

Clinical assessment and treatment in paediatric wards in the north-east of the United Republic of Tanzania

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Objective We assessed paediatric care in the 13 public hospitals in the north-east of the United Republic of Tanzania to determine if diagnoses and treatments were consistent with current guidelines for care.

Methods Data were collected over a five-day period in each site where paediatric outpatient consultations were observed, and a record of care was extracted from the case notes of children on the paediatric ward. Additional data were collected from inspection of ward supplies and hospital reports.

Findings Of 1181 outpatient consultations, basic clinical signs were often not checked; e.g. of 895 children with a history of fever, temperature was measured in 57%, and of 657 of children with cough or dyspnoea only 57 (9%) were examined for respiratory rate.

Among 509 inpatients weight was recorded in the case notes in 250 (49%), respiratory rate in 54 (11%) and mental state in 47 (9%). Of 206 malaria diagnoses, 123 (60%) were with a negative or absent slide result, and of these 44 (36%) were treated with quinine only. Malnutrition was diagnosed in 1% of children admitted while recalculation of nutritional Z-scores suggested that between 5% and 10% had severe acute malnutrition; appropriate feeds were not present in any of the hospitals. A diagnosis of HIV-AIDS was made in only two cases while approximately 5% children admitted were expected to be infected with HIV in this area.

Conclusion Clinical assessment of children admitted to paediatric wards is disturbingly poor and associated with missed diagnoses and inappropriate treatments. Improved assessment and records are essential to initiate change, but achieving this will be a challenging task.

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Une traduction en français de ce résumé figure à la fin de l'article. Al final del artículo se facilita una traducción al español. الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

Introduction

Hospital care for severely ill children can make an important contribution to child survival, especially in Africa where typically one in six children dies before their fifth birthday from treatable conditions such as malaria, pneumonia, gastroenteritis and malnutrition.^{1,2} Good-quality inpatient care in a rural district in Kenya has been estimated to have averted up to 60% of childhood deaths in the surrounding population,³ although this potential is probably not realized in many areas of Africa due to lack of trained staff and other resources, few and unreliable diagnostic tests and poor organization of care.^{4–6}

The limited diagnostic and treatment options available in most district hospitals have led in recent years to the development of syndromic-based guide-

lines for care. In the United Republic of Tanzania, the Referral Care Manual (RCM) based on Integrated Management of Childhood Illness (IMCI) was adopted as policy in 2005.⁷ Although not widely implemented, this defines a framework within which current standards of care can be evaluated and improved.

In this study, we aimed to determine if clinical assessments of children admitted to hospital were sufficient to make effective use of the RCM and if treatment of common conditions was consistent with the RCM. The study was conducted in 13 hospitals in the north-east of the United Republic of Tanzania as part of a baseline assessment before implementing a three-year capacity-building programme to improve paediatric inpatient care in the area.

Methods

The study area

The north-east of the United Republic of Tanzania is characterized by the Eastern Arc mountains stretching from the coastal plain to Mount Kilimanjaro. Populations living at an altitude of up to 2000 m create a wide natural variation in malaria transmission intensity.⁸ There are two administrative regions with a combined population of 3.4 million,⁹ 90% of whom live in rural areas where subsistence agriculture is supplemented by plantations of sisal, bananas and coffee.

Childhood mortality in 2002 was estimated at 67 out of 1000 and 162 out of 1000 in the Kilimanjaro and Tanga regions respectively;⁹ a difference that follows known differences in malaria

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transmission intensity and socioeconomic status in the regions. In the year before the start of the study, an IMCI “focal person” had been trained in each hospital in the regions, but IMCI was not systematically practised at any site.

Background and retrospective data

Thirteen hospitals were assessed; two were regional, seven were government district and four were mission “district-designated” hospitals. Hospital ecologies varied; five were highland district hospitals (> 1200 m of altitude), two were urban regional hospitals and six were lowland district hospitals. Clinical paediatric care was provided by clinical officers (with 2–3 years of training) and assistant medical officers (with an additional 2 years of training), except in three hospitals that had a fully-qualified medical doctor.

Data on all paediatric admissions and deaths during 2004 were extracted from the paediatric ward register in each site. The number of calendar days between admission and discharge or death was calculated in approximately 50 consecutive fatal and non-fatal admissions in each hospital to estimate the time from admission to death or discharge respectively.

The ward and hospital pharmacy were inspected for the presence of essential drugs, infusions and oxygen, as absence of these might explain a failure to seek indications for their use.

Outpatient and inpatient data

The basic methods of the assessment used established WHO evaluation tools¹⁰ adapted for use in east Africa.⁵ Outpatient consultations were silently observed by a medically trained research assistant who recorded whether IMCI diagnostic criteria were obtained either by examination or enquiry of the caretaker.¹¹ Hospital case notes of children who were present on the paediatric ward at the start of the five-day assessment or who were admitted during the assessment were inspected by medically trained research staff for the record of admission assessment, progress on the ward and treatment given. Data from maternity wards where neonates were cared for were not collected.

