

EDUCATION IN DIABETES

THE MISSING LINK
TO SUCCESS



**DIABETES IS DIFFERENT FROM
OTHER CHRONIC DISEASES IN THAT
THE PATIENT IS ABLE TO AFFECT ITS
COURSE THROUGH INDIVIDUAL
ACTIVITIES IN SELF-CARE
AND SELF-CONTROL**

> Effective self-care, self-control and dealing with the disease is something the patient needs to learn. To this end, the patient needs education that should be provided in first order by nurses and midwives – diabetes educator (A. Szewczyk)

**Content
development :**

HTA Consulting
Limited Liability Company
Limited Partnership

Ul. Starowiślna 17/3
31-038 Kraków
www.hta.pl

**Project
manager:** Piotr Wojciechowski

Authors: Magdalena Kulik
Monika Małowicka
Ewa Mucha
Anna Górka
Maciej Ziobro
Anna Chudzicka



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ALICJA SZEWCZYK

President,
Polish Federation
of Education
in Diabetes

Diabetes is different from other chronic diseases in that the patient is able to affect its course through individual activities in self-care and self-control. Effective self-care, self-control (i.e. dealing with the disease and accepting it) is something the patient needs to learn. This is not easy, as it requires medical knowledge, consistency and strong discipline. The patient therefore needs therapeutic education. The patient's primary teachers are nurses and midwives-educators in diabetology.

Diabetes education has been considered an equally important part of diabetes treatment for the past 40 years: it is in fact an international standard. The Polish Federation of Education in Diabetes (PFED) takes efforts to ensure that patient training in self-control and self-care become components of the basic therapeutic regimen.

In 1919 professor Elliott Joslin authored a diabetes education manual. Initially, education was considered part of general health education rather than a large-scale effective therapeutic system. However, this began to change when Joslin, Rose and Laurent introduced insulin as part of treatment. It became clear at the time that protecting the patient against hypo-

glycaemia after insulin administration requires training. Professor Joslin considered this so important that he in fact made the provision of insulin treatment contingent on the patient being professionally prepared in advance. The term "diabetes nurse educator" was coined at the time, referring to a person tasked with educating diabetic patients in hospitals and in their homes. Historically, the first healthcare professional involved in education was the diabetes nurse educator.

The development of diabetes treatment and working towards optimal diabetes control indicators led to the development of a new treatment strategy. It is based on the active participation of patients in the treatment process and establishes the need to create educational programs for patients and their families. The acknowledgment in 1991 of diabetes as a lifestyle disease and the signing of the St. Vincent Declaration strongly emphasized the role of patient education as a therapeutic factor.

Prof. Jean-Philippe Assal, president of the Foundation for Research and Training in Patient Education, during his stay in Poland at the 8th PFED Conference emphasized that good education helps reduce the indirect costs of diabe-

tes. He also warned against replacing education with information: they are not the same.

The Minister of Health in the order dated 22 June 2005 (with amendments) established a team to develop the program and health policy for the prevention and treatment of diabetes. In this team, nursing was represented by the president of PFED, Alicja Szewczyk, M.A., and the national consultant in nursing, Grażyna Kruk-Kupiec, Ph.D. in Biology named diabetes nursing as a priority area. This is reflected in intensified activities in the area: the work of the diabetes prevention and treatment healthcare policy development team, and the active cooperation with PFED. At a conference organized by the Centre for the Monitoring of Quality in Healthcare entitled "Quality in Healthcare", Grażyna Kruk-Kupiec presented PFED's strategic goals with the following commentary: "Diabetes is an example of a lifestyle disease due to its scale, chronic nature, incurability, threat to health and life, and high cost of treatment. The health education of diabetic patients, the role and the related tasks of the nurse in the area of organizing work and competencies constitute a challenge to the management, as well as to the nurses who work with patients." These words are equally valid today.

The next step to strengthen the importance of educating diabetic patients was the ordinance of the Minister of Health of 20 July 2011 concerning the qualifications of employees on individual job positions in public healthcare institutions, which introduced the position of diabetes educator. The qualifications required from employees in this position are listed in the table constituting the attachment to the ordinance in item 113. These positions will be filled with, among other persons, nurses and midwives who completed the specialist course "Diabetes educator for nurses and midwives." In February 2011, the Department of Nurses and Midwives of the Ministry of Health approved the framework program for a specialist course for diabetes educators. Its purpose is to prepare nurses and midwives to coordinate activities related to treatment education.

In December 2011 the Polish Federation for Education in diabetology adopted the "Declaration on the place and role of the educator in providing care to patients with diabetes", followed next year by a position on the employment of diabetes educators in compliance with the ordinance of the Minister of Health dated 20 July 2011. The position included the following postulates:

1. Employing in medical institutions (including hospital services and community care) of nurses / midwives in the position of diabetes educator, in compliance with the ordinance of the Minister of Health of 20 July 2011.

2. Financing of the educational service as a separate service contracted by the National Health Fund.

The introduction into the Polish healthcare system of the position of diabetes educator will give patients broad access to education necessary in the treatment of diabetes; this will contribute to improving the health and quality of life of diabetic patients, reducing diabetes complications, and will bring savings by reducing expenses on treatment of complications. In order for this to happen, diabetes treatment education should be a separate service contracted by the NHF, and the diabetes educator should be a professional employed obligatorily in medical institutions of certain types.

The nursing community suggested that the diabetes educator's service be in the form of "educational counselling". The national consultant in diabetes nursing established a team consisting of: the Mazowsze region provincial consultant in diabetology, the national children's endocrinology and diabetology consultant, national consultant in gynaecology and obstetrics nursing, representatives of the Polish Diabetes Society, Polish Federation for Education in Diabetes, Polish Dietetics Society, Diabetes Education Association and the Head Chamber of Nurses and Midwives. A meeting

of the team in the Department of Nurses and Midwives on 30 July 2015 discussed the terms of performance of the diabetes counselling education, its purpose, the required qualifications and licensing, location of service provision, eligibility criteria, medical procedures including the counselling, documentation required for payment. The team suggested, among other things, that the location of service provision should be outpatient and hospital-based specialized care facilities, as well as hospital wards where patients with diabetes are hospitalized, and the purpose of the counselling should be to prevent the acute and chronic complications of diabetes. It was also deemed that placement of educational counselling in primary healthcare would be difficult to implement at this time due to a shortage of educators and costs. However, the implementation of counselling as a separately contracted service will enable improved diabetes care especially to those groups of patients who have limited access due to their place of residence or other factors.

An important element of preparing for the role of diabetes educator are professional standards. These can differ slightly from province to province, nonetheless it is necessary, as minimum, to define general terms and clear rules pertaining to both the education and functioning of the diabetes educator. The standard for the diabetes educator was developed by a team appointed by the national diabetes nursing consultant and is being analyzed by at the Department of Nurses and Midwives. Its implementation still requires discussions in the medical community.

Before professional diabetes care teams become widespread in Polish hospitals and before the cooperation between the entire treatment team (including the patient, nurse, educator, doctor, dietician, psychologist, rehabilitation specialist, pharmacist and others) assumes the required form, everyone of us – nurses working with diabetic patients should individually strive towards professionalism and systematically expand their knowledge and improve their professional skills. On the other hand, employing nurses and midwives as diabetes educators in medical institutions (both in hospital treatment and in community care) in compliance with the ordinance of the Minister of Health of 20th July 2011 will increase the opportunities for developing professional careers in nursing and obstetrics. At the same time it will contribute to increasing the attractiveness of the profession as one that enables development and attainment of higher competencies.

I believe that the activities undertaken by the national diabetes nursing consultant in cooperation with the Department of Nurses and Midwives at the Ministry of Health, i.e.: the development of the educational counselling as a separately contracted service and the standard of nursing clinical practice for the position of diabetes educator will be effective in providing specialist diabetes nursing care and will contribute to strengthening the professionalism of nurses working with diabetic patients.

The report “Education in diabetes. The missing link to success” was developed on initiative of PFED, using the result of nationwide studies

entitled “The organization of diabetes care and education for diabetic patients in outpatient and inpatient treatment,” conducted as part of a series of conferences under the joint title “Diabetology in the region. A new look at diabetology in nursing,” conducted by PFED in cooperation with Dranel between January and May 2015 in the local capitals of Polish provinces. I will add that this is the second study of this kind conducted by PFED. The first, conducted in 2006 illustrated the level and organization of care for patients in different hospital wards.

I hope that this report will make decision-makers aware of the importance of diabetes education and its accessibility, as well as of the role of the nurse and midwife in patient education – also in context of indirect and direct costs of treating diabetes.

**Professor KRZYSZTOF STROJEK,
M.D. PH.D.**

3rd Cardiology Department and Clinical Ward
of the Medical University of Silesia
– Clinical Department of Internal Diseases,
Diabetology and Metabolic Disorders

Diabetes is one of most prevalent diseases of the 21st century in developed countries. An enormous number of patients, their health-related and psychological problems, the social costs involved in treatment and social benefits make this disease a particular challenge for healthcare and social security systems.

Modern medicine cannot cure diabetes, therefore it is so important to treat this chronic disease correctly. The proper treatment of diabetes, based on individualized indications, consist in maintaining proper blood glucose levels, blood pressure and lipid levels, including efforts to reduce body mass. It is also necessary to cyclically assess the presence and progression of late complications of the disease.

In the course of treatment, the parameters that require monitoring, including primarily the glyce-mic index and blood pressure, change dynamically, sometimes even within a day. Therefore a treatment based on administering a fixed dose of drugs during cyclical appointments every 3-6 months cannot be effective. According to the maxim of Dr Elliott P. Joslin, pioneer of modern diabetology, diabetes is treated by the patient assisted by the doctor. In order for this to be possible, it is neces-

sary to communicate to the patient a broad scope of knowledge about all aspects of treating the disease.

The term “education” should encompass different forms of communicating information – not just a lecture or talk during a doctor’s appointment when the patient’s perception is limited. Education should include different directions of both individual and group education, to enable patients to obtain the knowledge, understand the provided information, acknowledge the purpose of the recommendations and their application in everyday life. Recommendations communicated as part of education require the patient to, among other things, change their lifestyle and dietary habits which is extremely difficult to implement, and particularly to maintain throughout treatment. Therefore it is very important that education is provided in cycles to keep the knowledge fresh and to reinforce the motivation to adhere to guidelines. Modern treatment of diabetes shifts the relationship between the doctor and the patient from a paternalistic approach, in which the doctor sets a rigid drug dosage regimen, to a partnership-based relationship. In the latter, the doctor becomes an advisor and a partner to the patient, with whom he or she discusses any problems

arising in the course of the treatment and advises how to resolve them. This treatment model requires education, understood as an integral part of treating diabetes.

This document is a comprehensive compilation concerning broadly understood diabetes education in both individual and systemic aspects. I believe it will prove extremely useful as a basis for discussion about improving the effectiveness of education, and thus improving the effectiveness of diabetes treatment in Poland.

**Professor GRZEGORZ DZIDA,
M.D. PH.D.**

Department and Clinic
of Internal Diseases
Medical University of Lublin

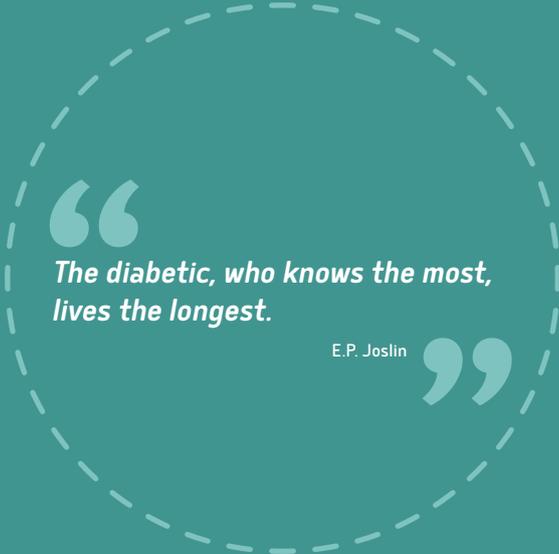
One of the greatest successes in diabetology in the early 21st century is that patients with type I diabetes can now live as long as their peers without the disease. This has been made possible with the progress in insulin therapy and methods of self-control, and primarily thanks to patient education. With proper education we, together with our patients, can now attempt to set more ambitious goals in controlling diabetes. It is the patient's thorough knowledge about their disease that is probably the most important factor in preventing hypoglycaemia. We already know what constitutes proper education in diabetes. It needs to be constant, planned and supervised by professionals. Who is to educate patients with diabetes? Naturally, the doctor is not the only, and probably even not the most relevant person in this context. Treating diabetes is a team task, and within this team there is a dedicated role in patient education for diabetes nurses, dietitians and educators. The role of the educator as part of the team cannot be overemphasized. If the educator is properly educated, as confirmed by relevant certificates, then the path to treatment success is much easier. In diabetology, more than an-

other areas of medicine, education is a necessary element of therapy. Over the last few years, many people in Poland obtained certification as diabetes educators with specialization in diabetes nursing. It is therefore high time to acknowledge their role, also by appreciating their educational counselling, which is time-consuming and requires systematic repetition. It is nothing but beneficial primarily for the patient, but also for the health-care system, because relieving the burden on specialist doctors improves access to diabetologists.

I have read the report "Education in diabetes. The missing link to success." with great interest. It treats therapeutic patient education comprehensively, presenting its principles in context of global and national guidelines. It discusses the current situation in Poland, drawing a map of access to therapeutic patient education in diabetes in our country. The authors of the paper seek to identify the causes of problems and to suggest solutions. Issues of therapeutic patient education in diabetes are treated in a much broader context of epidemiology, with consideration of economic aspects. The publi-

cation concludes with recommendations for the educator community.

On behalf of the Authors, I hope that with this initiative, the paths of diabetes education for Polish patients will lead straight to positive treatment outcomes.



