# 4. FINDINGS

This section of the report presents the main findings of the survey. These findings are interpreted based on the background and reference documents reviewed and group discussions held at health facility and national level. A summary of results related to the generic list of WHO priority indicators and supplemental measures, with their definitions, is given in Annex 17. Detailed and additional findings are presented in tables and graphs in Annex 18.

## 4.1 SAMPLE CHARACTERISTICS

### *4.1.1 Characteristics of cases observed and of their caretakers*

Forty-five (45) health centres were visited, located in 19 provinces implementing the IMCI strategy. The management of 397 children aged 2 months up to 5 years was observed. A total of 391 exit interviews with their caretakers was carried out and all 45 facilities were checked for health system support. Details of sample characteristics by residence are shown in Tables 3, 4 and 5.

*Age* More than half (57%) of the children enrolled and managed were under 2 years old, while all the six children classified as having a severe condition needing urgent referral were below three years old (Table 3).

*Gender* In rural facilities a statistically significantly higher proportion of children seen—almost two thirds—was male children (Table 3); the rate was higher especially in children less than 2 years old. It would be worthy investigating the reasons behind this higher care-seeking pattern from rural primary health care facilities for young male children than female children as observed in this sample.

*Caretakers* The large majority of caretakers accompanying the sick children recruited on the day of the visit was female (96%) and mothers of the children (89%). This represents an opportunity for maternal care, especially if the child has a mild condition and the consultation for the child requires less time. As many as 45% of the caretakers had no education, i.e. they were unable to read and write (Table 3). This rate is similar to the one reported in the general population [12]. The proportion was much higher, with a statistically significant difference, among caretakers of children seen in rural (68%) than urban facilities (40%) (Table 3). This finding has practical implications when designing health education materials and communication interventions on childcare in Morocco, as these would need to be preferably in the form of illustrations rather than text to be clearly understood by illiterate mothers, especially in rural areas where under-5 mortality rates and the needs for health care are higher. Furthermore, as reported in § 2.2, under-5 children of illiterate mothers carry a much higher risk of dying than children of mothers of secondary or higher education.

*Providers* All children enrolled were managed by a physician by definition. Nurses often performed selected tasks, which are described more in detail in § 4.3.2.

*Training* A little less than half (45%) of children enrolled in the survey was managed by health providers who had received follow-up visits after they had been trained in IMCI (Table 4). Follow-up visits are carried out as an integral part of IMCI training and have the objective of reinforcing trainees' skills in their working environment and strengthening those elements of the health system necessary to support the deliver of quality care. To be more effective, however, these follow-up visits should be carried out within 4–6 weeks after training. Despite the rate of follow-up described above, only about one child in 15 (7%) was seen by a provider who had received a follow-up visit within 2 months of IMCI training. It is possible that by then, in the absence of support, practices might tend to revert to the way they were before training.

**Table 3. Sample characteristics by residence**

| Characteristics | Urban | Rural | Total |
|---|---|---|---|
| **Health facilities surveyed** | **29** (64.4%) | **16** (35.6%) | **45** |
| Children observed | **325** (81.9%) | **72** (18.1%) | **397** |
| *Sex* | | | |
| Girls | 167 (51.4%)[a] | 27 (37.5%)[a] | 194 (48.9%) |
| Boys | 158 (48.6%) | 45 (62.5%) | 203 (51.1%) |
| *Age* (both sexes) | ***n* = 325** | ***n* = 72** | ***n* = 397** |
| <1 year ( 2–11 months) | 91 (28.0%) | 24 (33.3%) | 115 (29.0%) |
| 1 year (12–23 months) | 91 (28.0%) | 20 (27.8%) | 111 (28.0%) |
| 2 years (24–35 months) | 45 (13.8%) | 16 (22.2%) | 61 (15.4%) |
| 3 years (36–47 months) | 45 (13.8%) | 6 ( 8.3%) | 51 (12.8%) |
| 4 years (48–59 months) | 53 (16.3%) | 6 ( 8.3%) | 59 (14.9%) |
| Average time of examination per case observed: | | | |
| Range (min–max) | 2–60 minutes | 6–42 minutes | 2–60 minutes |
| Median | 11 minutes | 15 minutes | 12 minutes |
| Mode | 5 minutes | 15 minutes | 5 minutes |
| **Caretakers** (interviewed)[b] | ***n* = 320** | ***n* = 71** | ***n* = 391** |
| *Sex* | | | |
| Female | 314 (98.1%) | 62 (87.3%) | 376 (96.2%) |
| Male | 6 ( 1.9%) | 9 (12.7%) | 15 ( 3.8%) |
| *Relationship* | | | |
| Mother | 291 (90.9%) | 58 (81.7%) | 349 (89.3%) |
| Father | 6 ( 1.9%) | 8 (11.3%) | 14 ( 3.6%) |
| Other | 23 ( 7.2%) | 5 ( 7.0%) | 28 ( 7.1%) |
| *Education level* | | | |
| None | 128 (40.0%)[c] | 48 (67.6%)[c] | 176 (45.0%) |
| Primary | 87 (27.2%) | 18 (25.4%) | 105 (26.8%) |
| Secondary | 84 (26.2%) | 3 ( 4.2%) | 87 (22.3%) |
| Higher | 21 ( 6.6%) | 2 ( 2.8%) | 23 ( 5.9%) |

[a] 95% confidence interval: urban facilities: 47.0 to 55.7; rural facilities: 30.6 to 44.4
[b] Interviews conducted with caretakers of 391 children not needing urgent referral
[c] 95% confidence interval: urban facilities: 34.1 to 46.5; rural facilities: 55.6 to 80.5

*Visit length* The average (median) time of examination per case observed was 11 minutes, ranging from 2 to 60 minutes, with the tendency to be longer in rural facilities (Table 3). In some settings, visit length has recently been proposed as a quality indicator in primary care, although the complexity of the case, facility case-load, provider's experience and organization of work at the facility are some of the factors which influence it[13,14]. The presence of the surveyor observing the health provider managing a child is also likely to make the provider examine the child more carefully and increase the duration of the consultation during a survey.

*Residence* Almost two thirds (64%) of health facilities surveyed were urban facilities (see §3.2.3). However, since urban facilities usually had a higher case-load than rural facilities, only 72 (18%) of the 397 children enrolled in the survey were seen in rural facilities. Therefore, the performance of urban health centres tends to influence the overall results of this survey.

[13] Druss, B, Mechanic D, Should visit length be used as a quality indicator in primary care?, *The Lancet* 2003, 361:1148.
[14] Wilson A, Childs S., The relationship between consultation length, process and outcomes in general practice: a systematic review, *British Journal of General Practice* 2002, 52:1012-20

**Table 4. Sample characteristics: cases seen, by provider's training status and residence**

| Characteristics | Urban | Rural | Total |
|---|---|---|---|
| *Cases managed by IMCI-trained doctors:* | ***n* = 325** | ***n* = 72** | ***n* = 397** |
| Female | 195 (60.0%) | 23 (31.9%) | 218 (54.9%) |
| Male | 130 (40.0%) | 49 (68.1%) | 179 (45.1%) |
| *Cases managed by:* | ***n* = 323** [1] | ***n* =72** | ***n* = 395** [a] |
| Doctors trained in IMCI within the past 3 years | 235 (72.8%) | 72 (100%) | 307 (77.7%) |
| Doctors trained in: | | | |
| 12-day IMCI course | 23 ( 7.1%) | 0 ( 0.0%) | 23 ( 5.8%) |
| 10-day IMCI course | 51 (15.7%) | 8 (11.1%) | 59 (14.9%) |
| 7-day IMCI course | 251 (77.2%) | 64 (88.9%) | 315 (79.3%) |
| Doctors followed up after IMCI training | 140 (43.1%) | 39 (54.2%) | 179 (45.1%) |
| Doctors followed up within 2 months of IMCI training | 24 ( 7.4%) | 2 ( 2.8%) | 26 ( 6.6%) |

[a] Missing information on training status for the management of two children

### *4.1.2 Patterns of illness*

The pattern of illness of children enrolled in the survey based on surveyor's examination is shown in Table 5. A child on average had 1.7 'IMCI conditions'; one child in five (20%) had 3 or more 'IMCI classifications'. More than half of children (57%) had an acute respiratory (ARI) condition, 62% were febrile or had a history of fever, a fifth of children (21%) had diarrhoea, 8% had an ear problem and the same percentage (8%) had a throat problem (Fig. 5). When looking at the conditions by severity, only 32% of children had a condition requiring treatment[15], with no difference between urban and rural areas[16] (Table 5; Fig. 6); non-severe conditions requiring action by a qualified health provider—e.g., antibiotics, oral rehydration salts—are those expected to be seen and managed commonly at primary health care level. Fifteen percent (15%) of the children with ARI had pneumonia or severe pneumonia[17], while wheezing was identified in just 1% of cases. The percentages of children with diarrhoea who had dehydration or persistent diarrhoea were also low (4% and 5%, respectively), while only one child had dysentery[18]. Six children had measles. Eye infections—defined as the presence of pus draining from the eye—and skin problems were found in 5% and 21% of children, respectively. Interestingly, 61% of the 52 children who did not have an 'IMCI condition' (i.e., a condition specifically addressed in the IMCI guidelines) had a skin problem. Four percent (4%) of all children were low weight-for-age (< 2 SD) and 7% had anaemia. These rates are way below those found in the general under-5 population in the community while one would expect the opposite, with more concentration of these conditions in the population of sick children seen at health centres.

[15] For the purpose of this analysis, the following conditions were included: presence of danger signs, severe or non-severe pneumonia, wheezing, diarrhoea with severe or some dehydration, severe persistent diarrhoea, dysentery, streptococcal sore throat, mastoiditis, acute or chronic ear infection, 'very severe febrile disease' or 'fever–possible bacterial infection', measles with eye/mouth complications, severe or non-severe anaemia, severe malnutrition, low weight-for-age.

[16] The percentage of children with IMCI conditions requiring treatment or urgent referral in a similar survey conducted on 364 children in Sudan (2003) was 52%.

[17] The percentage of the children with ARI who had pneumonia or severe pneumonia in the survey in Sudan was 28%.

[18] This was not a diarrhoea peak season.

**Table 5. Sample characteristics by residence: classification of cases enrolled according to surveyor's re-examination findings**

| Classifications[a]<br>Cases observed for management[b] | Urban<br>*n* = 325 | Rural<br>*n* = 72 | Total<br>*n* = 397 |
|---|---|---|---|
| **Acute respiratory infection** | 187[d] (57.5%) | 41 (56.9%) | 228[d] (57.4%) |
| *Severe pneumonia/very severe disease* | 3 ( 0.9%) | 0 ( 0.0%) | 3 ( 0.8%) |
| *Pneumonia* | 25 ( 7.7%) | 7 ( 9.7%) | 32 ( 8.1%) |
| *No pneumonia (cough or cold)* | 156 (48.0%) | 34 (47.2%) | 190 (47.9%) |
| Wheezing[c, d] | 6[d] ( 1.8%) | 0 (0.0%) | 6[d] ( 1.5%) |
| **Diarrhoeal diseases** | 67 (20.6%) | 15 (20.8%) | 82 (20.7%) |
| *Diarrhoea with severe dehydration* | 0 ( 0.0%) | 1 ( 1.4%) | 1 ( 0.3%) |
| *Diarrhoea with some dehydration* | 2 ( 0.6%) | 0 ( 0.0%) | 2 ( 0.5%) |
| *Diarrhoea with no dehydration* | 65 (20.0%) | 14 (19.4%) | 79 (19.9%) |
| *Severe persistent diarrhoea* | 1 ( 0.3%) | 0 ( 0.0%) | 1 ( 0.3%) |
| *Persistent diarrhoea* | 4 ( 1.2%) | 0 ( 0.0%) | 4 ( 1.0%) |
| *Dysentery* | 1 ( 0.3%) | 0 ( 0.0%) | 1 ( 0.3%) |
| **Fever** | 203 (62.5%) | 44 (61.1%) | 247 (62.2%) |
| *Very severe febrile disease* | 0 ( 0.0%) | 0 ( 0.0%) | 0 ( 0.0%) |
| *Possible bacterial infection* | 58 (17.8%) | 13 (18.1%) | 71 (17.9%) |
| *Bacterial infection unlikely* | 145 (44.6%) | 31 (43.1%) | 176 (44.3%) |
| **Measles** | 5 ( 1.5%) | 1 ( 1.4%) | 6 ( 1.5%) |
| *Measles with eye/mouth complications* | 0 ( 0.0%) | 1 ( 1.4%) | 1 ( 0.3%) |
| *Measles* | 5 ( 1.5%) | 0 ( 0.0%) | 5 ( 1.3%) |
| **Throat problem** | | | |
| *Streptococcal sore throat* | 28 ( 8.6%) | 5 ( 6.9%) | 33 ( 8.3%) |
| *No streptococcal sore throat* | 297 (91.4%) | 67 (93.1%) | 364 (91.7%) |
| **Ear problem** | 26 ( 8.0%) | 7 ( 9.7%) | 33 ( 8.3%) |
| *Mastoiditis* | 0 ( 0.0%) | 0 ( 0.0%) | 0 ( 0.0%) |
| *Acute ear infection* | 17 ( 5.2%) | 4 ( 5.6%) | 21 ( 5.3%) |
| *Chronic ear infection* | 0 ( 0.0%) | 0 ( 0.0%) | 0 ( 0.0%) |
| *No ear infection* | 9 ( 2.8%) | 3 ( 4.2%) | 12 ( 3.0%) |
| **Severe malnutrition** | 1 ( 0.3%) | 0 ( 0.0%) | 1 ( 0.3%) |
| *Low weight* | 10 ( 3.1%) | 7 ( 9.7%) | 17 ( 4.3%) |
| *Not low weight* | 314 (96.6%) | 65 (90.3%) | 379 (95.4%) |
| **Severe anaemia** | 0 ( 0.0%) | 0 ( 0.0%) | 0 ( 0.0%) |
| *Anaemia* | 25 ( 7.7%) | 4 ( 5.6%) | 29 ( 7.3%) |
| *No anaemia* | 300 (92.3%) | 68 (94.4%) | 368 (92.7%) |
| Eye infection | 17 ( 5.2%) | 5 ( 6.9%) | 22 ( 5.5%) |
| Skin problems | 69 (21.2%) | 15 (20.8%) | 84 (21.2%) |
| Feeding problems | 153 (47.1%) | 45 (62.5%) | 198 (49.9%) |
| Children with IMCI conditions requiring treatment or urgent referral ('yellow' and 'red' row classifications of the IMCI chart) | 103 (31.7%) | 23 (31.9%) | 126 (31.7%) |

Note: Items in *italics* are IMCI classifications.

[a] A child may have more than one classification. Data in this table are unweighted.

[b] According to surveyor classification ('gold standard'). The distribution of classifications refers to the month in which the survey was conducted, which is usually a low season for such conditions as diarrhoeal diseases.

[c] Children with wheezing are first given a rapid-acting bronchodilator and then re-assessed 20 minutes later; if symptoms persist, another dose is given before classifying the child after 40 minutes.

[d] Three of the 6 children with wheezing had also another ARI classification and are therefore counted only once in the total of ARI cases (187 cases instead of 200 for urban facilities and 228 instead of 231 for total).

