Integrated Management of Childhood Illnesses strategy: compliance with referral and follow-up recommendations in Gezira State, Sudan

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Objectives To determine the extent to which families follow referral and follow-up recommendations given in accordance with the Integrated Management of Childhood Illnesses (IMCI) strategy and the factors that influence families' responses to such recommendations.

Methods Children aged 2 months–5 years who presented to an IMCI-trained health worker in Massalamia Health Area, Sudan, were recruited. Children with an IMCI classification that indicated the need for referral or follow-up were traced to determine whether the family complied with the referral or follow-up recommendation. Caretakers were interviewed to find out why they had or had not complied. Focus group discussions were held with health workers, caretakers, and community members.

Findings Overall, 5745 children were enrolled. Of these, 162 (3%) were considered to be in need of urgent referral: 53 (33%) attended a hospital on the day of the referral, with a further 37 (23%) visiting the hospital later than the day of referral. About half of families cited cost as the reason for not visiting a hospital. A total of 1197 (21%) children were classified as needing follow-up. Compliance with a follow-up recommendation was 44% (529 children). Almost 165 (90%) of caretakers who were aware of and did not comply with follow-up, said they had not done so because the child was better. Compliance increased with the caretaker's level of education, if drugs were provided during the first visit, and if the follow-up period was short (2 or 5 days).

Conclusion In Massalamia — a resource-constrained environment in which IMCI implementation was well received by the community — only about half of children judged to be in need of urgent referral were taken for that care within 24 hours. Most children in need of follow-up received their first treatment dose in the health facility. This aspect of IMCI was commented upon favourably by caretakers, and it may encourage them to return for follow-up. Rates of return might also improve if return visits for children currently asked to return after 14 or 30 days were scheduled earlier.

Keywords Child health services; Primary health care; Delivery of health care, Integrated; Referral and consultation; Patient compliance; Child; Family; Socioeconomic factors; Sudan (*source: MeSH, NLM*).

Mots clés Service santé infantile; Programme soins courants; Distribution intégrée soins; Consultation pour avis expert; Observance prescription; Enfant; Famille; Facteurs socio-économiques; Soudan (*source: MeSH, INSERM*).

Palabras clave Servicios de salud infantil; Atención primaria de salud; Entrega integrada de atención de salud; Remisión y consulta; Cooperación del paciente; Niño; Familia; Factores socioeconómicos; Sudán (*fuente: DeCS, BIREME*).

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Introduction

In 1996 the Government of Sudan introduced the Integrated Management of Childhood Illness (IMCI) strategy in four districts: two in Khartoum State and two in Gezira State (about180 km to the south of Khartoum). Under IMCI, health workers are trained to classify children according to the presence or absence of a limited number of signs and symptoms, treat the child, and counsel the caretaker (*1, 2*). Children may fall into one of three categories: those who need urgent referral to hospital (*3*); those who need treatment, for whom the caretaker is asked to return with the child some days later for follow-up; and those who need treatment but do not need to be followed up (*4*).

We investigated the extent to which families follow referral and follow-up recommendations and factors associated with families' responses.

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Methods

Study site

The study was conducted in Massalamia Health Area, 30 km from Medani, the capital of Gezira State. The population of the area, when enumerated in 1993, was about 53 000 individuals, with approximately 15% of these being children aged <5 years. This ethnically mixed population is distributed between Massalamia town (population about 7500), 47 villages (total population 38 000), and 38 "camps" (total population about 8000). Most of the population work as agricultural labourers or in the construction industry. At the time of the study in 2000, the daily wage for hired labourers was about 3000 Sudanese Pounds (SDP) (about US$ 1.2). Water, electricity, schools, and health facilities are confined largely to the town and villages. "Camps" have no facilities or services other than outreach vaccination services. The area has no paved roads, and travel can be very difficult during the rainy season (June–October).

