Telephone triage reduces out-of-hours work for country doctors

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ABSTRACT

Objective

To report call centre-based telephone triage of after hours calls to a rural medical centre.

Method

Healthline's automated call logging systems were used to examine calls diverted from Dargaville Medical Centre, and to compare those data with data derived from other rural and urban callers.

Results

Callers' age, sex and range of symptoms were similar for all groups. Dargaville callers' ethnicity matched that of Northland as a whole. The utilisation rate was higher in Dargaville than elsewhere, reflecting a higher rural than urban utilisation rate in Northland generally. Dargaville callers were more likely than others to be triaged to high levels of care. Nonetheless about two-thirds of callers were triaged to low levels of care such that the duty doctor did not have to be called.

Conclusion

Telephone triage of after hours calls to a rural medical centre resulted in reduced workload for the duty doctor.

Implications

If these figures are generalisable, Healthline could help rural practices by triaging two out of three after hours calls away from the duty doctor on call.

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Since 2000, Healthline (a consortium of St John and McKesson NZ Ltd) has been operating a pilot primary care triage and health advice service in four regions: Northland, Gisborne/East Coast, Canterbury, and West Coast.[1] The Health Funding Authority's original objective was to increase timely and appropriate access to health advice and services by people who had poor access or low utilisation.

General practice and emergency department nurses traditionally triage calls, and are effective in reducing doctor workload.[2] In Britain it has been said that general practitioners bear most of the cost of nurse telephone consultation and benefit least from the savings associated with it.[3] With the emergence of call centre technology, nurses working from a remote site can use decision support software to receive, assess and manage calls. The safety and effectiveness of telephone triage by nurses have been demonstrated in Britain.[4,5] In the United States over 90 per cent of callers were satisfied with a nurse triage service,[6] the service was cost-effective[7,8] and adherence to advice was similar to that for telephone-based physician recommendations.[9]

Healthline uses decision software in the form of binary chain logic algorithms to support its nurses. The algorithms are designed to help the nurse rule out important conditions (however rare), and stop at the condition that cannot be excluded; they do not diagnose – they recommend a level and timing for intervention. There are around 600 symptom-based algorithms, and 1 200 self-care instructions. The algorithms triage patients safely to appropriate care and provide comprehensive automated call documentation and reporting for analysis, risk management and quality improvement. The algorithms have been shown to triage more callers from emergency departments to

general practitioners and self care than either protocols, guidelines or nurse judgement alone, and to do so safely – doctors thought a higher level of care was needed for only two per cent of calls, and in no case was the patient endangered.

Symptomatic callers telephone an 0800 number, available 24 hours a day seven days a week. The nurse creates a caller chart, identifies the caller region, records the symptom, selects and traverses the appropriate algorithm, reaches a triage outcome or endpoint, searches for an appropriate provider or offers self care advice and refers if necessary.

Endpoints for a call may be:

- **Emergency:** immediate ambulance transfers and call out required;
- **Urgent care:** caller is advised to seek care via ED or GP within two to 24 hours;
- **Speak to provider (STP):** caller is advised to speak to their/a GP within time specified (two to 24 hours);
- **Appointment:** caller is advised to seek care at GP during regular hours; three-day or two-week timeframe specified,
- **Self care:** caller is advised of self-care measures. Follow-up call is offered.

Overall, two-thirds of Healthline users call to seek advice on current symptoms, and two-thirds call outside business hours (30% 0800–1730; 30% 1731–2359; 7% 0001–0759; 33% weekends 0001 Saturday to 2359 Sunday).[10] During the pilot the long-recognised shortage of rural general practitioners throughout New Zealand[11,12] was emphasised in the media, with Northland singled out for special attention. Country doctors in Northland were therefore quick to realise the potential Healthline provided for out-of-hours help for their patients.

We have communicated elsewhere about the use of the service by Maori,[13] and by callers in crisis.[14] Graber and others have also assessed the effect on an urban emergency department.[15] Others have shown the safety and effectiveness of nurse telephone consultation in out-of-hours primary care.[16–19] This paper examines the use of Healthline outside business hours by patients calling a rural group general practice.

Dargaville is a rural Northland town; its Medical Centre has ten doctors in a total staff of 30 serving 13 500 registered patients over a wide geographical area. Out of business hours two doctors are on duty, the first taking all calls to the centre. The second doctor is available when the first is overwhelmed, or is unavailable because of distant visiting or patient transfer. Dargaville hospital discourages calls.

Healthline and Dargaville Medical Centre agreed in 2001 that calls to the Medical Centre after hours and at weekends would be diverted to Healthline unless the caller perceived an emergency and wished to speak to the doctor on call, in which case they were connected to the doctor's cellphone. Other calls were triaged by Healthline nurses using decision support software.

Methods

For the Northland pilot region we made a rough split between urban and rural callers by separating calls from Whangarei from all other callers. We found urban and rural total population denominators for Northland by subtracting the 2001 Census Whangarei population from the total Northland population. We did the same for the four pilot regions by subtracting the 2001 Census Whangarei, Gisborne, Greymouth and Christchurch populations and caller numbers from the equivalent totals. We thus compared data for 'urban' and 'rural' callers.

