Quality of care offered to children attending primary health care clinics in Johannesburg

Kebashni Thandrayen, *MB BCh, FCPaed (SA), MMed (Paed)*
Haroon Saloojee, *MB BCh, FCPaed (SA), MSc (Med)*
Department of Paediatrics and Child Health, University of the Witwatersrand, Johannesburg
Corresponding author: *K Thandrayen, kebashni.thandrayen@wits.ac.za*

Objective. To assess the quality of child health services provided at primary health care (PHC) facilities in Johannesburg, South Africa.

Design. Observational study conducted at 16 PHC clinics. A researcher-developed structured checklist, based on national guidelines and protocols, was utilised.

Results. The majority of facilities were adequately equipped and well stocked with drugs. A total of 141 sick child and 149 well child visits were observed. Caregivers experienced long waiting times (mean 135 (standard deviation 72) minutes). Many routine examination procedures were poorly performed, with an adequate diagnosis established in 108 of 141 consultations (77%), even though health professionals were experienced and well trained. Triage and attention to danger signs were poor. An antibiotic was prescribed in almost half (65/141) of the consultations, but antibiotic use was unwarranted in one-third of these cases. Health promotion activities (such as growth monitoring) were consistently ignored during sick child visits. HIV status was seldom asked about or investigated, for the mother or for the child. Growth monitoring and nutritional counselling at well child visits was generally inadequate, with not one of 11 children who qualified for food supplementation receiving it.

Conclusion. The poor quality of PHC offered to children in the richest city in Africa is a sad indictment of the inability of health service providers to address children's health needs meaningfully. A deliberate and radical restructuring of PHC for children, with clearly defined and monitored standard clinical practice routines and norms, is required to change the status quo.

Primary health care (PHC) and the health of young children are popular focus areas for international organisations, politicians, heads of state, policy-makers and health professionals alike. They are the subject of innumerable policy statements and plans. In South Africa, the national health department has undoubtedly prioritised PHC, particularly in its fiscal decisions. Indeed, free primary health care for young children was one of the first decrees of Nelson Mandela on assuming the presidency in 1994, and free primary care services were extended to the whole population by 1996.

Unfortunately, there is limited evidence that this strategy has borne success. Most gains lie within the infrastructural domain, such as the number of new clinics built or upgraded (approximately 3 000 since 1994),[1] rather than in improvements in the quality of care or, more importantly, reductions in morbidity and mortality. *Saving Children: A Survey of Child Health Care in South Africa*[2] suggests that in 26% of hospital cases resulting in deaths, deficiencies were identified in the clinical care at PHC level, entailing poor case assessment and management and delayed referral.

The Integrated Management of Childhood Illness (IMCI) strategy developed by UNICEF was introduced in 1998 in South Africa as an important global intervention to address mortality in young children. Again, while resources have been directed at implementing the intervention, evidence that this has translated to greatly improved child health care delivery in the country is sadly lacking.

Johannesburg is the wealthiest city in Africa and is advantaged in its supply of health professionals compared with the rest of the country and continent. The care provided to children in this city may therefore be a useful indicator of the kind of care that could potentially be offered to children living in more disadvantaged settings throughout South and sub-Saharan Africa. This study evaluated the quality of health care offered to children attending PHC care clinics in Johannesburg.

Methods

An observational study was conducted in October and November 2005 at 16 PHC settings in Johannesburg. The study population consisted of public PHC clinics within the Johannesburg metropolitan area that offered child health services. The study sample consisted of 4 community health centres (larger clinics) and 12 ordinary PHC clinics that were randomly selected (clinics coded and numbers pulled from a box). Only clinics that managed 40 or more patients per day qualified for the study (to ensure access to sufficient participants in a short period). The sample included 15% (16/109) of all PHC facilities.