Sample size and data management

Data were double-entered into Microsoft Access and analysed using Stata 9.

The data are descriptive, but for illustrative purposes we estimated that within any single site data from 50 admissions would allow an estimate of any proportion of 25% ± 10% with 80% power and 90% confidence. Nutritional data were analysed using United States of America Centers for Disease Control reference data for height, weight and age.

Ethical approval and consent

Staff members were sensitized to the assessment through meetings at each site. Staff and caretakers of children whose consultations were observed gave verbal consent to participate. If qualified research staff observed care that was likely to directly jeopardize the survival of a child, they made a tactful intervention by informing the most senior staff member present of their concerns and offering assistance. Ethical approval for this study was obtained from the Institutional Review Boards of the London School of Hygiene and Tropical Medicine, the United Kingdom, and the National Institute for Medical Research in the United Republic of Tanzania.

Results

Retrospective data and hospital supplies

In 2004, there were a total of 27 703 admissions to the 13 hospitals (range per hospital 380–4447) with 826 (3%) deaths (range: 1–6%). Malaria accounted for 55% of admissions and was the most common single cause of admission in all but one site, followed by pneumonia (22% of admissions).

Malnutrition, meningitis and HIV-related disease were associated with the highest case fatality rates although these conditions were reported in only 0.4%, 0.2% and 0.1% of admissions respectively (Table 1). Almost 40% of admissions were infants and only 8% were over five years of age. The median duration of non-fatal admission was 3 days while that of fatal admissions was on the day of admission.

Inspection of wards and hospital pharmacies revealed that all sites had at least one oxygen cylinder or oxygen concentrator; these were present on the ward in all but one of the paediatric wards). Quinine, amoxicillin, penicillin, chloramphenicol and gentamycin were present either on the ward or in the hospital pharmacy in all sites. None of the hospitals had specialist feeds for severe acute malnutrition (ReSoMal, F-75, F-100 or equivalent).

Outpatient care

In the 13 hospitals, 1181 paediatric outpatient consultations were observed (interquartile range: 37–120). The median (mean) age of children seen was 1.5 (1.9) years, the median reported duration of illness was 3 days and 7 (0.6%) of the children had been referred from another health facility. In 95% of consultations, the consulting health worker was a clinical officer and in 5% an assistant medical officer. No consultations were conducted by a qualified medical doctor.

Clinical features that were sought during consultations are shown in Table 2. In 489 (50%) consultations an investigation was requested; 51% of

Table 1. Paediatric admissions and deaths during 2004 at 13 Tanzanian study hospitals

Diagnosis ^a	Admissions ^b	Deaths	CFR (%)
Malaria	15 299 (55)	367	2.4
Pneumonia	6 070 (22)	138	2.3
Anaemia	1 774 (6)	121	6.8
Gastroenteritis	1 248 (5)	40	3.2
Neonatal sepsis	303 (1)	21	6.9
Malnutrition	121 (0.4)	24	19.8
Meningitis	60 (0.2)	18	30.0
HIV	28 (0.1)	8	28.6
Other	2 800 (10)	89	3.2
Total	27 703 (100)	826	3.0

CFR, case fatality rate.

^a First-recorded final diagnosis in ward admission registers.

^b Percentage of total indicated in parentheses.

these were for a malaria slide only, 32% for a malaria slide and haemoglobin measurement, and 17% for other investigations. One hundred and twenty five (11%) children were admitted and an additional 51 (4%) were asked to re-attend for follow-up. An aggregated score was derived from the presence (1) or absence (0) of an enquiry or examination for the following features: duration of illness, treatment in this illness, ability to feed asked, temperature felt or measured, weight chart checked, chest exposed, respiratory rate counted, convulsion in this illness asked and examined for pallor. Overall, the median (mean) score for these 9 items was 3 (3.0), increasing to 4 (4.4) if the child was admitted. The assessment score increased with increasing duration of consultation (mean scores of 2.4, 2.9, 3.4, 3.7 and 4.6 for consultations lasting < 2 minutes, 2–3.9 minutes, 4–5.9 minutes, 6–7.9 minutes and > 8 minutes respectively) and consultations that resulted in a child being admitted lasted longer (median: 5 minutes) than other consultations (median: 3 minutes).

Inpatient data

Data from 509 paediatric admissions were extracted from case notes of children who were either on the ward at the start of the assessment or who were admitted during the assessment. The median (mean) age was 1.6 (2.5) years; 9 (1.8%) children died, 7 (1.4%) were referred to another hospital, 333 (65.4%) were discharged and 133 (31.4%) were alive on the ward at the end of the study.

