

Research article

## Paediatric referrals in rural Tanzania: the Kilombero District Study – a case series

Fidel Font\*<sup>1,2,4</sup>, Llorens Quinto<sup>1</sup>, Honoraty Masanja<sup>2</sup>, Rose Nathan<sup>2</sup>, Carlos Ascaso<sup>1</sup>, Clara Menendez<sup>1</sup>, Marcel Tanner<sup>3</sup>, Joanna Armstrong Schellenberg<sup>2,3</sup> and Pedro Alonso<sup>1</sup>

Address: <sup>1</sup>Unidad de Epidemiología y Bioestadística, Hospital Clinic i Provincial, Villarroel 170, 08036 Barcelona, Spain, <sup>2</sup>Ifakara Health Research and Development Centre, PO Box 53, Ifakara, Tanzania, <sup>3</sup>Swiss Tropical Institute, Basel, Switzerland and <sup>4</sup>International Federation of Red Cross, PO Box 372, 1211 Geneva 19, Switzerland

E-mail: Fidel Font\* - font@ifrc.org; Llorens Quinto - quinto@medicina.ub.es; Honoraty Masanja - epidemia@medicina.ub.es; Rose Nathan - epidemia@medicina.ub.es; Carlos Ascaso - ascaso@medicina.ub.es; Clara Menendez - menende@medicina.ub.es; Marcel Tanner - marcel.tanner@unibas.ch; Joanna Schellenberg - DaJoBeLo@aol.com; Pedro Alonso - alonso@medicina.ub.es

\*Corresponding author

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### Abstract

**Background:** Referral is a critical part of appropriate primary care and of the Integrated Management of Childhood Illness (IMCI) strategy. We set out to study referrals from the aspect both of primary level facilities and the referral hospital in Kilombero District, southern Tanzania. Through record review and a separate prospective study we estimate referral rates, report on delays in reaching referral care and summarise the appropriateness of paediatric referral cases in terms of admission to the paediatric ward at a district hospital

**Methods:** A sample of patient records from primary level government health facilities throughout 1993 were summarised by age, diagnosis, whether a new case or a reattendance, and whether or not they were referred. From August 1994 to July 1995, mothers or carers of all sick children less than five years old attending the Maternal and Child Health (MCH) clinic or outpatient department (OPD) of SFDDH were interviewed using a standard questionnaire recording age, sex, diagnosis, place of residence, whether the child was admitted to the paediatric ward, and whether the child was referred.

**Results:** From record review, only 0.6% of children from primary level government facilities were referred to a higher level of care. At the referral hospital, 7.8 cases per thousand under five catchment population had been referred annually. The hospital MCH clinic and OPD were generally used by children who lived nearby: 91% (n = 7,166) of sick children and 75% (n = 607) of admissions came from within 10 km. Of 235 referred children, the majority (62%) had come from dispensaries. Almost half of the referrals (48%) took 2 or more days to arrive at the hospital. Severe malaria and anaemia were the leading diagnoses in referred children, together accounting for a total of 70% of all the referrals. Most referred children (167/235, 71%) were admitted to the hospital paediatric ward.

**Conclusions:** The high admission rate among referrals suggests that the decision to refer is generally appropriate, but the low referral rate suggests that too few children are referred. Our findings suggest that the IMCI strategy may need to be adapted in sparsely-populated areas with limited transport, so that more children may be managed at peripheral level and fewer children need referral.

## Background

A functioning referral system is a critical part of an appropriate health care delivery system [1,2]. Referral systems have been given particular emphasis in the context of the health sector reform movement [2] and through the WHO/ UNICEF Integrated Management of Childhood Illness (IMCI) strategy, which is being introduced in various settings throughout Africa. In many developing countries, referral is an essential part of preventing unnecessary deaths: primary health care workers should refer life-threatening illness which they are unable to treat properly. In Tanzania, the Ministry of Health encourages referrals from dispensaries and health centres to district hospitals, although there are no official forms available for those being referred. National outpatient morbidity data shows that less than 1% of new cases attending rural clinics are referred to district hospitals [2]. In addition, a study of referral care in Kilombero district found a referral rate of only 2.3% [3], which together with the national level data suggest that the health referral system in Tanzania is not functioning well.

Implementation of IMCI is likely to increase referral rates: the proportion of children referred by health workers using the IMCI guidelines was 7%-16% in Ethiopia, Kenya, The Gambia and Uganda [4]. Although in rural Ethiopia Kloos [5] found that 13% of hospital outpatients had been referred, most published studies indicate very low referral rates. A Kenyan study of care seeking behavior [6] showed that one-quarter of all new attendances at hospitals had by-passed the nearest governmental health facility. A more recent study in Kenya found that less than 2% all new patients had been referred [7].