The area is served by a government-run rural hospital in Massalamia, which provides outpatient services and acts as a first level referral centre, and by another 21 facilities in which IMCI was implemented: four health centres, eight dispensaries, and nine dressing stations. The IMCI strategy was not implemented in two primary health care units in the area. The rural hospital has 60 beds, one medical officer, a medical assistant (four years of training), and 23 nurses (three years of training). Health centres are staffed by medical assistants or nurses and have additional staff, including vaccinators, laboratory technicians, nutrition educators, and statistical clerks. Dispensaries and dressing stations are staffed by a single medical assistant or nurse. A private clinic in Massalamia town is run by the medical officer from Massalamia hospital in the evenings. No other private clinics, hospitals, or pharmacies are located within the study area. Local healers exist, but the extent to which they are used in preference to government services is not known. A paediatric teaching hospital in Medani (outside the study area) is the high-level referral facility. This hospital receives about 80 children per day and is staffed by approximately 35 doctors, 60 trained nurses, and 60 nursing students.

At the time of the study, the fee for a consultation in primary level facilities was 250–500 SDP, the cost of drugs prescribed and laboratory examinations performed are charged extra. A patient referred from an outlying village to hospital would have to pay 1000–3000 SDP for transport. A few villages have a once-daily public transport system to Massalamia, but most have only a twice-weekly service on market days. Most villages have a once-daily transport service to Medani. Alternatives to the public transport system include donkey carts for 5000–10 000 SDP or private car for 15 000–20 000 SDP. An outpatient consultation at Medani hospital cost 1000 SDP and hospital admission, including food but not laboratory investigations or drugs, cost 1500 SDP. The monthly salary of medical assistants was 50 000–60 000 SDP (about US$ 20–25). Often staff supplement their incomes by offering free consultations in the evenings, when drugs prescribed are sold for profit.

Overall, 29 staff (one medical officer, 13 medical assistants, and 15 nurses) were trained in IMCI before the study started. All staff received two follow-up visits — after six weeks and two months later — and the equipment needed to assess and manage sick children.

Study design

All the government-run facilities in which IMCI was implemented, together with the private clinic in Massalamia town, participated in the study. All children aged 2–59 months, who were resident within the study area and presented to a health worker who participated in the study were eligible for inclusion.

Children were enrolled with the verbal informed consent of the caretaker. On the enrolment form, the health worker recorded data on: child's age, sex, and weight; date and time of consultation; whether care has already been sought for the episode; the IMCI classification; whether the child received treatment in the health facility; and whether the child was recommended for referral or follow-up. In addition, the socioeconomic profile of the family, with reference to the head of the family, was recorded. All children with a classification that mandated urgent referral to hospital and some children for whom follow-up care was appropriate were issued with a study card that showed identification information, the classification of the child, and the recommended course of action. The caretaker was asked to present the card when they attended the referral centre or returned for follow-up care. All children with a study card were "followed" prospectively.

The health worker reassessed and classified children who returned for follow-up, and completed a follow-up compliance form that recording basic identification information on the child, the date of the follow-up, the child's IMCI classification at follow-up, and any new recommendation for referral or follow-up. Referred children were identified at Massalamia and Medani Hospitals. The doctor completed a referral compliance form that recorded basic identification information, the date and time of arrival at the referral centre, the means and cost of transportation, the diagnosis, and the action taken. In addition, children from Massalamia area who presented at Medani Hospital without being referred were identified.

Follow-up and referral compliance forms were collected three times per week, transferred to the project office, and entered onto microcomputer. The lists of children who did not comply within four days with referral or follow-up recommendations were distributed to each health facility twice per week. Trained female field workers visited the child's home and interviewed the caretaker to obtain information on perceptions of the first contact, understanding of the referral or follow-up recommendation, previous experience of referral and follow-up, and reasons for non-compliance. In addition, a trained health worker made home visits to children who did not comply with referral recommendations so that they could be reassessed and given recommended clinical care.

At the end of the study, health workers were interviewed about their views on IMCI and focus group discussions were held with caretakers and community representatives.

The study received ethical clearance from the Gezira State Ministry of Health and was discussed with the communities through meetings with the popular committee — an elected forum representing the community and authorized by the local council (local government level) in each village.

