FOCUS ON

Counting Three

We talk to Roman Topór-Mądry, MD, chairman of the PAS Committee on Public health, and Tomasz Zdrojewski, MD, from the Jagiellonian University's Public Health Institute, coauthors of the first Report on Diabetes in Poland, about counting the number of diabetics and data-gathering techniques.

ACADEMIA: **What was the estimated number of diabetic patients in Poland before your *Report*?**
TOMASZ ZDROJEWSKI: Until recently, there was no reliable data on this subject. While certain regions keep excellent registers of children and adolescents with type 1 diabetes, registers of adults with type 1 and type 2 diabetes provided conflicting figures: some indicated 2 million patients, while others showed 4 million. And those figures were being cited by international organizations.

It seems odd, as diabetes is a serious problem of present-day civilization.
T.Z.: Yes, and it's not only a medical problem, but also an economic and social one. The diabetes epidemic around the world and in Poland is growing rapidly. We are starting to win our battles against certain diseases, such as hypertension, but obesity and diabetes are causing a lot of damage in Poland. Due to the aging of our population the number of patients will increase even more. This is why it's important for diabetes to be dealt with seriously, not only from a scientific standpoint, but also when it comes to the public health care system.

You decided to deal with it seriously in your *Report*.
T.Z.: The Public Health Committee of the Polish Academy of Sciences decided to convene a group of top experts – from the National Institute of Public Health – National Institute of Hygiene and the Jagiellonian University, as well as Professor Krzysztof Strojek, National Consultant in Diabetology. It was also crucially decided to closely collaborate with the two departments of the National Health Fund so as to obtain important data on reimbursed medications, outpatient visits, and hospitalizations. Also, bringing in Sequence HC Partners, a commercial organization which analyzes the Polish pharmaceutical market, helped to clarify and authenticate the number of patients in Poland calculated using data obtained from the National Health Fund. We must remember that the National Health Fund is a payer, not an epidemiological or clinical organization,

MILLION DIABETICS

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so the data it provides needs to be properly and carefully interpreted.

The third "safeguard" helping ensure the accuracy of data on the number of diabetic patients in Poland involved using the results of a nationwide cross-sectional NATPOL study, which I coordinated in Poland four years ago. In a representative sample of adult Poles randomly selected by the Ministry of Internal Affairs and Administration, we not only checked for the prevalence of hypertension, lipid disorders and diabetes, but also, through extensive research, which for the first time met the clinical criteria for diagnosing these diseases, we determined how many Poles are not aware of having this condition. Based on these three sets of data from the National Health Fund, Sequence, and NATPOL it turned out that we have 2,150,000 patients suffering from both diabetes type 1 and 2, including gestational diabetes, and 550,000 people who are unaware of having diabetes, making for a total of 2,700,000 people. The next crucial step should be to set up a registry of patients with diabetes. This should be done in two stages. First, we need to focus on type 1(insulin-dependent) diabetes mellitus, which is caused by immunological factors and usually begins in young people, followed by type 2 diabetes, which is associated with insulin resistance caused by obesity and an unhealthy lifestyle.

ROMAN TOPÓR-MĄDRY: In order to assess healthcare needs and the necessity for intervention, we must have epidemiological knowledge of the phenomenon. That is why the *Report* was direly needed. In turn, registries allow us to realistically evaluate the medical and also the economic effectiveness of diabetes therapy. What works in selected groups of patients in clinical trials may not always prove as effective in general medical practice. Assessing the effectiveness of medications in daily practice will aid in developing a better policy for pharmaceutical drugs, and improve the organization of medical care, including that of diabetes.

Do such registries exist for other illnesses?

R.T.-M.: There is a cancer registry, for instance. Unfortunately, since the introduction of the so-called "oncological package" its quality has greatly deteriorated. Data is also being gathered on reported cases of various infectious diseases. Notice the semantic nuance – "reported" cases, not "contracted" cases. No data is being collected on the number of patients infected, only on the number of patients seeking help from a doctor, who then relates this data to the Regional Sanitary-Epidemiological Station. We also have data on how many patients suffering from mental illnesses are hospitalized, but again we don't know how many people suffer from them. There are also registries of patients suffering from AIDS, tuberculosis, and occupational diseases.

