



International Diabetes Federation

**Report on the International Insulin
and Diabetes Supplies Survey on
Cost and Availability 2006**

**Task Force on Insulin, Test Strips and
Other Diabetes Supplies**

Table of Contents

| | |
|--|----|
| Executive Summary | 3 |
| Summary of key findings | 3 |
| 1. Introduction | 5 |
| 2. Methodology | 6 |
| Limitations | 6 |
| 3. Findings | 8 |
| 3.1.1 Access to insulin | 8 |
| 3.1.2 Reasons for lack of access to insulin | 9 |
| 3.1.3 People who require insulin but cannot obtain it | 10 |
| 3.1.4 Taxes on insulin | 11 |
| 3.1.5 Provision of insulin free or at subsidized prices | 12 |
| 3.1.6 Where insulin can be bought | 12 |
| 3.1.7 Cost of a 10ml vial of insulin | 12 |
| 3.2.1 Strengths of insulin available | 19 |
| 3.2.2 Types of insulin available | 19 |
| 3.2.3 Proportion of animal and human insulin used | 20 |
| 3.3.1 Access to syringes and needles | 21 |
| 3.3.2 Reasons for lack of access to syringes and needles | 22 |
| 3.3.3 Provision of syringes and insulin pens free or at subsidized prices | 23 |
| 3.3.4 Who provides the subsidies for syringes, needles and insulin pens | 24 |
| 3.3.5 Entitlement to free or subsidized insulin pen | 27 |
| 3.3.6 Prices of syringes, needles and pens | 27 |
| 3.4.1 Monitoring diabetes control | 31 |
| 3.4.2 Types of blood glucose materials used | 31 |
| 3.4.3 Reasons for not testing | 31 |
| 3.4.4 Where testing strips and blood glucose meters can be bought ... | 32 |
| 3.4.5 Cost of urine and blood glucose test strips, and blood glucose meters | 32 |
| 4. Conclusion | 35 |
| Appendices | 37 |
| Appendix 1 Survey Questionnaire | 37 |
| Appendix 2 Types of insulin available in the different countries | 47 |

Executive Summary

The International Diabetes Federation (IDF) Task Force on Insulin, Test Strips and Other Diabetes Supplies has as its aim to provide support to member associations with regard to access to, and availability and affordability of insulin, test strips and other diabetes supplies at national and international levels.

In line with this remit the Task Force sent out a survey questionnaire to diabetes associations in 50 countries in the seven IDF Regions. Letters were initially sent to WHO Regional Offices to invite them to collaborate on the survey by identifying countries with poor access to insulin and diabetes supplies. Diabetes associations were also invited to send the questionnaire to their respective Ministries of Health to obtain official information. In total, completed questionnaires were received from 35 countries, of which 26 came from diabetes associations and nine from Ministries of Health, Central Medical Supplies and Pharmaceutical Services.

Summary of key findings

Access

- Africa on the whole had the lowest level of access to insulin for people with type 1 diabetes.
- Cambodia, Côte d'Ivoire, Mali, Nepal and Togo reported that access to insulin for people with type 1 diabetes was less than 25% of the time.
- Access to insulin for people with type 2 diabetes is similar to type 1 diabetes.
- Main reason for lack of access to insulin was that insulin was expensive.
- People who required insulin were able to obtain it on a continuous basis in only seven countries.
- Human insulin was used more widely than animal insulin.
- The AFR region reported the most problems with regards to access to syringes, with the main one being the total supply of syringes being less than that required.
- Three countries reported that people with diabetes 'Rarely' were able to access needles and syringes.

Availability

- 78% of countries responding to the survey provided insulin for free to people with diabetes while 55% provided insulin at a subsidized price.
- Insulin was most widely available in private pharmacies, followed by public pharmacies, in countries where respondents gave an answer.
- In almost all countries, 100IU strength of insulin was available while 12 of the countries had 40IU and two had 80IU as well.
- Nigeria reported 17 different types of insulin available, whereas Syria only two.

Affordability

- Half of the countries surveyed had taxes on insulin.
- The most expensive insulin was reported in the EUR Region in all three sectors (public, private and NGO) with a price at USD42 per 10ml vial in Turkey.
- In the AFR Region the maximum price for insulin in the public sector was USD34 per 10ml vial in the Congo.
- There were 34 initiatives at national government level to provide syringes, needles and pens at subsidized prices or for free.
- The average price for all responding countries for 100 syringes and needles was USD12.10.
- The main reason for not testing reported from different countries was cost of supplies.
- The average cost for 100 urine test strips in the public sector was USD12.50.

1. Introduction

Banting and Best's discovery of insulin at the University of Toronto in 1921 is often hailed as a medical miracle. This discovery meant that the draconian diets, horrible complications and death that people with this condition faced were now a thing of the past. However, as we celebrate 85 years since insulin's discovery and the many people it has helped over the years, lack of access to insulin still leads to much suffering in many of the world's poorest countries.

Countries may face both acute and chronic shortages of insulin. This may be due to many factors, such as the cost of insulin, poor management of tenders and medicines supply, conflict and natural disasters. In either case lack of access to a continuous supply of insulin will lead to acute and long-term complications and unfortunately death.

Insulin is not enough however, and access to syringes and proper testing equipment are just as important. Access to these essential tools is also problematic and adds to the challenges that people with type 1 diabetes face in many developing countries. The impact of this lack of access means that life expectancy of children in sub-Saharan Africa with type 1 diabetes can be as low as one year. This is in stark contrast to the developed world where people with the same condition can expect to live close to normal life expectancies.

The International Diabetes Federation (IDF) Task Force on Insulin, Test Strips and Other Diabetes Supplies has as its aim to provide support to member associations with regard to access, affordability and other issues relating to insulin, test strips and other diabetes supplies at national and international levels.

Several initiatives have been developed to address the lack of access to insulin and supplies in many countries and to try to overcome the disparity in access to essential medication and tools. However, these actions are but a drop in the ocean of programmes needed to help people with diabetes obtain lifesaving insulin and equipment on a continuous basis. It is the aim of the Task Force to call attention to the obstacles to access to insulin, syringes and testing equipment identified in this survey, and to assist member associations in those countries to find solutions to overcome these barriers.

2. Methodology

The Task Force sent out a survey questionnaire to diabetes associations in 50 countries in the seven IDF Regions, which were selected in collaboration with the Regional Chairs. The selected countries were seen to have poor access to insulin and the data for some regions may not be representative for the whole region.

This is the fourth survey carried out by the Task Force. The 2006 survey differs from earlier surveys in that it covers a limited number of countries which were selected based on a specific criterion. It was decided to carry out a smaller and more targeted survey as previous surveys had met with low response rates. At the same time many developing countries which were thought to have poor access to insulin and diabetes supplies did not participate in the earlier surveys. It was therefore decided to focus on countries where the need was seen to be greater and where follow up could be carried out with the limited resources of the Task Force. Given the selective nature of this survey, it was not possible to compare the results of this survey with previous ones.

As previous surveys were limited by their reliability, it was felt that reliability could be improved if the survey questionnaire were completed by an official source such as the Ministry of Health. The Task Force Chair together with the appropriate IDF Regional Chair wrote to WHO Regional Offices inviting them to collaborate on the survey. They were invited to identify the countries to be surveyed as well as suggest names of officials who could be approached. Only the WHO African Regional Office accepted the invitation to collaborate.

At the same time, IDF Regional Chairs were requested to identify a maximum of five countries (10 in the African Region) which were thought to have poor access to insulin and diabetes supplies. The diabetes associations in the selected countries were then invited to send the questionnaire to their respective Ministries of Health to obtain official information or to identify an appropriate person to whom the questionnaire could be sent.

Questionnaires were sent to 50 countries. A copy of the questionnaire is attached as Appendix 1. In total, completed questionnaires were received from 35 countries, of which 26 came from diabetes associations and nine from official sources such as Ministries of Health. This was a response rate of 70%, an improvement over the 2003 survey response of 50%. Respondents from the diabetes associations were contact persons in the IDF database while those from official sources had been identified by either the Regional Chair or the diabetes association.

Limitations

During the analysis of the data many limitations to the survey became apparent. These questionnaires were completed by, in most cases, one individual and were based on their experience with regards to diabetes in their country. Also the wording of some questions may have led to confusion and therefore poor results.

In some instances, the responses given by a respondent were inconsistent, while in others the responses were inconsistent with the known reality of a particular country.

The data for some regions may not be representative for the whole region because of the selection criterion (only countries seen to have poor access to insulin and diabetes supplies). The data should therefore be interpreted with caution. The results for many questions are presented by region to facilitate the presentation of results and should not be interpreted as being representative of that region.

Inconsistencies, where apparent, are pointed out in this report. In spite of these limitations, the survey results provide us with a picture of access to insulin and diabetes supplies in many countries with limited resources for healthcare.

List of countries that participated in the 2006 survey

Africa (AFR): Congo, Côte d'Ivoire, Democratic Republic of Congo, Madagascar, Mali, Nigeria, Senegal, Seychelles*, Togo and Uganda*.

Eastern Mediterranean and Middle East (EMME): Egypt, Kuwait, Pakistan and Syria.

Europe (EUR): Belarus, Poland, Turkey and Uzbekistan.

North America (NA): Barbados*, British Virgin Islands, Jamaica and Mexico*

South and Central America (SACA): Brazil*, Costa Rica*, Guatemala* and Paraguay*.

South-East Asia (SEA): Bangladesh, Maldives*, Nepal and Sri Lanka.

Western Pacific (WP): Cambodia, China, Mongolia, Philippines and Vietnam.

*official sources: Ministry of Health, Joint Medical Stores, Pharmaceutical Services

3. Findings

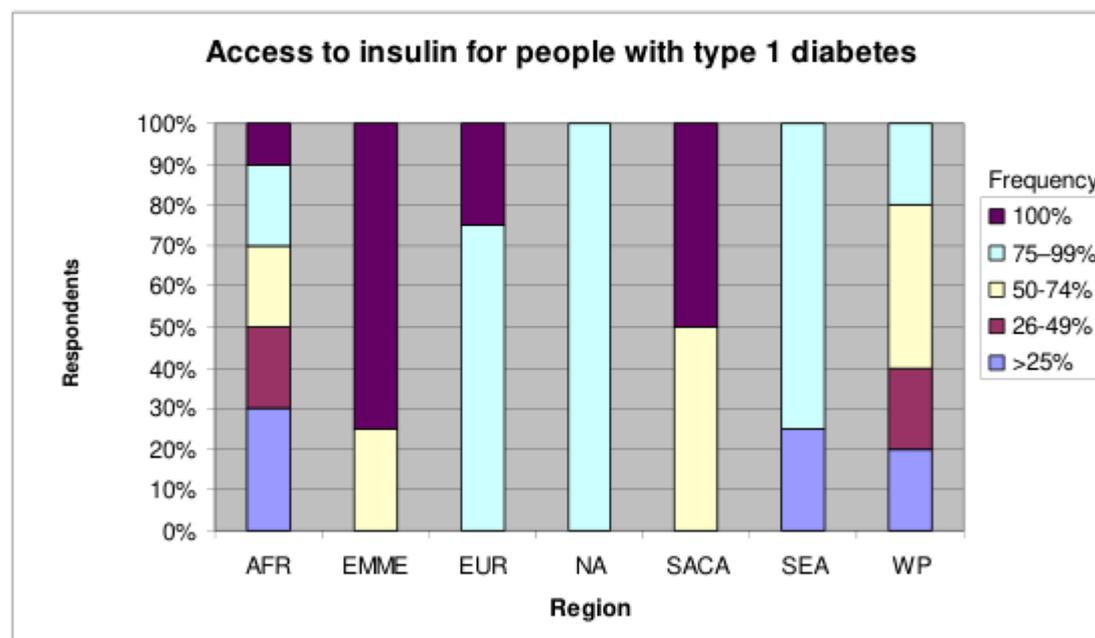
3.1.1 Access to insulin

Insulin is essential for all people with type 1 diabetes and can help improve outcomes for people with type 2 diabetes. Respondents to the survey were asked about the access to insulin that people with type 1 and type 2 diabetes had in their country.

Africa on the whole had the lowest level of access to insulin for type 1 diabetes with half of the respondents saying that people with type 1 diabetes could only access insulin less than 50% of the time. The same was true for 40% of the countries responding in the Western Pacific Region and 25% of countries in the South-East Asian Region. Cambodia, Côte d'Ivoire, Mali, Nepal and Togo were countries that reported that access to insulin for people with type 1 diabetes was less than 25% of the time.

Figure 1 gives the comparison for the different regions with regards to frequency of access to insulin for people with type 1 diabetes.