A record of clinical features in the case notes irrespective of the result for all admissions and for selected diagnoses is shown in Table 3. The age, duration of illness and measurement of temperature were present in a high proportion of admissions, but weight, pallor or the presence of a cough were recorded in only about half of admissions. The ability to drink or the level of consciousness was recorded in less than 10% of admissions.

Of the 509 children in the study, 310 (59%) had no entry in the case notes following admission. There were 669 entries in the 208 case notes that had any entry after admission (excluding insertion of laboratory or X-ray results); 25% of these related to continuation of treatment, 17% to a remark on general progress, 10% elaborated

Table 2. Clinical features that were sought (by enquiry or examination) in outpatient consultations directly observed over 5 days at 13 Tanzanian study hospitals

General signs and symptoms, all cases (n = 959) ^a	Number checked ^b	Interquartile range (%)
Ability to feed asked	607 (63)	49–82
Pre-treatment asked	534 (56)	45–72
Temperature felt or measured	533 (55)	24–75
Vomiting asked	514 (54)	41–71
Eyes examined	130 (14)	7–26
Pallor checked	124 (13)	5–13
Convulsion or lethargy asked	96 (10)	1–8
Fever in last 7 days asked	39 (4)	0–3
Immunization checked	41 (4)	1–3
Wasting or weight chart checked	31 (3)	0–7
Oedema checked	9 (1)	0–1
If fever was stated to be a problem (n = 805)		
Temperature felt or measured	456 (57)	27–79
Convulsion or lethargy asked	87 (11)	1–15
Ears checked	53 (7)	1–12
Fever in last 7 days asked	40 (5)	0–4
Mastoid checked	25 (3)	0–9
Stiff neck checked	7 (1)	0–5
If cough or difficult breathing reported as a problem (n = 657)		
Chest exposed ^c	183 (28)	23–42
Stethoscope used	115 (18)	11–29
Respiratory rate counted ^d	57 (9)	0–2
Cyanosis checked	22 (3)	0–7
If diarrhoea reported as a problem (n = 150)		
Blood in stool asked	57 (39)	22–55
Skin pinch checked	21 (14)	3–5
Diarrhoea more than 14 days asked	6 (4)	0–4
Thirst checked ^e	7 (5)	0–18

^a Cases with incomplete data omitted to allow a common denominator.

^b Percentage of total indicated in parentheses.

^c Chest exposed from below to nipple line and assumed to be evidence that chest in-drawing was sought.

^d Respiratory rate counted for any time period.

^e Thirst asked or fluids offered.

on the medical history, 10% related to temperature or fever, 8% related to new treatment and 24% to information categories other than these. Only 4% of entries recorded findings of examination for the level of consciousness or hydration, and 3% on respiratory function.

Specific diagnoses

Malaria was the single most common diagnosis; the assessment of which depends on the level of consciousness, presence of respiratory distress (the most fatal manifestation of severe malaria) and the presence of severe anaemia. Yet only pallor or a malaria slide result were recorded in more than half the cases.¹²

Of 206 children with an admission diagnosis of malaria and a slide request recorded, 149 (72%) had the result in the case notes. Treatment with combinations of antimalarial or antibiotic drugs by blood slide results is shown in Fig. 1; 66 (44%) children had a record of a negative malaria slide, of whom 23 (35%) were treated with an antimalarial drug alone.

Of 193 children with a diagnosis of pneumonia, only 29 (15%) had a record of respiratory rate, 11 (38%) of which were normal for the recorded age. Only one patient had a complete record of the respiratory rate, ability to drink, chest in-drawing and cyanosis (RCM criteria to classify pneumonia).

Seven (1.4%) children were diagnosed with meningitis (admission or discharge), 6 with a record of intention to lumbar puncture, and 4 with a result written in the case notes. One additional case had a lumbar puncture but was not diagnosed with meningitis.

There were only 2 (0.4%) children with a diagnosis (admission or discharge) that included HIV, AIDS or a variety of synonyms that are used in case-notes (e.g. "elisa-test positive", "immunosuppression").

An initial or final diagnosis of malnutrition was made for 5 (1%) children; 1 had an abnormal weight for age Z-score (WAZ) on admission, 1 was within normal limits and for 3 it was not possible to calculate the WAZ due to missing data on age and/or weight.

To assess whether diagnoses of malnutrition might have been missed, WAZ scores were calculated for the 209 children with a record of age and weight (with the addition of 6 months if age was only given in years). Seventeen of these had WAZ of < -5 and were excluded due to likely error. Of the remaining 192, 29 (15%) had a score between -2 and -3 , and 23 (12%) between -3 and -5 , suggesting moderate and severe malnutrition respectively. A record of height or length was not found in any of the case notes, so it was not possible to distinguish between stunting and acute malnutrition nor was not possible to estimate the contribution of dehydration (although 11 children with abnormal Z-scores had an admission diagnosis of gastroenteritis).