T.Z.: Recently, the centers in Zabrze, Gdańsk and Warsaw, in collaboration with the National Health Fund, developed a national registry of patients who have suffered heart attacks. This helped us assess the quality of the nation's health system in this area over the last decade. The results showed some significant failures (35% more cases than in the old EU countries) but also undisputed successes. The development of interventional cardiology brought mortality from myocardial infarctions in Polish hospitals down to the level of the best health systems in Europe. Without the registry we would not know, nor could we assess the effects of investing in cardiology intervention and ... the effects of not investing in improving the health of Poles through primary prevention.

The EU doesn't require these types of registries?

R.T.-M.: No. It only provides recommendations in certain areas. Everything comes down to economics. I was part of a team of experts from the European Commission involved in devising health indicators. They serve as the basis for compiling tables, graphs and maps relating to the health status, and determinants of health and health care in EU Member States and in other European countries. They enable monitoring and comparisons of the health situation, and serve as a basis for shaping the policy in this area. There were 88 European Core Health Indicators (ECHI) created. The European Commission, which financed the project, recommended that each country should begin collecting data when it is ready to do so. The announcement of this undertaking coincided with the economic crisis, which slowed it down.

How was data on diabetes patients collected previously?

R.T.-M.: The doctor at the clinic records the purpose of the patient's visit – which medical condition was involved. If it is diabetes-related, this information is received by the National Health Fund. Reimbursed medications are another source – and diabetes drugs belong to this category. Every pharmacy records these sales in their computer system and reports them to the National Health Fund every two weeks. Based on these records pharmacies receive a refund for a portion of the medications. On this basis we obtained data on the number of patients who received this service or medication during the course of one year. Obviously both sources were determined by a doctor. In order to prescribe diabetes medication, the doctor had to be sure that the patient suffers from the condition. The doctor keeps records, and the reimbursement system is fairly tight. In case of an audit, the doctor must justify the reason for writing the prescription. If the physician reports that the patient's visit was related to diabetes, this can be verified. There is a difference in the number of people using either system. The reimbursement data shows 2,130,000 patients, while data from doctor visits reduces the number to 1,670,000. This illustrates the inability of the service funding system to function as a registry – after all it wasn't created for that purpose. In

other words – if the patient seeking help from a doctor also suffers from another condition, and during the same visit the doctor prescribes diabetes medication but reports the other condition, the patient will not be registered as a diabetic patient in the database, which is of interest to us. There are also a number of patients who were treated by a doctor for diabetes, but did not purchase diabetes medications (for financial reasons, for instance), or didn't receive a prescription, as they didn't yet need pharmaceutical treatment, only a lifestyle change.

Which patients need treatment?
R.T.-M.: Treatment is based on blood glucose levels and HbA1c, the glycated hemoglobin level, which indicates average glucose levels over the last 3 months. Based on these results we recommend changes to the diet and physical activity – this is the initial, non-pharmaceutical intervention strategy – or treatment with medications, usually starting with metformin tablets. If this doesn't help we prescribe several other oral medications, or insulin injections.

What about those who aren't receiving treatment?
T.Z.: Indeed, as many as about 25% of diabetic Poles – one in three men and one in six women – doesn't know they're diabetic! The NATPOL study allowed us to verify the state of diabetes awareness in Poland. We obtained this data thanks to this study for the very first time utilizing the current diagnostic criteria for diabetes used in clinical practice. Usually, in these types of large research programs only one fasting blood glucose test is used. This is determined by financial considerations and logistics. In the NATPOL study, in accordance with the diabetes diagnosis process, the project took into account a second blood glucose test, and only when the glucose was elevated the second time did we diagnose the patient with diabetes. For the NATPOL study we used a representative sample consisting of 2,400 Poles. Based on these results we determined that 26% of patients aren't aware of having diabetes (36% of men, and 15% of women). Factoring this in enabled us to a come up with the total number of 2,700,000 patients suffering from diabetes.
R.T.-M.: The study conducted by one of our collaborators, Sequence HC Partners – an independent commercial company assessing medicine consumption – involves gathering information on pharmaceutical sales in a representative sample of 600 pharmacies. This too can help us estimate the number of diabetes patients. Using this information we can verify some of the data from the National Health Fund and find out how many people buy diabetes medications without being reimbursed. This is a group of about 100,000 people.