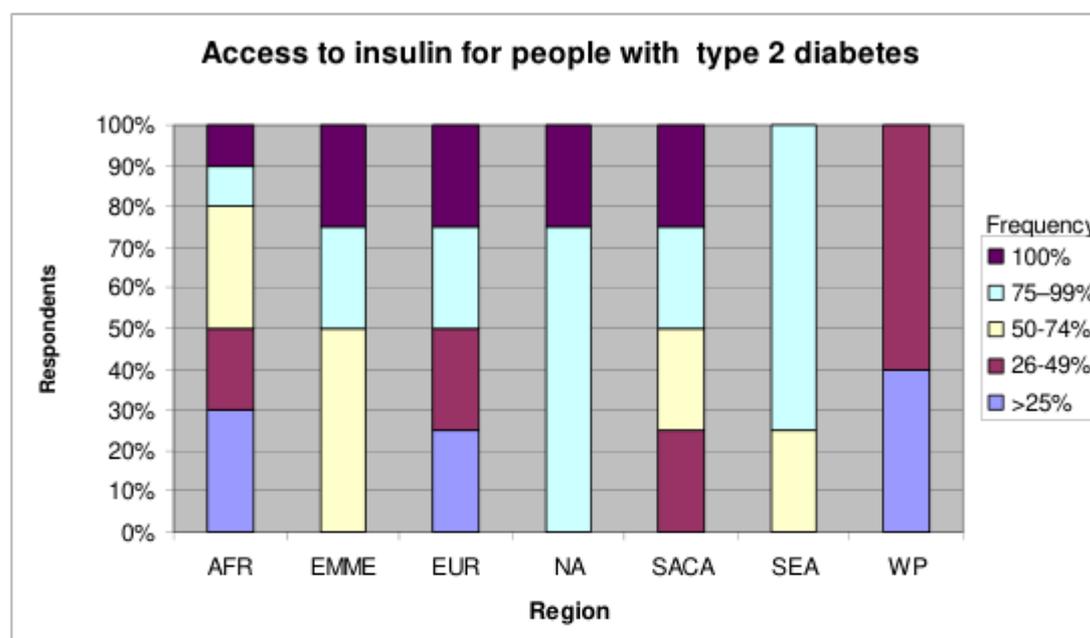
Figure 1 Access to insulin for people with type 1 diabetes



The Western Pacific Region on the whole had the lowest level of access to insulin for type 2 diabetes with 100% of respondents saying that people with type 2 diabetes could only access insulin less than 50% of the time. The same was true for 50% of countries in the European and African Regions, and 25% of countries from the South and Central America Region. Cambodia, Côte d'Ivoire, Mali, Togo, Turkey and Vietnam were countries that reported that access to insulin for people with type 2 diabetes was less than 25% of the time.

Figure 2 gives the comparison for the different regions with regards to frequency of access to insulin for people with type 2 diabetes.

Figure 2 Access to insulin for people with type 2 diabetes



Access to insulin for people with type 2 diabetes is similar to those with type 1 diabetes. For people with type 1 diabetes, 23 respondents reported access to insulin greater than 50% of the time, for type 2 diabetes this figure is 22. Five countries reported access less than 25% of the time for type 1 diabetes, this figure is six for type 2 diabetes. Africa remains the region where access is most problematic.

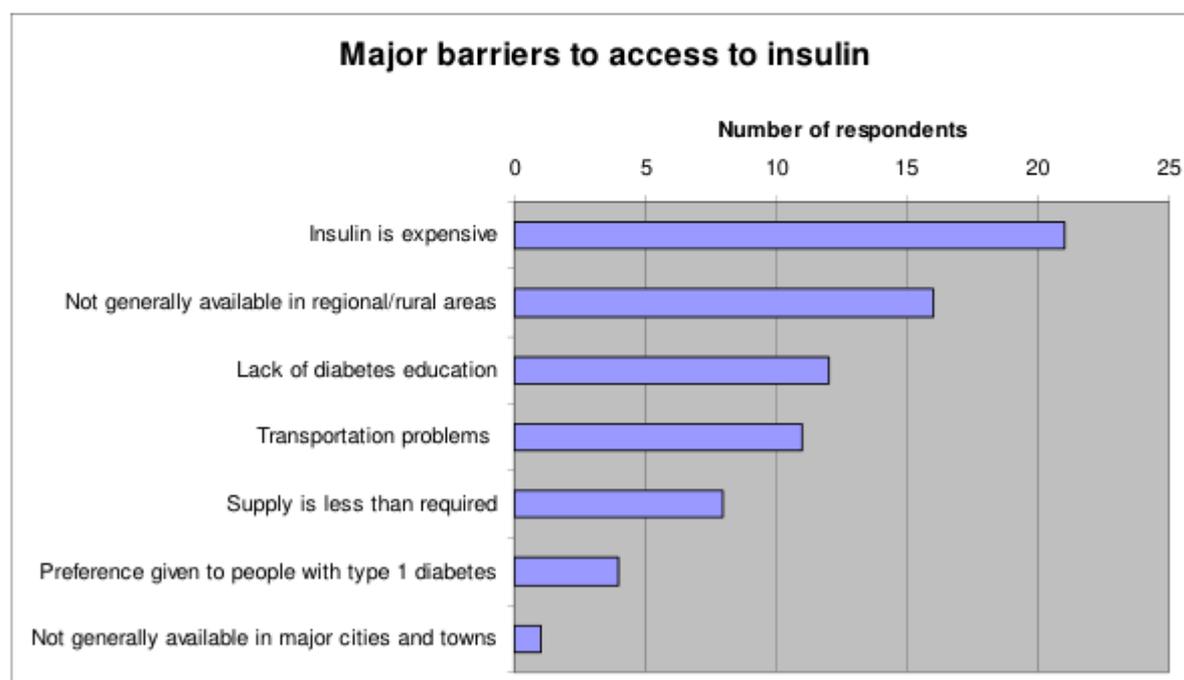
3.1.2 Reasons for lack of access to insulin

This survey confirmed once again that cost was a significant barrier to access to insulin. 'Insulin was expensive' was cited by the majority of respondents as the main reason for lack of access to insulin, and was also the only barrier present in all the regions (see Table 1). This was followed by unavailability in regional/rural areas, lack of diabetes education and transportation problems for people collecting insulin as a problem respectively (see Figure 3). Other barriers mentioned included the difficulty in finding animal insulin and storage issues.

Table 1 Main barriers to access to insulin

| Region | Number of countries reporting the following reasons for lack of access to insulin | | | | | | |
|--------------|---|--|--|---|----------------------------|----------------------|--|
| | Insulin is not generally available in major cities and towns | Insulin is not generally available in regional/rural areas | The total supply of insulin is less than the amount required | Transportation problems faced by people with diabetes in collecting insulin | Lack of diabetes education | Insulin is expensive | Insulin is available, but preference is given to people with type 1 diabetes |
| AFR | 0 | 7 | 4 | 5 | 2 | 7 | 0 |
| EMME | 0 | 0 | 0 | 0 | 1 | 2 | 2 |
| EUR | 0 | 0 | 2 | 0 | 3 | 2 | 2 |
| NA | 0 | 0 | 0 | 1 | 2 | 1 | 0 |
| SACA | 0 | 2 | 0 | 0 | 0 | 2 | 0 |
| SEA | 0 | 3 | 0 | 3 | 0 | 4 | 0 |
| WP | 1 | 4 | 2 | 2 | 4 | 3 | 0 |
| Total | 1 | 16 | 8 | 11 | 12 | 21 | 4 |

Figure 3 Main barriers to access to insulin



3.1.3 People who require insulin but cannot obtain it

Respondents were asked the percentage of people in their respective countries who required insulin but could not obtain it due to high cost. In only seven countries could all people who required insulin obtain it on a continuous basis. At the other end of the spectrum there were no countries which reported a complete lack of access by people who required insulin (see Table 2).

In Uzbekistan 76-99% of people requiring insulin were unable to afford it. Seven countries reported that 50-75% of people needing insulin were not able to afford

it and in six countries 25-49% of people were unable to access insulin because of too high a cost (see Table 2). These results again highlight that cost is a major barrier to access compounded by other factors discussed above.

Table 2 Percentage of people with diabetes unable to access insulin because it is too expensive

| Region | Country | Percentage of people unable to access insulin because it is too expensive | | | | | |
|--------------|------------------------------|---|-----------|----------|----------|----------|----------|
| | | 0% | 1-24% | 25-49% | 50-75% | 76-99% | 100% |
| AFR | Congo | | | | X | | |
| | Democratic Republic of Congo | | | | X | | |
| | Côte d'Ivoire | | | | X | | |
| | Madagascar | | | | X | | |
| | Mali | | | X | | | |
| | Nigeria | | X | | | | |
| | Senegal | | X | | | | |
| | Seychelles* | X | | | | | |
| | Togo | | | | X | | |
| | Uganda* | | | X | | | |
| EMME | Egypt | | X | | | | |
| | Kuwait | X | | | | | |
| | Pakistan | | X | | | | |
| | Syria | | X | | | | |
| EUR | Belarus | X | | | | | |
| | Poland | X | | | | | |
| | Turkey | | X | | | | |
| | Uzbekistan | | | | | X | |
| NA | Barbados* | | X | | | | |
| | British Virgin Islands | | X | | | | |
| | Jamaica | | X | | | | |
| | Mexico* | X | | | | | |
| SACA | Brazil* | X | | | | | |
| | Costa Rica* | X | | | | | |
| | Guatemala* | | X | | | | |
| | Paraguay* | | | X | | | |
| SEA | Bangladesh | | | X | | | |
| | Maldives* | | X | | | | |
| | Nepal | | | X | | | |
| | Sri Lanka | | | | | | |
| WP | Cambodia | | X | | | | |
| | China | | X | | | | |
| | Mongolia | | | | X | | |
| | Philippines | | | | X | | |
| | Vietnam | | | X | | | |
| Total | | 7 | 13 | 6 | 7 | 1 | 0 |

*official source

3.1.4 Taxes on insulin

The cost of insulin (and therefore the ability to afford it or not) to people with diabetes is determined, among other factors, by the selling price of the manufacturer, shipping and insurance costs, custom duties and any internal

mark-ups on medicines and other value added taxes. Insulin is on the WHO essential drug list and therefore should not be subjected to any taxes, but this is often not the case; 55% of countries surveyed had taxes on insulin. These taxes were applied to both imported and locally produced insulin. The maximum percentage of tax on imported insulin was 30% in Mongolia, with an overall average of 13%. For locally produced insulin the maximum percentage of tax was 35% in Brazil and the average was 20.5%.

3.1.5 Provision of insulin free or at subsidized prices

In about half of the responding countries people with diabetes could purchase insulin at a subsidized price while insulin was provided free in about three-quarters of the countries. It should be noted that in spite of this, many respondents also indicated that the high cost of insulin was a barrier to access in their countries. Although this might seem inconsistent, one possible explanation could be that free or subsidized insulin was available only to particular groups. It could also indicate that while insulin may be available, it is not always accessible to people with diabetes because of reasons other than cost such as transportation problems in collecting the insulin.

Subsidized and free insulin can be found in different sectors of each country (see Table 3). Subsidies and free insulin were provided by a variety of organizations, both international and national, faith-based, diabetes associations and the government.

Table 3 Provision of free or subsidized insulin

| Number of countries providing: | National Governments | Regional Governments | Non-governmental organizations |
|---------------------------------------|-----------------------------|-----------------------------|---------------------------------------|
| Free insulin | 10 | 4 | 4 |
| Subsidized insulin | 6 | 4 | 4 |
| Free and subsidized insulin | 5 | 1 | 3 |

3.1.6 Where insulin can be bought

Insulin could be bought in public pharmacies in 83% of countries surveyed, 100% in private pharmacies, 66% in diabetes associations and 40% in charities. Knowing where insulin can be bought is important, as this will have an impact on the price of insulin for the person with diabetes.

3.1.7 Cost of a 10ml vial of insulin

In all regions the least costly insulin could be found in the public sector (see Figure 4). Insulin was available from non-governmental organizations (NGOs) in four regions (AFR, EMME, EUR and SACA) and in three out of four regions it was the second cheapest source, indicating the potential this sector has in providing affordable insulin. In the EUR Region, however, insulin from the NGO sector was actually the most expensive on average.

The most expensive insulin was found in the EUR region in all three sectors with a price of USD42 per 10ml vial in Turkey. In the AFR region the maximum price for insulin in the public sector was USD34 per 10ml vial in the Congo.

The largest range in price was also found in the AFR region with Senegal having a price of USD2.50 in all sectors and Congo having a price of USD34 in the public sector, Madagascar a price of USD36 in the private sector and Nigeria a price of USD20 in the NGO sector.

Table 4 details the median and price range for insulin in the three sectors in the different regions. Figures 5 to 11 present these results in a visual manner for each region.

