

CHILDREN'S MEDICINES IN CHAD

An investigation into availability and factors impacting access

INTRODUCTION

The continuous availability of affordable medicines for children is necessary for countries to reduce infant mortality, for attainment of Millennium Development Goal (MDG) 4 (UNDP, 2010). In recognition of the importance of availability of medicines for children to the success of MDG 4, the World Health Assembly (WHA) passed Resolution WHA60.20 in 2007. The resolution urges the inclusion of essential children's medicines in national medicine lists, procurement and reimbursement schemes, as well as monitoring of prices (WHA, 2007).

In July and August 2010, the Ecumenical Pharmaceutical Network (EPN) conducted a study to determine the availability of essential medicines for children in church health facilities in Chad. The EPN study followed up on a 2007 World Health Organization (WHO) survey of children's medicines' availability in 14 African capitals. The WHO study revealed poor availability of medicines for children in both public and private medicine outlets (Robertson et al., 2009).

The objectives of the EPN study were to determine the availability of selected children's medicines including antiretrovirals (ARVs); to describe facility-level practices that affect access to medicines and to document the opinions of health professionals regarding barriers to access.

METHODS

The study sample comprised 31 church health facilities across six regions in Chad (see Table 1). All facilities were located in the south-west of the country, which had the highest concentration of church health facilities. The facilities were categorized as either hospital or health centre. Of the 31 facilities in the sample, 24 were health centres and 7 were hospitals. Data collection was done between 22nd July and 30th August 2010.

The survey covered 28 medicines in 34 paediatric formulations. Majority of the medicines investigated

Table 1: Distribution of health facilities

Region	Hospital	Health Centre	Total
Logone Occidental	1	4	5
Logone Oriental	1	7	8
Mandoul	2	2	4
Mayo Kebbi Est	1	5	6
Mayo Kebbi Ouest	0	2	2
Tandjile	2	4	6
Total	7	24	31

were included in the 2nd edition of the WHO model list of essential medicines for children (WHO, 2010a).

Two different questionnaires were used at facility level: one on factors affecting medicines availability at health facility level, and a second one, on availability and pricing of children's medication. The interviewees included facility in-charges, pharmacy in-charges, or other designated health professionals.

One interview took approximately one to two hours, depending on the facility's level of care.

The study also investigated the national situation of availability of medicines. Two additional questionnaires were administered, one assessing the national essential medicines list as well as standard treatment guidelines, and the other one assessing the supply chain.

The data was analysed using *Epi Info*TM.

The results on the pricing of paediatric medicines will be reported elsewhere.

RESULTS

Essential Medicines Lists and Treatment Guidelines

Researchers investigated the existence and day to day use of a standard list of children's medicines at each facility. Twelve of the facilities (39%) reported that they had a standard list of medicines. However, none of them indicated that the lists were classified into medicines for children and those for adults.

A majority of facilities (69%) reported having treatment guidelines for the management of

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The Ecumenical Pharmaceutical Network (EPN) is an independent Christian membership organization whose mission is to support churches and church health systems provide and promote just and compassionate quality pharmaceutical services. EPN has been actively involved in various ways in promoting increased access to and rational use of medicines.

common conditions, such as guidelines on malaria, TB and HIV and/or the essential medicine list (EML) of 2007. At the time of the study, the latest EML from 2009 for Chad was not yet available at surveyed facilities.

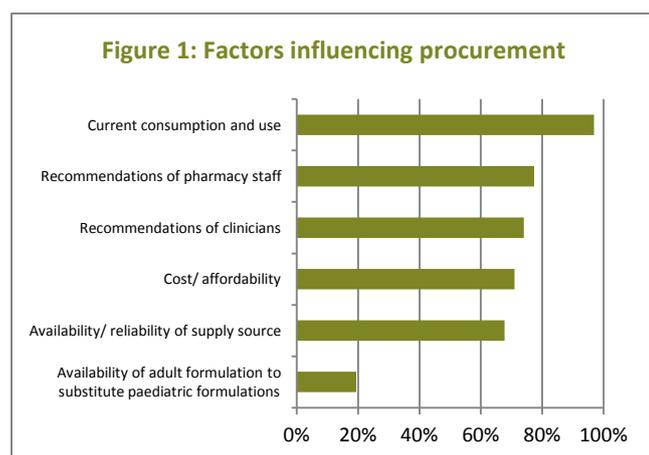
Only 6 out of 30 surveyed facilities (20%) reported having treatment guidelines specifically for children.

