of diseases and health conditions
* Disaster and emergency medicine training
 | * Pharmacokinetic and pharmacodynamic knowledge
* First response training
* CBRN & toxicology
 |
| Hassali 2016 37 | * All
 | * NGO
* INGO
 | * Supply chain management
 | * Quality control and assurance
 |  |  |
| * Establishment and operationalisation of pharmacy
 | * Management and leadership of a team
 |  |  |
| * Stakeholder liaison and collaboration
 | * SOP development and consultation.
 |  |  |
| * Direct patient care
 | * Psychosocial support
* Public health promotion
* Patient counselling & education
 | * Knowledge of diseases and health conditions
 | * Infectious disease medicine
* public health medicine
 |
| Hortman 2020 38 | * Meteorological & Hydrological
 | * INGO
 | * Establishment and operationalisation of pharmacy
 | * Management of drug destruction
 |  |  |
| * Direct patient care
 | * Consultation with MDT on patient care plans
 |  |  |
| * Supply chain management
 | * Management of donations
* Quality control and assurance
 |  |  |
| Kawataba 2013 39 | * Geohazards
 | * EMT
 | * Supply chain management
 | * Medicine substitution
 |  |  |
| * Establishment and operationalisation of pharmacy
 |  |  |  |
| * Direct patient care
 | * Medicine administration
* Management and assessment of diseases and health conditions
 | * Knowledge of diseases and health conditions
 | * Public health medicine
 |
| Kobayashi 2012 40 | * Geohazards
 | * NGO
* INGO
 | * Supply chain management
 | * Management of donations
 | * Medical logistics training
 |  |
| * Direct patient care
 | * Management and assessment of diseases and health conditions
 | * Knowledge of diseases and health conditions
 | * Public health medicine
* Sexual & reproductive health medicine
 |
| * Stakeholder liaison and collaboration
 | * Liaison with government organizations, NGOs and private-for-profit organizations
* SOP development and consultation.
 |  |  |
| * Establishment and operationalisation of pharmacy
 | * Management of drug destruction
* Management and leadership of a team
 | * Management and leadership skills
 |  |
| * Response management and coordination (ICS)
 | * Situational analysis and risk assessments
 | * Disaster and emergency medicine training
 |  |
| MONTELLO2002 41 | * Biological
 | * EMT
 | * Direct patient care
 | * Patient counselling & education
* Management and assessment of diseases and health conditions
* Medicine administration
* Psychosocial support
 | * Knowledge of diseases and health conditions
 | * Epidemiology
* CBRN & toxicology
* Psychological first aid
* First response training
 |
| * Supply chain management
 | * Medicine substitution
* Database management
 |  |  |
| * Stakeholder liaison and collaboration
 | * SOP development and consultation.
 |  |  |
| Rasheed 2019 42 | * All
 | * EMT
* NGO
* INGO
 | * Supply chain management
 | * Management of donations
* Mass dispensing
* Quality control and assurance
* Database management
 |  |  |
| * Establishment and operationalization of pharmacy
 |  |  |  |
| * Stakeholder liaison and collaboration
 | * SOP development and consultation.
* Liaison with government organizations, NGOs and private-for-profit organizations
 |  |  |
| * Direct patient care
 | * Patient counselling & education
* Public health promotion
* Management and assessment of diseases and health conditions
* Consultation with MDT on patient care plans
 | * Knowledge of diseases and health conditions
* Disaster and emergency medicine training
 | * Epidemiology
* CBRN & toxicology
* Infectious disease medicine
 |
| Risoldi 2012 43 | * Meteorological & Hydrological; Geohazards
 | * INGO
 | * Supply chain management
 | * Management of donations
 |  |   |
| * Direct patient care
 | * Patient counselling & education
 |  |  |
| Setlak 2004 44 | * Biological
 | * EMT
 | * Supply chain management
 | * Mass dispensing
* Medicine substitution
* Database management
 | * Knowledge of national stockpile inventory
 | * Knowledge of weapons of mass destruction
 |
| * Direct patient care
 | * Patient counselling & education
* Management and assessment of diseases and health conditions
* Medicine administrationConsultation with MDT on patient care plans
 | * Knowledge of diseases and health conditions
* Disaster and emergency medicine training
 | * Infectious disease medicine
* Epidemiology
* CBRN & toxicology
* First response training
* Vaccination
 |
| * Stakeholder liaison and collaboration
 | * Liaison with government organizations, NGOs and private-for-profit organizations
* SOP development and consultation.
