

# Library Service

## Literature search

Title	General Practice/Primary Care response to past pandemic/crisis
Context	Policy/Management (non-clinical)
Date	3 April 2020

## Guidance for ethical collaboration

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## Contents

Databases .....	5
Other Resources .....	5
Overview .....	6
Search results.....	7
Reports.....	7
<b>Australia</b> .....	7
<b>England</b> .....	7
Guidance .....	8
UK.....	8
Australia/New Zealand .....	10
Journal Articles .....	10
Reviews .....	10
Ebola .....	14
SARS/MERS .....	14
Natural Disasters (by country) .....	15
Australia.....	15
United States .....	15
India .....	17
Japan .....	18
New Zealand .....	18
Terrorism .....	19
Influenza .....	20
Australia.....	20
Canada .....	21
China .....	21
Germany .....	22
Japan .....	23
<b>Norway</b> .....	24
Netherlands .....	24
Search strategies.....	26
CINAHL .....	26
Medline.....	27
Koha (The King's Fund Database) .....	28



## Databases

### **CINAHL (Cumulative Index to Nursing and Allied Health Literature)**

CINAHL aims to provide information for all allied health professionals by offering complete coverage of English-language nursing journals and publications from the National League for Nursing and the American Nurses' Association. As well as journal articles some books, book chapters, dissertations, and conference proceedings are offered. The database goes back to 1982 and also offers some technology journals, as well as articles on

### **The King's Fund Information and Knowledge Services database:**

Also with a UK focus, this database covers health management and services, social care, service development, and NHS organisation and administration. Resources include journal articles, books, reports, and pamphlets and cover the years from 1979 onwards.

### **NICE Evidence Search**

NHS Evidence Search is unique index of authoritative, evidence-based information from hundreds of trustworthy and accredited sources.

### **Medline**

Medline is a general medical database produced by the U.S. National Library of Medicine (hereafter, NLM). The database contains millions of citations, derived from thousands of biomedical and life science journals. Broadly, the subject areas covered are: - Allied health specialties - Dentistry - Nursing - Medicine - Pre-clinical sciences - Some topics within veterinary medicine MEDLINE (TM) is also the primary source of global information from international literature on biomedicine.

## Other Resources

### **Australian Royal College of General Practice (RACGP)**

<https://www.racgp.org.au/>

### **British Medical Association**

<https://www.bma.org.uk/>

### **New Zealand Ministry of Health**

<https://www.health.govt.nz/>

### **NICE rapid guidelines and evidence reviews:**

<https://www.nice.org.uk/covid-19>

### **NHS England**

<https://www.england.nhs.uk/>

### **OECD**

<https://www.oecd.org/about/>

### **Public Health England**

<https://www.gov.uk/government/organisations/public-health-england>

### **The Royal College of General Practitioners**

<https://www.rcgp.org.uk/covid-19/latest-covid-19-guidance-in-your-area.aspx>

### **World Health Organisation**

<https://www.who.int/>

## Overview

The aim of this literature search was to find any existing material relating to how general practice/primary care has dealt with crisis situations and epidemic/pandemic situations in the past. The search was focused specifically on this specialty and therefore results relating to any other setting were excluded.

Events of interest (topics) might include:

**-MERS**

**-SARS**

**-H1N1 (2009 Swine flu pandemic)**

**-H1N5 (2005 Bird flu pandemic)**

**-Response to natural and manmade disasters (2011 Christchurch earthquake, 2011 Fukushima Daichii nuclear plant accident, 7/7bombings, Hurricane Katrina**

Sector:

**General practice**

**Primary healthcare**

**PHC**

**Primary care**

**Family medicine**

**What type of content are you most interested in?**

**Reports, Journal articles**

Focus on **major journals** if possible including the Lancet, BMJ, BJGP ,JAMA, NEJM, Lancet.

**Date range**

**From 2000 onwards is probably most appropriate**

**Geographic range**

**International**

## Search results

### Reports

**World Health Organization, (2018). *Primary Health Care and Health Emergencies*,**

[https://www.who.int/docs/default-source/primary-health-care-conference/emergencies.pdf?sfvrsn=687d4d8d\\_2](https://www.who.int/docs/default-source/primary-health-care-conference/emergencies.pdf?sfvrsn=687d4d8d_2) [Accessed April 2, 2020]

An emergency can be described as “a type of event or imminent threat that produces or has the potential to produce a range of health consequences, and which requires coordinated action, usually urgent and often non-routine” (3). This includes epidemics, disasters (e.g. natural and technological), as well as those involving violence and conflict, which can often become protracted. Primary health care has an essential role to play in preventing, preparing for, responding to and recovering from any emergency situation.

### Australia

Exercise Cumpston 06: report, Canberra, A.C.T: Dept. of Health and Ageing. Australia

<https://webarchive.nla.gov.au/awa/20070822045433/http://pandora.nla.gov.au/pan/75847/20070822-1426/www.health.gov.au/internet/wcms/publishing.nsf/Content/report.pdf> [Accessed April 1, 2020]

Exercise Cumpston 06 was the largest health simulation exercise ever undertaken in Australia and the first major exercise conducted by the Australian Government Department of Health and Ageing (DoHA). The aim was to exercise and validate the capacity and capability of the Australian health system to prevent, detect and respond to a pandemic in accordance with the Australian Health Management Plan for Pandemic Influenza (AHMPPI) and allow any gaps to be identified and addressed. It also exercised governance aspects of the National Action Plan for a Human Influenza Pandemic (NAP) and state and territory plans. Six national objectives relating to the policies, response actions and governance arrangements were addressed

### England

**Royal College of General Practitioners ed , (2004). *Major incidents and disasters: the role of the GP and the primary health care team : arising from the RCGP working meeting on major incidents held on 10 December 2003. RCGP position statements.***

Position statement from RCGP

(I can't find an online version of this statement but we could try BL to see if they have one?)

Woodman, P. and Kumar, V., (2009). A decade of living dangerously: the business continuity management report 2009, London : CMI.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/60840/cmibcm\\_2009.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/60840/cmibcm_2009.pdf)

This report presents the findings of research conducted in January 2009 by the Chartered Management Institute in conjunction with the Civil Contingencies Secretariat in the Cabinet Office.

The Institute's first survey on Business Continuity Management was conducted in 1999. It was repeated in 2001 and has been published annually since then, meaning that the 2009 survey is the tenth report in the series. In 2009, a total sample of 15,000 individual Institute members was surveyed and 1,012 responses were received

**Hine, D., (2010). *The 2009 influenza pandemic: an independent review of the UK response to the 2009 influenza pandemic*, London: Cabinet Office.**

<https://web.archive.org/web/http://interim.cabinetoffice.gov.uk/media/416533/the2009influenzapandemic-review.pdf>

This report sets out 28 recommendations that aim to enhance the proportionality of a future response, strengthen the development and handling of scientific advice, and improve how government communicates with the public.

NHS Confederation, (2018). When tragedy strikes: reflections on the NHS response to the Manchester Arena bombing and Grenfell Tower fire, London: NHS Confederation,.

<http://www.nhsconfed.org/resources/2018/06/when-tragedy-strikes>

To support NHS organisations with planning for major incidents, the NHS Confederation has conducted a series of interviews to capture the learning from the health service's response to events of 2017. Interviews were held with Lord Bob Kerslake, Chair of The Kerslake Arena Review, Dr John Green, Clinical Director of the Grenfell Tower NHS Mental Health Response, and Professor Chris Moran, National Clinical Director for Trauma, at NHS England. The interviews reflect on key aspects of the responses by emergency, mental health, acute and community services, drawing out key issues for executive and non-executive health care leaders to consider

## Guidance

### UK

**NHS England, (2017b). *Summary of published key strategic guidance for health emergency, preparedness, resilience and response (EPRR)*, [Leeds] : NHS England.**

<https://www.england.nhs.uk/publication/summary-of-published-key-strategic-guidance-for-health-emergency-preparedness-resilience-response-epr/>

The charts shown in this document give an overview of the key strategic EPRR guidance documents currently published. For published documents, website links are embedded in the charts

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**Department of Health, (2008). *Pandemic influenza: guidance for primary care trusts and primary care professionals on the provision of healthcare in a community setting in England*,**

[http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/@dh/@en/documents/digitalasset/dh\\_092008.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_092008.pdf)

The purpose of this guidance is to assist primary care trusts (PCTs) in developing their plans for responding to an influenza pandemic. It is also intended to be a useful document for primary care professionals such as those working in general practice, community pharmacy and nursing, and for partner agencies providing services in the community setting. The guidance is intended to provide



general advice for planners, and to outline a model of care within which local plans should be developed.