Discussion

Delivery of hospital care is a complex process involving management and supplies, staff availability and skills mix, laboratory services and so on. Some of these have been described elsewhere⁴⁻⁶ and in this analysis we have focused on what we consider to be a fundamental issue: that clinical assessments were often very superficial both in the outpatient department (where children are generally admitted and treatment is initiated) and on subsequent days of admission, where few and generally uninformative entries were added to the case notes. With the exception of specialist feeds for malnutrition, our findings could not be explained by the absence of the few basic treatments that are available in paediatric wards in

Table 3. Documentation in the case notes (irrespective of result) of clinical features required to make inpatient assessments according to WHO guidelines for care

All admissions (<i>n</i> = 509)	Number with any record ^a	Interquartile range (%)
Duration of illness	462 (91)	89–98
Age in years or months	448 (88)	91–100
Fever history	436 (86)	76–90
Temperature	413 (81)	68–92
Pallor	291 (58)	31–81
Cough or difficult breathing	258 (51)	51–70
History of vomiting	253 (50)	44–54
Weight recorded	250 (49)	12–51
Diarrhoea	173 (34)	35–46
Hydration status ^b	90 (18)	13–30
Convulsion in this illness	63 (12)	5–17
Respiratory rate	54 (11)	1–15
Mental state ^c	47 (9)	0–11
Able to drink	35 (7)	0–13
Oedema	29 (6)	3–11
Neck stiffness	26 (5)	2–1
Heart rate	19 (4)	0–2
Cyanosis	15 (3)	0–5
Any diagnosis of malaria^d (<i>n</i> = 299)		
Malaria slide result	175 (58)	21–88
Pallor	202 (68)	54–93
Difficulty in breathing	45 (15)	4–37
Mental state	27 (9)	0–17
Haemoglobin result	166 (56)	17–67
Any diagnosis of pneumonia (<i>n</i> = 191)		
Able to drink	14 (7)	0–11
Chest in-drawing	62 (32)	16–45
Respiratory rate	29 (15)	5–25
Cyanosis	11 (6)	0–11
Any diagnosis of gastroenteritis (<i>n</i> = 103)		
Fever history or temperature recorded	96 (93)	9–100
Hydration status ^a	56 (54)	26–85
Mental state	8 (8)	0–11

^a Percentage of total indicated in parentheses.

^b Any statement on the hydration status or presence/absence of sunken eyes or delayed skin pinch.

^c Any note on alertness, lethargy, Blantyre or alert-verbal response-pain response-unconscious (AVPU) scores.

^d Diagnoses include any admission or discharge diagnosis; cases may appear in multiple categories.

Africa (i.e. antimalarials, antibiotics, oxygen, fluids and blood).

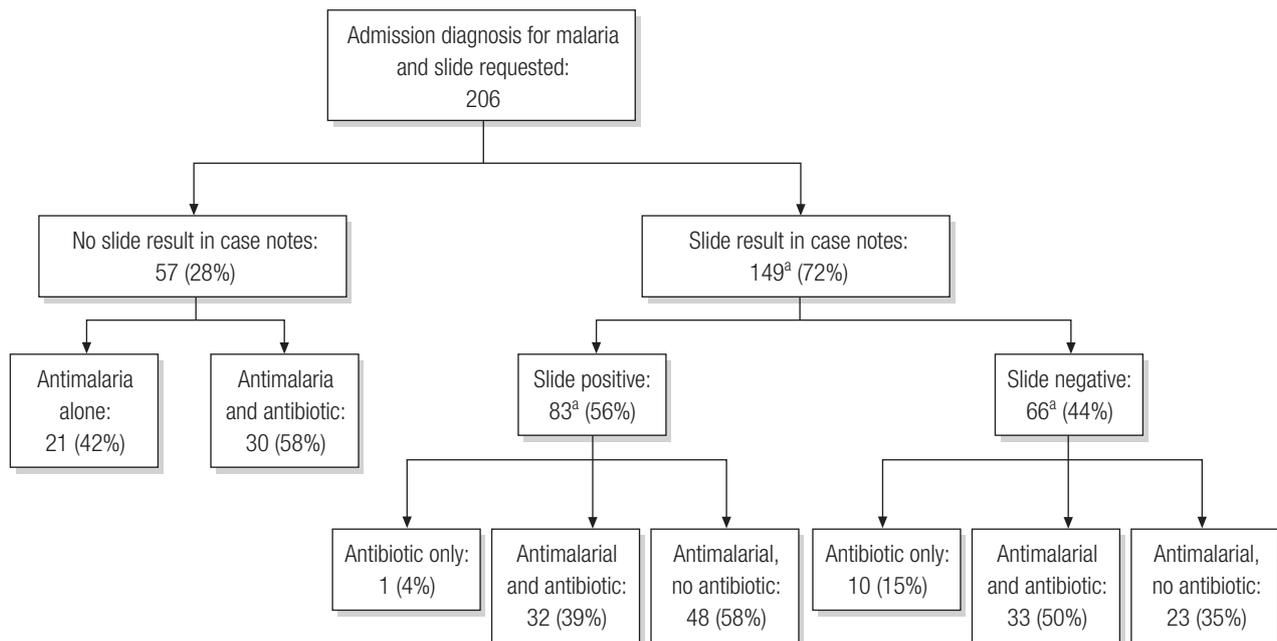
Specific diagnoses

Although a record of care is not the same as the care that is delivered (and there is a tendency to record only abnormal findings), where information was available it revealed problems with paediatric case management that are strikingly consistent with other studies.^{5,6,13}

