

REPORT

COMPARATIVE ANALYSIS OF PUBLIC PROCUREMENT **PRICES** FOR **DIABETES** MEDICINES AND OTHER HEALTH **PRODUCTS**

NCD POLICY LAB
UNIVERSITÉ DE GENÈVE FACULTY OF MEDICINE
acciss Addressing the Challenge and Constraints of Insulin Sources and Supply
HAI HEALTH ACTION INTERNATIONAL

COMPARATIVE ANALYSIS OF PUBLIC PROCUREMENT **PRICES** FOR **DIABETES** MEDICINES AND OTHER HEALTH **PRODUCTS**

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1. INTRODUCTION

Access to essential diabetes-related products remains a critical global challenge. A recent study highlighted that one in two people globally needing insulin lack access in terms of availability and affordability.[1] Similar dynamics of limited access have also been observed in self-monitoring blood glucose devices, which are vital for effective disease management.[2] The problems associated with diabetes-related products, and in particular insulin, are not limited to low- and middle-income countries (LMICs). Insulin shortages and stockouts are widespread across various geographies and income groups and have become an ongoing challenge in many regions.[3]

To improve this situation, the World Health Organization (WHO) launched the Global Diabetes Compact in 2021.[4] Through its six workstreams, the Compact endeavours to support progress toward the five global diabetes coverage targets to be achieved by 2030:

- 80% of people with diabetes are diagnosed;
- 80% of people with diagnosed diabetes have good control of glycaemia;
- 80% of people with diagnosed diabetes have good control of blood pressure;
- 60% of people with diabetes of 40 years or older receive statins; and
- 100% of people with type 1 diabetes have access to affordable insulin and blood glucose self-monitoring.

One of these workstreams focuses specifically on improving access to essential diabetes medicines and associated health technologies.

Access barriers persist due to a complex interplay of structural factors. These include: dominance of the market by a small number of multinational manufacturers, the complexity of producing and regulating insulin, a lack of transparency in procurement prices and negotiations, limited financial capacity coupled with weak procurement and supply chain systems in many health systems, and the inconsistent application of policies on biosimilar medicines and technologies.[3,5,6] Collectively, these dynamics give rise to significant price disparities across public procurement systems, inflating costs and making it increasingly difficult for health systems and patients alike to secure reliable and affordable access to the medicines and monitoring tools they need.

In response to these ongoing challenges, the Addressing the Challenge and Constraints of Insulin Sources and Supply (ACCISS) Study, in collaboration with the University of Geneva (UNIGE), developed a pilot survey to collect data on public procurement prices in 2023 and 2024 for diabetes-related medicines and medical devices across different countries. This initiative aligns with World Health Assembly (WHA) Resolutions 72.8 and 74.4, which call for increased transparency of prices and strengthened efforts to reduce the burden of noncommunicable diseases through improved prevention and control of diabetes.[7,8] The survey data aims to provide an evidence base for identifying price inequities, while advancing price transparency, and informing policy interventions, such as inter-country pooled procurement mechanisms, that can improve affordability and ensure more consistent access to life-saving diabetes treatments and monitoring devices globally.

This comparative price study serves two primary objectives:

- To document the current public procurement prices for various diabetes-related medical products across participating countries.
- To evaluate the feasibility of establishing a continuous monitoring mechanism for public procurement prices of diabetes-related products over time.

Through this work, the project seeks to generate evidence that can inform global and national procurement efforts to improve affordability, transparency around prices, and access to life-saving diabetes treatments and technologies.

2. METHODOLOGY

Survey Design and Content

For the pilot phase of this study, we developed a structured online survey using Jotform to collect procurement data on selected diabetes-related medicines and medical devices (see Annex 1). The selection of medicines was guided by the 2023 World Health Organization (WHO) Model List of Essential Medicines (EML), specifically targeting human and analogue insulins, and oral antidiabetic medicines.[9] In addition, the survey included self-monitoring blood glucose devices (glucose meters and test strips), as identified in the 2022 WHO Essential Diagnostics List, as well as insulin syringes for vial-based administration, aligned with recommendations from the 2021 WHO Priority Medical Devices List for the Management of Cardiovascular Diseases and Diabetes and insulin pen needles.[10,11]

See Table 1 for an overview of the products included in the survey.

Table 1. Overview of the products included in the survey

Product category	Product name	Dosage strengths and presentations
Human insulins	Regular human insulin, short acting	· 40 IU/ml, 10ml vial
		· 100 IU/ml, 10ml vial
		· 100 IU/ml, 3ml cartridge
		· 100 IU/ml, prefilled pen
	Isophane NPH human insulin, intermediate acting	· 40 IU/ml, 10ml vial
		· 100 IU/ml, 10ml vial
		· 100 IU/ml, 3ml cartridge
		· 100 IU/ml, prefilled pen
	Insulin zinc suspension, intermediate acting	· 40 IU/ml, 10ml vial
		· 100 IU/ml, 10ml vial
		· 100 IU/ml, 3ml cartridge
		· 100 IU/ml, prefilled pen

Product category	Product name	Dosage strengths and presentations
Analogue Insulins[a]	Insulin degludec, long-acting analogue	· 100 IU/ml, 3ml cartridge
		· 100 IU/ml, prefilled pen
	Insulin detemir, long-acting analogue	· 100 IU/ml, 3ml cartridge
		· 100 IU/ml, prefilled pen
	Insulin glargine, long-acting analogue	· 100 IU/ml, 3ml cartridge
		· 100 IU/ml, prefilled pen
Oral antidiabetic medicines	Empaglifozin	· 10 mg tablet
		· 25 mg tablet
	Canaglifozin	· 10 mg tablet
		· 25 mg tablet
	Gliclazide	· 30 mg controlled-release tablet
		· 60 mg controlled-release tablet
		· 80 mg controlled-release tablet
	Metformin	· 500 mg tablet
	Glibenclamide	· 5 mg tablet
Medical devices	Insulin syringe	· 0.5 ml (50 IU)
		· 1 ml (50 IU)
	Insulin pens	· non-disposable pens
		· pen needles
	Meters	· blood glucose meter for self-monitoring
		· blood glucose meter for health facilities
		· blood glucose meter strips

a The survey was developed prior to the publication of the 2025 EML and therefore does not include rapid-acting analogue insulins.