**Department of Health, (2009b). Pandemic flu : : planning and responding to primary care capacity challenges,**

[http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/documents/digitalasset/dh\\_104899.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_104899.pdf)

Guidance for PCTs on how to deliver primary care services whilst potentially short staffed and how to cope with increased patient demand during the pandemic and the anticipated seasonal flu.

**British Medical Association, Preparing for pandemic influenza: Guidance for GP practices,**

<https://www.lmc.org.uk/visageimages/news/2009/flupanprepdec08.pdf> [Accessed April 2, 2020]

This guidance is for GPs and their staff in general practice. Practice Managers in particular should find it helpful. It will also be of use to Primary Care Organisations (PCOs) and is relevant to patients. It tells practices what they need to do now and in the future in order to prepare for, and respond to, a pandemic influenza outbreak in the UK. It explains why there is a need to take action and how this will help minimise the spread of flu in a pandemic and make the best use of limited health resources. We

**Department of Health , (2012). Health and social care influenza pandemic preparedness and response, London : DH,.**

[http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/@dh/@en/documents/digitalasset/dh\\_133656.pdf](http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_133656.pdf)

This document provides guidance on operational aspects of pandemic response in the health and social care sectors. It should be read in conjunction with the UK Influenza Pandemic Preparedness Strategy 2011. It reflects key changes set out in the strategy, incorporating lessons identified from the H1N1 (2009) influenza pandemic.

**NHS England, (2017a). Operating framework for managing the response to pandemic influenza, Leeds : NHS England,.**

<https://www.england.nhs.uk/publication/operating-framework-for-managing-the-response-to-pandemic-influenza/>

This is the revised Operating framework for NHS England in managing the response to a Pandemic Influenza outbreak. This should be read in conjunction with the NHS England Emergency Planning Framework 2015 and the NHS England Incident Response Plan (National) 2017.

**Scottish Government, Pandemic Flu: A Scottish framework for responding to an influenza pandemic - gov.scot.**

<https://www.gov.scot/publications/pandemic-flu-scottish-framework-responding-influenza-pandemic/pages/10/> [Accessed April 1, 2020a]

Australia/New Zealand

**Ministry of Health NZ, Emergency management, disaster planning and business continuity in primary care. Ministry of Health NZ.**

<https://www.health.govt.nz/our-work/emergency-management/emergency-management-disaster-planning-and-business-continuity-primary-care> [Accessed April 2, 2020]

Primary care is an essential service that is relied on by the community. It's important to have a plan to keep providing services during an emergency.

The Royal Australian College of General Practitioners, Managing emergencies and pandemics in general practice,

<https://www.racgp.org.au/download/Documents/Disaster/mepsguide.pdf> [Accessed April 2, 2020]

The aim of the guide is to assist general practices to better prepare for, respond to and recover from the impacts of emergencies and pandemics. The guide has been designed as an educational resource for general practice staff during emergency preparation and response efforts.

SA Health, (2015). Primary Care Management: Pandemic Influenza sub-plan, Australian Government.

<https://www.sahealth.sa.gov.au/wps/wcm/connect/f801138048c622a8989bfd7577aa6b46/Primary+Care+Management+sub+plan+2015+FINALv2.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-f801138048c622a8989bfd7577aa6b46-mTo4a4F> [Accessed April 1, 2020]

## Journal Articles

## Reviews

**Kunin, M., Engelhard, D., Thomas, S., Ashworth, M. and Piterman, L., (2013). Influenza pandemic 2009/A/H1N1 management policies in primary care: a comparative analysis of three countries. *Australian health review : a publication of the Australian Hospital Association*, 37(3), pp.291–299.**

**BACKGROUND** During the influenza pandemic 2009/A/H1N1, the main burden of managing patients fell on primary care physicians (PCP). This provided an excellent opportunity to investigate the implications of pandemic policies for the PCP role. **AIM** To examine policies affecting the role of PCP in the pandemic response in Australia (in the state of Victoria), Israel and England. **METHODS** Content analysis of the documents published by the health authorities in

Australia, Israel and England during the pandemic 2009/A/H1N1. **RESULT** The involvement of PCP in the pandemic response differed among the countries in timing and allocated responsibilities. The Israeli approach during the containment phase was to maximise the protection of PCP at the expense of putting pressure on hospitals where the suspected cases were tested and treated. In Australia and England, PCP managed the suspected patients from the beginning of the pandemic. The work of PCP in England was supported by the introduction of the National Pandemic Flu Service during the mitigation phase, whereas Australian PCP had no additional support structures and their role was constant and intensive throughout the pandemic period. **CONCLUSION** Health authorities need to engage with representatives of PCP to evaluate policies for pandemic planning and management. Adequate support and protection for PCP during different stages of pandemic management should be provided. What is known about the topic? During the influenza pandemic 2009/A/H1N1, the main burden of diagnosing and managing the patients fell on PCP. The prominent role of PCP in the 2009/A/H1N1 pandemic presents an excellent opportunity to investigate implications of pandemic policies for primary care and to tackle the possible problems that these policies may impose on the ability of PCP to effectively participate in the public health response. What does this paper add? This paper examines policies that affected the roles of PCP in managing the influenza pandemic 2009/A/H1N1 in three countries: Australia, Israel and England. Although general evaluations of the pandemic response in different countries have previously been reported, this is the first study that focuses on policies for pandemic management at the primary care level. What are the implications for practitioners? Practitioners (PCP and primary care workers in general) would benefit if pandemic preparedness plans were constructed to provide an adequate system of support and protection to primary care workers during different stages of pandemic management. For policy makers, this analysis may help to overhaul the strategies for primary care engagement in the pandemic response.

**Kunin, M., Engelhard, D., Piterman, L. and Thomas, S., (2013). Response of general practitioners to infectious disease public health crises: an integrative systematic review of the literature. *Disaster medicine and public health preparedness*, 7(5), pp.522–533.**

**OBJECTIVE** Previous research has identified gaps in pandemic response planning for primary care. Identifying the challenges that general practitioners (GPs) face during public health crises of infectious diseases will help to improve prepandemic planning. In this integrative systematic review, we identified research-based evidence to (1) challenges that GPs have when participating in pandemics or epidemics and (2) whether GPs from different countries encountered different challenges. **METHOD** A systematic search was conducted in MEDLINE, PubMed, Scopus, EMBASE, PsycINFO, Cochrane Library, and ProQuest Dissertations and Theses databases during October to November 2012 to identify studies relevant to experience by GPs during epidemics or pandemics. **RESULT** Six quantitative, 2 mixed method, and 2 qualitative studies met the inclusion criteria. The challenges identified were not exclusive to specific countries and encompassed different responses to outbreaks. These challenges included difficulties with information access; supply and use of personal protective equipment; performing public health responsibilities; obtaining support from the authorities; appropriate training; and the emotional effects of participating in the response to an infectious disease with unknown characteristics and lethality. **CONCLUSION** GPs' response to public health crises in different countries presents potential for improving pandemic preparedness.

