Pricing and components analysis of some key essential pediatric medicine in Odisha state

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Abstract:
Objective: Study highlighting prices, i.e., the patients actually pay at ground level is important for interventions such as alternate procurement schemes or to expedite regulatory assessment of essential medicines for children. The present study was undertaken to study pricing and component analysis of few key essential medicines in Odisha state.

Methodology: Six child-specific medicines of different formulations were selected based on use in different disease condition and having widest pricing variation. Data were collected, entered, and analyzed in the price components data collection form of the World Health Organization-Health Action International (WHO-HAI) 2007 Workbook version 5 - Part II provided as part of the WHO/HAI methodology. The analysis includes the cumulative percent markup, total cumulative percent markup, and percent contribution of individual components to the final medicine price in both public and private sector of Odisha state.

Results: Add-on costs such as taxes, wholesale, and retail markups contribute substantially to the final price of medicines in private sector, particularly for branded-generic products. The largest contributor to add-on costs is at the level of retailer shop.

Conclusion: Policy should be framed to achieve a greater transparency and uniformity of the pricing of medicines at different health sectors of Odisha.

Key words: Essential medicines, markup, pricing, private sector

More than half the population does not have access to essential life-saving medicines in most of the impoverished parts of Africa and of Asia. Rapidly rising costs of health care and high medicine prices are a growing concern in developing countries where patients often have to pay the full price of medicines. It is now considered as the right of every human being to have access to essential drugs. Odisha is one of the least urbanized states in India, with an infant mortality rate second highest in the country. Control of pharmaceutical pricing in India comes under the Ministry of Chemical and Fertilizer which has established an independent body of experts National Pharmaceutical Pricing Authority (NPPA) to monitor prices of medicines. Price-controlled drugs are divided into two categories; the first category scheduled medicines include drugs considered as essential and are subject to more stringent control rules. Rest of the medicines called nonscheduled medicines, manufacturer sets the price and registers the price with NPPA. The previous studies involving pricing and availability of key essential pediatric medicines has revealed that there is a wide variation in prices in private sector. The present study was planned to explore the prices the patients actually pay and the exact level at which the child-specific medicines gain price so that a strategy for proper intervention can be devised at by the Government or regulators.

Methodology

This World Health Organization (WHO) supported survey program regarding the prices of medicines in Orissa was conducted between January 15, 2014, and February 15, 2015 using the standardized WHO/Health Action International (HAI) methodology (WHO/HAI 2008) developed by the WHO and HAI accessible on the HAI website (http://www.

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The six medicines shown in Table 1 were selected based on use in common disease conditions, constituting different formulations, having wide pricing variation, and finally taking into consideration their availability in private, public, and nongovernmental organization (NGO) sectors. Each medicine was divided into different product basing on (a) sector (private/public/other), (b) import or locally produced, and (c) product type (originator or generic).

In case of public sector, for each product, data were collected from State Drug Monitoring Unit, Bhubaneswar, procurement division by reviewing purchase order of different medicines. In case of private/NGO sector, different products basing on highest priced or lowest priced, originator, or generic were selected from data of the previous studies involving pricing and availability. For each product, one retail pharmacy was interviewed, and actual invoice was reviewed. These products were traced backward through the supply chain, from dispensing point to wholesaler, local manufacturer/importer, and different charges and markups were identified.

### Data Collection
Tracking of medicine pricing survey was conducted in two regions: Cuttack (urban) and Balasore (rural) districts. For all

#### Table 1: List of medicines tracked through the supply chain

| Medicine name | Type of drug | Different formulations | Acute disease | Pricing variation |
|---------------|--------------|------------------------|--------------|------------------|
| Amoxicillin/ clavulanic acid | Antibiotics | Syrup | Yes |
| Artemether + lumefantrine | Antimalarial | Dispersible tablet | Yes | Yes |
| ORS sachet 1 L | Electrolyte | Powder | Yes | Yes |
| Paracetamol suspension | Antipyretics | Suspension | Yes |
| Salbutamol inhaler | Antiasthmatics | MDI | Yes | Yes |
| Ofloxacin | Antibiotics | Tablet | Yes | Yes |

ORS=Oral rehydration solution, MDI=Metered-dose inhaler

#### Table 2: Cumulative percentage markups for generic medicines in the public sector

| Stage 1: MSP (Rs.) | Ofloxacin 200 mg tablet | Salbutamol 100 mcg/dose inhaler | Paracetamol 125 mg/5 ml suspension | ORS 20 mg powder |
|-------------------|--------------------------|-------------------------------|----------------------------------|-----------------|
| 8.00              | 48.00                    | 4.40                          | 1.80                             |
| 6.00              | 6.00                     | 6.00                          | 5.00                             |
| 0                 | 0                        | 0                             | 0                                |
| 0                 | 0                        | 0                             | 0                                |
| 4.00              | 4.00                     | 4.00                          | 4.00                             |
| Total cumulative markup (%) | 10.6 | 10.30 | 11.00 | 11 |
| Final price (Rs.) | 8.85 | 52.95 | 4.90 | 2.00 |

MSP=Manufacturer’s selling price, ORS=Oral rehydration solution
super-stockist markup (2%) both applied in Stage 2, and a value-added tax (VAT) of 4% applied to Stage 5.