Table 4 Median (Range) of price in different sectors (USD)

| Region | Median (Range) of price in different sectors (USD) | | |
|-------------|--|-----------------|-----------------|
| | Public | Private | NGO |
| AFR | 10 (2.50-34) | 11.10 (2.50-36) | 4.50 (2.5-20) |
| EMME | 5 (0-7.70) | 13 (5-14) | 5 (5) |
| EUR | 12.50 (0-42) | 16 (15-42) | 42 (42) |
| NA | 14 (1-15) | 18 (15-25) | - |
| SACA | 3.40 (0-7) | 17 (14-20) | 11.50 (9-14.10) |
| SEA | 5 (4.50-5.60) | 8.50 (5.80-14) | - |
| WP | 9.50 (6-11.60) | 10 (6-21.40) | - |

Figure 4 Average prices for 10ml vial of insulin (USD)

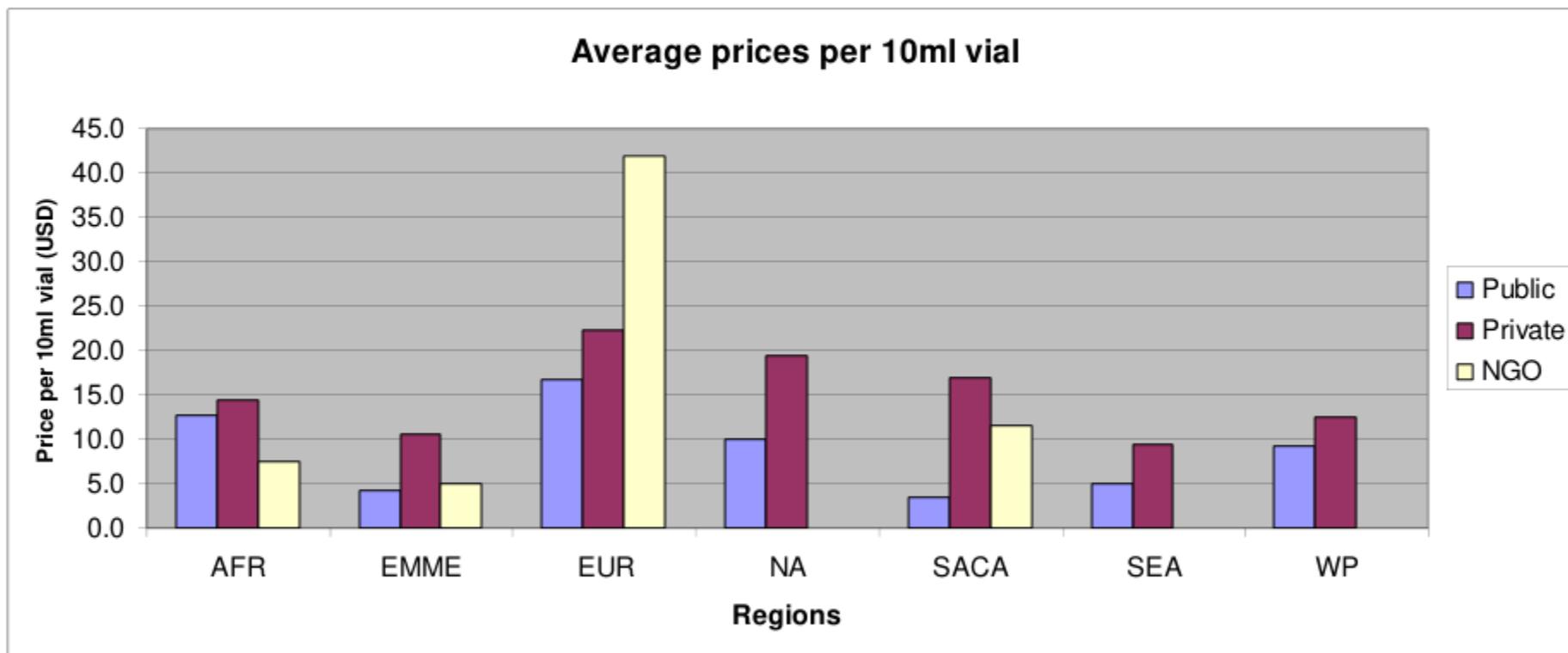


Figure 5 AFR Region: average, median, maximum and minimum price for a 10ml vial of insulin (USD)

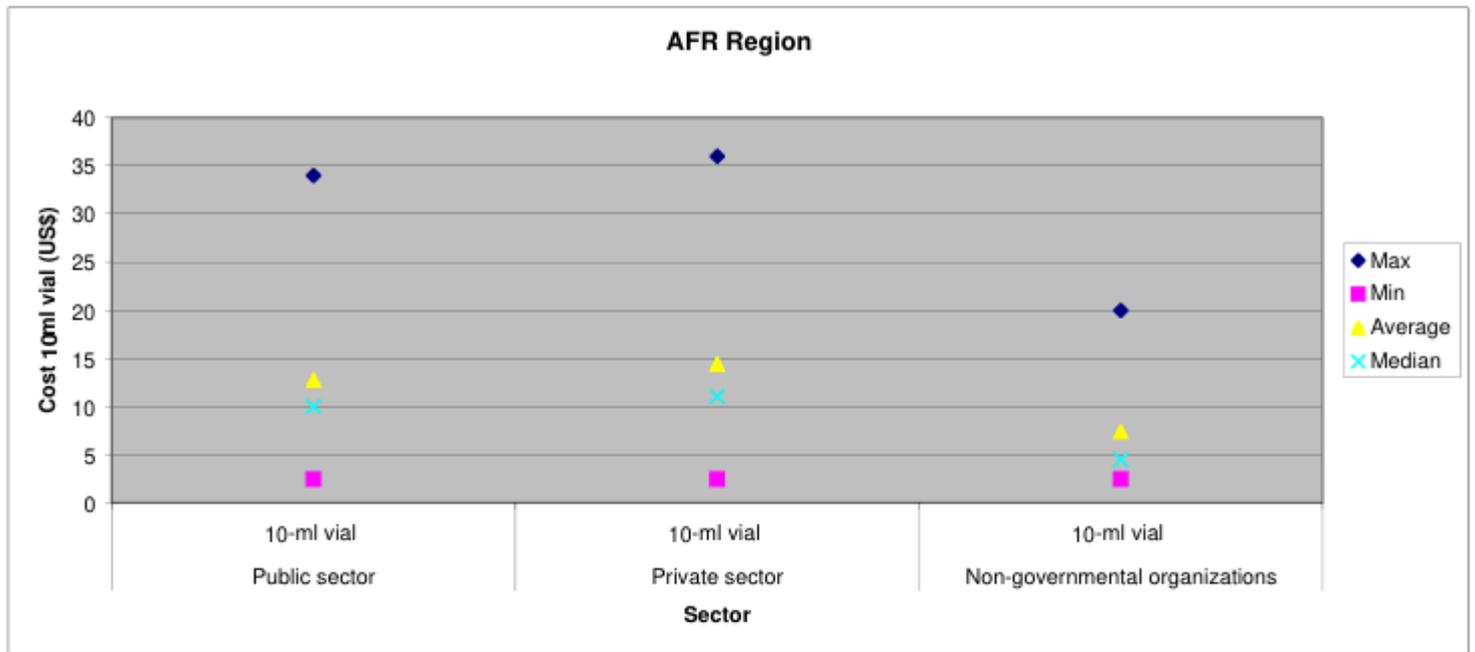


Figure 6 EMME Region: average, median, maximum and minimum price for a 10ml vial of insulin (USD)

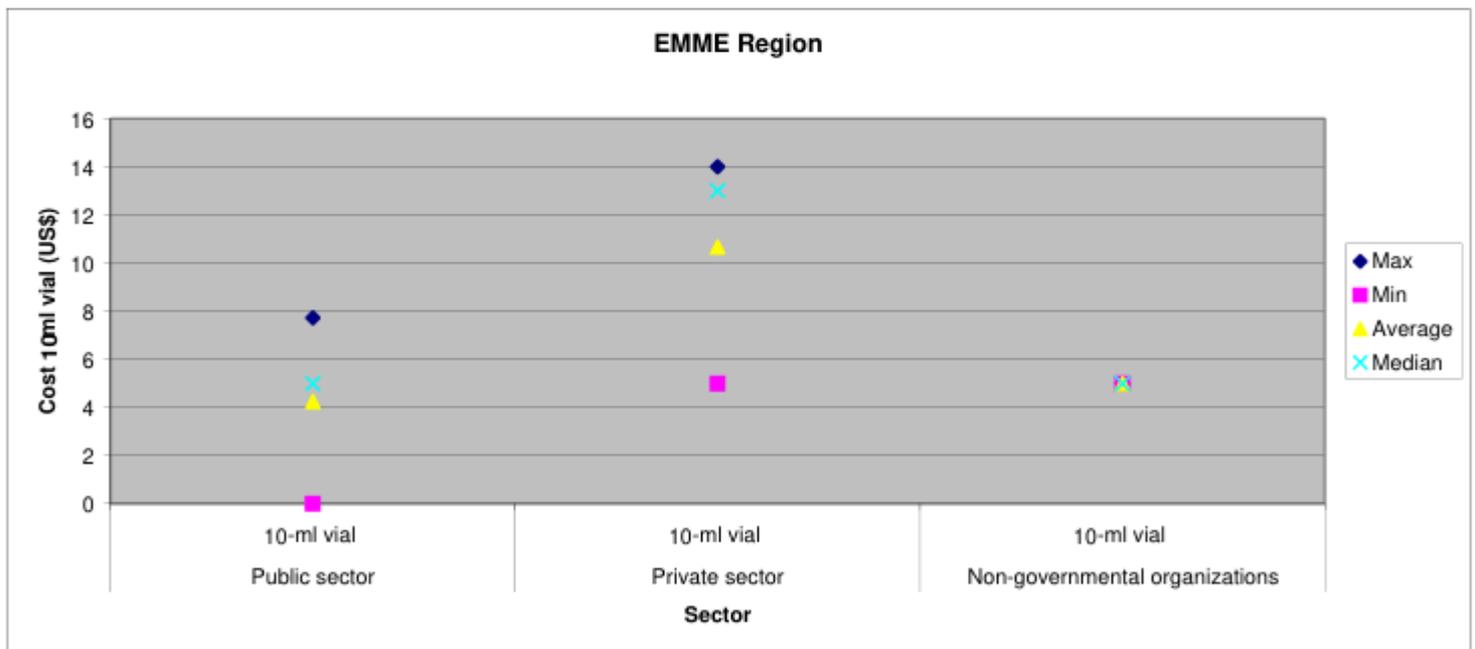


Figure 7 EUR Region: average, median, maximum and minimum price for a 10ml vial of insulin (USD)

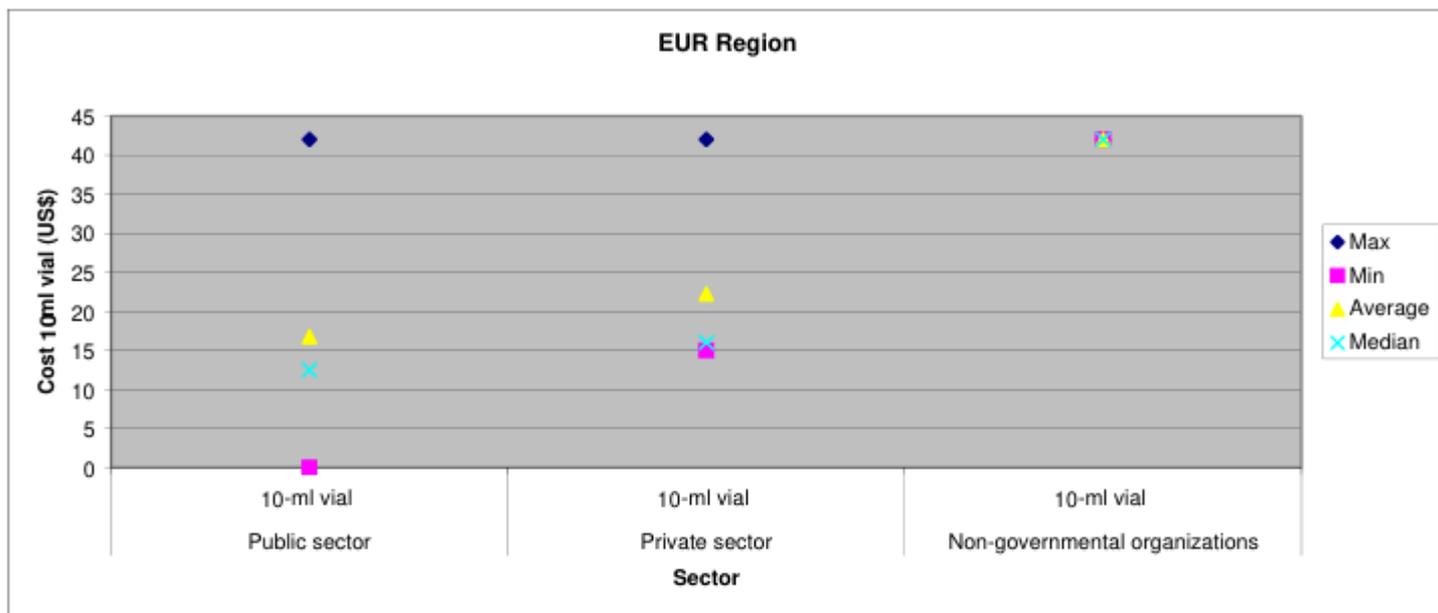


Figure 8 NA Region: average, median, maximum and minimum price for a 10ml vial of insulin (USD)

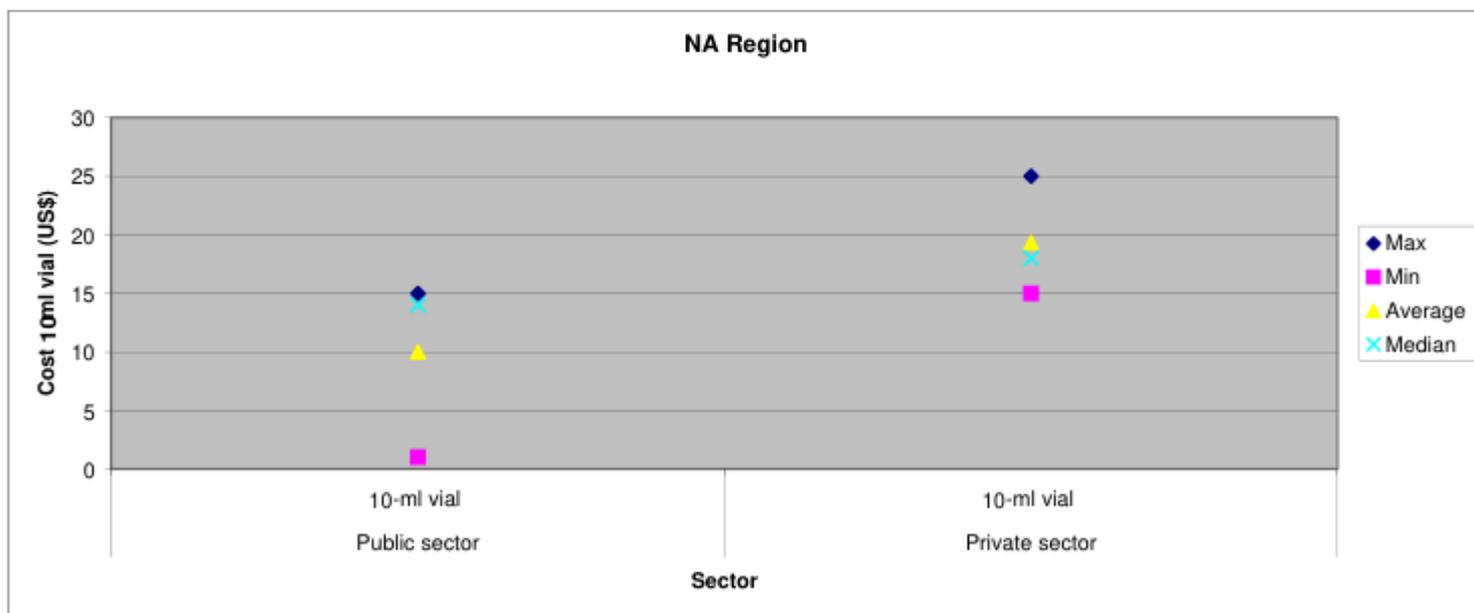


Figure 9 SACA Region: average, median, maximum and minimum price for a 10ml vial of insulin (USD)