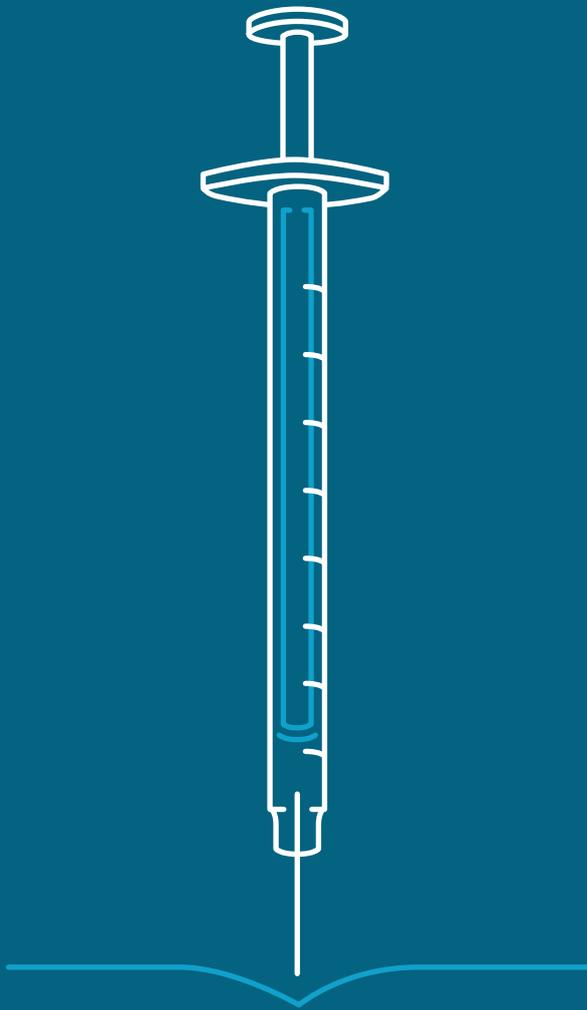
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*The diabetic, who knows the most,
lives the longest.*

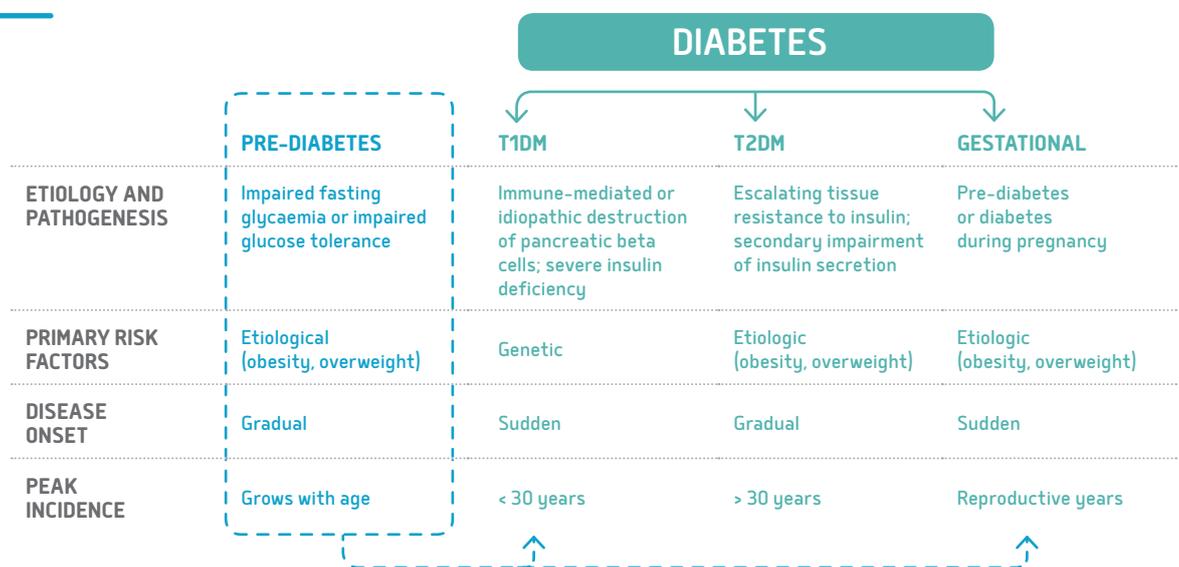
E.P. Joslin

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DIABETES



Diabetes is a collection of chronic metabolic disorders resulting from the impairment of insulin secretion and/or reduced tissue sensitivity to insulin, and manifests as elevated concentrations of glucose in the blood (hyperglycaemia). Chronic hyperglycaemia in diabetes leads to organ function disorder or damage, affecting in particular the kidneys, eyes, the heart and blood vessels. [1]



IGT- impaired glucose tolerance T1DM - type 1 diabetes T2DM - type 2 diabetes
own work based on Gajewski 2014 [1]

Although non-infectious, diabetes is considered an epidemic by the UN because of its fast proliferation. The 21st century brought a rapid increase in diabetes incidence. According to WHO estimates, diabetes, along with cancer, respiratory and cardiovascular diseases, accounts for 82% of global deaths from non-infectious diseases. WHO figures indicate that only in 2012, 1.5 million people have died from diabetes. The disease affects the daily lives of the patient and their families (2).

The etiology of diabetes is very complex. There are several subtypes of the disease, whose common characteristic is persistent hyperglycaemia. However, the causes of the disease's development and the characteristic features depend on the subtype (1). This aspect is extremely important, because aside from diagnosis and implementation of the right treatment, a crucial element of therapeutic success is the patient's awareness and understanding of the nature of his or her disorder.

**2.7 – 3 MILLION POLES
ALREADY SUFFER FROM DIABETES
BUT ONLY 2.1 MILLION ARE AWARE
OF THE FACT, MEASURE THEIR SUGAR
LEVELS AND TAKE MEDICINE**

> If effective action is not taken, the number of patients with diabetes may almost double by 2035. GUS figures indicate that diabetes is a rising cause of death. Between 2005 and 2013, the percentage of people who died from diabetes grew by more than one third.

THE EPIDEMIOLOGY OF DIABETES



The number of diabetic patients in Poland and around the world is growing dynamically. According to estimates of the International Diabetes Federation, there are currently 387 adults (aged 20-79) living with diabetes. Their number grows systematically and may amount to even 592 million over the next 20 years.^[3]

The main factors contributing to the fast growing incidence include: the unhealthy modern lifestyle (poor dietary habits, insufficient physical activity), obesity and hypertension, which are often its results, as well as low awareness of the disease in society. These factors negatively impact prevention and early diagnostics of diabetes. The International Diabetes Federation estimates that one in two diabetics around the world remain undiagnosed.

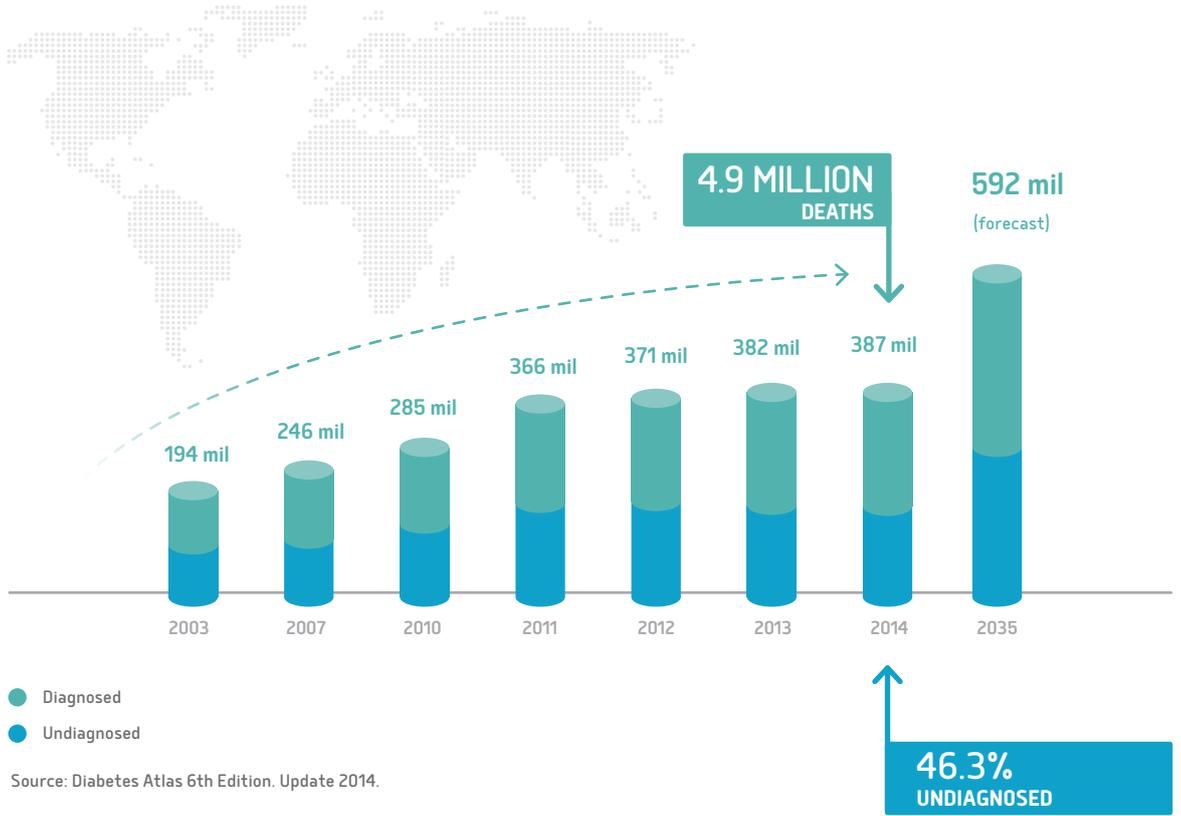
In Europe, including Poland, despite a developed healthcare system, diabetes remains undiagnosed in one in three patients. People unaware of their disease do not seek treatment, which leads to dangerous complications or even death^[3]

In 2014, diabetes caused 537 000 deaths in Europe. In Poland, as many as 21 000 people died from diabetes and its complications (IDF estimates for people aged 20-79).^[3]

GUS figures indicate that diabetes is a rising cause of death. In 2005 it was the cause of death of 14.3 in 100 000 people, in 2010 of 16.9, and in 2013 of 19.3. This represents a 35% increase over a period of eight years^[4]. These figures may be underestimated due to the course of the disease and its complications.

In Poland, close to 30% of reported deaths are due to "insufficiently specified causes", primarily associated with diseases of the cardiovascular system. For this reason, the WHO excludes Poland from comparative analyses of mortality by cause (including in 2013 and previous years).^[5] When the doctor does not know whether the patient had diabetes (often the patient himself or herself was unaware), he or she does not state it as cause of death. This way some deaths are not reported in statistics concerning diabetes.





PREVALENCE OF DIABETES IN THE 20-79 AGE GROUP IN SELECTED EUROPEAN COUNTRIES (2014)



Source: Diabetes Atlas 6th Edition. Update 2014

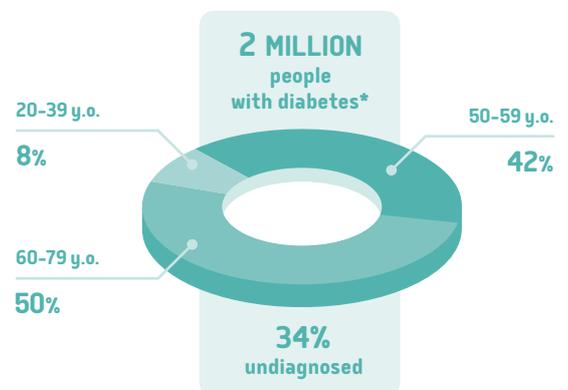
Epidemiology of diabetes in Poland compared to Europe

Latest IDF estimates indicate that currently in Europe there are 52 million adults (aged 20-79) living with diabetes, which means that the so-called prevalence rate is 7.9%. Nearly half of patients are in the productive age (below age 60) and more than 17 million are unaware of their disease. The highest percentage of patients in the adult population is reported in Turkey (14.7%), while the lowest in Moldova (2.9%). Poland with 2 million adult diabetics ranks, is a country with a medium prevalence of diabetes (7.1%). More than half of diabetics in Poland are elderly, between 60 and 79 years old.^[3]

According to IDF forecasts, the prevalence of diabetes throughout the populations of all European countries will grow systematically. It is estimated that by 2035, the percentage of adults with diabetes in Europe will have grown by 21% on average, and the number of patients will reach 68.9 million. The forecasted growth rate of diabetes prevalence in adults in Poland is higher than average. By 2035, the prevalence index will grow by nearly 22% in the 20-79 age group. This means that despite the anticipated decline in the population of adults from 28.9 million in 2013 to 26.9 million in 2035, the number of adults with diabetes (aged up to 79) will grow to 2.1 million.^[3] If we consider the entire population, including the growing group of

people aged 79+ (disregarded in IDF estimates), then the number of patients will turn out even higher, because the risk of diabetes grows with age. GUS figures indicate that today (2015) there are around 1.56 million people in Poland aged 80 and more, and according to forecasts, by 2035 their population will have grown to 2.87 million – by 84% in over two decades.^[6]

If effective action is not taken, the number of people with diabetes, which is currently around 2.7-3 million in the Polish population (including undiagnosed people),^[7] may nearly double in this timeframe. This necessitates urgent prophylactic and preventive action, but also the development of standards in education and care to minimize the risk of complications in a growing number of patients.



* in the 20-79 age group
Source: Diabetes Atlas 6th Edition. Update 2014.

Public awareness

Although diabetes is currently frequently discussed, public awareness of the disease is alarmingly low. Both in Poland and in Europe, a large portion of the population does not understand the causes, symptoms and ways to prevent and treat diabetes. Also low is the awareness of risk of development of complications of diabetes. As indicated by the Diabetes Awareness Survey results, Poland ranks worst compared to other European countries in terms of public awareness of major complications, and in quality of healthcare, as well as in access to treatment. More than half of respondents also confirmed that educational efforts and public support for diabetics are insufficient.^[8]

Results of the nationwide survey conducted in 2010 by the Coalition Against Diabetes and TNS OBOP indicate that one in five Poles have never had a blood sugar test, and one in three believe that diabetes is unpreventable.^[9] GUS data is even more worrying – only 66% of Polish residents have ever taken a prophylactic blood sugar test. The percentage of people after age 30 who have never been tested drops, but it is still dangerously high. Nearly one in five 50-year-olds said they had never undergone such a test, and with less than one in ten reporting the same in the older age group.

That Poles fail to have their blood sugar tested results from, among other factors, the fact that some are not aware of such an option, and some do not feel the need for such tests, believing they must be healthy as long as they are not experiencing any disease symptoms. This is evident in, among others, a survey from 2010, conducted by the Ipsos research institute as part of the “National Lifestyle Diseases Prevention Program” – Module II “Prevention and Treatment of Diabetes in Poland”. Two thirds of Poles stated they are not aware of how to prevent diabetes. They were also not aware of who is at risk of diabetes. Even though the disease can progress asymptotically for many years, half of Poles believed that if there are no symptoms of diabetes, then there is also no disease. Only 38% of respondents confirmed that regular blood tests help detect diabetes. Much less than half of respondents (41%) understood that untreated diabetes can lead to death or dangerous complications. Only 6% declared that they would be able to assist a person with symptoms of hypoglycaemia, although at the same time the majority agreed that everyone should know how to assist diabetics, but the public at large does not have the required knowledge.^[9] In turn, the above-mentioned survey of the Coalition Against Diabetes

and TNS OBOP indicates that as much as 35% of the public cannot list even one effect of the disease. Low awareness and insufficient knowledge of diabetes translates into lack of prevention, mindful management of the disease and self-discipline.^[11]

Another important problem in treating diabetes is the mental state of the patient. Self-acceptance and acceptance from friends and family, community and society as a whole is a factor that motivates patients to take therapeutic action and improves cooperation with the doctor. Failure to accept the disease contributes to the development of mental disorders (depression) and a sense of discrimination, which in consequence leads to insufficient glycaemic control, reduced quality of life and increased number of complications.^[12, 13] It is therefore important to provide patients with care and structured education beyond a description of the disease and its complications, including aspects related to accepting the disease, improving self-control and self care.

