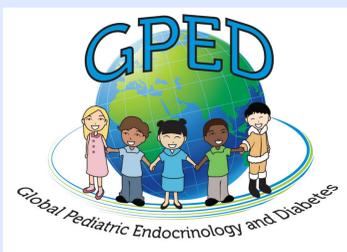


# Access to Medicines in Pediatric Endocrinology and Diabetes in Africa: Insights from the WHO and National Lists of Essential Medicines



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## Introduction

**Endocrine conditions and diabetes** are part of the non-communicable diseases group (NCDs) and affect thousands of children in low and middle income countries (LMICs). Their clinical presentation is often confused with more common conditions and their prevalence is likely grossly underestimated

The **World Health Organisation (WHO)** maintains two lists of medicines considered as essential (one for children and one for adults) which are regularly updated

These **Model Lists of Essential Medicines (EMLs)** are used as a template by most LMICs to decide which medicines will be made available at the national level and can be accessed on the WHO website

**Global Pediatric Endocrinology and Diabetes (GPED)** [1] is a NGO that aims at improving clinical care of children with endocrine conditions and diabetes living in LMICs. A main objective is to facilitate access to medicines to affected children

## Objectives

- To establish a master list of medicines deemed necessary in pediatric endocrinology and diabetes
- To compare our master list of medicines with
  - the EMLs published by the WHO in children and adults [2]
  - the national EMLs in the WHO African region [3]

## Methods

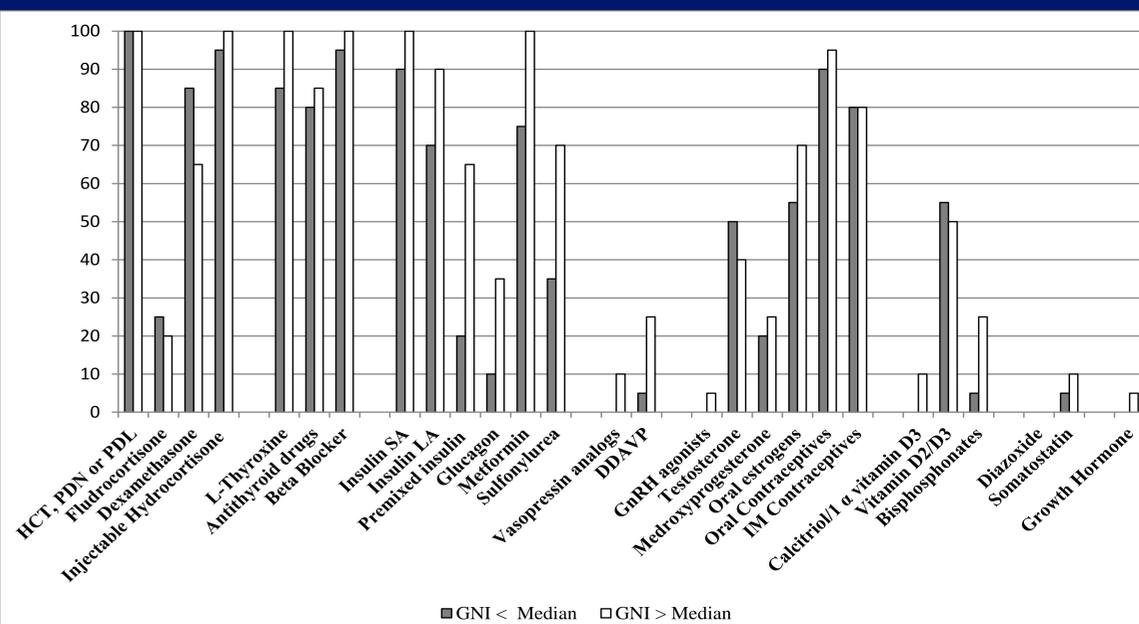
- We established a master list of necessary medicines based on non-proprietary names; medicines that are used interchangeably were listed as one category
- We accessed the most recent WHO EMLs for children and adults [2] and identified available national EMLs in the WHO African region, [3]. We then compared these EMLs for concordance with our master list. We also determined the influence of the Gross National Income (GNI) on the medicines listed in each country