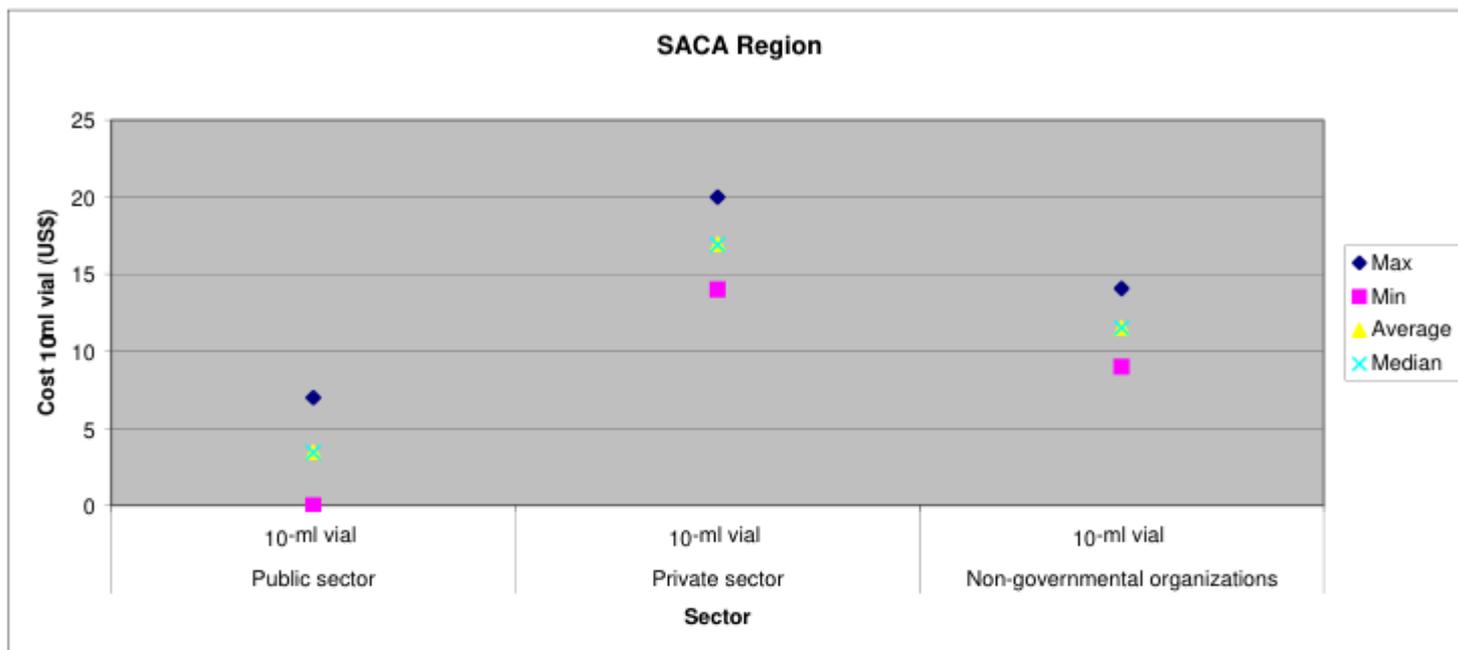


Figure 10 SEA Region: average, median, maximum and minimum price for a 10ml vial of insulin (USD)

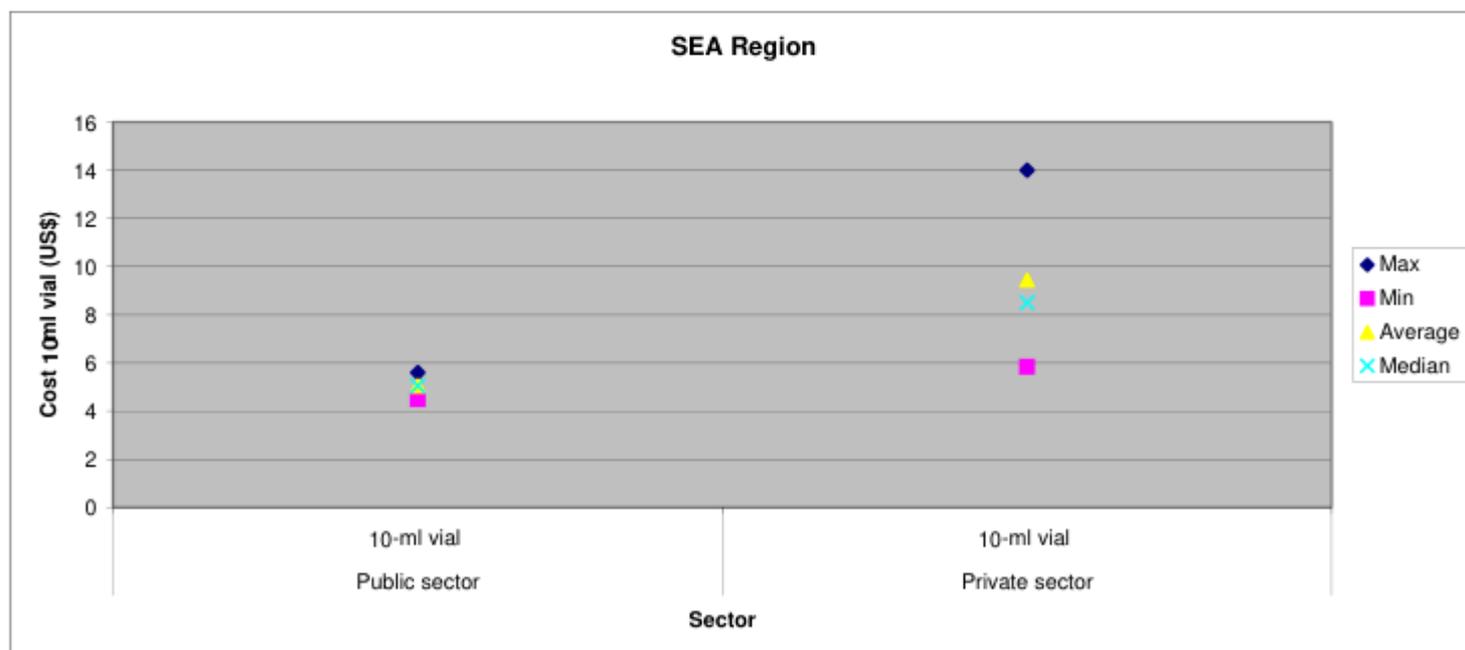
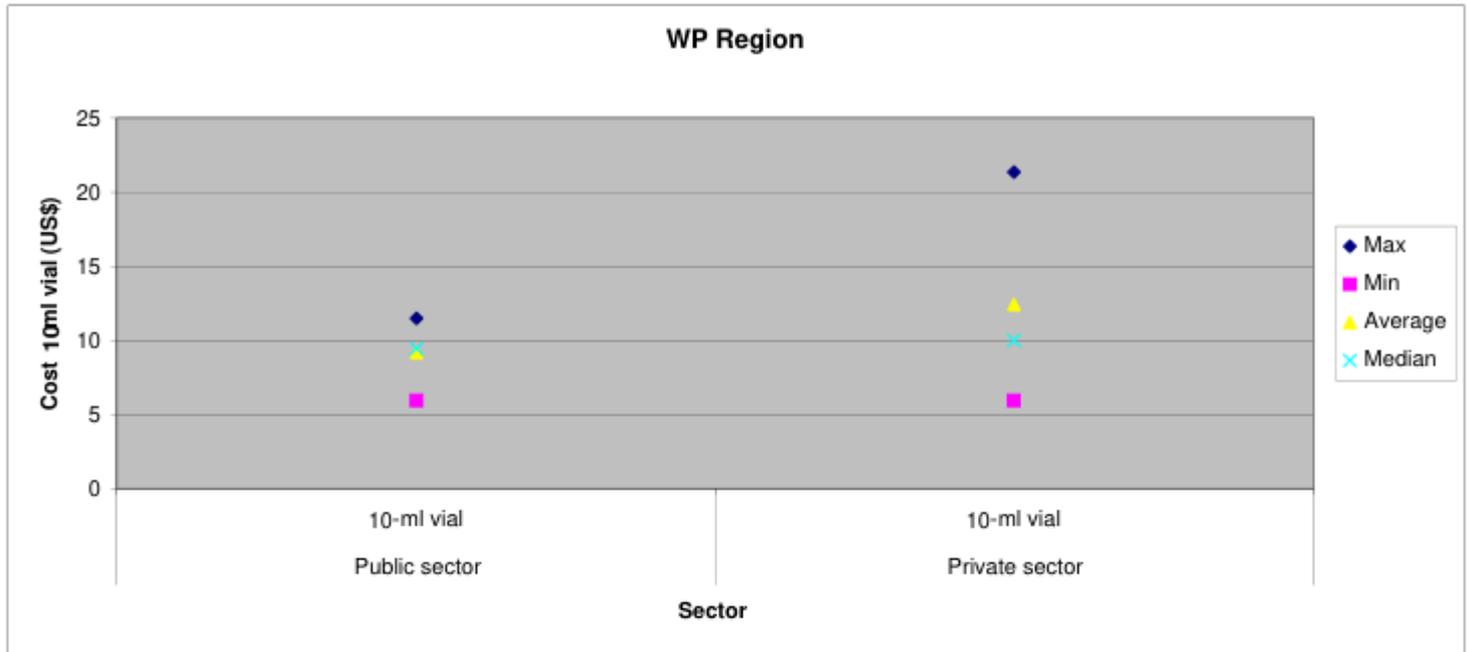


Figure 11 WP Region: average, median, maximum and minimum price for a 10ml vial of insulin (USD)



Different factors such as strength (number of units per vial of 10ml), type of insulin available (animal, human and analogues), and whether insulin is available in vial or cartridge form will have an impact on the cost of insulin to the person with diabetes. Table 5 shows the ratio of cost of a 10ml vial of human insulin to other types of insulin in selected countries.

Table 5 Ratio to price 10ml vial of insulin

| Country | Price in the public sector 10ml vial (USD) | Ratio to price 10ml vial | | | | | |
|---------------|--|---|--|--|---|---|--------|
| | | One box (5 per box) of 3ml insulin pen cartridges | 10ml vial of pork insulin (100 units/ml) | 10ml vial of beef insulin (100 units/ml) | 10ml vial of beef/pork insulin (100 units/ml) | 10ml vial of beef insulin (40 units/ml) | Lantus |
| Bangladesh | 4.5 | 3.6 | | | | | 15.6 |
| Belarus | 9.0 | 2.9 | 0.9 | | | | |
| China | 9.0 | 5.0 | | 0.7 | 0.3 | | |
| Congo | 34.0 | 2.1 | | | | | |
| Côte d'Ivoire | 10.0 | | 1.0 | | | | |
| Mongolia | 10.0 | 8.0 | 0.5 | | | | |
| Nigeria | 21.0 | 2.0 | 0.7 | 0.5 | | | |
| Pakistan | 7.7 | 2.2 | | 0.4 | | | |
| Senegal | 2.5 | 12.2 | | | | | |
| Seychelles* | 18.0 | 1.8 | | | | | |
| Turkey | 42.0 | 1.7 | | 0.5 | | | |
| Vietnam | 6.0 | 5.0 | | | | 0.7 | |

*official source

3.2.1 Strengths of insulin available

Almost all the countries had 100IU strength insulin available while 12 had 40IU, and only two had 80IU as well. Turkey was the only country that reported it did not have 100IU insulin and only 40 and 80IU.

3.2.2 Types of insulin available

Nigeria reported 17 different types of insulin available, whereas Syria only had two. Table 6 shows the number of countries which reported having the different types of insulin available. A detailed list of which countries have each type of insulin is provided in Appendix 2.

