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The Survey on the Completeness of the Medical Records as the Basis for Producing Valuable Health Information

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Abstract

The core of the health information system in the hospitals lies in the medical records, which contain all the data concerning diseases and practices. Then questions arise whether the medical records contain all the data needed in the reliable, complete and timely manners while meeting standards for confidentiality. In this study, we reviewed medical records of 11 general tertiary care hospitals in Seoul, Korea, according to the criteria we made based on the JCAHO's hospital accreditation manual. The focus of review was whether the medical records contain the valuable information fully and in timely manners. But the result was no better than our expectations. More caution should be given for the EPR software engineers to catch up all the information needed from the medical records. We also examine the cause of variation among hospitals and want to give basic information concerning the medical records for implementing the standardized EPR and suggest the method for keeping complete health information

Keywords
Medical Record; Health Information; EPR

Introduction

The core of the health information system lies in the electronic patient records, which contains all the data concerning diseases and practices. And the goal of the EPR may be to provide timely, reliable, complete information, while meeting standards for confidentiality [1]. If the goal is to be achieved, the medical records whether electronic or paper records, should contain all the data needed. So the JCAHO recommends the organizations review the completeness, accuracy and timely completion of information in medical records at least quarterly for the management of information [2]. However, there are large differences in the way of recording health information on the medical records among hospitals and the contents in them are not yet standardized. So there arose the question whether they contained the valuable information enough in them with the beginning of the electronic patient record (EPR) era. In this study, we reviewed medical records according to the criteria we made based on the JCAHO's CAMH (2), the focuses of review were whether the medical records contain the valuable information fully and if they were recorded in timely manners. And at the same time, we'd like to know the cause of variations among hospitals and want to give the basic information concerning the medical records for implementing the standardized EPR and to suggest the method for catching up complete health information

Materials and Methods

We reviewed the medical records of the 11 general tertiary care hospitals. The hospitals are among 22 tertiary care health institutions located in Seoul city. Among 11 hospitals, there are one public hospital, seven universities affiliated ones, one medical corporation, one social welfare corporation, one special corporation. Based on the JCAHO's Comprehensive Accreditation Manual for Hospitals [2] and some other references [3-4], we made a survey tool, which can reflect the timeliness, accuracy, completeness[1], and faithfulness[2].

All the sheets of the medical records except laboratory reports were reviewed. As for the pilot study, two health information managers who practiced in the medical record field over 5 years reviewed the medical records using this survey tool. The rate of correspondence between the two was 81.7%(SD=2.3). After rechecking the criteria, we made more clear definitions on the confusing terms, which showed differences between the two reviewers, or we excluded the criteria. With the final survey tool, two health information manager reviewed the completed medical records retrospectively. The discharge dates of the patient records reviewed were from Dec. 1st. 1995 to Dec 31st. 1995. The review was done from Jan. 4th, 1997 to Feb. 28th 1997. 3% of the medical records were extracted systematically. but the whole records couldn't be reviewed because of various reasons.

1. There is no clear definition of what the timeliness, accuracy, completeness of the mdeical records are. So we define them with our own discretion.
2. There appears to be no terminology like faithfulness in CAMH. As we use the term completeness to designate items of the medical record we included it in our criteria

Table 1 - The Percent Rates of the medical records the date appeared on every sheet

Hospitals	A	B	C	D	E	F	G	H	I	J	K	Average
%	56.6	25.9	31.0	43.8	68.6	30.6	0.0	28.1	10.7	12.8	5.7	33.6
Number of Medical Records reviewed	63	70	29	65	54	50	34	51	48	34	39	537

Table 2 - Time frame between the discharge date and the date completed

Hospitals	C	E	F	H	J	Average
Average Time Interval	56.2	45.7	44.7	17.6	18.4	33.6
SD	26.3	42.9	46.3	18.3	27.2	41.3
Number of medical Records Reviewed	27	54	50	50	34	215

Results

Timeliness

JCAHO recommends that medical records of discharged patients must be completed within the time frame specified in the medical staff rules and regulations. and it should not to be exceeded 30 days[2]. The ACHS Accreditation Guide of Australia designated that all medical records should be completed by medical staff within 14 days of the patient's separation. [3]. To review the timeliness of the medical records, we should know the time the event was occurred and the time the event was written as our study is the retrospective one. And also we should know both the discharge dates and the completion dates of the medical records.

The Date on every sheet

First, the dates were reviewed on every sheet to see the timeliness of the medical records (Table 1). Among the total 537 records reviewed, the percent rates of the medical records the dates were appeared on every sheet were only 33.6%. In the G hospital, there was no one record on which the date was written fully. It means that among the 34 medical records reviewed from that hospital, there was at least a sheet with no date appeared on each document. And it is also noted that the dates appeared on the medical records were not the dates they were written, but the dates events were occurred. So, it was not appropriate to check the timelines of the medical records.