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PATIENT THERAPEUTIC EDUCATION

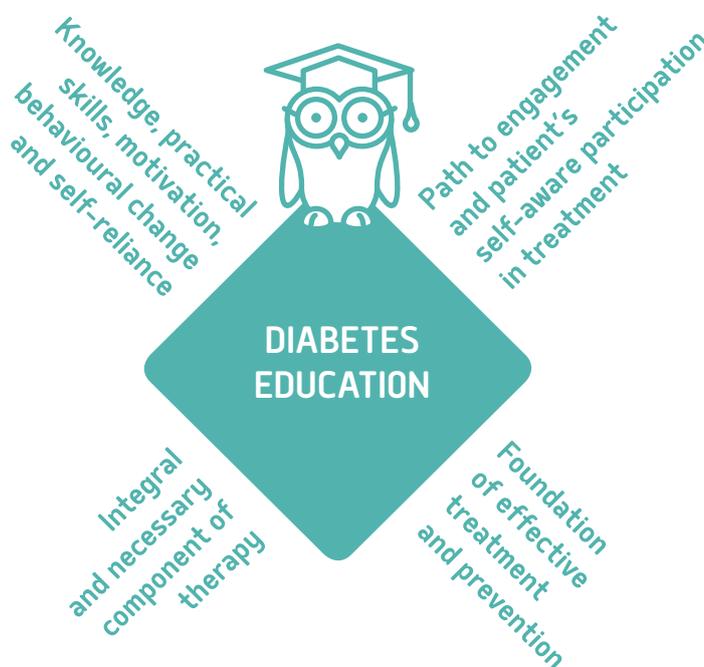


PATIENT THERAPEUTIC EDUCATION is an ongoing process which constitute an integral parts of treatment. It includes information, teaching self-control and psychosocial support. It enables patients to acquire knowledge and skills, helping to maintain quality of life at the highest possible level despite limitations related to the disease. The purpose of education is to help patients and their families maintain a partnership-based cooperation with healthcare professionals and society (WHO 1997). The patient’s lifestyle should be consistent with their informed choice, based on self-reliance, knowledge, skills and self responsibility.*

* Definition of education by the WHO, 1997, expanded to include the 1999 guidelines of the European Diabetes Policy Group experts.^[14]

Modern diabetes treatment goes beyond the traditional understanding of the treatment of chronic diseases. It includes early prophylaxis, identification and monitoring of risk factors, and education. The transformation in recent years of the traditional model of passive submission to treatment into a model of “active participation in treatment” (self-control) has elevated patient therapeutic education to a factor as important as pharmacotherapy. Self-aware patients who understand their role in the therapeutic process become active participants in the fight against the disease.^[15,16]

In 1997 the World Health Organization included patient therapeutic education into the treatment model of chronic diseases, because it was proven that patient knowledge improves their cooperation with medical personnel and makes them more competent to fight the disease.^[14]



Source: Banduska-Stankiewicz 2010,^[17] Ruxer 2005^[16] and materials from the PFED 2009 conference.^[19]

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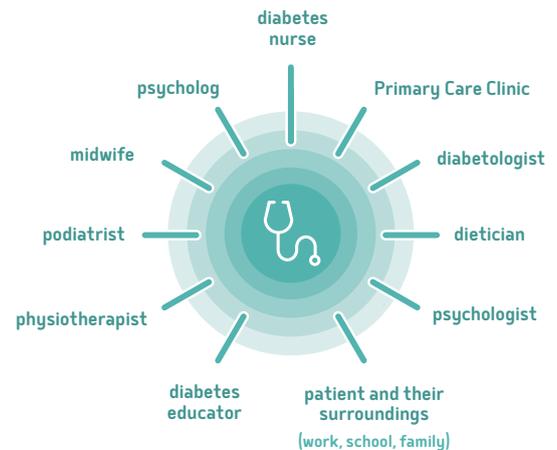
*Without good education,
even the best and most
expensive drugs will not help.*

Professor L. Czupryniak

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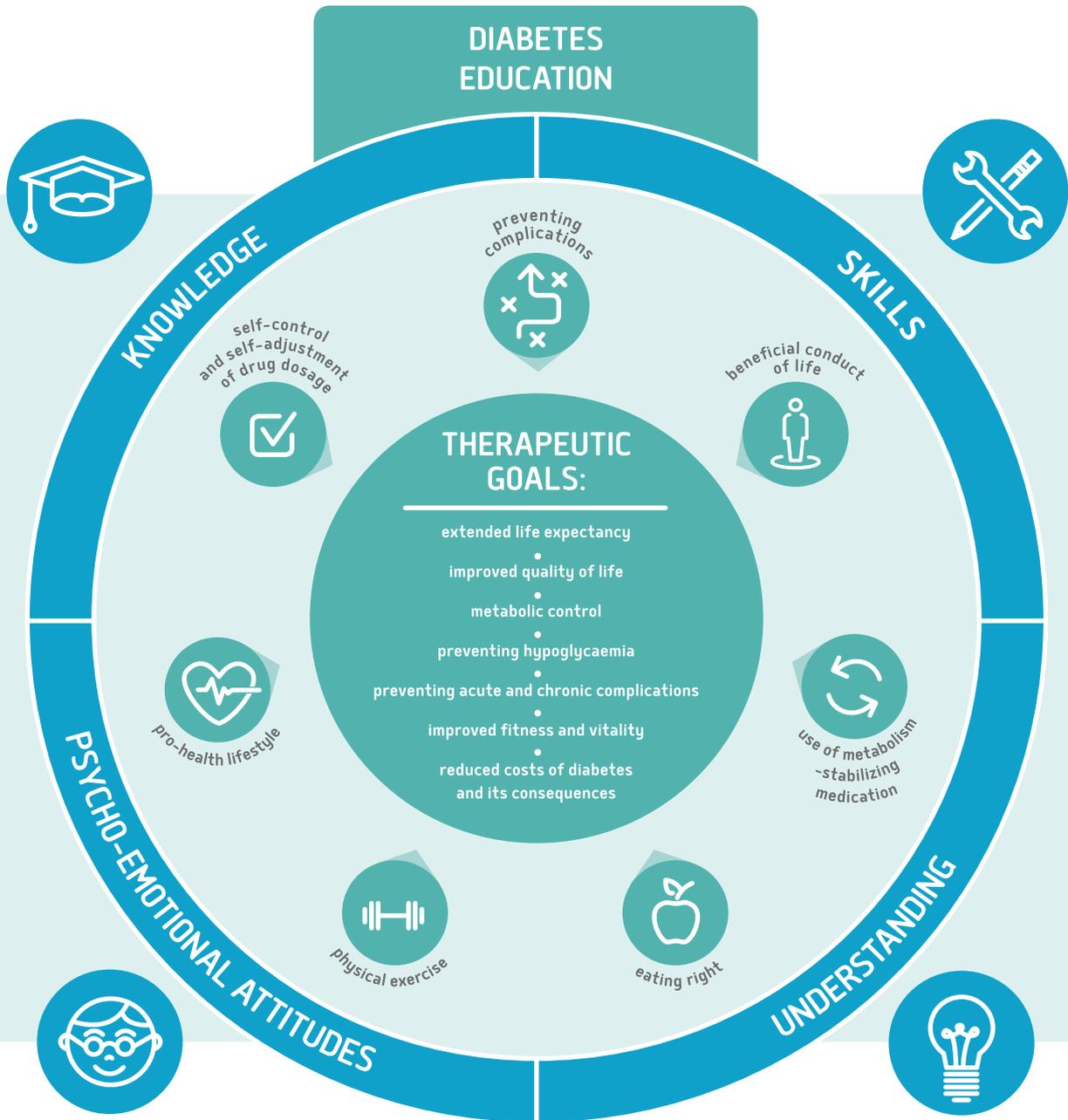
From the moment of diagnosis, the diabetic patient should be provided with comprehensive diabetes care, and a team of specialists should communicate the basic knowledge about the essence of the disease and ways to treat it, as well as practical skills required when living with diabetes. Properly conducted health education helps patients ‘tame’ the disease, implement a beneficial lifestyle, and in effect allows them to control diabetes, prevents development of hard to treat complications and provides the highest possible quality of life. Diabetes education that increases the competency of the patient and their family in their fight against the disease is also designed to prepare for cooperation in the treatment process and self-care. Proper education improves mental resilience to stress, reinforces self-reliance, motivates to undertake the challenges involved in treatment, counteracts anxiety, confusion, depression and eliminates concerns for the future.^[19, 20] As a result of effective diabetes education, the patient assumes responsibility for the treatment of the disease and for the related therapeutic decisions.^[17]

Comprehensive treatment of diabetes, including lifestyle modifications and pharmacotherapy requires the cooperation of multiple specialists (including diabetologist, diabetes nurse, dietician, physiotherapist, psychologist, educator) and strong self-discipline from the patient.^[20]



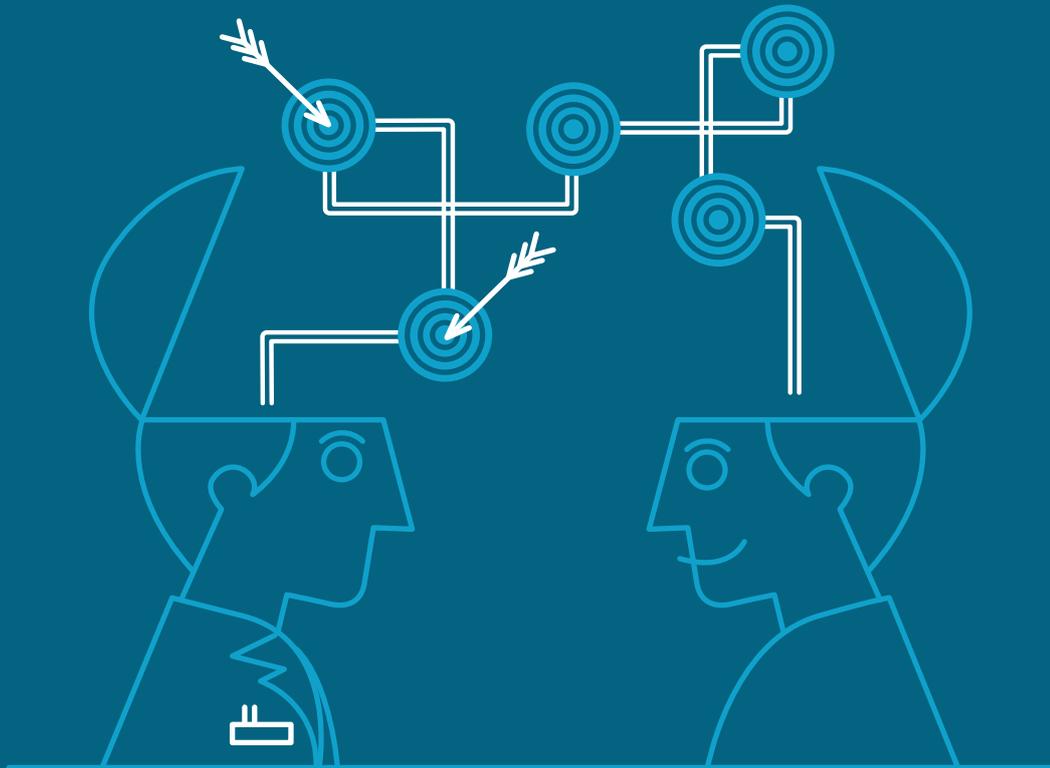
Patient education can proceed individually – as an integral part of their contacts with members of the treatment team – or as a group activity in small, preferably homogenous groups, where the content and methods should be individually adjusted to the needs and capabilities of the patient.^[19] Currently, education is also conducted in mass media, and there are also specialist internet-based courses available.^[21, 22]

own infographic based on data from Tatoń 2000.^[19]



Source: Tator 2000 [20]

EFFECTIVENESS OF DIABETES EDUCATION



EFFECTIVE CURRICULAR EDUCATION consists of setting goals based on a diagnosis of educational needs, creating educational plans, performing training and evaluating the process and outcomes.

A therapeutic program will only be effective when the patient believes it to be purposeful and tangibly beneficial. The patient also needs to have knowledge and skills enabling them to actively cooperate with the doctor and co-decide on the course of treatment. Unfortunately, the current situation is quite the opposite. Patient-doctor cooperation leaves much to be desired. One in three patients fail to comply with doctor's indications concerning the treatment. More than 80% of patients, consciously or not, fail to observe the dietary recommendations concerning the quality, amounts or hours of meals. Although in the case of type 1 diabetes nearly all patients acknowledge the non-negotiable necessity of insulin therapy, only 50% of them following doctor's recommendations correctly.^[14]

In the 1940s, professor E. Joslin, creator of contemporary diabetology, used his clinical experience to formulate a thesis that the more a patient will know about their disease, the longer they will live. Studies conducted in the 21st century provide scientific proof to support this claim.^[15] Many diabetes education plans have been developed in recent years. These

have shown a significant impact of diabetes education on the improvement of diabetes control and patient quality of life, as evaluated by patients before and after the training. The effectiveness of structured programs has been proven both for group and individual education. Education contributes to reducing the frequency of hypoglycaemic and hyperglycaemic events,^[23] improved glycaemic control, reducing blood pressure and excessive body weight, as well as to improving lipid disorders.^[24-27] It also reduces the risk of hospitalization, cardiovascular events and death.^[28] Aside from improvements in physiological indicators, education is also beneficial for the patient's psychosocial condition. Many studies have reported reduced anxiety and depression, increased confidence in their own competencies in dealing with diabetes, and an increased sense of satisfaction with life.^[26, 27]

Diabetes education also increases the patient's readiness to take pro-health action,^[23,29] is associated with improved adherence to doctor's recommendations regarding regular taking of medication, following the right diet and engaging in physical exercise, implementing self-inspection of the feet, measuring glycaemic levels, blood pressure, body mass and blood count. It also improves cooperation with the doctor.^[24,26,27,29,30]

Despite multiple sources of scientific proof confirming the importance of education for the improvement of diabetes treatment outcomes, it is not fully utilized. There is an insufficient number of professional educational teams, and access to specialist care is limited due to limits on services contracted from the NHF. Insufficient care and delayed therapeutic interventions result in more frequent hospitalizations, development of diabetes complications and deaths caused directly by cardiovascular complications.^[32] Therefore, diabetologists, nurses and other specialists working with diabetics, as well as patient organizations call for urgent action to implement patient therapeutic education both in diabetic populations and increased risk groups.



