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Assessing the Functionality of Job Aids in Supporting the Performance of IMCI Providers in Zambia

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Assessing the Functionality of Job Aids in Supporting the Performance of IMCI Providers in Zambia

Summary

The Quality Assurance Project investigated how job aids could increase compliance with guidelines for the Integrated Management of Childhood Illness (IMCI) in cooperation with the Zambia Central Board of Health beginning in 1999. One of the first countries to introduce IMCI, Zambia had a large number of IMCI-trained providers, and several IMCI job aids were already in use: a chartbook, recording form, poster, and mother card. The study proceeded in three stages: an initial assessment of job aid usage in 1999, the design and introduction of a new IMCI job aid (called “new outpatient department book” or “NOPD book”) that also served as the patient record, and a second assessment of job aid usage in 2000 after introduction of the NOPD book.

The 1999 assessment directly observed management of 385 IMCI cases by 57 providers in 33 health centers; it also interviewed the 57 providers plus 32 supervisors and 342 child caretakers in Lusaka and Kitwe Districts of Zambia. The 2000 assessment observed management of 263 IMCI cases by 39 providers in 16 health centers, interviewed 53 providers and 251 caretakers from the same 16 health centers, and reviewed a random sample of 157 completed NOPD books in Lusaka. The case observation measured compliance with IMCI guidelines and whether a job aid was used for assessment, classification, treatment, and counseling. Providers were asked to comment on the usefulness of the various IMCI job aids and how they could be improved.

Both assessments found high correlation between the use of IMCI job aids and compliance with IMCI standards. Compliance was higher with job aids for all types of providers (especially nurses), and for assessment, classification, and counseling; for drug prescribing there was no difference in compliance with or without a job aid. The positive correlation between use of job aids and IMCI compliance, while favorable with respect to job aids, does not demonstrate that job aids caused improved compliance because the study methodology did not address whether individual providers who previously did not use job aids improved their compliance when they started using them. In 2000, there was no significant difference in compliance between the NOPD book and the previously existing IMCI chartbook. Most providers (82 percent) said the NOPD book was useful because it saved time, reduced errors, helped them remember the IMCI guidelines, and was easy to use. They made the same comments about the IMCI chartbook and in fact used both the chartbook and NOPD book, as had been intended by those who developed the NOPD book. Nearly all caretakers said they preferred providers to refer to written material such as a job aid during an IMCI session, which contrasts with some providers’ assertion that using a job aid would make caretakers/patients doubt a provider’s ability. A review of a sample of completed NOPD books revealed that information was recorded appropriately in the sections on medical history, sub-tasks, and follow-up.

An abbreviated version of the NOPD book is included as an appendix. Before its widespread application, numerous issues need to be resolved: although the new job aid is packaged in a convenient booklet that organizes the information efficiently in a few pages, problems remain with lack of space for notes and a too-small font. Information and possibly improvement are needed on the cost of reproduction, the accuracy of recorded data in the job aid, instructions for its use, and its incorporation into the supervisory process and IMCI training.

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Assessing the Functionality of Job Aids in Supporting the Performance of IMCI Providers in Zambia

Anbrasi Edward-Raj and Rosemary Kumwenda Phiri

I. Introduction

Integrated Management of Childhood Illness (IMCI) is an important worldwide initiative of WHO and UNICEF to reduce child mortality. IMCI is a set of clinical guidelines for the management of major childhood illnesses; it informs healthcare providers on assessment, classification, treatment, and counseling.

Evidence demonstrates promising results in the form of more accurate diagnosis and improved treatment of sick children when IMCI is followed closely (Simoes et al. 1997; Kalter et al. 1997). Despite improved case management following IMCI training, the recommended approach faces several challenges when implemented at the national level (Perkins et al. 1997). Improvements in case management following IMCI training were not well sustained. IMCI's complexities and time constraints indicate that alternate approaches may be required to support its successful implementation.

Job aids have been shown to increase compliance with guidelines such as IMCI (Lahaie et al. 2001). They can enhance worker performance by reducing errors caused by poor recall and poor decision making, reduce the cost and time for training, and increase effectiveness of transferring skills learned in training to the job environment (Knebel et al. 2000; Moore 2001).

The Quality Assurance Project investigated how job aids could increase compliance with IMCI in Zambia in cooperation with the Zambian Central Board of Health. Zambia was purposively chosen because it was one of the first countries to train providers in IMCI, and thus had many IMCI-trained providers. Furthermore, others have noted the need for improved job aids in African countries to enable providers to implement IMCI (Tavrow 1998). In fact, several WHO-developed job aids for IMCI were already in use in Zambia at the start of our investigation, including a chartbook, wall chart, recording form, and mother card. The chartbook provides the official definition of the IMCI guidelines and includes recommended drugs and dosages.

This study obtained information on the use of and provider opinions about IMCI job aids in order to develop and test a job aid according to scientific design principles. The study had three stages. First was an assessment of the use and effectiveness of existing IMCI job aids. Second was the development and introduction of a new IMCI job aid (new outpatient department book, or NOPD book¹). Third was a reassessment of job aid usage and effectiveness following introduction of the NOPD book. This document reports the methods and results from the three stages.

II. Methods

A. Research Methods

The initial assessment (stage 1) was carried out in October 1999. The new job aid was developed in July 2000 and introduced and tested in August

Abbreviations

CBoH	Central Board of Health
CO	Clinical Officer
DHMT	District Health Management Team
HMIS	Health Management Information System
HW	Health worker
IMCI	Integrated Management of Childhood Illness
JA	Job aid
NOPD	New outpatient department book
OPD	Outpatient department book
ORT	Oral rehydration therapy
RN/HPN	Registered nurse
STD	Sexually transmitted disease
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
WHO	World Health Organization
ZEN	Zambia enrolled nurse

¹ The new IMCI job aid is often referred to as the NOPD book, standing for "new outpatient department book" because it is used in the outpatient department and is in the form of a small book. The IMCI chartbook was occasionally called the OPD (outpatient department) book.

through October 2000 (stage 2). The second assessment (stage 3) was done in November 2000. We refer to the first assessment as the “1999 assessment” and the second as the “2000 assessment.” The terms “baseline” and “follow-up” are generally not used in reference to the assessments because each assessment is analyzed as an independent cross-sectional data set. The 1999 assessment was carried out in two urban districts (Lusaka and Kitwe), selected because many of the Zambia providers already trained in IMCI resided there. The 2000 assessment was limited to Lusaka.

Both assessments obtained data using (1) structured interviews with providers, (2) structured exit interviews with caretakers, and (3) direct observation of IMCI case management by trained observers. The 1999 assessment also obtained data through provider focus groups and structured interviews with supervisors, and the 2000 assessment reviewed a sample of the completed NOPD books retained as part of the patient record.

In the 1999 assessment, only IMCI-trained providers were observed. The sample included all IMCI-trained providers in the two districts available for observation during the study period; 385 diarrhea cases being managed by 57 providers from 33 health centers were observed. Structured interviews were held with all observed providers, 32 supervisors, and 342 caretakers of children whose cases had been observed (89 percent of observed cases, representing all caretakers who agreed to participate and signed a consent form).

In 2000, 263 diarrhea cases managed by 39 IMCI-trained providers from 16 health centers were observed. Of the 39 observed providers, 22 had been observed in 1999. (According to District Health Management Team [DHMT] records, 91 providers from Lusaka had received training in IMCI before the 2000 assessment, 66 of whom were still providing care to sick children. Thus, the 39 observed providers represented 59 percent of all IMCI-trained providers still practicing in the district.) In addition, interviews were held with 53 providers (39 observed and 14 who were neither observed nor IMCI trained), no supervisors, and 251 caretakers of the children whose cases had been observed (95 percent of observed cases). Table 1 shows the sample sizes by district.

