

INTERNATIONAL STANDARDS FOR EDUCATION OF DIABETES HEALTH PROFESSIONALS



The mission of the International Diabetes Federation is to promote diabetes care, prevention and a cure worldwide

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CONTENTS

| | |
|--|-----------|
| FOREWORD | 2 |
| INTRODUCTION | 3 |
| Belief statement | 3 |
| Objective | 3 |
| Evidence | 4 |
| COMPONENTS OF THE INTERNATIONAL STANDARDS | 5 |
| Standards | 5 |
| Indicators | 5 |
| STRUCTURE STANDARDS | 6 |
| I. Organisational support | 6 |
| II. Coordination | 6 |
| III. Education space and equipment | 7 |
| IV. Advisory committee | 8 |
| V. The team and teamwork | 9 |
| VI. Professional competencies and continuing education | 10 |
| VII. Support systems | 10 |
| PROCESS STANDARDS | 12 |
| VIII. Objectives development and programme needs assessment | 12 |
| IX. Educational plan and implementation | 12 |
| X. Access | 14 |
| XI. Evaluation | 14 |
| CONTENT STANDARDS | 15 |
| XII. Prevention of diabetes and public health | 15 |
| XIII. Diagnosing diabetes | 16 |
| XIV. Diabetes self-management | 16 |
| XV. Diabetes self-management education | 21 |
| XVI. Emergencies and acute complications | 22 |
| XVII. Long-term complications | 24 |
| XVIII. Diabetes in pregnancy | 25 |
| XIX. Diabetes and surgery | 26 |
| XX. Complementary and alternative therapies | 27 |
| XXI. Utilising research and delivering evidence based practice | 27 |
| OUTCOME STANDARDS | 28 |
| XXII. Knowledge | 28 |
| XXIII. Student assessment and feedback | 28 |
| GLOSSARY | 30 |

FOREWORD

In 2011, the United Nations recognised diabetes and other non-communicable diseases as real and significant threats to the health and welfare of the world's people. Since that time, the prevalence of diabetes increased to 8.2% in 2014; 386.7 million people, worldwide.¹ If left unchecked, diabetes will affect 591.9 million people by 2035.²

Diabetes is a serious health condition that poses challenges to a person's daily life, emotional well-being and perceived quality of life. It increases one's risk of developing long-term diabetes and other health-related complications and encountering an early death. To meet the global demand for effective diabetes prevention, quality care, and effective treatment strategies, adequate resources must be allocated.

Standards of medical care for diabetes throughout the world recognise diabetes education as an essential component of quality diabetes care that achieves positive health outcomes. Significantly, 99% of the management of chronic diseases such as diabetes is undertaken by the person with the disease and/or his or her caregivers. Therefore, initial and on-going diabetes education must be comprehensive in scope, yet individualised to meet the specific needs of each person with diabetes. The number of health professionals who demonstrate a solid understanding of the principles of diabetes care and education is inadequate to meet the needs of the growing number of people with or at risk for diabetes worldwide. The *International Standards for Education of Diabetes Health Professionals* (the International Standards) are intended for use by institutions that currently provide or wish to provide a health professional diabetes education programme. The International Standards provide guidance about essential information that health professionals need to know about diabetes and its management. Health professionals will be better-equipped to address the growing burden of diabetes on health systems if the International Standards and other resources and tools such as the IDF Diabetes Education Modules and the IDF Curriculum are used to guide health professional education. Application of this knowledge and skills will enhance care and promote achievement of positive outcomes to be achieved with and for people with diabetes.

“Education is the most powerful weapon which you can use to change the world”

~ Nelson Mandela (Boston, 23 June 1990)

Sir Michael Hirst; IDF President, 2013-2015

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¹ Update 2014 IDF Diabetes Atlas, the Sixth Edition. International Diabetes Federation, Brussels, 2014.

² L Guariguata, D R Whiting, I Hambleton, J Beagley, U Linnenkamp, and J E Shaw. Global estimates of diabetes prevalence for 2013 and projections for 2035. *Diabetes research and clinical practice*, 103(2):137–49, February 2014

INTRODUCTION

The purpose of educating health professionals about diabetes and its management is to recognise and facilitate the capacity of the general workforce of health professionals to provide best practice, effective care and self-management education for people with diabetes and their families. The ultimate goal of diabetes education and management is to reduce the personal, societal and economic burden of diabetes, to promote quality of life and to improve health outcomes for individuals with diabetes, their relatives, communities and society.

Throughout the document ‘the programme’ refers to a diabetes education programme for health professionals. The *International Standards for Education of Diabetes Health Professionals* will be referred to as ‘the International Standards’. The authors decided not to use specific terminology to describe ‘diabetes educators’ such as diabetes nurse, or Certified or Credentialed Diabetes Educator because these terms are not standardised worldwide.

BELIEF STATEMENT

IDF and the IDF Diabetes Education Consultative Section believes every person affected by or at risk of diabetes has the right to receive high-quality care and education delivered by competent, trained health professionals. Therefore, IDF and the IDF Diabetes Education Consultative Section support countries and regions that proactively develop high-quality evidence-based diabetes education programs for health professionals.

OBJECTIVE

The primary objective of developing the International Standards is to promote high-quality education for health professionals in diabetes care.