Selection

Selection of medicines was done in a variety of ways; firstly, in majority of the facilities (81%), the head of the facility was responsible for medicine selection. Secondly, pharmacy in-charges were responsible for selection of medicines in 48 % of the facilities. Finally, the presence of a committee responsible for medicine selection was noted in only 10% of the facilities. However the answers were not mutually exclusive. Majority of the facilities (97%) did not have a checklist or standard operating procedures for the selection of medicines.

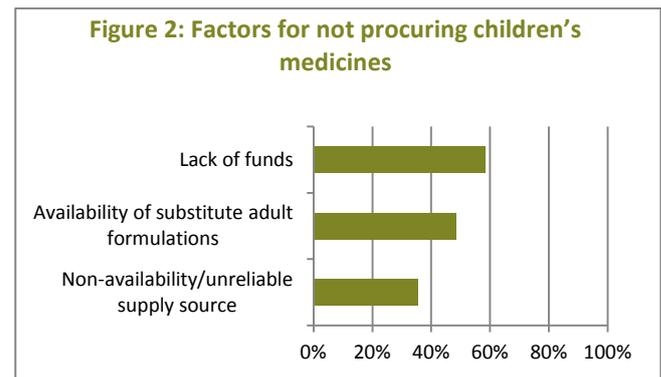
Procurement

Current consumption and use patterns were cited as the most common influencers of medicine purchases by 97% of the respondents. Other influences were recommendations by pharmacy staff (77%) or clinicians (74%), cost/affordability (71%), availability/reliability of supply source (68%), and availability of adult formulations to substitute the paediatric formulation (20%).



Strikingly, the respondents reported that medical representatives had no influence on procurement or selection of medicines.

58% of the respondents attributed failure to purchase children's medicines to factors such as lack of funds, availability of adult formulations that could substitute the paediatric formulations (48%) and non-availability or unreliable supply source (36%).



Sources

Nineteen of the 31 facilities bought 100% of all medicines with their own funding. Only 5 institutions bought less than 90% of medicines with their own funding.

36% of the facilities reported receiving donations through national programmes.

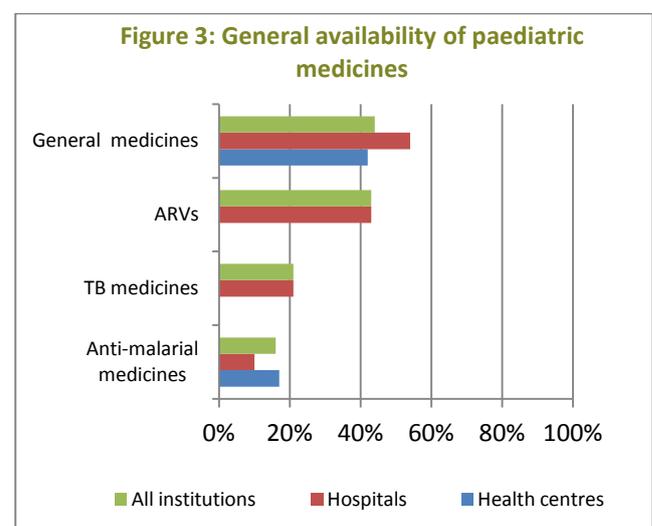
Information and Reporting

Only 16% of the respondents had received information about children's medicines in the last 12 months, exclusively through external workshops.

Daily activity registers (DAR) for general medicines were the most common recording tools at 81% reported use, followed by stock cards at 61%. A majority of facilities (57%) provided regular reports on medicine use.

Availability of Paediatric Formulations

Availability is only reported and taken into account for the level of care where medicines are supposed to be available according to the essential medicines list (EML, 2009).



Note: ARVs were only provided at hospital level

At 36%, the study found low availability of children's medicines across all facilities surveyed. Availability of the four major categories of medicines investigated was 44% (general medicines), 43% (ARV medicines), 21% (TB medicines) and 16% (anti-malarial medicines).

Table 2 shows the availability of selected children's medicines in percentages and numbers.

For most medicines apart from anti-malarial

medicines, hospitals generally ranked higher on availability than health centres as demonstrated in figure 3.