## Results

- Data from 40 of the 47 countries included in the WHO African region was collected, of which 33 countries (=83%) were classified as low income
- Several medicines that are considered as necessary by pediatric endocrinologists were not included in either of the two WHO lists: 1alpha Vit D or calcitriol, diazoxide/somatostatin, growth hormone, and bisphosphonates (Table 1)
- Several medicines that are not considered as essential by the WHO were included in the national EMLs (i.e. estrogens are listed in > 50% national EMLs)
- Fludrocortisone was only present in 23% and glucagon in 23% of the national EMLs despite being recommended by WHO (Table 1).
- Calcitriol was included in only 5%, and diazoxide was not included in any of the lists
- Richer countries overall have more medicines listed than poorer countries (Figure 1)
- Medicines for the management of thyroid diseases and adrenal insufficiency (except for fludrocortisone) were present in most countries irrespective of GNI

**Table 1.** Medicines deemed essential in pediatric endocrinology and diabetes that are listed in the WHO List of Essential Medicines (EML) for children and adults and in the national EMLs

List of Medicines for Pediatric Endocrinology and Diabetes	WHO		National lists* (%)
	Child	Adult	
<b>Adrenal</b>			
Hydrocortisone, prednisone or prednisolone (PO)	x (HCT, PNL)	x (HCT, PNL)	100
Dexamethasone (PO)	x	x	75
Fludrocortisone (PO)	x	x	23
Hydrocortisone (IV, IM)	x	x	98
<b>Thyroid</b>			
L-thyroxine (PO)	x	x	93
Propylthiouracil (PTU) or methimazole or carbimazole (PO)	x (PTU)	x (PTU)	83
Beta Blocker (PO)	x	x	98
<b>Diabetes</b>			
Insulin Short Acting (Human and/or Analogues) (SQ)	x (H)	x (H)	95
Insulin Long Acting Human and/or Analogues (SQ)	x (H)	x (H)	80
Insulin Pre-mix (SQ)			43
Glucagon (SQ, IM)	x	x	23
Metformin (PO)	x	x	88
Sulfonylurea (PO)		x	53
<b>Water metabolism</b>			
Vasopressin analogs (SC, IV)			5
Desmopressin (DDAVP) (NS, IN, SL, PO, IV)	x (NS, IV)	x (NS, IV)	15
<b>Gonads</b>			
GnRH agonists (IM)			3
Testosterone (PO, transdermal, topical gel, IM)		x	45
Medroxyprogesterone (PO)		x	23
Estrogen (17b Estradiol or Ethinylestradiol or Conjugated Estrogen) (PO)			63
Oral Contraceptives (Ethinylestradiol and Progestin) (PO)		x	93
IM Contraceptives (Medroxyprogesterone or other progestin) (IM)		x	80
<b>Bone/Calcium</b>			
Calcitriol/1 α vitamin D3 (PO)			5
Vitamin D2/D3 (PO)	x	x	53
Biphosphonates (PO or IV)*			15
<b>Hypoglycemia</b>			
Diazoxide (PO)			0
Somatostatin (SQ)			8
<b>Growth</b>			
Growth Hormone (SQ)			3



**Figure 1.** Percent of countries including each medicine or category of medicines, as a function of the median Gross National Income (GNI)

## Discussion and Conclusion

- Increasing capacity in pediatric endocrinology has led to the recognition of an increasing number of children with pediatric endocrine conditions and diabetes in LMICs. Access to medicines deemed necessary for their management remains suboptimal
- There are significant deficiencies in both the WHO and national EMLs for medicines that are life-saving, although this impacts mainly less common endocrine conditions
- Except for the most commonly used medicines (i.e. insulin, L-thyroxine, corticosteroids), there are significant discrepancies between the content of the WHO and national EMLs

## Future steps for GPED

- To determine whether having a medicine listed on the national EML actually reflects its availability in the country
- To work with the WHO and the local governments to promote access to essential medicines in pediatric endocrinology

The authors declare no conflict of interest

## References

- www.globalpedendo.org
- www.who.int/medicines/publications/essentialmedicines/en/
- www.who.int/selection\_medicines/country\_lists/en/index.html