Approximately one-third of slide-negative children diagnosed as having malaria were treated with an antimalarial only, while we have previously

documented that malaria tends to be overdiagnosed, slide-negative children with severe febrile illness suggestive of malaria have higher mortality than slide-positives¹³ and many of these children are likely to have blood-borne bacterial infections.¹⁴ In fact, there is evidence that even with a positive slide result a significant proportion of children with severe malaria also have potentially life-threatening bacteraemia.¹⁵ The bias towards and over-confidence in a single diagnosis of malaria in these settings is likely to put children at risk, and this bias merits more specific attention in current guidelines.

Fig. 1. Treatments with admission diagnosis of malaria by slide result



^a Numbers restricted to admission diagnosis, therefore different from Table 3.

Respiratory rate, chest-in-drawing, presence of cyanosis and ability to drink are essential criteria for diagnosing pneumonia and assessing its severity,⁷ but over half of the children with an admission diagnosis of pneumonia did not have one of these factors documented in the case notes and only one child had a record of all four factors. Reduced oxygen saturation in children with pneumonia is associated with a significant increase in mortality, although the difficulties in clinically detecting cyanosis may provide some justification for its being rarely recorded.¹⁶

Other studies in east Africa suggest that approximately 2% of paediatric admissions and up to 10% of deaths are due to meningitis, often presenting with atypical features. Careful application of guidelines for lumbar punctures is likely to result in approximately one in five paediatric admissions needing a lumbar puncture,^{15,17,18} but we found that it was very rarely undertaken. This is likely to result in significant numbers of children with acute meningitis being treated inappropriately, typically for cerebral malaria.

HIV testing in children is a sensitive issue, not least because a positive test almost inevitably means the mother is infected. However, now that

antiretroviral treatment that is available in many African hospitals (and in at least three of our study hospitals) the issue needs to be tackled. A study from Malawi (where HIV prevalence is approximately 16%, compared to 8% in the United Republic of Tanzania)¹⁹ found that almost 20% of paediatric admissions were HIV-positive and the diagnosis was often difficult to predict clinically.²⁰ In the assessment of one of the hospitals we subsequently found that 4% of febrile paediatric admissions with a history of fever were antibody-test positive for HIV, rising to 15% if the malaria slide was negative with criteria of pneumonia or malnutrition (Nadjm B et al., unpublished). Malnutrition has been implicated as a contributing cause in up to half of all childhood deaths in resource-poor countries,² and a hospital series in Kenya (a country with similar child mortality to the United Republic of Tanzania)²¹ found that almost 10% of paediatric admissions (and 38% of deaths) had severe acute malnutrition, compared to less than 1% diagnosed in our study.¹⁵ Specialist feeds and modern guidelines were absent in all of our study hospitals, and subsequent enquiry revealed that these were not available nationally, a situation that is now being urgently redressed by the Ministry of Health.

Inpatient mortality

Paediatric inpatient mortality in our study hospitals was approximately half that reported from Kenyan District Hospitals by English et al., and probably lower than in African hospitals generally. The reasons are not clear but at least two factors are likely to be important. First, neonates (with relatively high mortality) are managed on the maternity ward and are not counted as admissions or deaths, neither in our study nor in routine hospital statistics, a problem that also applies to Kenyan routine statistics. Second, in the United Republic of Tanzania paediatric inpatient care is generally free, while in Kenya and many other African countries there are significant user fees that are likely to restrict admission to more severely ill children. Consistent with this, a study of admissions with WHO criteria for severe malaria, in one of the hospitals in our study, found case fatality to be comparable to that found in Africa generally.²² Variations in inpatient mortality raise several questions regarding quality of care, access and appropriate criteria for admission, about which relatively little is known. Inadequate outpatient assessments inevitably lead to both a failure to recognize the need for admission and unnecessary

admission that is likely to compromise the care of severely ill children on the ward.

Improving quality of care

Improving hospital care is a complex and multidimensional task.²³ Tanzanian Ministry of Health policy²⁴ emphasizes the importance of multidisciplinary teams undertaking regular clinical audit, but establishing a meaningful audit cycle is almost impossible without essential clinical information. The RCM and the recently introduced Pocket Book lend themselves well to the use of a standard admission form to help fill this relative vacuum of useful clinical information, and following this study we developed and introduced such a form. However, it has been estimated that an IMCI assessment, even at the first level of care, takes approximately 8 minutes per child,²⁵ more than twice

as long as the median consultation time that we observed. Little is known about staff productivity in these settings; while it seems likely that in busy hospitals the availability of staff may limit what can be achieved, in many and perhaps most hospitals improved time-management and working practices may be the key.