A researcher-developed structured tool (checklist) was utilised, based mainly on national guidelines and protocols (e.g. the *South African Standard Treatment Guidelines and Essential Drugs List* (EDL),[3] the IMCI chart booklet,[4] *Guidelines for the Management of HIV-infected Children,*[5] and Expanded Programme on Immunisation guidelines[6]). The tool allowed for the evaluation of both a 'traditional' PHC and an IMCI-based

consultation. The primary researcher (KT) is a paediatrician and IMCI trained. Although the tool was developed to meet the study objectives, it was also designed to be easily adaptable for future routine use by supervisors in the clinics. It included observations of clinical encounters (sick and well child visits); assessment of clinic facilities, infrastructure, supplies and equipment (related to child services); a review of personnel, in-service activities and training, and services provided by clinics; and a review of clinic registers and records. A single clinic evaluation was completed in 1 - 2 days, depending on how busy the clinic was.

Clinical consultations in children younger than 13 years were observed on a convenience basis by the primary researcher. The health professional being observed was advised about the aim of the study, but not the specific objectives.

Ethical approval was obtained from the Committee for Research on Human Subjects (Medical) at the University of the Witwatersrand and from the relevant health authorities. Clinics were informed of the visit 2 - 3 days before the visit. Consent was obtained from facility managers, and individual health professionals who were being observed. Caregivers verbally consented to the encounter being observed.

Data were entered and analysed using Statistica version 6.0 (Statsoft, USA). Parametric, continuous variables were described using means and standard deviations (SDs). Standard statistical tests (such as chi-square and *t*-tests) were used when appropriate. A *p*-value of <0.05 was considered to be statistically significant.

Results
Clinic services
Twelve clinics (75%) operated from Monday to Friday, 1 functioned only 2 days a week, and the remaining 3 also opened on Saturdays. The maternal and child-related services offered by clinics are shown in Table I. There is an obvious lack of integration of child care services, with 4 clinics offering either well child services (2) or curative services (2) only. A gaping lack of chronic care services (e.g. for asthma or mental health) is also obvious. While the cleanliness of the clinic grounds, rooms and linen was not a concern, the state of public toilets was less than satisfactory in 13 clinics (81%). All clinics had tap water and a telephone. One clinic did not have electricity for the duration of the researcher's visit, although it had a connection. Eight clinics (50%) had a working computer available.

Essential paediatric equipment was not uniformly available at the 16 clinics: nebulisers were present in 14 clinics (88%), paediatric resuscitation masks in 13 (81%), Laerdal resuscitation bags in 11 (69%), peak flow meters in 10 (63%), and phototherapy units in 3 (19%). The latter were not being utilised as there were no guidelines on the management of neonatal jaundice in community health centres (CHCs) (larger clinics), despite midwife obstetric services and postnatal care being provided. Seven clinics (44%) had an oral rehydration therapy (ORT) corner; 10 (63%) had both litre containers and cups available for mixing ORT, and 13 (82%) had ORT sachets available. All but one of the 14 clinics had a working refrigerator, although vaccines were appropriately stored in 11 clinics (79%). While drug availability was generally very good, none of the clinics had some EDL-listed drugs such as cloxacillin and vitamin A 50 000 IU, while ceftriaxone and purified protein derivative (PPD) were only available at 7 (44%) and 4 (25%) clinics, respectively. The availability of training manuals and guidelines is shown in Table II.

Half of the clinics were able to transport extremely sick children to the referral centre by ambulance. Communication with the referral centre was almost exclusively through referral letters, except for one clinic which also routinely telephoned the centre.

Ordinary PHCs attended to a mean of 40 children per day and CHCs to a mean of 76. There were a mean of 4.2 professional nurses at each ordinary PHC clinic and 44.5 professional

TABLE I. MATERNAL AND CHILD SERVICES OFFERED AT PHC CLINICS IN JOHANNESBURG (*N*=16)

Service provided	N (%)
HIV counselling	16 (100)
TB DOTS	15 (94)
Curative care	14 (88)
Immunisation	14 (88)
Community support groups	13 (81)
Family planning	13 (81)
Postnatal care	7 (44)
AIDS home-based care	6 (38)
Rehabilitation	5 (31)
Antenatal care	4 (25)
Midwife obstetric unit	3 (19)
Chronic care (asthma)	1 (6)
Mental health	1 (6)

DOTS = directly observed therapy, short course.

