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# Universal telenursing triage in Australia and New Zealand

## A new primary health service

### Background

Most Australian and all New Zealand residents now have 24 hour access to free telephone advice and symptom triage. Australasia is following an international trend triggered by a perceived need for standardised advice, demand management (primary care and emergency department), and equity of access. A growing literature describes the impact of this new service on existing primary health services.

### Objective

This article summarises the results of telephone triage projects in Australia and New Zealand to acquaint Australian general practitioners with nurse led telephone triage services that have health call centre technology.

### Discussion

Australian and New Zealand services are similar with respect to the demographics of callers, when they call, and the issues on which they seek advice. Further study is needed in order to understand how telenursing can best be integrated with general practice and other primary care services.

■ **A number of countries have introduced telephone advice services to help to standardise advice and to assist in managing demand for health care (including ambulance and emergency department) services.<sup>1</sup> Ease of access to health advice for needy or disadvantaged groups is a further important consideration.**

Nurses in general medical practices and emergency departments have traditionally triaged calls, and are effective in reducing doctor workload.<sup>2</sup> Gallagher<sup>3</sup> remarked that in Britain, general practitioners bear most of the cost of nurse telephone consultation and benefit least from the savings associated with it. The application of call centre technology means nurses working from a remote site can use decision support software to receive, assess and manage calls from patients or their carers. The safety and effectiveness of telephone triage by nurses has been demonstrated in Britain<sup>4,5</sup> and New Zealand.<sup>6-10</sup>

A number of studies of telephone advice have suggested a need for consistency. In the United States and New Zealand, telephone callers presented simulated patient scenarios to a range of primary care facilities (including general practices and emergency departments). The training of the telephone adviser, their level of questioning, and the quality of their advice all varied widely.<sup>11-13</sup> In the Netherlands, the percentage of calls to general practice cooperatives managed by nurse telephone advice alone also varied substantially.<sup>14</sup> Crouch and Dale<sup>15</sup> have identified the need to formalise processes of telephone advice and assessment.

Medical practice variation was first brought to attention by Wennberg in 1982.<sup>16</sup> 'Medical practice variation is marked, apparently ubiquitous across the health sector, well documented, and continues to be a focus of professional and policy interest'.<sup>17</sup>

While choice in management is not always a bad thing, such an approach must assume similar outcomes, social equity and cost neutrality. The cost of providing primary care services varies widely from expensive ambulance transfer to emergency departments via general

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practice, to inexpensive self care. Furthermore, people seek care at times and places that are not appropriate to their needs. The economics of health care requires that demands for care are managed, and that care is provided at the right place and at the right time.

These realisations have coincided with advances in information technology allowing the worldwide introduction of telenursing triage services based in health call centres and supported by standardised decision support software. In Australasia, telenursing triage was established in Western Australia (HealthDirect) in 1999, New Zealand (Healthline) in 2000, the Australian Capital Territory (Health First) in 2000, Northern Territory (NT HealthDirect) in 2005, Victoria (NURSE-ON-CALL) in 2006 and Queensland (13 Health) in 2006. All except Queensland's 13 Health are operated by McKesson Asia-Pacific using Care Enhance Call Centre (CECC) software; 13 Health is operated by Queensland Health using Clinical Solutions' CAS software. A national Australian service (HealthDirect Australia) has commenced incorporating HealthDirect, Health First and NT HealthDirect and will be rolled out across Australia over the next few years. The British Government's NHS Direct is said to provide more health services per annum than any other agency in the world.

There is a growing base of evidence for the effectiveness of telephone triage:

- Barber et al<sup>18</sup> found that triaged referrals to an emergency department in Alabama had a 33% higher rate of appropriateness than controls: 'This evidence supports telephone triage as an efficient gatekeeper for health care resources'
- Light et al<sup>19</sup> showed that whereas most Pennsylvanian parents of feverish children wanted their children seen by a doctor, the majority followed nursing triage advice for home care
- a telerriage service in Canada 'was providing appropriate advice'<sup>20</sup>
- In Sweden, 'The telephone nurse triage model showed adequate guidance for the patients concerning level of care and released resources for the benefit of both patients and the health care system'<sup>21</sup>
- In Colorado, three-quarters of families complied with recommendations for their child to be evaluated urgently or to be treated at home. Under referral for hospitalisation was uncommon<sup>22</sup>
- Triage nurses in Western Australia validly and reliably estimated patient complexity in referrals to the Fremantle Hospital Emergency Department<sup>23</sup>
- A Cochrane Database Systematic Review concluded that 'telephone consultation appears to reduce the number of surgery contacts and out of hours visits by GPs'<sup>24</sup>
- In New Zealand, primary care doctors judged triage outcomes as safe,<sup>6</sup> rural GPs reported lower workload at weekends,<sup>8</sup> and the effect on an

urban emergency department was to free up a full time nurse for face-to-face clinical work.<sup>24</sup>