Figure 4 below shows the availability of some crucial paediatric medicines like oral rehydration salt (ORS), paracetamol and zinc tablet, tetracycline eye ointment as well as antibiotic syrups at hospital level as compared to health centres.

Table 2: Availability of selected children's medicines in church health facilities in Chad

Medicine Name	No (%) of facilities with medicine*	No (%) of hospitals with medicine*	No (%) of health centres with medicine*	Level of use**
GENERAL MEDICINES				
Amoxicillin suspension 125mg/5ml or 250mg/5ml	14 (45)	5 (71)	15 (38)	1,2
Benzyl penicillin injection 1 mu vial	1 (14)	1 (14)	-	2
Ceftriaxone injection 250mg vial	2 (7)	2 (29)	0 (0)	1,2
Chlorpheniramine syrup 2mg/5ml	0 (0)	0 (0)	0 (0)	1,2
Cotrimoxazole suspension 200mg + 40 mg/ 5 ml	12 (39)	5 (71)	7 (29)	1,2
Diazepam injection 10 ml vial	25 (81)	6 (86)	18 (88)	1,2
Mebendazole chewable tablet 100mg	27 (87)	4 (57)	23 (96)	1,2
Metronidazole suspension 200mg/5ml	4 (13)	3 (43)	1 (4)	1,2
Paracetamol syrup 120mg/5ml	4 (57)	4 (57)	-	2
Paracetamol tablet 100mg	11 (36)	5 (71)	6 (25)	1,2
Oral rehydration salts (for 1L solution)	28 (90)	6 (86)	22 (92)	1,2
Salbutamol tablet 2mg	27 (87)	6 (86)	21 (91)	1,2
Tetracycline eye ointment tube	21 (68)	6 (86)	19 (79)	1,2
Vitamin A capsules 100,000 IU (30mg)	2 (7)	0 (0)	2 (8)	1,2
Zinc tablet 20mg dispersible	10 (32)	4 (57)	6 (25)	1,2
ANTI TB MEDICINES				
Isoniazide tablet 100mg	2 (29)	2 (29)	-	2 ^b
Rifampicine + isoniazid + pyrazinamide tablet 60mg + 30mg + 150mg	1 (14)	1 (14)	-	2 ^b
Rifampicine + isoniazide tablet 150mg + 100mg	3 (43)	3 (43)	-	2 ^b
Rifampicine syrup 100mg/5ml	0 (0)	0 (0)	-	1 ^b ,2
ANTIRETROVIRALS (ARV's)				
Abacavir solution 100mg/5mg	0 (0)	0 (0)	-	2 ^a
Efavirenz capsule 50 mg	0 (0)	0 (0)	-	2 ^a
Lamivudine oral solution 10mg/ml	5 (71)	5 (71)	-	2 ^a
Lamivudine tablet 150mg	2 (29)	2 (29)	-	2 ^a
Nevirapine syrup 50mg/5ml	6 (86)	6 (86)	-	2 ^a
Nevirapine tablet 200mg	3 (43)	3 (43)	-	2 ^a
Zidovudine syrup 10mg/ml	5 (71)	5 (71)	-	2 ^a

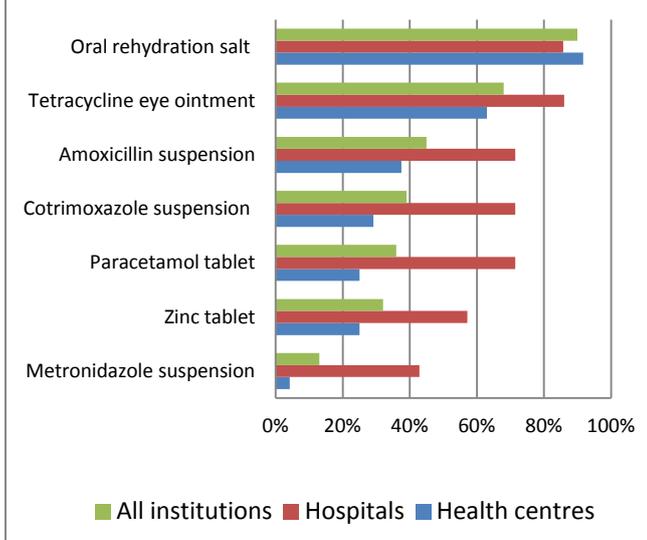
* Analysis was based on foreseen availability at the different levels as per EML 2009: either primary and secondary level (all 31 facilities) or only secondary level (7 hospitals)