**Patel, M.S., Phillips, C.B., Pearce, C., Kljakovic, M., Dugdale, P. and Glasgow, N., (2008). General Practice and Pandemic Influenza: A Framework for Planning and Comparison of Plans in Five Countries. *PLoS One*, 3(5).**

<https://search.proquest.com/docview/1312287411?accountid=31583>

**Background** Although primary health care, and in particular, general practice will be at the frontline in the response to pandemic influenza, there are no frameworks to guide systematic planning for this task or to appraise available plans for their relevance to general practice. We aimed to develop a framework that will facilitate planning for general practice, and used it to appraise pandemic plans from Australia, England, USA, New Zealand and Canada. **Methodology/Principal Findings** We adapted the Haddon matrix to develop the framework, populating its cells through a multi-method study that incorporated the peer-reviewed and grey literature, interviews with general practitioners, practice nurses and senior decision-makers, and desktop simulation exercises. We used the framework to analyse 89 publicly-available jurisdictional plans at similar managerial levels in the five countries. The framework identifies four functional domains: clinical care for influenza and other needs, public health responsibilities, the internal environment and the macro-environment of general practice. No plan addressed all four domains. Most plans either ignored or were sketchy about non-influenza clinical needs, and about the contribution of general practice to public health beyond surveillance. Collaborations between general practices were addressed in few plans, and inter-relationships with the broader health system, even less frequently. **Conclusions** This is the first study to provide a framework to guide general practice planning for pandemic influenza. The framework helped identify critical shortcomings in available plans. Engaging general practice effectively in planning is challenging, particularly where governance structures for primary health care are weak. We identify implications for practice and for research.

**Lee, A. and Chuh, A.A.T., (2010). Facing the threat of influenza pandemic - roles of and implications to general practitioners. *BMC public health*, 10, p.661.**

<https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-10-661>

The 2009 pandemic of H1N1 influenza, compounded with seasonal influenza, posed a global challenge. Despite the announcement of post-pandemic period on 10 August 2010 by the WHO, H1N1 (2009) virus would continue to circulate as a seasonal virus for some years and national health authorities should remain vigilant due to unpredictable behaviour of the virus. Majority of the world population is living in countries with inadequate resources to purchase vaccines and stockpile antiviral drugs. Basic hygienic measures such as wearing face masks and the hygienic practice of hand washing could reduce the spread of the respiratory viruses. However, the imminent issue is translating these measures into day-to-day practice. The experience from Severe Acute Respiratory Syndrome (SARS) in Hong Kong has shown that general practitioners (GPs) were willing to discharge their duties despite risks of getting infected themselves. SARS event has highlighted the inadequate interface between primary and secondary care and valuable health care resources were thus inappropriately matched to community needs. There are various ways for GPs to contribute in combating the influenza pandemic. They are prompt in detecting and monitoring epidemics and mini-epidemics of viral illnesses in the community. They can empower and raise the health literacy of the community such as advocating personal hygiene and other precautionary measures. GPs could also assist in the development of protocols for primary care management of patients with flu-like illnesses and conduct clinical audits on the standards of preventive and treatment measures. GPs with adequate liaison with public health agencies would facilitate early diagnosis of patients with influenza. In this article, we summarise the primary care actions for phases 4-6 of the pandemic. We shall discuss the novel roles of GPs as alternative source of health care for patients who would otherwise be cared for in the secondary care level. The health care system would thus remain sustainable during the public health crisis.

Redwood-Campbell, L. and Abrahams, J., (2011). Primary health care and disasters-the current state of the literature: what we know, gaps and next steps. *Prehospital and disaster medicine*, 26(3), pp.184–191.

**INTRODUCTION** The 2009 Global Platform for Disaster Risk Reduction/Emergency Preparedness (DRR/EP) and the Hyogo Framework for Action 2005-2015 demonstrate increased international

commitment to DRR/EP in addition to response and recovery. In addition, the World Health Report 2008 has re-focused the world's attention on the renewal of Primary Health Care (PHC) as a set of values/principles for all sectors. Evidence suggests that access to comprehensive PHC improves health outcomes and an integrated PHC approach may improve health in low income countries (LICs). Strong PHC health systems can provide stronger health emergency management, which reinforce each other for healthier communities.

**PROBLEM** The global re-emphasis of PHC recently necessitates the health sector and the broader disaster community to consider health emergency management from the perspective of PHC. How PHC is being described in the literature related to disasters and the quality of this literature is reviewed. Identifying which topics/lessons learned are being published helps to identify key lessons learned, gaps and future directions.

**METHODS** Fourteen major scientific and grey literature databases searched. Primary Health Care or Primary Care coupled with the term disaster was searched (title or abstract). The 2009 ISDR definition of disaster and the 1978 World Health Organization definition of Primary Health Care were used. 119 articles resulted.

**RESULTS** Literature characteristics; 16% research papers, only 29% target LICs, 8% of authors were from LICs, 7% clearly defined PHC, 50% used PHC to denote care provided by clinicians and 4% cited PHC values and principles. Most topics related to disaster response. Key topics; true need for PHC, mental health, chronic disease, models of PHC, importance of PHC soon after a natural disaster relative to acute care, methods of surge capacity, utilization patterns in recovery, access to vulnerable populations, rebuilding with the PHC approach and using current PHC infrastructure to build capacity for disasters.

**CONCLUSIONS** Primary Health Care is very important for effective health emergency management during response and recovery, but also for risk reduction, including preparedness. There is need to; increase the quality of this research, clarify terminology, encourage paper authorship from LICs, develop and validate PHC-specific disaster indicators and to encourage organizations involved in PHC disaster activities to publish data. Lessons learned from high-income countries need contextual analysis about applicability in low-income countries.

**Clark, S.J., (2015). Role of primary care providers in a pandemic – conflicting views and future opportunities. *Israel Journal of Health Policy Research*, 4.**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4654881/> [Accessed April 1, 2020]

In pandemic situations, primary care providers may be involved in a variety of roles related to disease surveillance, diagnosis and treatment, prevention, and patient education. This commentary describes the contextual factors that may influence primary care providers' perspectives on their pandemic roles and responsibilities. These factors include the natural evolution of the pandemic situation, with early uncertainty affecting decision-making and communication; the variation in typical practice patterns and clinical expertise across and within primary care providers; and the lack of representation of practicing primary care providers in pandemic planning and decision-making bodies.

**Uscher-Pines, L., Fischer, S. and Chari, R., (2016). The Promise of Direct-to-Consumer Telehealth for Disaster Response and Recovery. *Prehospital & Disaster Medicine*, 31(4), pp.454–456.**

Telehealth has great promise to improve and even revolutionize emergency response and recovery. Yet telehealth in general, and direct-to-consumer (DTC) telehealth in particular, are underutilized in disasters. Direct-to-consumer telehealth services allow patients to request virtual visits with health care providers, in real-time, via phone or video conferencing (online video or mobile phone applications). Although DTC services for routine primary care are growing rapidly, there is no published literature on the potential application of DTC telehealth to disaster response and recovery because these services are so new. This report presents several potential uses of DTC telehealth across multiple disaster phases (acute response, subacute response, and recovery) while noting the logistical, legal, and policy challenges that must be addressed to allow for expanded use. Uscher-

Pines L , Fischer S , Chari R . The promise of direct-to-consumer telehealth for disaster response and recovery. *Prehosp Disaster Med.* 2016;31(4):454-456.

**Augusterfer, E.F., Mollica, R.F. and Lavelle, J., (2018). Leveraging Technology in Post-Disaster Settings: the Role of Digital Health/Telemental Health. *Current Psychiatry Reports*, 20(10), pp.1–1.**

**the Purpose Review:** This paper will review the literature on global disasters and the mental health impact of disasters, and discuss the use of digital health/telemental health in providing care in post-disaster settings. **Recent Findings:** Global disasters, natural and manmade, are on the rise. As a consequence, there are increases in the health and mental health impact in the affected populations. We examine the literature on the health and mental health impact of disasters and the role of digital health/telemental health in response to meeting those needs. We examine the use of digital health/telemental health in two case examples, one of a natural disaster and one of a man-made disaster. Finally, we examine a blended telemental health model for collaboration between mental health and primary care providers in post-disaster settings. Digital health/telemental health is positioned on the cusp of the technology explosion, thus bringing much needed medical and mental health care to previously under-served populations.

