

COMPARATIVE ANALYSIS OF NATIONAL ESSENTIAL MEDICINE LIST FOR CHILDREN BY INDIAN ACADEMY OF PEDIATRICS (IAP) AND PEDIATRIC DRUGS AVAILABLE AT A TERTIARY CARE TEACHING HOSPITAL IN CHENNAI

Dr. Vinay¹, Dr. Vijayakumar AE², Dr. Seethalakshmi³, Dr. Rajathilagam²

¹Associate Professor, Department of Pharmacology, ESIC Medical College & PGIMSR, KK Nagar, Chennai -78.

²Assistant Professor, Department of Pharmacology, ESIC Medical College & PGIMSR, KK Nagar, Chennai -78.

³Professor & HOD, Department of Pharmacology, ESIC Medical College & PGIMSR, KK Nagar, Chennai -78.

Article Received on
02 Nov 2014,

Revised on 27 Nov 2014,
Accepted on 22 Dec 2014

***Correspondence for
Author**

Dr. Vijayakumar AE
Assistant Professor,
Department of
Pharmacology, ESIC
Medical College &
PGIMSR, KK Nagar,
Chennai -78.

ABSTRACT

Objectives: To find out the availability of essential medicines (drug, strength and dosage form) as given by National List of Essential Medicines for children by IAP (October 2011 version) on the hospital pharmacy of Employee's State Insurance Corporation Medical College and Postgraduate Institute of Medical Science and Research (ESICMC & PGIMSR), Chennai. **Methods:** This cross sectional study was conducted during August 2014. The availability of essential medicine for children (drugs, strength, and dosage form) were noted down. Drugs which are not listed in the National list of Essential medicines for children but available in the hospital pharmacy were also noted down. **Results:** Out of the drugs listed in NLEM, 92% drugs were available in the ESICMC and PGIMSR pharmacy. 80% percent

of these drug formulations were available in as specified in NLEM and 70% of the available drugs had the same strength as specified in NLEM. **Conclusion:** Majority of the drugs available in hospital pharmacy of ESIC MC & PGIMSR are in accordance to NLEM.

KEYWORDS: NLEM, IAP, Children, Drugs.

INTRODUCTION

As per WHO 6.3 million children under the age of five years died in 2013. Among these most of these early child deaths could be prevented. India (21%) and Nigeria (13%) together account for more than one third of under five children death.^[1] Pediatric population is heterogeneous group with different age groups with different physiologic and development stages. The availability of pediatric formulations and strengths are limited due to higher cost, limited demand and require specific storage conditions.^[2] To increase the global awareness of essential medicines for children WHO initiated 'Better Medicines for Children initiative and 'Make medicine child size' campaign.^[3] Three editions of Essential Medicine List for the Children (upto 12 years of age) were published by WHO. Latest edition was on 2011.^[4] The concept of child friendly formulations is at infant stage. Till recent times there is no separate list of national list of essential medicines for children. Indian Academy of Pediatrics (IAP) published National Essential Medicine List for children (NEMLc) on October 2011^[5] based upon WHO criteria of selection list and national health programs. Chhattisgarh and Odisha are the only two states included pediatric specific formulations in their essential medicines in their EML. Even 7-17% pediatric formulations only procured.^[6]

Objective

The present study was designed to analyze the pediatric drugs and formulations available in ESIC Pharmacy, KK Nagar with NEMLc in terms of drugs and formulations and strengths.

METHODS

Observational cross sectional study was done at pharmacy of ESIC hospital Chennai, tertiary care teaching hospital. Existing hospital pediatric medicine list was obtained from chief pharmacist along their dosage forms and strengths. IAP –EMLc July 2011 was downloaded from the official website and was used as reference for comparison. The % availability of the medicines along with dosage forms, strengths present in hospital were noted at the time of visit and the reason of non availability.

RESULTS

NEMLc contain 128 drugs and including 9 fixed dose combinations. They are 22 groups including cardiovascular, CNS, Oncologic, analgesic, Anti allergic, Ophthal, ENT, Dermatological drugs. ESIC pharmacy contains 118 drugs (atleast single dose) (92%). As per utility analysis ESIC maintains most of the drugs. The drugs not available in the ESIC pharmacy list in Table 1.

Table 1:

S. No	Drugs not available at ESIC	Group of the Drug
1.	Pyantel	Antimicrobial
2.	Diloxanide	Antimicrobial
3.	Sodium stibogluconate	Antimicrobial
4.	Pentamidine isethionate	Antimicrobial
5.	Danuorubicin	Anticancer
6.	Mercaptopurine	Anticancer
7.	Miconazole	Dermatology
8.	Naloxone	Antidote
9.	Pralidoxime	Antidote
10.	Hydroxyurea	Blood

Dosage forms NEMLC contains 195 dosage forms. ESIC pharmacy contains 157 dosage forms (80%). The dosage forms commonly missing from ESIC pharmacy given in Table 2. Mainly chewable, dispersible tablet are missing.

