Improvement in the quality of patient notes: A report of a closed loop audit quality improvement project at a neurosurgical department in Pakistan

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Abstract

Objective: To identify the deficiencies in patient note record-taking with the aim of improving the quality to meet international standards.

Methods: This prospective clinical quality improvement audit study was conducted at the department of Neurosurgery, Allama Iqbal Medical College, Jinnah Hospital Lahore from January 2019 to February 2020. The first audit cycle was carried out in July 2019, after data anonymisation, the notes from 1st January to 31st June were analysed in the first audit cycle against a hybrid proforma containing entries deemed essential in operative notes according to the guidelines of the Royal College of Surgeons of England. The guidelines were subsequently disseminated among postgraduate trainees using various methods. Post-intervention, randomly selected patient-notes from 1st August to 31st December 2019 were analysed in the second audit which was done in February 2020. The result of the two audits were compared to assess significance of association between the cycles for each categorical variable.

Results: Of the 100 patient-notes audited, 50(50%) were part of each of the two cycles. Significant improvements ($p<0.05$) were seen between the two cycles in time of operation, pre-op status, post-op care, monitoring instruction, mobilisation, feeding instructions, wound care and position. There was 100% improvement in entries including name, age and sex, date of operation, elective/emergency, name of the procedure and name of operating surgeon and assistant, and the name of anaesthetist. Overall, marked improvement was observed in all parameters except in 'use of antibiotic prophylaxes'.

Conclusion: Regular audits are needed to monitor and improve patient-care.

Keywords: Patient notes, Audit cycle, Clinical documentation, Neurosurgery, Quality improvement.
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Introduction

Adequate patient notes are an essential medico-legal document containing pertinent clinical information. The Royal College of Surgeons (RCS) of England set out guidance regarding information which should be in patient notes which was updated in 2014[1] and is considered the gold standard. Traditionally in Pakistan, notes are hand-written by surgical trainees supervised by senior members of staff.[2] The General Medical Council (GMC) of the United Kingdom advised documentation during or immediately after a procedure.[3] These recommendations are also included in the Pakistan Medical and Dental Councils (PMDC) code of ethics for physicians to ensure proper documentation for the medical service being provided.[4]

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Patient notes include information of the patients during surgery, post-operative management and subsequent instructions for their management in the wards. Despite being important for communication between different medical professionals and continuity of care, both national and international studies report illegibility and sometimes even the absence of basic, vital information in patient notes. This may include, but is not limited to, the name of surgeon assisting and the time of operation.[5-7] These multiple findings indicate that patient notes are often universally neglected in medicine, which may not only affect the patient's post-operative and follow-up managements, but can have legal implications. A lack of local guidelines in Pakistan and negligence in this matter has led to a culture where documentation is of poor quality. With a recent increase in medical litigation in Pakistan,[8] it is crucial that we ensure that patient notes were being documented in good quality. Patient notes are often the first evidence produced in the court of law and a substandard quality can not only lengthen the patient stay, but can leave a doctor/department open to litigation.[9,10]

Auditing clinical services have been established as an effective tool in improving clinical practice.[11] The current study was planned to identify deficiencies in patient note record-taking with the aim of improving the quality to meet international standards.

Materials and Methods

A prospective clinical audit study was conducted from July 2019 to February 2020 at the Department of Neurosurgery, Allama Iqbal Medical College, Jinnah Hospital Lahore. Approval from the institutional ethics review committee was not required due to the nature of the study.

Patient notes related to elective cases from January 1 to June 30, 2019, were selected randomly and audited in July 2019. This was the first audit cycle. All patient notes were hand-written. Patient notes of emergency cases were excluded. Only elective cases were evaluated of both sexes and patients of both cranial and spinal neurosurgical diseases. The words of the parameters where two or more letters could not be identified were considered illegible.

The notes were analysed and assessed using a hybrid proforma containing entries from the RCS guidelines.[1] Entries included were specific to neurosurgery in line with a similar to a previous study.[12] Patient notes were retrieved from the record room and audited by two researchers independently and consecutively.

After the first audit, awareness campaign for surgeons and trainees was run as the study intervention. This included lectures for new postgraduate trainees in line with RCS guidelines.[1] The guidelines were printed on a poster and placed on the walls of the surgeons' lounge, consultation rooms and operating theatres (OTs). Trainees were regularly made cognizant of writing good surgical notes at weekly meetings and during ward rounds. Poorly-written notes were brought up with the trainees on a bi-monthly basis during progress meetings with supervisors. Repeated incidences even led to the trainees being reprimanded.

The second audit cycle was carried out in February 2020 and comprised of random elective patient notes between 1st of August and to December 31, 2019. The two cycles were analysed to check for significant improvements in individual parameters. Data was anonymised to exclude information that could identify patients. The assessed parameters included basic patient information, operation details, post-operative instructions and others. These parameters were marked as either 'yes' or 'no'.

