



Jenny Bocquet  
Tania Winzenberg  
Kelly A Shaw

# Epicentre of influenza

## The primary care experience in Melbourne, Victoria

### 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.

### Methods

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.

**Keywords:** influenza; communicable/infectious diseases; public health; health services; delivery of health care; general practice manpower



Increased primary health care capacity is required when influenza-like illness (ILI) due to a novel virus of unknown virulence occurs in epidemic numbers in a community.<sup>1</sup> In this situation, primary care potentially provides accessible health services, continuity of care, an available multiskilled workforce, and a triage mechanism for diversion of patients to the tertiary sector.<sup>2</sup>

Australian general practices are expected to play a major role in the response to an outbreak of pandemic influenza.<sup>3</sup> This was the case when the northern suburbs of Melbourne (Victoria) were the first in Australia to experience community based transmission of the highly infectious H1N1 influenza virus in May 2009.<sup>4</sup> By mid June, 66% of Australia's confirmed cases were from Victoria.<sup>5</sup>

Melbourne's northern suburbs have a diverse group of general practitioners in solo, group, and corporate practices. They often have high patient-to-GP ratios and service an ethnically diverse population with some areas of social disadvantage. General practices are regionally supported by general practice divisions (GPDs), which are federally funded primary care support organisations that provide assistance to general practice across a wide range of activities.<sup>6</sup> The pandemic preparedness of the primary health care system in these suburbs was sorely tested as patients turned to general practices for information and treatment of ILI in May and June 2009.<sup>4,7</sup> In addition, due to local hospital emergency department (ED) overload, Australia's first state funded influenza clinics were established and were mostly co-located with hospitals in late May 2009. In July, recognising the intense pressure placed on practices in their catchments, two local GPDs instigated a quality assurance process to investigate the pandemic

experience of general practices, to inform improvements in pandemic plans.

The aim of this study is to describe the early experience (4 weeks from first clinic presentation) of these frontline general practices in managing the outbreak of H1N1 influenza, when the virus was of unknown virulence and clinical expertise was rapidly evolving.

### Methods

Semi-structured interviews were chosen for this study in order to collect in-depth information on the general practices' experiences during this novel clinical and public health crisis. Purposive sampling targeted general practices that were subject to high volumes of ILI presentations early in the pandemic. These were identified through the records of the local community health centre influenza clinic and the two GPDs. Ten such practices were identified.

The principal investigator, in consultation with GPD personnel, developed a semi-structured interview schedule. Discussion topics included practice pandemic preparations and early phase responses including:

- patient presentations and workload
- operational re-organisation
- barriers to provision of clinical care
- workforce challenges
- resource issues (eg. personal protective equipment [PPE], antivirals)
- referral relationships, and
- public health communication.

The interview schedule was appraised by a convenience sample of GPs before interviews. Practice managers provided informed consent to participation in a confidential interview with the principal investigator. Interviews were conducted in August and September 2009.

Interviews were content transcribed by the principal investigator at the time of interview.

Data were coded and analysed according to the discussion topics in the semi-structured interview schedule. Major themes were identified through an iterative process of discussion and refinement with the GPD staff and academic GPs in the field. Data were then described narratively according to these themes.

## Results

Ten practice managers completed interviews with the principal investigator, which ranged from 30–60 minutes. Six managers were administrative personnel, three were registered nurses and one was a GP. Practice managers consulted informally with practice GPs before interviews. Sampled practices ranged in size from 4–14 GPs, representing a maximum clinical capacity 6.5 full time equivalent GPs. Eight practices billed using a combination of private fee-for-service and bulk billing through Medicare, and two practices wholly bulk billed.

Major themes identified from the interviews are discussed below.

### Demand management strategies

General practices utilised resourceful and pragmatic demand management strategies driven by individual practice characteristics. Examples are given in *Case study 1–5*.