	1999 Assessment			2000 Assessment
	Lusaka	Kitwe	Total	Lusaka
Providers observed:				
All IMCI-trained providers in district	71	51	122	91
IMCI-trained providers practicing	43	30	73	66
IMCI-trained providers observed ^(a)	35	22	57	39 ^(b)
Providers interviewed:				
Interviewed providers trained in IMCI	35	22	57	39
Interviewed providers not trained in IMCI	0	0	0	14
Total providers interviewed	35	22	57	53
Supervisors interviewed:				
Interviewed supervisors trained in IMCI	na	na	12	0
Interviewed supervisors not trained in IMCI	na	na	20	0
Total supervisors interviewed	na	na	32	0
Health centers, cases, caretakers, NOPDs:				
Health centers visited	19	14	33	16
IMCI cases observed	na	na	385	263
Average cases per provider observed	na	na	6.75	4.70
IMCI case caretakers interviewed at exit	na	na	342 (89%)	251 (95%)
Completed NOPD books reviewed		Not applicable		157
Notes. (a) All providers observed were trained in IMCI. (b) Of the 39 trained providers observed in 2000, 22 had been observed in 1999. (c) na = not applicable. (d) “-” = data not available.				

The case management observations were recorded on a standardized form developed by WHO and the BASICS Project for IMCI observation. The form was modified to permit us to record whether a job aid

was used during each function (i.e., assessment, classification, treatment, counseling) of IMCI case management, deemed appropriate because some providers would use a job aid during some functions but not others. Prior to the 1999 observations, all data collection instruments were tested outside the study area in Kabwe District.

Ten observers were selected from the IMCI supervisors for each survey. Prior to each survey, the observers received a one-day training on using of the data collection instruments. For data collection, the observers were paired, and each pair worked one day a week, collecting data at one health center per day. Eligible IMCI cases included all children aged 2–59 months who visited the center on assessment day and exhibited an IMCI condition. Prior to the assessments, each pair of observers noted which job aids and other IMCI materials were available to providers. The observers conducted exit interviews with all consenting caretakers and all providers after the case management observations. The observers were asked to observe 7–10 cases for each provider; they averaged 6.8 cases per provider in 1999 and 4.7 in 2000 (Table 1).

The focus group discussions with providers during the 1999 assessment used a generic guideline designed to obtain information on the use of existing IMCI tools and the providers' recommendations for improving them.

The NOPD book doubled as a record of the visit and was stored with the patient record at the health centers. The 2000 assessment reviewed a random sample of 157 completed NOPD books at 16 study centers (approximately 10 per center) to determine whether they had been filled out appropriately.

Permission from the Central Board of Health (CBoH), Research and Ethics Board, and the DHMT was obtained prior to the research. Training schedules and permission letters were dispatched through the DHMT to all health centers where data collection would be conducted. All supervisors of facilities that received the new job aid were informed by the DHMT, and permission was obtained for conducting the research prior to the study. Consent forms were administered and signed by all providers and caretakers included in the study.

Data were entered using Epi-Info software in the field. Data cleaning and analysis were carried out using SPSS software.

B. Designing the Job Aid

At the start of the study, four different IMCI job aids were in use in the study area: a chartbook, wall poster, recording form, and mother card. The chartbook defined the IMCI algorithm, including recommended dosages of medications, and was given to providers during their original IMCI training. It was the most used of the four job aids by IMCI-trained providers when providing outpatient care to children during the 1999 assessment. The wall poster summarized much of the information in the chartbook and was posted in many outpatient areas. The recording form provided an instrument for providers to record observations made during IMCI case management. The rarely used mother card was available for providers in counseling mothers on good nutrition.

During the 1999 assessment, information on the use of and opinions about these job aids were obtained from a sample of providers. This included opinions on the content and format. This information was used in designing the new job aid (the NOPD book). The NOPD book adopted completely the IMCI-recommended guidelines for Zambia without modification (except prescribing information was eliminated; nonprescriptive instructions such as "Give first dose of appropriate antibiotic" were retained), even though some concerns about the guidelines had been raised by providers during the 1999 assessment.

The NOPD book was developed by a specialist in industrial performance improvement through job aids, who collaborated with the Zambian team. Information from the 1999 assessment, the IMCI chartbook, and observations of a few providers managing IMCI cases were used to identify essential tasks and key characteristics of the IMCI case work environment. A prototype was developed, using well-tested job aid design principles (Moore 2001), reviewed by Zambian providers experienced with IMCI, and finalized.

The NOPD book is 8 ½ x 5 inches, 56 pages long, and intended to be used on a one-child, one-book basis. It accommodates summary information for an infant one week to two months, and provides detailed information and accommodates the recording of detailed information for a child 2–59 months old. For the older age group, 12 separate episodes of illnesses, including two follow-up visits, can be treated and recorded using one book. The appendix here presents an abbreviated version that would cover just one episode and some material that appears only once in the NOPD book (e.g., “A Guide to Use When Counseling Caretakers on Feeding).”

The NOPD book adopted most of the IMCI chartbook content, but excluded recommended medications and dosages, and added sections for recording information on family, medical history, weight for age, and immunization. An important decision was to have the provider record directly in the job aid so that it would also serve as part of the patient record. Key objectives and features of the NOPD book were:

- Maintain credibility of provider
- Use existing OPD book content and general format
- Do not include recommended medication and dosages to save space and to prevent caretakers from prescribing if they receive an NOPD book
- Put counseling guidelines in a prominent place to remind provider
- Provide space to record family medical history (e.g., TB, HIV) and patient medical history
- Provide space to record non-IMCI symptoms and conditions
- Provide space to record temperature and weight
- Incorporate both a job aid and a record of visit

Workshops were held to introduce the NOPD book to the participating health centers and providers. At the workshops, the IMCI algorithm was reviewed and then the NOPD book was explained step-by-step. The results from the 1999 assessment were also discussed, and attendees and supervisors could discuss the distribution of the new book as well as its strengths and weaknesses.

Ten thousand copies of the NOPD book were distributed to 18 health centers. Health centers received 200–500 copies each, depending on size. Sixteen of the 18 health centers agreed to participate in the study and two declined. Follow-up visits were made to each health center a few days after they received the NOPD books to ensure they were being used. Additional copies were produced and distributed later for the case observations in the 2000 survey.

III. Results

A. Provider Characteristics

Table 2 summarizes characteristics of the providers who participated in the surveys. Two-thirds were female and one-third male, with the proportion of female providers higher in the 2000 survey than in 1999. The providers included mostly clinical officers (50 percent), Zambian enrolled nurses (28 percent) and registered nurses (20 percent), with roughly the same proportions in 1999 and 2000. All providers observed in 1999 and 2000 were trained in IMCI.

Characteristic		1999 Number of Providers (%)	2000 Number of Providers (%)	Total Number of Providers (%)
Sample size		57	56	113
Sex	Male	23 (40.4)	15 (26.8)	38 (33.6)
	Female	34 (59.6)	41 (73.2)	75 (66.4)
Level (cadre)	Physician	0 (0)	1 (1.8)	1 (0.9)
	Clinical officer (CO) ^(a)	29 (50.9)	28 (50.0)	57 (50.4)
	Registered nurse (RN/HPN)	13 (22.8)	10 (17.9)	23 (20.4)
	Zambian enrolled nurse (ZEN)	15 (26.3)	17 (30.4)	32 (28.3)
Years of Clinical training	Less than 1	8 (14.0)	nc ^(b)	
	1–1.9	26 (45.6)	nc	
	2–2.9	9 (15.8)	nc	
	3 or more	14 (24.6)	nc	

Notes. (a) Clinical officers have about three years of medical training at the university level, are authorized to treat patients, but have not obtained a medical degree. (b) nc = data not collected.

B. Provider Experience with IMCI (1999 Survey)

In the 1999 survey, 49 of the 57 providers (86 percent) said they had been using IMCI for more than one year. Furthermore, 77 percent (44 of 57) reported receiving at least one supervision visit in the previous three months, although 70 percent said they did not appreciate being supervised during the IMCI implementation. The providers said they experienced the following problems in using IMCI:

- Lack of drugs: 25/57 (43.9%)
- Lack of time: 24/57 (42.1%)
- Inadequate staff: 22/57 (38.6%)
- Lack of supplies: 11/57 (19.3%)
- Non-supportive coworker: 7/57 (12.3%)

C. Use of Job Aids

IMCI job aid usage in 1999 and 2000 is presented in Tables 3 and 4. The observed providers, all trained in IMCI, used a job aid in 41 percent of all IMCI cases in the 1999 survey. In the 2000 survey this figure had risen to 61 percent, with 37 percent using the NOPD book, often in combination with the chartbook, as had been intended by the NOPD book developers. Usage was similar for the assessment of different conditions, mostly varying from 41 percent to 48 percent in 1999, and from 56 percent to 64 percent in 2000. There were only two exceptions to these ranges: in 1999, only 19 percent used a job aid for assessment of feeding practices, and in 2000, only 43 percent used a job aid for assessment of malnutrition (feeding practice was not assessed in 2000). Job aid usage differed substantially by type of provider. Table 4 shows that nurses used job aids more than clinical officers in assessing all conditions in both years.