We collected data from Healthline following the arrangement with Dargaville Medical Centre, and we analysed those for the year 1 October 2001 to 30 September 2002, and compared them with data from Dargaville as a whole, with Northland, and with rural and urban callers aggregated from all the pilot regions. This data does not include the calls taken directly by the duty doctors out-of-hours. Data was not available on the number and kind of calls preceding the arrangement with Healthline: minor enquiries had not been documented, and duty doctors reported a wide variation in how busy they were.

We asked the Dargaville doctors by written questionnaire about their subjective impressions of change in workload, patient satisfaction, aptness of the referrals from Healthline, the safety of the arrangement, and suggestions for improvement.

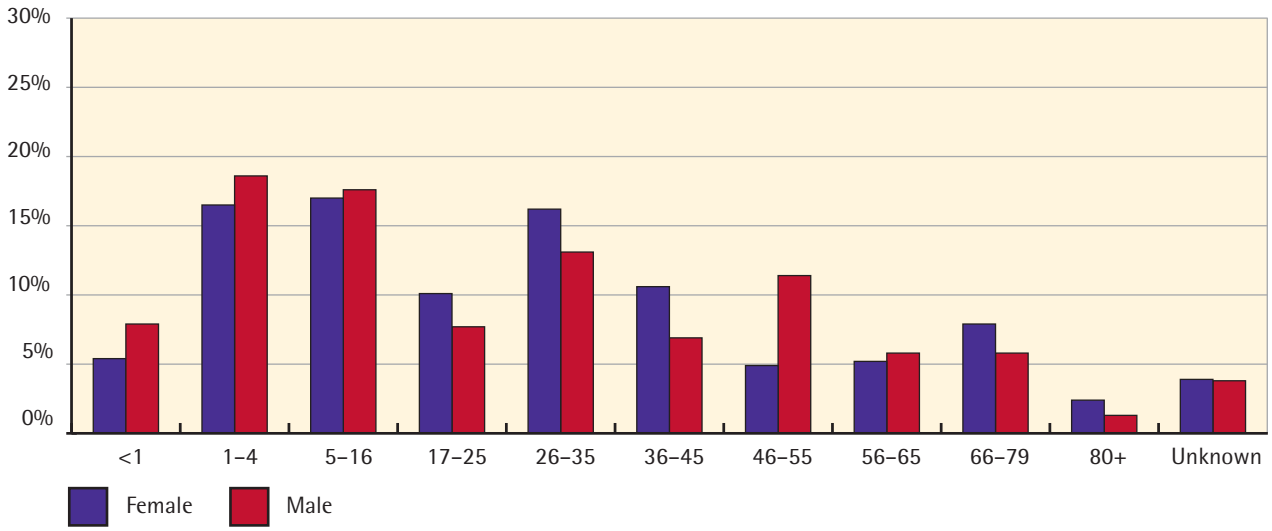
Results

Healthline received 36 465 calls during the study year, 9 107 of them from rural callers. Northland callers made 8 734 calls, 604 calls were diverted from Dargaville Medical Centre (DMC), and other Dargaville callers made 1 405 (total for Dargaville 2 009). Table 1 shows the 'utilisation

Table 1. 'Utilisation rates' – the number of calls divided by the populations

	Dargaville	Northland rural	Northland urban	All regions rural	All regions urban
Population	13 500	92 727	47 400	224 335	417 140
Calls	2 009	6 273	2 461	9 107	27 358
Utilisation %	14.9	6.8	5.2	4.1	6.6

Figure 1. Age and sex of Dargaville patients calling Healthline: 1 October 2001 to 30 September 2002



rates' – the number of calls divided by the populations.

Figure 1 shows the age and sex distribution of Dargaville patients. The distribution was similar for Northland, and all urban and rural patients (figures available on request).

Table 2 shows the ethnicity of callers identified as DMC, Dargaville, rural, Northland, and urban respectively.

Table 3 shows the call types (those calling for advice on symptoms, for general health information (GHI), and for identification of and referral to a provider).

Table 4 shows the outcomes of triaging the symptomatic callers. When the triage outcomes 'emergency' or 'urgent care' were reached, the caller was transferred to the duty doctor. When lower outcome levels were reached, the caller was advised to call DMC during working hours, or advised on self care – with call-backs or instructions on monitoring progress.

Table 5 shows the rank of frequency of symptoms presented by symptomatic callers.

All nine doctors answered the questionnaire. Seven rated their busy-ness when on first call as 'less' or 'much less' since Healthline started triaging the calls, and two 'the same'; none noted any difference in their busy-ness when on second call. Comments were:

- Wonderful process of selecting out minor calls.
- Definitely less phone calls and probably less patients to actually see.
- (The same) but probably less telephone advice given.