Sample size

Inspection of health facility registers and discussions with health facility staff suggested that each month in the study area there were around 1000 new consultations with children aged <5 years and that 50–100 children would be referred. We anticipated that 50% of children might be recommended for follow-up. We planned to conduct fieldwork for a period of

six months, with the expectation of enrolling at least 4000 children of whom at least 250–300 would be referred. Given these figures, we planned to follow prospectively all children recommended for referral and a sub-sample of about 700 children recommended for follow-up. After fieldwork began, we realized that the initial numbers were overestimates, so we included all children recommended for follow-up and extended the duration of the study.

Statistical methods

Data analysis was performed with Stata software (version 6.0) (*5*). For the descriptive analyses, simple proportions were calculated. Confidence intervals for these proportions, where presented, take account of the clustered nature of the sample (many children were recruited in each health facility) through the ratio estimator approach. Analysis of child-level factors associated with compliance used conditional logistic regression, with health facility as the "matching" factor, to avoid potential confounding by health facility-level factors.

Results

Between 11 February and 3 December 2000, 5745 children aged 2–59 months were recruited into the study. Table 1 gives the characteristics of these children: the median age was 24 months, 54% were male, 61% came from households headed by persons working as hired labour, and most lived in the village in which the health facility was located. About one-third of caretakers had never attended school or had attended only a Koranic school.

All children were assessed and classified by trained staff using a Sudan-adapted IMCI algorithm. Overall, 3019 children were seen by medical assistants, 2603 by nurses, and 123 by doctors. The most commonly reported symptom was fever (71%); this was followed by cough (36%) and diarrhoea (24%) (Table 2). At enrolment, 161 (3%) children were considered to need care at a higher level facility: 135 of these were referred, but referral was considered impossible for 26 children. The proportion of children considered in need of referral was higher at the outpatient department of Massalamia Hospital than at other facilities (7% vs 2%; $P<0.0001$). The most common indications for referral were severe pneumonia (55, 34%), very severe febrile disease (50, 31%), severe malnutrition or anaemia (23, 14%), and diarrhoea with severe dehydration (15, 9%). A further 1197 (21%) children were classified as needing treatment and follow-up at the health facility; 904 (76%) children had pneumonia. Most children (86%) received some treatment at the health facility, but only 4% received therapy by injection.

Compliance with referral recommendation

Table 3 summarizes the compliance of caretakers with recommendations for referral or follow-up. Of the 136 children referred to a higher level facility, 90 (66%) were seen at one of the hospitals that participated in the study. A clear difference was seen in the pattern of compliance between children referred by the outpatients department at Massalamia and those referred from another health care facility. Of 37 children referred by the outpatient department at Massalamia, 36 were seen at a referral site, and almost all of these (92%) were seen at Massalamia. Of 99 children referred by peripheral facilities, 54 (55%) were seen at a referral site; of these 54, only 9 (17%) went to Massalamia Rural Hospital.

Table 1. **Demographic and socioeconomic characteristics of 5745 children enrolled at first-level health facilities in Massalamia District**

Characteristic	No. of children[a]
Age (months)	
2–5	560 (10)
6–11	967 (17)
12–17	686 (12)
18–23	594 (10)
24–35	1290 (22)
36–47	826 (14)
48–59	822 (14)
Sex	
Male	3091 (54)
Female	2654 (46)
Birth order	
1	1265 (22)
2	1200 (21)
3	1009 (18)
⩾4	2271 (40)
Caretaker's educational level	
None or Koranic only	1995 (35)
Basic or intermediate	2357 (41)
High school or above	1393 (24)
Occupation of sponsor	
Government or private employee	783 (14)
Owner farmer	717 (12)
Hired farmer or labourer	3500 (61)
Other	745 (13)
Size of household	
2–4	1576 (27)
5–7	2664 (46)
⩾8	1503 (26)
Place of residence	
Same village as health facility	4090 (71)
Another village	868 (15)
Camp	787 (14)

[a] Values in parentheses are percentages.