**All the 6 children requiring urgent referral (1.5%) were children less than 3 years old**

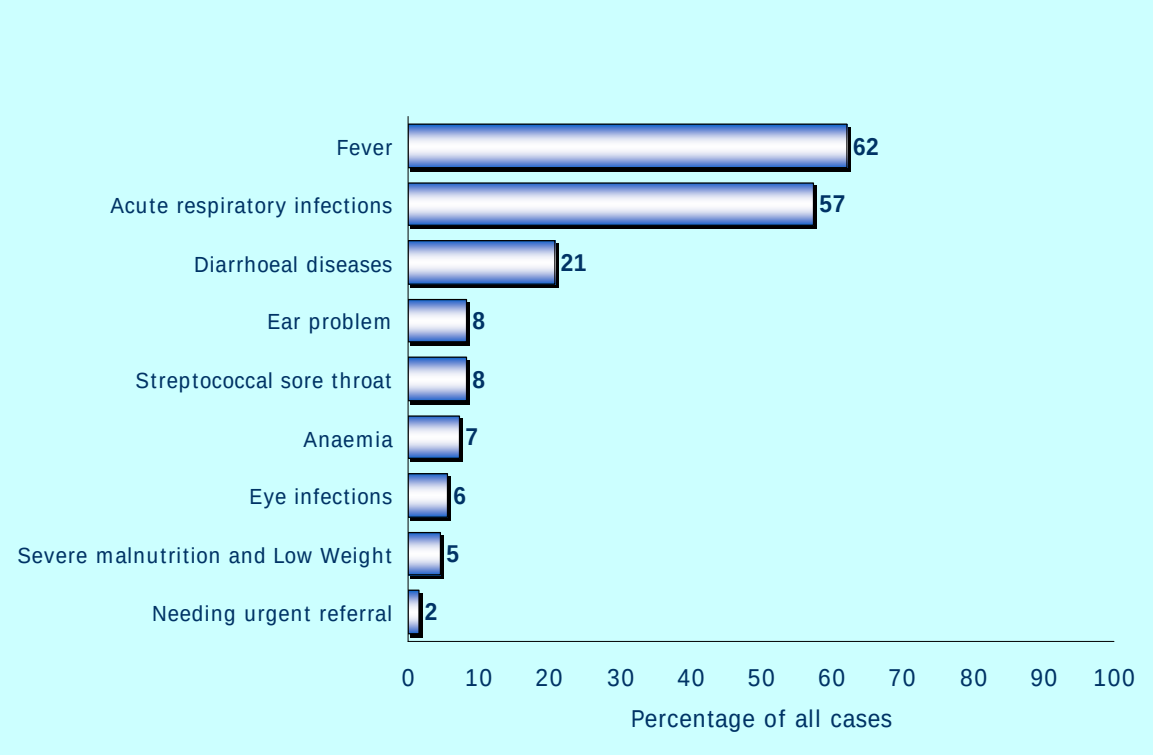


**Fig. 5. Distribution of main conditions in the sample (*n* = 397)**

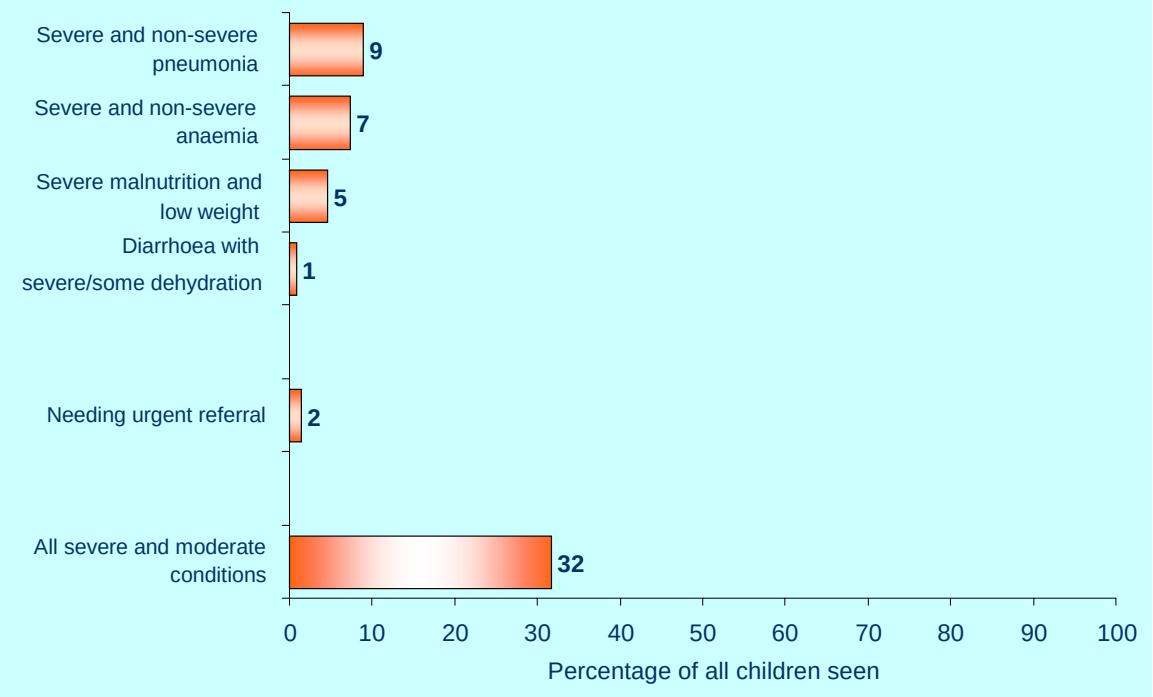


**Fig. 6. Distribution of selected severe and moderate conditions in the sample (*n* = 397)**

Only 6 (1.5%) children enrolled in the survey had a *severe* condition requiring urgent referral. Given the under-5 mortality rate in Morocco and the fact that pneumonia and diarrhoea are the reported leading causes of death in these children, the data above when interpreted together with other information from this survey and other sources would suggest a possible sub-optimal utilization of primary health care services for the conditions which would be expected to require

them most. Low utilization of public health centres has been reported in Morocco, with rates in rural areas being half of those in urban areas[19]. However, only a community survey investigating care-seeking patterns for young children could confirm this interpretation, which could be due to a number of factors, including among others caretaker inadequate knowledge about when to seek care (see § 4.2.3.7), limited access to primary health care services—especially in rural areas where a higher proportion of under-5 deaths occur (see § 4.3.9), quality of primary health care services (§ 4.3.4) and caretaker satisfaction level with services (see § 4.3.1), and care-seeking from other sources. If some of these children were taken to hospitals directly, hence using hospitals as if they were outpatient facilities such as health centres, then this would raise the issue of optimal use of resources. However, not only does the rural population have more difficult access to health centres than the urban population in Morocco, it has even more difficult access to hospitals [12]. Unfortunately, it was not feasible to collect data to document patterns of utilization of child health care services over the years, to see whether any changes had occurred before and after the introduction of IMCI in each of the facilities surveyed, as this meant retrieving data from many years before and these were not readily available.

### *4.1.3 Relationship of caretakers' report of fast or difficult breathing with pneumonia and care-seeking*

Difficult breathing, fast breathing or 'pneumonia' (referred to in this paragraph as 'breathing problems' all together) were spontaneously reported by caretakers in 37 (16%) of the 228 children who had an acute respiratory condition. Although the survey was not an ethnographic study designed to identify the local terminology used by caretakers to refer to 'breathing problems', the relationship of caretakers' report of breathing problems with pneumonia or severe pneumonia was briefly reviewed (Annex 18, Table A1 and A2[20]). In fact, these surveys offer the unique opportunity of comparing the local term used by caretakers with the actual illness of the child examined by the surveyor (medical classification). One of the key home care messages for families, promoted first by the ARI[21] control programme and then by IMCI, is for families to seek care promptly from an adequate health provider if a sick child develops a breathing problem. In this survey, caretakers reported a breathing problem only in 10 (29%) of the 35 children classified by the surveyors as having pneumonia or severe pneumonia (low *sensitivity*), although all of them had by definition an increased respiratory rate and/or chest in-drawing on examination (Table A1)[22]. The *specificity* was somewhat higher (86%): if caretakers did not report breathing problems, their children were then less likely to have pneumonia. Examining whether caretaker's report of breathing problems had a good predictive value for pneumonia or severe pneumonia, it was found that about a quarter (27%) of the children with reported breathing problems actually had pneumonia or severe pneumonia (Table A2)[23]. Children with a breathing problem spontaneously reported by caretakers were 2 times more likely to have pneumonia or severe pneumonia than those in whom the symptom had not been reported. As the predictive value also depends on the prevalence of the disease in the population under study (children taken to health centres in this case), some care is needed in interpreting these results, especially if children with 'breathing problems' are taken straight to the hospital (only household surveys on care-seeking can provide this information). Thus, in this particular sample of children taken to a health centre and found to have pneumonia or severe pneumonia, most caretakers had either missed the breathing problem or simply not given particular importance to this sign alone. The local term most often used by caretakers was '*makhnouq*' (مخنوق), mentioned in 27 (73%) of the 37 cases in which a breathing problem was reported. The breathing problem was the symptom triggering care-seeking in 21

[19] 0.5 consultations per person per year at public health centres in 2002, with the rates being 0.6 in urban areas and 0.3 in rural areas [12].
[20] All tables starting with the letter A (e.g. Table A1) are available in Annex 18 of this report.
[21] ARI: acute respiratory infections.
[22] It should be noted that this sample consisted of children taken to a health facility, rather than children at home. The classification of cases as 'pneumonia' or 'severe pneumonia' was based on clinical signs such as general danger signs, chest indrawing and fast breathing.
[23] 27.0% was the *positive predictive value* for pneumonia or more severe illness of caretakers' report of fast or difficult breathing or pneumonia in this sample; the *negative predictive value* for absence of pneumonia or more severe illness of caretakers' not reporting breathing problems was 86.9%.

(57%) of these 37 cases, followed by cough in 43% of cases. In this survey, information was collected from 33 of the 37 caretakers who had spontaneously complained of a breathing problem in their child with ARI on how long they had waited before seeking care from this facility since the time they had realized the child had difficult breathing or a chest problem. Only 9% answered that they had taken the child within a day, while 27% had waited for 2 days and the remaining 64% for 3 or more days; the median time was 3 days[24]. Although caretakers might have consulted other sources of care first or may have delayed seeking advice because of reasons other than lack of knowledge, *the findings suggest that additional work needs to be done to improve family care-seeking practices for children with ARI in Morocco*. Data from the recently conducted Multiple-Indicator Cluster Survey (MICS) may provide some information on this aspect of care, once they become available, although a care-seeking study would appear to be still appropriate.

## 4.2 QUALITY OF CLINICAL CARE

A summary of results on selected indicators on the quality of clinical care is shown in Table 6. The next sections present the findings on the key components of case management in detail, namely assessment, classification, treatment and counselling, to describe the quality of integrated care that children received at health facilities. Confidence limits are given for the main indicators. It is acknowledged that compound performance indicators, largely used in this analysis, are very demanding as they require compliance with each of the individual indicators of which they consist. The analysis therefore provides information also on each individual indicator to highlight where the specific performance issue may lie.

### *4.2.1 Assessment*

The guidelines on integrated child health care (IMCI) require that a number of key assessment tasks should be performed in any sick child, irrespective of the specific complaint. This helps identify conditions that are not reported by the caretaker. To measure how complete the assessment that each child received was, an *index of integrated assessment* was used in the analysis. The index consists of many key tasks and gives equal weight to each task done (score per task done = 1): it is expressed as the mean of the number of tasks performed in each child (out of those that should have been performed). The ten assessment tasks of the WHO index are: child checked for three danger signs (1,2,3), checked for the three main symptoms (4,5,6), child weighed (7) and weight checked against a growth chart (8), child checked for palmar pallor (9) and for vaccination status (10). This index is preferred to compound indicators as the latter result just in a 'yes' answer for the indicator if all and only all component tasks of which it consists are done: even if only one task is missed out of many, the compound indicator would result in a 'no' answer. This prevents documentation of changes in some of the compound indicators' component tasks in future. The index of integrated assessment, instead, enables follow-up of improvements in care and progress over time, taking into account each of the tasks of which it consists: the higher the number of tasks performed, the higher the index. It also allows comparisons with other surveys in different countries.

[24] The median was 2 days for the group of 8 children who did have pneumonia as assessed by the surveyor. In this group, 5 (62%) of the 8 caretakers who reported a breathing problem in their child had sought care from this health centre within 2 days.

**Table 6. Summary table on selected indicators on the quality of clinical care[a]**

| Quality of clinical care: tasks | Findings | Confidence intervals |
|---|---|---|
| ❖ **Assessment** | | |
| • Index of integrated assessment (mean of the 10 main assessment tasks) | 7.7 | (7.1 - 8.3) |
| • Children below 2 years old and those with low weight and/or anaemia and/or persistent diarrhoea assessed for feeding practices | 54.8% | (45.2 - 64.5) |
| ❖ **Classification** | | |
| • Agreement between provider's and surveyor's classifications of the conditions related to the three main symptoms of cough or difficult breathing, diarrhoea and fever requiring urgent referral, treatment or specific counselling | 76.6% | (72.0 - 81.1) |
| ❖ **Treatment and advice** | | |
| • Severe cases correctly managed | 1 out of 6 | -- |
| • Children needing an oral antibiotic for an IMCI condition prescribed a recommended antibiotic correctly | 30.9% | -- |
| • Children not needing antibiotics leaving the facility without antibiotics | 76.4% | (69.3 - 83.5) |
| • Children needing vaccinations who leave the facility with all needed vaccinations or advice on when to come back for scheduled vaccination session | 88.6% | (74.7 - 102.5) |
| • Children prescribed oral antibiotic and/or oral rehydration salts (ORS) whose caretakers knew how to give the treatment before leaving the facility: | | |
| – Antibiotic | 27.0% | (14.1 - 39.8) |
| – ORS | 16.4% | (7.5 - 25.7) |
| • Children whose caretakers were advised to give extra fluids and continued feeding during the child illness | 44.0% | (33.6 - 54.6) |
| • Children whose caretakers knew all the three home care rules before leaving the facility | 13.8% | (6.0 - 21.8) |
| • Proportion of children less than 2 years old and those with low weight-for-age and/or anaemia and/or persistent diarrhoea whose caretakers were given age-appropriate feeding advice | 25.5% | -- |

[a] For definitions, see text and tables in annexes.

*Note on results*: Rather than describe health providers' '*practices*', the survey results provide some information on providers' '*skills*'. Health providers knew that they were being observed by the surveyor; therefore, what they did may not necessarily reflect what they would do under routine circumstances (i.e. their routine practices). However, if they carried out a task and did it correctly while being observed, this would indicate at least that they would have the skills to do that task properly. The IMCI chart was consulted by the providers in two thirds (68%) of the cases observed.

❖ *Index of integrated assessment* (Fig. 7): the index was 7.7, meaning a mean of 7.7 assessment tasks were performed on average in each child out of 10 tasks to be performed. Apart from the index, the tasks which were often missed in the assessment of a child were those related to the clinical assessment of severe malnutrition, namely checking for visible wasting and presence of oedema of both feet, possibly because of the rarity of this condition observed at health centres in Morocco. Interestingly, the index was 1.5 lower for children assessed in urban facilities (7.4 out of 10) than in rural facilities (8.9 out of 10)[25, 26] (Fig. 8). It was also higher, although to a much less extent and without reaching statistical significance, for children seen by providers who had received a follow-up visit after IMCI training (8.1 out of 10) than those who had not (7.4 out of 10)[27].

[25] Difference of –1.5, 95% CI: –2.5 to –0.4. The 95% CIs for the index are: urban facilities: 8.1 to 9.7; rural facilities: 6.7 to 8.1. The complexity of cases, defined by the presence of conditions requiring treatment (labelled as 'pink' and ''yellow' in the IMCI chart), was similar in the two groups, although 5 of the 6 cases needing urgent referral were seen in urban areas.

[26] Although a higher percentage of children were seen by doctors who had received follow-up visits in rural areas (54.2%) than urban areas (43.1%), the difference in follow-up between the two areas is not statistically significant.