Participation in educational activities increase the patient's awareness of the influence of their own pro-health activities on treatment effectiveness.^[24,31]



In 2000, Drożdż et. al. from the Poznań University of Medical Sciences conducted a study on the impact of diabetes education on patient quality of life.

The study group consisted of 40 adults with type 2 diabetes.

It was shown that persons who participated in the training experienced increased sense of responsibility for their health, whereas patients who were not exposed to education believed that knowledge only made them more aware of the burden of the disease*.

* Study of the impact of education on patient quality of life.^[23]

** Study of impact of education on diabetes treatment outcomes.[†]

In 2001, Tatoń et. al. from the Bródnowski Hospital in Warsaw conducted a study on 630 patients exposed to therapeutic education on diabetes management, and 642 patients who had never participated in education before.

In the group of educated patients, the researchers observed reduced annual duration of hospitalizations, fewer episodes of metabolic coma and acute symptoms of diabetic foot, whereas the number of contacts with the doctor at the clinic more than doubled.

This proved that therapeutic education contributes to shifting the burden of care from the hospital to outpatient clinics, resulting in a reduction of total treatment costs**.

**A TREATMENT PROGRAM
IS SUCCESSFUL ONLY WHEN
THE PATIENT BELIEVES IT
TO BE PURPOSEFUL
AND TANGIBLY BENEFICIAL**

> Effective curricular education consists in setting goals based on a diagnosis of educational needs, creating educational plans, performing training and evaluating the process and outcomes.

PATIENT DIABETES EDUCATIONAL PATH



Clinical practice recommendations

Diabetes education constitutes an integral element of medical care for diabetics. That is why the Polish Diabetes Society, along with many other international societies, have published clinical practice recommendations which include frameworks for patient educational programs. The aim of these recommendations is to provide the highest standards and implement unified principles of providing diabetes education.

Also diabetes nurses involved in patient education as part of their jobs, have developed guidelines for diabetes education. 2006 saw the publication of the Guidelines for Diabetes Care by PFED and national nursing and epidemiologic nursing consultants. These were updated in 2012 and 2014. ^[33]

	NAME OF SOCIETY / ORGANIZATION	TITLE	DATE OF ISSUE
Polish guidelines	PFED Polish Federation of Education in Diabetes	Diabetes care guidelines by PFED and national nursing and epidemiology nursing consultants	2006 ^[33] Updated in 2012 and 2014
	PTD Polish Diabetes Society	Clinical guidelines for managing diabetic patients	2015 ^[34]
Foreign guidelines	AADE American Association of Diabetes Educators	Guidelines for the Practice of Diabetes Education	2009 ^[35]
	ADA & AADE American Diabetes Association & American Association of Diabetes Educators	National Standards for Diabetes Self-Management Education and Support	2012 ^[36]
	NHS National Health Service Scotland	Assessment of Patient Education in Diabetes in Scotland	2012 ^[37]
	CDA Canadian Diabetes Association	Self-Management Education	2013 ^[38]
	NICE National Institute for Clinical Excellence	Type 1 diabetes in adults: diagnosis and management	2015 ^[39]
	ADA & AADE & AND American Diabetes Association & American Association of Diabetes Educators & Academy of Nutrition and Dietetics	Diabetes Self-Management Education and support in Type 2 Diabetes	2015 ^[40]

Source: own compilation

PTD and foreign association guidelines emphasize that all patients with diabetes should have access to education and training. An educational program should also be provided to people with increased risk of diabetes and with suspected pre-diabetic state. The main purpose of education is to prepare patients to deal with diabetes independently on a daily basis and support them in the various stages of the disease. It is very important to encourage patients to change their lifestyles and to take up the required physical activity. According to NICE guidelines, another purpose of education is to improve control over risk factors that lead to cardiovascular complications (glucose and lipid concentration, and blood pressure), effective prevention of complications and improvement of quality of life. Education should be conducted both individually, and in group therapy programs. Educators are relevantly trained specialists, including doctors, nurses, dieticians, as well as specialists in diabetes education.

AADE and CDA guidelines single out five elements constituting a framework educational plan. These include: a preliminary assessment (survey including information about the patient, their family and test results), goal setting (together with the patient), planning further

steps (the path to achieving goals), attainment of goals (the educator should implement the relevant educational plan making sure the patient possesses sufficient knowledge and skills to follow through), as well as identification and removal of barriers, assessment of progress, and development of re-education plan. This type of organized, multi-staged and continued patient education is referred to as structured or structural education.

NICE emphasized that educational programs adjusted to individual patient needs should authorize patients to co-decide on healthcare issues. These recommendations also point to the necessity of annual evaluation of patient knowledge and adjustment of the educational program to their current needs.

COMPREHENSIVE EDUCATIONAL PROGRAM ACCORDING TO THE PTD

- 1 **SUPPORT** necessary for the patient to accept their disease. **MOTIVATION** to seek treatment and **STRENGTHENING** of **SELF-RELIANCE** by helping patients discover and apply their competencies – both innate and acquired – to assuming responsibility to their own health and life
- 2 **Set INDIVIDUAL THERAPEUTIC GOALS**
Consider:
 - course of the disease
 - prognosis
 - treatment
 - patient's living situation
- 3 **Communicate BASIC INFORMATION** about the disease.
- 4 **Teach SELF-OBSERVATION** techniques (glucose, ketone bodies and blood pressure measurements) and proceeding in **CRISIS** situations
- 5 **Depending on the type of treatment, education should include:**
 - teaching insulin administration techniques
 - teaching how to use the insulin pump and the constant glycaemic monitoring system
 - teaching how to calculate protein, fat and carbohydrate replacements
- 6 **IDENTIFYING, MANAGING AND PREVENTING** acute and chronic complications.
- 7 **Information about HEALTHY EATING and PHYSICAL ACTIVITY** and their importance in the course of the disease

Position of the Polish Diabetes Society
Clinical recommendations concerning diabetic patient management 2015. Clinical Diabetology 4, supplement A.

An important stage of every therapeutic program is outcome assessment. According to ADA/AADE guidelines, comprehensive evaluation of program effectiveness should be conducted based on patient behaviour in seven areas: physical activity, healthy eating,

compliance with medication regimen, monitoring blood glucose level, solving problems caused by diabetes, reducing risk of complications and psychosocial aspects.

Key elements in educating patients with type 2 diabetes > international guidelines

American guidelines published in 2015 by ADA in cooperation with AADE and AND for patients with type 2 diabetes point to the necessity of adapting educational methods to the capacities of the healthcare education system, so that patients can access guidance in all aspects.

The guidelines point to the necessity of implementing diabetes education already at diagnosis, and define critical moments, at which the educational results need to be evaluated, provide re-education and adjust the program to the patient's new needs.

IMPORTANT MOMENTS for providing therapeutic education to diabetic patients

- 1 DIAGNOSIS
- 2 ANNUAL ASSESSMENT OF KNOWLEDGE, HEALTH CONDITION AND NEEDS
- 3 PRESENCE OF FACTORS COMPLICATING SELF-CONTROL IN DIABETES
- 4 SWITCH IN CARE MODEL



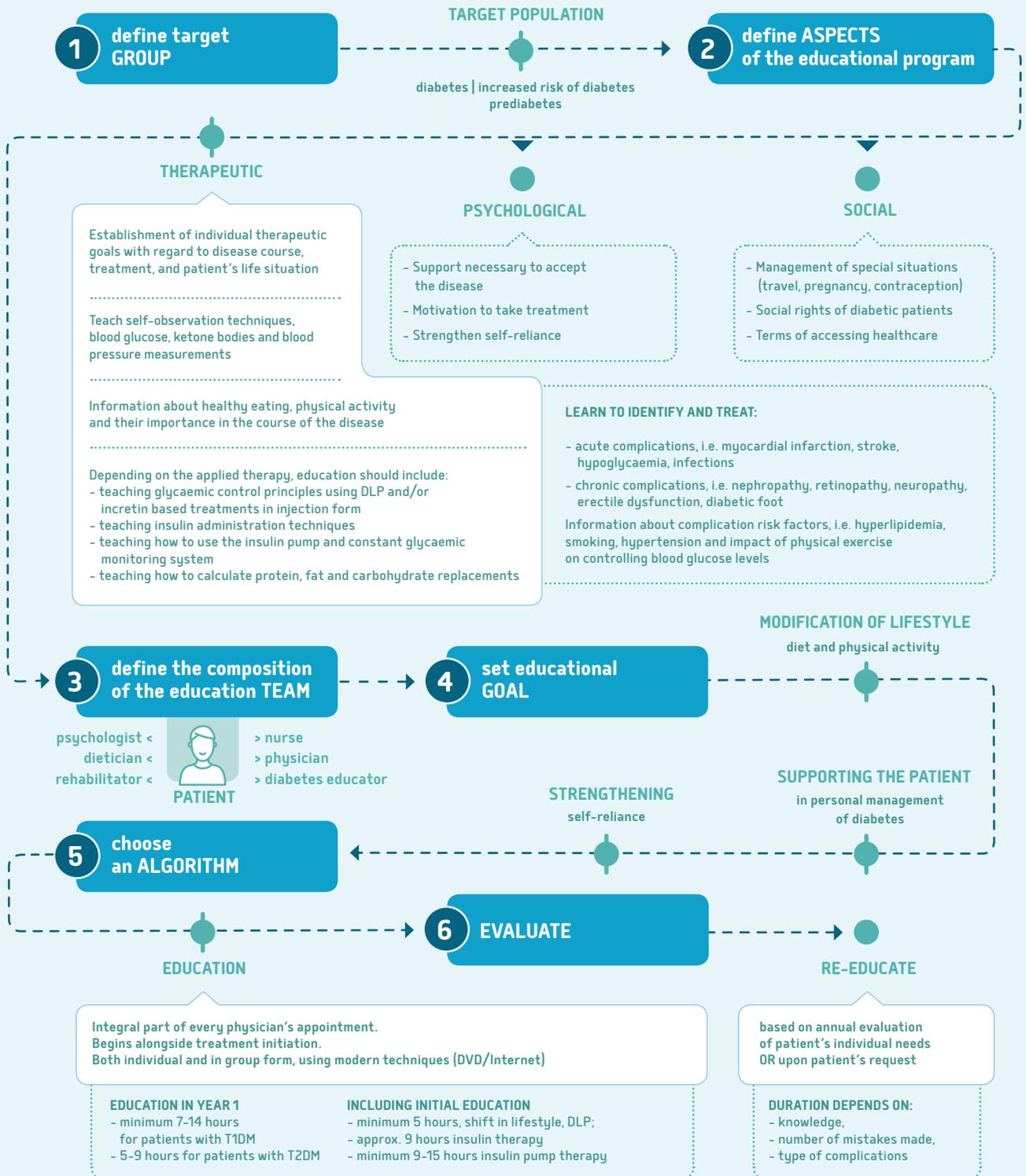
A PATIENT

who requires education is a patient who...

- is newly diagnosed
- needs re-acquisition of information about the disease and treatment when switching therapies or modifying lifestyle
- with chronic diabetes
- fails to achieve target HbA1c
- with unexplained episodes of hypo- and hyperglycaemia
- planning pregnancy or pregnant
- experiences problems with maintaining body weight
- with co-morbidities (kidney disease, stroke) that require steroid treatment or a complicated treatment scheme
- with physical limitations (problems with vision, motor skills, manual dexterity)
- experiences anxiety and depression
- requires specialist care due to ageing processes (including cognitive disorders)
- requires hospitalization, rehabilitation or remains without care
- is switching their attending physician
- is switching treatment regimens or type of medical care due to systemic change

Based on ADA/AADE/AND guidelines ^[40]

PATIENT DIABETES EDUCATION PATHWAY ACCORDING TO PTD



DLP - oral hypoglycaemics T1DM - type 1 diabetes T2DM - type 2 diabetes
Polish Diabetes Society (2015) Position of the Polish Diabetes Society
Clinical guidelines for managing diabetic patients 2015. Clinical Diabetology (4), supplement A.

Diabetes education pathway in Poland

> PTD guidelines 2015

Guidelines published by the Polish Diabetes Society state that education is an integral part of managing diabetes, and as such should constitute part of every physician's appointment. Guidelines recommend structured education, i.e. its implementation upon initiation of treatment and re-education based on annual assessments of patient's needs and knowledge, or at the patient's request. The educational program should support acceptance of the disease by the patient, strengthen their motivation to receive treatment, and provide knowledge about the disease and the impact of lifestyle on its course, teach self-control and treatment techniques (insulin administration), identifying and avoiding complications, proceeding in special situations; the program should also help determine and evaluate the attainment of therapeutic goals. ^[34]

Suggestions of the national consultant in diabetes nursing

Aside from physicians, nurses and midwives are co-responsible for providing relevant knowledge and skills enabling self-control and self-treatment in diabetes. High quality of nursing care can be guaranteed by relevant preparation for work based on unified standards. ^[38]

The diabetes nursing workgroup appointed by the national consultant defined the scope of interventions of the diabetes educator, necessary to perform the educational tasks in diabetes, in the form of a standard. The document, which is currently in the process of consultations, presents in detail the principle of organizing diabetes education including the level of education (first time or re-education), subject of education (with indication of the type of diabetes, special circumstances necessitating education), object of education (topics and contents) and duration of the session. Under this standard, education can only be provided by a person with relevant qualifications and certification as diabetes educator in compliance with the relevant ordinance of the Minister of Health. ^[41]

First-time education – a 45–60 minute session – should be provided to all patients newly diagnosed with diabetes. This educational session can also include members of the patient’s family or their caregivers, which should be mandatory for underage patients. The topics of the first session should be individually adapted to suit the diagnosis and include basic information about the disease, information about controlling the disease by lifestyle changes and pharmacotherapy, followed by a discussion of causes and symptoms of lack of glycaemic control, and information about possible long-term complications of the disease and ways to prevent them.^[38]

Re-educational meetings – approximately 30-minute sessions – should be provided to all patients who are:

- switching therapies (including the implementation of insulin pumps),
- with poor diabetes control,
- with episodes of acute hypoglycaemia,
- with complications,
- women planning pregnancy,

The scope of the re-educational visit to a large extent converges with first-time education, whereas in subsequent sessions the focus is on perfecting the practical skills of self-control and self-care, including insulin therapy skills. Other purposes of subsequent visits include motivating the patient, shaping the right attitude towards the disease, and informing the patient about news on the medical market.^[38]

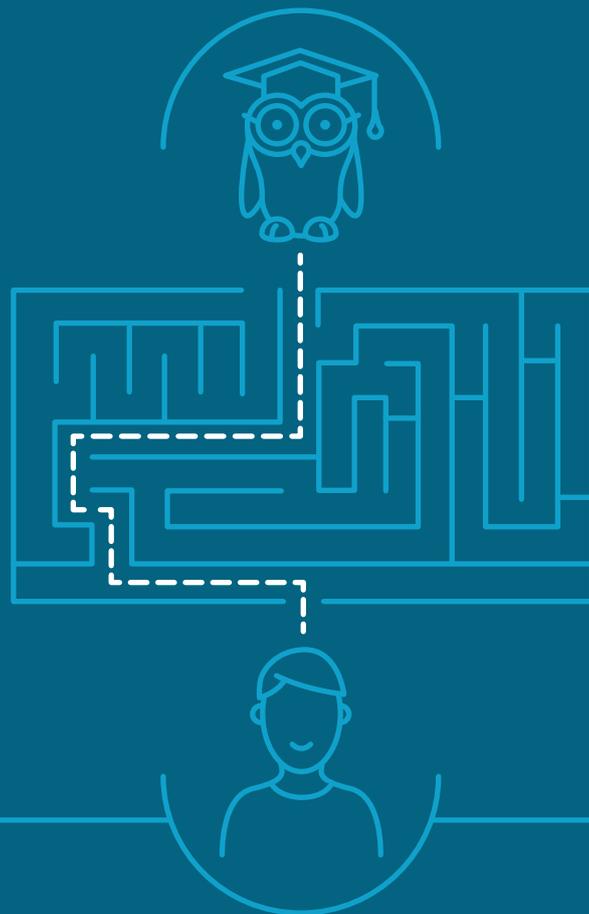
The frequency of educational visits should depend on the patient’s general level of knowledge. For people with newly diagnosed diabetes, the national consultant recommends guaranteed six visits per year for patients requiring insulin therapy, including patients with type 1 diabetes. Remaining patients should be provided with one to two visits per year depending on type of diabetes and treatment method, with the exclusion of persons under therapeutic care who are beginning insulin therapy – such patients are to be provided with up to six educational visits per year.