** Facility levels classified as (1) for primary (health centres) or (2) for secondary (hospitals)

^a Antiretroviral paediatric formulations

^b TB paediatric formulations

Figure 4: Availability of selected paediatric medicines

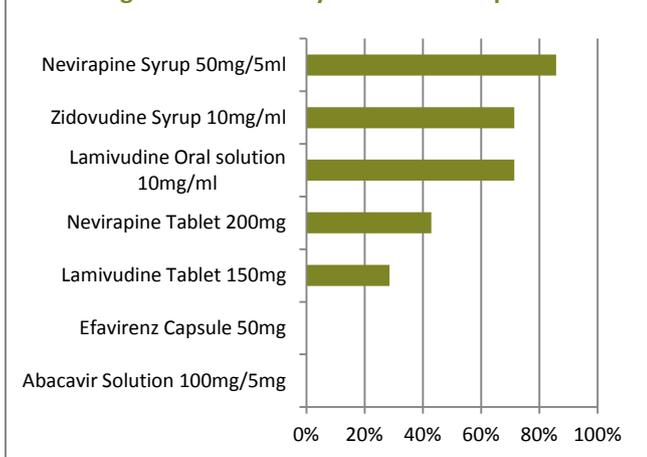


Amoxicillin suspension, cotrimoxazole suspension and paracetamol tablet were readily available in hospitals but less so in health centres (>70% and <40% respectively). Metronidazole suspension was also more readily available in hospitals than health centres (43% and 4% respectively). Tetracycline eye ointment had a moderate to high availability (63% for health centres and 86% for hospitals).

Children's medicines with very low overall availability ($\leq 10\%$), included ceftriaxone 250 mg injection and Vitamin A capsules 100,000 IU.

Antiretroviral medicines were only provided at hospital level. The average availability was 42.9%. Detailed information is provided in figure 5 below.

Figure 5: Availability of ARVs in hospitals



Availability of anti-malarial medicines was generally low with 15.6% average for all institutions. However, due to changes in the EML of 2009, the medicines included in the questionnaires didn't match those on

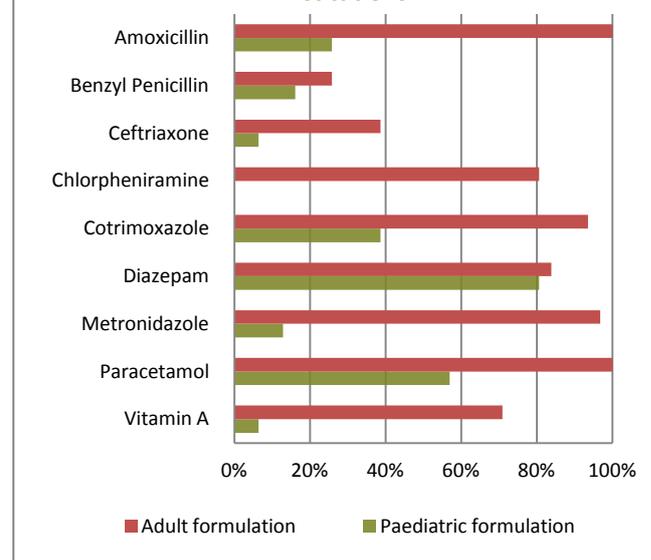
the EML. Additionally, artemisin-based combination therapies (ACT) were only offered at some pilot institutions during the time of the study. It was not established which of the surveyed institutions were pilot institutions; therefore the results reported here might not give the full picture.

Comparison to Adults' Medicines

Availability for adult formulations was consistently higher (52%), compared to the respective paediatric formulations (36%) regarding those where a specific formulation was on the market. Figure 6 below compares availability of adult and paediatric formulations for those medicines with specific children's formulations.

The compared formulations were syrup versus tablet for amoxicillin, chlorpheniramine, cotrimoxazole, metronidazole, and paracetamol (paracetamol syrup is only offered in hospitals); different strength for injections of benzyl penicillin and ceftriaxone; tablet instead of injection for diazepam; and different strength for capsules for vitamin A.