TABLE II. AVAILABILITY AND ACCESSIBILITY OF PROTOCOLS AND GUIDELINES AT CLINICS (*N*=16)

Guideline	Available at clinic N (%)	Accessible in consulting rooms N (%)
National tuberculosis control programme guidelines (2000)	15 (94)	15 (94)
Primary clinical care manual	13 (81)	13 (81)
Standard treatment guidelines and essential drugs lists	13 (81)	13 (81)
Handouts for vitamin A training and protocol	11 (69)	11 (69)
IMCI chart booklets	10 (63)	10 (63)
Management of HIV infection in children: guidelines for clinics and hospitals	9 (56)	8 (50)
National antiretroviral treatment guidelines	2 (13)	2 (13)
Policy guidelines for growth monitoring and promotion	2 (13)	0 (0)

nurses per CHC clinic. Half of the clinics (8/16) had at least one health professional attending solely to children. All the CHCs and 4 ordinary PHCs (33%) had the services of a doctor (full- or part-time), and 12 clinics (75%) had an IMCI-trained individual. Half the professional nurses observed (20/39) were IMCI trained.

Sick child visits

A total of 141 sick child encounters were observed. These involved 23 professional nurses with a mean of 17.5 (SD 10.1) years of experience since qualification. Nineteen (83%) had primary care training while 13 (57%) were IMCI trained.

Caregivers waited between 6 and 383 minutes before being seen, with a mean waiting time of 135 (SD 72) minutes (2¼ hours) and a median of 124 minutes. At one clinic caregivers waited nearly the whole day, only to be turned away at 16h00 without being seen by any health worker. There were three basic consultation methods used by nurses: a 'traditional' PHC approach (19 nurses, 111 consultations), the IMCI approach (3 nurses, 22 consultations), and a traditional combined with IMCI approach (1 nurse, 8 consultations). Only 3 clinics had a nurse practising IMCI, despite 12 clinics having IMCI-trained staff. The mean duration of a consultation was 11.2 (SD 6.1) minutes (median 9 minutes, range 2 - 38 minutes). There was no statistical difference in the mean length of a traditional and an IMCI consultation (10.1 (SD 4.5) v. 10.8 (SD 5.8) minutes, p=0.55).

The presence of danger signs, as defined by the IMCI,[4] was sought in less than a quarter of encounters, with no difference between IMCI and non-IMCI practitioners (Table III). Although history taking related to the main presenting symptom(s) was satisfactory in 120/141 instances (85%), it was less so for related symptoms and for past medical history (97 (69%) and 132 (93%) were classified as 'poor', respectively). Past medical history is not a component of the IMCI consultation, but is routinely part of the 'traditional' PHC or paediatric consultation. Immunisation status was checked in 65 children (46%), and 113 (80%) were weighed. The Road-to-Health (RTH) card (caregiver-held child health record) was requested in just two-thirds (95/141) of young child encounters, with 32 weighed children (28%) having their weights plotted on the card.

Only 56 children (40%) were adequately undressed. Many aspects of examination were poorly performed, or not performed when warranted, such as assessment of pallor, respiratory rate, bulging fontanelle and neck stiffness (Table IV). Those aspects of examination that are not part of the IMCI evaluation, such as chest auscultation and throat examination, were not included in the assessment when the health worker was utilising the IMCI approach (Table II). The diagnosis of HIV was infrequently considered, and when signs were sought, clinical examination was usually inadequate. The final diagnosis was considered appropriate in 108 encounters (77%).