Table 3 Observed Provider Usage of Job Aids: Percentage of Cases Where a Job Aid Was Used^(a)			
	1999	2000	Both (Pooled)
	N / D ^(b) (%)	N / D (%)	N / D (%)
By type of job aid:			
Cases using any IMCI job aid ^(c)	160 / 385 (41.6)	160 / 263 (60.8)	320 / 648 (46.8)
Cases using NOPD book	na ^(d)	98 / 263 (37.3)	
By health condition:			
To assess danger signs	159 / 385 (41.3)	160 / 263 (60.8)	319 / 648 (46.6)
To assess cough or breathing	115 / 267 (43.1)	109 / 170 (64.1)	224 / 437 (51.3)
To assess diarrhea	67 / 155 (43.2)	67 / 116 (57.8)	134 / 271 (49.4)
To assess fever	124 / 261 (47.5)	104 / 185 (56.2)	228 / 446 (51.1)
To assess ear problem	10 / 21 (47.6)	na	
To assess malnutrition or anemia	160 / 384 (41.6)	113 / 263 (43.0)	273 / 647 (42.2)
To assess immunization or Vitamine A status	160 / 384 (41.6)	143 / 228 (62.7)	303 / 612 (49.5)
To assess feeding	48 / 252 (19.0)	na	
By function:			
For referral	12 / 28 (42.9)	na	
For treatment	133 / 385 (34.5)	na	
Notes. (a) All figures based on observed usage by IMCI-trained providers. (b) N (numerator) is the number of cases in which an IMCI job aid was used, and D (denominator) for assessment of danger signs is the total number of cases observed that recorded data on job aid usage, and for all other conditions D is number of observed cases with signs present for that condition and that recorded data on job aid usage. (c) Includes the chartbook, NOPD, wall poster, recording form, and mother card. (d) na = data not available/not collected.			

	1999					2000				
	Clinical Officer	PHN / RN ^(b)	ZEN	Male Provider	Female Provider	Clinical Officer	PHN / RN	ZEN	Male Provider	Female Provider
Proportion (percentage) using any JA to assess:	N / D (%) ^(c)	N / D (%)	N / D (%)	N / D (%)	N / D (%)	N / D (%)	N / D (%)	N / D (%)	N / D (%)	N / D (%)
Danger signs	81/230 (35)	28/ 65 (43)	50/ 90 (56)	68/169 (40)	91/216 (42)	63/112 (56)	30/ 49 (61)	67/102 (66)	34/ 59 (58)	126/204(62)
Cough or breathing difficulty	48/157 (31)	28/ 43 (65)	37/ 57 (65)	44/115 (38)	69/142 (49)	44/ 77 (57)	25/ 33 (76)	40/ 60 (67)	25/ 44 (57)	84/126 (67)
Diarrhea	28/ 97 (29)	19/ 27 (70)	18/ 29 (62)	22/ 66 (33)	43/ 87 (49)	28/ 55 (51)	16/ 19 (84)	23/ 42 (55)	14/ 29 (48)	53/ 87 (61)
Fever	51/147 (35)	34/ 49 (69)	38/ 65 (59)	41/111 (37)	82/150 (55)	39/ 77 (51)	30/ 41 (73)	35/ 67 (52)	19/ 43 (44)	85/ 142 (60)
Ear problem	5 / 13 (39)	3 / 4 (75)	2 / 4 (50)	4 / 10 (40)	6 / 11 (55)	na	na	na	na	na
Malnutrition and anemia	66/230 (29)	40/ 65 (62)	54/ 89 (61)	51/169 (30)	109/215(51)	36/112 (32)	30/ 49 (61)	47/102 (46)	24/ 59 (41)	89/204 (44)
Immunization and Vitamin A status	69/229 (30)	40/ 65 (62)	51/ 90 (57)	60/169 (36)	100/215(47)	52/ 93 (56)	34/ 45 (76)	57/ 90 (63)	20/ 41 (49)	123/187(66)
Ave. percent using JA to assess ^(d)	32.4%	63.7%	58.3%	36.4%	49.5%	43.3%	61.6%	49.8%	42.3%	51.2%

Notes. (a) All figures are based on observed usage by IMCI-trained providers. (b) PHN/RN = public health nurse or registered nurse; ZEN = Zambia enrolled nurse; JA = job aid; na = data not available. (c) N (numerator) is the number of cases in which any job aid was used, and D (denominator) for danger signs is all cases observed that recorded data on job aid usage, and for all other conditions D is all cases with signs present for that condition and that recorded data on job aid usage. (d) Average percent is the average of the percentages for all conditions.

Table 5 presents the perceived usefulness of IMCI job aids, information that was obtained from interviews with providers and their supervisors. When providers were asked in 1999 which job aids were used frequently, the chartbook was identified by 54 of the 57 providers (95 percent) whereas only 18 (32 percent) mentioned the recording form, the next highest choice. In 2000, most providers said the chartbook and NOPD book were more useful than the other job aids: 89 percent favored the chartbook and 81 percent the NOPD book, while the other three job aids were mentioned by only about 25 percent of the providers. More providers not trained in IMCI found the NOPD useful than found the chartbook useful (79 percent to 71 percent). This reinforces focus group suggestions that the NOPD book may have motivated untrained providers to ask for IMCI training. In 1999, before introduction of the NOPD book, 65 percent of providers thought that job aids were useful for assessment, classification, and treatment, but only 21 percent thought they were useful for counseling. Most (65 percent) thought the job aids helped them remember IMCI guidelines, while only 23 percent said they saved time and 10 percent considered them useful because they served as a record. In 2000, after the introduction of the NOPD book, providers gave different reasons than in 1999 for using job aids: 70 percent said it made their job easier, 59 percent said it saved time, and 32 percent said it helped them remember.

	1999		2000		
	N / D	(%)(^b)	IMCI Trained	Untrained	Total
			N / D (%)	N / D (%)	N / D (%)
Supervisors' perception of job aids used frequently by providers:			na ^(c)	na	na
IMCI chartbook	26 / 31	(83.9)	na	na	na
Recording form	11 / 31	(35.4)	na	na	na
Wall chart	7 / 31	(22.5)	na	na	na
Mother card	2 / 31	(6.4)	na	na	na
Providers who said they used the job aid frequently (1999); considered it useful (2000): ^(d)	Used Frequently		Considered Useful		
IMCI chartbook	54 / 57 (94.7)		37 / 39 (94.9)	10 / 14 (71.4)	47 / 53 (88.7)
Recording form	18 / 57 (31.6)		14 / 39 (35.9)	0 / 14 (0.0)	14 / 53 (26.4)
Wall chart	6 / 57 (10.5)		10 / 39 (25.6)	3 / 14 (21.4)	13 / 53 (24.5)
Mother card	8 / 57 (14.0)		14 / 39 (35.9)	0 / 14 (0.0)	14 / 53 (26.4)
NOPD book	na		32 / 39 (82.1)	11 / 14 (78.6)	43 / 53 (81.1)
Usefulness by function, provider opinion:					
Helps identify risk cases	24 / 57 (42.1)		na	na	na
Helps in assessment	39 / 57 (68.4)		na	na	na
Helps in classification	37 / 57 (64.9)		na	na	na
Helps in treatment/prescription	37 / 57 (64.9)		na	na	na
Helps in counseling	12 / 57 (21.1)		na	na	na
Provides quick reference	24 / 57 (42.1)		na	na	na
Reasons for using job aid, provider opinion:			NOPD Book Only		
Helps to remember IMCI algorithm	37 / 57 (64.9)		13 / 39 (33.3)	4 / 14 (28.6)	17 / 53 (32.1)
Saves time	13 / 57 (22.8) ^(e)		25 / 39 (64.1)	6 / 14 (42.9)	31 / 53 (58.5)
Serves as a record	6 / 57 (10.5)		9 / 39 (23.1)	2 / 14 (14.3)	11 / 53 (20.8)
Makes job easier	na		26 / 39 (66.7)	11 / 14 (78.6)	37 / 53 (69.8)
Increases accuracy or reduces error	na		15 / 39 (38.5)	4 / 14 (28.6)	19 / 53 (35.8)
Required by supervisor	1 / 57 (1.8)		na	na	na
Notes. (a) Figures based on provider and supervisor opinions. (b) N (numerator) is the number of providers (or supervisors) who responded "yes" to this question, and D (denominator) is the number of providers (or supervisors) who were interviewed on this question. (c) na = data not available. (d) 1999 providers were asked which job aids were used frequently, and 2000 providers were asked which job aids were useful. (e) Four other providers said job aids were not useful because they increased the time for case management.					