Will the collected data tell us how many people suffer from type 1 diabetes vs. type 2?
R.T.-M.: Unfortunately not. Type 2 diabetes isn't depended on insulin at first, but on insulin resistance. The tissue does not respond to insulin in the body. Due to metabolic changes and increased obesity, the body needs more of it. Insulin is used in type 1 diabetes, but also in some cases of type 2 diabetes. The classification of diseases divides diabetes into insulin-dependent, and non-insulin-dependent. Some doctors occasionally code type 2 diabetes as insulin-dependent because they prescribe insulin. This ambiguous way of describing diseases is a problem. This is why we're not able to tell definitively how many cases of either type of diabetes are present in our population.

So there are 2,700,000 diabetics in Poland – is that number similar to those in other countries?
T.Z.: It's similar. That's 6–7% of the population. Percentage-wise we're on an average European level.

But aren't we heading towards a higher level?
T.Z.: Unfortunately, we are. And not only in Poland. In April, *The Lancet* published the results of a collection of studies conducted in 200 countries, which indicate that after 1980, the number of diabetes patients world-wide rose from 108 million to 420 million. The percentage of men suffering from diabetes rose from 4.5% to 9%, while in women that number increased from 5% to 8%.

Women take better care of themselves?
T.Z.: Yes. And they are more aware of diabetes.

It is worth noting that 40% of diabetes cases which caused the numbers to rise were due to the aging population. Thanks to our report we can provide the government with reliable data, not only about the prevalence of diabetes, but also – thanks to the demographic projections of GUS (Central Statistical Office), and the data from ZUS (Social Security Institution) – analyze trends and costs, and suggest improvements in the health policy in this field.

Many people don't want to know that they're ill.
T.Z.: In the 1990s we believed that the reason why people didn't want to get tested was, for example, a fear of losing their job, but these days we have no idea why this is the case. Maybe it's some type of "Macho Man" syndrome. In the case of Polish women, many health indicators depend on the level of education. As far as men are concerned, education determines their health knowledge and behavior to a much lesser extent.

A diabetic patient should absolutely follow doctor's orders?
R.T.-M.: Yes. Because, first of all, diabetes treatment does not bring effects without doctor intervention, as indeed is the case for all illnesses. Secondly, if the patient doesn't follow a diet or check blood glucose levels,

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they will not win the battle with this disease, or prevent diabetes complications. Similarly, if they forget to take medications or ignore the doctor's orders to take them, although they help treat the condition. In addition to taking medication, it is crucial to follow a healthy diet and engage in physical activity. If someone eats several sweets per day, then no medication will help them. So improving one's lifestyle is always important.

And quit smoking?
R.T.-M.: Yes, that's definitely recommended.

Leading a healthy lifestyle isn't easy.
R.T.-M.: In order for people to lead a healthy lifestyle their government needs to provide adequate socioeconomic conditions. It is only when their economic situation is stabilized that people start to change their preferences, have more time for themselves, their families, and take care of their health. This is especially apparent in the smoking habit, which is escalating in developing countries, but the number of smokers significantly drops when the economic situation improves. Twenty years ago 60% of Polish men were smokers, now it's only thirty-some percent. However, more and more Polish women are reaching for cigarettes and among them the number of deaths from lung cancer is rising.

How much is diabetes costing us?
T.Z.: Three, four years ago it was an annual expense of 4.5 billion PLN, counting both direct costs (e.g. medication, counseling, hospitalization) and indirect costs (related to absenteeism in the workplace, low productivity – the so-called presenteeism, meaning being present at work in spite of illness, which affects the quality of work, disability). Even if we assumed that the incidence of diabetes will not increase – and we know that due to growing obesity it will rise – then, at the expected rate of our population aging, by 2030 the cost of diabetes will double. That's why it's important for Poland to develop epidemiological research aimed at optimal monitoring of the prevalence, detection and control of lifestyle diseases, such as diabetes, as well as registries (outcome research), which would result in a much improved health policy. If we don't do that, it's easy to predict that in 10–20 years our healthcare system will have much bigger financial problems than we can imagine today. ■

We talk to **Dr. Krzysztof Strojek** from the Silesian Center for Heart Diseases, co-author of the first *Report on Diabetes in Poland*, about diagnosing diabetes, access to specialists, and the role of sugar in the development of diabetes.