[27] Difference of 0.7, 95% CI: –0.3 to 1.8.

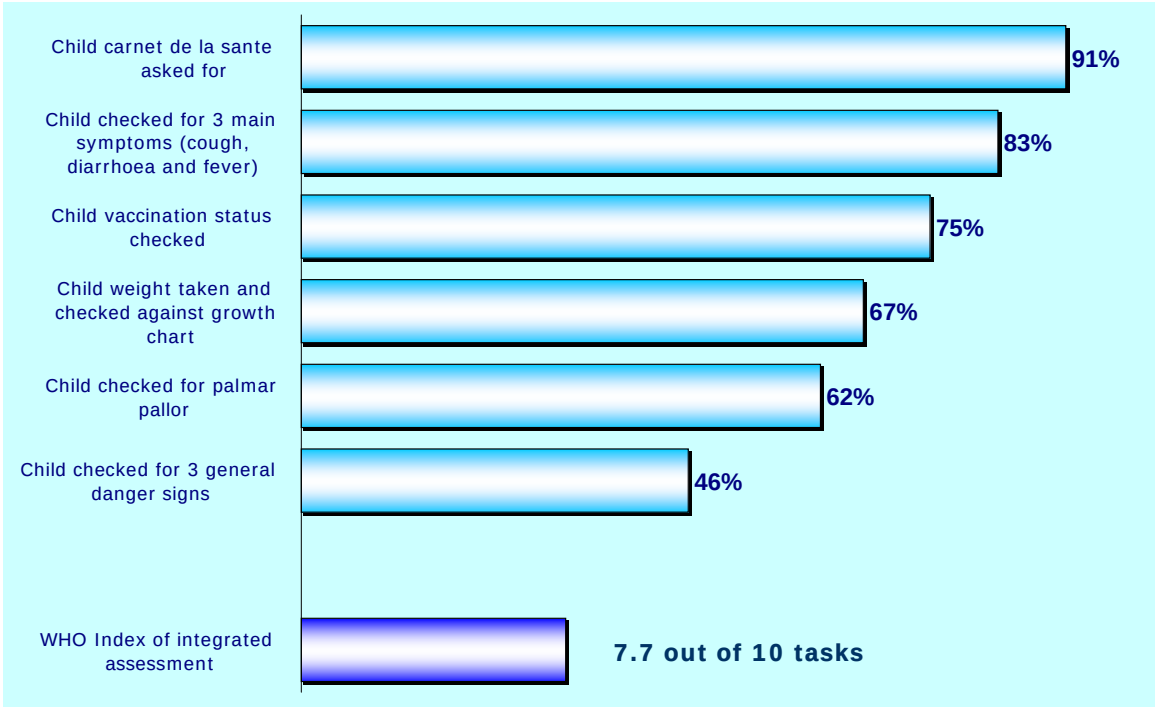


**Fig. 7. Integrated assessment: main tasks and WHO index (*n* = 397)**

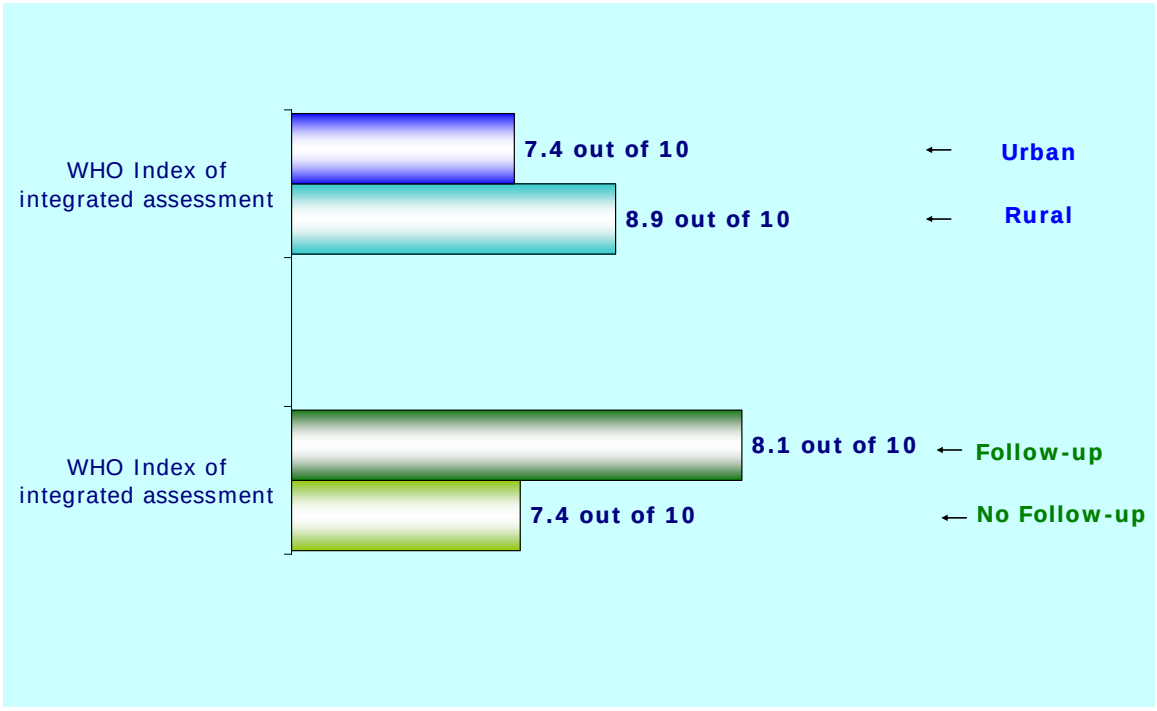


**Fig. 8. WHO index of integrated assessment: urban versus rural areas and follow-up versus no follow-up**

- An index of integrated assessment adjusted to Morocco was also considered, to include additional four tasks to the 10 of the WHO index, namely: temperature checked with thermometer (11) and child checked for the presence of ear problem (12), wasting (13) and oedema of both feet (14). The Moroccan index was 9.6 (9.6 tasks performed out of 14) (Table A3).

- *Assessment tasks* (Table A3): the tasks evaluated included the following:
  - **Taking weight and temperature**: the large majority of children was weighed (98%) and the weight was checked against the growth chart in two thirds (67%) of the children to determine the weight-for-age and classify the child according to it. The temperature was taken with the thermometer in two thirds (68%) of children. While weight and temperature were usually taken by the nurse (85% of cases in which they were taken), checking the weight against the growth chart was performed in the vast majority of cases by the physician (94%) (see also § 4.3.2).
  - **Checking vaccination status**: asking for the child's 'carnet de santé' (91%) and checking the child vaccination status (75%) to identify opportunities to provide the recommended vaccinations were also tasks commonly carried out.
  - **Checking for danger signs**: fewer than half (46%) of children were checked for the presence of the three general danger signs (inability to drink, vomiting everything and convulsions[28]) to detect cases with a very severe disease requiring urgent referral. One possible explanation is the pattern of cases commonly seen at health centres, mostly mild cases, with the physician losing the habit of including this systematically among the routine tasks, unless the child did look particularly sick. In fact, the only child who did have danger signs was assessed for them and correctly classified as a severe case to be urgently referred. Furthermore, all the 10 children (100%) who did not look alert were checked for lethargy or unconsciousness and 8 of them were checked also for all the other general danger signs to identify severe cases.
  - **Checking for main symptoms**: most children (83%) were systematically checked for the presence of the three main symptoms of cough, diarrhoea and fever, irrespective of the initial complaints, in order not to miss key and common conditions not reported spontaneously by caretakers.
  - **Checking for ear problem**: three quarters (76%) of children were checked for the presence of an ear problem.
  - **Checking throat**: while the child's throat was assessed systematically (96% of cases), lymph nodes were checked less often (56%), with both tasks then performed in about one child in two (55%).
  - **Checking for palmar pallor**: 62% of children were checked for the presence of palmar pallor, one of the signs usually not taught in medical schools and specifically introduced with IMCI in-service training.
  - **Checking for severe malnutrition**: Tasks that were performed much less frequently included: checking visible wasting (27%) and presence of oedema of both feet (20%), both aiming at detecting clinical severe malnutrition, a condition seen less commonly at health centres in Morocco nowadays.
  - **Checking for other problems**: What completes the IMCI protocol is checking for any other problems in the sick child: this task, which often tends to be overlooked in countries because it is less specific than the others, was instead accomplished in as many as 75% of children.

  *Note*: The value of the IMCI protocol of systematically checking a sick child for a number of common, key conditions, whether or not those are reported by the child caretaker, is clearly illustrated by the number of children in whom the provider detected a condition that the caretaker had not spontaneously reported. The surveyor identified 28 (34%) of the 88 children with diarrhoea in whom the caretakers had not reported diarrhoea as a complaint, 60 (26%) of the 228 children with ARI in whom caretakers had not reported cough or a breathing problem, and 75 (30%) of the

[28] This sign refers in this analysis to 'history of convulsions related to this episode of illness' and 'convulsing now'.

247 children with fever, 7 (21%) of the 33 children with streptococcal sore throat and 10 (30%) of the 33 children with an ear problem in whom the caretakers had not reported the problem (Fig. A3). These findings are similar to those found in previous surveys in Sudan and Egypt, further confirming the validity of the integrated child care (IMCI) guidelines when properly implemented for a more systematic examination of the sick child, not limited to the main complaint initially reported by the caretakers.

- *Feeding assessment* (Table A4): More than half (55%) of children under 2 years old or with low weight or anaemia or persistent diarrhoea not referred by the provider were assessed for feeding practices as recommended by the IMCI guidelines (including assessing breastfeeding for those less than 2 years old and complementary feeding and feeding changes during this episode of illness for all)[29]. All but one (94%) of 17 children two years old or older with anaemia, low weight or persistent diarrhoea had been misclassified by the provider as cases with no anaemia or not very low weight-for-age or no persistent diarrhoea; based on the provider's wrong classification, these children would not have required feeding assessment. When feeding practices were assessed, the assessment tended to be systematic, made it simpler by the clear instructions in the IMCI case recording form adapted in Morocco (Table A5). One of the most common feeding problems identified was the use of bottle-feeding, found in 47% of the children assessed (Table A6).

- *Quality of assessment and additional findings*: As part of the adaptation of the survey instrument, attention was paid in this survey to checking not only whether a certain number ('quantity') of key tasks was carried out for *any* sick child, but also how ('quality') they were performed and whether the provider conclusion on the assessment of certain signs matched the surveyor conclusion (Table A7).

  - **Weight and temperature** for all children: although the weight was taken and also recorded in the majority of children (95%), it was taken *correctly*[30] only in 14% of the cases (Fig. A7). The main reason beyond it is that children were often weighed with their clothes and shoes on. When taken, the temperature was taken with the thermometer *correctly*[31] in 60% of children. However, a thermometer was unavailable at the facility in 47% of the cases in whom the temperature was not taken. As taking the temperature and weight are routine tasks for nurses included in their basic pre-service training, they have not been the focus in IMCI training in Morocco to date and this explains why nurses trained in IMCI did not perform better than those not trained in IMCI (Fig. A8).
  - **Danger signs**, such as inability to drink or breastfeed and 'vomiting everything': these signs, when reported by the caretaker, were usually *correctly* checked by offering some water to the child. In the end, therefore, the presence of these two danger signs was correctly checked in 59% and 60% of children, respectively (see also 'Assessment tasks' above).
  - **History and respiratory rate** in children with cough or difficult breathing: duration of symptoms was asked in 88% of children and presence of a tuberculosis case in the family in 56% of children with ARI (Fig. A9). The respiratory rate was counted in almost three quarters (72%) of children with cough or difficult breathing and, when it was counted, it was counted with *correct methodology*[32] in 87% of cases. In this

[29] See definitions at bottom of Table A4. If the indicator is limited to children under 2 years of age, as proposed in the WHO general list of priority indicators for ease of calculation, the proportion of these children assessed for feeding in this survey rises slightly to 58%.
[30] Weight was considered as taken correctly if the child was weighed undressed or lightly clothed.
[31] Temperature was considered as taken correctly if the thermometer had been shaken first, then gently inserted in the child's rectum and kept in place for at least two minutes.
[32] The respiratory rate was considered as counted correctly if the child was calm and the count was for a full minute. The count was carried out in a calm child in 88% of cases and for a full minute in 98% of cases.

analysis, the counts were considered 'reliable'[33] in 53% of cases in which they were taken (Table A8). Ample differences in counts were found between the provider and the surveyor, ranging from–28 breaths/min. to +26 breaths/min. This analysis showed that 'unreliable' counts might directly have been responsible for providers' under-classifying as 'no pneumonia' 9 children who actually had fast breathing ('pneumonia') and over-classifying as 'pneumonia' 18 children with 'no pneumonia' (Table A8).

- **Wheezing** in children with cough or difficult breathing: in two thirds (68%) of children with cough and/or difficult breathing the provider leaned towards the child's mouth or chest to assess 'audible' wheezing.
- **History, offering water and skin pinch** in cases with diarrhoea: information on duration of the diarrhoea episode—necessary to distinguish acute from persistent diarrhoea cases—was asked in the large majority of cases (94%) and on presence of blood—to identify dysentery cases—in 78% of cases (Fig. A10). Offering the child something to drink to objectively check thirst was carried out in less than half (43%) of cases. In more than two thirds (71%) of children with diarrhoea the abdomen skin was pinched to check skin turgor. When the skin was pinched, the technique used was *correct*[34] in 78% of children[35]. Finally, the provider's conclusion on the assessment of skin turgor agreed with the surveyor's in 76% of cases in which the assessment was carried out[35].
- **History and checking both ears** in children with an ear problem: whether ear pain was present was asked in 26 (79%) of the 33 children with an ear problem (Fig. A11). Both ears and tender swelling behind the ear were checked in 67% and 61% of cases, respectively, with both tasks performed in 58% of children with an ear problem. Presence of ear discharge was asked in 73% of the children and, when reported, its duration was enquired from the caretakers in all cases.
- **History of fever and checking for measles**: duration of fever was asked in 79% of children with fever or history of fever and a history of measles within the last 3 months was checked in 53% of them (Fig. A11).
- **Palmar pallor**: when palmar pallor was looked for, the technique used was *correct* in 90% of cases and there was agreement of the provider's conclusion on the presence of palmar pallor with the surveyor's in 92% of children in whom the sign was checked (Fig. A12).
- **Oedema of both feet**: the sign was looked for in a minority of children (20%), rather than systematically. When it was checked, the technique was correct in 62% of cases in which it was performed (Fig. A12)[36].

[33] Exclusively for the purpose of this analysis, a count was considered 'reliable' if the difference in count between the provider and the surveyor for the same child was not greater than 5 breaths per minute. This arbitrary level was based on experience from previous health facility surveys on acute respiratory infections: about two-thirds of all counts would usually lie within this difference.

[34] Skin pinch was considered correctly performed if the abdomen skin was pinched halfway between the umbilicus and the side of abdomen, the skin was held firmly for one second between the thumb and the first finger and in line up and down the child's body.

[35] If the total number of children with diarrhoea is considered, rather than only those in whom the task was performed, as presented in Table A7, then the skin was pinched correctly in 54.9% of cases and there was agreement on the conclusion on the assessment of the skin pinch in 53.7% of cases.

[36] If the total number of children is considered, rather than only those in whom the task was performed, as presented in Table A7, then oedema of both feet was looked for correctly in 12.6% of cases.