**DIABETES THERAPY MUST CRUCIALLY
COMBINE SEVERAL ELEMENTS:
DIET, PHYSICAL ACTIVITY,
APPROPRIATE TREATMENT
AND EDUCATION**

> Combining all these elements enables the reduction of risk of dangerous complications and improvement in the quality of life of diabetics.

EVALUATING DIABETES EDUCATION



Polish perspective

The accessibility, scope and quality of diabetes education in Poland was assessed in a nationwide survey entitled "Organization of diabetes care and education for diabetics in outpatient and inpatient care" conducted by the Polish Federation of Education in Diabetes between January and May 2015. The survey included 1390 representatives of the nursing community, 70% of whom were nurses specialising in diabetes nursing or who completed the specialist course "Educator in diabetes". Key conclusions from the study follow below.

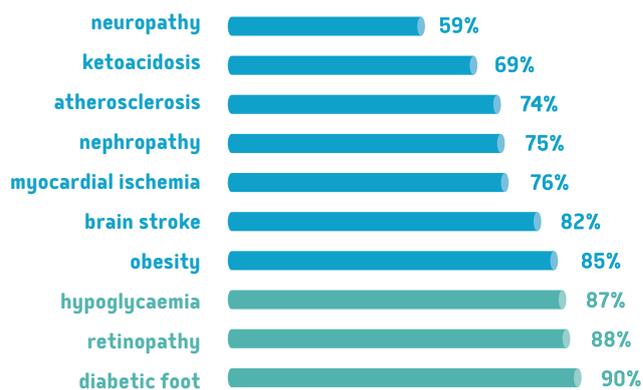
According to survey participants, diabetes education begins relatively late for the majority of patients. This is due to the fact that the disease may develop asymptotically for many years, and the moment of diagnosis, which usually provides the impulse to acquire education, occurs when the disease is already advanced – only around 10 years as of onset. Another factor that motivates patients to start education is a new awareness of the negative consequences of the disease. Patients are most concerned with complications such as diabetic foot (90%), retinopathy (88%) and hypoglycaemia (87%)

“
For most patients, diabetes education begins relatively late.
”

As many as
91%
of survey participants stated that patient education is not part of the nurses' basic duties and only constitutes an additional activity, performed in spare time, between other, numerous obligations.

Fear of complications

Patient education in Poland is provided by diabetes care teams, usually consisting of a physician, a nurse and a midwife, and in one third of medical institutions also by a qualified diabetes educator. Relatively rarely the educational teams include specialists in dietetics, rehabilitation or psychology. Eligible to become diabetes educators in public healthcare institutions are nurses or midwives with relevant specialist education and adequate work experience, as defined by an ordinance of the Minister of Health.^[41]



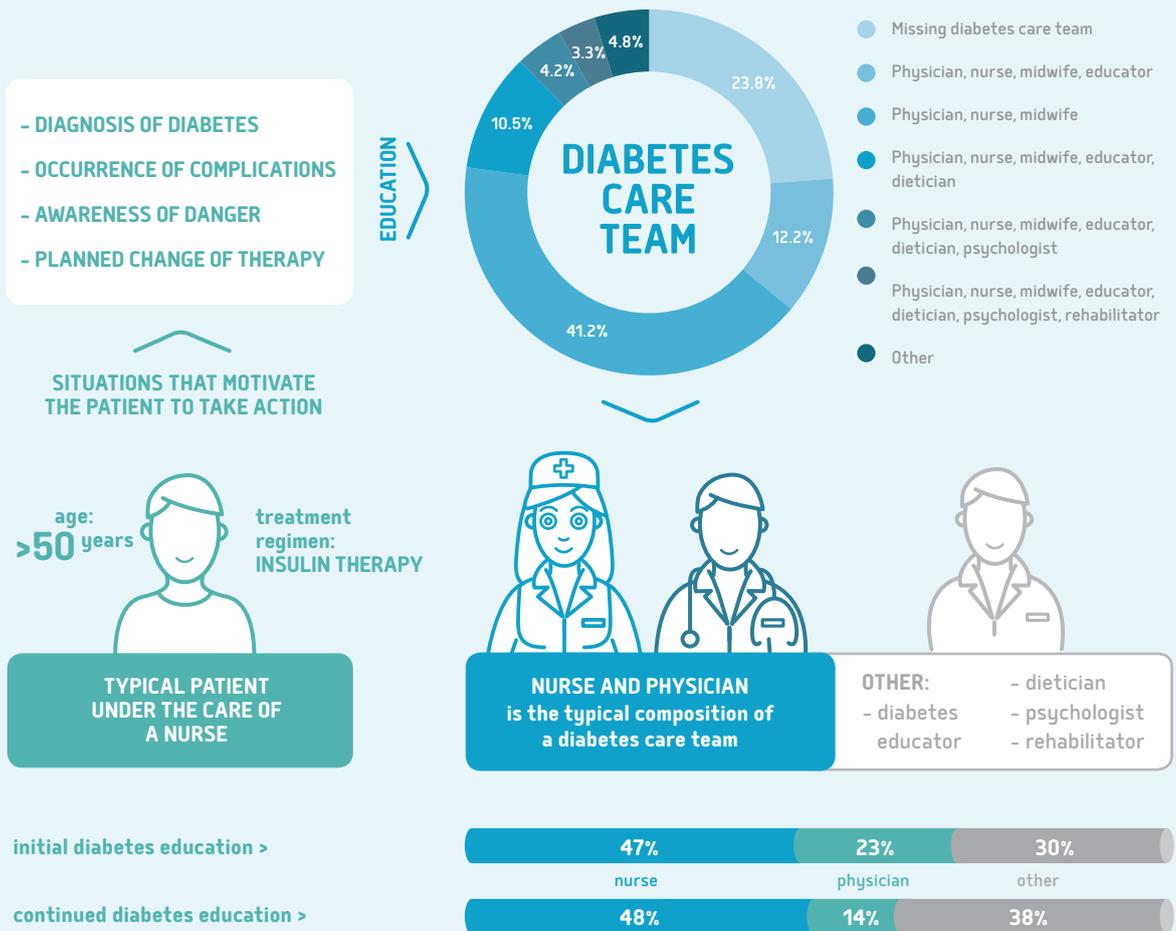
Based on a nationwide survey carried out by the Polish Federation of Education in Diabetology entitled Organization of diabetes care and education for diabetics in outpatient and inpatient care

Question:
Which diabetes complications are your patients most concerned about?

Under this ordinance, the position of educator should be manned by nurses with specialization in diabetes nursing who completed the specialist course "Educator in diabetes". Well-educated nurses and midwives prepared for the role of educator can contribute to organizing and implementing care in their communities. In around 50% of cases, it is the nurse who initiates diabetes education and continues it. To provide patients with the highest standards of care, the nursing staff should be guaranteed ample time to maintain and expand their competencies by participating in postgraduate education. There is also a broader reasoning behind this, as competencies gained in diabetes nursing also improve basic nursing skills and competencies, and can be applied in other areas of care.

The areas of postgraduate education for the nursing and midwifery staff have been defined in a number of legal acts, including the act on the nurse and midwife profession^[42] and ordinances of the Minister of Health.^[43-47]

The role of the nurse in diabetes education



Even up to one in four of nurses participating in the survey stated that a diabetes care team was not operating in her place of employment

Based on a nationwide survey carried out by PFED, entitled Organization of diabetes care and education for diabetics in outpatient and inpatient care

Questions

1. What is the age of diabetic patients under your care in your primary place of work?
2. The diabetic patients under your care in your primary place of work - are they being treated?
3. In what situations do diabetic patients usually feel motivated to seek diabetes education?
4. Who is on the diabetes care team operating in your primary place of work?
5. Who in your primary place of work usually provides primary diabetes education to diabetics?
6. Who in your primary place of work usually provides continued diabetes education to diabetics?

Quality of diabetes education

Each month, one nurse provides care to 100 patients, half of whom are diabetics. In a situation where nurses are already heavily burdened by their primary duties, only 9% of nurses provide diabetes education within their working hours. The remaining surveyed nurses (91%) provide education to patients in their free time, which makes the task more difficult to perform and reduces effectiveness.

Excessive work burdens on nurses negatively affect the form of training provided to patients. Training is usually provided in the form of spontaneous, individual educational sessions lasting less than one hour. More than half (51%) of trainings consist of a 15-minute conversation.

Group training – the most effective type of training – constitute just over 2%

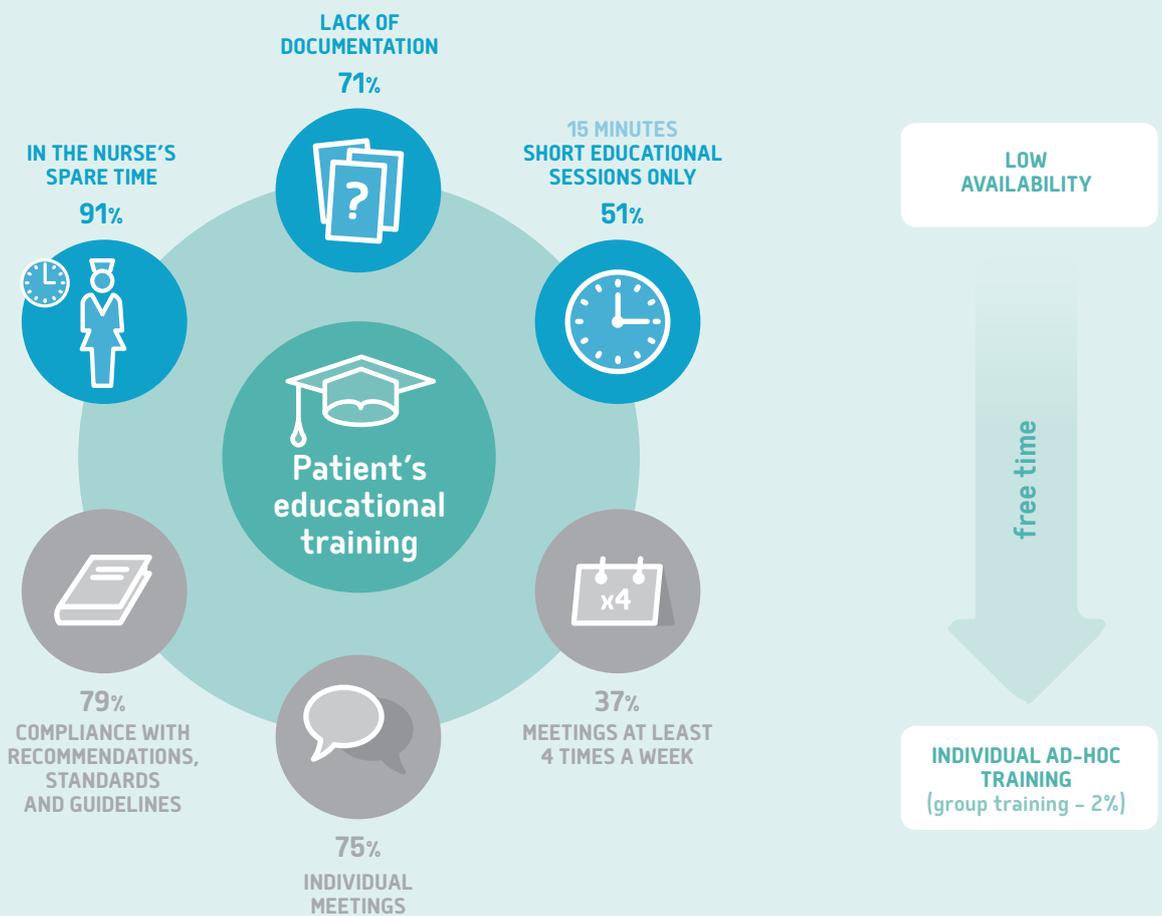
The study indicates that these types of short trainings are conducted quite often. According to 37% of respondents, they take place at least 4 times a year. A great majority of respondents (79%) claim they try to provide sufficient quality of training by conducting it in compliance with recommendations and guidelines. On the other hand, they admit that time constraints

prevent creating training plans in advance, and that training is not properly documented or controlled, which goes against the guidelines.

Due to lack of a structured formula for the delivery of education, limited time to prepare for meetings with patients, the short and spontaneous nature of the educational visits and lack of documentation, the quality of diabetes education offered to patients may be insufficient.

Increasing nursing staff and including education in the catalogue of nursing services could significantly improve the quality of diabetes education, resulting in improved diabetes care and patient's quality of life.

Practical implementation of diabetes education



Based on a nationwide survey carried out by PFED, entitled Organization of diabetes care and education for diabetics in outpatient and inpatient care.