To validate the content and structure of the survey, we shared draft versions with a small group of subject matter experts to gather initial feedback. This feedback was reviewed and discussed internally to refine the survey. We held multiple consultations with the Jotform development team to improve the survey's user interface and overall user experience. In addition, we created detailed instruction manuals in both English and French to guide respondents through the Jotform survey. Following interim feedback, we produced a Microsoft Excel version of the survey for offline use.

Data Variables Collected

For each procured product and its dosage form/strength, respondents were asked to provide detailed procurement information, including the following variables:

- Invoice date
- Source of purchase
- Supplier name
- Brand name
- Unit pack size
- Total quantity of packs procured
- Unit price per pack
- Currency of the transaction
- Incoterm
- Procurement method
- Reason for non-disclosure of price (if applicable)

Price and Currency Standardization

To allow for meaningful comparison across countries and over time, all reported prices were standardized to U.S. Dollars (USD). Where procurement was conducted in local currency, exchange rates at the date of procurement were used to convert values to USD.[12]

Unless otherwise stated in the tables, prices refer to a single unit (e.g., one vial, one prefilled pen). However, prices for insulin cartridges typically reflect a pack of five, prices for oral antidiabetics and insulin syringes are generally listed per 100 units, and the prices of glucose meter strips are based on packs of 50 strips.

Incoterms

Respondents were asked to indicate the Incoterms applied during procurement. Incoterms, developed by the International Chamber of Commerce (ICC), comprise of 11 internationally recognized terms that define the responsibilities of buyers and sellers regarding transportation, insurance, customs clearance, and delivery obligations.[13] An overview of the 2020 Incoterms is provided in Table 2. Where available, the relevant Incoterm is presented in the column next to each country or region's name to enhance interpretability.

Table 2. Overview of 2020 Incoterms

Acronym	Meaning	Brief description
EXW	Ex Works	The seller makes goods available at their premises; the buyer bears all transport costs and risks.
FCA	Free Carrier	The seller delivers goods to a carrier or another party at the seller's premises or another named place.
CPT	Carriage Paid To	The seller pays for carriage to a named place, but risk transfers to the buyer when the goods are handed over to the carrier.
CIP	Carriage and Insurance Paid To	Like CPT, but the seller also provides insurance up to the named destination.
DAP	Delivered at Place	The seller delivers when goods are ready for unloading at the named destination; the buyer handles import duties.
DPU	Delivered at Place Unloaded	The seller is responsible for delivery and unloading at the destination; the buyer covers import formalities.
DDP	Delivered Duty Paid	The seller delivers goods ready for unloading and pays all import duties and taxes; maximum seller responsibility.
Rules for Sea and Inland Waterway Transport		
FAS	Free Alongside Ship	The seller delivers the goods alongside the vessel at the port; the buyer handles loading, shipping, and risk beyond that point.
FOB	Free on Board	The seller loads the goods onto the vessel at the port; risk transfers to the buyer once on board.
CFR	Cost and Freight	The seller pays for transport to the destination port, but the buyer takes on risk once the goods are loaded.
CIF	Cost, Insurance and Freight	Similar to CFR, but the seller must also provide insurance for the goods during transit.

Data Collection Strategy

The survey focused primarily on procurement data for the years 2023 and 2024. However, where available, secondary data sources, including public procurement platforms, were used to supplement responses with historical data, extending as far back as 2021 to support comparative analysis.
The pilot sample of procurement entities aimed to ensure both geographical diversity and income-level representation[14] (i.e., high income, upper-middle income, lower-middle income, low income), targeting participation from at least two countries per WHO region, with an emphasis on LMICs. Participants were identified based on UNIGE and consultant networks and contacted to participate in the survey via email, either directly at procurement entities or through intermediaries at international organizations (e.g., International Diabetes Federation, WHO HQ or WHO regional offices) who facilitated introductions to relevant focal persons. When requested by contact persons, UNIGE prepared and shared invitation letters to officially invite procurement entities to participate in the survey. This approach was deliberately chosen to maximize response rates and data quality, recognizing that data sharing is largely trust-based and that no formal mandate from an international global health organization was in place.

In addition to data collected from three online public databases, a total of 42 entities were contacted between March 2025 and February 2026, often involving multiple representatives across global, regional, national, and sub-national levels. Of the 42 entities contacted, nine were on inter-country level, 31 were on national level, and two were on sub-national level. In addition, 17 (40.5%) were based in Africa, 10 (23.8%) in Asia, nine (21.4%) in the Americas, three (7.1%) in Oceania, and two (4.8%) in Europe. One entity (2.4%) operated at the global level and was not geographically specific.