There is now consistent evidence of disturbingly low standards of paediatric inpatient care in Africa, a situation that is unacceptable in an era of international focus on child survival. Our findings suggest that seeking and recording essential clinical features in sick children needs to be the focus for both improved individual case management and for effective clinical audit to raise standards generally. This will be a complex and challenging task, but is essential if inpatient paediatric care is to realize its potential to reduce childhood mortality in Africa. ■

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Résumé

Evaluation clinique et traitement dans les hôpitaux pédiatriques du Nord-est de la République-Unie de Tanzanie

Objectif Nous avons évalué les soins pédiatriques dispensés dans 13 hôpitaux publics du Nord-est de la République-Unie de Tanzanie afin de vérifier la conformité du diagnostic et du traitement avec les directives actuelles en matière de soins.

Méthodes Nous avons recueilli des données sur une période de 5 jours dans chaque site où l'on avait recensé des consultations pédiatriques externes et nous avons extrait des dossiers des enfants dans les hôpitaux un relevé des soins. Nous avons recueilli d'autres données en examinant les rapports hospitaliers et les stocks de fournitures dans les salles.

Résultats Sur les 1181 consultations externes recensées, il était fréquent que des signes cliniques de base n'aient pas été contrôlés : par exemple, sur 895 enfants avec des antécédents de fièvre, la température n'avait été mesurée que dans 57 % des cas et sur 657 enfants présentant une toux ou une dyspnée, on avait mesuré la fréquence respiratoire que chez 57 (9 %) seulement d'entre eux.

Sur 509 patients hospitalisés, le poids a été enregistré dans le dossier dans 250 cas (49 %), la fréquence respiratoire

dans 54 cas (11 %) et l'état mental dans 47 cas (9 %). Sur 206 diagnostics de paludisme, 123 (60 %) avaient été établis en présence d'un résultat négatif de l'examen sur lame ou en l'absence d'un tel résultat et 44 (36 %) des cas étaient traités par la quinine uniquement. Une malnutrition a été diagnostiquée chez 1 % des enfants hospitalisés, alors qu'un nouveau calcul des z-scores évaluant l'état nutritionnel laissait prévoir une malnutrition aiguë sévère chez 5 à 10 % de ces enfants. Aucun des hôpitaux ne disposait d'aliments appropriés pour de tels cas. Un dépistage du VIH/sida n'avait été pratiqué que chez 2 patients, alors qu'on peut s'attendre à ce qu'environ 5 % des enfants hospitalisés soient infectés par le VIH dans cette zone.

Conclusion La médiocrité de l'évaluation clinique des enfants admis dans les hôpitaux pédiatriques est choquante et cette médiocrité s'accompagne d'erreurs de diagnostic et de traitement. Une amélioration de cette évaluation et de la tenue des dossiers est essentielle pour commencer à faire changer les choses, mais y parvenir sera très difficile.

Resumen

Examen y tratamiento clínicos en las salas de pediatría en el noreste de la República Unida de Tanzania

Objetivo Evaluar la atención pediátrica dispensada en los 13 hospitales públicos del noreste de la República Unida de Tanzania para determinar si los diagnósticos y tratamientos se ajustaban a las directrices de atención en vigor.

Métodos Durante un periodo de cinco días se reunieron datos en cada uno de los sitios donde se observaron las consultas de pediatría ambulatoria, y se elaboró un registro de la atención dispensada a partir de las notas de seguimiento de los niños atendidos en la sala de pediatría. Se obtuvieron también otros

datos mediante la inspección de los suministros de sala y los informes hospitalarios.

Resultados En las 1181 consultas de pacientes ambulatorios consideradas, con frecuencia se ignoraron durante la exploración signos clínicos básicos; por ejemplo, entre 895 niños con antecedentes de fiebre, sólo se midió la temperatura en un 57% de los casos, y entre 657 niños con tos o disnea, sólo se examinó a 57 (9%) para determinar la frecuencia respiratoria.

De 509 niños hospitalizados, se registró el peso en las

notas de seguimiento de 250 (49%), la frecuencia respiratoria en 54 (11%), y el estado mental en 47 (9%). De 206 diagnósticos de malaria, 123 (60%) se hicieron con frotis negativo o sin frotis, y 44 (36%) de esos casos fueron tratados sólo con quinina. Se diagnosticó malnutrición en un 1% de los niños ingresados, mientras que recalculando los valores zeta nutricionales se pudo deducir que un 5%-10% de ellos habían sufrido malnutrición aguda grave; ninguno de los hospitales disponía de los alimentos apropiados. Sólo se diagnosticó VIH/SIDA en dos niños, cuando lo

previsible en la zona era que hubiese aproximadamente un 5% de casos entre los niños ingresados.