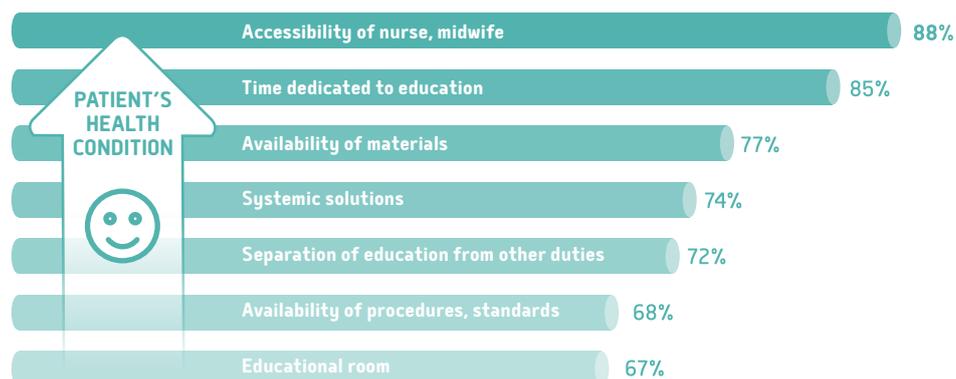
Questions

1. How much time each day do you usually dedicate to patient diabetes education
2. How many times per year do you provide diabetes education to selected patients?
3. Is providing diabetes education part of your basic duties?
4. What form of diabetes of education do you usually provide to your patient?
5. Do you educate patients according to a pre-developed educational plan?
6. Do you follow standards, procedures, recommendations and guidelines concerning diabetes education?

“
Excessive work burdens on nurses negatively affect the form of training provided to patients.
 ”



What is the degree of influence of the following on patient health:



Based on a nationwide survey carried out by PFED, entitled Organization of diabetes care and education for diabetics in outpatient and inpatient care.

Question:

In your opinion, to what degree can the following factors influence the improvement of patient outcomes in diabetes?

Scale from 0 (no influence at all) to 3 (to a large degree)

Evaluation of access to diabetes education

Patients need better access to specialists such as rehabilitators, dieticians, psychologists, and in particular diabetes educators, whose significant role in the diabetes healthcare system was emphasized by nearly all respondents.

As many as 70% of respondents point to the fact that diabetes educators are not employed full time.

According to newest data, in Poland there are around 1224 nurses who completed the "Educator in diabetes" course (CKPPIP figures, status as of 11.06.2015), and 284 specialists in diabetes nursing. Access to diabetes specialists and educators is limited and highly dependant on location.

Access to other specialists is also insufficient. According to the opinion of respondents, medical institutions do not provide diabetics with ongoing care of rehabilitators (not employed by 48% of institutions), dieticians (missing in 56% of institutions).

In many regions of Poland the education of diabetics, both those covered by care provided by physicians as part of primary health care (PHC), as well as diabetes treatment centres, remains insufficient. One result of the lack of appropriate therapeutic patient education provided by PHC personnel (physician and nurse) is that many patients are unfamiliar with the basic parameter of diabetes control, i.e. HbA1c, insufficiently control their glycaemia, blood pressure and condition of their feet.^[46]

Providing adequate education may be immensely important already in the early stage of diabetes, when it is asymptomatic and the patient does not experience any health consequences of complications. At this stage, only a patient who is fully aware of their disease will understand the need to comply with physician's recommendations, including recommendations pertaining to modifying their lifestyle (diet, sleeping hours), strict control of blood glucose levels and pharmacotherapy.^[48] Patients covered by adequate education in early stages of the disease, who comply with physician's recommendations, are more likely to enjoy better health for longer, avoiding severe complications in the future or significantly delaying their onset.

Lack of ongoing access to specialists



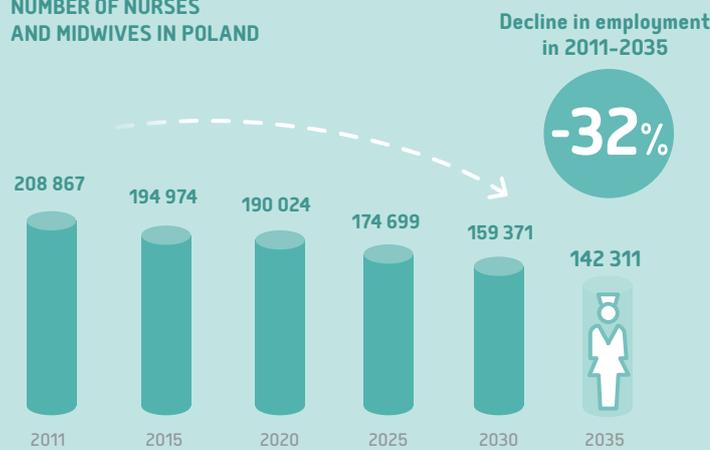
Based on a nationwide survey carried out by PFED, entitled Organization of diabetes care and education for diabetics in outpatient and inpatient care

Questions:

1. Does your primary place of work employ a full time, single shift, diabetes educator?
2. Does your primary place of work provide diabetics with ongoing assistance of a dietician?
3. Does your primary place of work provide diabetics with ongoing assistance of a psychologist?
4. Does your place of work provide diabetics with the assistance of a rehabilitator?

PROGNOSIS

NUMBER OF NURSES AND MIDWIVES IN POLAND



Based on figures provided by the Main Chamber of Nurses and Midwives.^[49]

According to estimates of the Main Chamber of Nurses and Midwives, the number of active nurses will decline year by year.

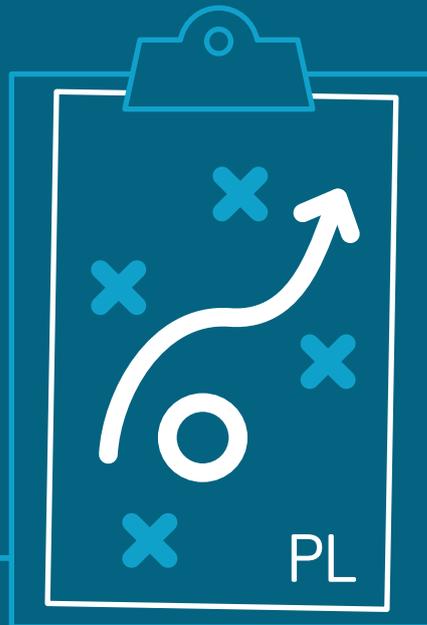
It is anticipated that by 2035, the number of employed nurses and midwives will decline by as much as 66 556, which in view of growing demand for nursing care will significantly impact the quality of and access to patient therapeutic education.

Lack of services in patient therapeutic education in diabetes, contracted separately by the NHF, and limited access to specialist educators obligatorily employed by certain types of medical institutions are the main barriers to implementing diabetes education in Poland.



Although the benefits of patient therapeutic education have been proven, access remains insufficient.

NATIONAL DIABETES PROGRAM



Impeded access to specialist diabetes care resulting from limits on NHF contracts, insufficient number of professional educator teams, underestimation of the importance of diabetes education and lack of a separately financed educational service result in more hospitalizations of diabetics, dangerous complications and premature deaths, often due to cardiovascular complications caused by diabetes.

The European Union has taken action to change this adverse state of affairs. In a resolution of 14th March 2012, the European Parliament called upon the governments of all EU member states to develop national diabetes programs and implement active efforts to prevent diabetes. ^[50] The Polish Diabetes Society began working on the National Diabetes Program.

Draft National Diabetes Program by the PTD

- **Establishment of National Registers:**
 - National Register of Diabetics
 - National Register of Children of Mothers with Gestational Diabetes (GDM)
 - National Register of Genetically Mediated Diabetes
- **Establishment of a nationwide chain of Diabetes Education Centres**
- **Launch of a National Polish Diabetic Retinopathy Prevention Program***
- **Establishment of a nationwide chain of Diabetic Foot Treatment Units**

* as part of which all diabetes institutions will be equipped with digital fundus imaging equipment

The draft of the National Diabetes Program was developed by PTD in 2014, but works were discontinued because the issues of diabetes and diabetes complications prevention were included in the 2007–2015 National Health Program^[51] and in the Draft National Health Program for subsequent years.

Public discussion of the priorities of changes in Polish diabetology with particular focus on preventing diabetes complications was restarted in 2015. In the opinion of some experts, the primary objective is to implement educational counselling as a separate service rendered as part of Primary Health Care (PHC) financed by the NHF and to establish educator teams in PHC units. Aside from educators, nurses and midwives, these teams would include psychologists and physical therapists. However, in order for the implementation of a separately financed educational service to be possible, it has to be assessed by the Agency for Health Technology Assessment and Tariff System (AOTMiT).^[52]

In October 2014, the Ministry of Health informed that in cooperation with the NHF it is analysing the possibility of including “diabetes educational counselling” in the range of outpatient specialist services.^[53] However, as of the end of October 2015, no official order of the Ministry of Health in this issue has been submitted to the AOTMiT.

Instead, a change has been made which in practice reduces expenditures on treating diabetics in PHC. As of 2015, the capitation rate multiplier was removed. Earlier, with the rate multiplier in place, the pricing of the treatment of a diabetic patient in PHC was triple the base rate. This enabled general practitioners to devote ample time to diabetic patients.

**IN THE OPINION OF MANY
EXPERTS, THE PRIMARY
OBJECTIVE IS TO IMPLEMENT
EDUCATIONAL COUNSELLING
AS A SEPARATE SERVICE IN PHC**

> In October 2014, the Ministry of Health informed that in cooperation with the NHF it is analysing the possibility of including “diabetes educational counselling” in the range of outpatient specialist services. ^[53]

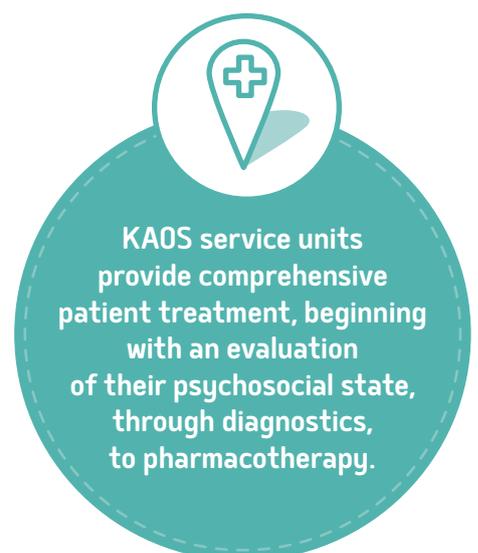
MAP OF ACCESS TO DIABETES EDUCATION IN POLAND



In Poland, diabetics can access free specialist services in diabetology in outpatient specialist care units (AOS), whose operations are financed from public funds. According to NHF figures (as of 28.07.2015), there are 730 AOS units. In 2008, in order to improve the quality of care for diabetics, the program entitled "Comprehensive specialist outpatient care for diabetic patients" (KAOS - diabetes) was implemented. The KAOS program provides free specialist care from physicians and nurses with many years of experience in diabetology, and educational services in diabetes self-control and proper nutrition. The following examinations are available to patients: laboratory diagnostics, EKG, ultrasound, eye examinations and neurological examinations. Also available are consultations with other specialists, depending on the patient's individual condition.

However, comprehensive specialist outpatient care for diabetic patients has not become common practice. Such units generate high costs for the service provider, therefore in 2015 only 38% of units signed contracts with the NHF for the provision of comprehensive care to diabetic patients (NHF figures, status as of 28.07.2015). In three provinces with the highest reported percentage of patients with diagnosed diabetes¹ - Łódź (5.5%), Lublin (5.5%), Lubusz (5.1%) - only two units provide these services.^[55]

¹ Proliferation of diagnosed diabetes according to NHF figures as a percentage of the general population. The discrepancy between these and IDF figures results from the fact that IDF includes both patients with diagnosed diabetes and people who are not aware of their disease. Additionally, IDF estimates relate to the population aged 20-79 where NHF figure pertain to the general population, which additionally increases the difference.



POPULATION WITH DIAGNOSED DIABETES

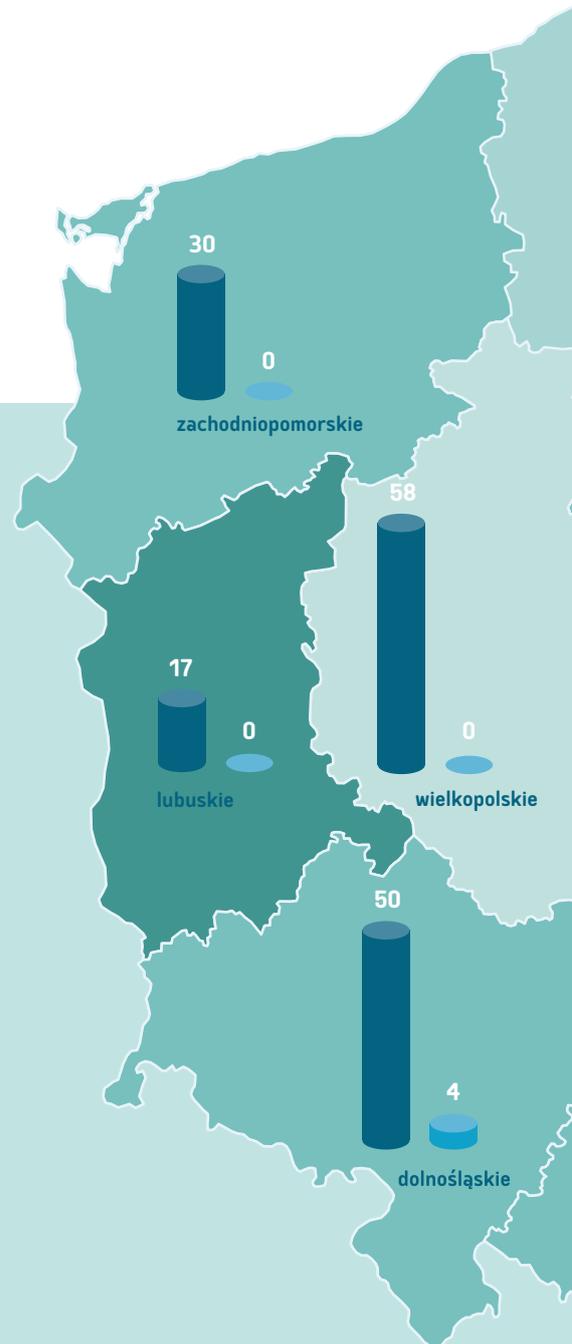
- 0-1.9% ●
- 2.0-3.9% ●
- 4.0-4.9% ●
- 5.0-5.5% ●

