空中轉診之安全研究

Safety study in Aeromedical Transportation

中文摘要

研究背景：病人安全已爲世界衛生組織及世界各國家最重視的課題之一，如何提升病人安全爲全球醫學界共同追求的目標，衛生署亦成立病人安全委員會，並與醫療院所配合規劃各項相關策略，以增進病人安全。 我國之地理特性爲中央高山、離島眾多，因爲海洋與山岳阻隔之地理因素，人力設備缺乏而品質落後，遇有急重症病況只得依賴空中醫療轉送，但空中醫療轉送之危險性及經濟成本極高，因此產生病人安全及健康照護之問題。如何提升離島地區空中醫療轉送品質、包括病人安全與飛行安全以及如何增進成本效益，均爲政府施政及公共衛生之重要課題。

研究方法：本研究方法採回溯法，使用行政院衛生署空中轉診審核中心之資料庫，調閱民國 91 年 11 月 1 日至 96 年 10 月 31 日空中緊急醫療轉送案件進行統計分析。病人之安全政策介入包括（1）全天候使用遠距醫療視訊系統配合專業審查制度,（2）空中轉診前之病情評估與協調隨行醫護人員,（3）轉出主治醫師及接受主治醫師之協調聯繫,（4）相關海上或路上轉診路線之規劃, （5）病人轉送至最近且最適當之醫院,（6）執行責任空域制度，（7）避免夜間空中轉診，（8）減少不必要之空中轉診，（9）氣象因素暫緩空中轉診,（10）建立標準作業程序。研究上述政策介入對空中轉診安全之成效。 結果：在空中轉診共 1,326 航次，轉送病患以男性居多(66%);轉診年齡層以大於 65 歲之老年族群最多(33%);轉送原因以非外傷患者居多（72%）；以醫院等級區分，73.38 % 轉診至醫學中心，轉診次數以澎湖地區最多 509 人次；轉診距離以金門地區最遠，每航次平均需時 1.99 小時，平均每航次 307.85 公里；轉診月份以七月最多，共 142 人次（10.7%），各季節以夏季最高，共 386 人次（29%）；轉診時間以日間【6AM~6PM】十時至十二時之 180 人次（13.57%）最高，夜間【6PM~6AM】二時至四時之 31 人次（2.34%）最少；執行日間轉診任務爲 776 航次（60%），研究結果顯示日間飛行比例由最低之 56.49%（93 年），逐年提升至 66.98%（96 年）；東部地區隨機護送傷病患之比例由最低之 50%（91 年），逐年提升至 91.3%（96 年），空中轉診航次平均每年 265.2 次，每月爲 21.74 航次，相較於空中轉診審核中心成立之前全國爲每月 43.18 人次減少 49.65%，成效卓越。不符轉診要件的患者，91 年是 15.56%至 96 年爲 4.82%。

結論：本研究顯示空中轉診審核中心已建立專業審查之「守門員效應」，離島偏遠地區亦逐漸建立自我審查機制。外傷轉診患者之勝算比最高爲 25~34 歲年齡層，勝算比爲 5.23。全部 1,326 航次之空中轉送均未發生任何病人安全與飛行安全事件，前述之遠距醫療視訊系統配合專業審查制度可以減少不必要之空中轉

送，每年節省政府巨額預算，符合經濟效益及完成安全的空中醫療轉送，並成功達成傷害防治學的策略與目標。
Background: Patient safety has been the core value of health care. Emergency air medical transport

英文摘要

Background: Patient safety has been the core value of health care. Emergency air medical transport (EAMT) services have increased in Taiwan as well as in other countries recently. However, high costs of these services as well as the risk of air transportation have raised questions on the efficacy to patient safety. In this study, we evaluate the key factors for safety of patient in EAMT. Method: Medical records of patients transported from islands hospitals or clinics to Taiwan were retrospectively collected from November 2002 to October 2007.The strategies in patient safety were studied in various aspects, including:
(1) Use of video-telemedical system and standardized screen criteria.
(2) Pre-flight assessment and coordination of medical escorts.
(3) Coordination between treating physician and physician in receiving hospital.
(4) Suggestion on transfer routing.
(5) Designation on nearest medical excellent center.
(6) Designation on EAMT-responsible zones.
(7) Avoidance of night flight, unless medically urgent.
(8) Disapproval unnecessary EAMT and continuing monitoring with video-telemedicine.
(9) Surveillance of weather condition for EAMT.
(10) Set up standard operation protocol.
Results: A total of 1,326 transfers were included in this study, male（66%） to female（34%） M:F=2:1. Age over 65 accounts for 33% of all transferred patients. 73.38% patients were transferred to medical center. Non-trauma victim comprised 72% in total patients. The Penghu area accounts for 509 transfers which are the most frequent in all referred areas. The longest transportation distances is 307.85 kilometers per transfer and 1.99 hours per flight belongs to the Kinmen area that was taken about. There was 386 transfers （29%） in summer which was the peak season of EAMT. The night flight（6:00pm to 6:00am）took 40% of the total flights. In addition 10:00 am to 12:00pm were the busiest hours 180 transfers（13.57%）for patient transportation; 02:00 am to 04:00am were the fewest frequency, 31 transfers（2.34%）for patient transportation. The percentage of the day flight from 56.49%（2004）to 66.98%（2007）. The percentage of escort in eastern area increased from 50%（2002）to 91.3% （2007）. The total flights decreased from 43.18 per month（2001）to 21.74

monthly （2007）. It was reduced about 49.65%. The “gate-keeper effects” of screen system is significant. The medical unnecessary EAMT, decreased from 15.56%（2002） to 4.82%（2007）, demonstrated the physicians in remote islands and rural areas has been well communicated and educated in application of EAMT . The odd ratio 5.23 of age group in 25~34 years old is the highest level among traumatic EAMT patients. There was no accident event in 1,326 EAMT. This study demonstrates the intervention of strategy effectively improve safety not only in all EAMT but also in reduce of medical unnecessary EAMT. These interventions save large amount of government budget, and contribute the efficiency of EAMT, and achieves the goal of injury prevention and control.