D. Performance with and without Job Aids

Using a predetermined list of indicators related to tasks that should be performed for each function (i.e., assessment, classification, treatment [prescription], and counseling), the observers judged whether or not the provider performed each task according to IMCI. The assessment function was organized according to seven conditions (danger signs, cough/difficult breathing, diarrhea, fever, ear problems, malnutrition/anemia, and immunizations/Vitamin A status), and each condition was measured against four or five indicators of compliance. For example, the four indicators used to judge compliance with IMCI for fever assessment were: Did the provider check for duration of fever?, For measles in the past three months?, For stiff neck?, For generalized rash? (The specific indicators are in Tables 6 and 7.) For the most part, the same assessment indicators were measured in both 1999 and 2000.² The classification indicators were measured only in 1999; the drug prescription and counseling indicators were measured only in 2000. For any given case, a job aid might have been used for some functions and not others. The use of a job aid was measured for each function.

We analyzed the association between provider performance and the use of job aids, and present the results in Tables 6 (assessment and counseling) and 7 (classification and prescription). In general, performance was much higher with a job aid. For assessment, pooled performance across all seven conditions in 1999 was 81 percent when a job aid was used, compared to only 53 percent without one, and in 2000 it was 84 percent with a job aid and 64 percent without. This result was consistent across the individual conditions and tasks; assessment tasks were performed to standard significantly more frequently with a job aid. Counseling performance was similar to assessment performance: in 2000, pooled performance for the five counseling tasks was 81 percent with a job aid and 55 percent without. These differences, although suggestive, do not imply causality.

Table 7 reports performance with and without a job aid for classification tasks in 1999 and for drug prescription tasks in 2000. Classification performance was significantly higher when using a job aid for the three most frequent problems: malaria, pneumonia, and moderate malnutrition (anemia, low weight-for-age, or growth faltering). Pooled classification performance for all tasks associated with the ten health problems was 76 percent with a job aid and 65 percent without. Unlike the other functions, drug prescription performance in 2000 was not significantly higher with a job aid. The correct antibiotic or anti-malarial was prescribed about 68 percent of the time with and without a job aid. (There was a small but not statistically significant advantage in favor of the job aids.)

Tables 6 and 7 show certain tasks with consistently low performance with or without a job aid. Assessment performance for malnutrition and anemia is consistently the lowest among all conditions, averaging only about 47 percent in the two surveys. Assessment for fever is also low: 54 percent in the 1999 survey and 62 percent in 2000. The only fever assessment task consistently performed correctly was checking the duration of the fever; checking for measles, stiff neck, and generalized rash were not done consistently. Checking for stridor or wheezing was another task with consistently low performance in both surveys. Children with severe anemia, very low weight for age, or growth faltering were correctly classified in only 58 percent of the cases in 1999, with most of this poor classification performance associated with cases not using a job aid. The correct prescription for cough and difficult breathing was done correctly in only ten of the 93 cases (11 percent) in 2000. This exceedingly poor performance was observed whether a job aid was used or not.

² Ear problems were dropped in the 2000 survey because of the small number of cases with this problem.

E. Performance with and without NOPD Book (2000 Survey)

Table 6 reports assessment and counseling performance according to IMCI standards in 2000 when using the NOPD book and when using any of the other job aids. In general the performance is slightly higher when using the other job aids, although the difference is not statistically significant for most tasks. However, performance in assessing fever is substantially higher when using the other job aids than the NOPD, while malnutrition/anemia and immunization/Vitamin A assessment performance is slightly higher with the NOPD than with other job aids.

Table 6 Compliance with IMCI Guidelines for Assessment and Counseling with and without Job Aids

IMCI Guidelines	1999 Assessment						2000 Assessment										
	With Job Aid		Without Job Aid		Total		With NOPD Book		With Other Job Aids		With Job Aid		Without Job Aid		Total		
	N / D ^(a)	% ^(b)	N / D	% ^{SIG(c)}	N / D	%	N / D	%	N / D	% ^{SIG}	N / D	%	N / D	% ^{SIG}	N / D	%	
ASSESSMENT																	
Basic information:																	
HW ^(d) asked age of child																259/263	98.5
HW weighed child																229/263	87.1
HW recorded temperature of child																236/263	89.7
HW checked for danger signs:																	
Can drink or breastfeed	149 / 159	93.7	169 / 226	74.8**	318 / 385	82.6	68 / 74	91.9	85 / 86	98.8*	153 / 160	95.6	79 / 103	76.7**	232 / 263	88.2	
Vomits everything	147 / 159	92.5	146 / 226	64.6**	293 / 385	76.1	69 / 74	93.2	82 / 86	95.3	151 / 160	94.4	74 / 103	71.8**	225 / 263	85.6	
Had convulsions	150 / 159	94.3	157 / 226	69.5**	307 / 385	79.7	63 / 74	85.1	78 / 86	90.7	141 / 160	88.1	81 / 103	78.6*	222 / 263	84.4	
Drowsy	146 / 159	91.8	115 / 226	50.9**	261 / 385	67.8	64 / 74	86.5	85 / 86	98.8**	149 / 160	93.1	87 / 103	84.5*	236 / 263	89.7	
Pooled results for danger signs^(e)	592 / 635	93.1	587 / 904	64.9**	1179 / 1539	76.6	264 / 296	89.2	330 / 344	95.9**	594 / 640	92.8	321 / 412	77.9**	915 / 1052	87.0	
Asked about cough/difficult breathing																365 / 385	94.8
YES responses of those asked																267 / 365	73.2
In yes responses, HW checked for...																	
Duration of cough	110 / 115	95.7	134 / 152	88.2*	244 / 267	91.4	50 / 50	100	57 / 59	96.6	107 / 109	98.2	56 / 61	91.8*	163 / 170	95.9	
Breaths per minute	112 / 113	99.1	114 / 142	80.3**	226 / 255	88.6	50 / 50	100	59 / 59	100	109 / 109	100	56 / 61	91.8**	165 / 170	97.1	
Chest indrawing	103 / 112	92.0	110 / 145	75.9**	213 / 257	82.9	49 / 50	98.0	58 / 59	98.3	107 / 109	98.2	57 / 61	93.4	164 / 170	96.5	
Stridor or wheeze	61 / 115	53.0	49 / 146	33.6**	110 / 261	42.1	24 / 50	48.0	40 / 59	67.8*	64 / 109	58.7	22 / 61	36.1**	86 / 170	50.6	
Pooled results cough/difficult breath	386 / 455	84.8	407 / 585	69.6**	793 / 1040	76.3	173 / 200	86.5	214 / 236	90.7	387 / 436	88.8	191 / 244	78.3**	578 / 680	85.0	
HW Asked about diarrhea																325 / 385	84.4
YES responses of those asked																156 / 325	48.0
If yes response, HW checked for...																	
Duration of diarrhea	63 / 66	95.5	78 / 89	87.6**	141 / 155	91.0	29 / 30	96.7	36 / 37	97.3	65 / 67	97.0	46 / 49	93.9	111 / 116	95.7	
Blood in stool	57 / 66	86.4	72 / 89	80.9	129 / 155	83.2	26 / 30	86.7	35 / 37	94.6	61 / 67	91.0	41 / 49	83.7	102 / 116	87.9	
Offered water (thirst, ability to drink)	44 / 65	67.7	42 / 89	47.2*	86 / 154	55.8	19 / 30	63.3	19 / 37	51.4	38 / 67	56.7	10 / 49	20.4**	48 / 116	41.4	
Pinched abdomen	53 / 66	80.3	45 / 89	50.6**	98 / 155	63.2	17 / 30	56.7	32 / 37	86.5**	49 / 67	73.1	18 / 49	36.7**	67 / 116	57.8	
Pooled results for diarrhea	217 / 263	82.5	237 / 356	66.6**	454 / 619	73.3	91 / 120	75.8	122 / 148	82.4	213 / 268	79.5	115 / 196	58.7**	328 / 464	70.7	
HW asked about fever																363 / 385	94.3
YES responses of those asked																261 / 363	71.9
If yes response, HW checked for...																	
Duration of fever	117 / 124	94.4	114 / 142	80.3**	231 / 266	86.8	43 / 47	91.5	55 / 57	96.5	98 / 104	94.2	72 / 81	88.9	170 / 185	91.9	
Measles in past three months	88 / 123	71.5	40 / 138	29.0**	128 / 261	49.0	31 / 47	66.0	50 / 57	87.7**	81 / 104	77.9	28 / 81	34.6**	109 / 185	58.9	
Stiff neck	71 / 123	57.7	42 / 138	30.4**	113 / 261	43.3	29 / 47	61.7	47 / 57	82.5*	76 / 104	73.1	31 / 81	38.3**	107 / 185	57.8	
Generalized rash	60 / 123	48.8	33 / 142	23.2**	93 / 265	35.1	19 / 47	40.4	42 / 57	73.7**	61 / 104	58.7	12 / 81	14.8**	73 / 185	39.5	
Pooled results for fever	336 / 493	68.2	229 / 560	40.9**	565 / 1053	53.7	122 / 188	64.9	194 / 228	85.1	316 / 416	76.0	143 / 324	44.1	459 / 740	62.0	