Data Processing and Validation

Survey responses were manually extracted and compiled into Microsoft Excel for initial data processing and the construction of comparative procurement price tables. Data cleaning involved checking for completeness and plausibility. Where discrepancies, missing values, or outliers were identified, follow-up communications were initiated with respondents to seek clarification.

To further support the pilot objective of evaluating the survey's usability, clarity and long-term sustainability, respondents were invited to provide feedback through follow-up interviews. As of this report, three respondents participated in these feedback sessions, and their insights are summarized in the **Discussion** section.

3. RESULTS

Overall, eleven surveys from nine respondents were received. One respondent contributed data for both a sub-national procurement agency and a tertiary-level teaching hospital in the same region. Another respondent provided data for two countries, while a third respondent was unable to provide supplier and price information due to national data-sharing restrictions.

In addition, seven surveys were completed manually by the UNIGE team using validated secondary data from's ACCISS Study report titled *Government Procurement of Insulin: Case Studies in 11 Low- and Middle-Income Countries*, as well as procurement price data from three public online databases.[15] For the final list of entities included in the survey and their respective data sources, see Table 3.

Table 3. Data sources by entity included or participated in the survey

Entity	World Bank classification	Data source
Organisation of Eastern Caribbean States	N/A	Respondent
Burkina Faso	Low income	HAI. (2025). Government Procurement of Insulin.
Chile	High income	CENABLAST
Comoros	Lower-middle income	HAI. (2025). Government Procurement of Insulin.
Dominican Republic	Upper-middle income	Respondent
Djibouti	Lower-middle income	HAI. (2025). Government Procurement of Insulin.
Indonesia	Upper-middle income	Respondent
Kyrgyzstan	Lower-middle income	Respondent
Laos	Lower-middle income	HAI. (2025). Government Procurement of Insulin.
Malawi	Low income	Respondent
Peru	Upper-middle income	Respondent
Rwanda	Low income	Respondent
South Africa	Upper-middle income	Respondent
Sri Lanka	Lower-middle income	2023 data: HAI. (2025). Government Procurement of Insulin.
		2024 data: State Pharmaceuticals Corporation of Sri Lanka
Tanzania	Lower-middle income	Respondent
Punjab (Pakistan)	Lower-middle income	Respondent
Punjab (Pakistan) - Tertiary hospital	Lower-middle income	Respondent
Tamil Nadu (India)	Lower-middle income	Tamil Nadu Medical Services Corporation Limited[a]

[a] Only accessible in India.

The following section presents the findings from our Survey on Procurement Prices for Diabetes Products at sub-national, national and regional levels. The analysis focuses on procurement price variations between and within countries across different product categories.

We have structured the results into two main groups: medicines and medical devices. Within the medicines category, we have further distinguished the data into three subgroups to reflect key therapeutic areas: 1) human insulins, 2) analogue insulins, and 3) oral antidiabetics. The analysis is limited to products for which data were received or available.

In each table, data is organized as follows: with regional/inter-country (pooled) buyers listed first, followed by national and then sub-national level buyers. Within each operational level, buyers are listed by Incoterms, from those placing the greatest (financial) risk and responsibilities on the buyer to those placing the greatest responsibilities on the seller. This structure allows for a more detailed understanding of price patterns and procurement dynamics within different operational levels. Tables 4 to 6 present prices per single unit for vials and prefilled pens, while prices for insulin cartridges correspond to packs of five. In Table 7, prices for different insulin products and presentations have been standardized to 1000 IU (equivalent to 10 ml) to facilitate comparison. Tables 8 to 10 list prices for oral antidiabetic medicines and insulin syringes per 100 units, blood glucose monitors per single unit, and glucose meter strips in packs of 50.

Medicines

Table 4. Price comparison of regular, short-acting human insulin

	Incoterm	Regular, short acting				
		100 IU/ml, 10ml vial			100 IU/ml, 3ml cartridge	
		Price for 1 vial (USD)			Price for 5 cartridges (USD)	
		2022	2023	2024	2023	2024
OECS	**CIP**		4.95	4.95		
Comoros[a]	**CIP**		5.14			
Burkina Faso	**CIP**	6.19				
South Africa	**DAP**			2.02		9.45
Indonesia	**DDP**		10.16	9.99		
Kyrgyzstan	**DDP**		2.66	2.8		12.07
Malawi	**DDP**		2.92	9.35		
Rwanda	**DDP**		2.79	2.79		
Sri Lanka	**CFR**		1.6	1.68		
Chile				4.6		
Djibouti[b]			4.1			
Dominican Republic				2.76		
Laos			5.65			
Peru			3.9			
Punjab, DGHS	**CIF**		2.43	3.05		
Punjab, Tertiary Hospital	**CIF**		1.94			

a Procures insulin via a WHO-mediated group purchasing agreement referred to as the Small Island Developing States (SIDS) pooled procurement initiative.
b Weighted average price of multiple procurements within that year.

Available data are primarily for short-acting human insulin in vials, with limited evidence on cartridges for reusable pens or prefilled pens (Table 4). Prices for vials in OECS, Burkina Faso, Comoros, Indonesia, Malawi, Chile and Laos seem notably high compared to other settings. These differences cannot be attributed solely to variation in Incoterms. Additional likely contributing factors include procurement through intermediaries rather than directly from manufacturers (i.e., OECS, Indonesia, Malawi, Comoros, Peru); or differential manufacturer pricing strategies based on the economic status of the purchasing country (as may be the case in Chile, which is classified as a high-income country). In Burkina Faso and Malawi, the significant price hike for short-acting human insulin in 2022 and 2024, respectively, was driven primarily by emergency procurement.

