

Healthcare Service Auditing and Intervention in an Emergency Paediatric Unit

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Summary

Okolo SN, Ogbonna C, Bode-Thomas F. Healthcare Service Auditing and Intervention in an Emergency Paediatric Unit. Nigerian Journal of Paediatrics 2002; 29:71. A pre- and post-intervention randomized cross-sectional study was carried out from January to February and April to May 2001, respectively, to audit and intervene in the timeliness of health services delivery in an Emergency Paediatric Unit (EPU) of Jos University Teaching Hospital. A structured questionnaire was used to observe and follow up 86 and 101 patients (in the pre- and post-intervention periods respectively) from the time of arrival to the time of being seen by the doctor. Also a cause and effect diagram and countermeasure matrix were used to identify and solve the problems of poor timeliness of health service delivery. There were no significant differences in the ages, weights and heights of the pre- and post-intervention children studied ($p > 0.05$). The overall mean excess (wasted) time from arrival to actually being seen by the doctor was 133 ± 121.8 minutes. Sixty-three percent of this excess time was the time between retrieving the patients' folders and actually being seen by the doctor, which was significantly reduced from 89 minutes to eight minutes ($p < 0.001$) following intervention. There was a general reduction in the mean excess time at various points of health care delivery, and on the number of cold cases seen in EPU. However, there was no difference ($p > 0.05$) in the mortality rate between the two periods. Timely health care service is very important in the provision of quality care which in turn, will most likely improve the utilization of health services.

Introduction

ILLNESSES in children usually run a rapid course which necessitate urgent care. Emergency Paediatric Units (EPU) are the windows of the quality of healthcare in paediatric practice. Most times, both acute and cold cases present to EPU. Acute cases such as diarrhoea with severe dehydration, meningitis, convulsions, acute asthma, and coma from various causes, are cases that call for immediate and prompt medical intervention. Cold cases such as scabies and helminthiasis are cases that should be seen in routine clinics because they do not call for any emergency intervention.

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Long waiting time has frequently been mentioned as one factor which may limit health service utilization by any given community.¹⁻⁴ Studies in developing countries have shown that patients spent 180-240 minutes in outpatient departments before seeing the doctor.⁵⁻⁷ The low ratio of health personnel and facilities to population in developing countries is a well known fact.⁸ In developing countries, women usually accompany their children to hospital, as well as shoulder major economic responsibilities of the family.⁹⁻¹² In a situation where women have many demands on their time, long waiting periods at the clinic may prove a deterrent to service use. From observations and informal community feed-back, there are complaints about the prevailing situation whereby patients sometimes spend a long time before seeing the doctor. This has become a general phenomenon in our hospitals. This long waiting time before medical intervention may result in the worsening of the illness and death, or a permanent disability if the patient recovers. The ability to deliver the best quality care to patients in EPU depends on a

chain of health workers who are independently responsible for the quality of their specific jobs. In this communication, we present the findings of an evaluation of the timeliness of patient care in an EPU in order to identify factors and problems responsible for delays in rendering medical service, and the efforts made to address such problems.

Materials and Methods

This study was undertaken at Jos University Teaching Hospital (JUTH), during the periods, January to February and April to May 2000 (pre-and post-intervention periods, respectively). JUTH runs specialized healthcare, and serves as a referral centre for other health facilities in Plateau State, and neighbouring states. Among its special areas is the EPU, which takes care of cases that require urgent intervention. The care given to patients was reviewed for its timeliness, in order to determine the need for improvement and revision of aspects of service organization. To do this, the team reviewed the movement of patients to see the doctor in EPU from the point of arrival in the hospital to the time doctors saw the patients. Through brainstorming and multivoting by the research team, some suggested problem areas such as patients' waiting time, staff welfare package, mortality rates and fee charges for patients, were identified. Using the theme selection matrix (Table I), the overall impact of each of these problem areas on the patients was analysed. Reducing patients waiting time in EPU was identified as the major problem area since it scored the highest in the matrix.