Conclusión El examen clínico de los niños ingresados en las salas de pediatría es preocupantemente deficiente y conlleva diagnósticos fallidos y tratamientos inadecuados. La introducción de mejoras en la exploración y los registros es una condición esencial para propiciar los cambios necesarios, pero ello significa afrontar una ardua tarea.

ملخص

التقييم السريري والمعالجة في أجنحة الأطفال في شمال شرق جمهورية تنزانيا المتحدة

ضمن الملاحظات المدونة عن الحالة لنحو 250 مريضاً (49%)، وسرعة التنفس لدى 54 مريضاً (11%)، والحالة النفسية لدى 47 مريضاً (9%). وبالنسبة لتشخيص 206 من حالات الملاريا، وجد أن 123 حالة (أي نحو 60%) كانت نتائج الشريحة سلبية أو غير موجودة، وتم معالجة 44 (36%) من هذه الحالات باستخدام الكينين فقط. وشخص سوء التغذية لدى 1% من الأطفال الذين أدخلوا المستشفى عندما كانت إعادة حساب الأحرار التغذوية Z تشير إلى إصابة ما يتراوح بين 5% و10% بسوء التغذية الحاد الوخيم؛ ولم تتوافر التغذية الملائمة في أي من هذه المستشفيات. كما شخّصت الإصابة بمرض الإيدز والعدوى بفيروسه في حالتين فقط بالرغم من توقع إصابة نحو 5% من الأطفال الذين أدخلوا المستشفى في هذه المنطقة بفيروس الإيدز. **الاستنتاج:** إن التقييم السريري للأطفال الذين يتم إدخالهم أجنحة الأطفال سيئ إلى درجة تبعث القلق، ناهيك عن ما يصاحبه من خطأ التشخيص والمعالجة غير الملائمة، مما يستلزم الارتقاء بالتقييم وتحسين السجلات لإحداث تغيير. وإن كان تحقيق ذلك يمثل مهمة صعبة تكتنفها التحديات.

الهدف: لقد قمنا بتقييم الرعاية المقدّمة للأطفال في 13 مستشفى من مستشفيات القطاع العام في شمال شرق تنزانيا المتحدة بُغية تحديد فيما إذا كانت تدابير التشخيص والمعالجة تتماشى مع الدلائل الإرشادية الحالية للرعاية.

الطريقة: تم تجميع المعطيات في فترة تربو على خمسة أيام من كل موقع من المواقع التي تم فيها ملاحظة كيفية تقديم استشارات طب الأطفال للمرضى الخارجيين، واستُخلص سجل الرعاية من واقع الملاحظات حول حالات الأطفال في جناح الأطفال، كما تم تجميع معطيات إضافية من خلال فحص تقارير المستشفى، والإمدادات الموجودة بالأجنحة.

الموجودات: من بين 1181 استشارة للمرضى الخارجيين، لم يتم في غالب الأحيان التحقق من العلامات السريرية الأساسية. فعلى سبيل المثال من بين 895 طفلاً سبق إصابتهم بالحمى، تم قياس درجة الحرارة لنحو 57% فقط من الحالات، ومن بين 657 طفلاً لديهم سوابق سعال أو ضيق تنفس، تم فحص سرعة التنفس لنحو 57 طفلاً فقط، أي ما يمثل نحو 9%. أما في ما يتعلق بنحو 509 مرضى داخليين بالمستشفى، فسُجّل الوزن