GOALS

The long-term goals of the International Standards are to:

- Provide a global framework for designing, implementing and benchmarking education programmes for health professionals
- Promote the access to and integration of health professionals qualified in diabetes care and support into health care systems
- Promote the essential role of diabetes education and multi-disciplinary diabetes care teams to ministries of health, hospital authorities and policy makers
- Improve the overall quality of care and thus improve the lives of those at risk of or living with diabetes and their caregivers

SCOPE

The scope of the International Standards described in this document reflects the mission and philosophy of the IDF Consultative Section on Diabetes Education and the IDF Centres of Education. It is not intended that the International Standards replace existing regional or national high quality

evidence-based standards. Regions or nations that developed their own standards should continue to use them; but could consider integrating components of the IDF International Standards, where relevant.

In addition, the International Standards were not designed as a 'how to develop' education programmes. They provide an evidence-based framework, which can be used to create high-quality education programmes for health professionals and describes indicators that can be used to measure quality.

Countries or institutions where health professional diabetes education is a relatively new entity or where resources to support such programmes are scarce, might begin by introducing the essential level of education and work towards developing a comprehensive portfolio of health professional diabetes education programmes over time. For example, an institution might start by developing a programme for health professionals who do not routinely work in diabetes centres or clinics (level 1) followed by other programmes for health professionals who work primarily with people with diabetes (level 2).

EVIDENCE

Standards for diabetes care either reference or encompass the integral role of diabetes education in comprehensive diabetes management, e.g.

- 1) The Standards of Medical Care in Diabetes (2014) of the American Diabetes Association.
- 2) The Guiding Principles for Diabetes Care: For Health Care Professionals of the US Department of Health and Human Services.
- 3) The 3rd edition of An Integrated Career and Competency Framework for Diabetes Nursing developed by TREND-UK.

Although these three documents are comprehensive, they were primarily developed for use in a particular country or by a specific health profession discipline. These International Standards were developed by medical and non-medical diabetes specialists with expertise in developing programmes from all seven IDF regions, using the latest research and best practice recommendations. Together with the IDF Curriculum and the Diabetes Education Modules, the International Standards provide a framework for developing education for health professionals, taking into account the different professional backgrounds and the diversity among diabetes care settings worldwide.

COMPONENTS OF THE INTERNATIONAL STANDARDS

The International Standards are comprised of four types of standards. Each standard has its own indicators to measure whether the standard was reached.

STANDARDS

The International Standards cover all aspects of an education programme for health professionals. The document is divided in the following types of standards:

- *Structure standards* provide the framework for the programme and describe the personnel, resources and physical structure needed to develop and deliver health professional education programmes.
- *Process standards* describe the education processes that will be used to deliver the education programme and the steps required to prepare for, implement and evaluate the programme.
- *Content standards* describe the content of the of the education programme curriculum) to ensure they are designed to meet the needs of local health professionals, institutions and organisations.
- *Outcome standards* are used to determine whether the objectives of the diabetes education programme were met.

INDICATORS

Each standard includes indicators that were designed to be used by the programme provider, the advisory committee, government agencies and other certifying organisations to determine whether the International Standards are met. The diversity in health care settings and resources was considered when determining these indicators. The structure and process standards contain the following indicators:

- *Essential indicators* describe the minimal measures needed to determine whether these standards are met.
- *Comprehensive indicators* are in addition to the essential indicators.

The indicators for the content standards are divided into two levels to recognise the diversity of health professionals' expertise:

- *Level 1:* Health professionals who have limited knowledge of diabetes care (generally non-diabetes specialists). Programmes designed for these professionals address the essential indicators to ensure non-specialist health professionals develop an understanding of diabetes care.
- *Level 2:* Health professionals who currently specialise in diabetes care and self-management education and health professionals who would like to specialise in diabetes care and self-management education by developing their knowledge and competences.

STRUCTURE STANDARDS

I. ORGANISATIONAL SUPPORT

Standard 1

There is evidence of organisational support for the programme as an integral part of the education portfolio offered by the institution.

Essential indicators

- a) The programme is recognised by the organisation's leadership as an integral part of the overall continuing education for health professionals.
- b) The programme is an integral component of the mission, vision and strategic plan and structure of the institution/organisation.
- c) A specific budget allocated to the programme in the organisation/institution's financial plan is sufficient to meet the objectives of the programme and is reviewed at least annually. .
- d) Sufficient funds are allocated to cover the salaries and/or hourly wages of staff providing diabetes education, support staff, and other ancillary staff and services that are integral to provision of the programme.
- e) Staff of the programme has access to teaching tools needed to provide the programme.
- f) Staff of the programme is accountable for the accuracy and relevance of the education they provide in the programme.

II. COORDINATION

Standard 2

An experienced course coordinator is responsible for organising, administering and evaluating the programme to ensure the programmed meets the relevant process and outcome standards.

Essential indicators

- a) The person responsible for the organising, administering and evaluating the programme is clearly identified as the programme coordinator.
- b) Responsibilities for managing staff and budget are clearly stated.
- c) Communication processes and authority are clearly defined within the institution providing the programme.
- d) Decisions about allocating human and other resources are determined by considering the best interests of the students.
- e) The coordinator maintains an environment that supports the faculty's ability to provide high-quality, safe, effective and ethically sound services.
- f) The coordinator maintains an environment that integrates continued professional development, programme outcomes and research evidence.

III. EDUCATION SPACE AND EQUIPMENT

Standard 3

The quality and availability of educational resources, physical space and/or electronic learning positively affect learning and meet students' needs.