Almost half the children (65/141) received antibiotics, although only 43 of these prescriptions (66%) were deemed necessary by the researcher. Although both dosage and frequency of antibiotic administration were adequately explained in almost all consultations (63/65), in less than half the encounters (31/65) was the duration of antibiotic use communicated to

---

TABLE III. PRACTITIONER ENQUIRY OF IMCI 'DANGER SIGNS' FROM CAREGIVERS

Sign	Question asked (N=141)	IMCI consults (N=22)	Non-IMCI consults (N=119)	p-value
Not able to drink or breastfeed (N (%))	40 (28)	9 (41)	31 (26)	0.34
Vomits everything (N (%))	23 (16)	3 (14)	20 (17)	0.46
Convulsions during this illness (N (%))	1 (0.5)	0 (0)	1 (1)	0.52

TABLE IV. ADEQUACY OF CLINICAL EXAMINATION OF SICK CHILDREN AND ASSOCIATED ACTIONS (N=141)

Sign	Assessment warranted (N)	Satisfactory (N (%))	Less than adequate (N (%))	Poor or not done (N (%))
Clinical examination				
Temperature	141	118 (84)	2 (2)	21 (15)
Pallor	141	13 (9)	1 (1)	127 (90)
Throat examination	122	75 (61)	22 (18)	25 (21)
Ear examination	113	60 (53)	2 (2)	51 (45)
Respiratory rate	107	8 (7)	20 (19)	79 (74)
Chest auscultation	105	56 (53)	16 (15)	33 (31)
Sunken eyes	28	24 (86)	0 (0)	4 (14)
Skin turgor	27	8 (30)	0 (0)	19 (70)
Abdominal examination	9	2 (22)	4 (44)	3 (33)
Perineal examination	7	5 (71)	0 (0)	2 (29)
Bulging fontanelle	6	0 (0)	0 (0)	6 (100)
Neck stiffness <18 months old	6	2 (33)	0 (0)	4 (66)
Neck stiffness >18 months old	2	1 (50)	0 (0)	1 (50)
Associated activities				
Examination of urine (Dipstix)	3	1 (33)	0 (0)	2 (66)
Oral rehydration solution administration	22	5 (23)	1 (4)	16 (73)

the caregiver. No medication was prescribed in 14 encounters (10%).

Referral was regarded as being necessary for 13 children (9%); 12 children were referred. Three children required immediate intravenous line insertion, but this procedure was not performed in any of these cases. Oxygen was given to 1 of 2 children requiring it, while only 1 of 4 children requiring bronchodilator nebulisation received it. Of 4 children who qualified for food supplementation based on their recorded growth patterns, only 1 received it.

Counselling on the current condition was satisfactorily provided in less than a third of consultations (44/141). Counselling on prevention (28/140, 20%), home management (40/140, 28%), follow-up plans (31/139, 22%) and danger signs to suggest immediate return (3/113, 2%) were all poorly performed. The child's growth was discussed with the caretaker in 17 consultations (12%). Nutritional advice was seldom offered, even for children who were failing to thrive. Maternal health issues were discussed and addressed in 14 of the 141 encounters (10%).

During most consultations (125/141, 89%), caregivers were not asked about their HIV status. The HIV-positive status of the infant or the mother was established in 7 consultations (5%); 5 infants were prescribed co-trimoxazole prophylaxis. Voluntary HIV testing and counselling (VCT) was offered to just 1 caregiver. The need for antiretroviral therapy was not considered in any child.

Well child visits

A total of 149 well baby encounters were observed. The median age of the children was 7 months (range 1 - 60 months). Sixteen professional nurses were assessed, with a mean of 16.9 (SD 9.1) years of experience since qualification.

The mean waiting time was 118 (SD 81, range 5 - 363) minutes. The mean duration of a consultation was 8.2 (SD 4.8) minutes (median 7 minutes, range 2 - 30 minutes). The RTH card was requested at every consultation; 147 children (99%) were weighed. Weights were generally plotted (131/149, 88%) and interpreted correctly (122/149, 94%). The child's growth was discussed with the caregiver in 43 instances (29%). Fourteen children with growth failure required nutritional counselling; appropriate advice was offered to 5 caregivers (36%). Eleven children qualified for food supplementation, but none received any. None of the 5 children identified by the researcher as requiring a referral to a social worker for a child care support grant were offered this advice. A single child requiring referral to hospital was sent there.