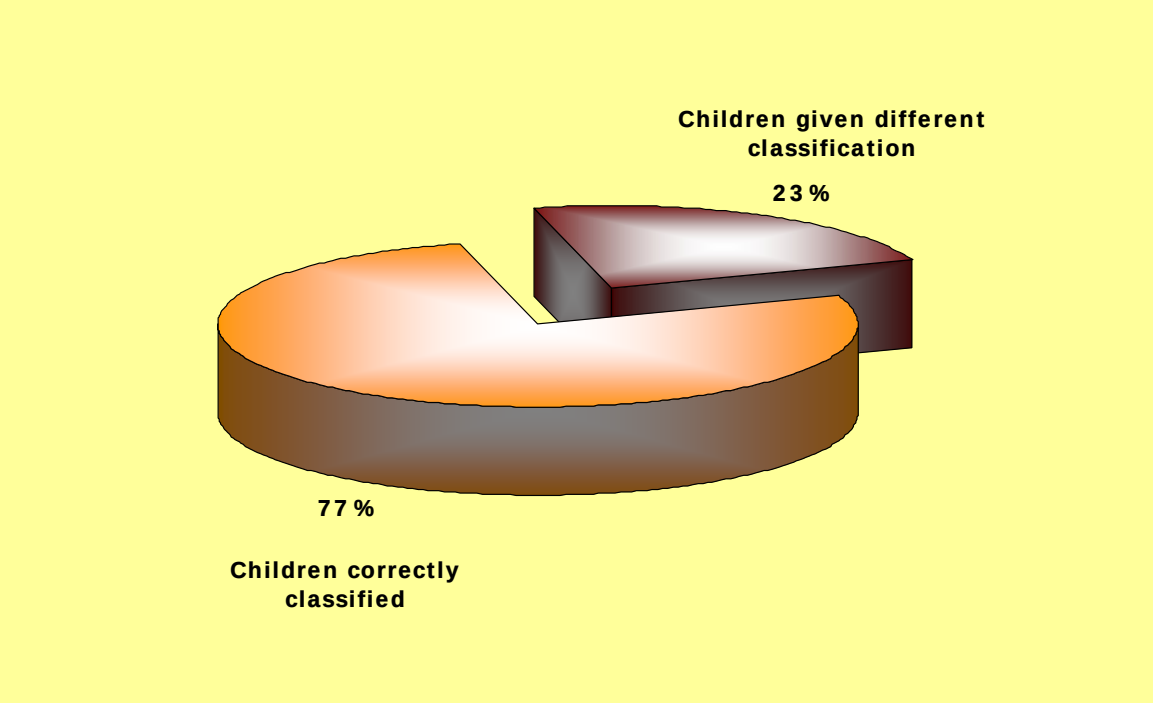


**Fig. 9. Children correctly classified by the provider for the conditions related to the main symptoms of cough or difficult breathing, diarrhoea and fever [1] (*n* = 397)**

[1] This indicator refers to the agreement of provider's classification of children with surveyor's on the following conditions: very severe disease or severe pneumonia or pneumonia, and/or diarrhoea with severe dehydration or some dehydration, and/or severe persistent diarrhoea or persistent diarrhoea, and/or dysentery, and/or very severe febrile disease or fever–possible bacterial infection, and/or measles with or without complications.

### *4.2.2 Classification*

Seventy-seven percent (77%) of children were correctly classified by the health provider for moderate to severe conditions related to the main symptoms of cough or difficult breathing, diarrhoea and fever, meaning that the provider classification matched the surveyor's in these cases (Fig. 9). This rate is relatively high, considering that this analysis took into account only moderate and severe classifications, excluding the mild ones. It referred to the classifications included in the 'pink-coded' and 'yellow-coded' classification areas of the IMCI chart and measles without complications[37]. In fact, it is widely recognized that more skills are required to correctly classify a moderate or severe condition when present ('positive classification') than a condition which is mild or not present, when a good guess would often be sufficient (e.g. a child with a simple cough).

To understand which conditions were misclassified, an analysis was conducted by classification, covering all the 223 classifications requiring urgent referral, medicine treatment or specific counselling found in the 397 children examined. The analysis showed that provider's classification agreed with the surveyor's classification ('gold standard') in 56% of cases[38, 39]. The breakdown by condition is presented in Table A9. All but one of the misclassified conditions were 'under-classified', i.e. considered as milder cases than they actually were or given no classification. This would in principle have clinical implications for their management. However, the data also

[37] The classifications include very severe disease or severe pneumonia or pneumonia, and/or diarrhoea with severe dehydration or some dehydration, and/or severe persistent diarrhoea or persistent diarrhoea, and/or dysentery, and/or very severe febrile disease or fever-possible bacterial infection, and/or measles with or without complications.

[38] A total of 223 conditions requiring urgent referral, treatment or specific counselling were identified, falling in the following eight main categories: 1) Very severe disease or severe pneumonia or pneumonia; 2) Diarrhoea with severe or some dehydration, severe and non-severe persistent diarrhoea, dysentery; 3) Very severe febrile disease or fever-possible bacterial infection; 4) measles with or without eye and mouth complications; 5) Mastoiditis or acute or chronic ear infection; 6) Streptococcal sore throat; 7) Severe malnutrition or low weight; and 8) Severe anaemia or anaemia.

[39] 'Correct' is used in this report when health provider's case management practices agree with surveyor's (the 'gold standard'), i.e. if they comply with the national, standard IMCI case management guidelines.

suggests that there were many instances in which the provider, although not using a proper IMCI classification for the case, decided treatment based on his/her judgement rather than his/her clinical findings or classification made. The results are described below. Although the samples by illness or by condition are small for some conditions, the data may help understand whether an inadequate assessment of the child (inaccurate history, or incomplete or incorrect physical examination) was responsible for the under-classification of the condition.

- **Very severe disease/severe pneumonia and pneumonia** (*n* = 35): there was agreement on these classifications in 18 (51%) of the 35 cases identified by the surveyor. All the 17 conditions that were misclassified by the provider were under-classified. This resulted in two cases of severe pneumonia not being referred by the provider. Although the provider under-classified 15 of the 32 children with non-severe pneumonia, nine of these children were then prescribed an antibiotic by the provider, who thus appeared to have followed his/her clinical judgement rather than clinical findings. This in the end left six children with pneumonia about to be sent home by the provider with no antibiotic treatment[40]. Reasons for missing non-severe pneumonia included provider's inaccurate count of the respiratory rate or, in a few cases, not taking the count or not classifying the child. Also, six children were found by the surveyor to have wheezing: five of them were picked up also by the provider. Only one of the six children also had fast breathing; this child was not administered a rapid-acting bronchodilator to interpret fast breathing correctly before being classified—as recommended by the national IMCI guidelines—but this was because the provider had missed the sign in the child.
- **Diarrhoea with persistent diarrhoea, dysentery and severe or some dehydration** (*n* = 9): there was agreement on the classification of one of the three children with diarrhoea and dehydration[41], one of the five children with persistent diarrhoea[42] and the child with dysentery. Three of the four children with persistent diarrhoea were given no classification, despite the fact that for two of them the provider had asked about the duration of the diarrhoeal episode, a key question to classify these cases. Concerning the group of mild diarrhoea cases (other 79 children, having diarrhoea and no dehydration), 11 (14%) of these children were over-classified by the provider as cases with dehydration. The reasons for the misclassification of children with diarrhoea lied in assessment tasks incorrectly carried out, findings not taken into account for the classification or no classification given.
- **Fever-possible bacterial infection** (*n* = 71): there was agreement in 51 (72%) of these 71 cases. The 20 children with fever that were misclassified by the provider were all under-classified: in one third, no classification for fever was given. Eleven of the 20 children misclassified by the provider were however given antibiotics by the provider. Concerning the group of mild cases with fever, 31 (18%) of the 176 children with 'fever-bacterial infection unlikely' were over-classified as with 'fever-bacterial infection' and 37 were then given antibiotics by the provider.
- **Measles (with or without complications)** (*n* = 6): two of the six children with measles were correctly classified. Of the remaining four, all of whom under-classified, the only child who had measles and complications was classified as with measles only, while the other three children with measles were given no classification. In two of these three children given no classification, the provider had specifically asked the caretaker whether the child had had measles in the last 3 months[43].
- **Acute ear infection** (*n* = 21): provider and surveyor classifications agreed with each other on the classification of 13 (37%) of the 21 children with an acute ear infection. The

[40] These cases were advised correct treatment by the survey team in the end before leaving the facility. In fact, the survey team supervisor reviewed these cases with the facility provider, after they had been examined by the provider and re-examined by the surveyor, who detected the condition.

[41] The child with severe dehydration was under-classified as with some dehydration and one of the two children with some dehydration as with no dehydration.

[42] Question on the duration of the diarrhoea episode was asked in four of these children.

[43] None of these three children received vitamin A.

reasons for missing the other cases included not giving a classification or making an incomplete assessment.

- **Streptococcal sore throat** (*n* = 33): there was good agreement between provider and surveyor classification for these cases (28 or 85% of the 33 children with the condition). Although four of the remaining five children with streptococcal sore throat were under-classified as no streptococcal sore throat, yet they were given antibiotics.
- **Severe malnutrition or low weight** (*n* = 18): the provider classification agreed with the surveyor classification only in four (22%) of the 18 cases with the condition. This was therefore one of the areas with lowest performance. Issues related to correct weighing of the child have been described earlier. The only child classified as severe malnutrition in the survey was under-classified as low weight, as it was not assessed for visible wasting and oedema of both feet. Thirteen of the 17 low weight children who were misclassified were either under-classified as 'no low weight' or given no classification.
- **Anaemia** (*n* = 29): this was another weak area identified in this survey (as noted also in other surveys). There was agreement between provider's and surveyor's classification in 6 (21%) of the 29 cases with clinically detected anaemia. Three of the 23 cases missed were given no classification (the provider missed to check palmar pallor in two of them). The main reasons for misclassifying the other 20 children with anaemia were: missing to check the child for palmar pallor (11 cases); and/or interpreting the findings of palmar pallor—when checked—differently from the surveyor (8 cases); and/or, for two cases, checking palmar pallor incorrectly.
- **Other problems: eye infections** (*n* = 22)**:** although not specifically included in the IMCI protocol among the main conditions to be checked routinely in each sick child, the prevalence of eye infections ('pus draining from the eye') in the sample was a little lower (6%) than ear problem and streptococcal sore throat. Although not included in the IMCI assessment protocol, there was agreement between the provider and the surveyor in 16 (73%) of the 22 children with an eye infection, according to the working definition used in the survey. In three of the six children in which the condition was missed, the provider had not checked for other problems at the end of the examination, a task instead recommended in the IMCI guidelines.
- **Identification of feeding problems:** feeding problems were common, as found in other surveys, and were found by the surveyors in 198 (50%) of the 397 children: providers were able to identify them in 81 (41%) of these cases. The main task missed by the provider in the feeding assessment of most of these children was asking whether child feeding practices had changed during the current episode of illness.

### *4.2.3 Treatment and advice*

#### 4.2.3.1 Management of severe cases

A total of six children (1.5%) of the 397 enrolled in the survey were classified by the surveyor as cases with a severe condition warranting urgent referral to hospital: three children had 'severe pneumonia', one had 'diarrhoea with severe dehydration', one had 'severe persistent diarrhoea' (with some dehydration) and one 'severe malnutrition' (Table A10). All of them were under 3 years old. Two of these six severe cases were correctly identified as severe and referred to hospital by the provider with explanations given to the caretaker on the reasons for the urgent referral, although only one of the two caretakers accepted referral. A referral note was therefore prepared only for the child whose caretaker had accepted referral. Eventually, only one child received pre-referral treatment as advised by the IMCI guidelines. This meant receiving a first dose of a recommended antibiotic (children with severe pneumonia) and/or ORS (children with dehydration) and vitamin A as applicable (child with severe persistent diarrhoea and child with severe malnutrition). In conclusion, only one child (with severe pneumonia) of the six with a severe condition was correctly managed, that is, was identified *and* managed according to the

IMCI guidelines[44]. The main reason explaining this result is provider's failure to identify the severity of the cases.

4.2.3.2 Use of injectable medicines

Injectable medicines were prescribed only in five (1%) of the 397 children (Table A11). Two of them had a streptococcal sore throat while in the other two cases the provider had wrongly classified the child as having this condition. In general, injectable medicines do not seem to be over-prescribed.

4.2.3.3 Rational use of oral antibiotics

- *Prescription:* Most (85%) of the 81 children with an IMCI condition not requiring urgent referral and who needed oral antibiotics were prescribed them, while for the other children not given them the provider had usually misclassified the child[45] (Table A12). The large majority (91%) of these children—needing and prescribed an antibiotic—was prescribed an antibiotic recommended by the national IMCI guidelines, the provider thus complying with the national list of essential medicines. Of these, 40% was given a complete, correct prescription (Fig. 10). For the antibiotic to be prescribed correctly[46], the provider had to state the dose, frequency and duration of treatment clearly in the prescription. While dose and frequency were prescribed correctly in three quarters of cases, the main reason for an incomplete or incorrect overall prescription was providing no or incorrect information about the duration of treatment. This has often been found a weak area in physician's prescribing practices also in surveys in other countries. On the other hand, 76% of children not needing antibiotics were not prescribed antibiotics unnecessarily (Fig. 11). The most common reason for giving antibiotics in the other 24% of children not needing them was that the provider had misclassified them as having conditions (mostly pneumonia) that would have required antibiotics had their classification been correct.

- **Non-severe pneumonia** ($n$ = 32): 25 (78%) of these cases were prescribed an oral antibiotic and 23 (72%) given a recommended oral antibiotic[47]. All the 17 children that the provider had correctly classified as having 'pneumonia' were prescribed an oral antibiotic—94% were given a recommended one. On the other hand, all the seven children with 'pneumonia' who were not prescribed an antibiotic had been misclassified by the provider (six as 'no pneumonia' cases and one given no classification).
- **Dysentery**: only one child had dysentery and was prescribed a recommended oral antibiotic, although not correctly (incorrect dose).
- **Acute ear infection** ($n$ = 21): 19 (91%) of these children were prescribed an oral antibiotic, mostly (15 cases) a recommended one.
- **Streptococcal sore throat** ($n$ = 33): all but three children (91%) with this condition received an oral antibiotic (all but one of them a recommended one). The three children with this condition who received no oral antibiotic were misclassified by the provider as 'no streptococcal sore throat'.

[44] One out of six severe cases needing urgent referral was properly managed in the survey in Egypt, 2002, and none of the 14 severe cases in the survey in Sudan, 2003.
[45] For example, all the seven pneumonia cases that were not prescribed an oral antibiotic had been misclassified by the provider as cases with 'no pneumonia'.
[46] According to the national IMCI guidelines.
[47] Only 7 (30%) of these 23 children were prescribed the recommended antibiotic correctly.