Table 2:

S. No	Group of the Drug	Formulations not available at ESIC
1.	Anesthesia	Dental cartridge (Lidocaine+ adrenaline) Midazolam oral liquid
2.	Anticonvulsants	Carbamazepine (Oral liquid, tablet chewable) Phenobarbitone (tablet, oral tablet) Phenytoin (Oral liquid, tablet chewable)
3.	CVS	Digoxin (Oral liquid, Injection) Furosemide (Oral liquid) Sprinolactone(Oral liquid)
4.	GIT	Omeprazole (Granules for oral liquid)
5.	Antibiotics	Azithromycin (dispersible) 100 mg
6.	Anticancer drugs	Cyclophosphamide Mercaptopurine

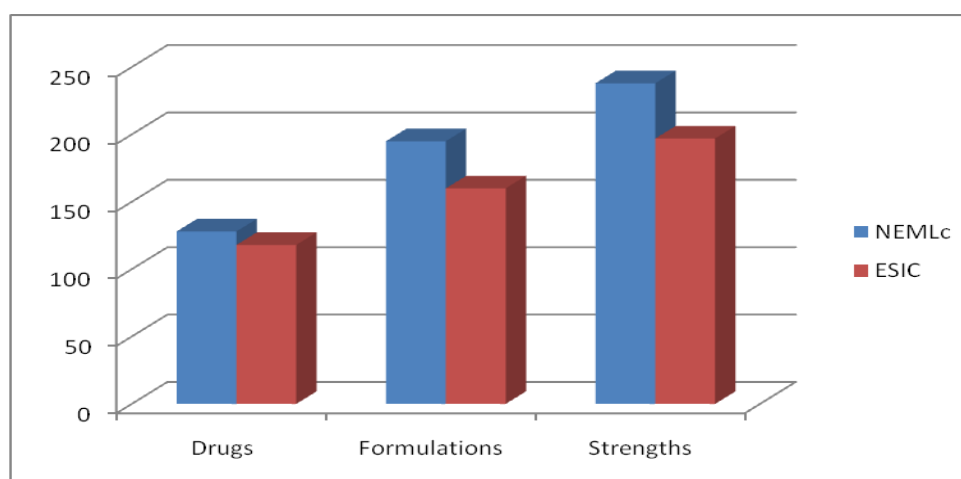


Figure 1: Drugs & Formulations & Strengths.

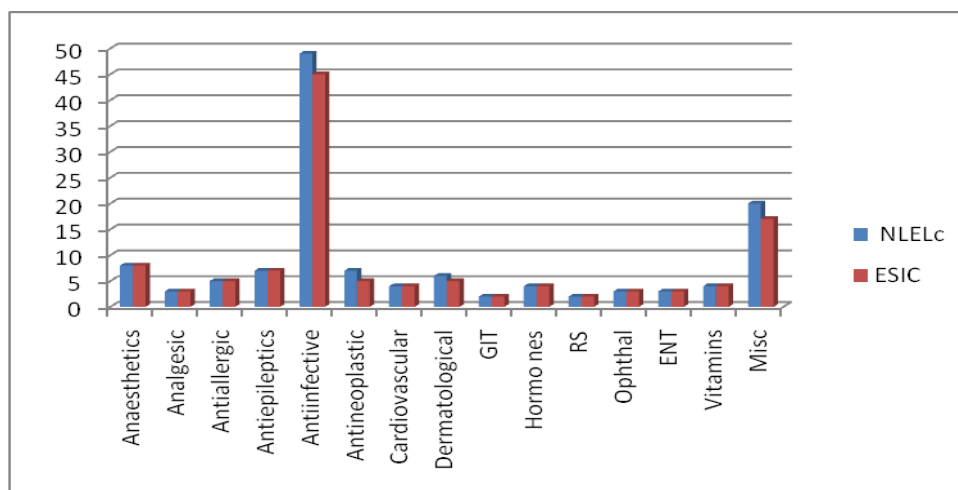


Figure 2: Drugs.