Time frame between the patient discharge and the completion of the medical record

The completion dates of the medical records should not exceed 30 days after discharge in America [2] and 14 days in Australia [3]. Most hospitals in Korea have the regulations about the completion date as 48 hours after discharge [5]. The discharge dates and the completion dates were compared (Table 2). Only 5 hospitals had the completion dates partially appeared on the medical records. The average completion date of those 5 hospitals was 34 days. The shortest one was 18 days of H hospital and the longest one was 56 days of C hospital. The three among five hospitals exceeded the recommended 30 days' completion time frame. This means that lots of medical records were written long after the patient discharge, only with memory. And this could be fatal for the information reliability.

Accuracy

All entries in medical records should be dated and authenticated and a method should be established to identify the authors of entries [2]. Accuracy was examined in the point of legibility, whether it was written without correction, and whether it was written without using arbitrary abbreviations (Table 3). Only the problematic cases are presented with the table. 35.4% of 537 medical records had at least one sheet which had legibility problem per each document. Three hospitals (B, F, J) had legibility problem over 50%. When it comes to the alteration problems, 58.7% of the medical records reviewed had at least one sheet on every document modified. The alteration itself is not illegal, but the method is. There was no consistent pattern in changing the entries of the medical records. Some are erased with black ink; others are patched with white. In the legal point of view, the arbitrary alteration cannot be justified. In the abbreviations, 27.7% of the records reviewed had been written on at least one sheet with abbreviations not officially approved. In these cases, no other person except the author of the entries could understand the meaning of them; therefore the arbitrary abbreviations could impede the information transmission.

Completeness

Medical records protect the hospitals, physicians, and the patients in the legal points. Of course, those roles can be achieved only when the medical records were completed on every point of view. Whether all the necessary papers filled in, whether all the identification data appeared on every sheet, whether all the sheets were authenticated and how about the originality of the records were reviewed. (Table 4). 22.4% of all the medical records reviewed didn't have the needed papers fully attached (we excluded laboratory reports). In that, there was a large variation among the hospitals from 4%(A hospital) to 50.0%(F hospital). Average 20.7% of the records did not have a full signature on every medical record. There was also a large variation from K hospital, whose medical records had signatures on every document, to G hospitals where 76.5% of its medical records omitted signature at least one place on every records. Identification data did not appear on half of the medical records. In the H, K hospitals, no one medical record was fully authenticated. The medical record should be original, but 37.4% of the records did not have the original paper somewhere within

Table 3 - Accuracy of the Medial Records

Hospitals	A	B	C	D	E	F	G	H	I	J	K	Average
Illegibility(%)	21.1	50.0	41.1	42.5	12.9	55.6	26.5	40.1	32.1	51.3	37.1	35.4
Alteration or Insertion(%)	52.6	38.0	90.7	65.0	48.6	19.4	94.1	65.6	46.4	71.8	91.4	58.7
Using abbreviations not officially approved(%)	15.8	51.7	17.2	40.0	21.4	33.3	38.2	18.7	10.7	46.2	5.7	27.7
Total numbers of medical records reviewed	63	70	29	65	54	50	34	51	48	34	39	537

Table 4 - Completeness of the Medical Records (unit : %)

Hospitals	A	B	C	D	E	F	G	H	I	J	K	Total
not fully documented	4.0	32.7	10.3	35.0	17.1	50.0	29.4	12.5	12.5	20.5	28.6	22.4
not fully authenticated	5.3	46.7	10.3	28.8	2.9	22.2	76.5	9.4	9.0	30.8	0.0	20.7
not fully identified	54.0	86.2	20.7	41.3	37.1	30.6	53.0	96.9	10.7	46.1	97.1	50.5
not all original	9.2	55.2	55.2	41.3	24.3	38.9	235.	68.7	12.5	66.7	62.9	37.4
Total (Numbers)	63	70	29	65	54	50	34	51	48	34	39	537

the medical record. In the four hospitals (C, H, J, K), over 50% of the medical records reviewed did not contain the original paper somewhere. Most of anesthesia reports were replaced with copied one in those hospitals.

Faithfulness

Medical records should contain all the hospital courses and the patient reactions regarding diagnoses and treatments in them. Next 18 items were reviewed in the faithfulness point of view (Table 5). The patient assessment at the emergency room or the impression drawn from the medical history and physical examination are very important for further evaluation of the patient. But frequently they were omitted (77 records in ER case, 18.2% of the intern notes). All the final diagnoses and complications should be written without the use of symbols or abbreviations. However, 18.2% of the medical records reviewed omitted at least one diagnosis. And the discharge summary should contain all the procedures performed and treatments rendered, but 12.1% of the discharge summaries did not contain all the procedures and treatments. The progress notes should be written whenever the patient's status changes. We examined the progress notes whether they were written on daily basis. 68.1% of the records were not written on daily basis.

Again we reviewed the records whether they were written within 4 days. 37.8% of the records were not written within 4 days. The major treatments and patient reactions can be omitted easily in this recording behavior. So it may cause difficulty in extracting the valuable information or in following the detailed hospital courses fully

Discussions and Suggestions

Though we reviewed only the completed medical records on the 4 points of view, the results were not so good as we expected. We'd like to discuss and suggest the method for retaining complete health information for implementing the standardized EPR.