Table 5. Price comparison of regular, intermediate-acting human insulin

	Incoterm	Isophane NPH								Zinc suspension	
		40 IU/ml,		100 IU/ml,		100 IU/ml,		100 IU/ml,		100 IU/ml,	
		10 ml vial		10 ml vial		3 ml cartridge		3 ml prefilled pen		10 ml vial	
		Price for 1 vial		Price for 1 vial		Price for 5 cartridges		Price for 1 pen		Price for 1 vial	
		2023	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
OECS	**CIP**			4.95	4.95						
Comoros[a]	**CIP**			5.14							
South Africa	**DAP**				1.89		9.45				
Indonesia	**DDP**							5.27	5.32		
Kyrgyzstan	**DDP**			2.67	2.8		12.18				
Malawi	**DDP**									2.92	3.6
Rwanda	**DDP**									2.79	2.79
Chile				4.4	3.2						
Dominican Republic					2.76						
Laos						21.36					
Peru				3.04	3.59						
Punjab, DGHS	**CIF**			2.43	3.05					2.43	2.87
Punjab, Tertiary Hospital	**CIF**			1.94						1.74	
Tamil Nadu			0.82								

a Procures insulin via a WHO-mediated group purchasing agreement referred to as the Small Island Developing States (SIDS) pooled procurement initiative.

For intermediate-acting human insulin, most available data concerned insulin isophane (NPH) in vial format (Table 5). The lowest price is observed in South Africa, where procurement is conducted through tendering. In contrast, the large price differential for cartridges between Laos and South Africa warrants further investigation, particularly regarding the Incoterms applied in Laos.

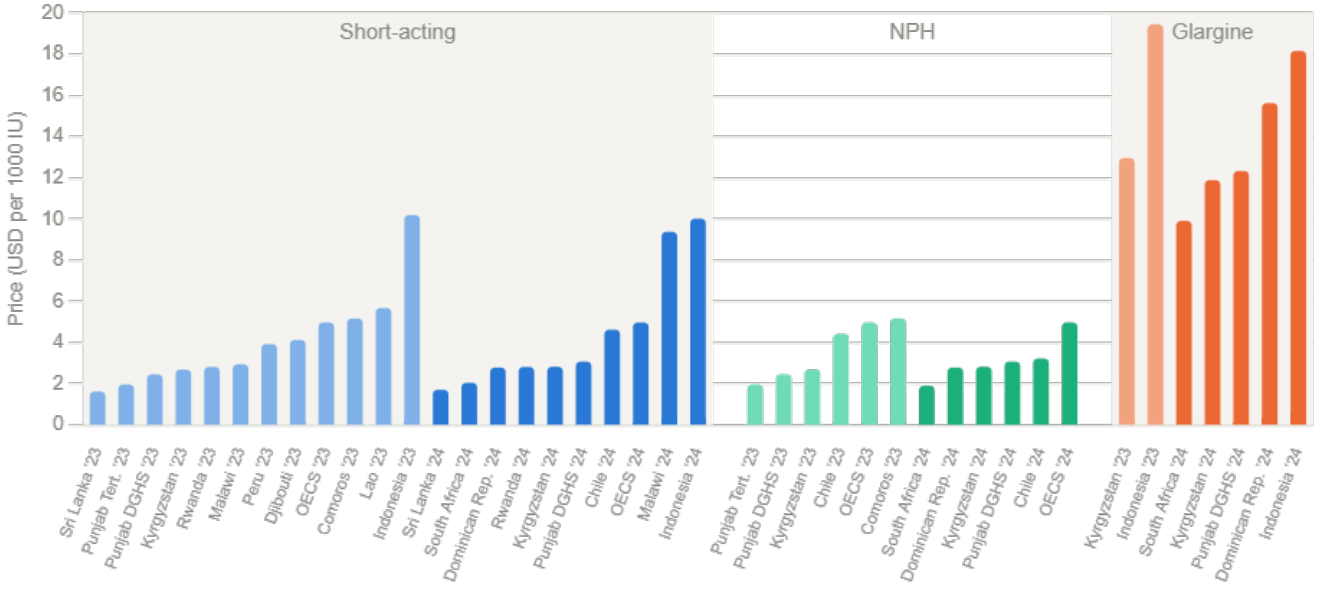
Table 6. Price comparison of long-acting analogue insulins degludec, detemir and glargine

	Incoterm	Insulin degludec				Insulin detemir				Insulin glargine			
		100 IU/ml, 3ml cartridge		100 IU/ml, 3ml prefilled pen		100 IU/ml, 3ml cartridge		100 IU/ml, 3ml prefilled pen		100 IU/ml, 3ml cartridge		100 IU/ml, 3ml prefilled pen	
		Price for 5 cartridges		Price for 1 pen		Price for 5 cartridges		Price for 1 pen		Price for 5 cartridges		Price for 1 pen	
		2023	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**	**2023**	**2024**
South Africa	**DAP**										14.82		
Indonesia	**DDP**							5.81	5.54			5.83	5.44
Kyrgyzstan	**DDP**					39.07	40.61			19.4	17.79		
Chile		75	66			15.6	14.6						
Dominican Republic									12.93				4.68
Peru				20.89									
Punjab, DGHS	**CIF**												3.69
Tamil Nadu					17.14								

Prices for long-acting analogue insulins (Table 6) show considerable variation even when similar Incoterms are used. Cartridges are procured at comparatively lower prices in South Africa (for glargine) and in Chile (for detemir) than in Kyrgyzstan. In Indonesia, prefilled pen prices are similar for both glargine and detemir. While prefilled detemir pens are priced substantially lower in Indonesia compared to the Dominican Republic, the reverse pattern is observed for prefilled glargine pens, which are priced lower in the Dominican Republic. Nonetheless, long-acting analogue insulins consistently remain higher priced than human insulins, implying that, within a fixed budget, fewer patients can be treated.