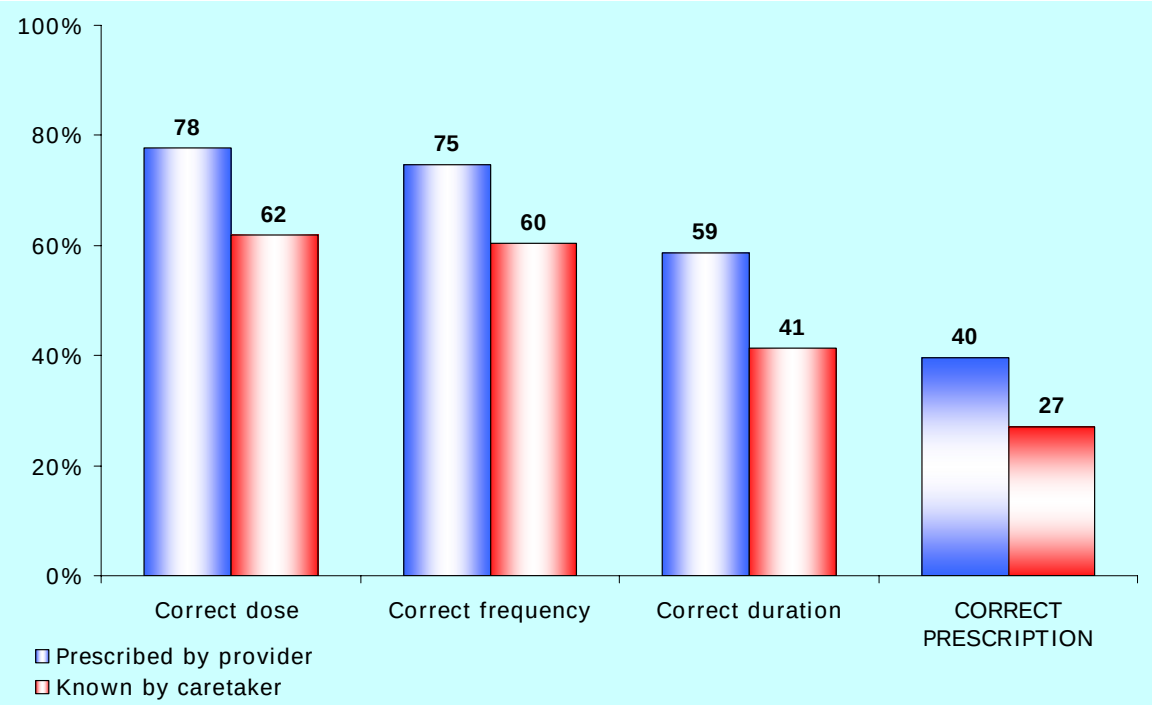


**Fig. 10. Prescription of IMCI recommended antibiotics for IMCI condition by provider and caretaker correct recall (*n* = 63)**

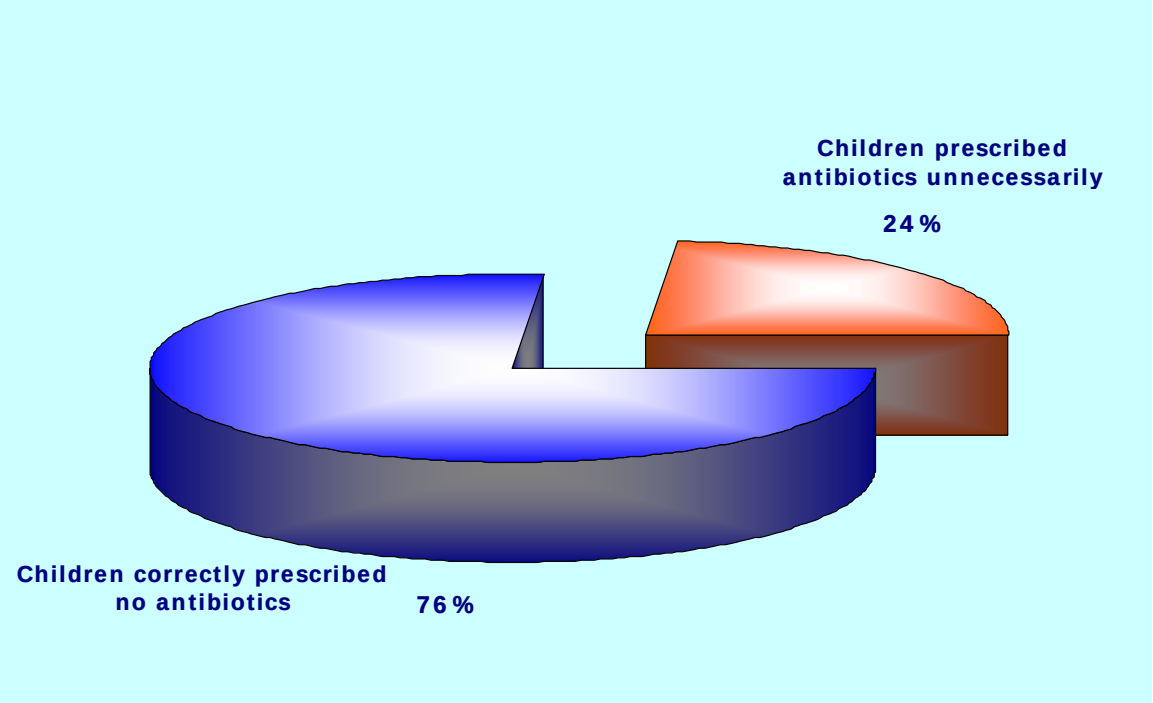


**Fig. 11. Rational use of drugs: children not needing antibiotics given no antibiotics (*n* = 301)**

❖ *Advice and caretaker recall*: Caretakers of children to whom an oral antibiotic is prescribed should be: a) given advice on how much, how many times per day and for how many days they should give the antibiotic to the child; b) shown how to give it to the child; and c) asked open-ended questions to check for their understanding of the instructions received. It can be assumed that if caretakers are given incorrect or no advice on treatment or are unclear about it, they may be less likely to administer it correctly to the child at home. The third task above (c) is therefore a key task, as oral antibiotic treatment is delegated to families: checking for caretaker comprehension of the instructions given is a good way to ascertain whether the caretaker has clearly understood all the instructions and to clarify any doubt before she leaves the facility. It should be noted that almost half of caretakers in this sample—about two thirds in rural areas—were illiterate, unable to read physician's written prescription, and would be likely to rely on the verbal advice received from the provider. In this survey, most (79%) caretakers were advised on antibiotic treatment[48] (item (a) above), 29% were shown how to give it (b), and only about one in ten (11%) was asked checking questions (c) (Table A17). Only one child was administered the first dose of the antibiotic at the facility[49].

As a result of the advice received, about one in four (27%) of the caretakers who had been prescribed a recommended antibiotic for their sick child was able to describe correctly to the surveyor during exit interviews how to give the antibiotic to the child (Table A12). This means that 27% of caretakers correctly knew *all* the following three items before going home: a) the dose (62% recalled this individual message correctly), the frequency (60%), and the duration of treatment (41%). The lower level of knowledge about the duration of treatment was consistent with between providers' tendency to overlook this advice. In fact, there was a direct relationship between provider's advice on dose, frequency and duration of treatment, and caretaker's correct knowledge about treatment: caretakers correctly advised on these items were more likely to recall them correctly at exit interview than those not advised (Table A13).

❖ *Potential compliance with advice*: Caretakers of children who had been prescribed an oral antibiotic for any reason by the provider were asked what they would do if their child got better before completing the treatment course as advised by the provider. Two thirds of them (68%) replied that they would continue treatment as advised, while one in five (21%) stated that they would stop treatment (Table A14; Fig. 12). The message about continuing treatment even if the child's condition improves should therefore be emphasized.

[48] This means that these caretakers were given some advice, whether correct or not. This item was included to know whether providers would as a routine practice explain treatment to caretakers or simply write the prescription or dispense the medicine with no verbal instructions.

[49] In studies on compliance with follow-up advice in Sudan and Brazil, providing the first dose of the antibiotic (Sudan) or prescribing antibiotics (Brazil) were associated with a higher compliance with follow-up advice (Al Fadil SM, Alrahman SH, Cousens S et al. *Integrated Management of Childhood Illnesses strategy: compliance with referral and follow-up recommendations in Gezira State, Sudan* Bulletin of the World Health Organization, 2003, 81(10): 708–16; Cunha AJ, dos Santos SR, Martines J. *Integrated care of childhood disease in Brazil: mothers' response to the recommendations of health workers.* Acta Paediatrica, 2005;94 (8): 1116–21).

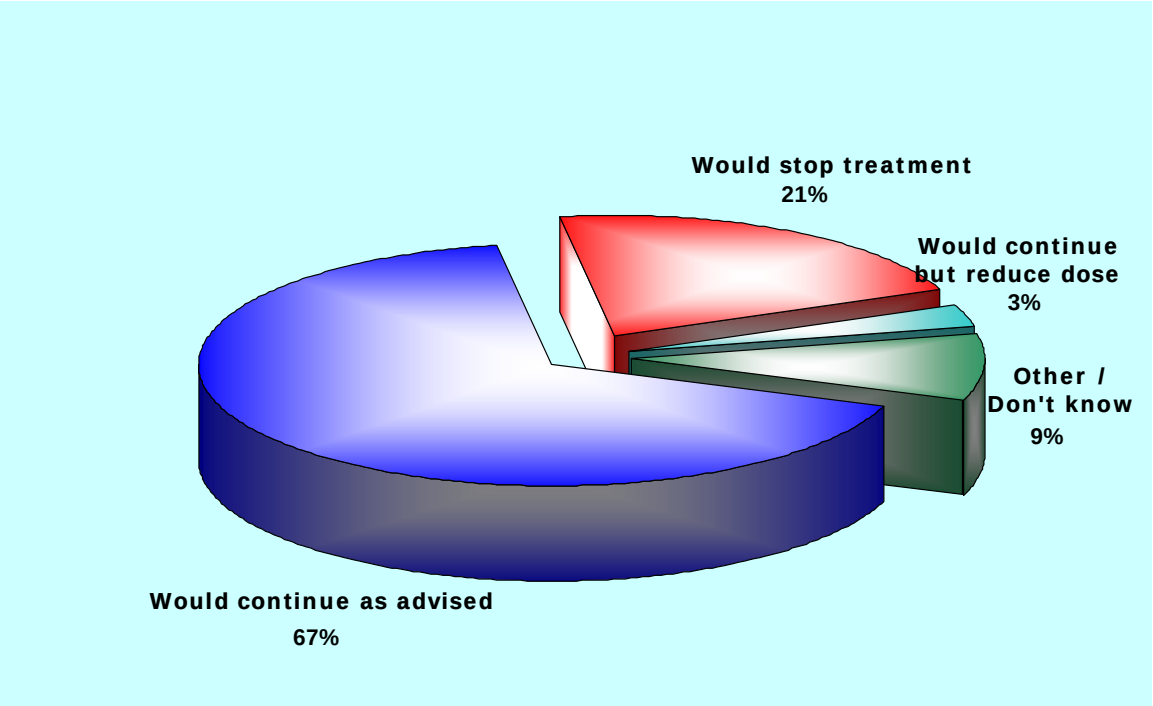


**Fig. 12. Caretaker potential compliance with provider advice on duration of oral antibiotic treatment should child get better before completing treatment course (*n* = 123)**

*In conclusion, the chances that a child with an IMCI condition requiring oral antibiotics would receive them were high (85%), while those of the child's being given the antibiotic at home correctly, based on caretaker's knowledge, were lower, i.e. one in four (27%).*

4.2.3.4 Oral rehydration salts (ORS)

❖ *Prescription*: Both children with diarrhoea and some dehydration were treated with ORS at the facility (Table A15). Most (83%) of the 78 diarrhoea cases with no clinical signs of dehydration were given ORS. Eleven (14%) of these children had been over-classified by the provider as children with some dehydration and would then have required oral rehydration at the facility if the provider's classification had been correct, but only three of them were actually started on ORS therapy at the facility. When ORS is prescribed, providers should state to caretakers how to prepare and administer it, since the solution will be prepared and used at home. The advice given most often (85% of cases) by the provider was the key advice on the amount of water to use to prepare the solution. When the complete advice is considered, less than a third (31%) of the caretakers of children with diarrhoea given ORS were fully and correctly advised on ORS, as they were provided with incorrect or no advice on when and how much solution to give to the child each time (Fig. 13).

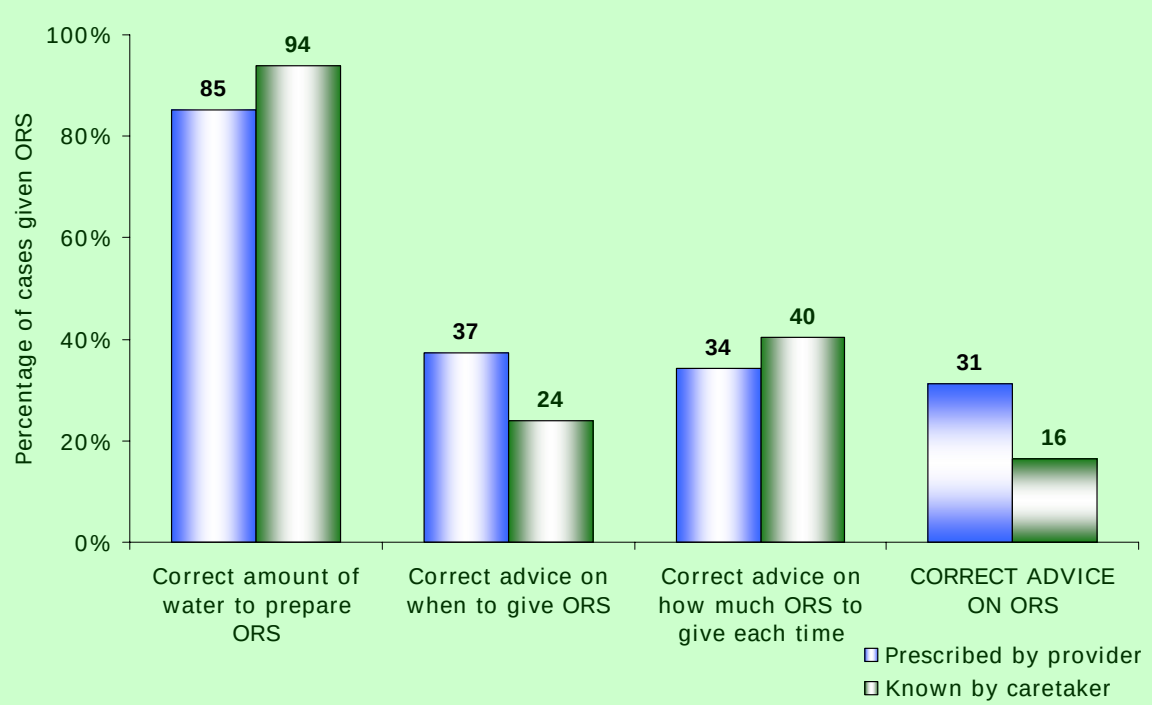


**Fig. 13. Provider correct advice on ORS and caretaker correct knowledge about ORS treatment (*n* = 67)**

❖ *Advice and caretaker recall*: As noted also for antibiotic treatment, caretakers of children with diarrhoea given ORS for home use should be advised on treatment (dose, frequency and duration), given a demonstration or explained how to prepare ORS referring to containers commonly available at home, and checked for their understanding of the advice received. The caretakers of 16% of children with diarrhoea given ORS were advised on the three items of ORS treatment, 9% were shown how to give it to the child and 15% were asked checking questions (Table A17).

When asked how they would prepare ORS, and when and how much solution they would give to the child, caretakers of 16% of the children with diarrhoea who were prescribed ORS were able to describe *all* the following items correctly: a) how much water to mix with an ORS sachet to prepare the solution (94% responded correctly on this critical item), b) when to give ORS to the child each day (24%), and how much ORS to give the child each time (40%) (Table A15; Fig. 13). A direct relationship was noted of provider advice on ORS preparation and administration with caretaker correct knowledge about it (Table A16). Interestingly, while only 85% of the caretakers of children given ORS were correctly advised by the provider on how much water to mix with one sachet, a higher proportion of the caretakers (94%) mentioned the correct amount, including therefore those who had not been told about it by the provider during this encounter at the facility. This finding, noted also in other surveys, most likely reflects caretaker's pre-existing knowledge in some cases, probably acquired through earlier, effective promotion activities for control of diarrhoeal disease.

*In conclusion, the chances of a child with diarrhoea receiving a correctly prepared ORS at home based on caretaker's knowledge were high (94%), while those of being administered the solution correctly were low, i.e. one in six (16%)—although these children were not dehydrated.*

4.2.3.5 Other treatment and opportunities for immunization

Data are shown in Table A18.