<i>Continued from previous page: Table 6 Compliance with IMCI Guidelines for Assessment and Counseling with and without Job Aids</i>																
IMCI Guidelines	1999 Assessment						2000 Assessment									
	With Job Aid		Without Job Aid		Total		With NOPD Book		With Other Job Aids		With Job Aid		Without Job Aid		Total	
	N / D	%	N / D	% ^{SIG} (c)	N / D	%	N / D	%	N / D	% ^{SIG}	N / D	%	N / D	% ^{SIG}	N / D	%
HW asked about ear problem: YES responses of those asked					21 / 385										206/263	78.3
If yes response, HW checked for...					21 / 21										21 / 206	10.2
Ear pain	8 / 10	80.0	7 / 11	63.6	15 / 21	71.4	5 / 6	83.3	12 / 12	100	17 / 18	94.4	3 / 3	100	20 / 21	95.2
Ear discharge (asked)	9 / 10	90.0	8 / 11	72.7	17 / 21	81.0	5 / 6	83.3	12 / 12	100	17 / 18	94.4	3 / 3	100	20 / 21	95.2
Tender swelling behind ear	5 / 10	50.0	4 / 11	36.4	9 / 21	42.9	3 / 6	50.0	7 / 12	58.3	10 / 18	55.6	2 / 3	66.7	12 / 21	57.1
Ear discharge (checked)	--	--	--	--	--	--	1 / 6	16.7	4 / 12	33.3	5 / 18	27.8	2 / 3	66.7	7 / 21	33.3
Pooled results for ear problems	22 / 30	73.3	19 / 33	57.6	39 / 63	65.1	14 / 19	73.7	35 / 40	87.5	49 / 59	83.1	10 / 12	83.3	59 / 71	83.1
HW checked malnutrition & anemia					384 / 385										263/263	100
Visible severe wasting	82 / 160	51.3	33 / 224	14.7**	115 / 384	29.9	31 / 45	68.9	42 / 68	61.8	73 / 113	64.6	34 / 150	22.7**	107/263	40.7
Palomar pallor	145 / 160	90.6	100 / 224	44.6**	245 / 384	63.8	38 / 45	84.4	56 / 68	82.4	94 / 113	83.2	59 / 150	39.3**	153/263	58.2
Edema of both feet	112 / 160	70.0	38 / 224	17.0**	150 / 384	39.1	35 / 45	77.8	37 / 68	54.4**	72 / 113	63.7	26 / 150	17.3**	98/263	37.3
Very low weight-for-age	131 / 160	81.9	69 / 224	30.8**	200 / 384	52.1	41 / 45	91.1	63 / 68	92.6	104/113	92.0	36 / 150	24.0**	196/263	74.5
Pooled results for malnutr/anemia	470 / 640	73.4	240 / 896	26.8**	710 / 1536	46.2	145 / 180	80.6	198 / 272	72.8	343 / 452	75.9	155 / 600	25.8**	498 / 1052	47.3
Immunization and Vitamin A																
HW checked for Under-5 Card	158 / 160	98.8	194 / 224	86.6**	352 / 384	91.7									228/263	86.7
Under-5 Card available	155 / 158	98.1	173 / 194	89.2**	328 / 352	93.2									228/228	100
If card available, HW checked for...																
Immunization status	148 / 155	95.5	151 / 173	87.3**	299 / 328	91.2	68 / 68	100	73 / 74	98.6	142/143	99.3	79 / 85	92.9**	221/228	96.9
Identified next vaccines due, if any	35 / 37	94.6	17 / 18	94.4	52 / 55	94.5	15 / 15	100	12 / 13	92.3	27 / 28	96.4	14 / 14	100	41 / 228	18.0
Due for Vitamin A	112 / 155	72.3	65 / 173	37.6**	177 / 328	54.0	60 / 68	88.0	59 / 74	79.7	120/143	83.9	48 / 85	56.5**	168/228	73.7
Pooled results for Immun/Vitamin A	295 / 347	85.0	233 / 364	64.0**	528 / 711	67.1	143 / 151	94.7	144 / 161	89.4	289 / 314	92.0	141 / 184	76.6**	430 / 498	86.3
Assessment – All pooled results^(e)		81.0		52.8		65.1		82.5		86.6*		84.8		54.6		71.7
Assessment – Ave of 7 sub-areas^(f)		80.1		55.8		66.5		80.8		86.3		84.0		63.5		74.5
COUNSELING																
HW explained to give oral drugs at home							52 / 60	86.7	72 / 77	93.5	124/137	90.5	75 / 122	61.5**	199/259	77.1
HW explained when is follow-up visit							56 / 57	98.2	73 / 73	100	129/130	99.2	93 / 112	83.0**	222/242	91.7
HW told caretaker date of next immuniz.							9 / 12	75.0	10 / 14	71.4	19 / 26	73.1	6 / 16	37.5*	25 / 42	59.5
HW told caretaker date next vit.A suppl.							8 / 14	57.1	8 / 13	61.5	16 / 27	59.3	7 / 20	35.0	23 / 47	48.9
HW asked checking questions ^(g)							36 / 57	63.2	60 / 75	80.0*	96 / 132	72.7	33 / 117	28.2**	131/249	52.6
Counseling – All results pooled							161 / 200	80.5	223 / 252	81.5*	384 / 452	85.0	214 / 387	55.3**	598 / 839	71.3
Notes. (a) N (numerator) equals the number of cases performed according to the IMCI guideline, and D (denominator) is the number of cases seen to which the guideline applies. (b) % is the ratio of the numerator to the denominator expressed as a percentage. (c) “% ^{SIG} ” is N/D expressed as a percentage followed by one asterisk (*) if the difference between that ratio and the preceding ratio is significant at the .05 level, and two asterisks (**) if at the .01 level, according to a CHI-Squared test. (d) HW is health worker. (e) Pooled results are obtained by summing the numerators and denominators of the individual items being pooled and obtaining the ratio (thus weighting each item by its sample size). (f) In the assessment function, there are seven sub-areas (danger signs, cough and difficult breathing, etc.) The average percentage of pooled results performed to guideline equals the average of the pooled result across the seven sub-areas. (g) “Checking questions” relates to questions asked of a caretaker to ensure that she understood counseling.																