In Figure 1, prices for various insulin products and presentations have been standardized to 1000 IU (equivalent to 10 ml) to facilitate comparison of prices between them.

Figure 1. Price comparison of short-acting human insulin vs. intermediate-acting human insulin vs. long-acting analogue insulin (glargine)



The figure highlights substantial price differences within countries that procure human insulins in both vials and cartridges. In South Africa, the cartridge price is three times higher than the vial price, while in Kyrgyzstan it is more than twice as high. The introduction of long-acting analogue insulins, such as glargine, has also noticeably increased prices, as shown in both South-Africa and Kyrgyzstan.

Only Indonesia, Dominican Republic, Peru, Tamil Nadu and Punjab (DGHS) reported procuring prefilled pens (see Tables 5 and 6, and Figure 1). Since neither procured other formulations of the insulin for which they had prefilled pens, price comparisons between prefilled pens and different presentations (i.e., vials and cartridges) within each respective country or sub-national region were not possible.

Although many factors may affect procurement in cross-country comparisons, examining countries with similar Incoterms can still provide a useful indication of relative prices. The data in Figure 1 show that NPH prefilled pens in Indonesia, adjusted to 100 IU per 10 mL ($17.57 in 2023 and $17.73 in 2024), are more than six times the price of vials in Kyrgyzstan and nearly ten times those in South Africa. Compared with cartridges, prefilled pens in Indonesia are almost three times the price in South Africa and more than twice the price in Kyrgyzstan.

For glargine, prefilled pens in Indonesia are nearly twice as expensive as cartridges in South Africa and about 1.5 times more expensive than those in Kyrgyzstan. Figure 1 further shows that, as of 2023-2024, the uptake of analogue insulins in the surveyed countries remained limited. This may be partially explained by their recent inclusion in the WHO Model List of Essential Medicines but also the impact of their current prices in comparison to other presentations. It will be important to monitor in future surveys to see whether the use and prices of analogue insulins will shift and whether those shifts will narrow the current gap with human insulins across different presentations.

Table 7. Price comparison of oral antidiabetics gliclazide, glibenclamide and metformin

	Incoterm	Gliclazide				Glibenclamide		Metformin		
		30 mg controlled-release tablet		60 mg controlled-release tablet		5 mg tablet		500 mg tablet		
		Price for 100 tablets		Price for 100 tablets		Price for 100 tablets		Price for 100 tablets		
		2024	**2025**	**2024**	**2025**	**2023**	**2024**	**2023**	**2024**	**2025**
OECS	**CIP**	2.85		3.25				1.64	1.64	
South Africa	**DAP**						0.75		1.11	
Indonesia	**DDP**			20.76	19.83	1.8	1.54	1.17	1.1	
Malawi	**DDP**					0.22	0.28		0.69	
Rwanda	**DDP**			12.97		0.27		0.72	0.72	
Chile						0.02	0.02	0.33		
Punjab, DGHS	**CIF**							1.05	1.13	
Punjab, Tertiary Hospital	**CIF**					0.84	1.05	0.99		
Tamil Nadu		0.56					0.11		0.35	

Following the inclusion of gliclazide in the WHO Model List of Essential Medicines in 2013, its use is gradually increasing in several countries, particularly given its suitability for patients over the age of 65. However, glibenclamide remains widely procured at very low prices through public tenders. While the introduction of gliclazide generally raises the cost of oral treatment, this increase is manageable in most settings except Indonesia, where it is more significant. Metformin continues to be an lower cost option across all contexts.

Table 8. Price comparison of insulin syringes and pen needles

	Incoterm	Insulin syringe				Insulin pen needles
		0,5 ml (50 IU)	1 ml (100 IU)			
		Price for 100 syringes	Price for 100 syringes			Price for 100 needles
		2024	**2023**	**2024**	**2025**	**2024**
OECS	**CIP**			9.3		
South Africa	**DAP**	0.63		0.45		3.28
Indonesia	**DDP**		7.23			11.59
Kyrgyzstan	**DDP**	5.64		4.8		4.68
Rwanda	**DDP**		4.92	5.05		
Peru		10.5				
Punjab, Tertiary Hospital	**CIF**		7.39		9.67	

Except for Kyrgyzstan, insulin syringes are generally cheaper than pen needles (Table 8), which may contribute to a continued preference in many countries for vials over cartridges with reusable pens or prefilled pens. While procurement from distributors, along with logistics and freight costs may contribute to higher insulin syringe prices in Peru, Punjab (tertiary hospital), Kyrgyzstan, Rwanda and OECS compared to procurement from manufacturers in South Africa, outcomes suggest that exploring alternative suppliers could help secure more competitive prices. Similarly, differences in Incoterms and procurement sources (distributor/wholesaler versus manufacturer) may only partly account for the variation in insulin pen needle prices between Indonesia, Kyrgyzstan and South Africa.