Chi-square test was applied to see the association between the first and second audit cycles for each categorical variable mentioned. $P<0.05$ was considered significant.

Results

Of the 100 patient-notes audited, 50(50%) were part of

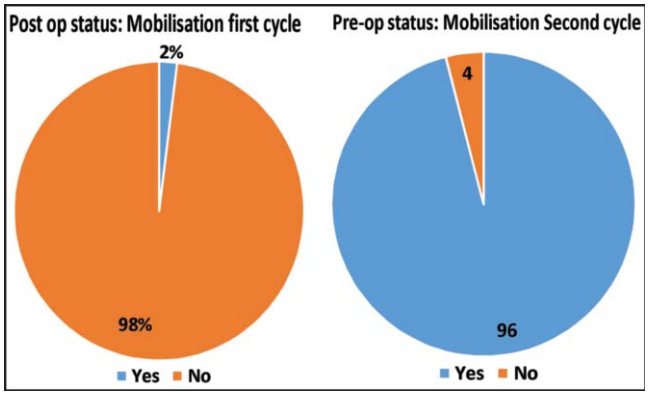

Figure-1 (a): Comparison of notes entered (yes/no) between first and second cycles in parameter 'post-op care: mobilisation'.

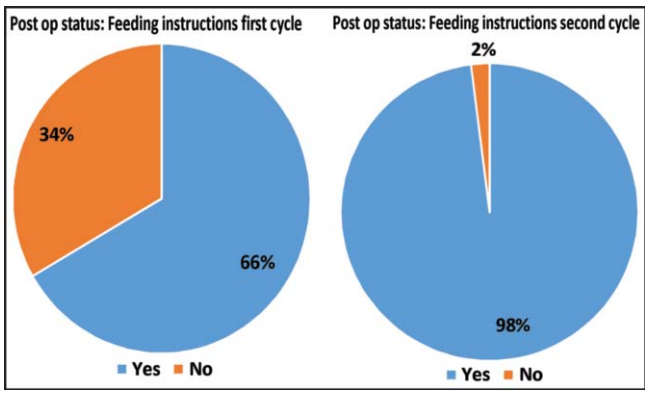

Figure-1 (b): Comparison of notes entered (yes/no) between first and second cycles in parameter 'post-op care: feeding instructions'.

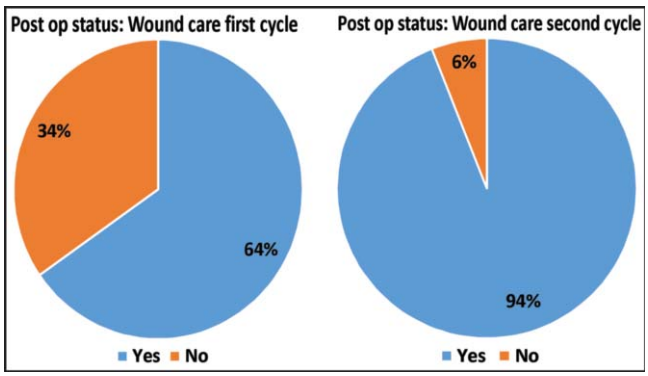

Figure-1 (c): Comparison of notes entered (yes/no) between first and second cycles in parameter 'post-op care: wound care'.

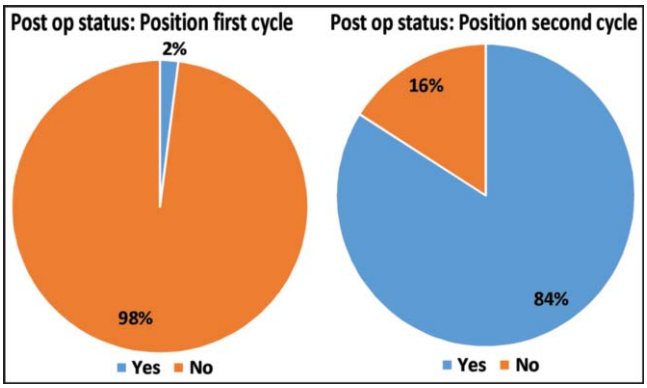

Figure-1 (d): Comparison of notes entered (yes/no) between first and second cycles in parameter 'post-op care: position'.

each of the two cycles. Significant improvements ($p<0.05$) were seen between the two cycles in time of operation, pre-op status, post-op care, monitoring instruction, mobilisation, feeding instructions, wound care and position. There was 100% improvement in entries including name, age and sex, date of operation, elective/emergency, name of the procedure and name of operating surgeon and assistant, and the name of anaesthetist. Overall, marked improvement was observed in all parameters except in 'use of antibiotic prophylaxes' (Tables-1, 2).

