

# RE-HOSPITALISATION OF CHILDREN IN ILESA

GA OYEDEJI

## SUMMARY

**Oyediji GA. Re-hospitalisation Of Children In Ilesa** *Nigerian Journal of Paediatrics* 1991; 18 (3):99-105 Six hundred and sixty-nine children (419 males and 250 females) readmitted to the Wesley Guild Hospital, Ilesa, over a ten year period were reviewed. The children constituted 2.53% of all admissions during the period. Over two thirds of the fathers th known occupations were in social classes IV and V whilst 90% of the children were aged 5 years and below at the time of first hospitalisation which lasted an average period of 7.4 days. Of the total 935 readmissions, 15.4% were affected within a month and 70% within a year of discharge. Whilst the overall mean number of readmissions per patient was 1.4, it was 2.2 for sicklers, 1.9 for asthmatics and 1.7 for epileptics. Most of the readmissions were unplanned or emergencies and at least 18.7% were preventable. The first and repeat admissions were affected more frequently during the rainy than dry season especially for sicklers, asthmatics and malnourished children.

### Introduction

In many developing countries, the provision of public hospital facilities falls significantly below actual needs; hence only seriously ill children tend to be hospitalised. Consequently, patients with non-emergency or chronic conditions who cannot be admitted early enough may deteriorate and develop complications requiring prolonged or repeated hospitalisations, thus imposing further strain on the inadequate bed facilities. The present study was conducted to seek information on the children who were rehospitalised and the reasons for such readmissions. If, as was found in another environment,<sup>1</sup> a tendency to, or causes for rehos-

pitalisation can be elicited, steps can be taken to minimise or prevent the incidences of readmission in such children.

### Materials and Methods

Wesley Guild Hospital (WGH) Ilesa, where the study was undertaken is the only government health institution providing both specialist and general children's care to the Ilesa population of Western Nigeria (estimated about half a million). The hospital receives cases from surrounding towns and villages situated within 40 kilometres radius. Its children's facilities include a large child welfare clinic, consultant outpatient clinics and 65 beds for inpatient care.

The entries made into the index cards which were completed in respect of all admissions to the hospital between January 1977 and December 1986 were examined. A list of all the children who had been admitted on more than one occasion was compiled and their case notes retrieved and analysed.

Obafemi Awolowo University, Ile Ife

Department of Paediatrics and Child Health

Correspondence: GA Oyediji

The occupations of the fathers which were recorded in the case notes were used to place them in social classes I to V according to the scale:

- Class I:** Professionals, Senior Public Servants, Managers, Large Scale Traders, Businessmen and Contractors.
- Class II:** Intermediate grade public servants and Senior School teachers.
- Class III:** Middle income traders, technicians, junior public servants and teachers.
- Class IV:** Drivers, mechanics, auto-electricians and artisans like carpenters, bricklayers, tailors etc.
- Class V:** Petty traders, messengers, labourers and similar grades, subsistence farmers, the unemployed and students.

Details of the episodes of admission of the subjects into health institutions other than WGH were not included in this analysis.

## RESULTS

### *Numbers and Sexes of Patients*

A total of 79,738 index cards completed in respect of admissions for the ten years under study were examined; 26,359 (33.1%) of these dealt with children's admission. Of these, 669 (2.53%) children were rehospitalised at least once during the ten years. These 669 consisted of 419 boys and 250 girls, a male: female ratio of 1.7:1.

### *Occupation and Social Classes of Fathers*

The occupations of the fathers of re-hospitalised children were recorded in the case notes in 592 (88.5%) cases.

Forty-eight (8.2%) were in social class I, 43 (7.3%) in II, 90 (15.2%) in III, 200 (33.8%) in IV and 211 (35.6%) in social class V. Thus, 181 (30.6%) were in social classes I to III and 411 (69.4%) in classes IV and V.

### *Diagnoses and ages at first Admission*

The diagnoses made at the first admissions of the patients are shown in Table I.