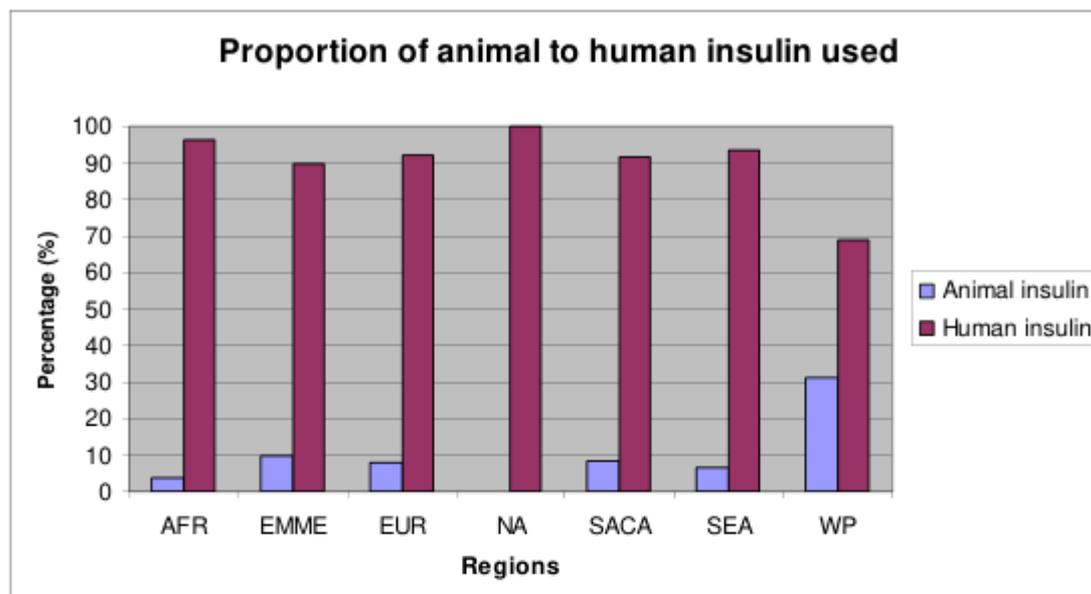
Table 6 Number of countries and type of insulin available

| Type of insulin | Number of countries |
|------------------------|---------------------|
| Human Regular | 30 |
| Human Lyspro (Humalog) | 21 |
| Novolog (Novo Rapid) | 19 |
| Human NPH | 32 |
| Human Lente | 18 |
| Human Semilente | 10 |
| Human Ultralente | 5 |
| Lantus (Glargine) | 22 |
| Beef Regular | 7 |
| Beef NPH | 6 |
| Beef Lente | 2 |
| Beef Semilente | 1 |
| Beef Ultralente | 1 |
| Insulin Determir | 3 |
| Pork Regular | 7 |
| Pork NPH | 7 |
| Pork Lente | 2 |
| Pork Semilente | 2 |
| Pork Ultralente | 2 |
| Beef/Pork Regular | 1 |
| Beef/Pork Regular | 1 |

3.2.3 Proportion of animal and human insulin used

Overall the highest percentage for animal insulin being used in a given country was 65% in Vietnam. All responding countries in the NA Region reported only human insulin being used. On average overall the regions had a presence of more than 90% of human insulin (see Figure 12). Countries in WP used the highest proportion of animal insulin, which equalled an overall percentage of 31% of all insulin used.

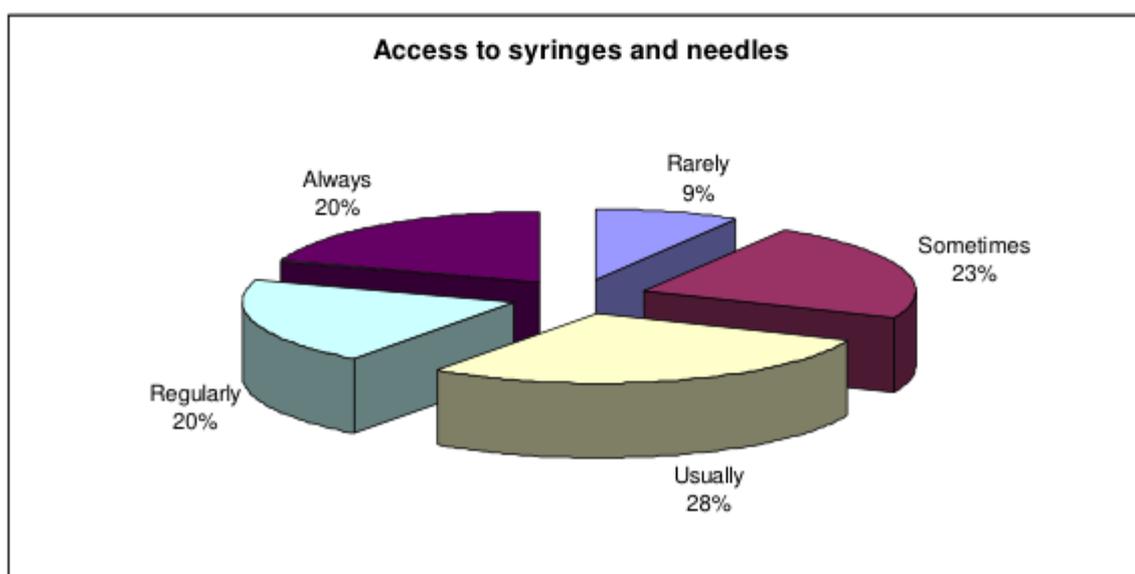
Figure 12 Proportion of animal to human insulin used



3.3.1 Access to syringes and needles

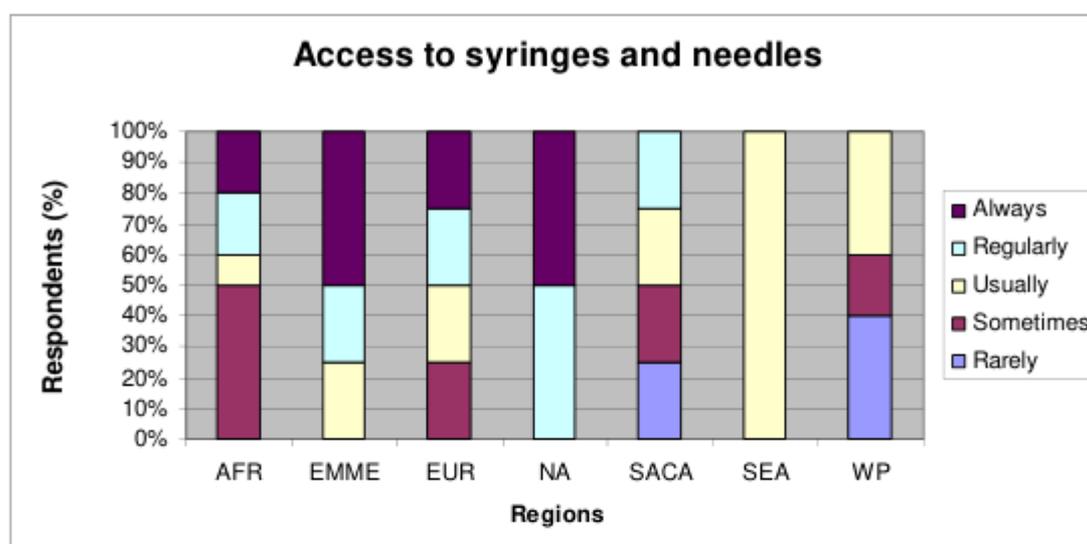
Syringes and needles are needed for insulin delivery but these are not always available to people with diabetes who require them. Cambodia, Costa Rica and Mongolia reported that people with diabetes 'Rarely' were able to access needles and syringes. Figure 13 shows the proportion of responding countries in relation to frequency of access to needles and syringes.

Figure 13 Access to syringes and needles



There was no region where 100% of countries indicated that all people with diabetes could 'Always' access syringes. The majority would be able to access syringes 'Usually'. Figure 14 shows the access to syringes and needles by region.

Figure 14 Access to syringes and needles by region

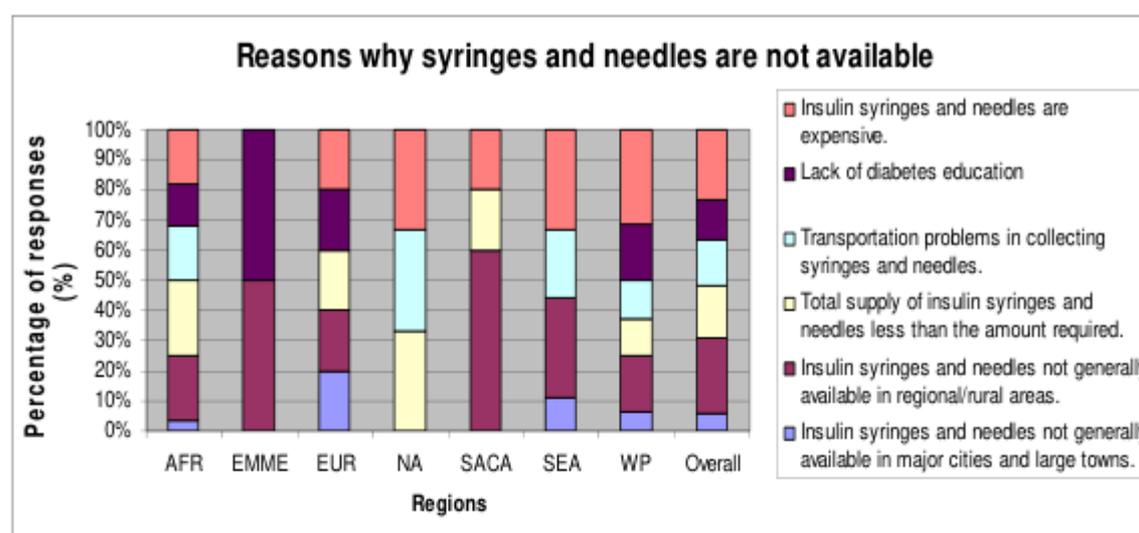


3.3.2 Reasons for lack of access to syringes and needles

There were two main reasons why access to syringes and needles was problematic for people with diabetes: insulin syringes and needles were not generally available in regional/rural areas and the cost of syringes and needles.

Respondents from the AFR region reported the most problems, with the main one being the total supply of syringes being less than what is required. In all the other regions, except for the NA Region, lack of syringes in rural areas seemed to be the main problem with regards to access. For the NA Region the total amount of syringes was less than the quantity required and also people with diabetes faced transportation problems to get their syringes (see Figure 15).

Figure 15 Reasons why syringes and needles are unavailable



3.3.3 Provision of syringes and insulin pens free or at subsidized prices

Overall people with diabetes in 17 countries received free syringes while those in 11 countries could purchase syringes at subsidized prices. It should be noted that some countries provided both subsidies and syringes for free. Table 7 details the breakdown of the provision of needles and syringes on a regional basis.

Table 7 Number of countries with measures to provide syringes and needles

| Region | Number of countries with the following measure with regards to the provision of syringes and needles | | | |
|-------------|--|------|---------------------|------------|
| | Subsidized | Free | Subsidized and Free | No measure |
| AFR | 1 | 4 | 2 | 3 |
| EMME | 2 | 0 | 1 | 1 |
| EUR | 1 | 2 | 0 | 1 |
| NA | 1 | 3 | 0 | 0 |
| SACA | 0 | 3 | 0 | 1 |
| SEA | 1 | 1 | 0 | 2 |
| WP | 2 | 1 | 0 | 2 |

With regards to insulin pens, of the countries that responded, eight provided them to people with diabetes at subsidized prices and 10 provided them for free. In the AFR region they were free in the Congo, Nigeria (also provided at subsidized prices) and Seychelles. Free pens were provided in Kuwait, Syria, Uzbekistan, Brazil, Paraguay and the Philippines. The Philippines also had subsidies on pens. Turkey, Barbados, Jamaica, Bangladesh, Sri Lanka and Mongolia provided subsidies only on insulin pens.

3.3.4 Who provides the subsidies for syringes, needles and insulin pens

Respondents were asked to identify the organization in their country which provided syringes, needles and pens for free, at subsidized cost or both free and at subsidized rates.

There were 34 initiatives to provide syringes, needles and pens at subsidized rates or for free at the national government organization or agency level. All regions, except the SEA Region, had some form of national government organization or agency involvement, with the NA region having the most with eight such measures. The largest number of measures concerned the provision of free needles, followed by free syringes.

In looking at regional or local government organization or agency, only 15 measures were present in the responding countries with regards to free or subsidized syringes, needles and pens. The EUR Region had the most such initiatives at the regional or local government organization or agency level, with the AFR, EMME and SEA Regions having no such initiatives. Again at this level measures to provide free syringes and needles were the most common.

There were 21 NGO measures present in all regions with regards to free or subsidized syringes, needles and pens. The AFR and SEA Regions had the most such initiatives, with the NA and SACA Regions having no provision of syringes, needles and pens by NGOs for free or at subsidized cost. For NGOs most initiatives were for the provision of subsidized, or free and subsidized syringes, needles and pens. The results are presented in Tables 8 to 10. Table 11 shows the countries with measures in more than one sector.

Table 8 Number of countries where national government organization or agency provide syringes, needles and pens free or subsidized

| Region | Number of countries where national government organization or agency provide | | | | | | | | | Total |
|--------------|--|----------|----------------|----------|----------|----------------|----------|----------|----------------|-----------|
| | Syringes | | | Needles | | | Pens | | | |
| | Free | Subsidy | Free + Subsidy | Free | Subsidy | Free + Subsidy | Free | Subsidy | Free + Subsidy | |
| AFR | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 5 |
| EMME | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 4 |
| EUR | 2 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 7 |
| NA | 2 | 1 | 0 | 2 | 1 | 0 | 0 | 2 | 0 | 8 |
| SACA | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 6 |
| SEA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WP | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 4 |
| Total | 7 | 3 | 3 | 8 | 2 | 2 | 5 | 2 | 2 | 34 |

Table 9 Number of countries where regional or local government organization or agency provide syringes, needles and pens free or subsidized

| Region | Number of countries where regional or local government organization or agency provide | | | | | | | | | Total |
|--------------|---|----------|----------------|----------|----------|----------------|----------|----------|----------------|-----------|
| | Syringes | | | Needles | | | Pens | | | |
| | Free | Subsidy | Free + Subsidy | Free | Subsidy | Free + Subsidy | Free | Subsidy | Free + Subsidy | |
| AFR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EMME | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EUR | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 7 |
| NA | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 3 |
| SACA | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 3 |
| SEA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WP | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Total | 3 | 1 | 2 | 3 | 1 | 2 | 1 | 0 | 2 | 15 |

Table 10 Number of countries where NGOs provide syringes, needles and pens free or subsidized

| Region | Number of countries where NGOs provide | | | | | | | | | Total |
|--------------|--|----------|----------------|----------|----------|----------------|----------|----------|----------------|-----------|
| | Syringes | | | Needles | | | Pens | | | |
| | Free | Subsidy | Free + Subsidy | Free | Subsidy | Free + Subsidy | Free | Subsidy | Free + Subsidy | |
| AFR | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 6 |
| EMME | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| EUR | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 4 |
| NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SACA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SEA | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 6 |
| WP | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3 |
| Total | 0 | 4 | 4 | 0 | 4 | 3 | 1 | 1 | 4 | 21 |

Table 11 Countries with measures for free or subsidized syringes in more than one sector

| Country | Measure at: | | |
|-------------|--------------------|--------------------|--------------------|
| | National level | Regional level | NGO level |
| Belarus | Free | Free | - |
| Brazil* | Subsidies and free | Subsidies and free | - |
| Kuwait | Free | - | Subsidies |
| Philippines | Subsidies | Subsidies | Subsidies |
| Turkey | Free | Subsidies and free | Subsidies |
| Uganda* | Subsidies and free | - | Subsidies and free |
| Uzbekistan | Free | Free | - |

*official source

3.3.5 Entitlement to free or subsidized insulin pen

Four countries, Mongolia, Kuwait, Uganda and Seychelles, reported that all people with type 1 diabetes received free pens or could purchase at subsidized prices.