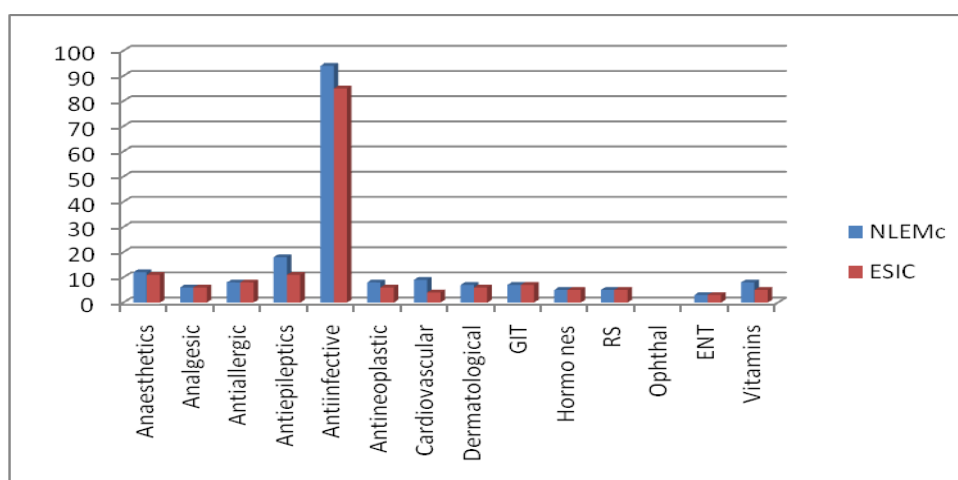


Figure 3: Formulations.

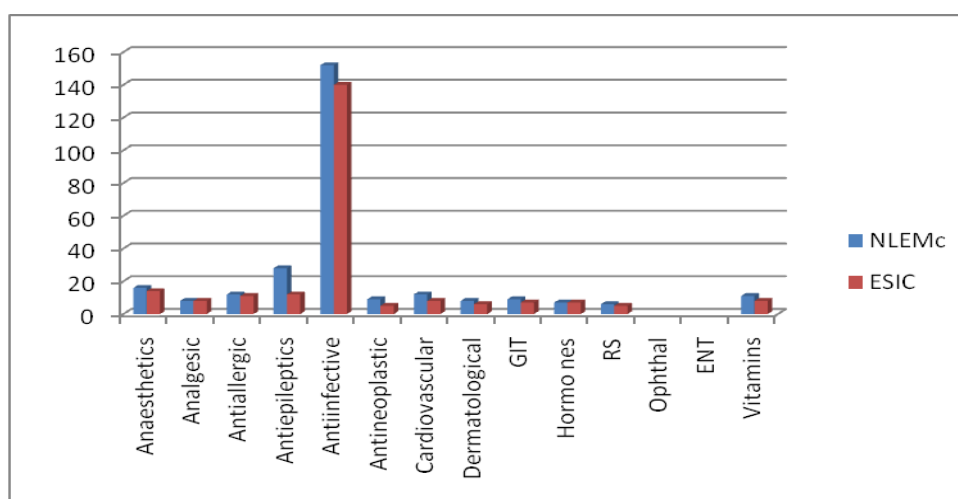


Figure 4: Strengths

NLEMc contains 248 dosage strengths for children less than 12 years of old. ESIC pharmacy contains 180 dosage strengths.

Pharmacologically children make a heterogeneous group with different pharmacokinetics from that of adults. Particularly Infants and newborns must need specific medicines in correct and appropriate dosage formulations and strength as they suffer from different disease than adults. Our study demonstrated that 92% availability of pediatric medicines and modest scarcity of formulations and strength in tertiary care teaching hospital, Chennai. The drugs not available in the pharmacy are Pyrantel, Diloxanide, Sodium stibogluconate, Pentamidineisothionate, Danurubicin, Mercaptopurine, Miconazole, Naloxone, Pralidoxime, Hydroxyurea. The drugs are acquired by as per utility analysis. Naloxone, Pralidoxime, Hydroxyurea acquired by local purchase. For pyrantel, Diloxandide and miconazole better drugs available like albendazole, metronidazole and fluconazole. As kala azar and the African sickness are the rarest disease in south india these drugs not available.

Regarding formulations pediatric specific formulations like dispersible, chewable formulations are completely absent from the formulations. Out of 195 formulations mentioned in the IAP- Essential medicine list for children October 2011 list only 157 formulations available (80%). Only 70% pediatric specific strength are available in the formulations. For pediatric use adult dosage forms are grinded or divided by health care workers or parents. Pediatric specific formulations are worldwide concern. So WHO initiated campaign like make medicines child size, child friendly formulations to increase the awareness of pediatric specific strength and formulations. As on date there is no pediatric essential medicine list not published in India.

1. WHO:http://www.who.int/mediacentre/news/releases/2014/child_mortality_estimates/en/ (Cited on 08/ October/2014)2222228888888888888888888888888888.
2. Gitanjali B. Essential Medicines for Children: Should we focus on a priority list of medicines for the present? J Pharmacol Pharmacotherapeutics, 2011; 2: 1-2.
3. “Better medicines for children project”- Overview of methods for medicines availability and pricing surveys [Internet], September 2009 [cited 2014 aug 16]. Available from:www.who.int/childmedicines/progress/ChildMeds_pricing_surveys.pdf.
4. <http://www.who.int/medicines/publications/essentialmedicines/en/index.html>.
5. http://www.who.int/selection_medicines/country_lists/Indian_EMLc.pdf.