Improving Pre-hospital Recording by Ambulance Cooperation under Administrative Regulations

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Abstract

To investigate the impact of administrative regulations on improving the completeness and quality of pre-hospital recordings (PCRs), we compared the PCRs from ambulance agencies during two different periods, that is, from July 2004 to December 2004 (the first stage that administrative regulations has not yet been implemented) and from January 2005 to June 2005 (the second stage that administrative regulations has been implemented). Overall completeness and item-wise review were performed for each PCRs from inter-hospital transfer by ambulance agencies. There were 185 patients (Group A) who were transferred from this institute to other hospitals during the first stage 4 and 70 patients (Group B) transferred to other hospitals during the second stage. Sixty-eight percent (126/185) of PCRs from Group A were not fulfilled at all, and 30% (57/185) of these PCRs were not recorded completely. In contrast, 17% (12/70) and 21% (15/70) of the PCRs from Group B were lacking and incompletely recorded, respectively ($P<0.01$ between the two groups). Item-wise review of the available PCRs revealed that improvement were found in patient assessment findings (58/58 or 100% in Group B vs. 29/59 or 49%, $P<0.01$), care rendered before arrival to receiving hospitals (50/58 or 86% in Group B vs. 25/59 or 42%, $P<0.05$), clinical observations including responses to interventions (42/58 or 72% in Group B vs. 18/59 or 31%, $P<0.05$), and medical decision making (41/58 or 71% in Group B vs. 18/59 or 31%, $P<0.05$). In conclusion, this study demonstrated that implementation of administrative regulation and assurance of health policies was proven to improve such deficiencies. It is believed to be an essential step in disaster preparation. *(Ann Disaster Med. 2005;4:1-6)*

Key words: Pre-hospital Records; Ambulance; Emergent Medical Service; Disaster Preparedness

Introduction

To have good prehospital medical records, prehospital personnel such as paramedics, emergency medical technician (EMT) and first responders shall provide the medical care of the patient within their scope of practice and have good recordings accordingly. To our

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knowledge, an approved prehospital patient care record (PCR) would be completed by each prehospital provider agency for each response in the United States.[1,2] The individual evaluating the patient's condition and providing emergency care shall complete the PCR.[1,2] In Taiwan, many ambulance services are provided by so-called ambulance agencies or corporation instead of those from the fire departments. In fact, nearly all of the inter-hospital transfers are performed by the ambulance agencies. In the past, PCR completed by professional EMT (from fire departments) are superior to those recorded by EMTs or nurses of ambulance agencies. There is even lacking of the records during transportation in a significant portion of PCR from ambulance agencies. Receiving hospitals thus usually do not have enough information concerning the clinical condition and management during ambulance transportation. It is of course risky for both the patients and the emergency staffs.

Administrative regulation and recommendation about PCRs during inter-hospital ambulance transportation are implemented in Taipei since January 2005. It provides detailed recommendation and regulations that require the ambulance agencies to guarantee the completeness and quality of PCRs. Otherwise these ambulance agencies may be fined or disqualified. We therein designed the following prospective observational study to evaluate the possible improvement in completing PCRs among these ambulance agencies after administrative regulation.

Methods

Study objectives

We firstly reviewed the PCRs from the ambulance agencies from July 2004 to December 2004 in a tertiary university-teaching hospital. The recordings reviewed were limited to these of the patients who were transferred from our hospital to others. The report is to be distributed as follows: medical record as an original top copy (legal document) to be retained by the provider agency; provider copy to be retained by provider agency for billing and/or quality assurance purposes; and hospital copy that forward with the patient to hospital for inclusion in the patient's chart. If the PCR is incomplete at the time of transport and/or arrival at the hospital, the provider must complete the PCR and take to the receiving hospital before the end of their shift.

Since January 2005, we prospectively reviewed the PCRs of the patients who were transferred from our hospitals by ambulance agencies. The distribution of the reports is the same. The completeness and evaluation items are performed according to the following protocol.

Evaluation of PCRs

The record forms were displayed in one separate page (Figure) and included the items such as call date and time, identification of the EMS agency/vehicle, patient identification, pertinent history of present illness/injury, relevant past medical history, chief and associated complaints, patient assessment findings (such as vital signs before transfer and during transportation), care rendered before arrival to receiving hospitals, clinical observations including responses to interventions, and facts supporting the intensity of the patient evaluation and treatment, including medical decision making, legible signatures and names of medical control

personnel and communication method. All of these 10 categories were evaluated and analyzed.