Figure 1 illustrates the necessary steps in order for children who need referral to be referred and managed appropriately. Steps 1 to 3 and step 6 relate to health-seeking behavior, accessibility of the health system and case-management. Though these actions are essential to the referral system, they also relate to management of non-referred cases: they are considered elsewhere [8-10,1]. Here we describe referrals from two aspects: firstly, from that of primary level facilities which refer patients (step 4), and secondly from that of the referral hospital where those who have been referred present for case-management (step 5). Our two studies estimate referral rates, document who refers, when and why, and determine the appropriateness of paediatric referral cases in terms of admission to paediatric ward at District Hospital.

## Methods

Paediatric referral is defined here as any child under 5 years of age who has been seen at a lower health facility or private practitioner and recommended for higher level care.

## Study area

The Kilombero health care system has three levels, the highest of which is St. Francis Designated District Hospital (SFDDH) with 70 paediatric beds (Figure 2). It serves an estimated population of 188,000 of which 16% are children under five. There are 2 health centres (Mang'ula and Mlimba) which provide the second level of care, and the first level has 13 government and 8 NGO/ mission dispensaries. Village health workers were recruited and trained in every village but few are active. Traditional healers of various types are found in every village [12] There are also a few private clinics, mainly in the town of Ifakara. There were no user fees for child health care at the time of this study. The district is described in more detail elsewhere [13,14].

### **Paediatric referrals from the primary level**

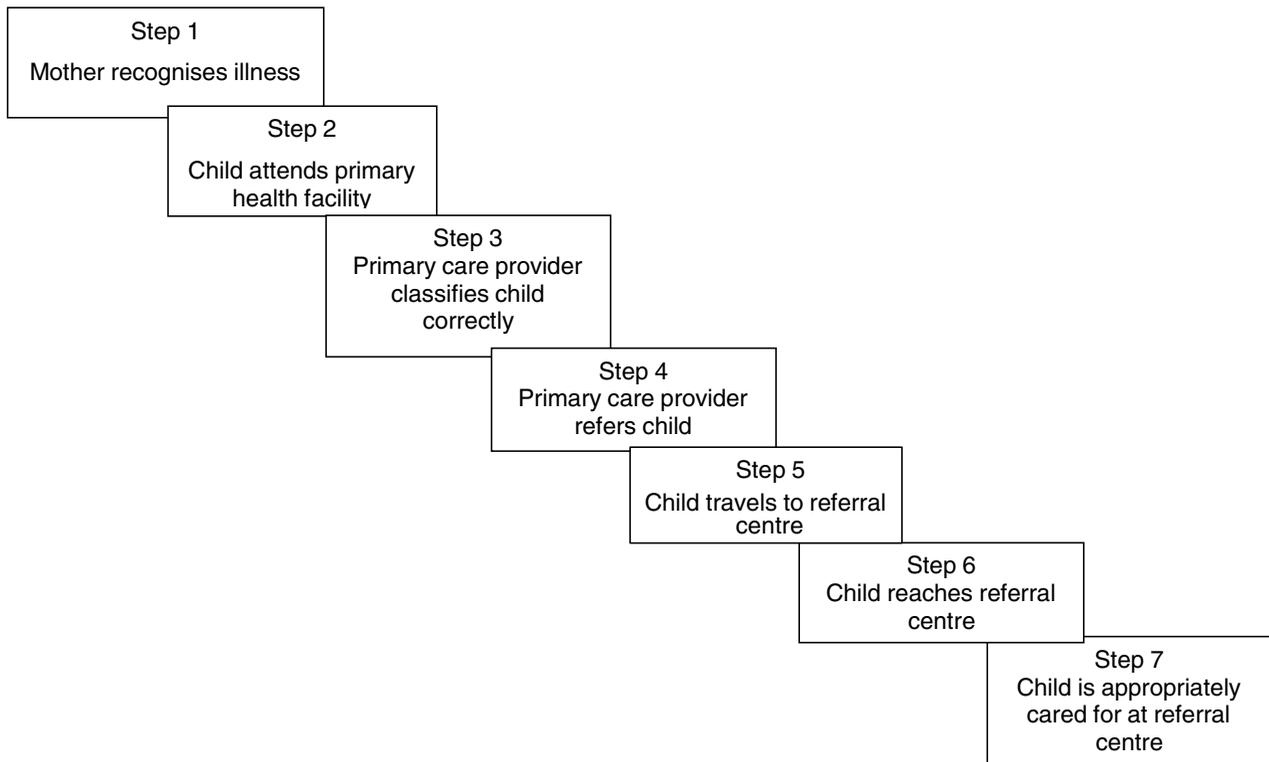
In a retrospective study of referrals, patient records from government health facilities in the first week of every month during 1993 were analysed. Records were summarised by age (over or under 5 years), diagnosis, whether a new case or a reattendance, and whether or not they were referred. In 1993, Essential Drug Program (EDP) kits were supplied to each facility at the start of every month, and stock-outs were common towards the end of each month. Patient data was restricted to the first week of the month in an attempt to reduce cases who were referred due to lack of drugs. Data from one of the 15 facilities was not available.