The households of the 46 children not seen at a hospital were visited to determine the reasons for non-compliance and the health status of the child. The families of three children had moved. Of the remaining 43 children, 13 caretakers reported that they had taken the child to another facility: nine indicated that they had visited hospitals or private clinics outside the study area, and four stated that they had visited participating hospitals (we could find no records of these visits). When we excluded the 13 children who were reportedly taken to a hospital or private clinic, we estimated the "same-day" compliance at 43% (95% confidence interval, 20–66%). Some children initially were seen at health facilities late in the day, and this made it difficult for them to reach the hospital on the same day. When we extended the compliance period to 24 hours, the proportion that complied with recommendations rose to 58% (37–80%), and when we extended the compliance period to include reaching hospital by any time the next day, the proportion that complied was 62% (37–88%). When all children classified as in need of urgent referral ($n = 162$) were considered, 53 (33%) were documented as having reached a hospital on the day of the referral, and a further 37 (23%) at a later date.

Caretakers who did not take the child to a hospital or private clinic were asked their reasons. Overall, about half (13)

Table 2. **Clinical features at enrolment of 5745 children seen in first level health facilities, Massalamia District**

Features	No. of children[a]
Symptoms reported by caretaker	
General danger sign	88 (2)
Cough	2094 (36)
Diarrhoea	1369 (24)
Fever	4062 (71)
Ear problem	159 (3)
Weight loss	114 (2)
Other	942 (16)
Integrated Management of Childhood Illnesses classification	
Respiratory	
Cough, no pneumonia	1065 (19)
Pneumonia	928 (16)
Severe pneumonia	55 (1)
Diarrhoea	
Diarrhoea, no dehydration	1227 (21)
Diarrhoea, some dehydration	86 (2)
Diarrhoea, severe dehydration	15 (0)
Persistent diarrhoea	8 (0)
Severe, persistent diarrhoea	1 (0)
Dysentery	71 (1)
Malaria or febrile disease	
Malaria	4045 (70)
Very severe febrile disease	51 (1)
Measles	
Measles	32 (1)
Severe, complicated measles	11 (0)
Ear infections	
Chronic ear problem	22 (0)
Acute ear problem	87 (2)
Mastoiditis	1 (0)
Anaemia	
Anaemia or very low weight	142 (2)
Severe anaemia or malnutrition	23 (0)
Diagnosis outside IMCI	
Yes	703 (12)
Management decision	
Home care	379 (7)
Home treatment	4008 (70)
Treat and follow-up	1197 (21)
Refer[b]	135 (2)
Referral impossible	26 (0)
Treatment delivered at the health facility	
None	770 (13)
Oral or local	4721 (82)
Injectable with or without oral treatment	254 (4)

[a] Values in parentheses are percentages.
[b] A further child was referred at the follow-up visit giving a total of 136 referrals.

cited the cost of going to the hospital and around a fifth (5) said that they had taken the child to another primary level facility or to a local healer. One caretaker stated that they had not gone to the hospital because the child was "not very ill", and one caretaker said, "we don't like hospitals".

Table 4 gives the health outcomes for the 162 children classified as in need of referral. Overall, 16 children died, which gives a risk of mortality of 10%. The status of some children who moved or left hospital without being discharged is unknown. Risk of mortality seems to be lower in children who attended hospital on the day of referral (6%) than among the other groups (11–15%), although the difference is not statistically significant ($P = 0.27$).

Self referral

A total of 76 children from the study area were identified as having gone directly to Medani Paediatric Hospital without referral by a primary level health worker. This number is greater than the number of children ($n = 48$) who went to the hospital after referral by a primary level worker. Half (38) of the self-referred children were girls, and 30 (39%) children were admitted. In total, 45 (60%) were reported to have already sought care for the illness episode: 34 of these had been seen at a primary level health facility, and 17 (50%) of these children were admitted. The most commonly cited reason for coming to the hospital without being referred (70%) was the better quality of care available at the hospital.