ACADEMIA: **How is diabetes diagnosed and treated in today's unfavorable state of the Polish healthcare system?**
KRZYSZTOF STROJEK: The problem with diagnosing this condition stems from the fact that at first it appears as slight hyperglycemia, which is characteristic of type 2 diabetes, and does not cause any alarming effects. Thus the patient isn't aware of the dangers, or ignores them. This is why routine checkups are necessary, even if we're feeling fine. It's ironic that we take our cars for inspection every year, but we are not as diligent when it comes to our own health. The aim of modern medicine, including diabetology, is to diagnose diseases very early on, before they are even clinically perceptible. It is based on routine checkups of apparently healthy people. In its recommendations, the Polish Diabetes Association includes the requirement to test blood glucose levels, which enables early detection of diabetes, every three years in persons over 45 years of age, and once a year in those at a higher risk of contracting diabetes. The data from our report shows that for every three people diagnosed with diabetes one person is not aware they have the condition.

That's quite a lot.
Yes, but we can see progress. A few years ago, for every patient diagnosed with diabetes there were two undiagnosed cases. Besides, these figures do not deviate from the European average. But the shortage of specialists certainly presents a problem. According to my calculations we need 1500 diabetes specialists, but Today have 1100, which is about 30% fewer than needed. In addition, they are unevenly spread out. There are regions where 85% of the demand for them is covered, but then there are those areas where that number doesn't exceed 40%. Of course not all diabetics need to be treated by a specialist. Insulin-dependent diabetics and those with complications should be treated at a Diabetes Clinic. But patients who take oral medications may remain in the care of a family doctor, and only annually consult a specialist to evaluate their clinical state and determine further treatment.

What is used to treat diabetics in Poland today? The newest medications available to diabetics in Western Europe?
All diabetes medications available world-wide are licensed in Poland. This means all types of therapy

are accessible, but only in theory. It's an illusion, because for the past ten years newer therapies have not been reimbursed. They cost 100-200 PLN per month, which significantly restricts access to them for most patients.

Are the numbers of newly diagnosed diabetics in Poland increasing as fast as in other countries?
We don't have complete data on this. Our report reflects the current situation, and doesn't enable us to assess trends. However, in the future it will be the starting point for further estimates. Indirect data suggest an upward trend, as in other countries in our latitude and similar stage of development. It is mainly based on growing obesity and overweight issues.

There were plans to establish a National Program for Prevention of Diabetes and related complications. Was such a program created?
That program was indeed established several years ago, but the funds allocated for its implementation amounted to 2 million PLN, which comes out to less than one zloty per patient. The Polish Diabetes Association is strongly urging the Ministry of Health to launch another program.

In January, David Ludwig, an American endocrinologist and Professor of Pediatrics at Harvard Medical School, published a book entitled *Always Hungry*, in which he writes about the insulin-carbohydrate model of obesity, where excess refined sugar interferes with the self-regulating balance of the metabolic system. What are your thoughts on the impact of sugar on our bodies?
Sugar is not a problem in itself. The notion that consuming large amounts of sugar can lead to diabetes is untrue. However, excessive consumption of food, including carbohydrates, may cause the condition through the induction of obesity. Professor Ludwig suggests that high intake of carbohydrates increases the appetite due to release of insulin and thereby contributes to obesity through unnecessary consumption of excess food, causing diabetes in the process.

In order to digest sugar, the body uses many valuable components, such as B vitamins, chromium and zinc, which is essential in fighting depression. Is sugar addictive as well?
It is not a classic addictive drug, but for some people, because of its taste, or simply because it's "delicious," it seems essential for normal functioning.

How can such a person survive on a low-sugar diet?
They have to realize that this is not something essential to survival. It also helps to find other pleasures in life aside from food, and sweets in particular.

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Statistically, each person consumes 25 kg of sugar per year (previously 2.5 kg), which adds an extra 260 calories per day. Should we avoid products to which sugar was added, such as bread, which did not need extra sugar in the first place?
I very much urge everyone to carefully read food labels and avoid those products which are high in carbohydrates. In some countries, including the UK, there is an ongoing legislative process aimed at increasing the excise tax on sugar, so as to reduce its consumption, and thus halt the plague of obesity and diabetes.

Sugar causes the deposition of cholesterol. 61% of Poles have elevated cholesterol. How does this number compare to other countries in the world?
It seems to me that in this respect we are no different from other societies in developed countries.

At the end of your report there is a chart showing that the world's top ten countries in terms of numbers of diabetics include the highly evolved and health conscious Germans and also the slim Japanese. That's a big surprise. What could be causing the high incidence of diabetes in those countries?
Germans gain weight similarly to us Poles, while in the case of the Japanese the problem is genetic predisposition. A growing number of patients with type 2 diabetes in this country are people who are not overweight. Intensive research is underway to explain this phenomenon.

Interviews by **Anna Kilian**
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