Essential indicators

a) Physical space and resources include:

- student privacy and student-teacher confidentiality
- adequate space suitable for the number of students
- comfortable seating, lighting and air quality
- a learning environment that meets safety regulations and is free from hazards
- accessible toilet and washroom facilities
- didactic materials including audio-visual resources that are appropriate for the literacy levels and culture of the students
- a record-keeping system
- effective communication systems such as a telephone and other electronic services
- office supplies and equipment.

b) Electronic and distance learning environments and resources include:

- privacy and confidentiality
- online programs that enable interaction among students and between students and tutors
- a record-keeping system
- didactic materials including audio-visual resources appropriate for the literacy level and culture of the students
- stable online platforms so that the learning process is not disrupted by communication/signal breaks
- effective communication systems
- access to appropriate reference material

Comprehensive indicators

c) Physical space and resources ideally include:

- easy access for people with a physical disability
- access to appropriate reference material and equipment (computers, Internet, e-mail scanner/copier).

d) The electronic learning environment and resources could encompass the ability to conduct 'live' classes or lectures

IV. ADVISORY COMMITTEE

Standard 4

A multidisciplinary advisory committee includes student representatives to ensure that the views and values of all stakeholders are represented in the on-going planning and delivery of programmes.

Essential indicators

- a) The advisory committee represents the target population and the wider professional environment. Committee members include:
 - a physician/clinician specialising in diabetes care
 - a nurse with training and experience in diabetes management
 - a dietitian with training and experience in diabetes management
 - a diabetes educator (where available)
 - at least one person with diabetes or caregiver or family member representative (i.e. for paediatrics, a parent or grandparent; for an older person, a partner or an adult child)
 - an individual with expertise in programme development and evaluation
- b) Written terms of reference are developed to guide the committee's processes, delineate its responsibilities, and are reviewed annually, at a minimum.
- c) The committee reviews the programme against the stated goals and outcomes on an annual basis.
- d) The committee has the authority to make recommendations for improvements based on the outcome evaluation, the changing environment in which health professionals practice, the emerging roles of health professionals and innovations in diabetes management, care and education, including technology.
- e) The committee advocates for on-going support for the programme within the institution, and from other agencies and organisations.
- f) The committee meets at least twice a year; minutes or records of the meetings are documented and progress on action items is reviewed at each meeting.

Comprehensive indicators

- g) In addition to those identified as essential indicators, the advisory committee may include the following members:
 - a primary care physician/clinician
 - other team members, pharmacist, social worker, podiatrist, exercise specialist/physiologist
 - a home care nurse or visiting nurse
 - a nurse working in inpatient services in the community hospital
 - representatives of the local professional bodies
 - at least one caregiver of a person with diabetes
 - a member of the local diabetes association
- h) There is an established link to agencies and organisations where decisions about education for health professional are made – such as government agencies, universities and professional societies.

V. THE TEAM AND TEAMWORK

Standard 5

Multidisciplinary teamwork and communication are evident among the health professionals delivering the programme.

Essential indicators

- a) An appropriate infrastructure of qualified and experienced personnel exists, including health professionals, clerical, administrative and other staff members.
- b) The programme faculty consists of:
 - a nurse and/or diabetes educator
 - a dietitian and/or diabetes educator
 - a physician
- c) Teamwork is evident through:
 - respect for the expertise of all team members
 - good communication among team members
 - open discussions regarding decision-making, problem-solving and setting priorities
 - a collaborative approach to meeting the programme goals and delivering outcomes
 - provision of consistent information to all members of the team
- d) Staffing schedules allocate time for:
 - delivering the programme (initial and on-going)
 - performing individual student assessments
- e) Timely, constructive feedback is provided to students and professional team members
- f) An effective communication system is implemented to ensure information is shared with all team members.
- g) Consistent programme evaluation and assessment processes and professional and clinical policies and procedures are disseminated and followed by all team members.

Comprehensive indicators

- h) The faculty can include:
 - an education specialist
 - a pharmacist
 - a psychologist, counsellor and/or social worker
 - a podiatrist/chiropractist
 - an exercise physiologist
 - at least one person with diabetes

VI. PROFESSIONAL COMPETENCIES AND CONTINUING EDUCATION

Standard 6

Personnel involved in the programme have a sound clinical knowledge of and competence in diabetes care and education, teaching and learning methods, and behaviour change theories/models.

Essential indicators

- a) Staff who delivers the programme have undertaken advanced training in diabetes care, teaching and counselling and behaviour change.
- b) The programme is consistent with the IDF International Curriculum for Diabetes Health Professional Education.

Comprehensive indicators

- c) The programme is recognised by local authorities (e.g. university; local professional association/society)
- d) Staff who delivers programmes targeting specific populations encompassing life stages (e.g. children and adolescents, young adults, women with gestational diabetes, pregnancy complicated by diabetes, older people, and those using pump therapy), must have undertaken training and be competent and knowledgeable about the specific, the special and changing needs of those populations.

Standard 7

Staff knowledge, competence and performance are assessed at least annually, and an individual learning and development plan implemented to enhance knowledge, competencies and foster appropriate attitudes.

Essential indicators

- a) The qualifications, roles and responsibilities of personnel are clearly documented.
- b) Staff receives written and/or verbal feedback about their professional performance from the programme coordinator, colleagues and students.

Comprehensive indicators

- c) Personnel participate in continuing education related to diabetes care and education throughout the year.
- d) Personnel maintain a professional portfolio to document their continuing education provided by accredited bodies.