Compliance with follow-up recommendation

Of the 1197 children recommended for follow-up, seven were due for follow-up after the end of fieldwork. Of the remaining 1190 children, 275 (23.1%) returned to the appropriate health facility on or before the due date, 237 (19.9%) returned one day late, and a further 163 (13.7%) returned some time later (Table 3). We arbitrarily defined compliance with follow-up as returning up to one day late for a two-day follow-up, up to two days late for a five-day follow-up, up to four days late for a 14-day follow-up, and up to seven days late for a 30-day follow-up. According to this definition, 529 (44.5%; confidence interval, 37–52%) caretakers complied.

We visited 359 households to ascertain reasons for non-compliance. Of these, 78 reported that the health worker had been to the house or that they had returned to the facility; we could find no record of these visits, but some children may have returned to the facility without the visit being recorded. This means that our estimate of compliance may underestimate the true figure. In 220 households, the caretaker who originally had taken the child to the health facility was interviewed, 28 (13%) said that they were unaware of the follow-up recommendation. Of the caretakers who were aware of the recommendation, most (165, 87%) said that the reason for not taking the child was that the child was better. A further 22 (5%) said that they had forgotten to take the child. Two caretakers said that they had not returned because they were dissatisfied with the initial visit, and four said that the health worker's advice had been unclear or unpersuasive.

Factors associated with compliance

Our analysis focused on factors associated with compliance of children recommended for follow-up, because the number of referred children was too small to perform useful analyses. Evidence that compliance rates differed between health facilities was strong ($P<0.001$). We used conditional logistic regression with stratification on health facility to allow for the effect of health facilities and clustering of compliance within health facilities. The results below are based on comparisons of compliers and non-compliers within health facilities. Table 5 gives the results of analyses of demographic and socioeconomic factors and compliance with follow-up, examining a single factor at a time. Compliance increased with the caretaker's level of education ($P<0.0001$), was higher if the family lived in the village in which the health facility was located rather than another village or camp ($P = 0.006$), and was higher if the person financially

Table 3. **Compliance with referral and follow-up recommendations**

Action taken	No. of children[a]
Referral	
Did not comply	33 (24)
Compliance reported by family[b]	13 (10)
Seen at hospital	90 (66)
Total	**136 (100)**
Length of time after referral that child arrived at hospital	
Same day	53 (59)
Day after	23 (26)
2–4 days	10 (11)
⩾5 days	4 (4)
Total	**90 (100)**
Follow-up	
Did not comply	431 (36)
Follow-up due after 3 December 2000	7 (1)
Compliance reported by family[c]	78 (7)
Seen at health facility	681 (57)
Total	**1197 (100)**
Timing of follow-up visit with respect to due date	
On or before	275 (41)
1 day after	237 (35)
2–4 days	156 (23)
⩾5 days	7 (1)
Total	**675 (100)**

[a] Values in parentheses are percentages.
[b] Of the 13 families reporting compliance, 4 reported attending hospitals in the study, 4 reported attending another hospital not included in the study and 5 reported attending private clinics.
[c] Of the 78 families reporting compliance, 43 said that they had been visited at home by the health worker, while 35 said they had been to the health facility.

responsible for the child was a salaried worker ($P = 0.007$). No evidence suggested that compliance varied with age of the child ($P = 0.90$), sex ($P = 0.41$), birth order ($P = 0.87$), or size of household ($P = 0.32$).

An analysis of medical and health service factors (data not shown) indicated that compliance was higher when the child received treatment at the health facility at the first visit ($P = 0.06$) and when the return visit was due in two or five days ($P<0.0001$). Somewhat surprisingly, compliance seemed to decrease as the number of symptoms reported increased ($P = 0.01$). Compliance was higher in children who presented with cough ($P = 0.0003$) and ear problems ($P = 0.04$) than in children who presented with other symptoms.

We then performed multivariable analyses (Table 6). The four factors most strongly associated with compliance were caretaker's educational level ($P<0.001$), place of residence ($P = 0.03$), delivery of treatment at the health facility ($P = 0.03$), and number of days of follow-up ($P<0.001$).