Immunisations were offered to all eligible recipients, vitamin A to 96 eligible children (64%) and routine deworming to 2 (4%). In only 16 cases (14%) did the caretaker of a vaccine recipient receive advice about possible adverse effects. Six of the 9 identified and eligible HIV-exposed children (67%) received co-trimoxazole. Age-appropriate milestones were asked about in 38 encounters (26%) and any form of developmental assessment completed in 21 consultations (14%). Vision and hearing screening were rarely performed.

Discussion

The quality of child health services for sick children offered at clinics in Johannesburg was disappointingly poor. Main areas of concern were the long waiting hours; poorly skilled staff despite years of clinical experience and good exposure to training (e.g. unfocused consultations, poor history taking, examination and communication skills, limited identification of children with HIV, over-prescription of antibiotics); poor triage and management of emergencies; and limited practice of child health promotion activities. The separation of preventive and curative care still continues, in that certain clinics provided only preventive services and others provided only curative services, while those that provided both services had separate queues for curative and preventive care.

It is clearly negligent for staff not to check the respiratory rate in children with respiratory symptoms, to ignore assessment of skin turgor in children with diarrhoea or vomiting, and to fail to assess for a bulging fontanelle or neck stiffness in a child with suspected meningitis. Establishing whether this situation is the result of a lack of knowledge or excessive workloads, or simply reflects a 'can't be bothered' attitude, was outside the scope of this study. It is disconcerting that less than a third of IMCI-trained nurses were routinely practising this method of consultation.

Inadequate attention was paid to routine health promotion and prevention activities such as immunisation in sick encounters, and growth monitoring and promotion, vitamin A supplementation and developmental assessment were inadequate in both well and sick encounters. Food supplementation was unavailable for children who were failing to thrive, despite this being a key feature of the National Integrated Nutrition Programme. While the Johannesburg metropolitan health service has supervisors regularly visiting all clinics in the area, it is obvious that they are monitoring a limited number of activities, are not focusing on quality of care issues, and are therefore failing to influence child health service delivery adequately. Positive findings were health professionals requesting the RTH cards during well baby encounters, uniformly weighing children (although plotting of weights and interpretation was less satisfactory), and ensuring immunisation administration.

Issues related to infrastructure are an important aspect of quality of care. In this study, basic amenities were available but emergency equipment such as resuscitation apparatus was lacking at some clinics. Not all clinics had ORT corners, and some less frequently prescribed EDL drugs were unavailable. Guidelines were variably available. Again, all of this may reflect inattention by clinic managers to fundamental responsibilities or, more likely, a lack of clear direction from their service managers about how to address recognised deficiencies.

The Johannesburg health service may take comfort from the fact that the situation reported here is not too dissimilar to that in most local settings and many poorly resourced settings globally. Long waiting times at PHC services are a worldwide problem, with waiting times between 2 and 5 hours at public facilities being described in El Salvador, for example.[7] Danger signs are poorly assessed during sick child encounters, even if staff are IMCI trained.[8,9] Over-prescription of antibiotics in the treatment of acute childhood illnesses is a global issue, leading to widespread antibiotic resistance.[10] At PHC clinics in Botswana, antibiotics were inappropriately prescribed for 79% of non-pneumonia cases,[10] while in a district in Bangladesh, over half of the prescriptions were unnecessary.[11] In Cape Town, counselling given to caregivers remained poor even after IMCI training.[8] IMCI training of staff did not improve caregivers' understanding of the medication prescribed or when to return to the health facility.[8]

The study has various limitations. It would have helped to increase the number of clinics accessed and to include

smaller clinics with less than 40 patients per day to improve generalisability. Observed performance may not be routine performance, as health workers may have modified their behaviour while being observed, although it is likely that this was a positive bias (i.e. health workers' real performance may be worse than reported here). Similarly, informing clinics about the impending visit may have afforded them the opportunity to update records, improve stocks and supplies and ensure that equipment was functional, although this was deemed not to have happened. The researcher, being a paediatrician, may have set unrealistically high standards when evaluating the observed clinical assessments and treatment. However, this was minimised by using standard South African guidelines as the evaluation benchmark. As consultations were conducted in as many as five different South African languages, the interpretation by the researcher of the quality of counselling and advice may have been suboptimal, as she was not fluent in all these languages.