All people with diabetes can receive a pen for free or purchase at subsidized prices in Cambodia, Turkey, Poland, Kuwait, Seychelles and Senegal.

Uganda, Syria, Belarus, Uzbekistan and Paraguay had measures for children up to the age of 18 who could receive an insulin pen either subsidized or free of cost.

Some countries had special measures for pregnant, blind and extremely poor people to receive pens at a lower cost than normal.

3.3.6 Prices of syringes, needles and pens

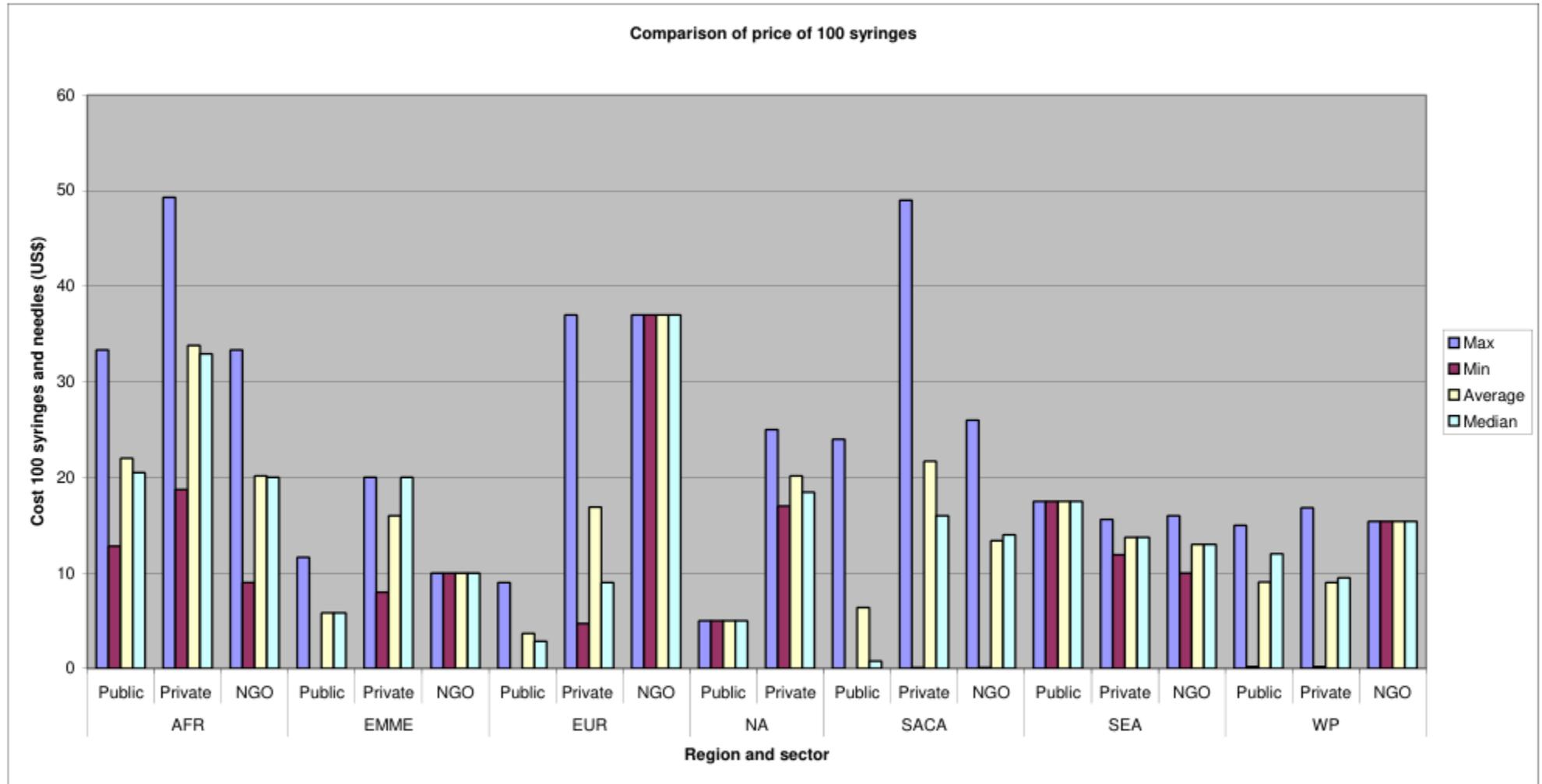
The highest price for 100 syringes and needles, USD33.30, in the public sector was in Senegal. It is interesting to note that Senegal subsidizes insulin, so possibly issues reported about access to insulin might in fact be due to the high cost of syringes.

The average price for all responding countries was USD12.10 in the public sector. In the private sector the maximum price for 100 syringes and needles was USD49.30 in Togo, and the average was USD21.50. For the NGO sector the most expensive syringes and needles were found in Turkey at USD37 for 100 syringes and needles (see Table 12). Figure 16 presents these results in a visual manner.

Table 12 Median (Range) of price in different sectors for 100 syringes and needles (USD)

| Region | Median (Range) of price in different sectors (USD) | | |
|--------|--|---------------------|--------------|
| | Public | Private | NGO |
| AFR | 20.50 (12.80-33.30) | 32.90 (18.80-49.30) | 20 (9-33.30) |
| EMME | 5.80 (0-11.70) | 20 (8-20) | 10 (10) |
| EUR | 2.90 (0-9) | 9 (4.70-37) | 37 (37) |
| NA | 5 (5) | 18.50 (17-25) | - |
| SACA | 0.80 (0-24) | 16 (0.10-49) | 14 (0.10-26) |
| SEA | 17.50 (17.50) | 13.80 (11.90-15.60) | 13 (10-16) |
| WP | 12 (0.20-15) | 9.50 (0.20-16.80) | 15.40(15.40) |

Figure 16 Comparison of price of 100 syringes and needles in the different sectors (USD)

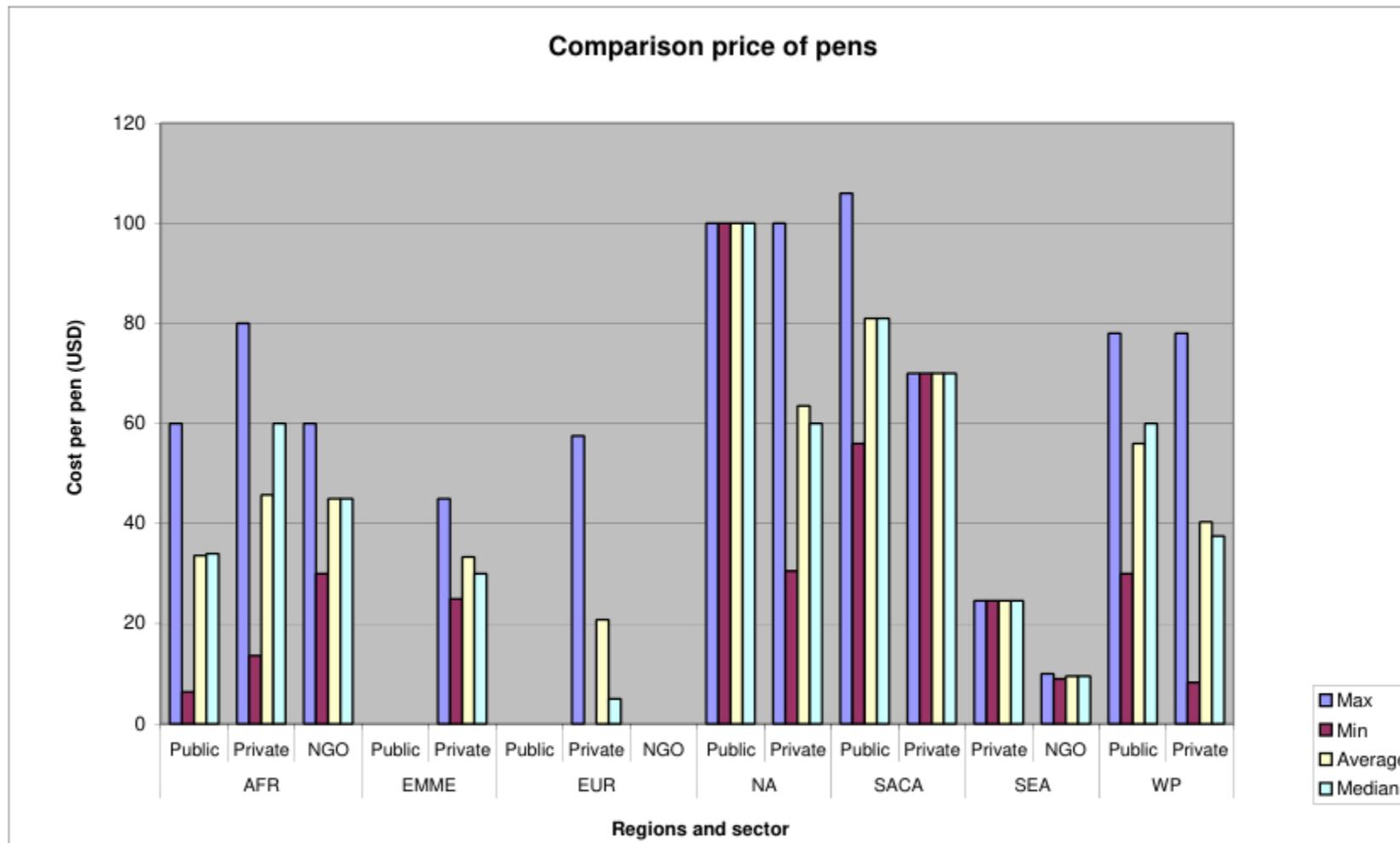


In the public sector the most expensive insulin pen cost USD100 in Mexico and the average for the public sector was USD40.20. Paraguay had the most expensive insulin pen in both the private sector, USD106, and the NGO sector, USD70. The average cost of an insulin pen was USD44.30 in the private sector and USD29.80 in the NGO sector (see Table 13). Figure 17 presents these results in a visual manner.

Table 13 Median (Range) of price in different sectors for insulin pens (USD)

| Region | Median (Range) of price in different sectors for insulin pens (USD) | | |
|-------------|---|-----------------|-------------|
| | Public | Private | NGO |
| AFR | 34(6.40-60) | 60 (13.60-80) | 45 (30-60) |
| EMME | - | 30 (25-45) | - |
| EUR | 5 (0-57.50) | - | - |
| NA | 100 (100) | 60 (30.50-100) | - |
| SACA | 81 (56-106) | 70 (70) | - |
| SEA | - | 24.60 (24.60) | 9.50 (9-10) |
| WP | 60(30-78) | 37.50 (8.25-78) | - |

Figure 17 Comparison price of insulin pens in the different sectors (USD)



3.4.1 Monitoring diabetes control

It was impossible to analyse the data from this question. Participants were asked what proportions of the population in their country monitored their diabetes using urine tests, blood tests or not at all. The ranges of percentages were 1-24%, 25-49%, 50-75%, 76-99% and 100%. In theory the total should add up to 100%, as either people test with urine or blood tests or not at all. Some countries only gave one response, others gave a response for each section, with the total not adding up to 100%. Also, providing ranges makes the analysis of this data hard. It is suggested that next time the question include the statement that the total should add to 100%, and that instead of ranges the respondents are able to complete the percentages on their own.

3.4.2 Types of blood glucose materials used

Again the responses to this question were not clear, and therefore meaningful analysis was impossible. The question was of those who monitored their diabetes using blood, how many used glucose meter strips or visual strips. Again the total should have equalled 100%, with people either using glucose meter strips or visual strips. Many countries gave one proportion (not equal to 100%) or two proportions not equal to 100. By looking at the data, it can be inferred that most people use strips for blood glucose meters. Again the question needs rewording, including the mention that the sum needs to be equal to 100%.

3.4.3 Reasons for not testing

Countries were asked to rank the top four reasons for not testing in their country. Respondents were asked to include other reasons not listed in the questionnaire. In looking at the rankings by region, cost of testing supplies was the most important barrier to testing. The details are as follows:

AFR:

1. Cost of testing supplies
2. Lack of testing supplies
3. Lack of diabetes education
4. Not interested

EMME:

1. Cost of testing supplies
2. Lack of diabetes education
3. Lack of testing supplies and not interested

NA:

1. Lack of diabetes education
2. Not interested
3. Lack of testing supplies

SACA:

1. Cost of testing supplies
2. Lack of testing supplies
3. Not interested

SEA:

1. Cost of testing supplies
2. Lack of testing supplies
3. Lack of diabetes education

4. Not interested

WP:

1. Cost of testing supplies
2. Lack of diabetes education
3. Lack of testing supplies
4. Not interested

In the EUR Region there was no real consensus, with the cost of testing supplies, lack of diabetes education and not interested being ranked as the number one problem by one country each. Lack of testing supplies was the second largest problem with two out of three countries, and one saying it was people were not interested. For the third problem, one country said lack of diabetes education and the other cost of testing supplies. Lack of education and not interested were stated as the fourth problem for one country each.