Discussion

We are not aware of other studies of compliance rates with recommendations for referral made in accordance with the IMCI strategy. In Massalamia, a resource-constrained environment in which IMCI implementation was well received by the community, only about half of children judged in need of urgent referral care reached that care within 24 hours. The barrier to compliance most commonly cited by families was cost. At the same time, a lack of confidence in the quality of care provided peripherally resulted in a number of children bypassing the established referral hierarchy altogether. Community members also mentioned the low level of staffing at Massalamia rural hospital as a reason for bypassing Massalamia and going to directly to Medani. The options for improving compliance with referral recommendations seem to be limited to providing low cost, regular transportation to Massalamia and Medani hospitals, reducing hospital charges, and improving the level of services available at Massalamia rural hospital; the last is likely to be the most feasible option.

The overall proportion of children classified as in need of urgent referral in our study was 3%, with the proportions higher (7%) at Massalamia Hospital's outpatient department and lower (2%) at other facilities. This pattern is unsurprising: IMCI-trained workers in outpatient departments of referral centres in the Gambia, Kenya, and Uganda identified 14%, 14% and 16% of children, respectively, as in need of referral (*6–8*). In Ethiopia and Niger, primary health centers, IMCI-trained health workers identified 7% and 2 % of children, respectively, as being in need of urgent referral (*9*), although in Niger, 10% presented with a general danger sign and thus should have been referred (*10*). Our referral rates seem to be somewhat lower than the rates in other studies.

Font et al. suggested that implementation of IMCI is likely to increase referral rates (*11*), but this does not agree with our

Table 4. **Outcomes in children with a decision to refer or for whom referral was impossible**

Outcome	No. of children[a]			
	Total	Died	Left hospital without being discharged or was unimproved[b]	Moved[b]
Presented to hospital on day of referral	53	3 (6)	8 (15)	NA[c]
Presented to hospital on a later date	37	4 (11)	8 (22)	NA
Reported attending hospital or private clinic	13	2 (15)	NA	0 (0)
Referred but did not attend	33	4 (12)	NA	3 (9)
Referral impossible	26	3 (12)	NA	1 (4)
Total	**162**	**16 (10)**	**16 (10)**	**4 (2)**

[a] Values in parentheses are percentages.
[b] Subsequent status unknown.
[c] Not available.

Table 5. **Association between characteristics, socioeconomic factors, and concordance with follow-up for 1190 children in Massalamia district**

Characteristic	No. of children	No. of compliers[a]	Odds ratio[b]
Age (years)			
0	357	145 (41)	1.0
1	330	151 (46)	1.14 (0.82–1.57)
2	242	109 (45)	1.13 (0.79–1.62)
3	148	68 (46)	1.21 (0.80–1.84)
4	113	56 (50)	1.12 (0.70–1.77)
Sex			
Male	618	264 (43)	1.0
Female	572	265 (46)	1.11 (0.87–1.42)
Birth order			
1	248	113 (46)	1.0
2	271	122 (45)	0.97 (0.67–1.41)
3	192	82 (43)	0.90 (0.60–1.36)
⩾4	479	212 (44)	0.88 (0.63–1.23)
Caretaker's level of education			
None or Koranic only	405	155 (38)	1.0
Basic or intermediate	516	231 (45)	1.45 (1.05–1.99)
High school or higher	269	143 (53)	2.34 (1.63–3.38)
Occupation of sponsor			
Government or private employee	168	92 (55)	1.0
Owner farmer	135	57 (42)	0.67 (0.40–1.11)
Hired farmer or labourer	741	310 (42)	0.57 (0.39–0.82)
Other	146	70 (48)	0.89 (0.55–1.45)
Size of household			
2–4	307	146 (48)	1.0
5–7	560	242 (43)	0.79 (0.59–1.07)
⩾8	322	141 (44)	0.85 (0.60–1.21)
Place of residence			
Same village as health facility	846	383 (45)	1.0
Another village	179	64 (36)	0.55 (0.38–0.80)
Camp	165	82 (50)	0.86 (0.57–1.30)

[a] Values in parentheses are percentages.
[b] Values in parentheses are 95% confidence intervals estimated by conditional logistic regression, stratifying on health facility.