Additional daily presentations to practices varied from 20–200 presentations per day. Two practices chose immediate, total and continuous ‘flu bypass’, using telephone triage and external signage on the basis of symptoms and risk exposure, with diversion to influenza clinics and hospital EDs (*Case study 1, 2*). Two practices with adequate stocks of PPE and capacity to physically isolate patients expanded services, although often at the risk of practice overload (*Case study 3*). Two practices had unused capacity due to a failure in resupply of PPE or workforce limitations (*Case study 4*). One practice undertook advanced restructuring of practice systems (*Case study 5*).

### Preparations

Three practices had a ‘flu champion’ who significantly promoted practice resilience and capacity. They had stocks of PPE, scrupulous hygiene protocols and disaster plans enabling rapid expansion of services (*Case study 3, 5*). These staff had prepared using resources from GPDs, The Royal Australian College of

General Practitioners, government websites and accreditation processes. They had often attended GPD educational activities on severe acute respiratory syndrome and avian flu. Seven practices had inadequate stockpiles of PPE, needing resupply within the first 2 weeks. Six practices ran critically low during the early pandemic with two practices being unable to access masks from any source within their first 2 weeks of the pandemic: ‘we were shocked at public health suggestions to try hardware chain-stores’, ‘the division scrambled to try to get us PPE’.

### Organisational characteristics

All practices reported that physical and organisational characteristics were a dominant determinant of service capacity. Access to a rear entrance or car park, extra rooms for conversion to isolation or a designated ‘mini flu clinic’, a large waiting room for infection control and staff protection were all highly valued. One small clinic with a ‘wait in car’ policy reported their main obstacle to influenza care was ‘rain’, as many consultations occurred in their outdoor car park. A ‘flu champion’, a practice nurse and a large group practice providing roster flexibility were reported as promoting capacity. Information technology systems enabling double booking, ‘flagging’ of infectious risks and allocation of urgent appointments of ILI patients to specific practitioners also contributed to capacity. Patient demography had a major impact: ‘we couldn’t take an unknown virus into all our nursing homes’, ‘it spread like wildfire through our large refugee extended families’.

### Communication

Influenza information to GPs came primarily from GPDs and the state health department. Six practices reported significant difficulties managing rapidly escalating information flow: ‘we had no time to sort through the welter of stuff’. Five practices reported that information provided was not necessarily synchronous with their on-the-ground experience, not orientated toward practical clinical guidelines and not tailored specifically to primary care. Three practice managers expressed frustration with attempts to access sophisticated clinical advice from health department help lines more orientated toward public health outcomes: ‘I was trying to source complex advice from a clerk using a checklist’. Practices reported difficulties

managing patient expectations of investigation or treatment, in the face of contradictory media reports and public help line instructions: ‘they were furious when I wouldn’t prescribe antivirals’.

### Public health role

Five practices reported conflicts of interest between their public health responsibilities and their capacity to provide clinical care, indicating that their patients took priority. Authorisation requirements for swabbing and prescription of antiviral agents were consistently reported as time consuming and compromising of clinical care when managing large numbers of patients: ‘40 minutes on the phone and they wouldn’t talk to anyone but a GP’. Three practices also reported delays in accessing swab results from an overwhelmed centralised laboratory.

The role of the GP as an advisor on quarantine, a guide for community organisations (infant welfare clinics/schools/sporting clubs/workplaces), and a provider of medical certificates could be overwhelming. One GP ‘donated’ significant unpaid expertise and time to influenza telephone triage, advice and education, home visits to quarantined families, telephone management/review of febrile illness and contract tracing in her community: ‘I predicted the spread up the tram track from the after school route of a confirmed case’ (*Case study 5*). Two practices reported that state government support dwindled precisely as clinical pressures increased, and the limits of public infrastructure were stretched by pandemic progression.

### Noninfluenza care

Five practices reported struggling to maintain routine care; appointment wait times often doubled. Medical emergencies were at risk from delays in urgent treatment: ‘out of 50 masked people I luckily picked the man turning grey with a heart attack’. One clinic cancelled all routine recalls (*Case study 3*). General practitioners reported risks in triage to influenza clinics using the criteria of fever: ‘patients with pyelonephritis or otitis media could queue for hours next to patients with fulminant flu; patients were afraid to attend’. Patients accustomed to the GP familiar with their complex chronic conditions were ‘triaged to a flu clinic focused on a narrow spectrum of illness, with no follow up, review or past file to refer to’.