Medical Devices

Table 9. Price comparison of blood glucose meters and strips

	Incoterm	Meters					
		Blood glucose meter for self-monitoring		Blood glucose meter for health facilities		Blood glucose meter strips	
		Price for 1 glucose meter		Price for 1 glucose meter		Price for 50 test strips	
		2023	**2024**	**2023**	**2024**	**2023**	**2024**
OECS	**CIP**			Free	Free	11.5	11.5
South Africa	**DAP**		Free				2.88
Indonesia	**DDP**			32.29	55.38	8.03	10.04
Malawi	**DDP**			4.82		9.48	6.51
Rwanda	**DDP**	3.58	3.58	3.58	3.58	7.16	7.16
Chile		5.6	4.82			0.1	
Punjab, Tertiary Hospital	**CIF**					2.62	

In several countries, blood glucose meters are provided free of charge. In South Africa, tendering processes have resulted in lower strip prices (Table 9). By contrast, prices in OECS (CIP), Indonesia (DDP), Malawi (DDP) and Rwanda (DDP) appear higher, and further analysis of procurement volumes could help clarify the underlying differences. Conversely, strip prices in Chile appear unusually low, raising questions about whether Incoterms or specific manufacturer agreements, such as bundled pricing with glucose meters, may be influencing these results. It should also be noted that countries procured different brands, which may contribute to variations in prices across settings. Further analysis is required to further clarify these results.

4. DISCUSSION

The following section reflects on the study outcomes, the design and use of the data collection tool, the overall data collection process, and the limitations that may have influenced the study.

Outcomes

The price data collected reveal substantial variation across diabetes-related products. For insulin, there are significant price differences between human insulins in vials and cartridges, with cartridge prices often two to three times higher than vial prices for both regular and NPH insulins. The lack of procurement data on short-acting human insulin prefilled pens suggests that these more patient-friendly formats are not yet prioritized in most countries.

Long-acting analogue insulins are consistently higher priced than human insulins, and prefilled pens remain the most expensive presentation compared to both cartridges and vials. For oral antidiabetic agents, countries and procurement agencies continue to procure glibenclamide rather than gliclazide, while metformin remains widely procured and consistently priced lower. Among medical devices, both delivery and monitoring devices, insulin syringes are generally more affordable than pen needles, and substantial price variation exists for blood glucose meters and test strips across countries, likely reflecting differences in manufacturer pricing agreements.

As part of its Defeat Diabetes strategy, Novo Nordisk introduced the Access to Insulin Commitment in 2017, providing low-priced human insulin to 76 low- and middle-income countries, and humanitarian organizations. Under this commitment, human insulin vials are offered at a guaranteed ceiling price of USD 3.00 per vial (ex-factory).[16] Analysis of national procurement data shows mixed outcomes. For short-acting human insulin, some countries (South Africa, Kyrgyzstan, Malawi in 2023; Rwanda, Sri-Lanka, Dominican Republic and Pakistan) achieved competitive prices through their procurement processes, while prices remained high in others (Comoros, Burkina Faso, Djibouti, Peru and Indonesia), which cannot be explained by Incoterms alone. For intermediate-acting human insulin, most countries secured prices below USD 3 using DAP or DDP incoterms, though Comoros paid higher CIP prices, suggesting limited benefit from the ceiling price offer. The procured products were not limited to Novo Nordisk products, as countries sourced human insulin from a variety of suppliers, including manufacturers, distributors and wholesalers. In 2023, the majority of procured short-acting and intermediate-acting insulin vials were produced by Novo Nordisk. However, only 25%–50% of all procured vials were sourced directly through Novo Nordisk. In 2024, approximately half of procured short-acting and intermediate-acting insulin vials were produced by Novo Nordisk, all of which were sourced directly through Novo Nordisk.

Overall, the dataset indicates that Novo Nordisk's USD 3 ceiling price can often be further reduced through transparent and efficient public procurement. In our dataset, countries procured insulin from a mix of sources, including Novo Nordisk and other manufacturers. While biosimilars can sometimes offer lower costs, they may also result in higher prices if countries are unaware of Novo Nordisk's commitment or face procurement inefficiencies. This highlights opportunities to improve insulin affordability through better-informed procurement strategies and increased awareness of available price options.

The most used Incoterm was DDP (27.8%), followed by CIP (16.7%) and CIF (11.1%), while DAP (5.6%) and CFR (5.6%) were reported less frequently. For 33.3% of the entries, the applicable Incoterm was unknown. As shown in Table 2 and defined by the International Chamber of Commerce, DDP places nearly all transport, insurance, and customs responsibilities on the supplier until delivery in the buyer's country, whereas DAP similarly shifts logistical responsibility to the supplier, but leaves import duties and taxes with the buyer. Under CFR, the seller covers the cost of sea transport to the destination port, while CIF additionally requires the seller to provide insurance during transit. In contrast, CIP obliges the supplier to arrange and pay for transport and insurance, but risk transfers earlier to the buyer once the goods are handed over to the carrier.

Overall, the predominance of DDP indicates a preference for supplier-managed delivery and reduced buyer-side logistical risk, with suppliers assuming responsibility for transport, custom clearance, and delivery to destination. This may reflect procurement preferences for more simplified import processes and predictable landed cost at the point of delivery. The use of DAP indicates partial transfer of import-related responsibilities to buyers, while CIF, CFR, and CIP reflect arrangements in which suppliers manage international freight to varying degrees, but risk and import responsibilities are transferred earlier in the supply chain.