Table 6. **Adjusted estimates of the effect of demographic, socio-economic and medical factors on compliance with follow-up recommendations**

Variable	Adjusted odds ratio[a,b]
Caretaker's educational level	
None/Koranic only	1.0
Basic/intermediate	1.48 (1.04, 2.11)
High school +	2.28 (1.52, 3.43)
Place of residence	
Same village as health facility	1.0
Another village	0.67 (0.45, 1.00)
Camp	1.27 (0.79, 2.04)
Treatment delivered in health facility	
None	1.0
Oral or injectable	1.82 (1.04, 3.16)
Number of days for follow-up	
2 or 5	1.0
14 or 30	0.35 (0.21, 0.58)

[a] Adjusted for each of the other variables included in the table.
[b] Values in parentheses are 95% confidence intervals estimated by conditional logistic regression, stratifying on health facility.

experience. In interviews with 22 of the health workers at the end of our study, 21 reported that the number of children they referred changed after they were trained. Of these, 17 reported that they referred fewer children than before, while four reported that they referred more children ($P = 0.005$). Costello, citing an evaluation in Uganda (*12*), reported that health workers felt more confident after IMCI training (*13*) — an observation that agrees with our experience. In Uganda, the application of IMCI guidelines would have reduced the number of referred children (*14*). In our study area, the introduction of IMCI may have reduced the number of children referred.

Several factors were associated with compliance with follow-up: caretaker education, proximity to the health facility, and first treatment dose received at the health facility at the initial visit, although the statistical strength of this last association was not very strong ($P = 0.03$). Well-educated caretakers were more likely to return to the health facility for follow-up than uneducated caretakers; this is consistent with a large body of evidence that supports an influence of maternal education on child mortality (*15, 16*), increased use of well-baby clinics (*17*), and uptake of immunization services (*18, 19*). As we did not control for income, some of the association may reflect residual confounding; however, as a third of mothers had not attended

school (other than Koranic schools), few would dispute the desirability of widening the coverage of female education in Massalamia. In focus group discussions with caretakers, one of the positive aspects of IMCI that was mentioned was the delivery of the first dose of treatment during the consultation. It is impossible to know whether the association observed between on-the-spot treatment and compliance reflects a causal link or whether the treatment and compliance both reflect perceptions of the illness severity. In either case, this positive response of caretakers is a reminder of the importance of ensuring an adequate supply of essential drugs for health facilities and the need to emphasize to health care workers during training and supervision how important it is to deliver the first dose of treatment.

Compliance with follow-up was much higher for those children with IMCI classifications that needed follow-up in two or five days (pneumonia, persistent diarrhoea, dysentery, measles with eye or mouth complications, and acute or chronic ear infection) than in 14 or 30 days (anaemia or very low weight). This difference might reflect differences in caretakers' perceptions of these different conditions or it might be a direct effect of the difference in timing of the follow-up visit. Longer periods between the initial and follow-up visits could lead to a reduction in compliance. One way to improve follow-up compliance for anaemic and underweight children might be to introduce earlier follow-up visits, therefore, even if no measurable improvement in the child's status can be expected by the time of the first follow-up. Such visits could be used to reinforce the counselling provided at the first visit. Further research to evaluate the impact of earlier follow-up visits — on follow-up rates and the children's health status — is required. ■

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Résumé

Prise en charge intégrée des maladies de l'enfant : observance des recommandations concernant le transfert et le suivi, dans l'Etat de Gezira (Soudan)

Objectif Déterminer dans quelle mesure les familles suivent les recommandations de transfert et de suivi qui leur ont été données conformément aux stratégies de la prise en charge intégrée des maladies de l'enfant (PCIME) ; identifier les facteurs qui influent sur la réponse des familles.

Méthodes Les enfants de 2 mois à 5 ans vus par un agent de santé formé à la PCIME dans la zone sanitaire de Massalamia (Soudan) ont été recrutés. Les aidants des enfants chez lesquels un diagnostic correspondant à une classification de la PCIME a été porté ont été interrogés pour déterminer si la famille s'est conformée aux recommandations fournies en matière de transfert et de suivi. Des groupes de discussion ont réuni les soignants, les aidants et des membres de la communauté.