Data Collection

A precoded standardized questionnaire was administered in the pre-intervention period to observe and follow up 86 patients. 500-level medical students recruited and trained in data collection, were stationed in EPU to monitor each patient from time of arrival to departure. The age, sex, weight and height of each patient were recorded. Cases were categorized as acute or cold. Patient's waiting time was defined as the total time spent from arrival in the hospital to the time the patient was attended to, by the doctor. Excess Waiting Time was defined as the difference between the Actual Waiting Time of the patient and the Expected (Ideal) Time the patient should wait. The expected (ideal) waiting time was determined from responses to a questionnaire by the doctors in the paediatric department. The data collected were stratified by intervals and analysed to determine the excess waiting

time and where in the health care process, the patients were spending excess time (Table II). Monthly mortality rate for the period under study was also recorded.

Having determined the current situation as regards the waiting time in EPU, a target was then set, aimed at reducing this mean excess time by 50 percent by the end of May 2000 (from April to May). The possible causes for delays were identified, analysed and thereafter corrected, using countermeasures such as increasing the doctor strength in EPU, screening out cold cases in time, and requesting the records clerk to focus only on emergency cases. After implementing these measures, the situation in EPU was re-evaluated from April to the end of May 2000, to confirm that the target set for improving the timeliness of patient care was achieved. Questionnaires were re-administered to monitor the movement of another 101 patients. The data collected was also analysed as previously stated.

Statistical Analysis

The Students' *t*-test was used to test the significance of the differences in means and the Chi-square test for tests of proportions, where appropriate.

Results

In the pre-intervention stage, 86 children (52 males and 34 females ; M/F = 1.5 :1) were observed. Their mean age was 36.76 ± 50.9 months, mean weight and height were 11.40 ± 8.65 kg and 0.83 ± 0.28 m,

Table I

Theme Selection Matrix

<i>S/N Themes</i>	<i>Impact on External Customers</i>	<i>Need for Improvement</i>	<i>Overall Score</i>
1 Improving staff welfare package	5	4	20
2 Reducing mortality rate	4	4	16
3 Reducing patients' waiting time	5	5	25
4 Reducing charges for paediatric patients	3	4	12

The scores are weighted from 0 to 5, where 5 is the highest score.

respectively. Table II shows the actual, expected and excess mean waiting time (in minutes) spent by the 86 patients between January and February 2000. The overall mean excess time from arrival to being seen by a doctor was 133 minutes and 63 percent of this excess time was the time between retrieving the patients' folders and actually being seen by the doctor

Table II

The Actual, Expected and Excess Mean Waiting Time (in minutes) spent by 86 Patients between January and February, 2000

Intervals	Actual	Expected	Excess
Arrival/Card	33.6	4	30
Card/Folder	31.6	9	23
Folder/Doctor	99	10	89
Arrival/Doctor	156	23	133

intervention ($t=1.18, 0.2, 0.6$, respectively, $p>0.05$). There was a proportionally significant reduction in the excess waiting time from 133 ± 121.6 minutes (pre-intervention) to 34 ± 66.5 minutes post-intervention ($\chi^2 = 7.1, df = 1, p < 0.01$), while the average excess waiting time between retrieval of folder and actually being seen by the doctor was reduced from 89 minutes to eight minutes ($p < 0.001$). There was a general reduction in the average excess waiting time at various points of healthcare (Figs. 1 and 2). The acute and cold cases seen during this post-intervention period were 68 and 33, respectively. There was a significant reduction in the percentage of cold cases seen, from 49 percent to 33 percent during the two periods ($\chi^2 = 5.2, df = 1, p = 0.025$). The mortality rate during this period was 12.3 percent, which, although higher, was not significantly different from that obtained in the pre-intervention period ($\chi^2 = 0.2, df = 1, p > 0.05$). Although there was no difference in the average number of nurses covering

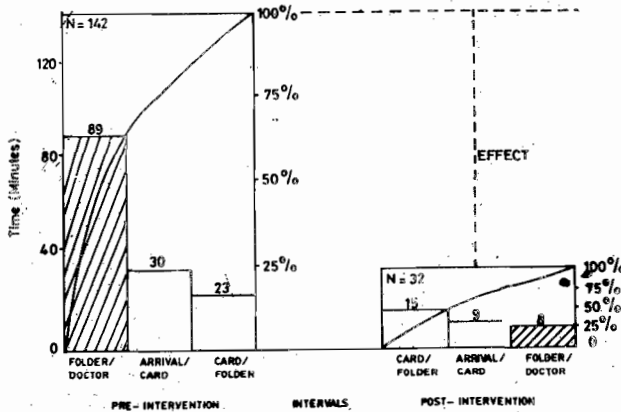


Figure 1: Comparing the pre- and post-intervention mean excess waiting time (minutes) according to intervals.