- **Paracetamol or aspirin** for children with high fever, sore throat and ear pain: a total of 49 (12%) children not needing urgent referral was prescribed paracetamol or aspirin: about half (46%) of children with high fever (i.e. a rectal temperature of 39.0ºC or above) and 16% of those with an acute ear infection or streptococcal sore throat were given these medicines, as recommended by the national IMCI guidelines. Paracetamol or aspirin were also given to 11% of children without those conditions.
- **Salbutamol** for children with wheezing: all the five children with wheezing not needing urgent referral—as per surveyor's examination—were prescribed oral salbutamol by the provider, as recommended by the IMCI guidelines. Interestingly, another five cases were prescribed salbutamol, although the provider had not reported wheezing. Providers reported wheezing in five additional children who had no wheezing according to the surveyor: two of them were prescribed oral salbutamol. One of the three children having wheezing and fast breathing according to the provider's assessment—not confirmed by the surveyor—was given a rapid-acting bronchodilator.
- **Cough medicines** use in children with ARI: The majority of children (89%) were correctly prescribed no cough or cold medicines by the provider (only 25 received them), in line with the national guidelines.
- **'Antidiarrhoeal'** use in children with diarrhoea: the use of these medicines is strongly discouraged in the management of diarrhoea diseases in young children, because of their potential harmful effects, especially in infants. Only six children, all but one older than one year, were prescribed an antidiarrhoeal/antimotility medicine in this survey: this very low rate is a positive finding, sustained over time.
- **Mebendazole**: four children, including a child with diarrhoea, were prescribed it for intestinal helminthic infection (oxyuriasis).
- **Iron** for children with anaemia: only 28% of children with clinical pallor were prescribed iron, as the rest had been misclassified by the provider as cases with no anaemia[50].
- **Vitamin A** for children 6 months old or older with persistent diarrhoea, measles (with or without complications), severe malnutrition, severe anaemia and low weight-for-age and as supplementation for children aged 6 months or older who had not received it in the previous 6 months: 41 (77%) of the 53 children who needed vitamin A were given it (29 children) or advised to come back on another day to receive it (12 children). It should be noted that vitamin A was available at the facility in all the 24 cases that did not receive it.
- **Tetracycline** for children with eye infection[51]: about two thirds (64%) of children identified by the surveyor as having an eye infection were prescribed tetracycline ointment. For those who did not receive it, the eye infection had been missed by the provider in more than half (63%) of the cases.
- **Immunization**: one (11%) in 10 children was found to be due or overdue for vaccinations on the day of consultation. Of them, two thirds (66%) were given the vaccination before leaving the facility, while almost a quarter (23%) were advised on when to come back to receive it on the scheduled vaccination day. Thus, overall, the large majority (89%) of children needing vaccination were either vaccinated or given proper advice, a good example of the added value of the IMCI protocol in utilizing these opportunities for immunization by systematically screening all sick children taken for a consultation and not needing urgent referral.

4.2.3.6 Advice on follow-up

The national IMCI guidelines recommend that caretakers of children found to have some specific conditions should be advised to take the child back to the facility for follow-up within a

[50] Three of these children had been given no classification for anaemia by the provider.
[51] Defined in this survey as 'pus draining from the eye'

certain number of days ('definite follow-up'), which may vary according to the condition. In this survey, more than half (55%) of all children seen would have needed definite follow-up based on the guidelines[52] and one in two (50%) of these were actually advised by the provider. As observed in other settings, the shorter the interval is of days the child should be taken back to the facility for follow-up, the higher the agreement is of provider's advice on definite follow-up with surveyor's: providers correctly advised follow-up in 50% of the children who needed to return in two days, in 23% of those needing to return in seven days and in none of the three children needing to come back in two weeks for follow-up (Table A19). When caretakers were advised to take the child back for follow-up, they recalled the advice in most cases (80%) and usually did so correctly (70%) (Table A20).

4.2.3.7 Provider advice and caretaker knowledge about home care

Two basic messages on home care during illness—'home care rules'—should be given to the caretakers of all sick children: giving extra fluids and continuing feeding. In this survey, the caretakers of almost half (44%) of children seen and not needing urgent referral were advised by the provider on both the fluids and feeding messages[53] (Table A21; Fig. 14). It is worth mentioning that caretakers of children with diarrhoea, a target group which would most benefit from this advice, were 1.4 times as likely to be advised on these messages as those without diarrhoea (58% vs 41%)[54].

When the caretakers were interviewed before leaving the facility and asked about the three home care rules, one in seven caretakers (14%) was able to mention *all* the three rules above (Table A22). What was missed in most cases was knowledge of the specific early danger signs that should prompt a caretaker to take the child back to the facility without delay, a finding which is common to many other surveys. It is important to note that this was the caretaker knowledge level *after* provider advice and this was a specific population of caretakers who had already sought care. Also, the median time waited before taking the child to the health centre since caretakers had recognized a breathing problem was as many as 3 days (§ 4.1.3). The issue then exists that the level of knowledge about when to seek care may be lower in the community and may be a factor influencing care-seeking practices negatively (see § 4.1.2). This information needs to be checked in household surveys which include data on care-seeking practices and sources of care. Receiving advice made a difference also in this case: the proportion of caretakers who mentioned they would give more fluids *and* continue feeding was higher among those who had received this advice than those who had not[55]. However, some of the knowledge pre-existed this specific encounter with the health provider, as clearly indicated by a high percentage of caretakers (88%) responding that they would continue feeding the child during illness, when only about half of them (46%) had been given this advice by the provider in this particular circumstance (Fig. 14). Finally, it is important to emphasize that a gap between knowledge and practice should be expected.

Although there are methodological issues related to the way a generic, hypothetical question on knowledge about care-seeking is formulated in these surveys, caretakers tended to miss the key signs for care-seeking while mentioning others that are much more generic as 'triggers' to care-seeking (e.g. fever, child becomes sicker) (Table A22). For example, a smaller proportion of caretakers of children with cough and no pneumonia mentioned respiratory signs as

[52] This rate is high and there is some concern that it may not be practical and feasible to advise the caretakers of such a high proportion of children to return for follow-up and expect them to do so.

[53] Data on provider advice on care-seeking were removed from the analysis because of some methodological issues identified during data collection on this particular item.

[54] RR 1.4, 95% CI: 1.12 to 1.80. Concerning the specific messages: caretakers of children with diarrhoea were 1.5 times as likely to be advised to give increased fluids during the episode as those without diarrhoea (65% vs 44%, RR 1.48, 95% CI: 1.16 to 1.90) and 1.4 times as likely to be advised to continue feeding (61% vs 43%, RR 1.4 , 95% CI: 1.15 to 1.80).

[55] 68.6% vs 26.5%, respectively. RR: 2.6; 95% CI: 1.8 to 3.7. The proportion of caretakers who mentioned that they would offer more to drink to the sick child was higher for those who had received this advice from the provider than those who had not (71% vs 26%). Likewise, there was a difference in the advice on continuing feeding, whereby 96% of caretakers who had been given the correct advice mentioned it compared to 82% of those who had not.

signs to watch out for at home than those who mentioned fever (i.e. 7% mentioned fast breathing and 37% difficult breathing vs 79% who mentioned fever). *In conclusion, the level of caretaker knowledge about some of the signs to seek care remains low and calls for more efforts in this area.*

4.2.3.8 Provider communication skills

Giving correct advice to caretakers of sick children is undoubtedly important, as shown in the above sections: it is the caretakers who will be caring for children at home and even treating them with medicines, so they become the actual providers of care to their children in most cases. Delivering child care messages using good communication techniques gives this action more chance of being effective. In this survey, some information was collected on the use of the 'home care card', which is a standardized IMCI home care counselling card with illustrated messages meant for providers' use when advising caretakers of sick children[56]. It should be noted, however, that the same illustrations and messages of the card are incorporated in the 'carnét de santé' in Morocco. This may explain why the card was used only in 3% of cases and was not available at the facility in 72% of cases in which it was not used by the provider. All the caretakers who were shown the card by the provider recalled being shown it. In 6 of the 11 cases in which the card was used, it was used properly with good communication techniques (Table A23). The card was held properly—in such a way that the caretaker could see the pictures and text, with the pictures pointed to while referring to the related messages in most cases and with caretaker's understanding of the messages checked less frequently. This latter aspect was expected as the use of effective communication techniques has not yet been the focus of IMCI training in Morocco and this information, collected on a small sample, may just serve as a reference for future training and follow-up visits.

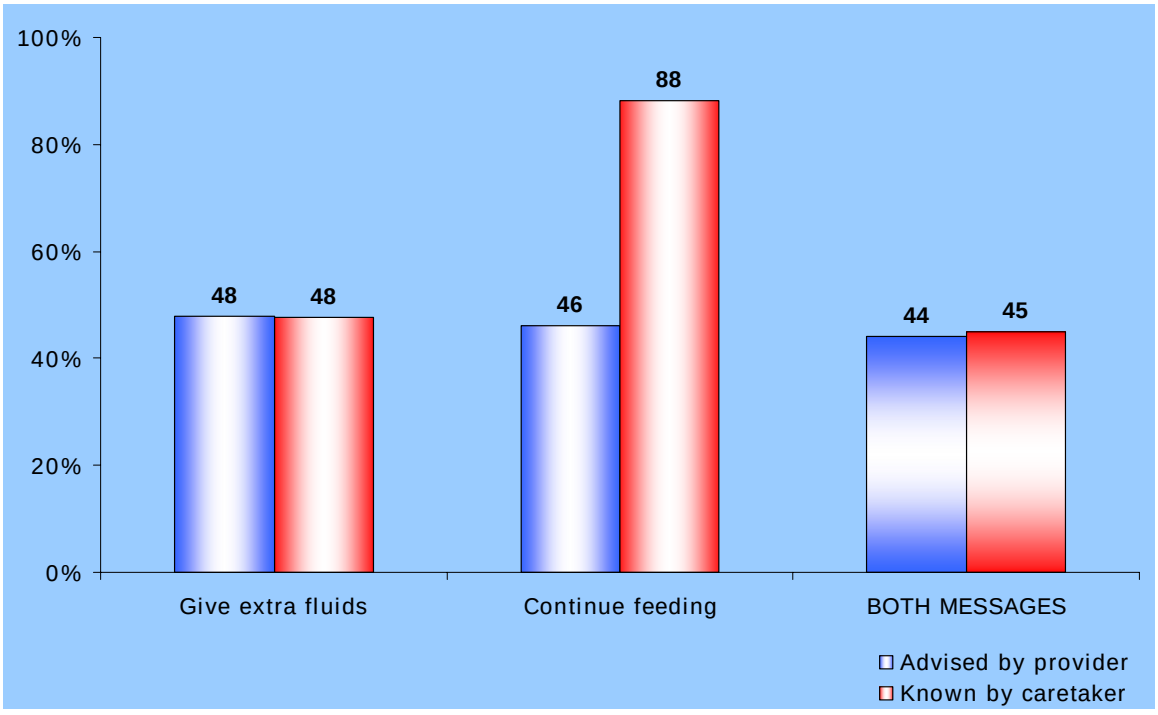


**Fig. 14. Provider advice and caretaker knowledge about home care for children not needing urgent referral (*n* = 391)**

[56] Also commonly known as 'mother card'.

4.2.3.9 Age-appropriate advice on feeding

The caretakers of only one child in four (26%) below 2 years old and those with low weight and/or anaemia and/or persistent diarrhoea not needing urgent referral were given appropriate advice on feeding according to the age of the child, including breastfeeding and frequency of complementary feeding (for the working definition of appropriate feeding in this survey, please refer to the box at the bottom of Table A24). It is worth noting that in all instances in which the caretakers were advised on feeding, the advice was given by a nurse who had received training in IMCI; no advice on feeding was provided by nurses not trained in IMCI. While this is an added value of IMCI training, it also suggests that feeding advice either may not be part of their basic training or, if it is, may be rather inadequate. It may also be a weak aspect in supervision. The groups of children in which the feeding advice was more often inadequate were those of children less than 6 months old and those 2 years old or older with low weight and/or anaemia and/or persistent diarrhoea. *Feeding advice therefore appeared inadequate*.

4.2.3.10 Advice on mother's health

Only 24 (7%) of the 350 caretaker-mothers of children not referred by the provider received some advice on their health[57]. The IMCI guidelines recommend that health providers should counsel the mother of the sick child about her own health. The low rate of counselling on mother's health was expected, as training courses in Morocco—as in other countries in the Region—have to date not provided emphasis on maternal health during trainees' clinical practice. At this stage, this may be considered an opportunity to pursue, as 88% of all children in this survey had mothers as their caretakers. For children seen at health facilities having mild conditions, IMCI would help build a bridge between child and maternal health by reminding health providers that the child's mother, and not only the child, is also there.

## 4.3 HEALTH SYSTEMS

The survey reviewed some key aspects of health systems support that are required for the provision of quality services and affect their utilization, namely: organization of work at the facility; provider's IMCI training status; availability of essential medicines, basic supplies and equipment—including immunization, transportation facilities for referred cases and transportation costs to reach the health centre; mobile services; supervision of providers; and records. Caretaker satisfaction is also described in this section as clients' satisfaction and perceived quality of services influence their use of health services. The main findings are summarized in Table 7.

**Table 7. Main findings on health system support** [a]

| Health system component | Findings | Confidence intervals |
|---|---|---|
| • Caretakers satisfied with the child health care services | 72.7% | (64.6 – 81.4) |
| • Health facilities with at least 66% of doctors managing children trained in IMCI | 73.3% | (61.4 – 85.9) |
| • Health facilities with essential oral treatments available (4 oral medicines) | 44.4% | (30.0 – 59.2) |
| • Health facilities with 12 non-injectable medicines available | 13.3% | (3.2 – 23.6) |
| • Health facilities with injectable medicines for pre-referral treatment available | 33.3% | (19.3 – 47.5) |
| • Facilities providing immunization services with vaccination supply and equipment available at the time of visit | 75.6% | (62.9 – 88.4) |
| • Facilities with basic equipment and materials for IMCI available | 40.0% | (25.4 – 54.7) |
| • Facilities that received at least one supervisory visit in the last 6 months that included observation of case management | 6.7% | (-0.8 – 14.2) |

[a] For definitions, see text and annexes.

[57] Any of the following: counselling on how to care for herself if sick or if she has a breast problem; advising to eat well; checking her tetanus toxoid immunization status; and ensuring access to reproductive health services.

### 4.3.1 Caretaker satisfaction

About three quarters (73%) of the caretakers interviewed reported being satisfied or very satisfied with the health services provided at the facility (Table A25). The aspects of care that were most appreciated by the caretakers included, without prompting, the health provider's attitude (46%), the availability of medicines (35%) and the way their child had been examined by the provider (35%). Caretakers were also asked what aspects of health services and care they would like to see improved. As many as 43% of caretakers answered that they would like to have medicines available. As expected, the percentage was higher in those who reported not being satisfied with services (59%) than in those who were satisfied (37%)[58]. The issue of availability of medicines was also the single most cited reason for caretakers' dissatisfaction with the services, mentioned by one in two (47%) of the caretakers who were little satisfied or unsatisfied. Even accepting that availability of medicines is often indicated as one parameter for caretaker perceived quality of health services and caretaker expectations and demands may be high, the fact that this item was mentioned by so many caretakers raises the issue about the actual, regular availability of medicines at health facilities. This is supported by data on availability of essential medicines (see § 4.3.4). It should be noted that these aspects of care which were perceived by the caretakers as an indication of good services are an integral part of the IMCI approach. According to the IMCI protocol, all children are to be examined thoroughly, treatment is standardized and medicines should be available in facilities implementing IMCI. It may be inferred that, if IMCI is properly introduced in a health facility, it should help make services more attractive to the clients and contribute to improving their reputation, as it has been shown in studies in some countries. Unfortunately, as records were not readily available to review service utilization trends for children under 5 years old over the years in the facility visited, there was lack of data to provide supporting evidence for that.