How should the health service best respond to the study findings? Focused attention on establishing norms and standards for the delivery of child health care services in Johannesburg is required. The impression obtained from this study is that a range of activities are occurring at clinics that are dependent on the idiosyncrasies of individual clinics (e.g. staffing, enthusiasm, management style) rather than on a well-structured health service. Each child health worker needs to have clear expectations of the required standard of any individual clinical consultation. This will also enable greater accountability for the (lack of) delivery of adequate services to children. A consensus on the structure and mechanisms whereby child care will be provided by the City needs to be established to address issues highlighted in Fig. 1.

> *Each child health worker needs to have clear expectations of the required standard of any clinical consultation.*

More effective supervision and routine, regular evaluation of child health services are needed. We would recommend the awarding of a 'child-friendly service' score to every clinic on a 6-monthly basis, based on an easy-to-perform scoring system. Clinics scoring poorly would be offered incentives to improve, while those scoring highly could be rewarded.

In conclusion, it is clear that many children attending PHC clinics in Johannesburg are not receiving the health care they deserve. This appears to be the result of lack of quality control mechanisms and limited abilities and commitment of health professionals rather than any inherent funding, training or infrastructural limitations. Nothing short of a deliberate and radical overhaul of the way in which health care is organised for children in the City, with clearly defined and monitored standard clinical practice routines and norms, is likely to significantly change the status quo.

- Should children have separate queues from adults?
- Should a dedicated staff member (with basic paediatric skills) care for children whenever possible (at least in larger clinics and CHCs)?
- What are the basic paediatric skills required by health professionals caring for children at the PHC level?
- Is the IMCI approach the preferred strategy for clinical consultations? If so, how can its routine implementation be ensured?
- Should promotive and sick care services for children be combined?
- How can standardised recording of clinical encounters be facilitated? (e.g. by use of the Road to Health Card, standardised consultation sheets (e.g. IMCI sheet), outpatient cards)
- What are standard, minimum equipment needs at every child health centre, including emergency equipment?
- Can referral mechanisms be streamlined and standardised? (e.g. communication links, referral forms, transport mechanisms)

Fig. 1. Key questions related to child health care delivery requiring policy consensus by the City of Johannesburg.

References

1. Health Care in South Africa. http://www.southafrica.info/about/health/health.htm (accessed 14 May 2010).
2. Saving children: A survey of child healthcare in South Africa. http://www.mrc.ac.za/maternal/savingchildren.pdf (accessed 22 July 2010).
3. Essential Drugs Programme South Africa. Standard Treatment Guidelines and Essential Drugs List. Pretoria: National Department of Health, 2003.
4. Integrated Management of Childhood Illness. http://whqlibdoc.who.int/publications/2008/9789241597289_eng.pdf (accessed 14 May 2010).
5. Department of Health. Guidelines for the Management of HIV-infected Children. Pretoria: Department of Health, 2005.
6. Department of Health. Expanded Programme on Immunisation in South Africa, EPI(SA). Pretoria: National Department of Health, 1998.
7. Lewis M, Eskeland G, Traa-Valerezo X. Primary health care in practice: is it effective? Health Policy 2004;70:303-325.
8. Chopra M, Patel S, Cloete K, et al. Effect of an IMCI intervention on quality of care across four districts in Cape Town, South Africa. Arch Dis Child 2005;90:397-401.
9. World Health Organization. The Multi-country Evaluation of IMCI Effectiveness, Cost and Impact (MCE): Progress Report, May 2002 - April 2003. Geneva: WHO, 2003.
10. Boonstra E, Lindbaek M, Ngome E. Adherence to management guidelines in acute respiratory infections and diarrhoea in children under 5 years old in primary health care in Botswana. Int J Qual Health Care 2005;17:221-227.
11. Arifeen SE, Bryce J, Gouws E, et al. Quality of care for under-fives in first-level health facilities in one district of Bangladesh. Bull World Health Organ 2005;83:260-267.