VII. SUPPORT SYSTEMS

Standard 8

Strategic partnerships are developed to improve communication and maintain consistent practices among health professionals, and to use diabetes resources effectively and efficiently.

Essential indicators

- a) The programme is marketed to be connected with other healthcare organisations in primary, secondary and tertiary settings such as community health clinics, hospitals and health professional organisations. This will heighten awareness of the programme and enable health professionals to share best practices and contribute to maintaining and enhancing the programme.

Comprehensive indicators

- b) The programme coordinator seeks endorsement, recognition or support of the programme from recognised government authorities and international bodies.

PROCESS STANDARDS

VIII. OBJECTIVES DEVELOPMENT AND PROGRAMME NEEDS ASSESSMENT

Standard 9

The objectives of the programme are based on an initial needs assessment of the professional environment, with input from stakeholders, and are reviewed regularly.

Essential indicators

- a) An initial needs assessment is undertaken to ensure the programme addresses the diversity and changing needs of the population. Subsequent needs assessments are undertaken every two years, or more often, if circumstances change.
- b) The needs assessment is a collaborative process that includes all programme stakeholders.
- c) The assessment process is appropriate to the needs of the population.

IX. EDUCATIONAL PLAN AND IMPLEMENTATION

Standard 10

The education programme is learner-centred and subject to on-going review and is modified when indicated .

Essential indicators

- a) The programme reflects the effective integration of:
 - the needs assessment and identified goals
 - current principles and practices of diabetes care
 - the principles and practices of teaching and learning
 - strategies for behaviour change
 - physical, psychosocial, religious, spiritual, emotional, cultural and socio-economic issues related to diabetes
 - processes for evaluating the outcomes and effectiveness of the plan
- b) The programme includes processes to identify the resources needed to support the programme.
- c) The programme is evaluated by the students and staff on an on-going basis.
- d) The programme recognises the diversity of individual learning styles.
- e) The programme includes age- and culturally appropriate educational resources.
- f) The programme includes regular review times and accommodates changes in professional education and diabetes care.

Standard 11

The implementation process facilitates student learning and behaviour change.

Essential indicators

- a) The implementation strategy is consistent with the education plan developed in collaboration with all stakeholders.

- b) The programme is provided by a multidisciplinary team.
- c) Individual and group teaching is interactive, encourages reflection and can be applied in the clinical setting.
- d) Processes and opportunities are in place to facilitate feedback between students and faculty members regarding progress towards achieving learning goals
- e) Students have the opportunity to discuss education issues and concerns with faculty on an individual basis.
- f) A range of educational approaches and methodologies are used to meet individual needs.
- g) Conflict resolution processes are in place.

Standard 12

The programme is evidence-based and provided in a professional and ethical manner.

Essential indicators

- a) The programme is evidence-based and results in increased student knowledge and ability to apply their knowledge in clinical and other settings.
- b) There is evidence that the results from current educational, behavioural and clinical research are used to improve the programme and ensure it meets best practice standards.
- c) Agreed processes and tools are used to measure the programme outcomes and effectiveness.
- d) The programme delivery is consistent with professional standards of practice, current knowledge and available evidence.

Comprehensive indicators

- h) Published research findings are regularly presented and discussed with students and team members.
- i) Education, behavioural and clinical research is undertaken by staff and students, where possible, to contribute to the evidence base for practice.

X. ACCESS

Standard 13

The programme will be recognised by and accessible to the target community.

Essential indicators

- a) Health professionals engaged in diabetes care in the local community and extended target area know how to access the programme.
- b) The programme is recognised as an entry level qualification for practice in diabetes care.
- c) The programme is offered at a cost appropriate for students and at a time and venue that is easy to access.
- d) Any facilitating factors that increase accessibility to the programme are identified and evaluated for effectiveness on an on-going basis by the advisory committee. These might involve cost, travel, language, and/or the application process.

XI. EVALUATION

Standard 14

The effectiveness and quality of the programme are assessed at least once a year, linked to outcomes, and is reviewed and revised on the basis of the programme needs assessment.

Essential indicators

- a) The assessment will take into account:
 - programme objectives
 - curricula, methodologies and materials
 - self-selected behavioural goal-setting and action-planning processes
 - participation of the multidisciplinary team
 - student access and follow-up
 - resources (space, personnel, budget)
- b) A data collection system is in place to facilitate staff capacity to measure and report the programme outcomes.
- c) Satisfaction with the programme is assessed by students, staff and external stakeholders. The findings are reviewed by the coordinator and the advisory committee as part of the evaluation process.
- d) The evaluation report is used to improve the programme.

CONTENT STANDARDS

XII. PREVENTION OF DIABETES AND PUBLIC HEALTH

Standard 15

There is evidence that the curriculum highlights the importance of preventing diabetes and indicates that diabetes is a public health concern.

Level 1 Indicators

Programme content includes:

- a) Increasing prevalence and incidence of diabetes worldwide
- b) Risk factors for developing any type of diabetes
- c) Brief description of impaired glucose tolerance and impaired fasting glucose (pre-diabetes)
- d) Lifestyle recommendations to prevent diabetes.

Level 2 Indicators

Programme content includes:

- e) Concepts of primary, secondary and tertiary prevention
- f) Evidence-based screening programmes for diabetes
- g) Research relating to primary prevention of type 2 diabetes
- h) Models of health promotion
- i) Role of advocacy in influencing policy makers
- j) Country-specific surveillance data on the prevalence of diabetes and risk factors for the development of diabetes in the community
- k) Special consideration in relation to prevention at different stages of life and for people with a disability or with special needs.