### 4.3.2 Organization of work

The tasks reviewed were those concerning taking the child's weight and temperature, checking the weight against the growth chart and assessing feeding practices. There was no duplication of tasks: the individual tasks were carried out either by the physician or by the nurse (Table A26). Weight and the temperature were, as expected, taken in most cases (85%) by the nurse, although doctors did it themselves in 15% of cases. On the other hand, checking the child's weight against the growth chart was a task performed mostly (94%) by doctors. Also, the assessment of feeding practices (breastfeeding, complementary feeding and feeding during illness) was carried out by the physician in the majority of cases, while nurses did it in about one in 10 children. Standardization of procedures to be performed by doctors and nurses, adequately trained in the task, may help, as the survey showed that these tasks were often carried out incorrectly and not necessarily by the same category of providers. Qualitative interviews with health facility staff also suggested the lack of a systematic flow of patients in 29% of the facilities.

### 4.3.3 IMCI training

#### 4.3.3.1 IMCI training coverage

By definition, all children enrolled in this survey were seen by health providers who had received IMCI training. Thus, each facility included in the survey had to have at least one physician trained in IMCI. In fact, MOH had aimed at training 100% of doctors dealing with under-5 children in a facility, in order for all children to have an equal chance of being managed by an IMCI-trained provider at any time in facilities which had introduced IMCI. Sixty percent (60%) of facilities reported 100% of the doctors working in that facility trained in IMCI: this in principle means that all children taken to those facilities were likely to be seen by a physician trained in IMCI (Table A27). This level of training coverage was highest in rural facilities (94%, all but one facilities) and lower in urban areas (41%). It is possible that the latter tend to be staffed

[58] RR for those satisfied 0.6, 95% CI: 0.4, 0.8.

with more doctors, making it more difficult to reach 100% training coverage. The situation was very different for nurses. Only two facilities, both of them urban, had all nurses dealing with under-5 children trained in IMCI; 22% had between one third and two thirds of nurses trained. This survey has shown how important the role of nurses is in carrying out certain specific tasks—and correctly, potentially contributing to the smooth delivery of the whole scope of IMCI care at the facility. More than three quarters (78%) of children were seen by doctors who had been trained within the previous 3 years, the percentage being 100% in rural areas (Tables A28 and A29). The higher rate for recently trained providers in rural facilities may be due to: a lower training coverage in rural areas in the previous years of IMCI implementation; or, as viewed by the national team, a higher turnover in rural than urban facilities, which may make it unlikely for a physician trained in IMCI to stay in the same facility for a few years; or both. However, turnover of trained staff was not measured in the survey and this remains therefore only a possible interpretation. The fact that as many as 22% of children in this survey were seen by doctors trained more than 3 years ago (as far back as in 1998) suggests also that IMCI was active throughout most of the years, although it had faced difficulties in planning additional training to address turnover of trained staff, especially in rural areas.

#### 4.3.3.2 Quality of child care by provider training and follow-up status

The findings on taking the weight and temperature by nurses' IMCI training status have been reported under § 4.2.1. *Those findings call for more emphasis during nursing basic training and consideration on reviewing them also during IMCI training for nurses.* As follow-up visits after IMCI training are an integral part of training and are a powerful instrument to strengthen performance of services, the findings are reported here. Less than half of all children managed were seen by an IMCI-trained physician who had received a follow-up visit after training to reinforce skills and strengthen health system support (see § 4.1.1, Fig A35). This and the following findings have implications for planning. Children assessed by doctors who had received a follow-up visit after training tended to be assessed more systematically than those who had not, including assessment of feeding practices, with the index of integrated assessment being higher for the former (8.1) than the latter (7.4), as described in § 4.2.1 (Fig. 8 and Table A30), although the difference did not reach statistical significance. However, no difference from a practical point of view was noticed for most of the treatment and advising tasks or caretakers' correct recall of messages on treatment and home care given by doctors followed up and those not followed up (Tables A31 and A32). It should be noted that, even if 45% of children were managed by doctors who had received follow-up, only 7% were managed by doctors who had been followed up within 2 months of training, thus reducing the potential impact of the follow-up visit (see § 4.1.1). These findings may suggest that, while follow-up visits have the potential to improve performance (see results on assessment), they may have less effect if they are carried out too long after IMCI training. *The findings call for improved planning, including allocation of resources, to include follow-up visits to trained staff for any IMCI training activity which is planned.* Weak supervision also adds to this situation (see § 4.3.11). Unfortunately, the small number of children seen by doctors followed up within 2 months of training prevented any further analysis to compare this group with those seen by doctors followed up after a longer period and those not followed up.

### *4.3.4 Availability of medicines*

Three measures—indexes[59]—to assess the availability at health facilities of medicines required to manage under-5 children according to the national IMCI clinical guidelines (Table A33) were used, namely the indexes of availability of:

- **Essential oral treatments**, that is four oral medicines recommended for home management of pneumonia, dysentery, diarrhoea and anaemia upon physician's advice (i.e. *cotrimoxazole*[60],

[59] As observed for the index on integrated assessment, each index of medicine availability represents the mean of the total number of medicines considered in each category.
[60] Used also as first-line antibiotic for the treatment of ear infections.

*ORS*, *vitamin A* and *iron*). The index was 3.0, that is a mean of 3.3 medicines available out of the four medicines. Twenty (44%) of the 45 facilities had all the four medicines available (Fig. 15).

- **12 non-injectable medicines**, including the four above and another eight medicines (shown in *italics* in this paragraph) for the management of cases with pneumonia and dysentery not responding to first-line treatment (*amoxicillin*), ear infections (cotrimoxazole[61] and, as second-line, amoxicillin), streptococcal sore throat (*penicillin V* or *erythromycin*), wheezing (*salbutamol* or[62] *terbutaline by inhalation* and *oral*), eye infections (*tetracycline ointment*), convulsions (*diazepam* or *medazolam*), fever (*paracetamol* or *acid acetylsalicylic*) and *vitamin D* as supplementation. The index was a mean of 9.1 out of 12 medicines. Six (13%) of the 45 facilities had all the 12 medicines available (Fig. 15).
- **Injectable medicines for one-dose pre-referral treatment** for children with severe classifications needing urgent referral, namely thiamphenicol (*or* ampicillin), gentamicin and benzylpenicillin (*or* ampicillin). The index was 1.7 out of 3 medicines. One in three (33%) facilities had all the three pre-referral medicines (Fig. 15). This meant that two thirds of these primary health care facilities would have been unable to provide pre-referral treatment as recommended in the IMCI guidelines if children below 5 years old with severe conditions requiring it had been taken there on the day of the survey.

The availability of individual medicines is shown in Table A34. Facilities which had a bronchodilator by inhalation available were 1.4 times more likely to have a space deviser than those which did not (90% vs 64%)[63]. Saline, as an acceptable solution for intravenous rehydration of children with diarrhoea and severe dehydration, was available in 44% of the facilities visited.

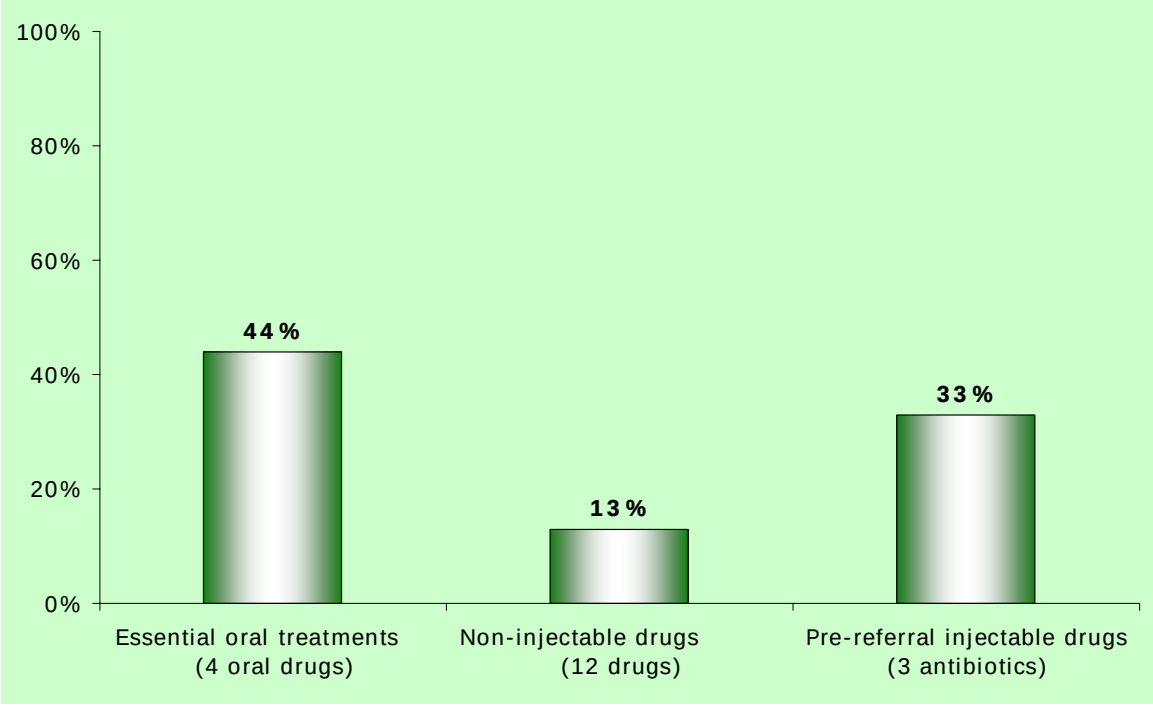


**Fig. 15. Percentage of facilities having medicines recommended for IMCI (included in the Essential List of Medicines) (*n* = 45 facilities)**

[61] Already included in the list of essential oral treatments.
[62] Either of the two as a requirement for this indicator.
[63] RR 1.4, 95% CI: 1.0 to 2.0.

The definition of medicine availability used in this and similar surveys required only the presence of just one full course of treatment for each of the medicines per facility. Alternative, better approaches to measuring availability of medicines based on case-load required medicine stock cards duly filled in, reliable case-load data, estimated time of medicine procurement etc., were explored but proved not to be feasible. This also suggested that facilities might be unable to calculate their own medicine requirements reliably, in the absence of this information. Medicine stock cards and registers were reported to be not available by staff of more than half of the facilities visited. These observations were confirmed during the discussion of findings with the data analysis group at national level, from which it emerged that there was a need for health facility staff to have standard tools and guidelines on how to estimate medicine requirements for children's conditions to order the necessary amounts based on needs regularly. Thus, also in this survey, non-availability of a medicine meant lack of even a single treatment course of that medicine. This situation would prevent the administration of pre-referral treatment to severe cases and, in general, force families to buy the medicines elsewhere at a cost. This situation has to be interpreted also in light of the difficult access to pharmacies in rural areas [12]. This would put further strain on the meagre resources of indigent families, affect the quality of care they would be able to provide to their children and contribute to inequitable access to services. Problems in regular supply of medicines were reported in this survey, with antibiotic stock-out situations in the previous 3 months reported by staff of at least a third of facilities during interviews. *To conclude, facility capacity to provide direct treatment to moderate and severe cases was low.*

### *4.3.5 Availability of supplies and equipment for vaccination*

All facilities reported providing immunization services, most of them (93%) two or more times a week. The majority (82%) followed the 'open vial' policy. Availability of vaccines (BCG, OPV, DPT, Measles, Hib, Hepatitis B and tetanus toxoid) was very good (all but one facility had all vaccines available except for Hib, a vaccine introduced rather recently and which was unavailable in three facilities). Of all facilities, 76% had cold chain equipment and supplies for vaccination (Table A35). Safety boxes or containers to safely dispose of used needles were available in half (49%) of the facilities. All facilities but one of the 44 which were supplied with a refrigerator had a functioning thermometer inside and in 39 (89%) of the 44 refrigerators the temperature was kept within the range of 2ºC to 8ºC as recommended by the national EPI[64], based on the thermometer reading. Monitoring of the cold chain was also done through vaccine vial monitors as time temperature indicators. Problems in the cold chain (vaccine exposure to heat) or expired vaccines were in this way identified for all vaccines in six of the facilities visited (five urban and one rural). *To conclude, there was good availability of vaccines with usually available supplies and good vaccine storage and some issues on the cold chain in a few cases.*

### *4.3.6 Availability of other basic supplies and equipment for IMCI*

Forty percent (40%) of the facilities were provided with the basic supply and equipment needed for IMCI, including all the following: adult and baby scales, timing devices to count the respiratory rate, supplies to mix ORS and thermometers (Table A36). Thermometers were not available in all facilities. Supplies to mix ORS were available only in half (51%) of the facilities, thus making it difficult to prepare and administer the ORS solution at the facility should a child with some dehydration be in need for it. Fourteen percent (14%) of the children with diarrhoea who were classified by the provider as having 'some dehydration' were not rehydrated at the facility but simply handed over ORS sachets. As noted on medicine availability (§ 4.3.4), *this finding contributes to raising issues about the capacity of PHC facilities to manage children with moderate conditions*. Medicine stock cards were available in about half (56%) of the facilities, this making it difficult to manage medicine stocks (see § 4.3.4).

IMCI recording forms, used also as an aid to the consultation to record information on the individual child and classify the case according to the IMCI guidelines, were available in most (82%) facilities. This is a rather positive finding. On the other hand, IMCI daily registers and

[64] Expanded Programme on Immunization

monthly reports, to summarize and report such information, were available in fewer facilities (58%). Forty-four percent (44%) of facilities had the IMCI referral form available, to record basic information on the severe case for the referral facility and receive feedback through the same form. This reflects part of the efforts by the MOH child health service to improve referral.

### *4.3.7 Access to referral facilities*

People living in the catchment area of 76% of the facilities visited were estimated by facility staff to have access both physically (e.g. distance) and economically to a means of transportation to take referred cases to the referral facility. For most (84%) of the facilities, it was estimated that the referral hospital could be reached within an hour. All but one of the seven facilities which reported a longer time to reach the referral facility were rural facilities. (Table A38). Based on qualitative interviews, staff of 16% of facilities reported experiences with problems with referral and, in as many as 40% of cases, believed that not all children needing urgent referral could be taken to the referral facility. Problems were reported more in rural than urban facilities. The reason most often cited for referral problems was family's lack of financial means. *It may be inferred from this qualitative information that access to referral facilities for severe cases may be constrained especially for underprivileged families, which are likely to be the most vulnerable, especially in rural areas*. It was not within the scope of this survey to assess how functional the referral system was, as this would have required a different design.

### *4.3.8 Transportation expenses*

An attempt was made in the survey to obtain some information on direct, 'hidden' costs borne by families to access services, namely transportation costs. As the large majority of caretakers came from nearby areas, it is no surprise that the majority of them (83%) reported no expenses for transportation. Nevertheless, the average cost for transportation was higher in rural than urban areas. The maximum amount paid in urban areas for transport was MAD 25 (about US$ 3.20) and in rural areas MAD 60 (about US$ 7.70)[65]. These costs add to those for medicines when the latter are not available at health facilities (see § 4.3.4). Inability to afford costs was also mentioned among referral problems as the most common reason for caretakers' not taking a child with a severe condition to a referral facility (see § 4.3.7).