 |  |  |
| * Establishment and operationalisation of pharmacy
 |  |  |  |
| Shrestha 2019 45 | * Geohazards
 | * EMT
 | * Response management and coordination (ICS)
 | * Situational analysis and risk assessments
 |  |   |
| * Direct patient care
 | * Prescribing medicines
* Search and rescue.
* Public health promotion
 |  |  |
| * Supply chain management
 | * Quality control and assurance
 |  |  |
| * Stakeholder liaison and collaboration
 | * Liaison with government organizations, NGOs and private-for-profit organizations
 |  |  |
| Thompson 2004 46 | * All
 | * EMT
 | * Supply chain management
 |  |  |  |
| * Direct patient care
 | * Management and assessment of diseases and health conditions
 | * Disaster and emergency medicine training
* Knowledge of diseases and health conditions
 | * Public health medicine
 |
| Thompson 2010 47 | * Meteorological & Hydrological
 | * EMT
 | * Supply chain management
 | * Medicine substitution
 | * Medical logistics training
 |  |
| * Direct patient care
 | * Medicine administration
* Management and assessment of diseases and health conditions
 | * Knowledge of diseases and health conditions
 | * Pharmacokinetic and pharmacodynamic knowledge
 |
| * Stakeholder liaison and collaboration
 | * SOP development and consultation.
* Liaison with government organizations, NGOs and private-for-profit organizations
 |  |  |
| * Establishment and operationalisation of pharmacy
 |  |  |  |
| Traynor 2008 48 | * Meteorological & Hydrological
 | * EMT
 | * Direct patient care
 | * Management and assessment of diseases and health conditions
* Patient counselling & education
* Medicine administration
 | * Knowledge of diseases and health conditions
* Disaster and emergency medicine training
 | * Infectious disease medicine
* Public health medicine
* CBRN & toxicology
 |
| * Supply chain management
 | * Medicine substitution
 |  |  |
| Traynor 2017 49 | * Meteorological & Hydrological
 | * EMT
 | * Direct patient care
 | * Medication reconciliation
* Patient counselling & education
* Consultation with MDT on patient care plans
 | * Disaster and emergency medicine training
 |  |
| * Supply chain management
 | * Database management
 | * Good use and knowledge of IT systems
 |  |
| * Stakeholder liaison and collaboration
 | * Liaison with government organizations, NGOs and private-for-profit organizations
 |  |  |
| Vardanyan 2018 50 | * All
 | * INGO
 | * Supply chain management
 | * Uphold and ensure policy, legal and financial legislation.
* Management of donations
* Medicine substitution
* Database management
 | * Knowledge of national and international legislation and policies related to pharmacists and medicines
 |  |
| * Direct patient care
 | * Public health promotion
* Patient counselling & education
* Medicine administration
* Management and assessment of diseases and health conditions
* Consultation with MDT on patient care plans
 | * Disaster and emergency medicine training
* Knowledge of diseases and health conditions
 | * Humanitarian principles
* Epidemiology
* Infectious disease medicine
* Pediatric medicine
* Sexual & reproductive health medicine
* First response training
* Public health medicine
* Vaccination
* Pharmacokinetic and pharmacodynamic knowledge
 |
| * Establishment and operationalisation of pharmacy
 | * Management and leadership of a team
* Management of drug destruction
 | * Management and leadership skills
 | * HR and financial resource management
 |
| Velazquez 2006 13 | * Meteorological & Hydrological
 | * EMT
 | * Establishment and operationalization of pharmacy
 | * Management and leadership of a team
 |  |  |
| * Stakeholder liaison and collaboration
 | * Liaison with government organizations, NGOs and private-for-profit organizations
* SOP development and consultation.