## Ebola

**Puig-Asensio, M., Braun, B.I., Seaman, A.T., Chitavi, S., Rasinski, K.A., Nair, R., Perencevich, E.N., Lawrence, J.C., Hartley, M. and Schweizer, M.L., (2020). Perceived Benefits and Challenges of Ebola Preparation Among Hospitals in Developed Countries: A Systematic Literature Review. *Clinical Infectious Diseases*, 70(5), pp.976–986.**

The 2014–2016 Ebola epidemic in West Africa provided an opportunity to improve our response to highly infectious diseases. We performed a systematic literature review in PubMed, Cochrane Library, CINAHL, EMBASE, and Web of Science of research articles that evaluated benefits and challenges of hospital Ebola preparation in developed countries. We excluded studies performed in non-developed countries, and those limited to primary care settings, the public health sector, and pediatric populations. Thirty-five articles were included. Preparedness activities were beneficial for identifying gaps in hospital readiness. Training improved health-care workers' (HCW) infection control practices and personal protective equipment (PPE) use. The biggest challenge was related to PPE, followed by problems with hospital infrastructure and resources. HCWs feared managing Ebola patients, affecting their willingness to care for them. Standardizing protocols, PPE types, and frequency of training and providing financial support will improve future preparedness. It is unclear whether preparations resulted in sustained improvements. Prospero Registration. CRD42018090988.

## SARS/MERS

**Aldohyan, M., Al-Rawashdeh, N., Sakr, F.M., Rahman, S., Alfarhan, A.I. and Salam, M., (2019). The perceived effectiveness of MERS-CoV educational programs and knowledge transfer among primary healthcare workers: a cross-sectional survey. *BMC infectious diseases*, 19(1), p.273.**

<https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-019-3898-2>

BACKGROUND Knowledge transfer of Middle East respiratory syndrome coronavirus (MERS-CoV) involves the dissemination of created/acquired information on MERS-CoV in hospitals, making this



information accessible to all healthcare workers (HCWs). This study evaluated the perceived effectiveness of MERS-CoV educational programs and knowledge transfer among primary care HCWs at a hospital in Saudi Arabia that witnessed the largest outbreak of confirmed MERS-CoV cases in this country. METHODS A survey was distributed among primary care HCWs at five clinics in Saudi Arabia in 2016. Those with non-direct patient care responsibilities were excluded. Their knowledge was evaluated against facts published by Mayo Clinic Foundation, and its percentage mean score (PMS)  $\pm$  standard deviation was calculated. HCWs' perceived effectiveness of educational programs and knowledge transfer was classified as negative or positive. RESULTS Sample comprised of 404 HCWs, of which 64% were females and 36% were males. Almost 26% were  $\leq$  30 years old, and 42% had  $>$  10 years of work experience. Almost 46.5% were nurses, 23.0% physicians, 18.1% were pharmacists, and 12.4% were technical staff. PMS for knowledge was  $71.1 \pm 19.4$ . The prevalence of negative perceptions towards educational programs was 22.5% and of knowledge transfer was 20.8%. Older ( $>$  40 years of age) and more experienced ( $>$  10 years) HCWs had the highest PMS for knowledge ( $73.4 \pm 18.9$ ,  $P = 0.005$  and  $76.9 \pm 15.7$ ,  $P < 0.001$  respectively). Negative perceptions of educational programs ( $49.4 \pm 20.7$ ;  $P < 0.001$ ) and knowledge transfer ( $46.0 \pm 19.7$ ;  $P = 0.001$ ) were associated with a lower knowledge PMS. Males were 2.4[95% confidence interval 1.4-4.2] times and 2.0[1.1-3.5] times more likely to have negative perceptions of educational programs and knowledge transfer (adjusted (adj.)  $P = 0.001$  and adj.  $P = 0.023$ , respectively). Physicians/pharmacists were 1.8[1.03-3.11] and 2.8[1.6-5.0] times more likely to have negative perceptions of both outcomes (adj.  $P = 0.038$  and adj.  $P = 0.001$ , respectively). Less experienced HCWs were 2.1[1.3-3.5] times and 4.9[2.6-9.2] times more likely to exhibit negative perceptions of the two outcomes (adj.  $P < 0.001$  each). CONCLUSION A negative perception of the effectiveness of MERS-CoV knowledge transfer was associated with poorer knowledge and was more prevalent among male HCWs, physicians/pharmacists and less experienced HCWs. Hospitals should always refer to efficient knowledge sharing and educational strategies that render beneficial outcomes to patients, HCWs, and the public community.

## Natural Disasters (by country)

### Australia

Burns, P.L., Douglas, K.A. and Hu, W., (2019). Primary care in disasters: opportunity to address a hidden burden of health care. *Medical Journal of Australia*, 210(7), pp.297–297.  
<https://pubmed.ncbi.nlm.nih.gov/30888072/>

The article highlights the importance of general practitioners (GPs) in health management of people effected by disasters. Topics discussed include the negative impact of climate change on the health of Australians according to a report; policies of disaster management focusing on risk reduction at the community level, and improving local capacity to respond; and the roles of GP across the prevention, preparedness, response and recovery phases of disaster management.

### United States

Zigmond, J., (2010). Gaining in New Orleans. With help from a federal grant, wounded city builds a model primary-care system. *Modern healthcare*, 40(3), pp.1–4.

In the wake of Hurricane Katrina, a thriving primary-care network of neighborhood clinics in New Orleans seemed unimaginable. But today, thanks to a federal grant, the flood-damaged city has built a model system. 'From the devastation emerged an opportunity to restructure and reorganize

primary care for low-income and vulnerable populations in New Orleans,' says Melinda Abrams, left, of the Commonwealth Fund.

Rittenhouse, D.R., Schmidt, L., Wu, K. and Wiley, J., (2013). Contrasting trajectories of change in primary care clinics: lessons from New Orleans safety net. *Annals of family medicine*, 11.

<https://pubmed.ncbi.nlm.nih.gov/23690388/>

**PURPOSE**We sought to compare and contrast patterns of change toward patient-centered medical homes (PCMHs) in 5 New Orleans primary care safety net clinics in the aftermath of Hurricane Katrina. We assessed the general direction of change in practice to discover possible reasons for differences in patterns of change, and to identify impediments to change.**METHODS**Data collection consisted of 5 semiannual telephone interviews with clinic leadership over 2.5 years supplemented by administrative audits. We used standard survey indexes of PCMH to monitor practice change. We conducted site visits and unstructured in-person interviews with clinicians and staff of the 5 clinics.**RESULTS**PCMH index scores improved during the observation period with variations in rates of change and initial levels of PCMH. Qualitative analysis suggested possible explanations for this differential success: (1) early vs later starts in practice change, (2) funding based on patient outcomes, (3) demands that compete with practice change, (4) qualities of clinic leadership, and (5) relations with the communities where patients live. Barriers to practice change included high demand for services, deficient linkages between hospital and specialty care, lack of staff resources, and a need to focus on clinic finances.**CONCLUSIONS**The PCMH model can successfully address the needs of safety net populations. Stable leadership committed to serving safety net patients via the PCMH model is important for successful practice transformation. Beyond clinic walls, cultivating deep ties to the communities that clinics serve also supports the PCMH model.

Rittenhouse, D.R., Schmidt, L.A., Wu, K.J. and Wiley, J., (2014). Incentivizing primary care providers to innovate: building medical homes in the post-Katrina New Orleans safety net. *Health services research*, 49(1), pp.75–92.

<https://pubmed.ncbi.nlm.nih.gov/23800148/>

**OBJECTIVE**To evaluate safety-net clinics' responses to a novel community-wide Patient-Centered Medical Home (PCMH) financial incentive program in post-Katrina New Orleans.**DATA SOURCES/STUDY SETTING**Between June 2008 and June 2010, we studied 50 primary care clinics in New Orleans receiving federal funds to expand services and improve care delivery.**STUDY DESIGN**Multiwave, longitudinal, observational study of a local safety-net primary care system.**DATA COLLECTION**Clinic-level data from a semiannual survey of clinic leaders (89.3 percent response rate), augmented by administrative records.**PRINCIPAL FINDINGS**Overall, 62 percent of the clinics responded to financial incentives by achieving PCMH recognition from the National Committee on Quality Assurance (NCQA). Higher patient volume, higher baseline PCMH scores, and type of ownership were significant predictors of achieving NCQA recognition. The steepest increase in adoption of PCMH processes occurred among clinics achieving the highest, Level 3, NCQA recognition. Following NCQA recognition, 88.9 percent stabilized or increased their use of PCMH processes, although several specific PCMH processes had very low rates of adoption overall.**CONCLUSIONS**Findings demonstrate that widespread PCMH implementation is possible in a safety-net environment when external financial incentives are aligned with the goal of practice innovation.