## Staff impacts

Service delivery was affected when GPs and their families were quarantined or affected by community impacts, or staff had members of their family infected by influenza: 'due to school

closure my child sometimes attended work with me'. Eight practices reported very low rates of staff absenteeism due to influenza or fear of infection, with the exception of pregnant staff. Only two practices used antivirals as workforce

protection. One clinic treated staff from antiviral stockpiles: 'we stocked up through travel clinic after avian flu'. Another practice provided their 'designated' GP with prophylactic antiviral medication at clinic cost.

### Case study 1 – 'safety first'

This practice was a small clinic in a busy shopping centre with no car park, no alternative entry, a small waiting room with 12 chairs and four small rooms all continuously occupied by the practice's six GPs. The practice judged that there was insufficient capacity to provide adequate infection control for staff or patients. An immediate decision was made to refer all ILI risk patients to influenza clinics/ED for the duration of the pandemic. The practice's limited PPE stocks were utilised for patients not diverted by stringent telephone triage and external signage.

### Case study 2 – 'our patients first'

This practice of four part time GPs serviced predominantly elderly chronically ill patients, multiple nursing homes and very few young families. Home visits were commonly performed. With a high level of concern about providing a vector for the virus into their high risk patient population, the practice decided that all ILI risk patients should be referred to a nearby influenza clinic/ED for the duration of the pandemic.

### Case study 3 – 'it was an avalanche'

Twelve GPs with substantial pre-existing stocks of PPE due to advanced planning saw up to 200 extra ILI risk patients daily (usual daily winter load 250). The practice serviced a highly ethnically diverse patient population; large close-knit extended families with rapid viral transmission and poor access to translated health information. Car park access was ample and a 'wait in car' policy was enacted. The waiting room expanded to seat 50 (from 35) and consistent use of patient/staff masks and alcohol washes occurred (supplied by a local pathology company). An isolation room was used with segregation of at risk patients in the waiting room. Despite these measures there were 'patients sitting on the pavement outside the clinic' at times. The nurse practice manager organised cancellation of nonurgent patient recalls and, dressed in full PPE to avoid cross infection, performed after hours home visits for the chronically ill. At the close of the epidemic there were 500 routine recalls awaiting attention. Despite this expansion of capacity and high level of preparation, increasing partial diversion to influenza clinics occurred due to staff exhaustion, compromised routine patient care, suboptimal infection control, and the inability to process the deluge of patients.

### Case study 4 – PPE exhaustion

Twelve GPs with excellent infection control and well organised practice staff, including nurses, consumed all existing PPE stocks within 1 week. They were unable to obtain PPE from health department sources for 2 weeks, forcing total temporary 'influenza bypass'. Complete service to patients resumed when an alternative supply of PPE was obtained from GPN supplies. Upward of 20 ILI risk patients were referred daily to an influenza clinic while out-of-stock of PPE.

### Case study 5 – all systems go

Fourteen GPs (6.5 FTE in full consulting rooms) adjacent to the first diagnosed case of H1N1 influenza in Victoria. With activation of their disaster plan the practice allocated a designated 'flu' GP full time for 5 weeks, who took prophylactic antiviral medication. She saw most at risk patients, followed up all swab results, triaged most ILI telephone queries, did home visits to families in quarantine, managed information flow, and personally sourced PPE when supplies ran out at day 10. She also conducted her own contact tracing in collaboration with public health officials, and predicted the spread of the virus through the community based on her knowledge of positive swab results. The clinic had a separate waiting area, a 'wait-in-car' policy, alcohol wash supplies for GP/nurse room cleaning between patients, and full PPE for GP swabbing procedures. Upward of 40 patients daily were managed before the establishment of influenza clinics, which were then used for after hours cover.