3.4.4 Where testing strips and blood glucose meters can be bought

In all regions testing strips and blood glucose meters could be found predominantly in the private sector, except for the WP region where they were available in the same number of countries in the private and public sector. Table 14 details the data for all countries.

Table 14 Availability of test strips and glucose meter in the different sectors

| | Number of countries where test strips and glucose meter were available in the following sectors | | | |
|-----|---|----------------|------------|----------------|
| | Public Sector | Private Sector | NGO Sector | Charity Sector |
| Yes | 14 | 32 | 14 | 6 |
| No | 13 | 1 | 8 | 13 |

3.4.5 Cost of urine and blood glucose test strips, and blood glucose meters

The average cost for 100 urine test strips in the public sector was USD12.50, with a maximum cost of USD30 in Mongolia. The highest cost reported in the private sector was 6.5 times higher at USD195 in Togo. The average cost in the private sector was USD22.40. Based on the information the countries reported, the NGO sector provides the cheapest source of urine test strips. The average price was USD10.50, with the maximum price at USD17 in Senegal (see Table 15).

Table 15 Median (Range) of price in different sectors for urine strips (USD)

| Region | Median (Range) of price in different sectors (USD) | | |
|--------|--|--------------------|----------|
| | Public | Private | NGO |
| AFR | 12.80 (2.70-17) | 17 (3-195) | 9 (5-17) |
| EMME | 4.10 (0-8.20) | 11 (10-12) | - |
| EUR | 10 (2-18) | 12 (6.30-18) | - |
| NA | - | 4.50 (4.50) | - |
| SACA | - | 17.50 (11-35) | 11 (11) |
| SEA | 17.50 (17.50) | 10.90 (3.50-21.40) | - |
| WP | 23.30 (16.50-30) | 16.50 (10-30) | - |

As for urine strips, blood test strips seem to be more widely available in the private sector. Blood test strips were more expensive than urine test strips. Overall the most expensive blood test strips were found in Nigeria (USD62.50), Togo (USD102) and Democratic Republic of Congo, Nigeria and Uganda (USD40) for the public, private and NGO sectors respectively (see Table 16). The average price in these sectors was USD29.80, USD37.90 and USD30.60.

Table 16 Median (Range) of price in different sectors for blood test strips (USD)

| Region | Median (Range) of price in different sectors (USD) | | |
|--------|--|------------------|---------------|
| | Public | Private | NGO |
| AFR | 49.50 (18-62.50) | 41.10 (30-102) | 40 (39-40) |
| EMME | 20 (20) | 25 (22.50-50) | 15 (15) |
| EUR | 13.50 (2-25) | 25 (20-25) | 22.50 (22.50) |
| NA | 23 (0-33) | 29 (10.70-70) | 29 (28-30) |
| SACA | 20 (20) | 35.50 (13-40) | 30 (27-31) |
| SEA | - | 33.50 (20-70.40) | 25 (25) |
| WP | 32 (22.50-60) | 32.60 (20-60) | - |

The final tool needed for proper management of diabetes is the blood glucose meter. Relative to the strips the price of these meters was quite low. Senegal had the most expensive meter in the public sector and NGO sector at a price of USD125 compared to an average of USD64.40 and USD68.50 respectively. For the private sector the maximum cost was USD156.50 in Mali, the average for all countries being USD81 (see Table 17).

Table 17 Median (Range) of price in different sectors for blood glucose meters (USD)

| Region | Median (Range) of price in different sectors (USD) | | |
|--------|--|-------------------|---------------|
| | Public | Private | NGO |
| AFR | 105 (53-125) | 103 (65-156.50) | 82.50 (1-125) |
| EMME | 25 (0-50) | 60 (45-90) | 30 (30) |
| EUR | 48 (36-60) | 81.30 (60-102.50) | 55 (55) |
| NA | 32 (0-64) | 77.50 (0-100) | 62.50 (45-80) |
| SACA | - | 66 (35-70) | 67 (65-69) |
| SEA | - | 70.40 (50-132) | 90 (90) |
| WP | - | 87.50 (75-100) | 67.50 (60-75) |

In looking at all the access and cost figures, the African Region is the worst off. Table 18 highlights the total financial impact of diabetes for the African countries surveyed in comparison to other countries from the different regions.

Table 18 Comparison of financial impact of diabetes care[‡] in selected countries (USD)

| Country | Nominal Gross Domestic Product per capita, 2005 (USD)# | Cost one 10ml vial of insulin (USD)* | Cost syringes assuming 6 syringes used per month (USD) | Cost testing assuming one strip used per month (USD) | Total cost diabetes care [‡] per month (USD) | Diabetes care [‡] as percentage of GDP per capita in one year |
|------------------------------|--|--------------------------------------|--|--|---|--|
| Congo | 1,785 | 34.00 | 1.47 | N/A | 35.47 | 24% |
| Democratic Republic of Congo | 119 | 4.20** | 1.20** | 0.80** | 6.20 | 63% |
| Côte d'Ivoire | 900 | 10.00 | 1.20 | 0.60**** | 11.80 | 16% |
| Madagascar | 282 | 6.00 | 0.54** | 0.86**** | 7.40 | 31% |
| Mali | 432 | 10.30 | 1.76 | 0.78**** | 12.84 | 36% |
| Nigeria | 678 | 21.00 | 0.90 | 1.25 | 23.15 | 41% |
| Senegal | 738 | 2.45 | 2.00 | 0.78 | 5.23 | 9% |
| Seychelles | 8,556 | 18.00 | 1.26 | 0.36 | 19.62 | 3% |
| Togo | 377 | 7.70 | 0.02 | 2.04**** | 9.76 | 31% |
| Uganda | 303 | 5.50 | 1.20 | 1.20***** | 7.90 | 31% |
| Bangladesh | 400 | 4.49 | 0.00*** | 0.40**** | 4.89 | 15% |
| Brazil | 4,320 | 6.85 | 1.44 | 0.40 | 8.69 | 2% |
| Barbados | 11,088 | 0.00*** | 0.00*** | 0.00 | 0.00 | 0% |
| Kuwait | 26,020 | 0.00*** | 0.00*** | 0.30** | 0.30 | 0% |
| Pakistan | 728 | 7.73 | 0.70 | 0.40 | 8.83 | 15% |
| Paraguay | 1,288 | 0.00*** | 0.00*** | 0.26**** | 0.26 | 0% |
| Philippines | 1,168 | 11.55 | 0.92 | 0.86**** | 13.33 | 14% |
| Poland | 7,946 | 0.00*** | 0.09 | 0.04 | 0.13 | 0% |
| Uzbekistan | 444 | 16.00 | 0.25 | 0.51**** | 16.76 | 45% |
| Vietnam | 618 | 6.00 | 0.72 | 0.45 | 7.17 | 14% |

‡Diabetes care in this context covers only cost of insulin, syringes and testing strip

Source: International Monetary Fund, World Economic Outlook Database, http://en.wikipedia.org/wiki/Gross_Domestic_Product. Accessed November 2006

*Price in public sector or lowest price in country

**Price in NGO sector

***Provided for free in public sector

****Price in private sector

*****Public sector price used, but cheaper in private and NGO sectors

In the Democratic Republic of Congo the cost of diabetes care (insulin, syringes and testing) in a year represents over half of the GDP per capita. In many of the African countries surveyed this figure is above 30% with the majority of the cost being for insulin.

4. Conclusion

The theme for World Diabetes Day in 2006 is 'Diabetes Care for Everyone'. While new technologies have improved the spectrum of insulin profiles and delivery systems in developed countries, the price and availability of insulin, syringes and testing equipment in many countries is still a barrier to proper care.

This survey highlights many of the problems that people in some of the world's poorest countries face with regards to high costs of diabetes-related supplies. Insulin and syringes are vital for the survival of people with type 1 diabetes and the wellbeing of some people with type 2 diabetes. An essential element of diabetes care is also the means to regularly test blood sugar. This is not only essential for good follow-up, but also for initial diagnosis.

Some countries have implemented interesting initiatives that might serve as examples to other countries. Through a government initiative, the Barbados Drug Service, human insulin (regular, NPH, Lente, 70/30), syringes and needles, and testing strips are available free of cost to Barbadian nationals i.e. those with valid national registration numbers. In Senegal the government provides a subsidy for insulin, with the aim being free insulin, but for this advocacy is needed.

Most countries either through the data presented or in comments mention cost of one aspect of diabetes as a barrier for people with this condition. The focus of many initiatives has been on insulin access and price, however syringes and needles and also testing equipment are needed for proper care for people with diabetes.

The Task Force should look at ways of addressing both the acute and chronic shortages that occur in different regions. Various international initiatives such as the Insulin for Life and IDF Life for a Child programmes deal with poor access or unavailability by providing insulin and supplies. These activities should complement and not replace the role of government agencies in doing so. The work of the International Insulin Foundation and its Rapid Assessment Protocol for Insulin Access look at ways of improving the overall system in order to improve the health system as a whole and deal with the chronic shortages and structural problems with regards to access to insulin and other materials necessary for diabetes. All these initiatives should be promoted in order to address both types of needs.

Two of the main barriers mentioned, i.e. cost of insulin and lack of diabetes education are areas that the Task Force should continue to address, through discussion with its partners in industry and development of better education tools. The other barriers can be addressed through proper advocacy and action of diabetes associations with support from the Task Force, for example through promoting twinning activities.

IDF plays a vital role in trying to improve this situation. The global diabetes community needs to find ways to address access to insulin and other supplies in a sustainable way. Donations are good for acute shortages, but for chronic shortages long-term solutions need to be found to improve government supply

systems to ensure that the advances in diabetes care since 1921 benefit all people with diabetes.

On behalf of the Task Force, I would like to express my gratitude and thanks to all the member associations who participated in this survey and to the Regional Chairs who provided invaluable advice and assistance. A special thanks to the WHO African Regional Office for its collaboration. I would like also like to thank David Beran and Delice Gan for preparing this report, and Olivier Jacqmain and Lorenzo Piemonte at the IDF Executive Office for project support.

Jean-Claude Mbanya
Chair

Task Force on Insulin, Test Strips and Other Diabetes Supplies
15 November, 2006

Appendices

Appendix 1 Survey Questionnaire



International Diabetes Federation

International Insulin and Diabetes Supplies Cost and Availability Study

All questions refer only to people with diabetes in your own country.

You may also fill in this form online at www.eatlas.idf.org/insulin_survey.

Name: _____

(The names of individuals will be kept confidential and not included in any report arising from this project unless permission is given to include them.)

Position: _____

Telephone: _____

Fax: _____

E-mail: _____

Name of organization: _____

Address: _____

Country: _____

Permission to use your name in the public report: Yes No

If Yes, please you sign your name here:

.....

Note: there is an explanation of terms used at the end of this questionnaire.

Access to Insulin

1.1 In your country, are people who have diabetes able to obtain insulin?

(Indicate the estimate you think is most accurate.)

| Type of diabetes | Less than 25% of the time | 26 - 49% of the time | 50- 74% of the time | 75 – 99% of the time | 100% of the time |
|-----------------------------|---------------------------|----------------------|---------------------|----------------------|------------------|
| People with type 1 diabetes | | | | | |
| People with type 2 diabetes | | | | | |

1.2 What are some of the reasons why people with diabetes are not able to access insulin in your country?

(Indicate all that apply)

Insulin is not generally available in major cities and towns.

Insulin is not generally available in regional/rural areas.

The total supply of insulin is less than the amount required.

Transportation problems faced by people with diabetes in collecting insulin.

People with diabetes are not able to store insulin properly.

Lack of diabetes education

Insulin is expensive.

Insulin is available, but preference is given to those people with type 1 diabetes.

Other (specify)

1.3 In your country, what do you estimate is the percentage of people with diabetes who require insulin but cannot obtain insulin because they cannot afford it?

(Indicate the estimate that you think is most accurate)

0% 1-24% 25-49% 50-75% 76-99% 100%

1.4 Are there any taxes on insulin in your country?

(Indicate one)

Yes

No

If Yes, indicate what these are:

Tax (customs/import duty) on insulin imported from other countries

If yes, what is the percentage level of this tax? _____ %

Tax on insulin produced in your country.

If yes, what is the percentage level of this tax? _____ %

1.5 In your country, can people with diabetes who need insulin:

(Indicate one answer per line)

| | Yes | No |
|--|-----|----|
| Buy insulin at a subsidized rate? | | |
| Receive insulin free of charge? | | |

If Yes – Who subsidizes or provides free insulin?