MacRae, J., Kingham, S. and Griffin, E., (2015). The effect of spatial barriers on realised accessibility to health services after a natural disaster. *Health & place*, 35, pp.1–10.

The closure of the Manawatu Gorge in New Zealand in August 2011 caused a change in the travel time for patients living in the east of the MidCentral Health District to their health services located in Palmerston North. This presented an opportunity to study the effect a change in spatial access had on a population before and after such an event. We used a retrospective cohort design with



routinely collected data from general practice and hospital services. Realised accessibility was calculated for 101,456 patients over 3.5 years. General practice utilization appeared to be the only service affected negatively during the gorge closure (rate ratio 1.106). Outpatient attendances had an increase in use by those with increased travel time (rate ratio 0.922). There was evidence of other unidentified factors that impacted the use of services across both intervention and control groups between the gorge open and closed periods. These results were more conservative than those produced by a traditional uncontrolled travel time category analysis which suggested a correlation in non-urgent ED attendance and general practice and boundary effects in all ED attendances and hospital admissions.

Guclu, H., Kumar, S., Galloway, D., Krauland, M., Sood, R., Bocour, A., Hershey, T.B., van Nostrand, E. and Potter, M., (2016). An Agent-Based Model for Addressing the Impact of a Disaster on Access to Primary Care Services. *Disaster medicine and public health preparedness*, 10(3), pp.386–393.

**OBJECTIVE**Hurricane Sandy in the Rockaways, Queens, forced residents to evacuate and primary care providers to close or curtail operations. A large deficit in primary care access was apparent in the immediate aftermath of the storm. Our objective was to build a computational model to aid responders in planning to situate primary care services in a disaster-affected area.**METHODS**Using an agent-based modeling platform, HAZEL, we simulated the Rockaways population, its evacuation behavior, and primary care providers' availability in the aftermath of Hurricane Sandy. Data sources for this model included post-storm and community health surveys from New York City, a survey of the Rockaways primary care providers, and research literature. The model then tested geospatially specific interventions to address storm-related access deficits.**RESULTS**The model revealed that areas of high primary care access deficit were concentrated in the eastern part of the Rockaways. Placing mobile health clinics in the most populous census tracts reduced the access deficit significantly, whereas increasing providers' capacity by 50% reduced the deficit to a lesser degree.**CONCLUSIONS**An agent-based model may be a useful tool to have in place so that policy makers can conduct scenario-based analyses to plan interventions optimally in the event of a disaster. (*Disaster Med Public Health Preparedness*. 2016;10:386-393).

**Mainzer, H.M., Kruger, J. and Mahany, M., (2019). Essential Public Health Services Framework: Use for Rebuilding Communities. *American Journal of Public Health*, 109.**

The authors present their thoughts in favor of the Essential Public Health Services (EPHS) framework as a strategic planning resource in the planning of public health systems recovery following natural disasters.

## India

**Phalkey, R., Dash, S.R., Mukhopadhyay, A., Runge-Ranzinger, S. and Marx, M., (2012). Prepared to react? Assessing the functional capacity of the primary health care system in rural Orissa, India to respond to the devastating flood of September 2008. *Global health action*, 5.**

**BACKGROUND**Early detection of an impending flood and the availability of countermeasures to deal with it can significantly reduce its health impacts. In developing countries like India, public primary health care facilities are frontline organizations that deal with disasters particularly in rural settings. For developing robust counter reacting systems evaluating preparedness capacities within existing systems becomes necessary.**OBJECTIVE**The objective of the study is to assess the functional capacity of the primary health care system in Jagatsinghpur district of rural Orissa in India to respond to the devastating flood of September 2008.**METHODS**An onsite survey was conducted in all 29 primary and secondary facilities in five rural blocks (administrative units) of Jagatsinghpur district in Orissa state. A pre-tested structured questionnaire was administered face to face in the facilities. The data was entered, processed and analyzed using STATA(®) 10.**RESULTS**Data from our primary survey

clearly shows that the healthcare facilities are ill prepared to handle the flood despite being faced by them annually. Basic utilities like electricity backup and essential medical supplies are lacking during floods. Lack of human resources along with missing standard operating procedures; pre-identified communication and incident command systems; effective leadership; and weak financial structures are the main hindering factors in mounting an adequate response to the floods.

**CONCLUSION** The 2008 flood challenged the primary curative and preventive health care services in Jagatsinghpur. Simple steps like developing facility specific preparedness plans which detail out standard operating procedures during floods and identify clear lines of command will go a long way in strengthening the response to future floods. Performance critiques provided by the grass roots workers, like this one, should be used for institutional learning and effective preparedness planning. Additionally each facility should maintain contingency funds for emergency response along with local vendor agreements to ensure stock supplies during floods. The facilities should ensure that baseline public health standards for health care delivery identified by the Government are met in non-flood periods in order to improve the response during floods. Building strong public primary health care systems is a development challenge. The recovery phases of disasters should be seen as an opportunity to expand and improve services and facilities.

## Japan

Starkey, J. and Maeda, S., (2011). Earthquake in Japan. *The Lancet*, 377(9778), p.1653.

One aspect of the structure of Japan's health-care system that bears on the recent earthquake is the weakness of the primary-care system.<sup>1</sup> In Japan, most patients get their care through hospitals and subspecialists. The weak primary-care system has left hospitals overwhelmed with patients seeking attention for non-urgent needs, and health-care workers in the hardest-hit areas are lamenting the influx of primary-care-type patients.

## New Zealand

**Croy, C., Smail, C. and Horsley, E., (2012). Preparing for AND Recovering From A Natural Disaster. *Family Practice Management*, 19(3), pp.15–18.**

**Ardagh, M.W., Richardson, S.K., Robinson, V., Than, M., Gee, P., Henderson, S., Khodaverdi, L., McKie, J., Robertson, G., Schroeder, P.P. and Deely, J.M., (2012). The initial health-system response to the earthquake in Christchurch, New Zealand, in February, 2011. *The Lancet*, 379(9831), pp.2109–2115.**

**Summary** At 1251 h on Feb 22, 2011, an earthquake struck Christchurch, New Zealand, causing widespread destruction. The only regional acute hospital was compromised but was able to continue to provide care, supported by other hospitals and primary care facilities in the city. 6659 people were injured and 182 died in the initial 24 h. The massive peak ground accelerations, the time of the day, and the collapse of major buildings contributed to injuries, but the proximity of the hospital to the central business district, which was the most affected, and the provision of good medical care based on careful preparation helped reduce mortality and the burden of injury. Lessons learned from the health response to this earthquake include the need for emergency departments to prepare for: patients arriving by unusual means without prehospital care, manual registration and tracking of patients, patient reluctance to come into hospital buildings, complete loss of electrical power, management of the many willing helpers, alternative communication methods, control of the media, and teamwork with clear leadership. Additionally, atypical providers of acute injury care need to be integrated into response plans.

**Johal, S.S. and Mounsey, Z.R., (2017). Recovering from disaster: Comparing the experiences of nurses and general practitioners after the Canterbury, New Zealand earthquake sequence 2010-2011. *Nursing & Health Sciences*, 19(1), pp.29–34.**

This paper summarizes, elaborates upon, and contrasts the findings of two research projects that explored how general practitioners and nurses coped with the dual challenge of personal and work demands following the earthquakes in Canterbury, New Zealand, in 2010 and 2011. Qualitative data from two separate studies - the first with general practitioners and the second with nurses - are compared to identify the challenges faced during and following the earthquakes. Semi-structured interviews took place with eight general practitioners two years after the start of the earthquake sequence and 11 nurses a year later to enable exploration of the longer-term aspects of the recovery process. The interview transcripts were analyzed and coded using a constructivist grounded theory approach. The analysis identified that the earthquakes had a significant impact on nurses and general practitioners both in terms of their professional and personal lives. The nurses and general practitioners commented on the emotional impact and their support needs, as well as some of the longer-term recovery issues.