XIII. DIAGNOSING DIABETES

Standard 16

The programme includes content related to the pathophysiology and diagnosis of diabetes mellitus.

Level 1 Indicators

Programme content includes:

- a) Definition of diabetes
- b) Differences between type 1, type 2 and gestational diabetes
- c) Clinical presentation of diabetes e.g. acanthosis nigricans for type 2, the insidious and progressive nature of type 2 diabetes
- d) Required laboratory tests for diagnosis of diabetes
- e) Genetic and environmental factors, obesity, insensitivity to insulin (IRS) and insulin deficiency in the development of diabetes
- f) The effect of defective insulin action or 'insensitivity to insulin' (also known as 'insulin resistance') in terms of genes, adiposity, gender, diet, exercise, hyperglycaemia, medicines and infection.

Level 2 Indicators

Programme content includes:

- g) Less common forms of diabetes (including MODY, LADA and other specific types)
- h) Secondary diabetes (e.g. steroid induced)
- i) Pathogenesis of diabetes
- j) Trends in the epidemiology (incidence) of diabetes
- k) Accuracy of tests at diagnosis and use of additional tests such as c-peptide, insulin antibodies, islet cell antibodies and GAD antibodies assays, zinc transporter as well as urinalysis (urine glucose and ketones) and HbA1c estimation
- l) Altered pathophysiology of diabetes and consequences
- m) Definition and implications of the metabolic syndrome
- n) Special consideration of diagnosis at different stages of life and for people with a disability or with special needs.

XIV. DIABETES SELF-MANAGEMENT

Standard 17

The programme includes content related to the role of monitoring diabetes self-management.

Level 1 Indicators

Programme content includes:

- a) Treatment targets including but not limited to blood glucose monitoring, HbA1c, blood pressure, lipids

- b) Importance of modifying treatment targets to individual patient
- c) Importance of screening for complications, including but not limited to micro- and macro-vascular complications, diabetic foot disease, retinopathy through dilated eye examinations or retinal photographs
- d) Psychosocial issues that affect diabetes self-management
- e) Appropriate use of blood glucose monitoring and, where appropriate, urine or blood testing for ketones
- f) Interpretation of blood glucose results and urine testing
- g) Sick day management (i.e. what to do and when to call a health care provider)

Level 2 Indicators

Programme content includes:

- h) Diabetes self-management for changing schedules and special events such as travel, social gatherings, sports days, weekends versus work days, and shift work
- i) Recognising blood glucose patterns and using the information to manage and fine tune blood glucose control and reduce glycaemic variability. Insulin pump therapy and continuous glucose monitoring systems should be included.
- j) Diabetes self-management at different stages of life and for people with a disability or with special needs
- k) Diabetes self-management during illness (i.e. medicine management, guidelines for diet, fluid needs, ketone testing, precautions with metformin)
- l) Implications of monitoring during fasting e.g. Ramadan, Buddhist Lent and Christian fasting.
- m) Pre-pregnancy counselling and counselling women with established diabetes.

Standard 18

The programme includes content about the effect of exercise on blood glucose levels and diabetes self-management.

Level 1 Indicators

Programme includes:

- a) Effects of exercise on blood glucose and the differences between type 1 diabetes and type 2 diabetes)
- b) Exercise recommendations for people with diabetes
- c) Safety precautions regarding exercise, footwear, hypoglycaemia and when certain exercises are not appropriate e.g. weight bearing in those with peripheral neuropathy.

Level 2 Indicators

Programme content includes:

- d) Physiological effects of aerobic and anaerobic exercise

- e) Blood glucose management during and following an exercise period, the risk of hypo and hyperglycaemia
- f) Compounded effects of multiple and/or intensive exercise periods on blood glucose response
- g) Medicine adjustments before and after exercise
- h) Implications of exercise for people at different stages of life and for people with a disability or with special needs.

Standard 19

The programme includes content about the effect of food choices, eating patterns and cultural influences and the inter-relationship with other components of diabetes self-management.

Level 1 Indicators

Programme content includes:

- a) Basic principles of a well-balanced diet and the impact of macronutrients, food groups, food portions and meal timing on blood glucose levels
- b) How to appropriately match carbohydrate counting and other nutrition teaching tools such as the Glycaemic Index to patient need and learning level
- c) Nutrition recommendations: economic, social, cultural and ethnic influences on eating patterns, food procurement and preparation, and food choices
- d) Relationship among and the need to balance of food intake with diabetes and some other medicine doses and dose intervals, physical activity, illness, and the blood glucose pattern.