Figure 6: Comparison of availability of adult and paediatric formulations in all institutions

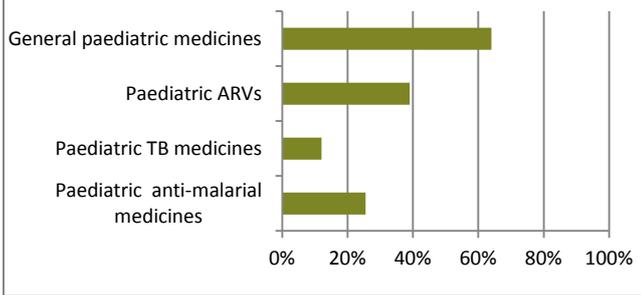


Note: Results for paracetamol only reflect availability at hospitals as the syrup is only offered at that level.

Availability at Supply Agencies

46 % of general paediatric medicines on the essential medicine list were available at government supply agencies. ARVs, TB and anti-malarial medicines had lower availability (39%, 13% and 26%, respectively) at supply agencies, as shown in figure 7 below.

Figure 7: Availability of paediatric medicines at government supply agencies



DISCUSSION

According to the UNDP report on progress towards the achievement of the Millennium Development Goals in Africa (UNDP, 2010), MDG 4, reducing the under-five mortality rate by two thirds between 1990 and 2015, will not be reached in Africa as a whole if the current trend continues.

The situation in Chad is worrying. At 209 per 1,000 live births, child mortality in Chad has not reduced over the past years (WHO, 2010b). Data from Chad showed that the percentage of children under 5 presenting with fever and receiving antimalarial treatment was 32% (WHO, 2010b). No information on ACT was available. This implies low availability of effective treatment for malaria in children. The UNDP progress report recommended increased availability of medicines for common childhood illnesses, including malaria (UNDP, 2010).

Most African countries, including Chad, have now started to include paediatric formulations in their essential medicines lists. However, there is a lack of data on availability of children's medication at the facility level.

Following a study done by WHO which investigated availability of paediatric medicines in medicine outlets in capitals of 14 African countries (Robertson et al, 2009), EPN decided to carry out similar studies in Kenya, Chad and Uganda to assess the situation in faith-based health institutions and also to gather information on practices at facility level that might impact on the availability of medicines for children. These are the first studies to report on the availability of paediatric medicines in the faith-based organizations in a country.

According to *Division du Système d'Information Sanitaire* (DSIS), faith-based health facilities make up 20% of all health care facilities in Chad (DSIS, 2007).

Furthermore it was acknowledged that faith-based institutions have a higher frequentation than public health facilities (Oral communication). This therefore implies that any improvements in the availability of children's medicines in the faith-based sector are likely to have a positive impact on national health targets, particularly MDG 4 and 6.

Essential Medicines Lists and Treatment Guidelines

When comparing the Chadian EML 2007 (EML, 2007) with 2009 edition (EML, 2009), it is obvious that more paediatric formulations were included on the EML 2009. For example, only 6 of the investigated medicines were foreseen to be offered at primary level when referring to the EML of 2007 whereas the 2009 EML included 15 of those medicines for provision at primary level. The results of this survey showed, however, that inclusion of medicines on the EML does not directly translate to availability. Furthermore, most facilities were still using the EML of 2007, while the new version still had to be disseminated. It is crucial that the current EML will be made available to all health facilities to ensure that medicines will be made available.

The poor findings on treatment guidelines for children (20% availability, but all outdated) and access to information about medicines for children by pharmacy personnel (16%) pointed to difficulties Chad faced in keeping up with important developments regarding paediatric medicines. These guidelines are constantly being reviewed and updated and will therefore enable the staff to keep abreast with new developments in health care if made available.

Medicine Selection

Selection of medicines by individuals, instead of a committee is a subjective process and could be biased to the preferences of this person instead of following local or national guidelines. This could have a negative impact on availability and accessibility of medicines. Management Sciences for Health (MSH) recommends that a multi-disciplinary team takes responsibility for medicine selection at a health facility. A multi-disciplinary team is likely to ensure consideration of diverse interests and to minimize the influence of suppliers (MSH, 1997).

Moreover, most facilities (97%) used neither checklists nor standard operating procedures to guide medicines' selection, as it is recommended. Almost half of the facilities (48%) substituted paediatric medicines with available adult

formulations, indicating low prioritization of stocking paediatric formulations.

