
Assessing the Quality of Operation Notes in a Teaching Hospital Taiz Yemen

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Abstract:

Background: With the increasingly litigious nature of medical practice, operation notes provide an insight into the operative process and a legal document of a surgical procedure occurring. This study aims to assess the quality of surgical operation notes in Taiz Hospitals against Royal College of Surgeons of England (RCSEng) guidelines, 2014 in order to improve our practice, patient care, and training process in surgery.

Methods: Nineteen parameters based on the RCSEng 'Good Surgical Practice' 2014 guidelines used to assess the operation notes in Taiz hospitals during 2018-2019 retrospectively. The study consisted of 306 operation notes randomly selected including general surgery and other specialties. We assessed the overall compliance with the RCSEng guidelines, whether each parameter of RCSEng guidelines recommendations were clearly recorded in the operation notes, and legibility of operation notes.

Results: 306 operation notes were assessed, 155 (50.7%) in private and 151 (49.3%) in public hospital distributed as 164 (53.6%) general surgery and 142 (46.4%) other surgical specialties. Overall, 50% compliance was achieved in 7/19 standards with respect to date (72.5%) documentation, (64.4%) diagnosis, (84%) name of operating surgeon and assistants' names, (72.2%) name of anesthetist, (60.8%) incision, (59.2%) operative findings, (91.2%) and the signature that was the only standard attained. Legibility of operation notes was 78.8% and notably 56.6% of operative notes have been written by consultants.

Conclusion: This study identifies key areas of weakness in our operative note keeping and there is a clear need to develop a systems that are part of the normal work flow to improve quality and compliance.

Keywords: Operation note, general surgery, Quality.

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1. Introduction

Surgical operative notes are important documentations that describe the detail of the procedure and operative findings.[1] Operative notes are essential for patient postoperative care and also important for research and medicolegal purposes. Therefore operative notes should be accurate, comprehensive and legible.[2]–[4] Operative notes can be recorded by handwritten or typed through electronic templates or database management systems.[5]

In Taiz city, despite the increment in the number of surgical procedures in different specialties with the increment in the number of qualified surgeons, there is no sufficient data regarding the assessment of quality and legibility of operative notes that reflect negatively on the care provided to the patient. This study aims to assess the quality of surgical operation notes in Taiz hospitals against Royal College of Surgeons of England (RCSEng) 'Good Surgical Practice' 2014 guidelines in order to improve our practice, patient care, and training

2. Materials & Methods

A retrospective study was conducted at two hospitals one is governmental and the other one is private where a large number of patients are received. Surgical operations are conducted on a daily basis from general surgery and other various specialties e.g. (orthopedics, vascular, urosurgery, ophthalmology, maxillofacial surgery, and gynecology and obstetrics) which we are targeting in our study.

A sample of 343 files collected between 1st January 2018 to 30th December 2019, were randomly selected including general surgery and other specialties; 37 files were excluded because patients treated conservative and no operation. 306 operation notes were retrospectively audited by one reviewer according to the RCSEng 'Good Surgical Practice' 2014 guidelines (Table 1).[6]

Each operation note was assessed by questionnaire

created by Google form was filled out electronically. The questionnaire consists of two parts, the first part includes patient ID, hospital name and either it is governmental or private, surgeon name and specialty, date of operation and who wrote operative note. The second part assess 19 items set by RCSEng 'Good Surgical Practice' 2014 guidelines and legibility. Each item has two answer options Yes or No. Statistical analysis was performed using

SPSS version 24. Statistical analysis for difference between the two groups was performed using the independent sample t-test. P value of <0.05 was considered statistically significant.

Table 1. Standards for Documentation in Operation Notes from the RCSEng Good Surgical Practice Guidelines 2014

Date
Time
Elective or emergency procedure
Names of operating surgeon and assistant
Name of theatre anesthetist
Operative procedure carried out
Incision
Operative diagnosis
Operative findings
Problems or complications
Extra procedure performed and the why it was performed
Details of tissue removed, added or altered
Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials
Details of closure technique
Anticipated blood loss
Antibiotic prophylaxis
DVT prophylaxis
Detailed postoperative care instructions
Signature

3. Results

A total of 306 operation reports were analyzed selected randomly from two hospitals; public with 151 (49.3%) operation notes and private with 155 (50.7%) operation notes. The procedures distributed as following 164 (53.6%) general surgery and other specialties including: 67 (21.9%) Orthopedics, 25 (8.2%) Urological, 14 (4.6%) Vascular, 12 (3.9%) Plastic, 6 (2.0%) Ophthalmic, 6 (2.0%) Maxillofacial, 5 (1.6%) Gynecology and Obstetrics, and 7 (2.3%) Neurosurgery. Overall, there were 156 (51%) emergency and 150 (49%) elective operations.