## Influenza clinics

All practices used influenza clinics, once established, for after hours diversion. Two used them for in hours diversion, when 'in extremis' with workforce, lack of resources, or 'other practices' patients attending us'. Two practices instituted permanent 'flu bypass' for ethical reasons (*Case study 1, 2*). Only one practice contributed a GP part time to influenza clinic workforce, resulting in detailed knowledge of clinic functioning but increased risk of cross infection. No practice reported use of influenza clinic as a resource for primary care clinical guidance or assistance with coordinated management of high risk patients. One practice was 'kept afloat by a single resupply of 100 masks from flu clinic'. Co-location of influenza clinics at distant major hospitals was problematic for one practice: 'many patients just don't own cars, and they were too sick or contagious for public transport'. Those practices adjacent to the very first ILI cases questioned the timeliness of establishment of influenza clinics: 'we had an extra 40 patients daily well before establishment of the first influenza clinic, 30 minutes away by car'.

## Discussion

The study clearly demonstrates the variability of both the pandemic experience of individual general practices and their choice of pandemic service delivery model. Factors influencing care provision included:

- staffing profiles
- patient demography (ethnicity/age/chronic illness)
- potential for reconfiguration of physical infrastructure
- supplies of PPE stocks
- proximity to EDs/influenza clinics, and
- the presence of staff knowledgeable in pandemic planning.

These factors influenced practice decisions regarding whether to maintain only noninfluenza care, to integrate influenza care into 'business as usual', or to adapt practice operations by deferring nonurgent medical care. These responses were consistent with potential models of clinical

practice identified pre-pandemic by Phillips et al.<sup>8</sup> These reactive decisions were often made with only patchy support from, or integration with, the broader health services. Some practices attempted to function as de-facto influenza clinics without the attendant back up of infectious diseases physicians, EDs, pathology, pharmacy or plentiful PPE stocks which characterised influenza clinics. This lack of integration increases risks of suboptimal primary health response, reduced workforce sustainability and inefficient referral to tertiary health services. Conversely pandemic planning that incorporates adjustment for these decisions could support those general practices whose structures best enable them to safely increase capacity.

Results also reflected the dynamic nature of the pandemic. Local intensity of demand for primary care services at the epicentre fluctuated significantly both chronologically and geographically. National plans such as the Australian Health Management Plan for Pandemic Influenza (AHMPPI)<sup>9</sup> did not seem to afford regional public health authorities sufficient flexibility to tailor their response to local primary care providers. Consequently, public health assistance could be untimely, with delayed rollout of resources (PPE/antiviral agents/influenza clinics) that was inconsistent with the primary care objectives of the AHMPPI. Previous research suggests that GPs expected government provision of PPE and antiviral agents; otherwise they may well have created larger stockpiles.<sup>10</sup>

General practices need a streamlined, clinically appropriate, regularly updated, electronic source of information focused on primary care that prioritises urgent changes of protocol. Effective two-way communication would enable rapid dissemination of information from the field (clinical and surveillance) and urgent resupply of equipment and medications to general practices. Public health authority requirements for antiviral prescription or swabbing requiring time consuming communication need overhauling. Consideration could be given to remuneration and indemnity for primary care staff who perform public health functions in an emergency.

This study identified practice organisational modifications including:

- creating mini influenza clinics with a designated GP
- assigning the 'worried well' to a clinic nurse

- training reception staff to provide health department literature
  - appointing an information coordinator, and
  - maintaining routine care by diverting ILI patients.
- Inter-practice cooperation could be considered to more efficiently manage risk and service delivery. Influenza clinics provided essential backup to these strategies, either for after hours care or total diversion of ILI patients. Influenza clinic deployment should effectively support primary as well as tertiary care, without duplicating existing services or depleting the GP workforce.