Statistical analysis

The values were presented as mean ± SD. For categorical variables, the percentage of fulfillment has been converted to the scores and the comparison between groups has been analyzed by Chi-square tests. In contrast, the scores of non-categorical variables were evaluated by the reviewers and the comparisons between the groups were made by students' *t* test or ANOVA as indicated. A *P* value less than 0.05 was considered as statistically significant.

Results

There were 185 patients (Group A) who were transferred from this institute to other hospitals from July 1st, 2004 to December 31st, 2004. In contrast, 70 patients (Group B) were transferred to other hospitals from January 1st, 2004 to June 30th, 2004. Each PCR supplemented in transfer notes were reviewed overally and item by item. One hundred and thirty nine patients (75%, 139/185) were transferred via emergency operations center (EOC) in Group A, whereas 49 (70%, 49/70) were transferred via EOC in Group B. There was no statistically significant difference in transfer-via-EOC rates between the two groups (*P*=NS).

Sixty-eight percent (126/185) of PCRs from Group A were not fulfilled at all, and 30% (57/185) of these PCRs were not recorded completely. In contrast, 17% (12/70) and 21% (15/70) of the PCRs from Group B were lacking and incompletely recorded, respectively. There was statistical significance in rates of completing PCRs between the two groups ($P<0.01$).

Item-wise review of the available PCRs (that is, 59 PCRs of Group A and 58 of Group B) revealed that the most striking improvement were patient assessment findings (58/58 or 100% in Group B vs. 29/59 or 49%, $P<0.01$), care rendered before arrival to receiving hospitals (50/58 or 86% in Group B vs. 25/59 or 42%, $P<0.05$), clinical observations including responses to interventions (42/58 or 72% in Group B vs. 18/59 or 31%, $P<0.05$), and facts supporting the intensity of the patient evaluation and treatment, including medical decision making (41/58 or 71% in Group B vs. 18/59 or 31%, $P<0.05$) (Table).

Discussion

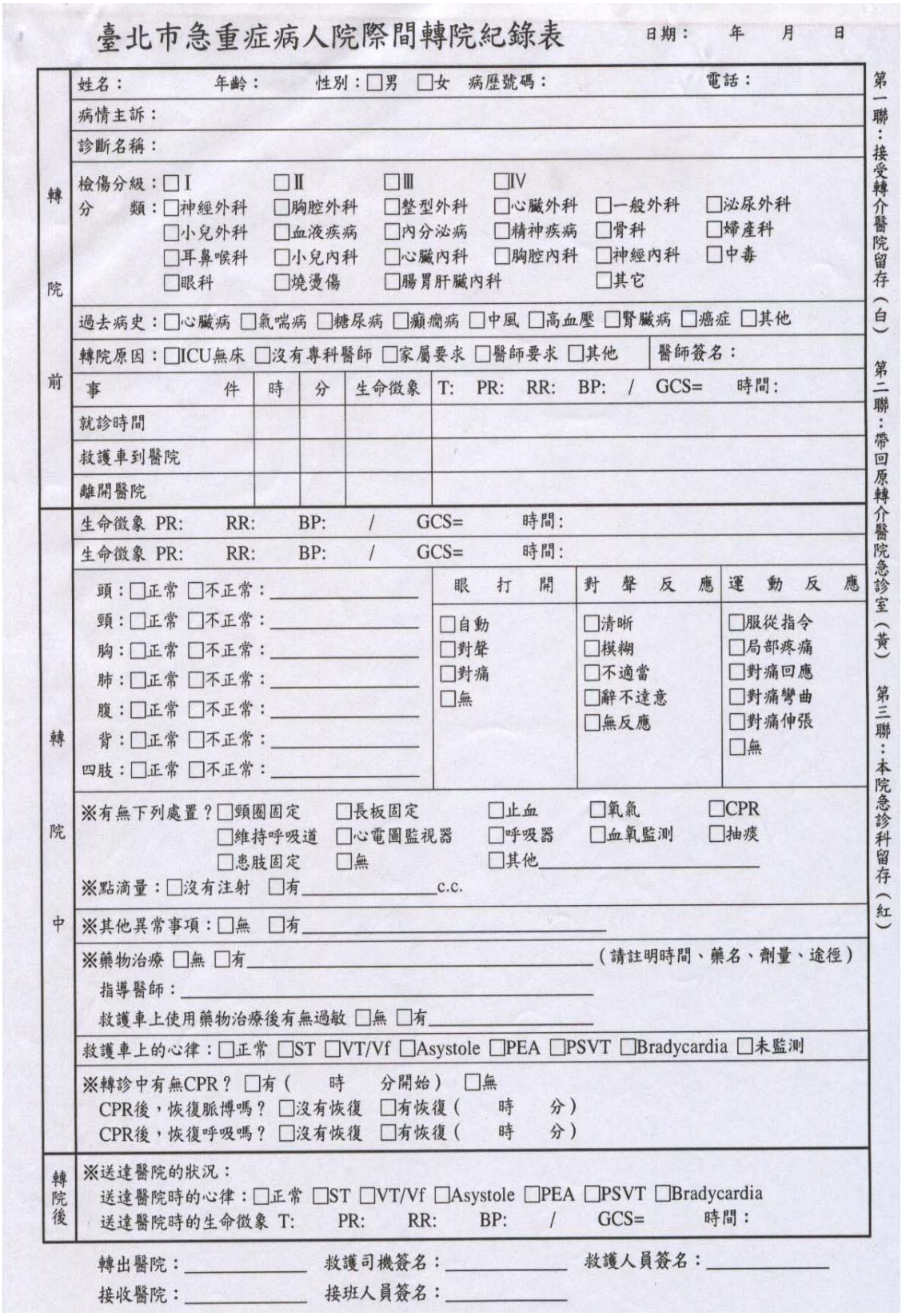
This study demonstrated that the rate of completeness of PCRs from ambulance agencies were severely low even in a metropolitan area in Taiwan before the related administrative regulations have been implemented. We believe it would result in severe problems in patient safety during the process of emergency management and transportation. Implementation of administrative regulation and assurance of health policies were proven to improve such deficiencies.