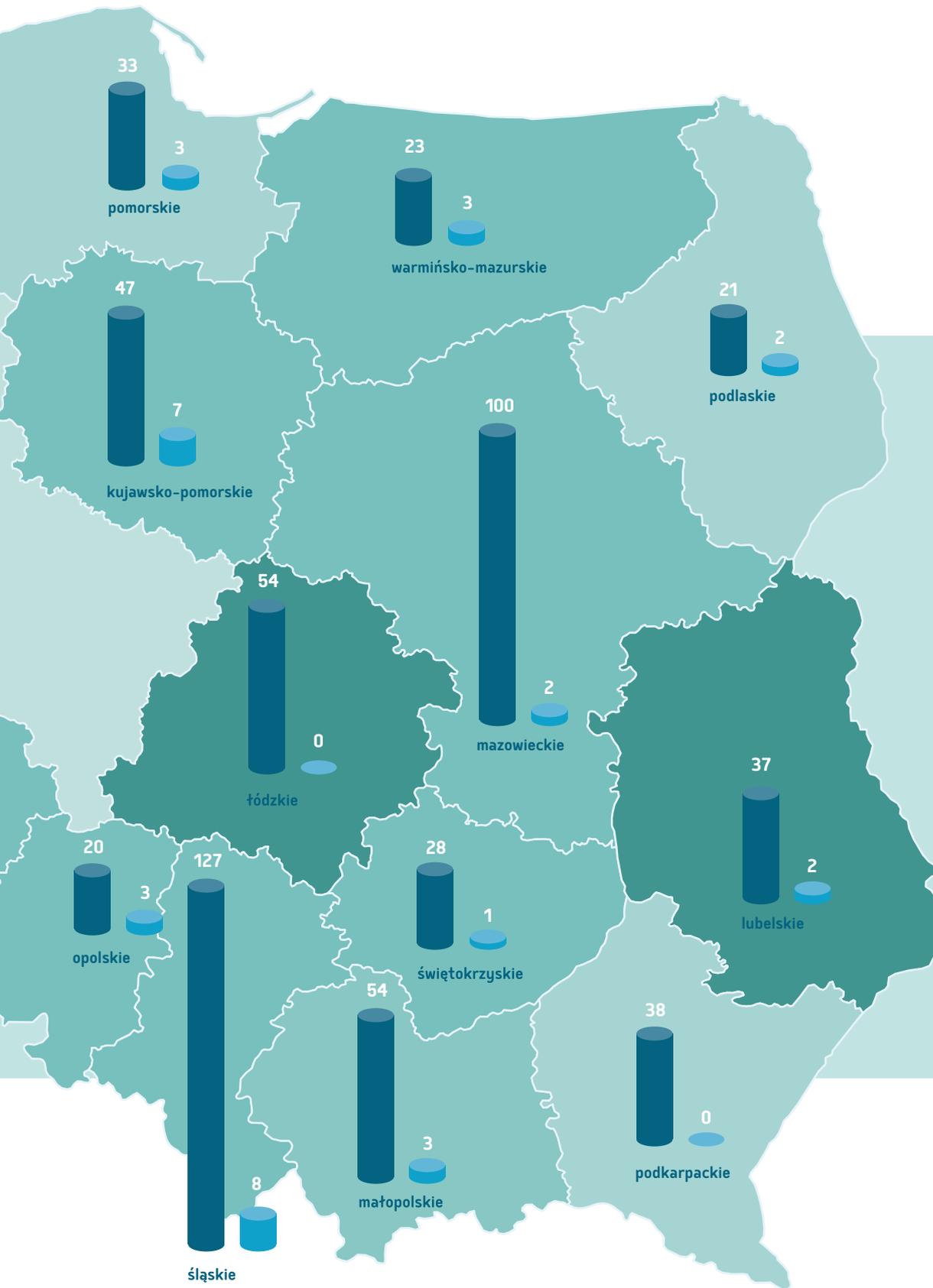
KEY

- XX Number of service providers
- AOS Diabetology
- KAOS Comprehensive care for diabetics

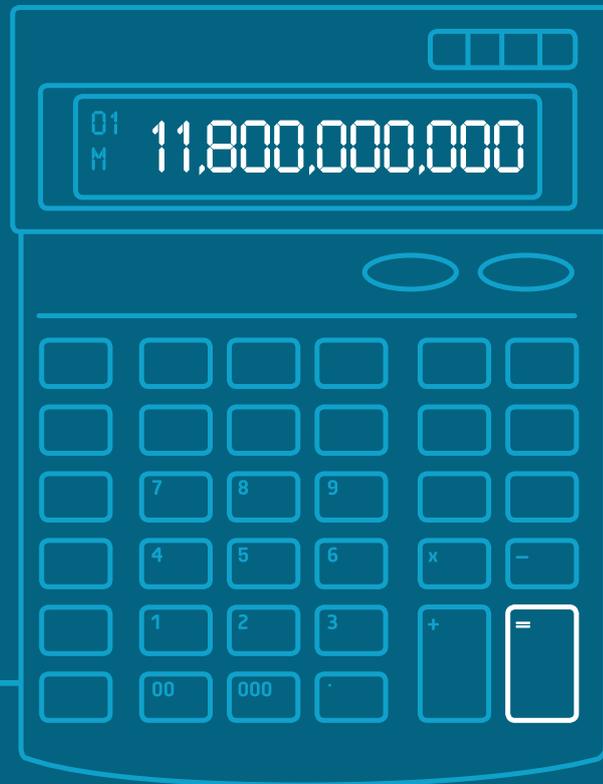
Data on number of service providers based on NHF contracts – status as of 28 July 2015^[56]

Data on number of patients with diagnosed diabetes based on 2013 NHF figures.^[55]





COSTS OF DIABETES



Diabetes is a growing health concern for Poles. According to International Diabetes Federation (IDF) figures, nearly 7% of the Polish population suffered from diabetes in 2014.^[3] Unresolved problems include unidentified diabetes; only 50-60% of cases are what is referred to as identified diabetes, the remaining are unidentified.^[1] World Health Organisation forecasts predict that the number of patients may increase to around 10% of the world population over the next 25 years, and in 2030 diabetes will rank as the seventh cause of death.^[57]

The course of diabetes - especially when incorrectly treated or not treated at all - is associated with the development of multiple complications. Patients are at increased risk of cardiovascular disease, brain blood vessel diseases, neuropathy and retinopathy. Costs of treatment are generated not only by diabetes itself, but also by diseases that are considered complications of diabetes.

Fighting diabetes involves taking action to increase diabetes detection (this pertains to, in particular type 1 diabetes and reducing incidence (in particular of type 2 diabetes). Implementing the proper treatment on time

also reduces risk of complications. However, achieving success requires considerable participation from the patient. A proper lifestyle, appropriately adjusted diet and physical exercise are among the first recommendations for controlling diabetes. However, patients are not equipped with the right knowledge on the issue, as evidenced by the high number of hospitalizations due to diabetes complications. Thorough, comprehensive and continual diabetes education for patients is a necessity in this situation. The counselling system should include, among other things, nutritional issues, the application of physical exercise, reducing obesity or giving up smoking, and self-control of glycaemic levels. The Polish healthcare system is insufficiently staffed with providers of diabetes education, which is tantamount to the fact that there are not enough educational services available.

Great Britain has been running a diabetes and self-control program for newly diagnosed patients with type 2 diabetes since 2004 (DESMOND). Gillett in the 2010 publication presented an analysis of the implementation of the educational program and its results. Although the total costs of implementing diabetes education turned out to be 209 GBP higher than

ABSENTEEISM

describes a situation where upon diagnosis, the employee must discontinue their job. Loss of productivity due to the employee's absence constitutes an indirect cost of the disease in question. ^[64]

PRESENTEEISM

describes a situation where the employee decides to continue to work despite being diagnosed with the disease. The temporary decline in the employee's health condition results in reduced efficiency, which translates into lost productivity. ^[64]

the costs of regular care, in a longer perspective (the patient's lifetime), implementation of the program gave good results and proved cost-effective. ^[58]

According to the American Diabetes Association (ADA), all patients with diabetes should have access to diabetes education. Most public and private insurance systems in the United States cover the costs of education. ^[59] Many studies conducted in the U.S. compared the costs and benefits from diabetes education. Data presented in the 2011 Dall publication indicate that annual savings from participation in the educational program amounted to around 783 dollars per person, mainly through reduced number of days of hospitalization and outpatient clinic visits. ^[60] The patients described in the Balamurugan publication (2006) participated in training on nutrition and self-control in diabetes. Their effectiveness in controlling diabetes improved so that over three years, their treatment involved much less resources – 415 dollars less per program participant. ^[61] In turn, Christensen (2004) estimated that broader knowledge about nutrition and glycaemic control reduces hospitalization costs by up to 94 000 dollars. ^[62] The results of this study clearly show that

educating patients with diabetes is beneficial.

The costs involved in treating patients with diabetes constitute a major share in healthcare expenditures, and grow year by year. Costs of diabetes – as with any other disease – include direct and indirect costs. Direct costs result from the use of resources involved in individual medical interventions. These include direct medical costs (medication, hospitalization, diagnostics, etc.) and direct non-medical costs (e.g. patient's commutes to the hospital, employing a caregiver for the patient).

Indirect costs are costs of lost resources in connection with the disease and its consequences. These usually include costs of lost productivity of patients as a result of, among other factors, so-called absenteeism and presenteeism, and costs resulting from the need to limit the vocational activity of people providing care to patients. ^[63]

Direct costs

In 2013, direct costs of treatment of diabetes exceeded PLN 2.2 billion, and including direct costs of diabetes complications, this number exceeded PLN 4.3 billion.^[65] In more detail, the breakdown is as follows: the costs of hospitalization, specialist outpatient care, insulin pumps (contracted as separate services) and rehabilitation was estimated at PLN 398.9 million. The cost of treating diabetics in primary health care (considering the difference in the capitation rate) amounted to PLN 263.9 million. Reimbursement of medication and medical products cost the payer more than PLN 1.1 billion, which constituted more than 50% of direct costs (not including the costs of diabetes complications). It is worth adding that the cost of reimbursement of medication for patients with diagnosed diabetes constituted nearly 16% of the expenditures of the public payer on financing all medication in 2013.^[66] Additionally, patients co-paid more than PLN 444.1 million out of pocket for medication and medical products.

The direct medical costs of diabetes complications grow year by year – in 2013 they amounted to PLN 2.08 billion. Cardiovascular complications represent a close to 70% share in the costs, with kidney complications representing nearly 27%.

The share of the direct costs of diabetes treatment in the total treatment expenses incurred by the public payer is considerable. Hospital and specialist outpatient services, separately contracted services and rehabilitation for patients with diagnosed diabetes together constitute more than 1% of total NHF 2013 expenditures on services in the mentioned scopes. The share of primary health care counselling for patients with diabetes in the costs of all PHC services in 2013 amounted to nearly 3.5%.

Based on available figures^[65], the forecast of direct treatment costs of diabetes and its complications is as follows. If the current rising trend and level of care are maintained, in 2020 the NHF will spend around PLN 6.35 billion on treating diabetes and its complications, whereas by 2025 these expenditures will have grown to PLN 8.06 billion.

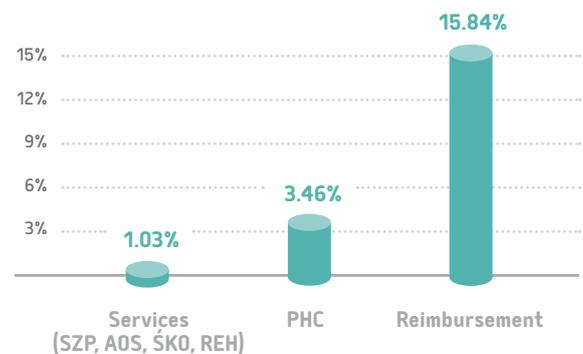
Table 1
Direct costs involved in treating diabetics in 2013
by type of services (PLN millions)

COST CATEGORY	DIABETES	COMPLICATIONS
Services (SZP, AOS, SKO, REH)	398.89	2081.91
PHC	263.93	-
Reimbursement	1137.28	-
Patient co-payment	444.11	-
TOTAL	2244.21	-
TOTAL with COMPLICATIONS	4326.17	

Source: Diabetes. A hidden pandemic. Situation in Poland. Edition 2014 ^[65]

Without effective preventive action to improve detection and limit the expansion of diabetes, and without educational efforts to increase diabetes awareness in society, there will be a rapid growth in cost of treatment that will prove difficult for the public payer to bear. In a longer perspective, direct costs can be curbed by implementing modern treatment techniques, and by implementing broadly designed diabetes education (the quoted results of global research have demonstrated the effectiveness of this method of fighting diabetes).

Diagram 1
Share of diabetic patient treatment costs
in total costs of patient treatment in 2013
– by individual cost categories ^[65, 66]



Source: own compilation

Indirect costs

Indirect costs of diabetes treatment have been estimated including two measures of lost productivity:

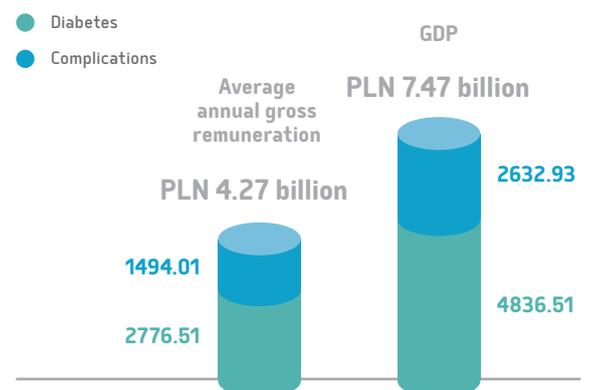
- **average annual gross remuneration,**
- **gross domestic product (GDP)**

Indirect costs of diabetes and its complication increased in 2013 – depending on the base of calculations – from PLN 4.27 billion (estimated based on average annual gross remuneration) to PLN 7.47 billion (based on GDP). For indirect costs of diabetes complications, the largest item are premature deaths (PLN 0.76 billion and PLN 1.35 billion respectively).

As indicated by the presented data, the total costs of diabetes in 2013 amounted to PLN 8.6 billion (based on average gross remuneration) or PLN 11.8 billion (measured against GDP).

According to IDF figures, average expenditures per person with identified diabetes in Europe amount to PLN 8 823. In Poland they are much lower – PLN 3 375. In European countries, the treatment of one patient costs between several to over ten times more than in Poland, e.g. in Spain (converted to PLN) – PLN 9 823, in Great Britain – PLN 14 195, in Germany – PLN 15 713, in France – PLN 17 800, in Austria – PLN 19 506, in Denmark – PLN 23 855, in Switzerland 33 666, and in Norway as much as PLN 35 420.