**Private Sector**

In private sector, the cumulative markup on branded products was approximately 53% [Table 3]. Stage 2 charges comprised central sale tax (2%) and entry tax (1%), as well as the super-stockist markup (generally 3%). Wholesale and retail markups are represented in Stages 3 and 4, respectively while the 4% VAT applied to all medicines is accounted for Stage 5. However, in case of branded generics, a much larger cumulative percent markup (218% and 325%) was seen in paracetamol suspension and oral rehydration solution (ORS) powder. Graph 1 represents the difference between markup structures in public and private sectors for generic, branded, and branded generic product of paracetamol suspension. In the public sector, the MSP contributes 90% to the final patient price and the add-on costs of the supply chain only contribute 10%. Conversely, in private sector, MSP only contributes 30%–65%, and add-on costs contribute 35%–70%. This is generally due to the higher retail markup applied for branded generics in private sector (in this case contributing 61% to the final price). The difference between markup structures of branded and branded-generic products of paracetamol suspension are also depicted in Graph 1 which shows the percentage contribution of price components to the final price. For branded products, the MSP is the largest contributor to final price (around 65%). However, for the branded generic such as paracetamol suspension and ORS powder, the retail markup is the largest contributor (61% and 67%), with the MSP only accounting for 31% and 23%, respectively, of the final price.

**Discussion**

In the public sector, add-on costs represent 10% of the final patient price for generics medicines, with largest contributor at Stage - 2 (central sales tax + entry tax, and super-stockist markup). In private sector, add-on costs, such as taxes, wholesale, and retail markups, contribute substantially to the final price of medicines, contributing approximately 35% of the final patient price for branded medicines and 70% for unbranded generics. The largest contributor to add-on cost is retailer markup which also includes the operating cost of transportation, storage, and dispensing medicines. The high variability of price between private sector outlets is likely the result of low market competition and absence of proper price regulation.[6] Our findings also match with price components survey in Mongolia, which also revealed that cumulative percent markups for individual medicines ranged from 37.5% to 115.53% in private sector with major contributions to final price from retail markup (30.44% of final price) and wholesale markup (15.7% of final price).[8]

The study results may be limited by the fact that most of the data collected are subjective and may be influenced by market fluctuations and delivery schedules. The operating cost of transportation, storing, and dispensing of medicines could not be separated from the markups at wholesaler and retailer stage. Finally, the methodology does not include bonus pack given by manufactures, informal sectors such as markets and general stores, as the quality of the medicines found in such

| Table 3: Cumulative percentage markup of products in private sector |
|---------------------------------------------------------------|
| **MSP (Rs.)** | **Super stockist markup (%)** | **Wholesale markup (%)** | **Retail markup (%)** | **Dispensed markup (%)** | **Total cumulative markup (%)** | **Final price (Rs.)** |
|----------------|-----------------------------|------------------------|---------------------|------------------------|-------------------------------|---------------------|
| Ofloxacin (branded) | 2.130 | 2.00 | 6.00 | 4.00 | 12.00 | 29.00 |
| Ofloxacin (generic) | 5.65 | 1.10 | 12.00 | 4.00 | 20.00 | 39.00 |
| Salbutamol (branded) | 36.00 | 5.00 | 6.00 | 4.00 | 5.00 | 52.00 |
| Paracetamol (branded) | 11.01 | 10.01 | 25.00 | 4.00 | 45.00 | 80.00 |
| Paracetamol (generic) | 5.00 | 10.00 | 25.00 | 4.00 | 45.00 | 80.00 |
| ORS (branded) | 7.50 | 5.00 | 10.00 | 4.00 | 23.00 | 45.00 |
| ORS (generic) | 3.25 | 5.00 | 10.00 | 4.00 | 23.00 | 45.00 |

MSP=Manufacturer’s selling price, ORS=Oral rehydration solution
sectors cannot be assured. Thus, our study highlights variation of prices of essential child medicines across different sectors and the cause behind the price variation. Proper policy can be framed and implemented to control medicine price or to go for alternate procurement schemes at least with essential medicines for children.

**Conclusion and Recommendation**

This study has helped to provide broad insight into price and affordability of key medicines for the treatment of common conditions. A set of policies needs to be implemented to make medicines accessible to poor patients. The policy should be framed to achieve greater transparency and uniformity in the pricing of medicines. Promotion and acceptance of generic medicine among the health professionals should be done by providing adequate training for doctors to improve prescribing practices around cost-effective generics. Regulatory authorities should think of importing more child-specific formulations for the state. The cost of medicines in private sector should be lowered by specific policy change. Although further investigation is required to obtain a more in-depth understanding of the causes and consequences of medicine pricing, the results of this survey provide broad directions for future research and action. It is, therefore, recommended that the Government of Odisha should procure children’s medicine on a priority basis looking at the very high childhood morbidity and mortality and excellent purchasing efficiency.

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**Conflicts of Interest**

There are no conflicts of interest.

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