References

- Black RE, Morris SS, Bryce J. Where and why are 10 million children dying every year? *Lancet* 2003;361:2226-34. PMID:12842379 doi:10.1016/S0140-6736(03)13779-8
- Bryce J, Boschi-Pinto C, Shibuya K & Black RE. WHO estimates of the causes of death in children. *Lancet* 2005;365:1147-52. PMID:15794969 doi:10.1016/S0140-6736(05)71877-8
- Snow RW, Mung'ala VO, Foster D & Marsh K. The role of the district hospital in child survival at the Kenyan Coast. *Afr J Health Sci* 1994;1:71-5. PMID:12153363
- English M, Esamai F, Wasunna A, Were F, Ogutu B, Wamae A, et al. Delivery of paediatric care at the first-referral level in Kenya. *Lancet* 2004;364:1622-9. PMID:15519635 doi:10.1016/S0140-6736(04)17318-2
- English M, Esamai F, Wasunna A, Were F, Ogutu B, Wamae A, et al. Assessment of inpatient paediatric care in first referral level hospitals in 13 districts in Kenya. *Lancet* 2004;363:1948-53. PMID:15194254 doi:10.1016/S0140-6736(04)16408-8
- Nolan T, Angos P, Cunha AJ, Muhe L, Qazi S, Simoes EA, et al. Quality of hospital care for seriously ill children in less-developed countries. *Lancet* 2001;357:106-10. PMID:11197397 doi:10.1016/S0140-6736(00)03542-X
- Management of the child with a serious infection or severe malnutrition: guidelines for care at the first-referral level in developing countries. Geneva: WHO; 2000.
- Drakeley CJ, Carneiro I, Reyburn H, Malima R, Lusingu JP, Cox J, et al. Altitude-dependent and -independent variations in Plasmodium falciparum prevalence in northeastern Tanzania. *J Infect Dis* 2005;191:1589-98. PMID:15838785 doi:10.1086/429669
- Tanzanian National Census 2002. United Republic of Tanzania.
- Improving quality of paediatric care assessment tools. Geneva: WHO; 2001.
- Armstrong Schellenberg J, Bryce J, de Savigny D, Lambrechts T, Mbuya C, Mgalula L, et al. The effect of Integrated Management of Childhood Illness on observed quality of care of under-fives in rural Tanzania. *Health Policy Plan* 2004;19:1-10. PMID:14679280 doi:10.1093/heapol/czh001
- Marsh K, Forster D, Waruiru C, Mwangi I, Winstanley M, Marsh V, et al. Indicators of life-threatening malaria in African children. *N Engl J Med* 1995;332:1399-404. PMID:7723795 doi:10.1056/NEJM199505253322102
- Reyburn H, Mbatia R, Drakeley C, Carneiro I, Mwakasungula E, Mwerinde O, et al. Overdiagnosis of malaria in patients with severe febrile illness in Tanzania: a prospective study. *BMJ* 2004;329:1212. PMID:15542534 doi:10.1136/bmj.38251.658229.55
- Berkley JA, Lowe BS, Mwangi I, Williams T, Bauni E, Mwarumba S, et al. Bacteremia among children admitted to a rural hospital in Kenya. *N Engl J Med* 2005;352:39-47. PMID:15635111 doi:10.1056/NEJMoa040275
- Berkley JA, Maitland K, Mwangi I, Ngetsa C, Mwarumba S, Lowe BS, et al. Use of clinical syndromes to target antibiotic prescribing in seriously ill children in malaria endemic area: observational study. *BMJ* 2005;330:995. PMID:15797893 doi:10.1136/bmj.38408.471991.8F
- Usen S, Weber M, Mulholland K, Jaffar S, Oparaugo A, Omosigbo C, et al. Clinical predictors of hypoxaemia in Gambian children with acute lower respiratory tract infection: prospective cohort study. *BMJ* 1999;318:86-91. PMID:9880280
- Berkley JA, Mwangi I, Ngetsa CJ, Mwarumba S, Lowe BS, Marsh K, et al. Diagnosis of acute bacterial meningitis in children at a district hospital in sub-Saharan Africa. *Lancet* 2001;357:1753-7. PMID:11403812 doi:10.1016/S0140-6736(00)04897-2

Hugh Reyburn et al.

18. Mwangi I, Berkley J, Lowe B, Peshu N, Marsh K, Newton CR. Acute bacterial meningitis in children admitted to a rural Kenyan hospital: increasing antibiotic resistance and outcome. *Pediatr Infect Dis J* 2002;21:1042-8. PMID:12442027 doi:10.1097/00006454-200211000-00013
19. *Report on Global HIV/AIDS Epidemic* 2000. Geneva: UNAIDS; 2000.
20. Rogerson SR, Gladstone M, Callaghan M, Erhart L, Rogerson SJ, Borgstein E, et al. HIV infection among paediatric in-patients in Blantyre, Malawi. *Trans R Soc Trop Med Hyg* 2004;98:544-52. PMID:15251404 doi:10.1016/j.trstmh.2003.12.011
21. The state of the world's children, 2006. UNICEF; 2006.
22. Reyburn H, Mbatia R, Drakeley C, Bruce J, Carneiro I, Olomi R, et al. Association of transmission intensity and age with clinical manifestations and case fatality of severe *Plasmodium falciparum* malaria. *JAMA* 2005;293:1461-70. PMID:15784869 doi:10.1001/jama.293.12.1461

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23. Duke T, Tamburlini G, Silimperi D. Improving the quality of paediatric care in peripheral hospitals in developing countries. *Arch Dis Child* 2003;88:563-5. PMID:12818896 doi:10.1136/adc.88.7.563
24. *Guidelines for reforming hospitals at regional and district levels in Tanzania*. United Republic of Tanzania: Ministry of Health; 2005.
25. Adam T, Manzi F, Schellenberg JA, Mgalula L, de Savigny D, Evans DB. Does the Integrated Management of Childhood Illness cost more than routine care? Results from the United Republic of Tanzania. *Bull World Health Organ* 2005;83:369-77. PMID:15976878