## Terrorism

**Burns, P.L., Aitken, P.J. and Raphael, B., (2015). Where are general practitioners when disaster strikes? *Medical Journal of Australia*, 202(7), pp.356–358.**

**Stene, L.E. and Dyb, G., (2015). Health service utilization after terrorism: a longitudinal study of survivors of the 2011 Utøya attack in Norway. *BMC health services research*, 15, p.158.**

**BACKGROUND**For effective organization of health services after terror attacks, it is vital to gain insight into survivors' health service utilization. Following the 2011 Utøya mass shooting in Norway, a proactive outreach programme was launched to prevent unmet help needs. All survivors received health services during the first five months, yet an important minority were not proactively followed-up. This study assessed the prevalence of health service utilization and factors associated with mental health service utilization among the survivors 5-15 months after the attack.  
**METHODS**The study comprised data from interviews using standardised questionnaires performed 4-5 (T1) and 14-15 (T2) months after the attack. Altogether 281 of 490 (57.3%) survivors answered questions on health service utilization at T2 and were included in this study. Users and non-users of mental health services were compared using Pearson Chi Square tests (categorical variables) and independent t-tests (continuous variables). Multivariate logistic regression analyses were conducted to examine the relationship between mental health service utilization at T2 and early (model 1) and concurrent (model 2) posttraumatic stress reactions, mental distress and somatic symptoms. Both models were adjusted for age, gender and predisaster utilization of mental health services.  
**RESULTS**Altogether 267 (95.0%) of 281 survivors reported contact with health services at T2, including 254 (90.4%) with ≥1 types of primary care services; and 192 (68.3%) with mental health services. In bivariate analyses, mental health service utilization was associated with female gender, injuries, PTSD, mental distress, somatic symptoms, and sleep problems. After multivariate adjustments for early symptom levels (model 1), only mental distress remained significantly associated with mental health service utilization at T2 (OR 2.8, 95% CI 1.2-6.8). In the analysis adjusting for concurrent symptom levels (model 2), only somatic symptoms were associated with mental health service utilization (OR 4.4, 95% CI 1.8-10.8).  
**CONCLUSIONS**The high utilization of both primary and secondary health services among young survivors 5-15 months after the attack underscores the importance of allocating resources to meet the increased demand for services over a longer time period. The results further highlight the need to address somatic symptoms in disaster survivors who receive mental health services.

### Australia

**Collins, N., Litt, J., Winzenberg, T., Shaw, K. and Moore, M., (2008). Plan your pandemic. A guide for GPs. *Australian Family Physician*, 37(10), pp.794–799, 802–804.**

BACKGROUND: Influenza A virus has a range of subtypes characterised by the display of particular surface structures and is associated with significant symptoms and a tendency to cause epidemics and pandemics. OBJECTIVE: This article presents a checklist to assist general practitioners in preparing for an influenza pandemic. DISCUSSION: The Australian Federal Government launched 'Exercise Cumpston' in October 2006 to assess Australian pandemic preparedness. The report of the outcomes recommends the integration of general practice into the planning process at a national and jurisdictional level. General practitioners are enthusiastic about receiving further information and training in pandemic preparedness but preparing a general practice to deal with an influenza pandemic is a complex task.

**Seale, H., Ward, K.F., Zwar, N., Van, D., Leask, J. and Macintyre, C.R., (2010). Examining the knowledge of and attitudes to pandemic influenza among general practice staff. *The Medical journal of Australia*, 192(7), pp.378–380.**

OBJECTIVE To assess the views, needs and intended behaviour of general practitioners and practice nurses (PNs) regarding pandemic influenza. DESIGN, SETTING AND PARTICIPANTS A postal survey of GPs and PNs in four Divisions of General Practice in New South Wales, selected to represent a diverse sample of practices from inner-city, semi-urban and rural areas. The study was undertaken from 1 February to 1 April 2009. MAIN OUTCOME MEASURES GPs' and PNs' responses to survey statements assessing their awareness and perceived personal risk, intended behaviour in the event of a pandemic, and expectations surrounding antivirals, vaccine and personal and family protection. RESULTS Of 390 general practice staff who were sent the survey, 139 (36%) completed it. Most respondents felt confident that they possessed the necessary knowledge (71.5%, 98/137) and skills (73.7%, 101/137) to provide patient care during an influenza pandemic. Although 38.7% (53/137) stated that they would visit quarantined symptomatic patients, 41.6% (57/137) were unsure. More than half the respondents (53.2%, 74/139) stated that they would require access to vaccination and antivirals for their family as well as themselves before they would attend symptomatic patients at the general practice. CONCLUSION These findings provide evidence of the need to ensure that general practice staff have access to personal and family protection to encourage an adequate response to a pandemic situation.

**Bocquet, J., Winzenberg, T. and Shaw, K.A., (2010). Epicentre of influenza - the primary care experience in Melbourne, Victoria. *Australian family physician*, 39(5), pp.313–316.**

BACKGROUND General practice in Australia is expected to play a major role in responding to an influenza pandemic. This study investigated the experience of frontline general practice during the H1N1 influenza pandemic of 2009. METHOD Semi-structured interviews were conducted with general practices in the northern suburbs of Melbourne (Victoria) in August and September 2009. Purposive sampling chose practices with high volumes of patient presentations early in the pandemic. Interviews were content transcribed at the time of interview. Major themes were identified through discussion with general practice division personnel and academic general practitioners in the field. RESULTS There was significant variability in the pandemic experiences of the 10 participating practices. DISCUSSION Addressing issues identified in this study could increase the capacity of general practice to support the community and public health measures during a pandemic. Future planning for the role of general practice in pandemics should include pre-pandemic assessment of practice capacity, review of public health communication strategies and workforce protection, and improved integration of general practice and public health responses.

## Canada

**Jaakkimainen, R.L., Bondy, S.J., Parkovnick, M. and Barnsley, J., (2014). How infectious disease outbreaks affect community-based primary care physicians: comparing the SARS and H1N1 epidemics. *Canadian family physician Medecin de famille canadien*, 60(10), pp.917–925.**

**OBJECTIVE**To compare how the infectious disease outbreaks H1N1 and severe acute respiratory syndrome (SARS) affected community-based GPs and FPs.**DESIGN**A mailed survey sent after the H1N1 outbreak compared with the results of similar survey completed after the SARS outbreak.**SETTING**Greater Toronto area in Ontario.**PARTICIPANTS**A total of 183 randomly selected GPs and FPs who provided office-based care.**MAIN OUTCOME MEASURE**The perceptions of GPs and FPs on how serious infectious disease outbreaks affected their clinical work and personal lives; their preparedness for a serious infectious disease outbreak; and the types of information they want to receive and the sources they wanted to receive information from during a serious infectious disease outbreak. The responses from this survey were compared with the responses of GPs and FPs in the greater Toronto area who completed a similar survey in 2003 after the SARS outbreak.**RESULTS**After the H1N1 outbreak, GPs and FPs still had substantial concerns about the effects of serious infectious disease outbreaks on the health of their family members. Physicians made changes to various office practices in order to manage and deal with patients with serious infectious diseases. They expressed concerns about the effects of an infectious disease on the provision of health care services. Also, physicians wanted to quickly receive accurate information from the provincial government and their medical associations.**CONCLUSION**Serious community-based infectious diseases are a personal concern for GPs and FPs, and have considerable effects on their clinical practice. Further work examining the timely flow of relevant information through different health care sectors and government agencies still needs to be undertaken.