(Indicate one answer per line)

| No. | Organization | Subsidizes | Free |
|-----|---|------------|------|
| 1. | National government organization or agency | | |
| 2. | Regional or local government organization or agency | | |
| 3. | Non-governmental organization | | |
| 4. | Other organizations (please specify): | | |
| | 1. | | |
| | 2. | | |
| | 3. | | |
| | | | |

1.6 In your country, where can insulin be bought?

(Indicate one answer per line)

| No. | Sector | Yes | No |
|-----|----------------------------|-----|----|
| 1. | Government pharmacies | | |
| 2. | Privately-owned pharmacies | | |
| 3. | Diabetes associations | | |
| 4. | Charities | | |
| 5. | Other (please specify): | | |
| | 1. | | |

| | | | |
|--|----|--|--|
| | 2. | | |
| | 3. | | |
| | | | |

1.7 What is the cost of insulin in United States dollars (US\$) in your country?

(Indicate all that are applicable)

| No. | Sizes/type | Public sector | | Private sector | | Non-governmental organizations | |
|-----|---|---------------|---------------|----------------|---------------|--------------------------------|---------------|
| | | US\$ | Not available | US\$ | Not available | US\$ | Not available |
| | Human insulin | | | | | | |
| 1. | 10-ml vial | | | | | | |
| 2. | One box (5 per box) of 3ml insulin pen cartridges | | | | | | |
| 3. | Other sizes and types | | | | | | |
| | | | | | | | |
| | Animal Insulin | | | | | | |
| 1. | 10-ml vial of Pork insulin (100 units /ml) | | | | | | |
| 2. | 10-ml vial of Beef insulin (100 units/ml) | | | | | | |
| 3. | 10-ml vial of Beef/Pork insulin (100 units/ml) | | | | | | |
| 4. | Other sizes | | | | | | |
| | | | | | | | |
| | Insulin analogues | | | | | | |
| 1. | | | | | | | |
| 2. | | | | | | | |
| 3. | | | | | | | |
| | | | | | | | |

2. Insulin Strengths, Types and Origins

2.1 What insulin strengths are available in your country?

(Indicate all that are applicable)

U-40 (40 units/ml)

U-80 (80 units/ml)

U-100 (100 units/ml)

2.2 From the list below, please indicate the type of insulin available in your country?

(Indicate all that are available)

Human Regular

Pork Regular

Human Lyspro (Humalog)
Novolog (Novo Rapid)

Human NPH

Pork NPH

Human Lente

Pork Lente

Human Semilente

Pork Semilente

Human Ultralente
Lantus (Glargine)
Beef Regular

Pork Ultralente

Beef/Pork Regular

Beef NPH

Beef/Pork NPH

Beef Lente

Beef/Pork Lente

Beef Semilente

Beef/Pork Semilente

Beef Ultralente

Beef/Pork Ultralente

Insulin detemir (Levemir)

Please indicate other types used:

2.3 Please indicate what percentage of animal and human insulin is used in your country:

Animal insulin _____%

Human insulin _____%

= 100%

3. Access to Insulin Syringes and Needles, and Pens

3.1 In your country, do people with diabetes who require insulin have access to insulin syringes and needles?

(Indicate the estimate you think is most accurate.)

Rarely less than 25% of the time.

Sometimes 26 - 49% of the time

| | |
|-----------|----------------------|
| Usually | 50- 74% of the time |
| Regularly | 75 – 99% of the time |
| Always | 100% of the time |

3.2 If access to insulin syringes and needles is not always possible, please indicate why?

(Indicate all that are applicable)

Insulin syringes and needles are not generally available in major cities and large towns.

Insulin syringes and needles are not generally available in regional/rural areas.

The total supply of insulin syringes and needles is less than the amount required.

Transportation problems faced by people with diabetes in collecting syringes and needles.

Lack of diabetes education

Insulin syringes and needles are expensive.

Other (specify)

3.3 In your country, can people with diabetes obtain syringes and needles, and insulin pens by:

(Indicate 'yes' or 'no' in all relevant boxes)

| | Syringes and needles | Insulin pens |
|--|----------------------|--------------|
| Buying them at a subsidized rate? | | |
| Receiving them free of charge? | | |

3.4 If applicable, who pays for the subsidized or free syringes and needles, or insulin pens?

(Indicate 'Subsidized' or 'Free' in all relevant boxes)

| No. | Organization | Syringes | Needles | Insulin pens |
|-----|---|----------|---------|--------------|
| 1. | National government organization or agency | | | |
| 2. | Regional or local government organization or agency | | | |
| 3. | Non-governmental organization | | | |
| 4. | Other organizations (please specify): | | | |
| | 1. | | | |
| | 2. | | | |
| | 3. | | | |
| | | | | |

3.5 If applicable, who is entitled to receive a free or subsidized insulin pen?

(Indicate all that are applicable)

- All persons with type 1 diabetes
- All persons with diabetes who require insulin
- Children with diabetes up to the age of 18 years or a similar age limit
- Other, please specify

3.6 In your country, what is the cost in United States dollars (US\$) of:

(Indicate all that are applicable)

| No. | Item | Public sector | Private sector | Non-governmental organization |
|-----|------------------------|---------------|----------------|-------------------------------|
| 1. | 100 syringes + needles | | | |
| 2. | insulin pen | | | |

4. Monitoring Diabetes Control

4.1 In your country, what do you estimate is the percentage of people with diabetes who monitor their diabetes:

(Indicate the estimate that you think is most accurate)

| Method | 0% | 1-24% | 25-49% | 50-75% | 76-99% | 100% |
|--------------------------|-----------|--------------|---------------|---------------|---------------|-------------|
| By testing urine | | | | | | |
| By testing blood glucose | | | | | | |
| Not at all | | | | | | |

4.2 Of those testing blood glucose, what do you estimate is the percentage who use:

(Indicate percentage estimate)

Glucose meter with strips _____ %

Visual strips only (no meter) _____ %

4.3 In your opinion, rank from 1 to 4 the following reasons for not testing diabetes control in your country.

(1 being the most important reason for not testing to 4 being the least important reason for not testing.)

| Reason | Rank |
|---------------------------------|-------------|
| Cost of testing supplies | |
| Lack of testing supplies | |
| Lack of diabetes education | |
| Not interested | |
| Other reasons (please specify): | |
| a. | |
| b. | |
| c. | |
| | |

4.4 In your country, where can testing strips and blood glucose meters be bought?

(Indicate one answer per line)

| No. | Sector | Yes | No |
|------------|--------------------------|------------|-----------|
| 1. | Government pharmacies | | |
| 2. | Private-owned pharmacies | | |
| 3. | Diabetes associations | | |
| 4. | Charities | | |
| 5. | Other (please specify): | | |
| | 1. | | |

| | | | |
|--|----|--|--|
| | 2. | | |
| | 3. | | |
| | | | |

4.5 In your country, what is the cost in United States dollars (US\$) of:
(Indicate all that are applicable)

| No. | Item | Public sector | | Private sector | | Non-governmental organizations | |
|-----|------------------------------|---------------|---------------|----------------|---------------|--------------------------------|---------------|
| | | US\$ | Not available | US\$ | Not available | US\$ | Not available |
| 1. | 100 urine test strips | | | | | | |
| 2. | 50 blood glucose test strips | | | | | | |
| 3. | blood glucose meter | | | | | | |

5. Further comments

We would greatly appreciate any further comments you may have on the problems relating to insulin and diabetes supplies in your country. This will help us to better understand the complex situations that may occur in your country and will help us achieve the objective of improving the existing situation for people with diabetes.

Glossary of Terms

- **Non-governmental organizations** – Term used in this survey to described not-for-profit organizations such as diabetes associations and charitable organizations.
- **Type 1 Diabetes** – The less frequent form of diabetes (accounts for approximately 10% of all persons with diabetes), resulting in the destruction of insulin producing cells in the pancreas by an autoimmune process. Frequent onset in childhood or youth. Daily insulin treatment is always required.
- **Type 2 Diabetes**– Predominantly insulin resistance with relative insulin deficiency or predominantly an insulin secretory defect with/without insulin resistance. It is a term

used for individuals who have relative (rather than absolute) insulin deficiency. People with this type of diabetes are frequently resistant to the action of insulin. Usually occurs over the age of 30 (but increasingly in younger people also), and is controlled by diet and medication, or diet and insulin.



The International Diabetes Federation Task Force on Insulin, Test Strips and Other Diabetes Supplies expresses its appreciation for your participation in this survey. Thank you for taking the time to complete this survey form. Please return the completed form by 07 April 2006.

Please return the completed document by e-mail, airmail post or fax to:

Mr Olivier Jacqmain
Project Coordinator
International Diabetes Federation



Tel: + [redacted]
Fax: + [redacted]
E-mail: [redacted]

Appendix 2 Types of insulin available in the different countries

| Country | Human Regular | Human Lyspro (Humalog) | Novolog (Novo Rapid) | Human NPH | Human Lente | Human Semilente | Human Ultralente | Lantus (Glargine) | Beef Regular | Beef NPH | Beef Lente | Beef Semilente | Beef Ultralente | Insulin detemir | Pork Regular | Pork NPH | Pork Lente | Pork Semilente | Pork Ultralente | Beef/Pork Regular | Pork/Beef NPH | Total of types of insulin per country |
|-------------------------------------|----------------------|-------------------------------|-----------------------------|------------------|--------------------|------------------------|-------------------------|--------------------------|---------------------|-----------------|-------------------|-----------------------|------------------------|------------------------|---------------------|-----------------|-------------------|-----------------------|------------------------|--------------------------|----------------------|--|
| Bangladesh | X | | | X | | | | X | | | | | | | | | | | | | | 3 |
| Barbados* | X | X | X | X | X | | | X | | | | | | | | | | | | | | 6 |
| Belarus | X | X | X | X | X | | | X | | | | | | | X | X | | | | | | 8 |
| Brazil* | X | X | X | X | X | | | X | | | | | | | X | X | X | | X | | | 10 |
| British Virgin Islands | X | | X | | | | | X | | | | | | | | | | | | | | 3 |
| Cambodia | X | X | X | X | X | X | | X | | | | | | | | | | | | | | 7 |
| China | X | X | X | X | | | | X | | | | | | | X | | | | | | | 6 |
| Congo | | X | X | X | | | | X | | | | | | | | | | | | | | 4 |
| Costa Rica* | X | | | X | | | | X | | | | | | | | | | | | | | 3 |
| Democratic Republic of Congo | X | | | X | | | | | | | | | | | | | | | | | | 2 |
| Côte d'Ivoire | | | | | | | | | | | | | | | | | | | | | | 0 |
| Egypt | X | X | | X | | | | X | X | X | | | | | | | | | | | | 6 |
| Guatemala* | X | X | X | X | X | X | X | X | | | | | | | | | | | | | | 8 |
| Jamaica | X | X | X | X | X | | X | X | | | | | | | | | | | | | | 7 |

| Country | Human Regular | Human Lyspro (Humalog) | Novolog (Novo Rapid) | Human NPH | Human Lente | Human Semilente | Human Ultralente | Lantus (Glargine) | Beef Regular | Beef NPH | Beef Lente | Beef Semilente | Beef Ultralente | Insulin detemir | Pork Regular | Pork NPH | Pork Lente | Pork Semilente | Pork Ultralente | Beef/Pork Regular | Pork/Beef NPH | Total of types of insulin per country |
|-------------|---------------|------------------------|----------------------|-----------|-------------|-----------------|------------------|-------------------|--------------|----------|------------|----------------|-----------------|-----------------|--------------|----------|------------|----------------|-----------------|-------------------|---------------|---------------------------------------|
| Kuwait | X | | X | X | X | | | X | | | | | | X | | | | | | | | 6 |
| Madagascar | | X | X | X | X | X | | X | | | | | | | | | | | | | | 6 |
| Maldives* | X | | | X | X | X | | | | | | | | | | | | | | | | 4 |
| Mali | | | | X | | | | | | | | | | | | | | | | | | 1 |
| Mexico* | X | X | X | X | X | | X | X | | | | | | | | | | | | | | 7 |
| Mongolia | X | | | X | | X | | | | | | | | | X | X | | X | | | | 6 |
| Nepal | X | X | X | X | X | | | | | | | | | | X | X | | | | | | 7 |
| Nigeria | X | | X | X | X | X | X | | X | X | X | | X | | X | X | X | X | X | X | X | 17 |
| Pakistan | X | X | | X | | | | X | X | X | | | | | | | | | | | | 6 |
| Paraguay* | X | X | | X | | | | X | X | X | | | | | X | X | | | | | | 8 |
| Philippines | X | X | | X | X | | X | X | X | | | | | | | | | | | | | 7 |
| Poland | X | X | X | X | | | | X | | | | | | X | | | | | | | | 6 |
| Senegal | X | | X | X | X | X | | | | | | | | | | | | | | | | 5 |
| Seychelles* | | X | | X | | X | | | | | | | | | | | | | | | | 3 |
| Sri Lanka | X | X | X | X | X | | | | | | | | | | | | | | | | | 5 |
| Syria | X | | | X | | | | | | | | | | | | | | | | | | 2 |
| Togo | X | | X | | | X | | | | | | | | | | | | | | | | 3 |
| Turkey | X | X | | X | X | | | X | X | X | | | | X | | | | | | | | 8 |

| Country | Human Regular | Human Lyspro (Humalog) | Novolog (Novo Rapid) | Human NPH | Human Lente | Human Semilente | Human Ultralente | Lantus (Glargine) | Beef Regular | Beef NPH | Beef Lente | Beef Semilente | Beef Ultralente | Insulin detemir | Pork Regular | Pork NPH | Pork Lente | Pork Semilente | Pork Ultralente | Beef/Pork Regular | Pork/Beef NPH | Total of types of insulin per country |
|-----------------------|---------------|------------------------|----------------------|-----------|-------------|-----------------|------------------|-------------------|--------------|----------|------------|----------------|-----------------|-----------------|--------------|----------|------------|----------------|-----------------|-------------------|---------------|---------------------------------------|
| Uganda* | X | X | X | X | X | | | | | | | | | | | | | | | | | 5 |
| Uzbekistan | X | X | | X | | | | X | | | | | | | | | | | | | | 4 |
| Vietnam | X | | | X | X | X | | X | X | X | X | X | | | | X | | | | | | 10 |
| Total per type | 30 | 21 | 19 | 32 | 18 | 10 | 5 | 22 | 7 | 6 | 2 | 1 | 1 | 3 | 7 | 7 | 2 | 2 | 2 | 1 | 1 | - |

*official source