Table 7 Compliance with IMCI Guidelines for Classification and Drug Prescription with and without Job Aids												
IMCI Guidelines	1999 Assessment						2000 Assessment					
	With Job Aid		Without Job Aid		Total		With Job Aid		Without Job Aid		Total	
	N / D ^(a)	% ^(b)	N / D	% ^{SIG(c)}	N / D	%	N / D	%	N / D	% ^{SIG}	N / D	%
CLASSIFICATION												
Children correctly classified according to clinical signs and symptoms												
Severe pneumonia	5 / 13	38.5	5 / 9	55.5	10 / 22	45.5						
Pneumonia	44 / 54	81.5	24 / 39	61.5*	68 / 93	73.1						
Some dehydration	1 / 4	25.0	1 / 2	50.0	2 / 6	33.3						
Persistent diarrhea	0 / 4	0.0	0 / 10	0.0	0 / 14	0.0						
Measles	1 / 10	10.0	0 / 5	0.0	1 / 15	7.7						
Malaria	103 / 113	91.2	109 / 131	83.2	212 / 244	86.9						
Acute ear infection	6 / 8	75.0	5 / 8	62.5	11 / 16	68.8						
Chronic ear infection	0 / 1	0.0	0 / 0	--	0 / 1	0.0						
Severe malnutrition and severe anemia	0 / 4	0.0	1 / 5	20.0	1 / 9	11.1						
Anemia, very low wt. or growth falter.	37 / 49	75.5	11 / 33	33.3**	48 / 82	58.5						
Pooled results^(d)	197 / 260	75.8	145 / 242	64.5**	353 / 502	70.3						
DRUG PRESCRIPTION												
Correct prescription of antibiotic or anti-malarial for:												
Cough and difficult breathing							7 / 50	14.0	3 / 43	7.0	10 / 93	10.8
Pneumonia							29 / 31	93.5	27 / 28	96.4	56 / 59	94.9
Severe pneumonia							2 / 3	66.7	2 / 2	100	4 / 5	80.0
Malaria							92 / 96	95.8	64 / 73	87.7**	156 / 169	92.3
Severe febrile illness							2 / 2	100	0 / 0	--	2 / 2	100
Acute ear infection							6 / 6	100	2 / 3	66.7	8 / 9	88.9
Pooled results							138 / 198	69.7	98 / 149	65.8	236 / 347	68.0

F. Provider Comments on Job Aids

Providers gave additional information on job aids in interviews and focus groups. When the 57 providers in the 1999 survey were asked where their IMCI job aids were located, approximately 40 percent said “on the screening room table,” while the remainder said “at home” or “in a drawer.” When these providers were asked for suggestions to improve the IMCI job aids, 6 said to increase content, 3 said to reduce content, 2 said to modify the language, 2 to modify the design, and 3 to modify the format. Some specific suggestions included: create a separate job aid for common conditions such as diarrhea, cough, and malaria with recording forms for individual cases; include pictures of Africans; set aside an IMCI exam room; and secure needed supplies, such as scales, timers, thermometers, water jugs and cups, oral rehydration therapy (ORT) kits, and posters.

The 1999 providers participated in four focus groups of 8–10 providers each. Some of the general comments from the focus groups about problems with and suggested modifications of the existing IMCI job aids and other issues were:

- All nurses and health workers should be trained in IMCI to reduce workload; an infrastructure proportional to population growth.
- It is possible to follow IMCI for 10–15 cases per day, but not for 30–40 cases.
- No time for adequate counseling; assign another health worker for counseling
- Do not have fluids to confirm whether child is able to drink
- There are discrepancies in IMCI training materials from CARE, BASICS, and UNICEF, for example, information related to water pitchers, buckets, timers, wall clock, electric kettle, spoons, scales.
- Combine all materials so that everything is on one page
- Design materials that are easy to carry, e.g., pocket-sized books
- Thermometers and stop watches are not available for assessments.
- The content is gradually internalized, so there is no need to refer to the materials.
- Information on nutritional counseling is not relevant.
- Chloroquine should be administered at the health center because mothers do not understand dosage.
- Updated materials must be disseminated to everyone.
- Incompatibility between IMCI and Health Management Information System (HMIS) classification complicates recording.
- Give job aids to mothers to help them administer treatment and come for follow-up
- Educated mothers prefer that providers refer to materials during the visit.
- Some mothers complain that providers who refer to materials don’t know what to do.

Table 8 lists specific suggestions of the focus groups for improving the IMCI materials. The 1999 focus groups also proposed some different IMCI job aids: a register (similar to one developed by the Centers for Disease Control), table and desk mats, pocket booklets, videotapes, and computer software. They said that a register that had contents similar to the recording form would complement the IMCI chartbook and substitute for the HMIS register in health centers with only one provider. However, they said, it shouldn’t “feel” like a questionnaire, and would cause confusion if used in addition to, rather than as a substitute for, the HMIS register. They said that table and desk mats would be more convenient for reference than wall charts if they were the right size, but would only work if the table is not cluttered by other objects (e.g., thermometers, water pitcher, tally sheets, ORS cups). They said pocket booklets would be especially convenient for disease assessment and prescription information, and should be similar to the Syndromic Management of STD material.

Job Aid	Problems	Suggested Changes
IMCI chartbook	Time consuming; waiting clients claim using it takes too long IMCI drugs not available Too big Wears out easily Good for malnutrition and pneumonia but not for malaria or skin problems	Put mother card in booklet Include several drug options Make it more mother friendly Include information on vomiting, poisoning, and jaundice
Recording forms	Not useful for follow-up	Give every provider recording forms Give busy clinics recording forms, and other clinics a laminated version for reference
Wall chart	Difficult to see in large rooms (CARE photocopies too small; BASICS version better)	Undressing child for nutrition assessment is unnecessary
Mother card	Acceptable to providers but not mothers Small slips in vernacular Rarely used	Provide space for follow-up dates Attach to Under-5 Card Include seasonally available foods

The interviews with providers in the 2000 survey focused almost exclusively on the NOPD book. Most (94 percent) providers said the NOPD book was useful. Reasons given for its usefulness are summarized in Table 5. When asked about difficulties experienced with the NOPD book, the 53 providers mentioned lack of space and small font most often. Twenty-one providers (40 percent) said treatment space was too small, no lab space, space for writing too small, and follow-up difficult to find, and 9 (17 percent) said there was too much text. Thirteen (25 percent) said the font was too small. When asked about the clarity of the different sections, the answers were generally positive for all sections. The three sections with the most number of negative responses were Family and Medical History, Treatment, and Immunization, each with five (9 percent) providers saying the section was difficult to understand. All other sections had two or fewer negative responses. Suggestions for improving the NOPD book were:

- Increase font size
- Number the visits
- Provide a list of instructions
- Increase space for treatment section, other diseases, writing notes
- Provide space at the top of the cover for the name of provider
- Incorporate guidelines and more space for follow-up
- Provide place to indicate whether child is an orphan
- Incorporate infant recording form
- More questions on fever
- Include space for admission to hospital
- Put assessment and classification on one page to avoid having to turn the page
- Include instructions for treatment of HIV/AIDS

G. Interviews with Caretakers

Table 9 provides the responses obtained from caretaker exit interviews in 1999 and 2000. Over two-thirds said they had received information on their child's condition, had been told to return if the condition worsened, and had received information on medications. Over three-quarters knew the date of their scheduled follow-up visit. Use of job aids by the providers had no significant effect on the responses of the caretakers, except that medication information was received significantly more often by

caretakers attended by providers who used job aids. In 1999, 99 percent of caretakers said they preferred providers to refer to job aids during the IMCI visit. Seventy percent said that their provider had used written materials during the visit, which contrasts with our observed job aid usage rate of 41 percent. We cannot explain this 41–70 discrepancy.

Caretakers who:	1999	2000		
	N / D (%)	Used JA N / D (%)	No JA N / D (%)	Total N / D (%)
Said they received information on child's condition	245/ 342 (71.6)	100/135 (74)	78/ 116 (67)	178/ 251 (70.9)
Knew return date	259/ 342 (75.7)	114/135 (84)	90/ 116 (78)	204/ 251 (81.3)
Said they were told to return to center if child worsened	279/ 342 (81.6)	107/135 (79)	82/ 116 (71)	189/ 251 (75.3)
Said they received information on medications	317/ 342 (92.7)	123/125 (98)	91/ 106 (86)*	214/ 231 (92.6)
Said provider used IMCI materials	241/ 342 (70.5)	--	--	--
Preferred providers to refer to materials	340/ 342 (99.4)	--	--	--

Note. Significance of difference between those using a job aid and not using a job aid in 2000: no asterisk = not significant; * = significant at .001 level; -- = data not collected.

