The Royal College of Surgeons of England

Ann R Coll Surg Engl 2004; **86**: 243–246
doi 10.1308/147870804515

Audit

A cost-effectiveness analysis of conventional and nurse-led telephone follow-up after nasal septal surgery

S Uppal, S Nadig, L Smith, AP Coatesworth

Department of Otolaryngology, Head and Neck Surgery, York Hospital, York, UK

Background: **The need to bring down costs while maintaining a high standard of care has led to the expansion in the role of nurses in recent years.**
Methods: **We present results of cost-effectiveness analysis of conventional and nurse-led telephone follow-up after nasal septal surgery.**
Results and Conclusions: **Our results indicate that the substitution of nurse-led telephone follow-up for conventional out-patient follow-up has the potential for substantial cost reduction and decreased out-patient access times in the NHS.**

Key words: Nasal septum surgery – Nurse's role – Cost-benefit analysis – Cost savings

Increased emphasis on bringing down the access times to nationally agreed limits and to reduce costs has led to a move in recent years to devise innovative ways of patient care. The availability of doctors and the skill and expertise of nurses have led to the expansion in the role of nurses in recent years.[1]

Over the last decade, nurses have been involved in providing postoperative care following various ENT procedures.[2–4] One of the innovations has been nurse-led telephone follow-up of postoperative patients.[2,3] To date, a cost-effectiveness analysis of nurse-led telephone follow-up following nasal septal surgery has not been published .The aim of this study was to compare the cost-effectiveness of conventional and nurse-led telephone follow-up after nasal septal surgery.

Patients and Methods

Nurse-led telephone follow-up (group 1)

An ENT nurse followed 75 consecutive patients undergoing nasal septal surgery between December 2000 and March 2002. Prior to surgery, all the patients were provided with an information sheet and specifically informed that a nurse

Table 1 Actions resulting from nurse-led telephone follow-up

Category	No. of patients
Nurse able to contact patients by telephone	62
Patients who themselves contacted nurse	5[a]
Nurse unable to contact patients by telephone	8[b]
Patients discharged by nurse	41[c]
Patients scheduled to attend out-patient clinic for a review by ENT doctor	34[d]
Planned out-patient appointment not arranged	3
Total number of out-patient follow-up appointments resulting	38

[a]Three patients contacted the ENT department prior to scheduled call by nurse. Nurse made an unsuccessful attempt to contact two patients, these patients subsequently contacted the ENT department.
[b]Includes 2 patients nurse did not try to contact.
[c]Includes 8 patients who were not contactable by telephone.
[d]Seven patients were seen in the out-patient department on 2 occasions each.

Correspondence to: Mr AP Coatesworth, Department of Otolaryngology, Head and Neck Surgery, York Hospital, Wigginton Road, York YO31 8HE, UK. Tel: +44 1904 725611; Fax: +44 1904 726347; E-mail: apctonsil@aol.com

would contact them by telephone 6 weeks after surgery. The patients were informed that if the nurse was unsuccessful in contacting them and was not contacted by the patients themselves, it would be assumed that they were satisfied with the results of their surgery, and would be discharged.

A nurse stationed on the ENT ward contacted the patients (Table 1). If she was unsuccessful in contacting the patients, she tried to contact them on two further occasions at 1-week intervals. A note was made of the number of telephone calls required to contact each patient and the time spent during each attempt to contact the patient. For each successful patient contact, the nurse completed a follow-up protocol flow chart (Appendix 1). Symptomatic patients were offered an appointment to see the doctor and a note was made of the number of follow-up out-patient appointments required for each patient.

Conventional out-patient follow-up by a doctor (group 2)

Prior to the nurse-led telephone follow-up, an otolaryngologist routinely saw postoperative patients following nasal septal surgery in the out-patient clinic. A review of case notes of 78 consecutive patients who underwent nasal septal surgery between January 1999 and December 2000 was performed. A note was made of the number of times each patient was seen in the out-patient clinic after surgery (Table 2).

Table 2 Summary of conventional out-patient follow-up

Number of appointments arranged	Number of patients
0	05
1	52
2	15
3	5
5	1

Cost-effectiveness analysis

Assistance in cost analysis was obtained from our finance department. The data from the two groups were compared to determine which of the two methods of follow-up was more cost-effective.

Group 1

The nurse-led telephone follow-up costs comprised:

Direct costs

Salary of a grade D nurse. The cost to hospital of employing a grade D nurse is £19,990 per annum. Thus, the hourly rate is £10.22 and the cost per minute is £0.17. The nurse spent 13–21 min (mean = 15 min) during each successful contact with the patient and 3–6 min (mean = 5 min) during each unsuccessful attempt to contact the patient. The nurse was able to contact 62 patients leading to a total of 92 telephone calls. Five patients contacted the nurse themselves (nurse was unsuccessful in contacting one patient despite two phone calls and did not attempt to contact one patient). Thus, the nurse spent 1465 min (92 x 15 + 5 x 15 + 2 x 5) with patients that were contactable for telephone follow-up. The nurse was unsuccessful in contacting 6 patients despite 17 phone calls. The nurse thus spent 17 x 5 = 85 min in contacting these patients. Hence, the nurse spent 1550 min on the telephone leading to a cost of £0.17 x 1550 = £263.50.

Cost of telephone calls. The cost of telephone calls was £0.13 per minute (mean of peak national rate, local rate and calls to mobile phones). The total cost of making telephone calls was 1475 x £0.13 = £191.75.

Indirect costs

Indirect expenditure for clinical support staff and equipment. This was estimated at 20% of direct costs by our finance department.