Level 2 Indicators

- e) Nutrition assessment, goal setting, implementing the food plan and evaluating the effect and using the information to individualise treatment
- f) How to use clinical, laboratory data to individualise nutrition goals and treatment
- g) Impact of socio-economic issues, cultural and religious practices on diabetes nutrition management e.g. family dynamics, dining away from home, food abundance, food scarcity, travel, grocery shopping
- h) Innovative approaches to and tools for nutrition education
- i) Effects of alcohol on blood glucose levels and precautions about drinking alcohol e.g. when driving, risk of hypoglycaemia
- j) Nutrition needs of people with type 1 diabetes at different ages
- k) Nutrition needs of people with prediabetes and type 2 diabetes including weight management, if indicated
- l) Nutrition needs at preconception, for gestational diabetes and during and after pregnancy for women with type 1 and type 2 diabetes
- m) Nutrition needs of older adults and those with special needs, including those living in care homes
- n) Nutrition needs of people from various ethnic groups and backgrounds

- o) Nutrition information during religious and cultural festivals
- p) Nutrition needs for those with eating disorders, digestive disorders or hormonal disorders e.g. anorexia, coeliac disease, thyroid disease
- q) Nutrition needs during acute illness and co-morbid conditions such as cancer, cardiovascular disease, and digestive disorders)
- r) Nutrition needs at different stages of life and for people with a disability or with special needs
- s) Adapting nutrition information for people with low literacy and numeracy.
- t) Techniques and strategies to promote behaviour change

Standard 20

The curriculum includes information about glucose lowering medicines and their role and effectiveness in the management of diabetes.

Level 1 Indicators

Programme content includes:

- a) The role of blood glucose lowering medicines
- b) Treatment aims when using blood glucose lowering medicines
- c) Types of blood glucose lowering medicines
- d) Appropriate administration of most commonly used blood glucose lowering medicines including dose, timing, route and monitoring the effects of the dose.
- e) Common side effects and contraindications to blood glucose lowering medicines
- f) Challenges encountered by people with diabetes when self-managing their medicines and following their care plan.

Level 2 Indicators

Programme content includes:

- g) Combination therapy i.e. two or three oral glucose lowering medicines (GLM), or oral GLMs and insulin
- h) Efficacy of different oral GLMs
- i) Possible side effects and other adverse events associated with secretagogues, biguanides, thiazolidinediones, alpha glucosidase inhibitors, incretin mimetics, SGLT-2 inhibitors, DPP-4 inhibitors and other emerging therapies
- j) Dose titration and impact on risk of side effects
- k) Strategies when glycaemic targets are not reached and when to add a second or third GLM or switch to insulin.
- l) Using oral medicines in vulnerable populations
- m) Impact of other frequently prescribed medicines for people with diabetes, rationale for their use, and their potential impact on glycaemia and other metabolic parameters e.g. statins, ACE, ARBs, corticosteroids, and NSAIDS

- n) Management of complex medicine regimens for diabetes when accompanied by illness and/or co-morbid conditions
- o) Implications of using GLMs at different stages of life and for people with a disability or with special needs.
- p) Annual review of prescribed medicines

Standard 21

The curriculum includes content information about the effective use of insulin in the management of diabetes

Level 1 Indicators

Programme content includes:

- a) Benefits of insulin in glucose management
- b) Types of insulin
- c) Insulin action time and duration of action
- d) Availability of insulins in respective country
- e) Basic insulin regimens
- f) Insulin injection technique and site rotation
- g) Preparation and administration of insulin using different methods, including syringes and pens
- h) Storage and disposal of insulin, syringes, and pen needles, lancets
- i) Side effects of insulin such as hypoglycaemia, insulin oedema

Level 2 Indicators

Programme content includes:

- j) Factors that affect insulin absorption, lipohypertrophy, lipoatrophy
- k) Principles of determining starting doses
- l) Insulin therapy in combination with oral GLM
- m) Types of insulin regimens and the importance of individualising the regimen to suit the person
- n) Benefits and risks of using different insulin regimens
- o) Appropriate use of insulin regimens in different situations
- p) Treatment goals and targets
- q) Addressing fear of injections and insulin
- r) Principles of insulin dosage adjustment for persons with diabetes and health professional
- s) Management of insulin pumps
- t) Role of specialised teams in pump therapy
- u) Special consideration of use of insulin at different stages of life and for people with a disability or with special needs.

XV. DIABETES SELF-MANAGEMENT EDUCATION

Standard 22

There is evidence that the curriculum encompasses the role of diabetes self-management education (DSME) in the care of people with diabetes.

Level 1 Indicators

Programme content includes:

- a) The role of DSME in the care of people with diabetes, adapted to the local context.
- b) Competencies and tools for DSME and behaviour change
- c) The importance of the multidisciplinary team in the DSME and care of the person with diabetes.
- d) The importance of support systems and community resources available to the person with diabetes.
- e) The difference between holistic education and medical education
- f) The difference between teaching and learning, including identifying barriers and enablers to teaching and learning
- g) Psychological and emotional impact of diagnosis of diabetes
- h) Prevalence and impact of diabetes distress and depression
- i) The role of the diabetes educator in assisting people to manage their diabetes effectively and recognising when to refer on to other professionals or resource agencies
- j) Recognising discrimination and stigmas related to diabetes.

Level 2 Indicators

Programme content includes:

- k) Critical discussion about advanced roles within diabetes care
- l) Mentoring processes for healthcare professionals training to become diabetes educators
- m) Theoretical concepts that underpin adult learning principles
- n) Theories of behaviour change
- o) How to identify cognitive, emotional, behavioural and social risks to effective self-management, and strategies that help people with diabetes identify positive solutions
- p) Psychological disorders among people with diabetes that warrant special attention and specialised mental healthcare such as depression, anxiety, eating disorders, substance abuse and understand the impact on emotional wellbeing
- q) Importance of continuing DSME and support
- r) Models of care to facilitate high quality services.

XVI. EMERGENCIES AND ACUTE COMPLICATIONS

Standard 23

The curriculum adequately addresses hypoglycaemia and other acute emergencies associated with GLMs.