**TABLE I:**

Diagnoses at first admissions		
Diagnosis	No. of Children in whom made	% of Total 669 children
Neonatal Jaundice	99	14.8
Bronchopneumonia	93	13.9
Sickle cell anaemia	64	9.6
Protein-energy malnutrition	52	7.8
Prematurity	49	7.3
Gastroenteritis	48	7.2
Measles	45	6.7
Epilepsy	35	5.2
Febrile convulsion	35	5.2
Neonatal sepsis	34	5.1
Severe anaemia	32	4.8
Asthma	29	4.3
Malaria	21	3.1
Congestive heart failure	21	3.1
Others	194	29
<b>TOTAL</b>	<b>851</b>	

There were 851 diagnoses in the 669 patients because of many instances of multiple diagnoses in the same individuals. In only ten (1.5%) of the 669 patients were admissions planned.

Two hundred and fifteen (32.1%) patients were aged 1 month and below, 182 (27.2%) 2-12 months, 111 (16.6%) 13-24 months, 51 (7.6%) 25-36 months, 29 (4.3%) 37-48 months, 20 (3.0%) 49-60 months and the remaining 61 (9.1%) patients were over 60 months at first admission.

### *Length of first admission and time intervals between successive admissions*

The duration of hospitalisation during the first admission ranged from 1 to 70 days (mean 7.4 days).

## Re-Hospitalisation of Children in Ilesa

**TABLE II:**

**Time Intervals between successive Admissions**

Length of time between 2 admissions (months)	No. of admissions	% of 935 admissions
0 - 1	144	15.4
2 - 6	306	32.7
7 - 12	205	21.9
13 - 24	155	16.6
25 - 36	60	6.4
37 - 48	31	3.3
49 - 60	15	1.6
Over 60	19	2.0
<b>TOTAL</b>	<b>935</b>	<b>100</b>

The length of time between successive admissions are shown in Table II. Of 935 readmissions, 144 (15.4%) were affected within one month, 450 (48.1%) within 6 months and 655 (70%) within 12 months of discharge from previous admission. The 144 readmissions effected within one month of discharge consisted of 121 episodes of single, 10 of double and one of triple readmissions within the month.

### *Frequency of Readmissions*

The 669 children were readmitted 935 times giving a mean readmission rate of 1.4 per patient. Four hundred and ninety-nine (74.6%) of the patients were readmitted once whilst 112 (16.7%) were readmitted twice, 39 (5.8%) thrice, 13 (1.9%) four times each, 4 (0.6%) five times each, and the remaining two patients 11 and 12 times each respectively. The highest mean number of readmissions of 2.2 was experienced by children with sickle cell disease followed by the patients with asthma who had a mean number of 1.9 readmissions each and epilepsy, 1.7.

### *Seasons when admitted*

During an eight-year period (1979 to 1986) for which the figures were recorded on a monthly basis, 12,411 (60.5%) of a total 20,509 children hospitalised were admitted during the rainy season (April-October) whilst the remaining 8,098 (39.5%) were admitted in the dry season (November-March). The rainy season clustering of admis-

sions was seen with most conditions but especially in certain chronic or recurrent ones such as sickle cell disease, bronchial asthma, protein-energy malnutrition and to some extent, epilepsy.

The numbers of children admitted during each of the two seasons for the first and re-admissions are shown in Table III whilst the totals for both the first and all the subsequent admissions put together with the mean number of admissions per month for each of the two seasons are shown in Table IV.

### *Reasons for Readmissions*

One hundred and seventy-five (18.7%) of 935 readmissions were for preventable conditions; these were measles (86 cases), protein-energy malnutrition (38), typhoid enteritis (12), tuberculosis (10), accidental poisoning (8) pertussis (6), (7), other accidental injuries (6) and paralytic poliomyelitis (2 cases). Apart from these 175 children another 69 were readmitted for gastroenteritis which could have been prevented in many cases. Four hundred and fifteen (44.4%) of the readmitted 935 children were readmitted with the same diagnoses as at original admission. This was especially so for sickle cell anaemia in which 84.5% of all readmissions were for the same condition, and also for epilepsy, asthma and to some extent protein-energy malnutrition in which 82%, 73.3% and 51.1% respectively, of readmissions were for the same condition. In all the 935 readmissions 14 (1.5%) were scheduled or planned admissions and the rest were unplanned.

### *Reasons for readmissions in Certain Diseases*

Fifty-one (35.9%) of the 141 readmissions in the 64 patients with sickle cell disease were for vasoocclusive crises whilst 63 (44.4%) were for anaemia. Four children were readmitted with osteomyelitis and another 4 with sequestration crisis.