First, every information should be written or keyed in as soon as the event occurred right on the place. With current system, the checking the deficiencies of the medical records are done after the patient discharged, so the delinquency rate is high. If the EPR system is standardized, then alert system can be applied when there is an event not written within the predetermined time frame. It may be done with batch job daily. With this, we can get better information and can reduce the losses incurred by information deficiencies. In the EPR system, the input date should be fixed for the timeliness, for the legal point of views, for the quality assurance programs and for others..

-Second, accuracy may be improved greatly with the EPR system. As the standardized terms and abbreviations will be used in the EPR system, these accuracy problems may be resolved completely. But alteration or new insertion of entries afterwards may invoke the legal problems and can be viewed as the forgery. In the EPR system, as the alteration and insertion of the entries can be done more easily than the paper records that the entry time should be monitored to be fixed and should not be changed.

Third, if EPR system becomes popular, the software engineers should take a caution not to omit the needed information or signatures at any rate. Though whether the electronic signatures can be accepted as legal proof or not is controversial, there is a tendency to accept it legally, so the security should be considered carefully [8].

Table 5 - Faithfullness of the Medical Records (only negative cased are presented here)

Hospitals		Unit1)	A	B	C	D	E	F	G	H	I	J	K	Total
Admission note		%	7.9	6.9	0.0	0.0	0.0	2.8	0.0	0.0	1.8	0.0	2.9	2.4
ER imp.		Numbers	19	0	0	15	15	2	1	3	0	8	14	77
Imp. after physical exam.		%	10.5	13.8	10.3	32.5	0.0	30.6	0.0	0.0	0.0	2.6	14.3	12.8
Operation Report		Numbers	0	3	0	0	1	0	0	0	1	0	0	5
Progress notes after operation		Numbers	0	7	0	3	0	2	0	0	1	1	0	14
All major treatments		%	6.6	22.4	0.0	6.3	5.7	38.9	8.9	6.3	16.1	15.4	14.3	12.1
All major diagnostic reports		Numbers	1	11	3	24	10	18	7	3	3	6	8	94
transfer note		Numbers	1	14	1	3	0	3	0	0	1	1	0	24
record of the final date		%	14.5	46.6	20.7	33.8	65.7	5.6	17.7	31.3	25.0	59.0	62.9	35.6
progress notes on daily basis		%	71.1	55.2	72.4	48.8	71.4	58.3	88.2	87.5	67.9	89.7	65.7	68.1
progress notes within 4 days		%	31.6	60.3	34.5	33.8	35.8	19.4	44.1	37.5	32.1	43.6	45.7	37.8
Consultation reports			1	2	0	10	0	1	0	0	2	0	0	18
The reason for delay consultation	Progress Notes	Numbers	3	1	0	1	4	0	2	1	5	5	1	23
	Nurse Records	Numbers	2	0	0	0	1	0	3	0	5	4	1	16
The reason for delay operation	Progress Notes	Numbers	3	2	0	0	0	1	0	2	0	2	0	18
	Nursing Records	Numbers	1	3	0	0	0	0	1	0	0	0	0	5
All the final diagnoses		%	5.3	27.6	7.0	11.3	14.3	33.3	32.4	15.6	17.9	28.2	25.7	18.2
Results of the treatment		%	0.0	51.7	10.3	21.3	20.0	5.6	0.0	9.4	0.0	0.0	2.9	12.8
Disposition after discharge		%	0.0	57.9	3.5	16.3	18.6	13.9	0.0	28.1	51.8	0.0	2.9	19.1
follow up plan		%	0.0	46.6	44.8	56.3	47.1	63.1	0.0	43.4	3.6	25.6	0.0	32.1
Total numbers of Medical records reviewed		Numbers	63	70	29	65	54	50	34	51	48	34	39	537

Fourth, to decide whether the medical record is valuable enough to be used as the source of health information, the faithfulness of it is most important. Though we only reviewed the representative items with the completed medical records, they were not met our expectations satisfactorily. Especially the deficiency rate of the final diagnoses was as high as 18.2%. And the reasons for delay of consultations (23 cases) or the reasons for delay of operations (18 cases) should be written clearly with the EPR system too.

There was one very important thing we should make clear from this survey, and this may explain the variations among the hospitals. When we review the diagnostic tests or treatments, there should be orders, results and the evidences the physician referred them in the documents. Most hospitals have them, but in case of B hospital as an extreme, only the orders and the results appeared on the medical records. The evidence that the physician referred it did not presented there. As the EPR models are now being standardized by the agency like ASTM [9], and the merit of EPR system may be writing once for every event, we'd like suggest strongly that however good the EPR system may be, the concept the event should be written once should be reconsidered in the legal and scientific point of view though it looks efficient. And the reason for practice, the decision making processes from various sources, the evidences the physicians consulted the results should also be included in the EPR format. And with the standardized clinical practice protocols, the alert system may be integrated into the EPR not to miss the valuable information.

Conclusion

We Koreans are now involved in the standardization of the medical records actively and beginning to produce the EPR models [10]. And in America, we know that there already appeared the paperless hospitals. We only hope to contribute the basic information for these activities and to suggest the directions of the EPR.

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