### Limitations of this study

This study has several limitations. Participants were purposively selected for high volumes of presentations early in the pandemic. The sample was limited to 10 urban group general practices and was at the epicentre of a novel infectious threat. There may have been an element of recall bias as the study was undertaken in August and September 2009, reflecting on experiences in the first 4 weeks of the pandemic. While the study sample is therefore not representative of the experience of all general practices, it provides novel and important data from general practice at the frontline of the first pandemic in over 40 years.

### Conclusion

This study's results provide valuable insights into the reality of general practice challenges at the epicentre of the H1N1 influenza 2009 pandemic. They assist in identifying key factors influencing the efficacy of frontline GPs in a pandemic, thus contributing to reviews of primary care pandemic planning. This planning should include:

- pre-pandemic assessment of each practice's capacity
- review of public health pandemic communication strategies
- enquiry into workforce protection using PPE and antiviral agents, and
- improved integration of general practice and public health response.

A rapid, flexible and responsive pandemic primary care support system could identify those general practices under extreme pressure, enabling prompt targeting of resources, utilisation of efficiencies of scale and mobilisation of personnel.

Addressing issues raised by GPs this study could increase general practice capacity to safely

support the community and public health measures during a pandemic. Pandemic planning review must clearly articulate the responsibilities of primary care and both levels of government, informed by a collaborative approach that engages with general practices and their peak organisations. The frequent comment: 'we were just lucky it wasn't a killer' should not apply to subsequent pandemics or a second wave of this pandemic.

### Authors

Jenny Bocquet MBBS, is a general practitioner, Melbourne, Victoria. jenbocquet@hotmail.com

Tania Winzenberg MBBS, PhD, FRACGP, MMedSc(ClinEpi), is Senior Research Fellow, Menzies Research Institute, University of Tasmania  
Kelly A Shaw MBBS, MPH, PhD, FRACGP, FAFPHM, is Postdoctoral Research Fellow, Southern Cross University, Coff's Harbour, New South Wales.

Conflict of interest: Jenny Bocquet is a former board member of NEVDGP (2004) and NDGP (2008).

### Acknowledgments

The authors wish to thank the North East Valley and Northern Divisions of General Practice for their funding and support of this project, and the general practice participants who generously donated their time.

### References

1. Lurie N. H1N1 influenza, public health preparedness, and healthcare reform. *N Engl J Med* 2009;361:843–45.
2. Ontario Home and Community Care Council. SARS and community care: impact and opportunities. OHCCC, 2003. Available at [www.ohccc.on.ca](http://www.ohccc.on.ca).
3. Collins N, Litt J, Moore M, Winzenberg T, Shaw K. General practice: professional preparation for a pandemic. *Med J Aust* 2006;185(10 Suppl):S66–9.
4. Eizenberg P. The general practice experience of the swine flu epidemic in Victoria – lessons from the frontline. *Med J Aust* 2009;191:151–3.
5. H1N1 09 Outbreak. National case update. 15 June 2009. Available at [www.healthemergency.gov.au](http://www.healthemergency.gov.au)
6. Australian General Practice Networks. Available at [www.agpn.com.au/](http://www.agpn.com.au/) [Accessed 11 January 2010].
7. Lum M, McMillan A, Brook C, Lester R, Piers L. Impact of pandemic (H1N1) 2009 influenza on critical care capacity in Victoria. *Med J Aust* 2009;191:502–06.
8. Phillips C, Patel M, Glasgow N et al. Australian general practice and pandemic influenza: models of clinical practice in an established pandemic. *Med J Aust* 2007;186:355–8.
9. Australian Government Department of Health and Ageing. Australian Management Plan for Pandemic Influenza. Canberra: Department of Health and Ageing, 2005. Available at [www.flupandemic.gov.au/internet/panflu/publishing.nsf/Content/ahmpipi](http://www.flupandemic.gov.au/internet/panflu/publishing.nsf/Content/ahmpipi) [Accessed 11 January 2010].
10. Shaw K, Chilcott A, Hansen E, Winzenberg T. The GP's response to pandemic influenza: a qualitative study. *Fam Pract* 2006;23:267–72.

correspondence [afp@racgp.org.au](mailto:afp@racgp.org.au)