## Method

Data for May 2007 from the following telenursing services: HealthDirect (HD), Health First (HF), Healthline (HL), NURSE-ON-CALL (NOC), NT HealthDirect (NT HD), and 13 Health (13H), were derived from regular reports by providers to their funding agencies (ACT Health, Northern Territory Department of Health and Community Services, Victorian Department of Human Services, Health Department of Western Australia, and the Ministry of Health in New Zealand). We derived data for 13 Health from its website ([www.health.qld.gov.au/13health/stats.asp](http://www.health.qld.gov.au/13health/stats.asp)).

We derived the catchment populations from 2006 Census figures for each country. We have not calculated statistical differences, or Cohen's d for effect size because practical differences and similarities (effect size) are obvious from the figures.

## Results

In May 2007, HD took 16 522 calls; HF 4306; HL 24 571; NOC 30 392; NT HD 1407; and 13H 12 727.

*Figure 1* (females) and *2* (males) show the patients in each age group expressed as a percentage of that age group in the populations served. A logarithmic Y axis is used to show differences more clearly. Age and gender distributions of callers were similar across all services, and were in turn similar to the distribution of patients attending GPs with new complaints.<sup>25</sup> (The U shaped age distribution of primary medical care attenders results from peaks in acute problems in children, and chronic problems in the elderly; acute triage services do not experience that second peak). By comparison with their representation in the populations served, children and women of child bearing age were over represented, teenagers were under represented, and other age groups were more or less evenly represented.

*Figure 3* shows the times and days calls were received by HL during the April to June 2007 quarter. This is a sample typical of all Australasian sites, showing peak use during week day evenings and throughout weekends. Two-thirds of symptomatic calls were made between 4.30 pm and 8 am, or during weekends, with peak calling on weekdays after 4.30 pm.

*Figure 4* shows the purpose of calls received (health information for a well person, provider information, triage of existing symptoms, or other). The proportions of symptomatic calls (seeking triage), or information (on a health topic or provider availability) were comparable across services:

about 70% were symptomatic, the rest were seeking information.

Figure 5 shows the outcomes recommended (dispositions) after triage of symptomatic callers.

Table 1 shows the rank order of the 10 most common symptoms triaged – symptoms typical of any primary care service. Calls concerned roughly the same symptoms on roughly the same topics across all six sites. The 10 most common symptoms accounted for about a quarter of symptomatic calls to each service.

Figure 1. Number of female patients (expressed as a percent of the number in that age group in the catchment population, for each service)

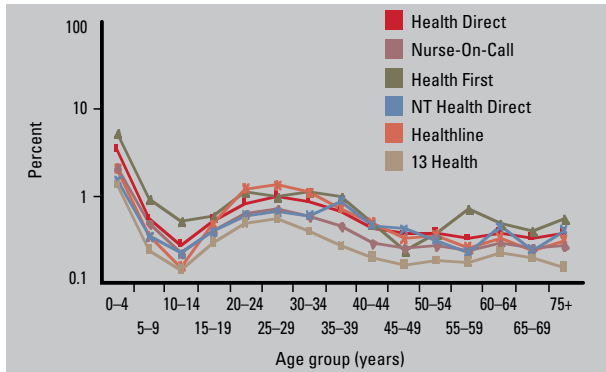


Figure 2. Number of male patients (expressed as a percent of the number in that age group in the catchment population, for each service)

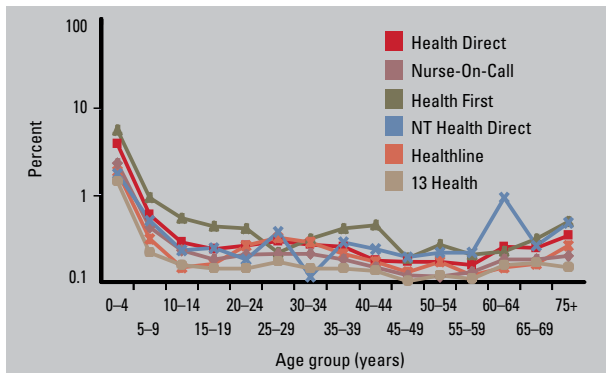
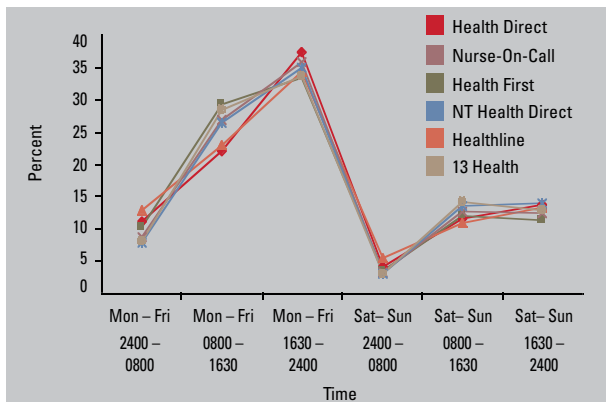


Figure 3. Number of calls at different times (expressed as a percent of total calls to each service)



## Discussion

The international literature on telenursing triage demonstrates high levels of safety, effectiveness as a gatekeeper to other services, and acceptability to callers.