## China

**Zhiheng, Z., Caixia, W., Jiaji, W., Huajie, Y., Chao, W. and Wannian, L., (2012). The knowledge, attitude and behavior about public health emergencies and the response capacity of primary care medical staffs of Guangdong Province, China. *BMC Health Services Research*, 12, p.338.**

**Doc number: 338 Abstract Background:** Primary care medical staffs' knowledge, attitude and behavior about health emergency and the response capacity are directly related to the control and prevention of public health emergencies. Therefore, it is of great significance for improving primary care to gain in-depth knowledge about knowledge, attitude and behavior and the response capacity of primary care medical staffs. The main objective of this study is to explore knowledge, attitude and behavior, and the response capacity of primary care medical staffs of Guangdong Province, China. **Methods:** Stratified clustered sample method was used in the anonymous questionnaire investigation about knowledge, attitude and behavior, and the response capacity of 3410 primary care medical staffs in 15 cities of Guangdong Province, China from July, 2010 to October 2010. The emergency response capacity was evaluated by 33 questions. The highest score of the response capacity was 100 points (full score), score of 70 was a standard. **Results:** 62.4% primary care medical staffs believed that public health emergencies would happen. Influenza ( $3.86 \pm 0.88$ ), food poisoning ( $3.35 \pm 0.75$ ), and environmental pollution events ( $3.23 \pm 0.80$ ) (the total score was 5) were considered most likely to occur. Among the 7 public health emergency skills, the highest self-assessment score is 'public health emergency prevention skills' ( $2.90 \pm 0.68$ ), the lowest is 'public health emergency risk management (the total score was 5)' ( $1.81 \pm 0.40$ ). Attitude evaluation showed 66.1% of the medical staffs believed that the community awareness of risk management were ordinary. Evaluation of response capacity of health emergency showed that the score of primary care medical staffs was  $67.23 \pm 10.61$ , and the response capacity of senior physicians, public



health physicians and physicians with relatively long-term practice were significantly better ( $P < 0.05$ ). Multiple linear stepwise regression analysis showed gender, title, position, type of work, work experience and whether to participate relative training were the main factors affecting the health emergency response capacity. Conclusions: The knowledge, attitude and behavior about public health emergencies and the response capacity of primary care medical staffs of Guangdong Province (China) were poor. Health administrative departments should strengthen the training of health emergency knowledge and skills of the primary care medical staffs to enhance their health emergency response capabilities.

Wong, S.Y.S., Kung, K., Wong, M.C.S., Wong, C., Tsui, W., Chan, K., Liang, J., Lee, N.L.S., Cheung, A.W.L. and Wong, E.L.Y., (2012). Primary care physicians' response to pandemic influenza in Hong Kong: a mixed quantitative and qualitative study. *International journal of infectious diseases : IJID* : official publication of the International Society for Infectious Diseases, 16(9), p.e687.

**OBJECTIVE** The current study was conducted to use a developed framework to appraise the public primary care response to pandemic 2009 influenza A H1N1 virus in Hong Kong in 2009. **METHODS** A cross-sectional survey was conducted of 300 doctors working in public primary care clinics. In addition, a qualitative study was conducted in two selected general outpatient clinics (GOPCs) with 10 doctors between September and December 2009. **RESULTS** We found that there was an increase in clinical service demand for public primary care doctors and that there was lower compliance with hand washing as compared to the wearing of masks among GOPC doctors during the study period. **CONCLUSION** Since hand hygiene and influenza vaccination are effective methods to prevent the spread of influenza infection, future studies should explore the reasons for non-compliance with these preventive behaviors among doctors. More education and training in dealing with influenza A H1N1 infection may be needed.

#### Germany

Eisele, M., Hansen, H., Wagner, H.-O., von Leitner, E., Pohontsch, N. and Scherer, M., (2014). [Epidemics and pandemics in general practice. What can we learn from the swine flu (H1N1) and EHEC outbreak?]. *Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz*, 57(6), pp.687–693.

**BACKGROUND** As primary care givers with a coordinating function, general practitioners (GP) play a key role in dealing with epidemics and pandemics. As of yet, there are no studies in Germany describing the difficulties experienced by GPs in patient care during epidemics/pandemics. **OBJECTIVE** This study aimed at identifying the problem areas in GPs' patient care during the H1N1 and EHEC (enterohemorrhagic strain of *Escherichia coli*) outbreaks. With this information, recommendations for guaranteeing proper patient care during future epidemics/pandemics can be derived. **MATERIALS AND METHODS** In all, 12 qualitative, semi-structured, open guideline interviews with GPs in Hamburg and Lübeck were conducted, transcribed, and evaluated with qualitative content analysis. **RESULTS** Five areas in ambulatory patient care were identified in which changes are needed from the primary care perspective: provision of information for GPs, workload, financing of epidemic-related measures, organization of the practices, care of those taken ill. **CONCLUSION** The workload of GPs in particular can and should be reduced through successful, centralized information distribution during epidemics/pandemics. The GP's function as a coordinator should be supported and consolidated, in order to relieve the in-patient sector in cases of an epidemic/pandemic. Secured financing of epidemic-associated measures can help ensure patient care.

## Japan

**Tomizuka, T., Kanatani, Y. and Kawahara, K., (2013). Insufficient preparedness of primary care practices for pandemic influenza and the effect of a preparedness plan in Japan: a prefecture-wide cross-sectional study. *BMC family practice*, 14, p.174.**

**BACKGROUND**Cases of emerging infectious diseases, including H5N1 influenza, H7N9 influenza, and Middle East Respiratory Syndrome, have been reported in recent years, and the threat of pandemic outbreaks persists. In Japan, primary care is the frontline against emerging infectious diseases in communities. Although the importance of pandemic preparedness in primary care has been highlighted previously, few studies have thus far investigated the preparedness among primary care practices (PCPs) or differences in the preparedness of different institutional settings. We examined PCP preparedness and response to the 2009 influenza pandemic in Japan, and explored the role of a pandemic preparedness plan during the pandemic.**METHODS**We used a survey questionnaire to assess how well individual PCPs in Okinawa, Japan, were prepared for the 2009 influenza pandemic. The questionnaire was mailed to all eligible PCPs (N = 465) in Okinawa, regardless of their institutional setting. In addition, we assessed the differences in the preparedness of clinics and hospitals and determined whether the national preparedness plan affected individual preparedness and response. Data were analyzed using descriptive and logistic regression analyses.**RESULTS**A total of 174 (37.4%) PCPs responded to our survey. In general, high-level personal protective equipment (PPE) such as N95 masks (45.4%), gowns (30.5%), and eye protection (21.3%) was stocked at a low rate. Clinic-based PCPs were significantly less prepared than hospital-based PCPs to provide N95 masks (OR 0.34), gowns (OR 0.15), and eye protection (OR 0.18). In addition, only 32.8% of PCPs adopted an adequate business continuity plan (BCP). After controlling for institutional setting, reading the national preparedness plan was significantly associated with establishment of a BCP (OR 5.86), and with knowledge of how to transfer a swab specimen to a local medical laboratory (OR 5.60).**CONCLUSIONS**With regard to PPE availability, PCPs (especially clinic-based PCPs) were not adequately prepared for the influenza pandemic. Awareness of the national pandemic preparedness plan is likely to promote prefecture-wide implementation of BCPs and surveillance activity.

**Williams, D., Begg, A., Burgess, K., Hider, M., Jennings, L., Martin-Smith, M., McCormack, P., Mitchell, J., Pithie, A., Schroeder, P. and Werno, A., (2010). Influenza H1N1 2009 in Canterbury: a case study in pandemic response co-ordination. *Journal of primary health care*, 2(4), pp.323–329.**

**BACKGROUND AND CONTEXT**Reviews of overseas pandemic responses have suggested that stronger links between primary care and other parts of the health sector are required. The influenza A (H1N1) 2009 ('H1N1 09') pandemic was the first real test of New Zealand's pandemic preparedness.**ASSESSMENT OF PROBLEM**In the six months from May to October 2009, there were 595 confirmed cases of H1N1 09 in Canterbury, with 187 hospitalisations and three deaths. This paper describes the way a range of Canterbury agencies worked together in a co-ordinated health-led response aimed at minimising the impact of H1N1 09 in the community and maintaining effective health care services for both influenza and non-influenza patients.**STRATEGIES FOR IMPROVEMENT**Key strategies included sector-wide response co-ordination, intelligence and communications, a combined public health/primary care response during the 'containment' phase, and universal red/green streaming supported by dedicated 'flu centres and an 0800 call centre during the 'manage it' phase.**LESSONS**Despite the considerable impact of the H1N1 09 virus in Canterbury, health care services were not overwhelmed. The key lesson learned from the Canterbury H1N1 09 response has been the importance of preparing and working together across the sector.