Overheads to support non-clinical staff (estates, domestics, personnel). These were estimated at 30% of direct costs by our finance department.

Cost of conventional out-patient follow-up. A total of 38 out-patient follow-up appointments with an ENT doctor resulted from the nurse-led telephone follow-up. The cost of an ENT follow-up out-patient appointment is £81 (National Database of Reference costs for NHS Trusts). Thus, the total cost of out-patient follow-up in this group was 38 x £81 = £3078. The total cost of nurse-led telephone follow-up is summarised in Table 3.

Table 3 Summary of cost analysis: nurse-led telephone follow-up

Category	Amount (£)
Salary of grade D nurse (1550 min)	263.50
Cost of telephone calls (1475 min)	191.75
20% indirect costs	91.05
30% overheads	136.58
Cost of out-patient follow-up with doctor (38 x £81)	3078.00
Total cost of nurse-led telephone follow-up for 75 patients	3760.88
Cost of follow-up per patient operated	50.15

Group 2

A total of 102 out-patient appointments were made for the 78 patients in this group, an average of 1.31 appointments per patient. For the purpose of comparison between the two groups, the cost of conventional follow-up was calculated for 75 patients. Thus a total of 98.25 appointments were made for 75 patients leading to a cost of 98.25 x £81 = £7958.25. The mean cost of conventional follow-up was £106.11 per patient.

Comparison between the two groups

The difference in the mean cost of follow-up between the two groups per patient operated is £55.96. This represents a cost reduction of £4197 for the 75 patients followed by the nurse over a period of 16 months or a cost reduction of £3147.75 per year.

Discussion

The current trend in healthcare is to make prudent use of the limited resources. Cost effectiveness is now given the same importance as many medical advances.[5] Innovative ways of patient care like nurse-led telephone follow-up can decrease costs and avoid unnecessary patient hospital visits while at the same time identify patients who require further attention.

It has been suggested by Murthy *et al*.[6] that a routine out-patient appointment is unnecessary after nasal septal surgery. Otolaryngologists depend on patient feedback to assess the results of functional nasal surgery and most feel uncomfortable with the idea of not following up their patients after surgery. We suggest that nurse-led telephone follow-up provides a good method of patient feedback. Various studies have shown that telephone follow-up allows nurses to provide support, health education, and advice to patients.[7–10] A number of authors have reported a high degree of patient satisfaction with nurse-led telephone follow-up.[9,11,12] The cost benefits of substituting a physician with a nurse for providing patient care of an equally high quality have been reported.[13,14]

Nurse-led telephone follow-up also provides substantial savings to the surgeon in terms of time. James *et al*.[15] have re-iterated this fact in their study on patients undergoing oncological follow-up. Koltai[16] commented that elimination of the postoperative visit also benefits the patients and parents in terms of time off work or school and transportation costs.

Conclusions

Nurse-led telephone follow-up is more cost effective than conventional out-patient follow-up after nasal septal surgery. Substituting conventional out-patient appointment with nurse-led telephone follow-up makes more out-patient appointment slots available for patients thus reducing out-patient access times.

Acknowledgements

The authors wish to thank Ms Debbie Hollings-Tennant, Finance and Performance Manager and Mr Neil Wilson, Directorate Manager Head and Neck Services, York Hospital for their help and advice.

References

1. Horrocks S, Anderson E, Salisbury C. Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. *BMJ* 2002; **324**: 819–23.
2. Preston D, Meehan K, Rudy SF, Sparacino LL, Wines MA. The role of nurse practitioner in otolaryngology: a decade of development. *ORL Head Neck Nurs* 1995; **13**: 21–3.
3. Miller W. The role of outpatient nurse in endoscopic sinus surgery. *ORL Head Neck Nurs* 1992; **10**: 20–4.
4. Murray JM. How I do it: a pediatric nurse practitioner-run post-operative otolaryngology clinic. *ORL Head Neck Nurs* 1999; **17**: 26–8.
5. <http://www.evidence-based-medicine.co.uk/ebmfiles/WhatisClinGov.pdf>.
6. Murthy P, McKerrow WS. Nasal septal surgery: is routine follow-up necessary? *J Laryngol Otol* 1995; **109**: 320–3.
7. Weinberger M. Telephone-based interventions in outpatient care. *Ann Rheum Dis* 1998; **57**: 196–7.
8. Brada M, James ND. Phone clinic provides excellent support. *BMJ* 1995; **310**: 738.
9. Riley J. Telephone call–backs: final patient care evaluation. *Nurs Manage* 1989; **20**: 64–6.
10. Bowman GS, Howden J, Allen S, Webster RA, Tompson DR. A telephone survey of medical patients 1 week after discharge from hospital. *J Clin Nurs* 1994; **3**: 369–73.
11. Garland M. Discharge follow-up by telephone. *Rehab Nurs* 1992; **17**: 339–41.
12. Turner D. Can telephone follow-up improve post-discharge outcomes? *Br J Nurs* 1996; **5**: 1361–4.
13. Salkever D, Skinner E, Steinwachs F, Katz H. Episode based efficiency comparisons for physicians and nurse practitioners. *Med Care* 1982; **20**: 143–53.
14. Poirier-Elliot E. Cost effectiveness of non-physician health care professionals. *Nurs Pract* 1984; **Oct**: 54–6.
15. James ND, Guerrero D, Brada M. Who should follow-up cancer patients? Nurse specialist based outpatient care and the introduction of a phone clinic system. *Clin Oncol* 1994; **6**: 283–7.
16. Koltai PJ. Editorial footnote. *Arch Otolaryngol Head Neck Surg* 2000; **126**: 722.

Appendix 1

Telephone follow-up protocol