Out of 70 readmissions in the 52 patients with protein-energy malnutrition, 20 (28.6%) were precipitated by attacks of gastroenteritis and 4 by measles. Thirteen (25%) of the 52 children were readmitted within one month of discharge from previous admissions.

The readmissions in 13 (44.8%) of the 29 children with bronchial asthma were preceded by various

GA Oyedeji

lengths of default from follow up clinic appointments. Fourteen (25.5%) of the total 55 re-admission episodes in the asthmatics were precipitated by infections.

TABLE III

First and subsequent admissions with various conditions during the two seasons

SEASONS	Sickle Cell Disease	Epilepsy	Protein Energy Malnutrition	Bronchial	All other conditions	Total
<b>First Admissions</b>						
April to October	49	25	37	21	296	428
November to March	15	10	15	8	193	241
<b>Total</b>	<b>64</b>	<b>35</b>	<b>52</b>	<b>29</b>	<b>489</b>	<b>669</b>
<b>Readmissions</b>						
April to October	94	32	49	41	403	619
November to March	47	26	21	14	208	316
<b>Total</b>	<b>141</b>	<b>58</b>	<b>70</b>	<b>55</b>	<b>611</b>	<b>935</b>

TABLE IV:

Total and monthly mean numbers of admissions and readmissions for the two seasons

Numbers of Admissions and Readmissions for various Conditions

Seasons	Sickle cell Disease	Epilepsy	Protein-Energy Malnutrition	Bronchial	All other conditions	Total
Rainy (April to October)	143	57	86	62	699	1,047
Mean No. of admissions per month	20.4	8.1	12.3	8.9	99.9	149.6
Dry (November to March)	62	36	36	22	401	557
Mean No. of admissions per month	12.4	7.2	7.2	4.4	80.2	111.4

Similarly, 9 (25.7%) of the 35 epileptics were readmitted after various lengths of default from outpatient clinic follow up.

It was not possible to determine from the case notes, how many attacks were precipitated by poor compliance with prescribed drug regimen or by other reasons.

#### Outcome

Mortality among readmissions was 7%. Thirty-three of the 47 deaths were in males and 14 in females. There were seven discharges against medical advice.

#### Discussion

Hospitalisation results in stress for children<sup>2</sup> and expenditure of usually unbudgeted time and money for their parents. Besides, repeated rehospitalisation has been shown to be associated with later life

problem like psychological, behaviour and emotional disturbances<sup>3</sup>. In Nigeria<sup>4</sup> as in Britain<sup>5</sup> the majority of children who are hospitalised in public health institutions belong to the lower social class parents who can least afford the cost. This fact coupled with the lack of adequate numbers of public hospital beds for children, demands that children are hospitalised only when necessary. Studies from Britain,<sup>5</sup> have shown that the reasons for the hospitalisation of the children of the lower social class parents are to a large extent, preventable. In the present study, 18.7% of all readmissions compared with 17.9% of first admissions were for preventable conditions. In addition, many of the attacks of gastroenteritis seen in 7.2% and 7.4% of admissions and readmissions respectively in this study, could have been prevented by hygienic living and feeding and their severities reduced by early use of oral rehydration solutions. These rehospitalisations for preventable diseases represent a partial failure of our unit's child health promotion strategy. During previous admissions

and on discharge to our ambulatory services, these children and their parents would have been exposed to the various components of our disease prevention and health promotion programme. Yet, 18.7% of them were still readmitted with preventable diseases. The reasons for such failure should be investigated and ways to improve suggested.

The prominence of neonatal jaundice and bronchopneumonia among the first admission diagnoses is more a reflection of the high frequencies of these conditions as causes of admissions into our units<sup>4</sup> rather than a tendency for children with such conditions to be rehospitalised. Patients admitted on account of gastroenteritis<sup>6</sup> and prematurity<sup>7-10</sup> have been shown to be at risk of rehospitalisation. In both cases, factors associated with low socio-economic status were found to increase the chances of rehospitalisation.

Only 1.5% each of the first and subsequent admissions in this study were planned. Earthrowl and Stacey<sup>11</sup> have shown that children of lower social class parents have more emergency or unplanned admissions than those of the higher social class parents. More studies need to be conducted in our environment to define the effects of social factors on various diseases and on the patterns of use of medical services.