As mentioned above, the PCR should be met with the following criteria:[3,4] 1) Factual: The log should chronicle objective information reported by emergency medical technicians -- what they observe about the scene, glean from their assessment, or treatments rendered to the patient. Resist the impulse to speculate, judge character, or to label behaviors by using slang or demeaning statements abbreviated as code initials. On the other hand, using appropriate medical abbreviations increases the amount of information that can be noted in a limited space

Table. Comparison of PCR completeness between (Group A) and Group B

	Group A (n=59)	Group B (n=58)	*P* value
Call date and time	93% (52/59)	99% (57/58)	NS
Identification of the EMS agency	99% (57/59)	99% (57/58)	NS
Patient identification	100% (59/59)	100% (58/58)	NS
Pertinent history of present illness/injury	68% (40/59)	76% (44/58)	NS
Relevant past medical history	68% (40/59)	78% (45/58)	NS
Chief and associated complaints	68% (40/59)	76% (44/58)	NS
Patient assessment findings	49% (29/59)	100% (58/58)	<0.01
Care rendered before arrival to receiving hospitals	42% (25/59)	86% (50/58)	<0.05
Clinical observations	31% (18/59)	72% (42/58)	<0.05
Facts supporting the intensity of the patient evaluation and treatment	31% (18/59)	71% (41/58)	<0.05

and in the short time span taken by most telemetry calls. Charting generally should maintain a sense of profession detachment. 2) Accurate: Even factual records will be subject to scrutiny if they look inaccurate or unreliable. During the discovery period, attorneys from both sides will examine all charts or logs and compare the actual notations to written standards. Every word and time frame may be meaningful. Inaccurate or incomplete entries, without just cause, diminish the reliability of the record. 3) Complete: The communications log should stand alone as a chronologic recording of all out-of-hospital events. It is helpful if boxes are present that allow quick checkmarks noting either "within normal limits" or other locally customized notations suggesting a pathologic condition (nausea, vomiting, cough, etc.) Equally helpful are check boxes for routine assessments, such as quantification of pain, pupil size and reactivity, breath sounds, skin color, temperature, moisture, level of consciousness, Glasgow Coma Scale scores and trauma scores. Forms constructed to facilitate quick notations of care rendered in the field, destination, and estimated time of arrival are also beneficial provided local protocols define the applicable standards of practice. 4) Timely: The EMT should document as much as



臺北市急重症病人院際間轉院紀錄表　日期：　年　月　日

轉院前

姓名：　年齡：　性別：☐男 ☐女　病歷號碼：　電話：

病情主訴：

診斷名稱：

檢傷分級：☐I ☐II ☐III ☐IV

分　類：☐神經外科 ☐胸腔外科 ☐整型外科 ☐心臟外科 ☐一般外科 ☐泌尿外科
☐小兒外科 ☐血液疾病 ☐內分泌病 ☐精神疾病 ☐骨科 ☐婦產科
☐耳鼻喉科 ☐小兒內科 ☐心臟內科 ☐胸腔內科 ☐神經內科 ☐中毒
☐眼科 ☐燒燙傷 ☐腸胃肝臟內科 ☐其它

