



OPERATIONS RESEARCH SUMMARY

Quality Assurance Project II

Cost, Workload and IMCI Compliance in Niger

Previous studies reported that increased compliance with Integrated Management of Childhood Illness (IMCI) guidelines was associated with lower drug costs and longer client-provider visits.¹ However, this study² found no association between IMCI compliance and drug costs, even within specific diagnoses, and no association between IMCI compliance and the duration of client-provider visits. In light of the dissonance between this and previous research, the study authors recommend additional work to determine the conditions under which increased compliance actually decreases drug costs and client-provider visits become longer.

Method

In a prior study undertaken by the Quality Assurance Project,³ observers trained to monitor client-provider visits measured the duration of such visits and IMCI compliance by IMCI-trained nurses. Observers used a modified version of the Facility Assessment developed by the World Health Organization (WHO) and the BASICS Project. The assessment covers 158 standards of care grouped into assessment, counseling, and treatment. The study sample included 211 IMCI cases attended by 26 nurses in 26 rural health centers (one nurse per center) in three districts. An IMCI case was defined as any child from two months to five years of age presenting for outpatient care with fever, cough, diarrhea, or earache.

Patient records for these cases were obtained several months later and used to collect data on the type of pharmaceutical products used or prescribed for each case. Total pharmaceutical costs for each case were estimated by multiplying the WHO-recommended dosage for the products used/prescribed for each case by the average unit cost for that product (the Niger Ministry of Health provided cost information). Workload was defined for each health center (not each case) and equaled the average daily number of outpatients (all outpatients, not just IMCI patients) at each center during the observation days.

Table 1: Summary of Key Results

IMCI Function	Mean Compliance	Relationship of ...		
		Drug Cost to Compliance	Visit Duration to Compliance	Workload to Compliance
Assessment	33%	Not Significant	--	--
Counseling	42%	--	--	--
Treatment	81%	Not Significant	--	--
Overall (Pooled)	47%	Not Significant	Not Significant	Not Significant

All results are based on the analysis of all 211 cases, except relationship of Workload to Compliance, which is based on workload and average compliance in 26 health centers. Similar results obtained when only 164 low-cost cases were used.

Results

Table 1 shows some key results. Treatment compliance was much higher (81%) than assessment (33%) or counseling (42%) compliance. Assessment compliance was predictive of treatment compliance; treatment complied 36% of the time when the assessment was done correctly, but only 20% of the time when it wasn't (p<0.001).

Pharmaceutical products used/prescribed included various antibiotics, quinine, chloroquine, aspirin, vitamin A, iron, oral rehydration solution (ORS), and Ringer's IV Solution. The last was by far the most expensive (\$1.76 per dose), the antibiotic ampicillin a distant second (\$0.68 per dose), and ORS an even more distant third (\$0.18 per dose). There were two distinct distributions of drug costs: low-cost cases (164 cases averaging \$0.23) and high-cost cases that included Ringer's IV Solution and most other pharmaceutical products (47 cases averaging \$2.18). No explanation is given for this distribution.

Determinants of costs: The relationship of compliance to costs for each IMCI diagnosis (diarrhea, malaria, pneumonia, cough) was analyzed for all cases and separately for low-cost cases using a multivariate analysis. No relationship was found, but the following other factors were found to correlate with cost:

Severity of illness: More serious cases, as measured by the number of danger signs, had higher drug costs.

Diagnosis: Some diagnoses had significantly higher drug costs (diarrhea, dehydration, malnutrition) than others (cough, malaria, dysentery). However, this finding is compromised by the two-cost distribution problem.

Number of complaints: Cases with more complaints had higher costs.

Source of drugs: Cases where prescriptions were given had higher drug costs than those where drugs were provided at the center.

However, these simple correlations did not consider interactive effects with other factors and certainly do not denote causality.

Client costs: Although the study did not systematically obtain or analyze total client costs, partial data suggest that there is cause for concern. Client costs for charges, food, and drink per case averaged about two–three days of client income. Client transportation costs rose ten-fold in the 14 month period just before the study, when inflation was only 3.4%. Providers were reluctant to refer patients to other facilities because of high transportation costs and suspected non-compliance.

¹ Kolstad PR, Burnham G, Kalter H, Kenya-Mugisha N, and Black R. 1998. Potential implications of the Integrated Management Childhood Illness (IMCI) for hospital and pharmaceutical usage in western Uganda. *Tropical Medicine and International Health* 3(9): 691-99.

² This study is reported in: Kelley E, Geslin C, Djibrina S, and Boucar M. 2002. Compliance, Workload, and the Cost of Using the Integrated Management of Childhood Illness Algorithm in Niger. *Operations Research Report* 2(11). Published for USAID by the Quality Assurance Project, Bethesda, MD, available at www.qaproject.org.

³ Kelley E, Djibrin S, Boucar M, and Geslin C. 2001. Improving performance with clinical standards: The impact of feedback on compliance with the Integrated Management of Childhood Illness algorithm in Niger, West Africa. *International Journal of Health Planning and Management* 16: 195-205; and Kelly E, Geslin C, Djibrin S, and Boucar M. 2000. The impact of QA methods on compliance with Integrated management of Childhood Illness algorithm in Niger. *Operations Research Results* 1(2). Bethesda, MD: Published for USAID by the Quality Assurance Project.