Level 1 Indicators

Programme content includes:

- a) Causes of hypoglycaemia
- b) Signs and symptoms of hypoglycaemia: adrenergic and neuroglycopenic
- c) Preventive strategies for hypoglycaemia
- d) Treatment of hypoglycaemia
- e) Use of glucagon in hypoglycaemia
- f) Fear of hypoglycaemia
- g) Effects of alcohol and precautions

Level 2 Indicators

Programme content includes:

- h) Relationship between hypoglycaemia and rebound hyperglycaemia
- i) Nocturnal hypoglycaemia
- j) Risk of prolonged hypoglycaemia in older adults
- k) Hypoglycaemia unawareness
- l) Legal implications and safety aspects of hypoglycaemia (Driving, Use of heavy equipment)
- m) Educating teachers, sports coaches, police officers and other emergency-service personnel to manage hypoglycaemia
- n) Hypoglycaemia presentation and treatment at different stages of life and for people with a disability or with special needs.

Standard 24

The curriculum adequately addresses diabetic ketoacidosis

Level 1 Indicators

Programme content includes:

- a) Definition of DKA
- b) Causes of DKA such as insulin omission, inadequate insulin dosing, stress, illness
- c) Signs and symptoms of DKA
- d) When to refer a patient for medical assistance/treatment
- e) Preventive strategies for DKA.

Level 2 Indicators

Programme content includes:

- f) Pathophysiology of DKA
- g) Treating and managing DKA
- h) Strategies to prevent recurrent episodes of DKA

- i) Sick day management to prevent DKA
- j) Impact of illness on insulin requirements
- k) Ketone management
- l) Social or psychological problems associated with DKA
- m) Implications of DKA at different stages of life and for people with a disability or with special needs.

Standard 25

The curriculum adequately addresses hyperosmolar hyperglycaemic syndrome (HHS) as an emergency complication of diabetes.

Level 1 Indicators

Programme content includes:

- a) Definition of HHS
- b) People at risk of HHS
- c) Signs and symptoms of HHS
- d) Strategies to prevent HHS
- e) When to refer patient for medical assistance/treatment

Level 2 Indicators

Programme content includes:

- f) Treating and Managing HHS
- g) Mortality rates for HHS
- h) Consequences associated with HHS in the immediate recovery period
- i) Supportive education
- j) Sick day management
- k) Impact of illness on insulin requirements
- l) Special consideration of HHS at different stages of life and for people with a disability or with special needs.

XVII. LONG-TERM COMPLICATIONS

Standard 26

The curriculum includes content about screening, assessing and managing long term complications of diabetes

Level 1 Indicators

Programme content includes:

- a) A description of the long term complications of diabetes
- b) Need for screening
- c) Timing of screening
- d) Information about people most at risk of developing complications
- e) Importance of good glycaemic control to prevent or delay complications
- f) Psychological, social and physical consequences of diabetes complications
- g) How and when to refer people with diabetes for screening or management of complications
- h) Basic foot care and assessment
- i) Importance of eye screenings using dilated eye examinations of fundal photography
- j) Sexual health and diabetes
- k) Effect of blood glucose fluctuation on sexual responsiveness in men and women
- l) Disease factors that can impact on a person's sexual health
- m) Screening for sexual health problems
- n) Dental health and oral cavity infections
- o) Precautions for women of childbearing age regarding the metformin, statins and other medicines
- p) When to refer for expert assessment and advice

Level 2 Indicators

Programme content includes:

- q) Review of all micro-vascular and macro-vascular complications (Retinopathy, Nephropathy, Neuropathy, Cardiovascular disease) including :
 - Pathophysiology including disease progression and classification
 - Incidence and prevalence
 - Risk factors and predictors
 - Screening and diagnostic tests
 - Treatment and management
 - Use of medicines
 - High risk groups
 - Associated co-morbidities
 - Managing cardiovascular diseases, hypertension and dyslipidaemia
 - Women's risk of CVD
 - Use of medicines including statins, ACE/ARBs protective to kidneys to reduce CV risk
- r) Identifying and managing gastroparesis
- s) Foot assessment and managing complicated foot problems

- t) Counselling people with diabetes adults, adolescents and parents of children with diabetes about the risks of developing long-term diabetes complications and strategies to reduce those risks
- u) Taking a basic sexual history, respecting a person's culture and their right to privacy and confidentiality
- v) Preventive strategies for sexual health such as the need to practice safe sex and have regular pap smears
- w) Managing and treating sexual dysfunction in men and women
- x) Proactive dental and oral cavity health and treatment and the relationship to heart disease and diabetes
- y) Review of research evidence associated with preventing and managing diabetes complications
- Z)** Implications of long-term complications at different stages of life and for people with a disability or with special needs.