Medicine Sources

Only 35 % of the facilities reported to benefit from medicines via national programmes. This may account for the low availability of priority medicines such as ARVs, TB and anti-malarial medicines at surveyed facilities. It is not clear whether the low coverage via national programmes was due to the fact the surveyed institutions belonged to the faith-based sector or whether the national programmes had a poor performance in general. With the church health sector providing nearly 20% of health services in the country, it is important that these institutions will be included in national programmes.

Factors impacting availability

58% of the facilities identified lack of funds as a major constraint to regular purchasing of medicines. Additionally, the majority of institutions reported to use their own funding for purchases of medicines, and didn't seem to benefit from donations or government subsidies.

Low availability of needed medicines at points of care was attributed to unavailability at the suppliers by 36% of the facilities. Average availability of children's medicines at supply sources was 46%.

Governments have to ensure that crucial paediatric medicines are available at supply agencies and health institutions if national health targets should be attained. Furthermore it is crucial that key medicines are subsidised to ensure affordability.

The study also revealed that only two of the surveyed facilities had pharmaceutically trained staff. While it is acknowledged that not every small health facility can afford or needs to employ a pharmacist, pharmaceutically trained staff should at least be available at district hospital level according to the national health policy (personal communication, Dr Djékadoum, August 2010). However, in nearly half of the facilities the pharmacy in charge was at least partly responsible for selection and procurement of medications. Inappropriate selection can lead to unavailability of the right medication, irrational use of medicines and eventually waste of resources. It is desirable that a pharmaceutically trained person is involved in selection and procurement.

Overall Children's Medicine Availability

At 36%, availability of essential children's medicines in church health facilities in Chad was low. Hospitals had slightly higher (39%) availability than health centres (33%).

Specific Children's Medicine Availability

ORS and Zinc dispersible tablets

Diarrheal diseases accounted for 22% of deaths among children under five in Chad in 2008 (WHO, 2010b). Zinc replacement improves recovery and reduces chances of occurrence of another diarrhoeal episode within the next 2 to 3 months (WHO/UNICEF, 2004).

The study found ORS to have good availability (90%) while zinc had very low availability (10%) especially in the health centres. High availability of both ORS and zinc at all levels of care will improve health outcomes significantly. Parents in the rural areas are likely to travel only to the nearest health facility for a child suffering from diarrhoea.

ARVs

The number of children living with HIV in Chad had increased by more than 75% from 13,000 in 2001 to 23,000 in 2009. Only 6% (774) of children in need of ARVs in Chad were receiving them (UNAIDS, 2010). The study found moderate availability (43%) of all ARVs, and high availability of nevirapine syrup, lamivudine syrup and zidovudine syrup. However, given that ARVs are not available at the primary level of care (health centres), many children in need may not have access to ARVs, despite an availability of more than 70% for the above mentioned syrups at secondary level.

Anti-malarial medicines

In 2008, 19% of deaths among children under five in Chad were attributable to malaria (WHO, 2010b). The study found a low availability (15%) of anti-malarial medicines, including artemisin-based combination therapy (ACT) and artemether injection.

ACT is the WHO treatment of choice for uncomplicated malaria according to the WHO treatment guidelines for malaria (WHO, 2010c). It is therefore imperative that ACT is readily available at all levels of care in Chad. However, as mentioned before, low availability could also be due to only few pilot facilities providing ACT during the study period.

RECOMMENDATIONS

The study results provide entry points for stakeholders to improve availability of paediatric medicines within the church health sector in Chad.

Facility Administration

Efforts made by facility administrators to increase pharmacy personnel, provide medicine management tools, form multi-disciplinary medicine selection committees and increase funding for children's medicines need to be supported. The church health sector should institutionalize these facility-level measures to increase access to paediatric medicines.

Supply Chain

Availability of children's medicines at the supplier level was low. However, paediatric medicines also didn't seem to be subsidised, which would facilitate availability of children's medicines. Data from this study could be used to advocate for the provision of

subsidies and other measures to improve availability of children's medicines.

National Programmes

Church health facilities should be included in national programmes that supply ARVs, anti-malarial and TB medicines. A performance review of national programmes would highlight weaknesses and identify remedial measures to increase availability of these very important classes of children's medicines.

Access to information

Current essential medicines lists and treatment guidelines should be disseminated to all facilities. Furthermore pharmaceutical and other health staff should have access to up-to-date information and continuous education programmes so as to keep abreast with the new protocols in management of diseases. This will improve the quality of health care and have a positive impact on health outcomes of the population.

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