Post-operative elements also showed significant improvement between the two audit cycles (Figure).

Table-1: Data comparision between the first and second audit cycles.

Sr#	Information	Comparison							
		1st Cycle Total=50				2nd Cycle Total=50			
		No	Yes	%No	%Yes	No	Yes	%No	%Yes
1	Name	49	1	98	2	0	50	0	100
2	Age	50	0	100	0	0	50	0	100
3	Sex	50	0	100	0	0	50	0	100
4	Date of operation	2	48	4	96	0	50	0	100
5	Time of operation	49	1	98	2	12	38	24	76
6	Pre op status	47	3	94	8	8	42	16	84
7	Elective/Emergency	5	45	10	90	0	50	0	100
8	Name of procedure	1	49	2	98	0	50	0	100
9	Name of operating surgeon and assistant	0	50	0	100	0	50	0	100
10	Name of anaesthetist	0	50	0	100	0	50	0	100
11	Scrub nurse name	2	48	4	96	1	49	2	98
12	Use of Antibiotic prophylaxis	50	0	100	0	44	6	88	12
13	Procedure details								
	1. Incision	0	50	0	100	0	50	0	100
	2. Anatomical structures encountered	0	50	0	100	0	50	0	100
	3. Operative diagnosis	0	50	0	100	0	50	0	100
	4. Technique	0	50	0	100	0	50	0	100
	5. Prosthesis implanted	2	48	4	96	0	50	0	100
	6. Tissue excised	0	50	0	100	0	50	0	100
	7. Closure technique	0	50	0	100	0	50	0	100
	8. Type of suture used	50	0	100	0	0	50	0	100
14	Estimated blood loss	50	0	100	0	3	47	6	94
15	Complications encountered	50	0	100	0	42	8	84	16
16	Extra procedure performed	50	0	100	0	39	11	78	22
17	Post op care								
	1. Antibiotic prescription	0	50	0	100	1	49	2	98
	2. Monitoring instruction	48	2	96	4	1	49	2	98
	3. Fluid prescription	1	49	2	98	1	49	2	98
	4. Mobilization	49	1	98	2	2	48	4	96
	5. Analgesic prescription	0	50	0	100	0	50	0	100
	6. Feeding instructions	17	33	34	66	1	49	2	98
	7. Wound care	18	32	36	64	3	47	6	94
	8. Post op investigations	1	49	2	98	3	47	6	94
	9. Neuro medicine	0	50	0	100	4	46	8	92
	10. Position	48	2	96	4	8	42	16	84
18	Signature	0	50	0	100	0	50	0	100
19	Cadre of personnel writing notes	0	50	0	100	0	50	0	100

Table-2: Level of significance between the two audit cycles.

Parameter	α^2	P value	Significance
Time of operation	57.5452	<0.00001	Significant
Pre-op status	61.4545	<0.00001	Significant
Scrub nurse name	0.3436	0.557734	Non-Significant
Post-op care (monitoring instruction)	88.3951	<0.00001	Significant
Post-op care (fluid prescription)	0	1	Non-Significant
Post-op care (mobilization)	88.3951	<0.00001	Significant
Post-op care (feeding instructions)	17.3442	0.000031	Significant
Post-op care (wound care)	13.5624	0.000231	Significant
Post-op care (post op investigations)	1.0417	0.307434	Non-Significant
Post-op care (position)	64.9351	<0.00001	Significant

Discussion

Evaluation of clinical services including quality of patient notes should be encouraged by means of an audit as this can improve the service being provided.[12,13] Post-graduate residents are trained to fulfil the responsibility for the transcription of surgical notes. However, the training being provided is very anecdotal and is dependent on the senior surgeon concerned. The lack of standardisation may have been partially responsible for the poor quality of notes in the first cycle. The result of the first cycle highlighted the important need to formalise a teaching tutorial on writing good-quality legible patient notes that meet departmental and international standards. The first audit highlighted key areas that were poorly documented, including name (2%), age (0%), sex (0%), time of operation (2%), pre-op status (8%), and use of antibiotic prophylaxis (0%). These entries were found inadequate when compared to international studies[13-16], but were on par with the standard of local scene.[2,6,17] Reports in Pakistan demonstrated a constant problem of substandard note-taking across the nation. There is also a failure to complete the audit cycle or recommend departmental level changes to improve practice.[2,6,17] Practitioners should always try to complete the audit cycle and assess if the changes placed do indeed result in improvement. To our knowledge, this is the first completed audit loop quality improvement project in Pakistan with interventions leading to improvements for quality in patient notes.