### *4.3.9 Access to health centres and mobile team services*

The large majority of the caretakers who used health centres' services in this survey had come from nearby areas, on average 24 minutes away, with 88% of them reaching the facility within an hour (Table A39). The population which had used these services on the day of the survey was therefore mostly the one which had good access to the facility, with only five caretakers (1%) having taken more than an hour to get there. *One question would then be where the population with more difficult access would go for care and whether it would have access to, and use, PHC services*. The issue was stronger in rural areas, which typically have higher under-5 mortality rates (§ 2.2): it took on average 20.6 minutes for caretakers to reach the facilities in urban areas compared with 38 minutes in rural areas. Furthermore, only one child in five (20%) of those seen was covered by health insurance (Fig. 16), the percentage being lower in rural (11%) than urban (23%) areas. It should be noted that, as the health insurance system works on a reimbursement basis, even those covered by health insurance would need to have the financial resources available to advance payment for health-related expenses, e.g. medicines. Most private care is provided in urban areas.

[65] One US dollar corresponded approximately to MAD 7.8 at the time of the survey. This rate in given only as indicative.

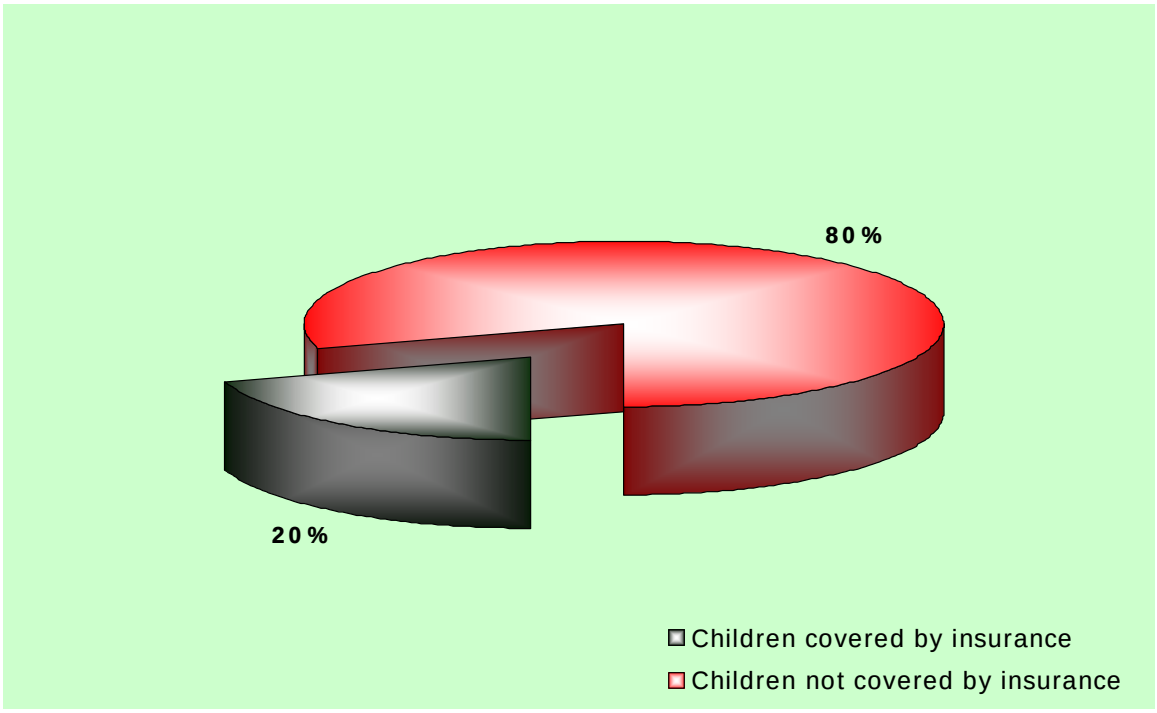


**Fig. 16. Percentage of children seen covered by insurance (*n* = 397 children)**

Mobile teams (‘*équipe mobile*’) are supposed to play an important role in the provision of health care in Morocco, especially in rural areas. They were reported to cover some 30% of the population living at more than 10 km of a health facility in 2003 (§ 2.1). Qualitative information was therefore collected in this survey on the type and frequency of services provided by the ‘*équipe mobile*’. Overall, 29% of all facilities reported providing the service while 38% of the 16 rural facilities, those more likely to need them, reported not providing the service. In interviews with facility staff, ‘*équipe mobile*’ was reported to provide not only preventive care (100% of cases)—as expected, given its original aim—and promotive activities (e.g. health education) (92%), but also curative services (85%) (Table A40). However, the presence of a physician in the team was reported only in 46% of cases. The frequency of missions also raised issues about the validity of the service to provide curative care. In fact, 62% of facilities reported planning only for up to 4 sessions in 2006, a frequency which would prevent regular provision of curative care, and less than half of facilities reported that they were able eventually to conduct all the sessions originally planned (Fig. 17). Thus, based on this qualitative information, not all rural facilities reported providing mobile services, not all of these services included curative services and the availability of a physician and an important proportion of planned sessions was not conducted. Although the sample of facilities providing ‘*équipe mobile*’ services was small in this survey and the aim was not an evaluation of these services, the information collected is in line with previous reports of low coverage and performance of these services. *The information collected suggests that these services may mostly have the objective of providing preventive care, rather than regular curative care to the underserved population. In fact, curative care should be provided regularly (and by a physician). A review of ‘équipe mobile’ services and their scope would be warranted.*

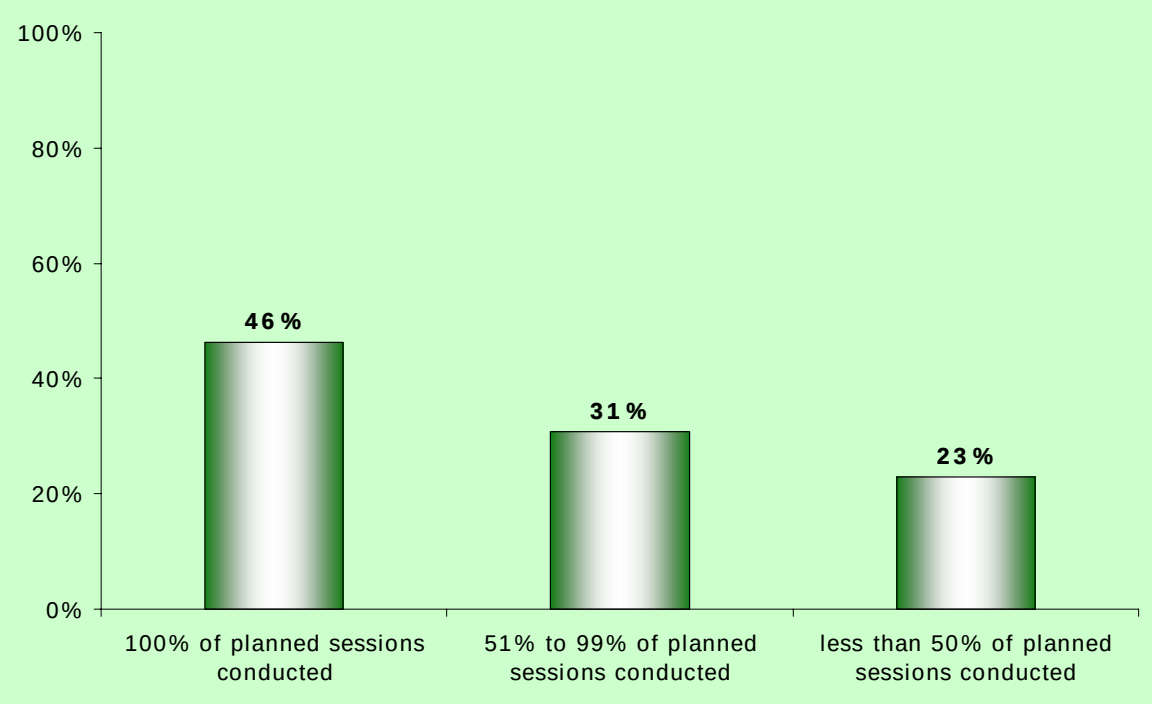


**Fig. 17. *Equipe mobile*: conducted versus planned sessions (*n* = 13 facilities which reported provision of *équipe mobile* services)**

### *4.3.10 Observations on access and utilization of PHC facilities*

*Some of the information collected in this survey raises issues about access to PHC facilities and their optimal utilization.* While these are often observations and interpretations of the information collected, they tend to point to the same direction. Therefore, these observations are described in this report as an issue worth investigating, clearly acknowledging that this survey tool (used at health facility level) is not designed to collect conclusive information on accessibility and utilization of health services at PHC facilities. The data and information coming more specifically from this survey in this respect concern the pattern of cases seen (§ 4.1.2) and caretakers' low level of knowledge about care-seeking—in this selected population which had used the services (§ 4.2.3.7), caretaker satisfaction level with services (§ 4.3.1) and quality of services especially in relation to availability of medicines (§ 4.3.4), health insurance coverage (§ 4.3.9), the type of population using health centres in terms of accessibility (§ 4.3,.9), referral-related problems (§ 4.3.7) and coverage of underserved populations with mobile team services ('*équipe mobile*') (§ 4.3.9).

### *4.3.11 Supervision*

About half (49%) of the facilities visited reported having received at least one supervisory visit in the past 6 months and only 3 (7%) reported having received clinical supervision in the same period, including observation of case management (Table A41; Fig. 18). *Supervision, both in terms of frequency and content, appeared therefore largely inadequate to support clinical achievements made with IMCI training and follow-up visits.* Supervisory books to record information were available in most (91%) facilities. For one facility in four (24%), the latest record of a supervisory visit dated back to a year or more ago; the percentage was higher in rural (36%) than urban (19%) facilities, although the difference did not reach statistical significance, possibly because of the small numbers involved in both groups. Routine supervision was therefore among the weakest health system areas identified in this survey.

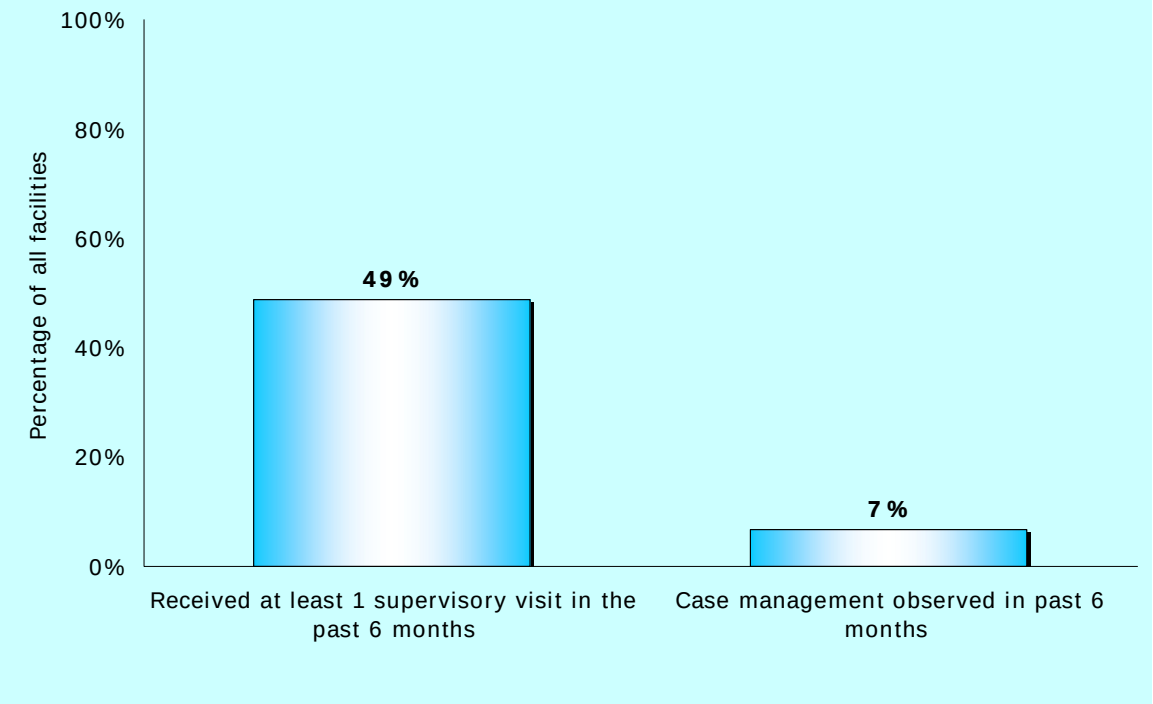


**Fig. 18. Supervision in the 45 facilities visited**

### *4.3.12 Records*

An attempt was made to collect some additional information on patterns of cases by age and sex by reviewing routine outpatient records for the month of September 2007 at the facilities visited. All facilities had an outpatient logbook. Unfortunately, the survey teams had difficulty in retrieving basic information in many cases. For example, summary information on outpatients was readily available only in 69% of facilities. There were some problems also in reconciling the figures in many instances. It would therefore be challenging to use these data effectively for estimating medicine needs and planning purposes in general. *This is another area which requires substantial strengthening to ensure effective planning.*

## 4.4 LIMITATIONS OF THIS SURVEY

In any study, it is very important to identify and describe its limitations and take into account the original objectives, so that the findings can be interpreted and used properly. No study is exempt from limitations. Below are the main limitations found for this survey.

- *Sampling frame*: the case-load criterion of at least 4 cases below 5 years old, used to include health facilities in the sampling frame inevitably meant the exclusion of facilities with lower case-load. Within the time and financial resources allocated, however, this was unavoidable and enabled the results to be within the acceptable limits of precision originally planned for the main indicators. As urban facilities tend to have higher average case-load than rural facilities, the sampling frame included a higher proportion of urban facilities than rural facilities and, hence, more urban facilities were included in the survey sample to reflect the same proportional distribution (§ 3.2.3).
- *Surveyors and supervisors*: the criteria for selection of surveyors and supervisors included previous training in IMCI and facilitation skills, experience in IMCI training as trainers, training and involvement in IMCI follow-up visits after training and, as a desirable option, previous experience in similar surveys (§ 3.6.1). This enabled the selection of staff who were very familiar with IMCI and who needed to be trained only in the survey procedures. The limitation of this choice is in that people fully involved in IMCI may in principle be unintentionally more biased than people not involved in it. However, it would have been

almost impossible to conduct a survey of this type—requiring excellent familiarity with the IMCI clinical guidelines as a prerequisite for surveyors—using staff not trained in IMCI. To reduce the effects of this bias, attention was placed on the supervision of survey activities, assigning teams to provinces different from the ones they were originally based in, and interpretation of the data.

- *IMCI implementation*: implementation of the IMCI strategy at health facilities, as recommended by WHO, goes beyond the one-event of the IMCI training course, to include as a requirement a follow-up visit within a certain time after IMCI training and health system support. In this survey, very few children were seen by doctors who had been followed up within 2 months of IMCI training, as described in § 4.3.3.2, and health system support was weak. This has to be considered when interpreting the results.
- *Generalization of results:* for any survey, it must be very clear to which population the results apply, to avoid inappropriate generalizations for which the data would be unsuitable. The results of this survey apply to the population from which the sample was drawn, consisting of all facilities meeting the enrolment criteria. The sample was not stratified by province or district, to limit it to a manageable size. Based on the objectives of this survey, *the results refer to the quality of care provided to children aged 2 months up to 5 years old by doctors trained in IMCI in facilities with an estimated daily case-load of four or more cases.*
- *Availability of medicines:* the presence of just one course of treatment was sufficient to meet the definition of medicine availability in this survey, given the constraints of applying improved definitions (§ 4.3.4). Attempts to relate medicine stocks to case-load failed, due to lack of stock cards and incomplete or inconsistent records in many facilities (§ 4.3.6 and 4.3.12).