Of the 19 standards set by RCSEng 'Good Surgical Practice' guidelines, the distribution of the maximum score was 14 achieved only in 4 (1.3%) operation notes, the highest percentage of the score was 8 achieved in 34 (11.1%) operation notes the rest scores were shown

in table 2.

Overall, 50% compliance was achieved in 7/19 standards with respect to date documentation (72.5%), diagnosis (64.4%), name of operating surgeon and assistants' names (84%), name of anesthetist (72.2%), incision (60.8%), operative findings (59.2%), and the signature that was the only standard attained (91.2%).

Table 2. Distribution of operation notes score

Total score 19	n	%
1	15	4.9
2	9	2.9
3	21	6.9
4	28	9.2
5	32	10.5
6	33	10.8
7	33	10.8
8	34	11.1
9	31	10.1
10	25	8.2
11	19	6.2
12	18	5.9
13	4	1.3
14	4	1.3
Total	306	100

This study audit highlighted 12 components with poor compliance: the time or length of the operation (8.5%), the operative procedure carried out (42.8%), any problems or complications (3.6%), any extra procedure performed and the reason why it was performed (7.8%), details of tissue removed, added or altered (22.9%), identification of any prosthesis used including the serial numbers of prostheses and other implanted materials (8.5%), details of closure technique (28.4%), postoperative care instructions (32.7%), anticipated blood loss (2.9%), antibiotic prophylaxis (31.4%), DVT

prophylaxis (2.6), and surgery type either elective or emergency (0%). (Table. 3)

Legibility of operation notes was 78.8% and notably 56.6% of operative notes have been written by consultants.

The two surgical categories, general surgery (GS) and other surgical specialties were analyzed, it was found that General surgery notes were more complete in comparison to other surgical specialties with the higher score 7-14 /19 standards in general surgery than 1-6/19 standards in other surgical specialties. Regarding the comparisons between the two surgical categories as shown in table 4 & 5, the compliance to the guidelines was better in general surgery regarding date of surgery, operating surgeon, assistants' names, anesthetist's name, operative procedure, incision, operative diagnosis, operative findings, detailed post-operative instructions, details of tissue removed, added or altered and signature.

Whereas the 9 standards attributes most poorly documented in both categories notes were information on time of surgery, any problems/complications, any extra procedure performed, identification of any prosthesis used, details of closure technique, anticipated blood loss, antibiotic prophylaxis, DVT prophylaxis, and surgery type elective or emergency.

Table 3. Overall compliance with RCSEng guidelines

Compliance	n	%
Date	222	72.5
Time	26	8.5
Elective or emergency procedure	0	0
Names of operating surgeon and assistant	257	84
Name of theatre anesthetist	221	72.2
Operative procedure carried out	131	42.8
Incision	186	60.8
Operative diagnosis	197	64.4
Operative findings	181	59.2
Problems/complications	11	3.6
Extra procedure performed and the why it was performed	24	7.8
Details of tissue removed, added or altered	70	22.9
Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials	26	8.5
Details of closure technique	87	28.4
Anticipated blood loss	9	2.9
Antibiotic prophylaxis	96	31.4
DVT prophylaxis	8	2.6
Detailed postoperative care instructions	100	32.7
Signature	279	91.2

The relation between hospital type (governmental or private) and the compliance to RCSEng guidelines has been studied and shows significant difference in

compliance which were statistically significant ($P < 0.05$) in date of surgery, Name of theatre anesthetist, operative procedure carried out, incision, operative diagnosis, operative findings, details of tissue removed, added or altered, antibiotic prophylaxis, detailed postoperative care instructions and signature (Table. 6).

The 19 standardised have been studied against the surgery type whether it is elective or emergent and showed no difference in compliance except in time (p. value 0.007), antibiotic prophylaxis (p.value 0.014) and operative diagnosis (0.045) in favor of the emergent operation (Table. 7).

4. Discussion

Operation report is an important pillar in patient postoperative care. For this reason it must be accurate, legible and complete according the RCSEng 'Good Surgical Practice' 2014 guidelines.