H. Review of NOPD Medical Records

The reviewers estimated the number of active NOPD books³ stored at each center based on a quick count. The large centers had 300–400 active books and the smaller ones 80–90. Since the large centers had received 500 and the small ones 200, clearly some were missing. Loss of registration numbers was one reason, and transfer of cases and records to other facilities was another.

The information in the sample of active NOPD books stored as medical records in the 16 study health centers was analyzed; see Table 10. Three-quarters of the reviewed books had information on one visit and one-quarter on multiple visits. Six percent of the books contained visits of infants aged one week to two months at the time of the visit, but some providers recorded information for these infants in the space for older children rather than on the special page for young infants, probably due to inadequate written instructions. Only about 36 percent of the books had all information recorded appropriately in the sections on medical history, sub-tasks, and follow-up.

NOPD books with:	N / D	(%)
Data on more than one IMCI visit	40 / 157	(25.5)
Appropriately recorded data in family/medical history section	59 / 157	(37.6)
Sub-tasks checked	56 / 157	(35.7)
Appropriately recorded data on follow-up visits	53 / 157	(33.8)
Information on children age 1 week to 2 months	9 / 157	(5.7)
Provider's name or initials	91 / 157	(58.0)
Other information	24 / 157	(15.3)
Unusual information	22 / 157	(14.0)

Note. Data are from a sample of 157 completed NOPD books (10 each from 15 study health centers and 7 from another.)

IV. Discussion and Conclusion

Both assessments found high correlation between the use of job aids for IMCI case management and compliance with IMCI standards. Compliance was higher when job aids were used across all types of providers, and for assessment, classification, and counseling, but not drug prescription. Nevertheless, this result does not demonstrate that job aids cause improved compliance, because the study methodology did

³ An active NOPD book has the results of one or more IMCI visits recorded.

not address whether individual providers who previously did not use a job aid *improved* their compliance when they started using job aids.

The provider interviews indicate that providers believe there are many advantages to using job aids: helps them remember the IMCI algorithm, saves time, and reduces errors. Such beliefs by job aid users strengthen our unproven opinion that job aids probably do cause higher compliance.

The 1999 survey was used to identify problems that might be resolved by a newly designed job aid and also to identify the strengths and weaknesses of the IMCI job aids then in use. Some providers expressed concern that caretakers would think less of them if they relied on job aids during case management, but 362 caretaker interviews indicated that caretakers overwhelmingly preferred to have providers refer to written material during visits.

The 2000 assessment focused on the new job aid, which has the key characteristic of serving as a permanent record as well as a job aid. Compliance with IMCI standards using the NOPD book was roughly similar to compliance with the IMCI chartbook. Both IMCI-trained and untrained providers considered it to be a useful tool (81 percent) for IMCI case management. It may have motivated providers not yet trained in IMCI to ask for IMCI training: 79 percent of these providers found it useful. Note however that the NOPD book is not designed to stand alone because it refers providers to the IMCI chartbook for treatment prescriptions. The NOPD book may provide significant advantages as a permanent medical record, but the accuracy of the recorded data in a small sample is suspect and more careful analysis is needed to determine whether it is superior to existing record systems. One of the key objectives of the 2000 assessment was to identify aspects of the NOPD book that could be improved. Numerous suggestions made by the providers have now been incorporated.

The NOPD book was useful in the opinion of the providers who used it. However, the methodological design of this study precluded determining whether the addition of the NOPD book as a complement to the existing IMCI chartbook was responsible for the increase in IMCI compliance between 1999 and 2000. Further revisions and testing are needed before the product can be promoted at a national level. Issues needing further analysis include costs of reproduction, having more space and a larger font size without making the book bigger, better instructions and orientation for providers and medical records staff, and integration into the supervisory structure and process.

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Selected Pages from the
New Outpatient Department Book
(Job Aid)

**Lusaka Urban District
Health Management Board**

_____ **Health Center**

Out-Patient Attendance Book

Child's Name: _____

Child's Birth Date: _____ Sex: M F

Residential Address: _____

Guardian's Name: _____

Date: _____ Age: _____ Weight: _____ kg Temp: _____ °C

Presenting Symptoms: _____

1. symptoms found (Column 1). 2. Classify illness (in THEN column):

IF this <u>main</u> symptom (Bold)	AND	THEN <input checked="" type="checkbox"/>						
<input type="checkbox"/> NOT able to drink or breastfeed <input type="checkbox"/> Vomits everything <input type="checkbox"/> Convulsions (Has or has had) <input type="checkbox"/> Lethargic or unconscious	⇒	<input type="checkbox"/> GENERAL DANGER SIGN: Urgent attention needed						
<input type="checkbox"/> Cough or difficult breathing _____ Days _____ Breaths/min <input type="checkbox"/> Chest indrawing <input type="checkbox"/> Stridor <input type="checkbox"/> Wheeze } Child must be calm	General danger sign Chest indrawing Stridor Fast breathing	<input type="checkbox"/> Severe pneumonia <input type="checkbox"/> Pneumonia <input type="checkbox"/> Cough or cold, but suspect TB <input type="checkbox"/> Cough or cold						
<table border="1" style="width: 100%;"> <thead> <tr> <th>If age</th> <th>Fast breathing</th> </tr> </thead> <tbody> <tr> <td>< 12 mo.</td> <td>50 bpm or more</td> </tr> <tr> <td>> 12 mo</td> <td>40 bpm or more</td> </tr> </tbody> </table>	If age	Fast breathing	< 12 mo.	50 bpm or more	> 12 mo	40 bpm or more	More than 30 days and a family history of TB (See inside front cover) None of the above	
If age	Fast breathing							
< 12 mo.	50 bpm or more							
> 12 mo	40 bpm or more							
<input type="checkbox"/> Diarrhoea _____ days <input type="checkbox"/> Blood in the stool <input type="checkbox"/> Lethargic or unconscious <input type="checkbox"/> Restless and irritable <input type="checkbox"/> Sunken eyes <input type="checkbox"/> Unable to drink or drinks poorly <input type="checkbox"/> Drinks eagerly (thirsty) <input type="checkbox"/> Abdominal skin pinch goes back <u>very slowly</u> (> 2 seconds) <input type="checkbox"/> Abdominal skin pinch goes back <u>slowly</u> (< 2 sec)	Two of the following signs: Lethargic or unconscious Sunken eyes Not able to drink or drinking poorly Skin pinch goes back <u>very slowly</u> Two of the following signs: Restless, irritable Sunken eyes Drinks eagerly, thirsty Skin pinch goes back <u>slowly</u> Not enough signs to classify as some or severe dehydration	<input type="checkbox"/> Severe dehydration <input type="checkbox"/> Some dehydration <input type="checkbox"/> NO dehydration						
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Note: A child with diarrhoea may have one or more classifications for diarrhoea</p> </div>	14 days or more and dehydration present	<input type="checkbox"/> Severe persistent diarrhoea						
	14 days or more and NO dehydration	<input type="checkbox"/> Persistent diarrhoea						
	Blood in stool	<input type="checkbox"/> Dysentery						
<input type="checkbox"/> Fever (By history, feels hot, auxiliary temperature 37.5° C or higher) _____ days <input type="checkbox"/> Fever present everyday for more than 7 days <input type="checkbox"/> Stiff neck <input type="checkbox"/> Generalized rash <input type="checkbox"/> Runny nose <input type="checkbox"/> Red eyes	Any general danger sign Stiff neck Generalized rash and at least one of these: Cough Runny nose Red eyes Fever	<input type="checkbox"/> Very severe febrile disease <input type="checkbox"/> Measles <input type="checkbox"/> Malaria						