Diagram 2
Indirect costs of diabetes and complications in 2013 (PLN millions).^[65]



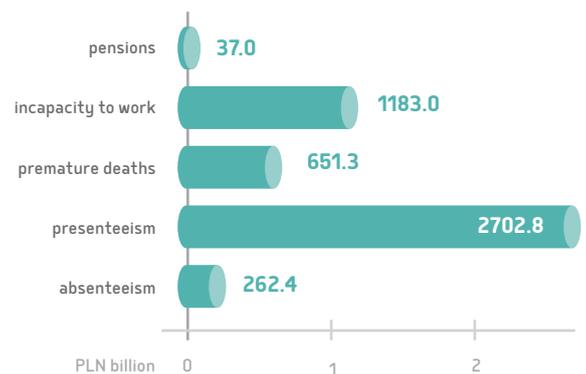
Source: Diabetes. A hidden pandemic. Situation in Poland. Edition 2014

Diagram 3
Indirect costs of diabetes in 2013 (PLN millions)

Diabetes
- metric: average gross remuneration



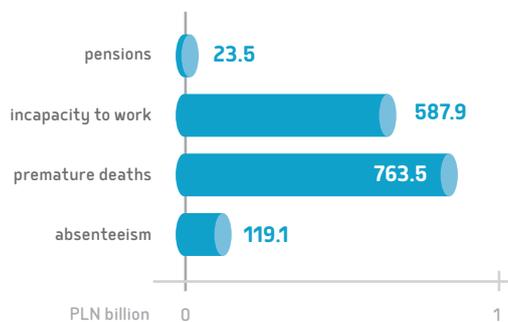
Diabetes
- metric: GDP



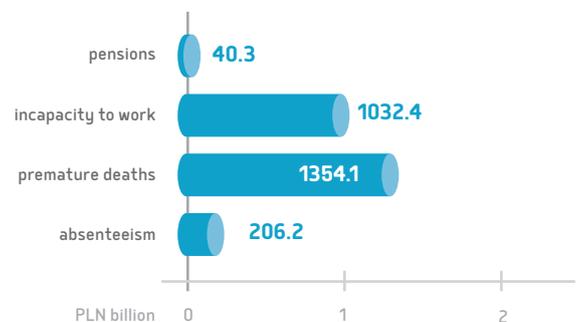
Source: own compilation

Diagram 4
Indirect costs of diabetes complications in 2013 (PLN millions)

Diabetes complications
- metric: average gross remuneration

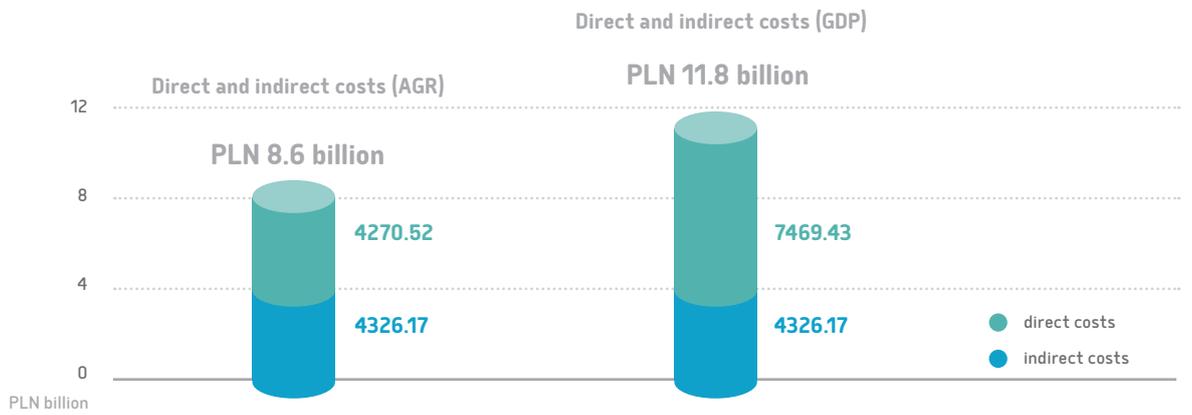


Diabetes complications
- metric: GDP



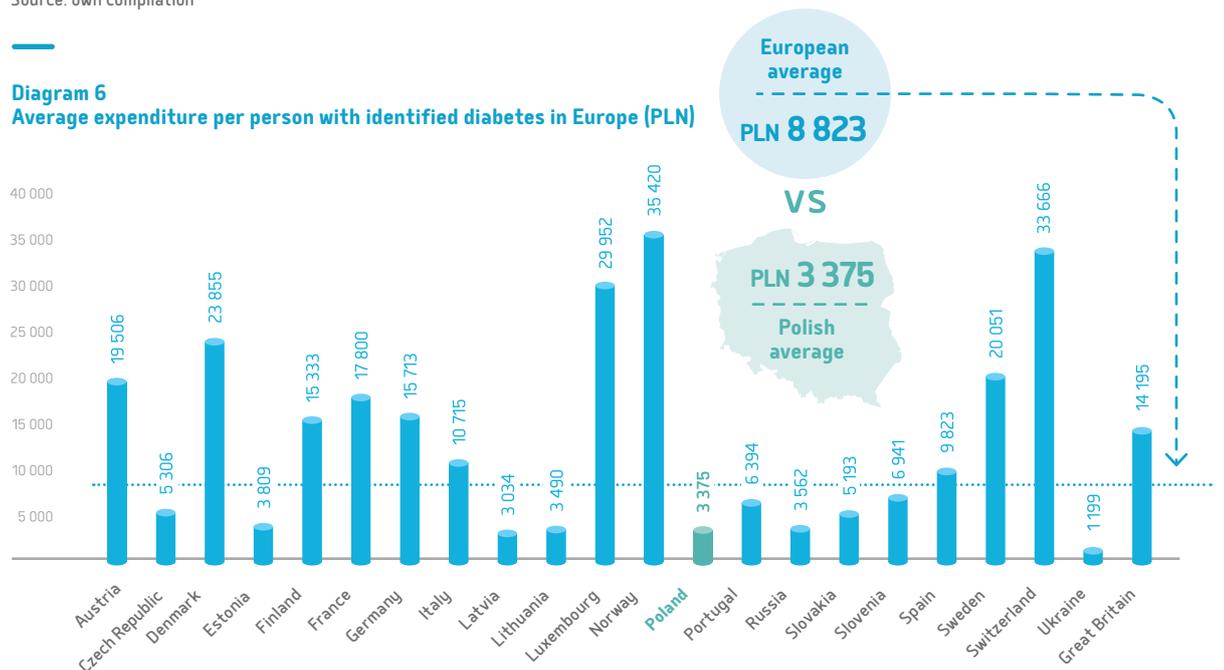
* does not include costs of presenteeism due to missing data
Source: own compilation

Diagram 5
Direct and indirect costs of diabetes in 2013 (PLN millions)



AGR – average gross remuneration, GDP – gross domestic product
Source: own compilation

Diagram 6
Average expenditure per person with identified diabetes in Europe (PLN)



Source: IDF

SUMMARY AND RECOMMENDATIONS



The number of people with diabetes in Poland is systematically growing.^[6] According to experts, their number is currently around 2.7-3 million. However, the number of patients aware of their disease is lower – around 2.15 million (estimated on the basis of the number of people purchasing diabetes medication and/or glucose metering device strips in 2013).^[6] According to forecasts, diabetes incidence in Poland will grow at a faster rate than the average in Europe. If effective preventive action is not implemented, then over the period of 20 years the number of diabetics could grow by almost 100%^[6] – additionally compounded by the aging of society.

Diabetes affects many aspects of life, therefore the hard to stop increase in incidence constitutes one of the biggest and still unresolved problems in modern medicine, as well as to the healthcare policies and economies of many countries. However, many countries have already taken long-term action to change the situation.

Despite postulates raised for many years, Poland has as yet not implemented a National Diabetes Program. The situation is to be improved by the act on public health and the accompanying National Health Program (NHP) passed on 11th September 2015 for the years

2016–2020. **The main purposes of the NPH include “stopping the growth of obesity and diabetes by 2025”.**^[67, 68] However, due the fact that the document focuses on prophylaxis, and assumes relatively low financing (PLN 140,7 million annually for all tasks), there is a legitimate concern that it will not resolve the urgent issues involved in diabetes. The situation in our country could be improved by implementing, in compliance with EU guidelines, a **National Diabetes Program independent of the NHF. The coexistence of two programs sharing the tasks of preventing a disease and improving treatment outcomes has been provided for, among other areas, in oncology and psychiatry.** One urgent outstanding issue is to increase public awareness of diabetes, increase the number of people who examine themselves regularly (the disease develops asymptotically for many years) and to provide comprehensive care to those already diagnosed with prediabetes or diabetes.

It is estimated that at least several hundred thousand people in Poland are not aware of their developing disease, and according to experts only 10% of treated patients achieve therapeutic goals which increase the chances of avoiding severe complications in the future.

It is therefore very important to make the public aware of disease risk factors and to provide patients with care and structured education including aspects of accepting the disease, and improving self-control and self-care.^[38]

Under the current therapeutic model, education is theoretically as important as pharmacotherapy. In order for the model to be implemented in practice, **education should constitute part of every physician's appointment**, as postulated by the Polish Diabetes Society in compliance with the standard developed by the standards workgroup established by the national consultant in diabetes nursing.

Diabetes education should be structured and include:

- **initial education beginning at diagnosis, providing information about lifestyle modifications and application of individual forms of therapy**
- **continued education within the first year as of diagnosis**
- **re-education based on an annual assessment of the patient's level of knowledge.**^[34]

Despite the inclusion of education into the basic model of diabetes therapy and the mounting scientific evidence confirming its therapeutic and cost effectiveness, it is not fully utilized. This is mainly due to the insufficient number of professional educator teams, short time provided for the education and difficult access to specialist care.

The biggest problem is the lack of ongoing access to specialists: diabetes educators, rehabilitators, dieticians and psychologists. Currently, patient education in Poland is primarily the responsibility of nurses who, burdened with many duties, do not find the time to adequately prepare and conduct the training. Educational sessions therefore usually take the form of short and spontaneous meetings, which prevents the full utilization of the potential of the training.

One attempt to improve the quality of diabetes care was the implementation of comprehensive outpatient care financed by the NHF, which was meant to provide ongoing access to doctors and nurses specializing in diabetes. However, due to high costs of the service, there is a reluctance to provide it. Meanwhile, providing patients with access to diabetes education is a key aspect of treating diabetes. Education builds the pa-

patient's active stance towards fighting the disease.

According to experts¹ improvements in diabetes education would also be facilitated by a variety of activities. Below follow proposals and postulates raised at the first Polish ExPAND (European Policy Action Network on Diabetes) conference which took place in Warsaw in May 2015.

- Inclusion of educational counselling as a separate service financed as part of PHC.
- Establishment in PHC of educational teams consisting of professionally trained educators on diabetes, psychologists and physiotherapists.
- Establishment of adequate conditions for diabetes education by separating diabetes care rooms, and obligatory employment of a professional educator in all medical institutions (ultimately including PHCs) where diabetic patients are treated. Separate contracting of educational services would increase their supply, which would provide patients with broad access to education. As mentioned multiple

times, this would increase patient awareness and their competency in self-control of diabetes, contributing to improvement of health, quality of life and reduction of distant complications of diabetes.

· Informational, educational and preventive action conducted on a wide scale on both the local and national levels to improve public awareness of diabetes with the participation of healthcare professionals, non-government organizations, employer organizations and the media.

· A inter-ministerial policy for diabetes education – utilizing the competencies of the ministries of education and sports to shape responsibility for the health and healthy habits of the population. As demonstrated by the first months as of implementation of changes in school shops and canteens, many parents and children lack knowledge about the importance of healthy eating. School nurses could contribute to changing the situation

· Educating society, employees of the educational sector, uniformed services, drivers of public transportation about type 1 diabetes, training in reacting in case of suspected hy-

¹ Participants in the ExPAND conference, including Lidia Gądek – president of the parliamentary team on primary health care and prevention in the 7th Term; Maciej T. Małecki – president of the Polish Diabetes Society; Beata Stepanow – president of the Diabetes Education Association; Alicja Szewczyk – chairwoman of the Polish Federation of Education in Diabetes.

poglycaemia, and principles of assisting people with diabetes.

- Development of principles of a healthcare policy for the prevention and treatment of diabetes for the nursing profession.
- Development and popularization of diabetic patient education standards, along with development and implementation of documentation of educational activities.
- Training for first contact doctors to prepare them to promote health in context of preventing diabetes and promoting an active stance towards the disease.
- Development of diabetes prevention programs for groups most at risk (prediabetes)
- Adjustment of the number of nursing job positions in medical institutions involved in treating diabetics to actual needs, guaranteeing time to prepare and professionally deliver education, enable self-training for nurses who provide care to diabetics on a daily basis.
- Conduct research into the selection of teaching methods and optimisation of education.
- Analysis of postgraduate education in diabetes nursing.

The national consultant on diabetes nursing also formulates the following postulates and tasks for urgent implementation to improve the practice of patient therapeutic education ^[69]:

- Establish an organisational structure in diabetes centres (personnel, educator team, objectives, resources) in inpatient and outpatient treatment.
- Implement in the healthcare system the “diabetes educator” position (scope of tasks and obligations, authorisations, responsibilities)
- Develop organizational standards for diabetes nursing.
- Develop diabetic patient education standards.
- Develop therapeutic procedural algorithms for nurses (measurement of glycaemia, interventions in hypoglycaemia, interventions in hyperglycaemia, physical exercise, nutrition, insulin therapy, interventions in distant complications).
- Develop and implement documentation of educational activities.
- Research work to improve the level of education (improvement and selection of educational methods).

- Analysis of the number and qualifications of nurses employed in diabetes wards and units in individual provinces, and on a nationwide basis.
- Develop services in diabetes nursing to be included in the range of guaranteed services.
- Develop principles of a healthcare policy for the prevention and treatment of diabetes for nursing staff.
- Develop requirements for diabetes nursing personnel.

Diabetes education for diabetics increases their level of knowledge and shapes the right attitude towards the disease and treatment. In a longer perspective, this reduces the risk of dangerous complications, improves quality of life and presents a chance for normal living in society. Improving accessibility to holistic diabetes education and increased awareness of the disease in society can not only reduce the number of hospitalizations and new cases of the disease, but also reduce the costs of diabetes.

The announcement of inclusion of remote consultations with diabetologists into the range of benefits, allowing PHC doctors to resolve patients' concerns more quickly, is a positive development.

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DIABETES EDUCATION FOR DIABETICS

EXPANDS THEIR KNOWLEDGE

AND SHAPES THE RIGHT ATTITUDE

TOWARDS THE DISEASE

AND ITS TREATMENT

> In a longer perspective, this reduces the risk of dangerous complications, improves quality of life and presents a chance for normal living in society.