 |  |  |
| * Supply chain management
 | * Quality control and assurance
 |  |  |
| * Direct patient care
 | * Medication reconciliation
* Management and assessment of diseases and health conditions
* Consultation with MDT on patient care plans
 | * Knowledge of diseases and health conditions
* Disaster and emergency medicine training
 | * First response training
* CBRN & toxicology
 |
| Villacorta‐Linaza 2009 51 | * Geohazards; Societal
 | * INGO
 | * Supply chain management
 | * Uphold and ensure policy, legal and financial legislation
* Database management
 | * Knowledge of national and international legislation and policies related to pharmacists and medicines
 |  |
| * Stakeholder liaison and collaboration
 | * SOP development and consultation.
* Liaison with government organizations, NGOs and private-for-profit organizations
 |  |  |
| * Establishment and operationalisation of pharmacy
 | * Management and leadership of a team
 |  |  |
| * Direct patient care
 | * Public health promotion
* Patient counselling & education
 | * Knowledge of diseases and health conditions
 | * Public health medicine
* Infectious disease medicine
* Epidemiology
 |
| Watson 2019 52 | * All
 | * EMT
* NGO
* INGO
 | * Supply chain management
 | * Mass dispensing
* Management of donations
* Quality control and assurance
* Medicine substitution
 | * Knowledge of national stockpile inventory
 |  |
| * Establishment and operationalization of pharmacy
 |  |  |  |
| * Direct patient care
 | * Medication reconciliation
* Psychosocial support
* Management and assessment of diseases and health conditions
* Medicine administration
* Patient counselling & education
* Public health promotion
* Prescribing medicines
* Consultation with MDT on patient care plans
 | * Knowledge of diseases and health conditions
* Disaster and emergency medicine training
 | * Public health medicine
* CBRN & toxicology
* First response training
* Psychological first aid
* Vaccination
 |
| * Stakeholder liaison and collaboration
 | * Liaison with government organizations, NGOs and private-for-profit organizations
* SOP development and consultation
 |  |  |
| Young 2003 53 | * Meteorological & Hydrological
* Societal
 | * EMT
 | * Establishment and operationalisation of pharmacy
 |  |  |  |
| * Supply chain management
 | * Database management
* Quality control and assurance
 |  |  |
| * Direct patient care
 | * Management and assessment of diseases and health conditions
 | * Knowledge of diseases and health conditions
* Disaster and emergency medicine training
 | * Vaccination
* Infectious disease medicine
* CBRN & toxicology
 |
| Young 2005 54 | * Meteorological & Hydrological
 | * EMT
 | * Supply chain management
 | * Mass dispensing
 |  |  |
| * Establishment and operationalisation of pharmacy
 |  |  |  |
| Young 2005 55 | * Meteorological & Hydrological
 | * EMT
 | * Establishment and operationalisation of pharmacy
 |  |  |  |
| * Direct patient care
 | * Management and assessment of diseases and health conditions
* Consultation with physicians and MDT on patient care plans
 | * Knowledge of diseases and health conditions
* Disaster and emergency medicine training
 | * First response training
* Infectious disease medicine
* Vaccination
 |
| * Supply chain management
 |  |  |  |
| Young 2006 56 | * Meteorological & Hydrological
 | * EMT
* NGO
 | * Supply chain management
 | * Quality control and assurance
* Management of donations
 |  |  |
| * Direct patient care
 | * Management and assessment of diseases and health conditions
* Prescribing medicines
* Patient counselling & education
* Consultation with physicians and MDT on patient care plans
 |  | * Vaccination
 |
| * Stakeholder liaison and collaboration
 | * Liaison with government organizations, NGOs and private-for-profit organizations
 |  |  |
| * Establishment and operationalization of pharmacy
 |  |   |  |