Results of this study demonstrate that handwritten surgical operation notes in Taiz Hospitals are relatively legible but incomplete with only 7 of 19 standards having >50% compliance. However, the documentation for the date, name of the surgeon, name of anesthetist, diagnosis, operation findings, incision and signature, which would lead to serious issues in patient safety if left incomplete, were well.

Regarding the results related to any extra procedures performed and complications encountered should be interpreted with caution because the author could not be sure whether it had been omitted or did not occur.

Additionally, there are standards from the Royal College of Surgeons guidelines that are often discussed (but not documented) or documented elsewhere. Time and estimated blood loss are documented in the intraoperative anaesthetic charts by the anaesthetist but not in operation note. Antibiotic and DVT Prophylaxis are documented in preoperative order sheet but not in operation note, and prosthesis or implant used is documented elsewhere in theatre documentation by non-scrubbed staff as and when these are used. Nevertheless it would be good practice to have these documented in one place for clarity and ease of access.

Closure technique and postoperative care instructions were written in most of the operation notes but not in details. Although the operation was documented the type of surgery whether the operation is emergent or elective was not.

Regarding the comparison between General surgery and other specialties, General surgery notes are more

complete. This may be due to presence of surgical training and post graduated teaching programs in General surgery in the hospitals where the study was conducted. Additionally, private hospital operative notes are more compliant to the RCSEng 'Good Surgical Practice' 2014 guidelines than the Public hospital operative notes that may represent presence of strict documentation system and highly qualified surgeon private hospital.

Compliance not affected by Surgery type either elective or emergent except in time (p. value 0.007), antibiotic prophylaxis (p. value 0.014) and operative diagnosis (0.045) in favor of the emergent operation.

This result shows that during current training in surgical residency program the importance of accurate operative note documentation is not emphasized enough. Johari et al. also showed significant improvement in documentation of surgical operation note after teaching the residents how to write operation notes.[7] One of the studies has recommended the use of procedure-specific proformas for common general surgical procedures to improve quality.[2]

The author agrees with other study has shown improvement in the quality of operation note by introduction of operation note that addresses the 19 standard from the RCSEng 'Good Surgical Practice' 2014 guidelines which will guide the surgeon or the trainee to write them and the author recommends its application.[5]

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Table.4 Compliance of General Surgery and other Surgical Specialties

Compliance		GS	Other specialty	Total	P value
Date	n	129	93	222	0.011
	%	42.2	30.4	72.5	
Time	n	18	8	26	0.104
	%	5.9	2.6	8.5	
Elective or emergency procedure	n	0	0	0	
	%	0	0	0	
Names of the operating surgeon and assistant	n	143	114	257	0.118
	%	46.7	37.3	84.0	
Name of the theatre anesthetist	n	130	91	221	0.003
	%	42.5	29.7	72.2	
The operative procedure carried out	n	71	60	131	0.908
	%	23.2	19.6	42.8	
Incision	n	113	73	186	0.002
	%	36.9	23.9	60.8	
Operative diagnosis	n	113	84	197	0.094
	%	36.9	27.5	64.4	
Operative findings	n	116	65	181	0.000
	%	37.9	21.2	59.2	
Any problems/complications	n	10	1	11	0.012
	%	3.3	0.3	3.6	
Any extra procedure performed and the reason why it was performed	n	15	9	24	0.401
	%	4.9	2.9	7.8	
Details of tissue removed, added or altered	n	44	26	70	0.101
	%	14.4	8.5	22.9	
Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials	n	10	16	26	0.149
	%	3.3	5.2	8.5	
Details of closure technique	n	50	37	87	0.446
	%	16.3	12.1	28.4	
Anticipated blood loss	n	5	4	9	1.000
	%	1.6	1.3	2.9	
Antibiotic prophylaxis (where applicable)	n	54	42	96	0.540
	%	17.6	13.7	31.4	
DVT prophylaxis (where applicable)	n	2	6	8	0.151
	%	0.7	2.0	2.6	
Detailed postoperative care instructions	n	66	34	100	0.003
	%	21.6	11.1	32.7	
Signature	n	153	126	279	0.225
	%	50.0	41.2	91.2	
Total	n	164	142	306	
	%	53.6	46.4	100	