Here we report some typical data from services in Australia and New Zealand, demonstrating consistent usage in terms of: demographics of callers, times calls were made, purpose of calls and the dispositions of symptomatic calls. Some variations in triage dispositions could be attributed to differences in software in some regions, the relative novelty of the service to some populations, differing population demographics or expectations.

Telephone triage is already a well used after hours primary care service in Australia and New Zealand, indicating wide acceptance of its value as a health care resource. The extent of that role – and the level of cooperation between telenursing triage and other after hours primary care providers – will be an important issue to determine, especially with the imminent introduction of an Australian national service.

This is a limited, descriptive report. More detailed studies are needed if the potential of telenursing services is to be understood and realised. These should examine clinical outcomes as well as utilisation, addressing how best these new services might be integrated with other primary care providers, especially general practice.

Figure 4. Number of calls seeking triage or information (expressed as a percent of all calls to each service)

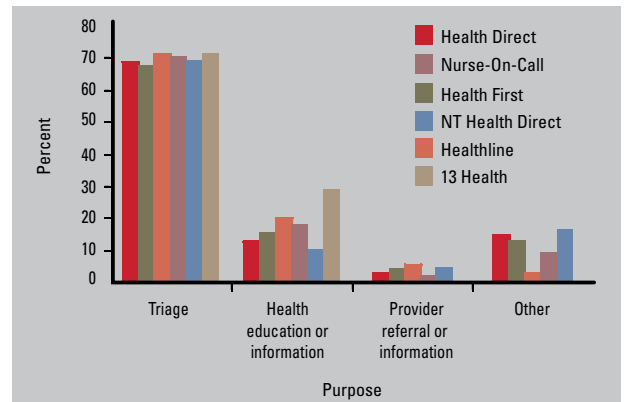


Figure 5. Percent of symptomatic patients triaged to different dispositions (expressed as a percent of all symptomatic calls to each service)

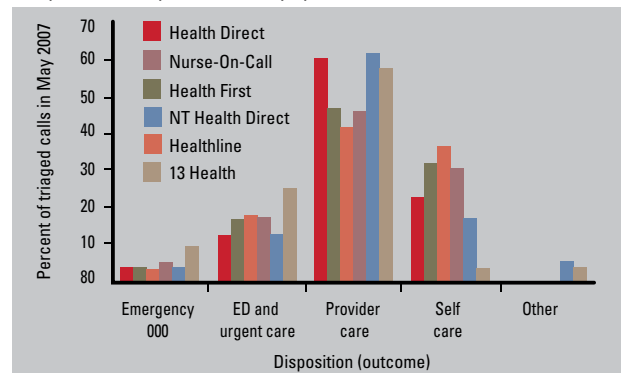


Table 1. What were their symptoms? Frequency rank of 10 most common symptoms triaged by each service

Symptom	HD	HF	HL	NOC	NT HD	13H
Vomiting (P)	1	1	1	1	2	8
Colds (P)	2	4	2	9		
Fever (P)	4	2	3	3	3	1
Cough (P)	8	5	4	6		
Abdominal pain	5	3	5	2	8	2
Diarrhoea (P)	7	10	6	8		
Rashes (P)	9	9	7	10	4	9
Chest pain	3	7	8	4	1	4
Nausea/vomiting		8	9	5		6
Headache			10		10	7
Unwell newborn						3
Poisoning						5
Trauma – head (P)	6	6		7	5	
Postoperative problems	10				6	
Abortion <20 weeks threatened/spontaneous					7	
Abrasions/lacerations/bites/puncture wounds					9	
Top 10 as percent of all triaged calls	26	27.7	28.6	27.2	29.6	23.1
P = paediatric						

## Implications for general practice

- Most Australian and all New Zealand residents now have free access to telephone advice and symptom triage lines 24 hours per day.
- Australasian services are similar with respect to the demographics of callers, the time of the call, and the issues about which callers seek advice.
- Telenursing services demand detailed study if they are to be integrated properly into primary care in Australasia.

Conflict of interest: all authors are associated with McKesson Asia-Pacific, either as Directors or Medical Advisers.

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