### **Paediatric referrals at the referral hospital**

From August 1994 to July 1995, mothers or carers of all sick children less than five years attending the MCH clinic or outpatient department of SFDDH were interviewed using a standard questionnaire regarding age, sex, diagnosis, place of residence, whether the child was admitted for care on the paediatric ward and whether or not the child was referred, by whom, and when. Children presenting between 8:00 to 14:00 hours were interviewed at the Mother and Child Health (MCH) Clinic adjacent to SFDDH, while those presenting at other times were interviewed at the Outpatient Department (OPD) of SFDDH. Children re-attending for the same illness were not included.

### **Data processing and statistical analysis**

Data was double entered using FoxPro version 2.6 (Microsoft Corporation, Redmond, WA). Descriptive analysis was performed by calculating proportions of children according to sex, source of referral, distance from SFDDH, and diagnosis for the referred cases. Binomial or Poisson confidence intervals were calculated as appropriate. Significance testing was carried out using  $\chi^2$  tests. Statistical analysis was performed using Stata version 6 (Stata Corporation, Texas, USA).

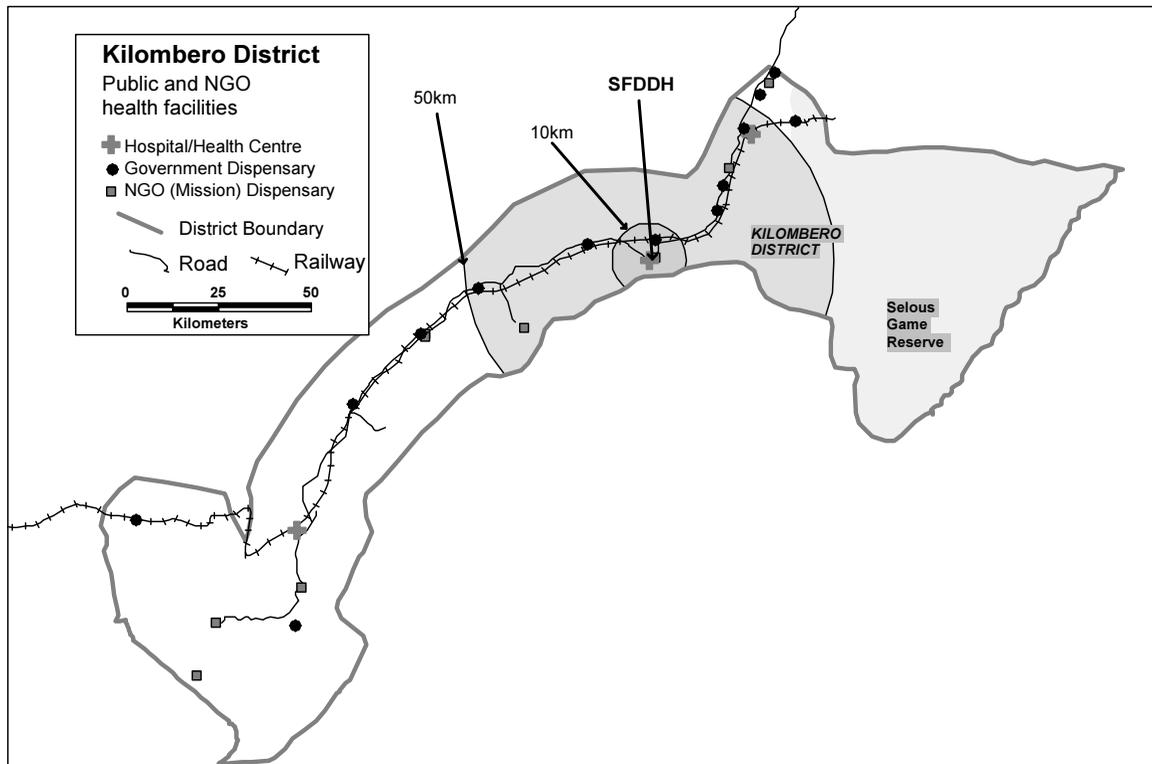
**Figure 1****Results**

A total of 5,030 new paediatric cases were recorded from government first or second level health facilities during the first week of every month in 1993. Only 28 (0.6%) of these children were referred to a higher level of care (95% confidence interval 0.4, 0.8). Half of the health facilities ( $n = 7$ ) did not refer any children, and the highest proportion of children referred was 2.5% (9/356, Mngeta Dispensary). The most common reasons for referral were anaemia (32%,  $n = 9$ ), malaria (14%,  $n = 4$ ), and malnutrition (14%,  $n = 4$ ).

Between August 1994 and July 1995, 7,989 sick children under 5 years old presented to SFDDH, of whom 91% ( $n = 7,166$ ) came from within 10 km of the hospital (Table 1 and Figure 2). None of the mothers refused to be interviewed. The majority of admissions (75%, 607/812) had also travelled less than 10 km. The most common diagnosis was malaria, accounting for 59% of all attendances. There were 235 (2.9%) referred children (95% CI 2.6%, 3.3%). This represents 7.8 cases per thousand under five catchment population referred annually (95% CI 7.7, 7.9).