The second audit cycle showed that documentation of name, age, sex was present in all patient notes (100%). Time of operation was documented in 76% notes, pre-op status 84%, and these were also found to have been statistically significant in their improvement compared to the first cycle. The entry 'antibiotic prophylaxis' was only improved from 0% to 12%, due to a lack of clear heading for this category in our patient note sheet. It is important to strive for 100% completion of such basic details because in litigation cases, medical professionals are hounded in court to provide an account of the clinical events during the operation. The current results provide an evidence in support of frequent training sessions of surgeons and trainees, using posters and aide memoirs in the department and including evaluations of patient notes' quality as an important part of surgical trainees' regular evaluations. There should be a trend of using a dedicated proforma with the headings for all essential entries fulfilling all requirements as mentioned and discussed in several audit reports.[18,19]

Procedure details from the first and second cycles were 100% completed for incision, anatomical structures encountered, operative diagnosis, and prosthesis implanted, and closure technique. Main deficiencies were found in the 'type of suture used', 'complications encountered', 'estimated blood-loss' and documentation of any 'extra procedure performed' which were all absent in 100% cases in the first cycle. The audit of second cycle showed a complete documentation of 'type of suture used' (100%) and improvement in 'estimated blood-loss' (94%). Some improvements were seen in 'complications encountered' (16%) and 'extra procedures performed' (22%). Despite having dedicated headings for these in our patient notes, the documentation was still poor. The department was advised to document 'none encountered/none required' in such cases, rather than leaving these spaces blank. Persistent advocacy and reminders are needed to improve these components.

Both local and international studies had mentioned that whether the post-operative instructions were present, they did not provide information regarding individual instructions.[2,5,6,13-20] Analysing the results, it was realised that individual post-operative instructions must be accounted for. The first audit cycle showed incomplete entries for 'monitoring instructions' (4%), 'mobilisation instructions' (2%), 'feeding instructions' (66%), 'wound care' (64%) and 'post-operative positioning' (4%). But these were improved in the second audit cycle: 'monitoring instructions' (98%), 'mobilisation instructions' (96%), 'feeding instructions' (98%), 'wound care' (94%) and 'post-operative positioning' (84%). These individual entries are very important and efforts are being made to achieve 100% completion of these instructions as they are vital for managing the patient in the days following the surgery. This is the responsibility of the doctor to have good communication skills, especially towards their fellow nurses who will carry out their instructions. Good communication between physicians and nurses fosters a healthy and respectful relationship between them and improves patient outcomes.[21,22]

Deficiencies in notes specific to a department can be addressed by a proforma with appropriate headings that address them. One completed audit loop quality improvement project from Calderdale and Huddersfield National Health Services (NHS) Foundation Trust, West Yorkshire, UK, provided a strong evidence that an electronic patient note system greatly improves the quality of patient notes.[23] This would address the issue of illegibility — a strong disadvantage of hand-written notes. One major difficulty in developing countries adopting a computer-based patient notes and record system is the requirement of staff to be computer literate. The computer literacy is high in the UK, and thus tutorials to staff for a novel electronic note system can be done in an afternoon.[23] Binyam et al reported that in developing countries, the doctors have a suboptimal computer knowledge and proposed that regular training workshop and self-study of computer literacy both are essential to implement electronic health system.[24] This is a long-term goal one should work towards.

Another issue an electronic systems raise is the question of who would write the notes and who would then register them electronically? Currently, throughout the country, public-sector hospitals mandate that there departments hand-write patient notes and so even if an electronic system is implemented at the departmental level, it would certainly lead to some conflict of work and responsibility between doctors and nurses. There are other disadvantages as well.[23] Electronic notes are the norm in the developed nations. E-notes should also be implemented in the hospitals of developing countries, such as Pakistan, with a gradual shift to make their make their use mandatory, as we train doctors and nurses in computer literacy.

Analysing hand-written notes has been a time-consuming and lengthy task. Therefore, we need to move towards an electronic database in order to access them within a connected healthcare system, improve training by reducing the burden on trainees and ultimately allow space to conduct large-scale research projects more quickly and more accurately. This will require many long-term structural improvements in the healthcare system to achieve such goals.

The limitations of the current study include the obvious disadvantage associated with a single-centre study. Long-term audits are required within the department to ensure that approach to quality improvement is being maintained by the changes being implemented. To generalise the current findings, more audits are necessary in allied surgical departments to reassess the current situation as the Pakistani surgical audits cited are relatively old and few in numbers. Other surgical departments adopting similar approaches may benefit in reporting how beneficial these interventions are in improving the quality of operative notes.

Conclusions

Operative notes can be improved by using audits to identify deficient areas. Simple interventions can significantly improve the quality of notes, especially using a modified proforma containing essential headings. Departments and hospitals should carry out regular audits to improve patient-care. Implementation of e-notes in the long term and employing the use of predesigned proforma for specific procedures are ways forward. Patient notes should be a component of a surgical trainee's evaluation.

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