All nine thought the referrals from Healthline were 'appropriate':

Table 2. The ethnicity of callers

	DMC	Dargaville	rural	Northland	urban
NZ European	67.0	65.1	71.3	61.7	80.3
NZ Maori	25.2	29.5	24.0	33.3	13.4
Pacific Island	3.0	1.6	0.7	1.1	1.1
Other	4.9	3.7	3.9	3.8	5.2

Table 3. Call types

	DMC	Dargaville	rural	Northland	urban
Emergency	0.0	0.2	0.1	0.1	0.1
Symptomatic	81.2	79.0	76.2	72.8	75.6
GHI	14.3	12.3	7.9	9.4	6.2
Provider referral	2.0	5.7	11.6	9.6	13.2
Other	2.5	2.8	4.2	8.0	5.0

Table 4. The outcomes of triaging the symptomatic callers

	DMC	Dargaville	rural	Northland	urban
Emergency	5.5	4.5	2.9	3.6	2.8
Urgent care	36.4	28.2	20.8	19.6	16.6
Speak to provider later	31.1	31.8	30.5	29.9	30.6
Appointment	8.7	10.2	12.5	12.3	13.6
Self care	18.3	25.4	33.3	34.6	36.5

- Most appropriate often to clarify which I am happy to do; most calls referred on warrant patient review.

Five thought that overall patients were 'satisfied' with the service:

- Some complain vigorously. Majority satisfied.
- Very irritated having to spend a long time answering questions.
- (Satisfied) after quite a bit of initial grumbling.
- Variable – some very happy, others unhappy with programme.
- (Satisfied) with a few exceptions who don't appreciate the delay – asking questions.
- A few love it; most very frustrated by number of questions for demographic purposes and 'hassle' if know need to see a doctor – e.g. sutures required.
- Still some complainers.
- Some complain it took them too long to answer questions.

All nine thought Healthline triage was a 'safe' way to manage after hours workload:

- Most protocols seem to err very much on the side of caution.
- Adequate screening for emergency conditions has been achieved. Some patients have difficulty communicating this kind of urgency.

Suggestions for improvement were:

- 'Fast track' list for selected patients, particularly with ongoing serious conditions.
- Patching through patient with toll bar is important.

Table 5. The rank of frequency of symptoms presented by symptomatic callers

	Dargaville	Rural	Northland	Urban
Adult trauma limb	1	6		8
Child URTI	2	3	2	4
Adult abdominal pain	3	2	3	1
Child rash	4	1	1	3
Child vomiting	5	4	4	2
Adult chest pain	6	7	5	5
Child ear pain	7			
Adult skin problems	8	8	6	7
Adult new headache	9		9	
Child abdominal pain	10			
Child fever			7	
Child diarrhoea		5	8	6

- Any system which interferes with direct access to the doctor on call results in a situation which is less than ideal. This is a compromise in patient access, with a benefit to the doctor in not having to deal with non-urgent phone calls. The system does not improve overall patient care in my opinion, but makes life a bit easier for the doctor (which would indirectly produce benefits with less worn-out doctors).
- Achieving a more rapid transfer of calls system for those who insist on doctor contact.
- Less non-essential questioning.

Discussion

The high utilisation rate by Dargaville callers may reflect a larger real population than the 13 500 registered with DMC, or may represent an awareness and acceptance of the Healthline service among Dargaville patients, as a result of their doctors' recommending the service. Callers to DMC showed insignificant differences in age, sex and ethnicity from other Northland callers. All Dargaville callers were (as would be expected) less likely to be seeking the identification of a provider than others, and were consequently more likely to be calling with clinical issues (symptom advice or health information).

The range of symptoms presented was similar to that of other groups, but the outcomes for symptomatic callers from Dargaville showed the highest rates of triage to emergency services and urgent care, and the low-

est rates of later appointments and self care. In fact there is a clear trend in rates of triage to urgent or emergency care from DMC through to urban callers, suggesting rural (and especially Northland callers, and especially Dargaville callers) call with more serious complaints.

There were variable impressions of patient satisfaction by the doctors, though most thought that overall patients were satisfied with the service. Much of the dissatisfaction was attributed to the collection of demographic data that are clinically unimportant, but are an important requirement for reporting and planning future service provision.

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Healthline intercepted 604 calls to Dargaville Medical Centre, and handled another 1 405 from the practice catchment area (14.9% of the practice population in one year). As the year progressed, more patients called Healthline direct rather than the Medical Centre. Thus between 12 and 40 calls a week, which would probably have been fielded by the doctor on call, were taken by Healthline. Of these almost two-thirds were triaged to low levels of care, such that the duty doctor would not have been called out-of-hours. Most of the doctors noticed a fall in out-of-hours workload.

Conclusions

Dargaville callers were more likely than others to make clinical calls and to be triaged to higher levels of care than others. Objective and subjective data presented here support the hypothesis that call centre-based nurses using decision support software can triage symptomatic callers by telephone, and reduce the demand on country doctors out-of-hours. Other research has shown they do so safely. The doctors' impression of patient satisfaction was mixed, but independent and routine provider surveys of Healthline callers have consistently shown high levels of satisfaction.

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