The majority of referred children had come from dispensaries (62%), followed by private doctors (22%) and health centres (12%) (Table 1). Those referred were younger on average than other attenders (60% of those referred were infants compared with 45% of all those attending outpatients who were infants,  $x^2 = 24.4$ , 1df,  $P < 0.001$ ). Children who had been referred had also travelled further on average than other attenders: two-thirds of the referrals had travelled more than 10 km to reach SFDDH, whereas only 10% of all attenders had travelled this distance ( $x^2 = 959.7$ , 3df,  $P < 0.001$ ). Almost half of the referrals (48%) took 2 or more days to arrive at the hospital. Severe malaria and anaemia were the leading diagnoses in referred children, together accounting for a total of 70% of all the referrals.

Most referred children (167/235, 71%) were admitted to the paediatric ward of SFDDH (Table 1). Admission was more common in those who took less than 2 days to reach SFDDH than in those who took longer ( $x^2 = 23.1$ , 1df,  $P < 0.001$ ). Anaemia (47%) and severe malaria (28%) were the leading causes of admission to hospital in the referrals. Nearly all children referred with anaemia were admit-



**Figure 2**

ted (95%), more than those with malaria (57%) or other diagnoses (60%:  $\chi^2 = 35.9$ , 2df,  $P < 0.001$ )

### Discussion

We have shown that paediatric referral rates in this rural Tanzanian setting are extremely low, at less than 1% of cases seen and 8 per 1000 catchment population per year. There may be many reasons for this low referral rate: firstly, that acutely ill children are not brought to health facilities (Figure 1, steps 1 and 2), secondly that health facility staff do not identify children who need referral (step 3), and thirdly that they only refer children who have the financial and social support required to travel to the referral centre (step 4). The high rate of admissions (71%) among the referred patients suggests that the decision to refer is generally appropriate, but that too few children are referred. The low referral rate may contribute to the high infant and child mortality in the area.

As in Kenya [6], dispensaries bypassed the health centres by sending paediatric referral cases directly to SFDDH. It is likely that in both countries there is little operational

difference between dispensaries and health centres, and also that caretakers perceive them to be the same. Investment is needed in district health systems in order to revitalize health centres, so as to increase their capacity to identify, manage and treat a critical number of severe paediatric patients in order to reduce long-distance referrals.

A quarter of the referral cases did not come from the governmental health system. This reflects the relatively high number of mission and private health actors in Kilombero District. However, we also found 5 patients who had been referred by traditional healers. Similar findings were reported in Bagamoyo District on the Tanzanian Coast [15]. These positive results should encourage the district health management team to remain in contact and to work together with the informal and the private health sectors [16,17].