<input type="checkbox"/> Measles now or within the last 3 months <input type="checkbox"/> Mouth ulcers <input type="checkbox"/> Mouth ulcers that are deep and extensive <input type="checkbox"/> Pus draining from eye <input type="checkbox"/> Clouding of the cornea	Any danger sign	<input type="checkbox"/> Severe complicated measles
	Clouding cornea	
	Deep or extensive mouth ulcers	<input type="checkbox"/> Measles with eye or mouth complications
	Pus draining from the eye	
	Mouth ulcers	<input type="checkbox"/> Measles
	Measles now or within last 3 months	
<input type="checkbox"/> Ear problem <input type="checkbox"/> Ear pain <input type="checkbox"/> Ear discharge reported (_____ days) <input type="checkbox"/> Visible pus draining from ear <input type="checkbox"/> Tender swelling behind the ear	Tender swelling behind ear	<input type="checkbox"/> Mastoiditis <input type="checkbox"/> Acute ear infection
	Pus is seen draining from ear and duration <u>less than</u> 14 days	
	Ear pain	<input type="checkbox"/> Chronic ear infection <input type="checkbox"/> NO ear infection
	Pus is seen draining from ear and duration <u>14 days or more</u>	
	NO ear pain and NO pus seen draining from the ear	
<input type="checkbox"/> Visible severe wasting <input type="checkbox"/> Severe palm pallor <input type="checkbox"/> Some palm pallor <input type="checkbox"/> Oedema of both feet <input type="checkbox"/> Very low weight for age <input type="checkbox"/> Faltering growth	Visible severe wasting	<input type="checkbox"/> Severe malnutrition or severe anemia
	Severe palmar pallor	
	Oedema of both feet	<input type="checkbox"/> Anaemia or very low weight or faltering growth <input type="checkbox"/> NO anaemia and NOT very low weight and growth NOT faltering
	Some palmar pallor	
	Very low weight for age	
	Growth faltering	
	NONE of the above	

Refer to growth chart on last page

3. Assess & classify the child's other problems (Presenting problems, rashes, worms, etc.):

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4. Assess the Mother's health needs:

Current health problems:
Is family planning help desired?: <input type="checkbox"/> Yes <input type="checkbox"/> No Comments:
Were you able to examine the mother's health card? <input type="checkbox"/> Yes <input type="checkbox"/> No Comments:

5. Immunize the child if immunization is due today (See medical history, inside front cover)

6. Give the child Vitamin A if it is due today (See medical history, inside front cover)
Note: If supplies are low, reserve the Vitamin A for children with measles or severe malnutrition

7. **Treat the child.** If there are multiple classifications, do NOT double dose. treatments administered. Record medication and dosage given. Train the mother if appropriate:

IF this is the classification	THEN provide this treatment (Urgent pre-referral treatments in bold)	Rx & dosage
Severe pneumonia/very severe disease	<input type="checkbox"/> Give first dose of an appropriate antibiotic <input type="checkbox"/> If wheezing and 12 months or older , treat for severe wheezing <input type="checkbox"/> Refer URGENTLY to in-patient healthcare facility	
Pneumonia	<input type="checkbox"/> Give an appropriate antibiotic for 5 days <input type="checkbox"/> If wheezing, give Salbutamol <input type="checkbox"/> Soothe the throat & relieve the cough with a safe remedy	
Cough or Cold	<input type="checkbox"/> If coughing more than 30 days, refer to assess for TB <input type="checkbox"/> If wheezing, give Salbutamol <input type="checkbox"/> Soothe the throat & relieve the cough with a safe remedy:	
Severe dehydration	<input type="checkbox"/> If child has no other severe classification, give fluid for severe dehydration (Plan C) <input type="checkbox"/> If child has another severe classification: <input type="checkbox"/> Refer URGENTLY to in-patient healthcare facility with mother giving frequent sips of ORS on the way <input type="checkbox"/> Advise mother to continue breastfeeding <input type="checkbox"/> If child is 2 years or older and there is cholera in your area, give antibiotic for cholera	
Some dehydration	<input type="checkbox"/> Give fluid and food for some dehydration (Plan B) <input type="checkbox"/> If child has another severe classification: <input type="checkbox"/> Refer URGENTLY to in-patient healthcare facility with mother giving frequent sips of ORS on the way <input type="checkbox"/> Advise mother to continue breastfeeding	
No dehydration	<input type="checkbox"/> Give fluid and food to treat diarrhoea at home (Plan A)	
Severe persistent diarrhoea	<input type="checkbox"/> Give Vitamin A <input type="checkbox"/> Treat dehydration before referral unless the child has another severe classification <input type="checkbox"/> Refer to in-patient healthcare facility	
Persistent diarrhoea	<input type="checkbox"/> Give Vitamin A <input type="checkbox"/> Advise the mother on feeding a child who has persistent diarrhoea	
Dysentery	<input type="checkbox"/> Treat for 5 days with an oral antibiotic for Shigella	
Very severe febrile disease	<input type="checkbox"/> Give quinine for severe malaria (first dose) <input type="checkbox"/> Give the first dose of an appropriate antibiotic <input type="checkbox"/> Treat the child to prevent low blood sugar <input type="checkbox"/> Give one dose of paracetamol in clinic for high fever (38.5+°C) <input type="checkbox"/> Refer URGENTLY to in-patient healthcare facility	
Malaria	<input type="checkbox"/> Treat with oral antimalarial <input type="checkbox"/> Give one dose of paracetamol in clinic for high fever (38.5+°C): <input type="checkbox"/> If fever present every day for more than 7 days, refer for assessment	
Severe complicated measles	<input type="checkbox"/> Give Vitamin A <input type="checkbox"/> Give first dose of an appropriate antibiotic <input type="checkbox"/> If clouding of the cornea or pus draining from the eye, apply tetracycline eye ointment <input type="checkbox"/> Refer URGENTLY to in-patient healthcare facility	
Measles with eye or mouth complications	<input type="checkbox"/> Give Vitamin A <input type="checkbox"/> If pus draining from eye, treat eye infection with tetracycline eye ointment <input type="checkbox"/> If mouth ulcers, treat with gentian violet	
Measles	<input type="checkbox"/> Give Vitamin A	
Mastoiditis	<input type="checkbox"/> Give first dose of an appropriate antibiotic <input type="checkbox"/> Give first dose of paracetamol for pain	

IF this is the classification	THEN provide this treatment (Urgent pre-referral treatments in bold)	Rx & dosage
	<input type="checkbox"/> Refer URGENTLY to in-patient healthcare facility	
Acute ear infection	<input type="checkbox"/> Give an antibiotic for 5 days <input type="checkbox"/> Give paracetamol for pain <input type="checkbox"/> Dry the ear by wicking	
Chronic ear infection	<input type="checkbox"/> Give an antibiotic for 5 days <input type="checkbox"/> Dry the ear by wicking	
Severe malnutrition or severe anaemia	<input type="checkbox"/> Give Vitamin A <input type="checkbox"/> Refer URGENTLY to in-patient healthcare facility	
Anaemia or very low weight or growth faltering	<input type="checkbox"/> Assess child's feeding & counsel the mother (Use guide on page 1) <input type="checkbox"/> If pallor: <input type="checkbox"/> Give iron <input type="checkbox"/> Give oral antimalarial if high malaria risk <input type="checkbox"/> If child is 2 years old or older and has not been given a dose in 6 months, give mebendazole	
Other Treatment	<input type="checkbox"/>	

8. If child is less than 2 years old, **and** there are NO severe anaemia or malnutrition problems, then assess child's feeding and counsel the mother (Use guide on page 1)

9. Advise mother: When to return immediately _____ (See tables on inside back cover) and to return in _____ days for: follow-up immunization

10. Healthcare Worker: _____

Record for Follow-up Visit 1:

Date: _____

Assessment results: _____

Treatment summary: _____

Next follow-up visit: _____ Healthcare Worker: _____

Record for Follow-up Visit 2:

Date: _____

Assessment results: _____

Treatment summary: _____

Healthcare Worker: _____

Guides for Advising Mother

When to Return

When to Return Immediately

IF the child currently	AND develops ANY of these symptoms	THEN
Has cough or cold (NO pneumonia)	Fast breathing Difficult breathing	Return Immediately
Has diarrhoea	Blood in stool Drinking poorly	
Is sick with any other classification	NOT able to drink or breastfeed Becomes sicker Develops a fever	

When to Return for a Follow-up Visit

(If more than one time, advise Mother to return at the earliest time)

IF the child has	THEN Return in
Pneumonia	2 days
Dysentery	
Malaria, if fever persists	
Measles with eye or mouth complications	
Persistent diarrhoea	5 days
Acute ear infection	
Chronic ear infection	
Feeding problem	
Any other illness that is NOT improving	
Pallor	14 days
Very low weight for age	30 days
Growth faltering	
NO problems (A well child)	Return for the next immunization according to the immunization schedule