**Wilson, N., Summers, J.A. and Baker, M.G., (2012). The 2009 influenza pandemic: a review of the strengths and weaknesses of the health sector response in New Zealand. *The New Zealand medical journal*, 125(1365), pp.54–66.**

**INTRODUCTION**To inform future pandemic planning and disaster response, we aimed to review the literature on the health sector response to the influenza A (H1N1) 2009 pandemic in New Zealand in 2009.**METHODS**We searched PubMed and Google Scholar along with the websites of government agencies for the period 1 April 2009 to 20 May 2012.**RESULTS**In 2009, 18% of the New Zealand population had evidence of infection from the pandemic strain, 1122 people were hospitalised (with pandemic influenza as the primary diagnosis), 102 of those hospitalised were treated in intensive care units (ICU), and there were an estimated 49 pandemic-attributed deaths. At the severe end of the disease spectrum (ICU admissions and mortality), the health burden was significantly worse for Maori and Pacific peoples. The available evidence (including various estimates of low case-fatality risk relative to other high income countries), is consistent with the overall response in the public health, primary care and hospital sectors being fairly successful. Nevertheless, a number of likely weaknesses were identified, including a relative lack of: (i) a detailed review of the epidemiology and health sector response; (ii) sophisticated analytic studies to identify risk factors (e.g., using case-control studies); (iii) studies on pandemic vaccine uptake and public acceptability; and (iv) evaluation of the health protection messages that were used in campaigns and in media releases from health authorities.**CONCLUSION**There appear to have been both strengths and weakness in the New Zealand health sector's response to the 2009 influenza pandemic. Nevertheless, it is probably still worthwhile to address some of the omissions to inform future pandemic and natural disaster planning and preparations.

## Norway

**Simonsen, K.A., Hunskaar, S., Sandvik, H. and Rortveit, G., (2013). Capacity and adaptations of general practice during an influenza pandemic. *PloS one*, 8(7), p.e69408.**

**BACKGROUND**GPs play a major role in influenza epidemics, and most patients with influenza-like-illness (ILI) are treated in general practice or by primary care doctors on duty in out-of-hours services (OOH). Little is known about the surge capacity in primary care services during an influenza pandemic, and how the relationship between them changes.**AIM**To investigate how general practice and OOH services were used by patients during the 2009 pandemic in Norway and the impact of the pandemic on primary care services in comparison to a normal influenza season.**MATERIALS**Data from electronic remuneration claims from all OOH doctors and regular GPs for 2009.**METHODS**We conducted a registry-based study of all ILI consultations in the 2009 pandemic with the 2008/09 influenza season (normal season) as baseline for comparison.**RESULT**The majority (82.2%) of ILI consultations during the 2009 pandemic took place in general practice. The corresponding number in the 2008/09 season was 89.3%. Compared with general practice, the adjusted odds ratio for ILI with all other diagnoses as reference in OOH services was 1.23 (95% CI, 1.18, 1.27) for the 2008/2009 season and 1.87 (95% CI, 1.84, 1.91) for the pandemic influenza season. In total there was a 3.3-fold increase in ILI consultations during the pandemic compared to the 2008/09 season. A 5.5-fold increase of ILI consultations were observed in OOH services in comparison to the 2008/09 season. Children and young adults with ILI were the most frequent users of OOH services during influenza periods.**CONCLUSION**The autumn pandemic wave resulted in a significantly increased demand on primary care services. However, GPs in primary care services in Norway showed the ability to increase capacity in a situation with increased patient demand.

## Netherlands

**van Dijk, C.E., Hooiveld, M., Jentink, A., Isken, L.D., Timen, A. and Yzermans, C.J., (2015). Experiences of General Practitioners and Practice Assistants during the Influenza A(H1N1) Pandemic in the Netherlands: A Cross-Sectional Survey. *PloS one*, 10(8), p.e0135666.**



**OBJECTIVE** Since few pandemics have occurred since the Spanish influenza pandemic, we should learn from every (mild) pandemic that occurs. The objective of this study was to report on general practitioners' and practice assistants' acceptance of the chosen national policy, and experiences in the Netherlands during the influenza A(H1N1)pdm09 pandemic. **METHODS** Data on experience and acceptance of the chosen national policy were obtained by structured questionnaires for general practitioners (n = 372) and practice assistants (n = 503) in April 2010. **RESULTS** The primary policy chosen for general practice was not always accepted and complied with by general practitioners, although the communication (of changes) and collaboration with involved organisations were rated as positive. In particular, the advised personal protective measures were difficult to implement in daily work and thus not executed by 44% of general practitioners. Half of the general practitioners were not satisfied with the patient information provided by the government. The influenza A(H1N1) pandemic highly impacted on general practitioners' and practice assistants' workloads, which was not always deemed to be adequately compensated. **DISCUSSION** Involvement of general practitioners in future infectious disease outbreaks is essential. This study addresses issues in the pandemic policy which might be critical in a more severe pandemic.

## Search strategies

### CINAHL

#### # Search term

- 1 ("middle east respiratory syndrome" OR "MERS-CoV" OR "MERS" OR "SARS" OR "severe acute respiratory syndrome").ti,ab
- 2 (swine flu" OR influenza OR H1N1 OR "bird flu" OR H1N5)).ti,ab
- 3 (disaster\* AND (earthquake OR manmade OR natural)).ti,ab
- 4 ((Christchurch OR New Zealand) AND earthquake).ti,ab
- 5 (Fukushima).ti,ab
- 6 (terror\* OR bomb\*).ti,ab
- 7 exp "SARS VIRUS"/
- 8 exp "MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS"/
- 9 exp "INFLUENZA, PANDEMIC (H1N1) 2009"/
- 10 exp "INFLUENZA A H5N1"/
- 11 exp "MASS CASUALTY INCIDENTS"/
- 12 exp "NATURAL DISASTERS"/
- 13 exp DISASTERS/
- 14 exp TERRORISM/
- 15 (1 OR 2 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15)
- 16 ("general practice\*" OR "primary care" OR "primary healthcare" OR "family medicine" OR "family practice").ti,ab
- 17 exp "FAMILY PRACTICE"/
- 18 exp "PRIMARY HEALTH CARE"/
- 19 exp "PHYSICIANS, FAMILY"/
- 20 (16 OR 17 OR 18 OR 19)
- 21 (15 AND 20)
- 22 (DT 2010-2019)

## Strategy 832410

### # Search term

- 1 ("middle east respiratory syndrome" OR "MERS-CoV" OR "MERS" OR "SARS" OR "severe acute respiratory syndrome").ti,ab
- 2 (pandemic AND ("swine flu" OR influenza OR H1N1 OR "bird flu" OR H1N5)).ti,ab
- 3 exp PANDEMICS/
- 4 "INFLUENZA A VIRUS, H1N1 SUBTYPE"/
- 5 exp "SARS VIRUS"/
- 6 exp "MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS"/
- 7 (1 OR 2 OR 3 OR 4 OR 5 OR 6)
- 8 ("general practice\*" OR "primary care" OR "primary healthcare" OR "family medicine" OR "family practice").ti,ab
- 9 exp "GENERAL PRACTITIONERS"/-og
- 10 exp "FAMILY PRACTICE"/-og
- 11 exp "GENERAL PRACTICE"/-og
- 12 exp "PRIMARY HEALTH CARE"/-og
- 13 (8 OR 9 OR 10 OR 11 OR 12)
- 14 (7 AND 13)
- 15 (disaster\* AND (earthquake OR manmade OR natural)).ti,ab
- 16 ((Christchurch OR New Zealand) AND earthquake).ti,ab
- 17 (Fukushima).ti,ab
- 18 (terror\* OR bomb\*).ti,ab
- 19 exp "FUKUSHIMA NUCLEAR ACCIDENT"/
- 21 exp "MASS CASUALTY INCIDENTS"/
- 22 exp "NATURAL DISASTERS"/
- 23 exp EARTHQUAKES/
- 24 exp TERRORISM/
- 25 exp "SEPTEMBER 11 TERRORIST ATTACKS"/
- 26 (15 OR 16 OR 17 OR 18 OR 19 OR 21 OR 22 OR 23 OR 24 OR 25)
- 27 (13 AND 26)
- 28 (14 OR 27)
- 29 28 [DT 2010-2020]

Koha (The King's Fund Database)

(su: pandemics or su: swine influenza or su: influenza or su: emergency planning or su: major incidents) and (su: general practice or su: primary care or su: general practitioners)

su: (disaster or disasters) or (su: crisis not su: (mental or suicide or disabilities or disabled or psychiatric)) and (su: general practice or su: general practitioners or su: primary care)

su: Severe acute respiratory syndrome

su: earthquake or su: natural disasters