Table. 5 Compliance of GS and other Surgical specialties

Total score 19	GS	Other specialty	Total
1	4	11	15
2	4	5	9
3	10	11	21
4	12	16	28
5	16	16	32
6	13	20	33
7	21	12	33
8	22	12	34
9	14	17	31
10	14	11	25
11	13	6	19
12	14	4	18
13	4	0	4
14	3	1	4
Total	164	142	306

Table 6. Compliance of Governmental and Private Hospitals

		Governmental	Private	Total	P value
Date	n	96	126	222	0.000
	%	31.4	41.2	72.5	
Time	n	17	9	26	0.150
	%	5.6	2.9	8.5	
Elective or emergency procedure	n	0	0	0	
	%	0	0	0	
Names of operating surgeon and assistant	n	131	126	257	0.642
	%	42.8	41.2	84	
Name of theatre anesthetist	n	100	121	221	0.005
	%	32.7	39.5	72.2	
Operative procedure carried out	n	56	75	131	0.005
	%	18.3	24.5	42.8	
Incision	n	85	101	186	0.047
	%	27.8	33.0	60.8	
Operative diagnosis	n	84	113	197	0.000
	%	27.5	36.9	64.4	
Operative findings	n	72	109	181	0.000
	%	23.5	35.6	59.2	
Problems/complications	n	7	4	11	0.541
	%	2.3	1.3	3.6	
Extra procedure performed and the reason why it was performed	n	8	16	24	0.092
	%	2.6	5.2	7.8	
Details of tissue removed, added or altered	n	25	45	70	0.006
	%	8.2	14.7	22.9	
Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials	n	13	13	26	1.000
	%	4.2	4.2	8.5	
Details of closure technique	n	44	43	87	1.000
	%	14.4	14.1	28.4	
Anticipated blood loss	n	5	4	9	1.000
	%	1.6	1.3	2.9	
Antibiotic prophylaxis	n	40	56	96	0.049
	%	13.1	18.3	31.4	
DVT prophylaxis	n	3	5	8	0.500
	%	1.0	1.6	2.6	
Detailed postoperative care instructions	n	29	71	100	0.000
	%	9.5	23.2	32.7	
Signature	n	132	147	279	0.001
	%	43.1	48.0	91.2	
Total	n	154	152	306	
	%	50.3	49.7	100	

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Table.7 Compliance of Emergency and Elective Surgery

Compliance		Emergent	Elective	Total	P value
Date	n	116	106	222	0.522
	%	37.9	34.6	72.5	
Time	n	20	6	26	0.007
	%	6.5	2.0	8.5	
Elective or emergency procedure	n	0	0	0	
	%	0	0	0	
Names of operating surgeon and assistant	n	131	126	257	1
	%	42.8	41.2	84	
Name of theatre anesthetist	n	109	112	221	0.373
	%	35.6	36.6	72.2	
Operative procedure carried out	n	69	62	131	0.645
	%	22.5	20.3	42.8	
Incision	n	89	97	186	0.198
	%	29.1	31.7	60.8	
Operative diagnosis	n	109	88	197	0.045
	%	35.6	28.8	64.4	
Operative findings	n	99	84	181	0.296
	%	31.7	27.5	59.2	
Problems/complications	n	4	4	8	0.542
	%	1.3	1.3	2.6	
Extra procedure performed and the reason why it was performed	n	15	9	24	0.290
	%	4.9	2.9	7.8	
Details of tissue removed, added or altered	n	40	30	70	0.077
	%	13.1	9.8	22.9	
Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials	n	14	2	16	0.839
	%	4.6	0.6	5.2	
Details of closure technique	n	40	47	87	0.311
	%	13.1	15.4	28.4	
Anticipated blood loss	n	6	3	9	0.502
	%	2.0	1.0	2.9	
Antibiotic prophylaxis	n	59	37	96	0.014
	%	19.3	12.1	31.4	
DVT prophylaxis	n	3	5	8	0.495
	%	1.0	1.6	2.6	
Detailed postoperative care instructions	n	48	52	100	0.542
	%	15.7	17.0	32.7	
Signature	n	143	136	279	0.841
	%	46.7	44.4	91.2	
Total	n	156	150	306	
	%	51	49	100	

5. Conclusions

Accurate and complete operative notes are essential in different aspects. The quality of handwritten surgical operation notes written in Taiz Hospitals has been shown to be deficient when compared against a set standard. There is a potential need to teach the surgical resident the art of writing operation note as part of the curriculum and to develop a system to improve the quality and the compliance.

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