Accessibility is one of the key features of a well-functioning system of primary health care. We found that over 90% of patients using MCH and OPD services and 75% of admissions came from within 10 km of the hospital. This

**Table 1: Characteristics of sick children presenting, referred & admitted to St. Francis Hospital**

Characteristic	Children Attending (n = 7989 <sup>a</sup> )	Children referred	
		Number (n = 235) (%)	Admitted (n = 167) (%)
<b>Age</b>			
< 1 year	3567 (45%)	142 (60%)	106 (63%)
1 year	2332 (29%)	53 (23%)	37 (22%)
2 years	1178 (15%)	24 (10%)	16 (10%)
3 years	629 (8%)	9 (4%)	5 (3%)
4 years	283 (4%)	7 (3%)	3 (2%)
<b>Sex</b>			
Males	4033 (51%)	123 (53 %)	87 (52 %)
Females	3915 (49%)	109 (47 %)	79 (48 %)
Missing information	41	3	1
<b>Diagnosis</b>			
Severe malaria	4687 (59%)	83 (35 %)	47 (28 %)
Anaemia	219 (3%)	83 (35 %)	79 (47 %)
ARI**	573 (7%)	17 (7 %)	14 (8 %)
Acute diarrhoea	229 (3%)	6 (3 %)	4 (2 %)
Other	2267 (28%)	46 (20 %)	23 (14 %)
Missing information	14	0	0
<b>Distance travelled (km)</b>			
<5	4887 (62%)	14 (6 %)	7 (4 %)
5–10	2279 (29%)	64 (27 %)	45 (27 %)
10–50	290 (4%)	70 (30 %)	58 (35 %)
>50	459 (6%)	84 (36 %)	55 (33 %)
Missing information	74	3	2
<b>Referred by</b>			
Dispensary		146 (62 %)	108 (65 %)
Private Doctors		52 (22 %)	29 (17 %)
Health Centre		29 (12 %)	27 (16 %)
Traditional Healer		5 (2%)	2 (1 %)
VHW***		2 (1 %)	1 (1 %)
Missing information		1	0
<b>Time to reach SFDDH (days)</b>			
0–1		117 (52 %)	99 (63 %)
2+		106 (48 %)	58 (37 %)
Missing information		12	10

<sup>a</sup>Age was unknown for 78 children (<1%), and these have been omitted from the analysis. \*\*Acute Respiratory Infection \*\*\*Village Health Worker

shows that the Kilombero District referral hospital is mainly used for primary care for those who live within reach. Approximately 75% of the population of the district live further away, and presumably use their local health facilities for primary care, with the drawback of the low number of referrals.

Our hospital study found 235 referred children in a one-year period, whereas the record review would suggest that around 121 children had been referred from public facilities

during 1993 (28 times 4.33, the number of weeks in a month) This difference is partly explained by the inclusion of private and mission referrals in the former work, and may also be due to the one-year time difference and to our sampling scheme of the first week in every month. Whatever the reason, the findings suggest that most patients who are referred do arrive at hospital. However, almost half had a delay of 2 or more days. Once a child is referred, the mother is likely to need the approval of her husband or other family members before she can travel, and she may also need to raise money for the journey [18,19]. Many of the villages in Kilombero district are difficult to reach, particularly during the rainy season, due to the poor state of the roads and the lack of public transport.

Anaemia and malaria were the main causes of referral. This is not unexpected, particularly in an area with intense perennial malaria transmission and where malaria and anaemia are the major causes of admission the paediatric ward of SFDDH [20,21]. However, cases reaching the district hospital are only the tip of the iceberg, as over half of child deaths occur at home (Armstrong Schellenberg, unpublished observations).

The low number of paediatric referral cases found in this study (0.6%) are in contrast with the high proportion of children (7 % to 16%) referred by health workers using IMCI guidelines [4]. Full implementation of the IMCI guidelines could lead to an increase in the number of paediatric referral cases who would have difficulties in reaching the district hospital due to the poor road conditions and the lack of transport. In remote areas, the IMCI guidelines may need to be locally adapted to reduce the number of children referred. This step may need availability of more sophisticated treatments at peripheral level accompanied by the respective training, monitoring and supervision.

### Competing interests

None declared

### Author contributions

author 1, Fidel Font – conceived of the study and participated in its design, coordination and drafted the manuscript

author 2, Llorenç Quinto – sequence alignment and performed the statistical analysis

author 3, Honoraty Masanja – sequence alignment and performed the statistical analysis

author 4, Rose Nathan-participated in its design, coordination and drafted the manuscript

author 5, Carlos Ascaso – design and performed the statistical analysis

author 6, Clara Menendez – conceived of the study and participated in its design and coordination

author 7, Marcel Tanner – conceived of the study and participated in its design and coordination

author 8, Joanna Armstrong – participated in the sequence alignment and drafted the manuscript

author 9 Pedro Alonso – conceived of the study and participated in its design and coordination

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