過去病史：☐心臟病 ☐氣喘病 ☐糖尿病 ☐癲癇病 ☐中風 ☐高血壓 ☐腎臟病 ☐癌症 ☐其他

轉院原因：☐ICU無床 ☐沒有專科醫師 ☐家屬要求 ☐醫師要求 ☐其他　醫師簽名：

事　件	時	分	生命徵象	T: PR: RR: BP: / GCS= 時間:
就診時間				
救護車到醫院				
離開醫院				

轉院中

生命徵象 PR: RR: BP: / GCS= 時間:

生命徵象 PR: RR: BP: / GCS= 時間:

頭：☐正常 ☐不正常：
頸：☐正常 ☐不正常：
胸：☐正常 ☐不正常：
肺：☐正常 ☐不正常：
腹：☐正常 ☐不正常：
背：☐正常 ☐不正常：
四肢：☐正常 ☐不正常：

眼打開	對聲反應	運動反應
☐自動	☐清晰	☐服從指令
☐對聲	☐模糊	☐局部疼痛
☐對痛	☐不適當	☐對痛回應
☐無	☐辭不達意	☐對痛彎曲
	☐無反應	☐對痛伸張
		☐無

※有無下列處置？☐頸圈固定 ☐長板固定 ☐止血 ☐氧氣 ☐CPR
☐維持呼吸道 ☐心電圖監視器 ☐呼吸器 ☐血氧監測 ☐抽痰
☐患肢固定 ☐無 ☐其他_____

※點滴量：☐沒有注射 ☐有_____c.c.

※其他異常事項：☐無 ☐有_____

※藥物治療 ☐無 ☐有_____（請註明時間、藥名、劑量、途徑）

指導醫師：_____

救護車上使用藥物治療後有無過敏 ☐無 ☐有_____

救護車上的心律：☐正常 ☐ST ☐VT/Vf ☐Asystole ☐PEA ☐PSVT ☐Bradycardia ☐未監測

※轉診中有無CPR？ ☐有（　時　分開始） ☐無
CPR後，恢復脈搏嗎？ ☐沒有恢復 ☐有恢復（　時　分）
CPR後，恢復呼吸嗎？ ☐沒有恢復 ☐有恢復（　時　分）

轉院後

※送達醫院的狀況：
送達醫院時的心律：☐正常 ☐ST ☐VT/Vf ☐Asystole ☐PEA ☐PSVT ☐Bradycardia
送達醫院時的生命徵象 T: PR: RR: BP: / GCS= 時間:

轉出醫院：_____　救護司機簽名：_____　救護人員簽名：_____

接收醫院：_____　接班人員簽名：_____

第一聯：接受轉介醫院留存（白）　第二聯：帶回原轉介醫院急診室（黃）　第三聯：本院急診科留存（紅）

Figure. The form of the PCR for inter-hospital ambulance transportation

possible during the run.[5] If this cannot be done contemporaneously, jot down shorthand notes so that details remain fresh until the staff can finish the record. All vital signs, rhythm interpretations, assessments, and out-of-hospital interventions should be timed unless local protocols indicate otherwise.

Patient tracking is always an important issue in disaster medicine.[6,7] To provide direction for the development and use of patient tracking mechanisms at different levels in a disaster or mass casualty incidents, transport providers will record the total number of patients transported and each patient's triage tag number, triage category, field site of origin and destination. Receiving hospitals or receiving destinations will record the number of patients received by triage number, triage category and will attempt to further identify them as time and resources allow and as provided in the facility's disaster plan. Accurate tracking of numbers of patients is critical to the ability to project medical resource use and need at all levels of the system, the ability to provide information to concerned family members; and the ability to not "lose" patients evacuated or transferred out of the area. However, we believe that patient records or PCRs are one of the important components that maintain good patient tracking. In other words, the role of PCRs is more important in chaotic circumstances such as disasters.

Inter-hospital patient transfer is a different issue from other pre-hospital transportation and care. It is related to the policies of hospitals and administrative agencies. In lack of uniform administrative regulations, the performance of inter-hospital transfer depends upon mainly the regulations of hospitals themselves and their related ambulance cooptation or agencies. Any deficiencies in these related policies are closely associated the problem of patient safety and disaster preparation. We are glad to find the implementation of administrative regulations that defined the obligations of ambulance during inter-hospital transportation and care certainly improved the completeness and quality of PCRs in this field. We believe that it is a small and definitely significant step in patient safety and disaster preparation.

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