Possible explanations for the clustering of admissions and readmissions around the rainy season include the heavier breeding of mosquitoes and by implication, higher incidence of mosquito associated diseases, the occurrence of epidemics of certain bacterial and viral infections due to the effects of weather changes on the activity of the organisms, and the contamination of drinking water supplies by the rains washing dirt and sewage into shallow wells and streams and hence, an increase in water borne diseases. However, the influence of seasonal changes on individual diseases needs to be more carefully studied. For example in the present study, the preponderance of presentation in the rainy season was particularly pronounced in sickle cell disease, a disease in which crises tend to occur more frequently during the rainy and cold seasons. Community based health programmes should be aimed at minimising the incidences of gastroenteritis, measles, malnutrition and of default from clinic attendances. Also, the application of behavioural intervention has been found to significantly

reduce the numbers and lengths of rehospitalisations in asthmatic children.<sup>12</sup>

Anyone attempting to reduce hospital admissions in children must take a careful note of the reasons for and the factors involved in them. For example, Abasiokong<sup>13</sup> has reported that familism (the subordination of individual goals and decisions to those of the family) significantly influences decisions to hospitalise patients in Nigeria. Therefore, any health education programme that does not include immediate and extended members of the family is unlikely to succeed.

A number of suggestions emerge from this study. First of all, activities to prevent disease and promote health must more than ever before, be given prominence in this and similar countries. Secondly, these activities should be continually appraised and reviewed with a view to promoting only the effective ones. Thirdly, surveillance through health visitation should be encouraged as an important means of reducing the incidence of readmissions. For this reason, the presently inadequate numbers of community health and social workers need to be increased. Indeed, it is important to ensure adequate staffing, equipment and delivery of effective services at every level of the health care system. At the grassroots level, appropriate clan heads and community leaders can be mobilised to assist in the surveillance of children at risk of rehospitalisation in their own areas. Such include children with chronic or recurrent conditions, social problem and previous histories of hospitalisation or default from specialist or welfare clinic attendance.

#### Acknowledgement

Thanks are due to the members of the Medical Records Department, Wesley Guild Hospital, Ilesa, for their assistance and to Mr G O Owojori for secretarial assistance.

#### References

1. Wadsworth MEJ, Morris S. Assessing chances of hospital admission in pre school children: critical evaluation. *Arch Dis Childh* 1978; **53**:159-63.

*Re-Hospitalisation of Children in Ilesha*

2. Barker P. Psychological effects on children of admission to hospital. *Hospital Update* 1975; **1**:27-30
3. Quinton D, Rutter M. Early hospital admissions and later disturbances of behaviour; and attempted replication of Douglas' findings. *Develop Med Child Neurol* 1976; **18**: 447-59
4. Oyedeji GA. Socio-economic and cultural background of hospitalised children in Ilesha. *Nig J of Paediatr* 1985 **12**:111-7.
5. Blaxter M. Health behaviour, preventive medicine and use of services. In: Blaxter Med. *The Health of the Children*. London: Heinemann Educational Books 1981; 152-82.
6. Tripp JH, Wilmers MJ, Wharton BA. Gastroenteritis: A continuing problem of child health in Britain. *Lancet* 1977; **2**:233-6
7. Bank M, Fanaroff AA, Merkatz IR. The low birth weight infant - Evolution of a changing outlook. *N Eng J Med* 1979; **301**:1162-5
8. Hack M, De Monterice D, Merkatz IR, Jones P, Fanaroff AA. Rehospitalisation of the very low birth weight infant: A continuum of perinatal and environmental morbidity. *Amer J /dis Child* 1981; **135**:263-6
9. Skeoch C, Rosenberg K, Turner T, Skeoch H, Mellwaine G. Very low birth weight survivors: illness and readmission to hospital in the first 15 months of life. *Med J* 1987 **295**: 579-80.
10. McCormick MC, Shapiro S, Starfield BH. Rehospitalisation in the first year of life for high risk survivors. *Pediatrics* 1980; **66**:991-9.
11. Earthrowl B, Stacey M. Social class and children in hospital. *Soc Sci Med* 1977; **11**: 83-8.
12. Hochstadt NJ, Shepard J, Lulla SH. Reducing hospitalisation of children with asthma. *J Pediatr* 1980; **97**:1012-5.
13. Abasiokong E M. Familism and hospital admission in rural Nigeria - a case study. *Soc Sci Med* 1981; **15**<sup>B</sup>:45-50.

Accepted May 15, 1991