While some of these price variations can be attributed to differences in Incoterms, currency fluctuations may be another potential factor that may have affected price changes. Seven countries used local currencies to procure health products: Pakistan, Rwanda, Peru, Kyrgyzstan, Indonesia, Malawi and South Africa. The consistent price increases observed in Pakistan are likely influenced by currency depreciation against the US dollar between 2023 and 2024, while Rwanda's largely stable prices reflect the use of multi-year framework contracts that shield most procurements from exchange-rate movements. In Peru, the slight price increase observed between 2023 and 2024 is unlikely to be driven by currency fluctuations, as the exchange rate remained relatively stable over this period. Kyrgyzstan showed modest price increases that may be partly currency-driven, and Indonesia experienced slight overall price reductions in line with the country's currency fluctuations, with a few product-specific exceptions. In Malawi, substantial price increases may be linked to a combination of strong currency depreciation and the use emergency procurement, whereas products paid in USD showed smaller price variation. For South Africa, lack of data supplied for 2023 prevents assessment of price changes over time.

However, Incoterms and currency fluctuations alone are unlikely to fully explain the observed price differences, as several additional factors may also play a significant role. These may include the source of procurement, differential manufacturer pricing strategies linked to the economic status of purchasing countries, bundled pricing arrangements, the use of emergency procurement, and inefficiencies within procurement and supply chain systems. No clear relationship was observed between prices and country income level in the available dataset. Further research is therefore needed to better understand the relative contribution of these factors and to inform policies aimed at improving affordability and equitable access to diabetes-related products.

Data Collection Process

The development and data collection process of the price survey highlighted some challenges and limitations that may have affected participation.

One of the key lessons we took away from this study was how the absence of formal institutional backing can influence participation. Without endorsement from key actors, such as the WHO, the survey lacked the visibility and legitimacy often required to secure widespread participation. Although WHO regional offices (EMRO, AFRO, WPRO) supported the process by sharing contacts and introducing the initiative to select country offices, these efforts resulted in only a limited number of country responses. Reflections from one of our respondents reinforced these points, noting that formalized or institutionally backed surveys are generally more effective at reaching the right decision-makers and encouraging participation.

Structural barriers further increased the difficulties of collecting data. As UNIGE and HAI are neither donor agencies nor traditionally associated with these surveys, they may not have been viewed as having the mandate or authority to request procurement data. Unlike donor entities, such as Global Fund with its Price & Quality Reporting mechanism, UNIGE lacked leverage to condition data reporting on allocation of funds, limiting its influence.[17]

A parallel can be drawn with the Management Sciences for Health (MSH) Medical Products Price Guide (formerly known as International Drug Price Indicator Guide), which was published annually from 1986 and supported by the WHO from 2000. Despite this long-standing institutional backing, the Guide ceased publication in 2024, as it had been unable to update its data since 2015, illustrating that even well-established surveys require continuous engagement and resources to remain sustainable.[18] Building on this insight, we believe that sharing procurement price information may be more effective within groups of countries or entities that already have established agreements to strengthen procurement practices, such as the Pharmaceutical Pricing and Reimbursement Information (PPRI) network[19], the WHO Western Pacific Regional Office (WPRO) initiated Price Information Exchange for Medicines (PIEMEDS), or information sharing platforms currently developed in various Regional Economic Communities (RECs) in Africa.

Finally, successful data collection in this context extends beyond simply developing and distributing a survey. Making meaningful use of procurement price data requires a deeper understanding of the country-specific context, market dynamics, and the broader factors that influence prices. Without this contextual knowledge, data risks being misinterpreted or of limited value to respondents. Therefore, sustainable data collection of this nature demands a supporting infrastructure, such as sufficient human resources, analytical capacity, contextual expertise, and institutional buy-in.

Data Collection Tool

The use of an online data collection tool, in this case Jotform, presented both advantages and disadvantages for the purpose of this study. Its intuitive interface and secure data handling were clear strengths, facilitating ease of use for respondents. However, several limitations became apparent. The tool's design, despite being developed through multiple rounds of internal review and piloted with a procurement agency, may have been too detailed for agencies without readily accessible or standardized procurement data. In addition, the layered structure of the survey prevented direct analysis within the platform, requiring a time-consuming transfer of data to Microsoft Excel to perform the analysis. The rigid architecture further constrained data granularity by permitting only

a single procurement entry per product per year, while the absence of a downloadable PDF limited the accessibility and shareability of the survey. Finally, the cost of obtaining a license for the tool represents a practical consideration for future studies and may limit the replicability of this approach for organizations with more limited resources.

These internal reflections were partially echoed by three respondents who found the tool relatively easy to complete, particularly since they had direct access to the necessary data through their own Enterprise Resource Planning systems (integrated software systems that manage procurement planning) or internal database. Two respondents suggested that Microsoft Excel might have been a more familiar and convenient platform for data collection, especially since the procurement price data were originally extracted from Microsoft Excel. In response to this feedback, an offline Excel-based version of the survey was subsequently developed as an alternative and shared with respondents that preferred providing data this way. The respondents also provided useful feedback on potential areas for improvement, emphasizing that the tool's current structure may not fully capture the nuances needed for accurate cross-country price comparisons. Key procurement details, such as whether prices include VAT or logistics costs, the duration of contracts, and the number of registered suppliers, were not captured, limiting the interpretability of the data. Usability enhancements were also suggested. These included providing a confirmation message upon successful submission of data, as well as generating a summary sheet that would allow users to review the information they submitted.