Résultats Au total, 5745 enfants ont été recrutés. Parmi eux, 162 (soit 3 %) étaient sensés avoir besoin d'un transfert urgent : 53 (soit 33 %) ont consulté dans un hôpital le jour du transfert et 37 (soit 23 %) l'ont fait ultérieurement. La moitié environ des familles ont indiqué le coût comme motif de non-respect des recommandations. Sur l'ensemble des enfants, 1197 (soit 21 %) avaient besoin d'un suivi. Cette recommandation a été respectée dans 44 % des cas (soit 529 enfants). Près de 90 % (165) des aidants informés de la nécessité du suivi et qui ne s'y sont pas conformés ont indiqué comme raison que l'enfant allait mieux. L'observance augmentait avec le niveau d'éducation des aidants, si les médicaments étaient fournis lors de la première visite et si la durée du suivi était courte (2 à 5 jours).

Conclusion A Massalamia, où les ressources sont limitées et où la PCIME a été bien accueillie par la population, près de la moitié seulement des enfants ayant besoin d'un transfert urgent ont été adressés à un hôpital dans les 24 heures. La plupart des enfants ayant besoin d'un suivi ont reçu la première dose du traitement au centre de santé, un aspect de la PCIME jugé très positif par les aidants, et susceptible de les inciter à revenir pour le suivi. Les taux de retour pourraient encore être améliorés si la visite de contrôle pouvait se situer avant 14 jours ou 30 jours comme c'est le cas actuellement.

Resumen

Estrategia de Atención Integrada a las Enfermedades Prevalentes de la Infancia: cumplimiento de las recomendaciones de derivación y seguimiento en el Estado de Gezira (Sudán)

Objetivo Determinar hasta qué punto las familias siguen las recomendaciones sobre derivación y seguimiento realizadas con arreglo a la estrategia de Atención Integrada a las Enfermedades Prevalentes de la Infancia (AIEPI), así como los factores que influyen en la respuesta de las familias a tales recomendaciones.

Métodos Se utilizó como muestra a niños de 2 meses a 5 años visitados por un agente de salud capacitado en AIEPI en el área de salud de Massalamia, Sudán. Se siguió la evolución de los niños que según los criterios de la AIEPI necesitaban derivación o seguimiento para determinar si la familia cumplía o no las

recomendaciones en ese sentido, y se entrevistó a los cuidadores para determinar las razones de que hubieran observado o no esos consejos. Se organizaron debates temáticos por grupos entre trabajadores de salud, cuidadores y miembros de la comunidad.

Resultados En total participaron en el estudio 5745 niños. De éstos, se consideró que 162 (3%) necesitaban derivación urgente: 53 (33%) fueron llevados al hospital el mismo día de la derivación, y otros 37 (23%) fueron llevados al día siguiente. Aproximadamente la mitad de las familias citaron los costos como la razón de no haber acudido al hospital. En total, 1197 niños (21%) fueron clasificados como necesitados de seguimiento. El cumplimiento de esta recomendación fue del 44% (529 niños). Casi 165 (90%) de los cuidadores que eran conscientes de la importancia de esa recomendación y no la observaron señalaron que habían actuado así porque el niño había experimentado una mejoría. El cumplimiento aumentaba con el nivel de instrucción del cuidador, cuando se proporcionaban medicamentos en la primera visita y cuando el periodo de seguimiento era breve (2 ó 5 días).

Conclusión En Massalamia, un entorno con pocos recursos en el que la aplicación de la AIEPI fue bien acogida por la comunidad, sólo la mitad de los niños que se consideraba que necesitaban derivación urgente fueron efectivamente derivados en un plazo de 24 horas. La mayoría de los niños que requerían seguimiento recibieron su primera dosis de tratamiento en el establecimiento de salud. Este aspecto de la AIEPI fue objeto de comentarios favorables por parte de los cuidadores, y podría brindar un incentivo para el retorno de éstos con fines de seguimiento. Las tasas de retorno podrían mejorar también si esas visitas de seguimiento se programaran para tener lugar antes de los 14 o 30 días habituales en la actualidad.

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