(Fig. 1). The pre-intervention acute and cold cases seen were 44 and 42 respectively, and the mortality rate for this period was 10.5 percent. The mean number of nurses and doctors covering each shift during the pre-intervention period was two each.

In the post-intervention period, 101 children (55 males and 46 females; M/F = 1.2:1) were followed up. Their mean age was 29.89 ± 38.9 months, mean weight and height were 11.14 ± 8.6 kg and 0.8 ± 0.23 m, respectively. There were no significant differences between the mean ages, weights and heights of the children seen before and after the

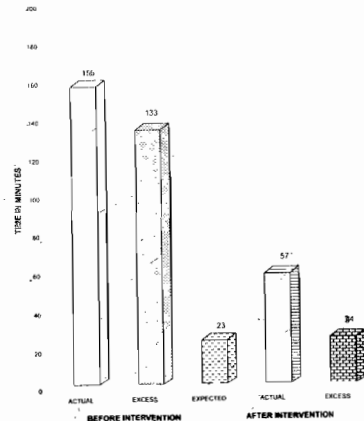


Figure 2: Comparing the mean excess time (minutes) between arrival and actually being seen by the doctor before and after intervention.

each shift, the average number of doctors increased from two to four.

Discussion

In this study, the pre-intervention waiting time of 156 minutes was much longer than the 73.9 minutes and 49 minutes reported by Bamgboye *et al*³ and Liptak *et al*¹⁴ respectively. The long waiting time in our study could be attributed to many factors such as inadequate medical staffing as well as the overwhelming number of routine and cold cases that

came and waited for a long time before being seen by the doctor, since they were not given priority. The contribution to the long waiting period by the cold cases might therefore have given a false impression of poor quality of healthcare provided by the unit. In a similar study¹⁵ in Lagos, the mean waiting time for mothers on routine hospital visit was 162 minutes. Although this waiting time or the 156 minutes obtained in our study probably compared favourably with that expected for conventionally organized child health clinics, it is unacceptably long for an Emergency Paediatric Unit, where immediate and prompt medical intervention should be the norm. It is also desirable to attempt to reduce waiting time in general as this offers a real possibility of reducing serious morbidity and resultant mortality.

The target set in the study to reduce the excess waiting time was achieved. The excess waiting time was significantly reduced from 133 minutes to 34 minutes. Also, the average excess waiting time between retrieval of folder to actually being seen by the doctor was reduced from 89 minutes to eight minutes. The probable reason for such an achievement could be the increase in the doctor strength in EPU, and also the fact that the doctors and nurses were prioritizing cases by examining them as they came to EPU to determine their emergency status. There was also a reduction in the percentage of cold cases seen from 49 percent to 33 percent. Furthermore, there was a general reduction in the average excess waiting time at the various points of healthcare. The significance of this achievement was that the patients who had received such timely medical care were satisfied and happy. This timely care has also helped to salvage the very critically ill, thus reducing the morbidity in EPU. However, although there was no significant difference in the mortality during the two study periods, the timeliness of care was improved. The reason for this is not obvious but may be due to the nature of cases presenting at these periods. There is no doubt that this new system involving an increase in doctor strength, and the practice of prioritizing cases, will improve the quality of healthcare delivery in EPU. Ultimately, this will attract a good image for the paediatric emergency care in the hospital. In order to ensure continued timely healthcare services, periodic evaluation of the healthcare delivery system is desirable.¹⁶

Acknowledgements

We wish to express our profound gratitude to Ms.

Ifeoma Umolu and Dr. Abel Eigege for their useful criticisms.

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