Overall, these reflections suggest that successful data collection depends not only on survey design but also on the perceived legitimacy of the executing organization and the incentives for respondents to engage. The success of future studies will depend on closer alignment with existing procurement data collection mechanisms, simplification of the tool's structure, and strategic collaboration with regional blocs or multi-country initiatives where trust and shared goals around transparency already exist. Enhancing the perceived legitimacy of the survey through official endorsements, partnerships, or integration into broader policy efforts will also be essential to improve participation, data quality and sustainability of such price sharing mechanism.

Limitations

The analysis faced several key limitations that shaped its scope and interpretation. Although procurement data were requested for both 2023 and 2024, respondents could provide information for only a single purchase order per year due to the survey design, even when multiple purchases may have occurred. This differs from the methodology used in the 2025 ACCISS (HAI) report[16], where data on all suppliers and awarded quantities for the year were collected. As a result, while some volume data were available, they did not capture total annual procurement volumes, and publishing these partial volume data could be misleading with respect to price. Confidentiality constraints further limited access to supplier-level data, and the lack of publicly available or reliable contact information for national procurement entities may have restricted outreach, potentially reducing engagement with relevant stakeholders. These factors may have influenced the analysis, and readers are advised to interpret the findings with these considerations in mind.

5. CONCLUSION

Overall, the analysis demonstrates a high degree of price variability for diabetes-related products. Such price differences can be attributed to a complex interplay of procurement, financial, market and supply chain factors. Gaining a clearer understanding of how these factors affect prices will be important for developing policies and procurement strategies aimed at improving affordability and ensuring more equitable access to diabetes-related products.

This exercise in collecting procurement price data for diabetes-related products has also demonstrated that data collection remains a complex and challenging process. Despite commitments made under World Health Assembly (WHA) Resolutions 72.8 and 74.4 to increase price transparency and reduce the burden of noncommunicable diseases through strengthened diabetes prevention and control, many countries remain reluctant to share procurement prices for diabetes products. While limitations in the design of the data collection tool may have partially contributed to the response rate, as discussed in the previous section, this experience suggests that future price-sharing initiatives would benefit from stronger institutional backing. Establishing a regular, country-requested data collection mechanism could help streamline data submission, improve data quality, and enable more robust analysis.

6. LESSON LEARNED

Data Collection Survey	Access to Diabetes Products
Institutional support is essential. Support is needed from international organizations for visibility and legitimacy to secure widespread participation. The same time, countries must see the value-added: sharing prices can support more efficient and effective procurement.	**Prices vary widely across countries**. Differences may stem from procurement, financial, market and supply chain factors.
Context matters. Collecting prices alone is not sufficient. Effective use requires resources and knowledge of country-specific contexts, market dynamics, and supporting infrastructure.	**Transparency supports better access.** Making price information available can help countries benchmark, negotiate, and identify opportunities to improve affordability and equitable access. Further, price transparency can provide clarity in understanding price markups along the supply chain.
Continuous engagement and resources are needed to maintain surveys. This includes sufficient human resources, analytical capacity, contextual expertise, and institutional support, while sharing price data may work best among countries or entities with established agreements.	

7. ENDNOTES

1. Ewen M, Joosse H-J, Beran D, & Laing R. Insulin prices, availability and affordability in 13 low-income and middle-income countries. BMJ Global Health. 2019;4:e001410.
2. Ewen M, Lepeska M, Abdraimova A, Besançon S, Cham NTP, Dunganova A, et al. Availability, prices and affordability of self-monitoring blood glucose devices: surveys in six low-income and middle-income countries. BMJ Public Health. 2025;3(1):e001128.
3. NCD Policy Lab. Documenting global insulin shortages and stockouts 2023–2025: Comprehensive overview using various data sources. 2025.
4. World Health Organization. The WHO Global Diabetes Compact.
5. NCD Policy Lab. Access to insulin no longer just an issue for low-and middle-income countries: Should Switzerland be worried? 2025.
6. Beran D, Lazo-Porras M, Mba CM, & Mbanya JC. A global perspective on the issue of access to insulin. Diabetologia. 2021;64:954–962.
7. Resolution WHA72.8. Improving the transparency of markets for medicines, vaccines, and other health products. 2019.
8. Resolution WHA74.4 Reducing the burden of noncommunicable diseases through strengthening prevention and control of diabetes. 2021.
9. World Health Organization. Model List of Essential Medicines - 23rd list. 2023.
10. World Health Organization. The selection and use of essential in vitro diagnostics. 2022.
11. World Health Organization. Priority Medical Devices List for the Management of Cardiovascular Diseases and Diabetes. 2021.
12. XE was used as the online currency converter tool. Available from: https://www.xe.com/nl/currencytables/
13. More information on 2020 Incoterms is available from: https://business.gov.nl/international/international-transport/incoterms/
14. World Bank country classifications by income level for 2024-2025. Available from: https://blogs.worldbank.org/en/opendata/world-bank-country-classifications-by-income-level-for-2024-2025
15. ACCIS & HAI. Government Procurement of Insulin: Case Studies in 11 Low- And Middle-Income Countries. 2025.
16. Novo Nordisk. Defeat Diabetes.
17. The Global Fund to Fight AIDS, Tuberculosis and Malaria. Sourcing & Management of Health Products: Price & Quality Reporting.
18. Management Sciences for Health. International Medical Products Price Guide.
19. Vogler S, Windisch F, Knoll V, Kieslich K. Pharmaceutical pricing and reimbursement information (PPRI): evolution and impact of a policy network over two decades. Journal of Pharmaceutical Policy and Practice. 2026 Dec 31;19(1):2670697.

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