XVIII. DIABETES IN PREGNANCY

Standard 27

The curriculum includes content about managing diabetes during pregnancy

Level 1 Indicators

Programme content includes:

- a) Types of diabetes in pregnancy
- b) Screening for gestational diabetes in pregnancy
- c) Need for pre-conception counselling
- d) How and when to refer to a health care provider

Level 2 Indicators

Programme content includes:

- e) Pre-conceptual counselling
- f) Complications of diabetes in pregnancy
- g) Diagnosing gestational diabetes
- h) Managing diabetes in pregnancy
- i) Changes in insulin requirements during and post pregnancy
- j) Use of glucose lowering medicines during pregnancy
- k) Blood glucose targets in pregnancy
- l) Risk of hypoglycaemia in pregnancy
- m) Breastfeeding and hypoglycaemia
- n) Risks to the infant after being exposed to hyperglycaemia during pregnancy
- o) Risks to Large for Gestational Age babies and Intrauterine growth retardation
- p) Managing the woman with diabetes during labour and delivery
- q) Recognising and managing hypoglycaemia post delivery
- r) Importance of rescreening women who had GDM at 6 weeks post-delivery

- s) Impact of living with diabetes on levels of stress and fatigue and their impact on sexual desire, especially in women

XIX. DIABETES AND SURGERY

Standard 28

The curriculum includes content about how to manage diabetes during elective surgical and clinical procedures

Level 1 Indicators

Programme content includes:

- a) Metabolic changes that occur during surgery
- b) Relationship between glycaemia and wound healing
- c) Principles of management for people with type 1 diabetes and type 2 diabetes undergoing fasting and surgery
- d) Approaches to managing minor and major procedures
- e) Managing fasting to prevent hypoglycaemia.

Level 2 Indicators

Programme content includes:

- f) Pre-surgical regimens for managing people on oral GLMs and/or insulin
- g) Effective post-procedural strategies, including the managing blood glucose, discharge planning, rehabilitation and follow-up appointments
- h) Stress hormone response during surgery and the effects on glycaemia
- i) Implications of managing diabetes during elective surgical and clinical procedures at different stages of life and for people with a disability or with special needs.

XX. COMPLEMENTARY AND ALTERNATIVE THERAPIES

Standard 29

The curriculum includes content about using complementary therapies and alternative medicines (CAM), their role and effectiveness in diabetes management.

Level 1 Indicators

Programme content includes:

- a) Place of CAM in managing diabetes
- b) Philosophical basis of CAM
- c) Safety and efficacy of different types of CAM
- d) Benefits and risk associated with CAM
- e) Regulation of CAM in the relevant country

Level 2 Indicators

- f) Information about integration of CAM in the relevant health system
- g) Research and scientific evidence about benefits and risks of commonly used CAM
- h) Education about and how to provide objective, non-judgemental advice to people with diabetes about using CAM

XXI. UTILISING RESEARCH AND DELIVERING EVIDENCE BASED PRACTICE

Standard 30

The programme includes content related to the use of evidence to underpin best practice.

Level 1 Indicators

Programme content includes:

- a) Value, definition and fundamentals of how to implement evidence based practice
- b) Overview of different forms of evidence i.e. qualitative, quantitative, surveys, evaluation, reflective evidence, and audit

Level 2 Indicators

Programme content includes:

- c) Understanding the contribution of different research paradigms to diabetes care
- d) Critiquing research literature for practice
- e) Interpreting the latest evidence on new technologies and therapies
- f) Translation of theory into practice
- g) Report writing and communication of results
- h) Need for evaluation including structure, health outcomes and cost effectiveness
- i) Role of evaluation in improving diabetes care
- j) Audit and quality improvement

OUTCOME STANDARDS

XXII. KNOWLEDGE

Standard 31

The student correctly describes the effects of diabetes on the body, treatment modalities, management of the behavioural, psychosocial and clinical aspects of diabetes, and the definition and significance of a healthy lifestyle to reduce the risks for diabetes and diabetes-related complications.

Essential indicators

- a) Documentation is maintained about each student, and includes:
- education plan
 - self-selected education goals and action plans
 - signed records indicating that the student met course requirements
 - outcome of evaluation processes

XXIII. STUDENT ASSESSMENT AND FEEDBACK

Standard 32

The programme includes robust student assessment and feedback processes.

Essential indicators

The programme contains:

- a) A process that encourages students to provide feedback regarding the programme
- b) Individualised learning outcomes for students
- c) Student access to appropriate resources and mentoring to be able to meet the prescribed learning outcomes
- d) Opportunities for group discussion on specific topics: virtual or face-to-face
- e) Opportunities to problem-solve specific issues in diabetes management and to apply learning to practice
- f) Reflection whereby the student reflects on clinical practice e.g. individual journals, written assignments or monitored group discussion
- g) A final comprehensive assessment or ongoing assessment process
- h) A fair, robust and equitable assessment process
- i) A process for marking assignments.

Comprehensive indicators

- j) There is external quality assurance for the marking process
- k) There are established student support services
- l) The programme utilises different assessment approaches, such as examinations, assignments or case studies

The programme includes:

- written assignments that require the student to apply knowledge regarding management of diabetes, use of educational techniques and behaviour change strategies

- opportunities for students to present their work to other students
- opportunities for students to critique the work of other students providing rationale to back up their comments
- evidence that students completed a critical assessment of the current literature.

GLOSSARY

Accrediting body, agency, or association

An accrediting body, agency, or association is a non-governmental entity that sets standards for accreditation, administers the process of accreditation, and provides assistance as it is able to its constituents (i.e. institutions, programs, students, and the general public)

Advisory committee

An advisory committee is a collection of individuals who bring unique knowledge and skills which complement those of an organisation's formal board members and enable them to more effectively govern the organisation. A key function of the group is to make recommendations and/or provide key information and materials to the formal board of directors

Continuing education

An instructional training or series of programmes or experiences that update an individual in a particular area of knowledge or skill sets, following formal or post-secondary education; a certificate of learning is often provided upon completion of the programme to prove attendance

Continued professional development

The means by which people maintain their knowledge, skills and experience in a chosen field of study, following completion of formal or post-secondary education

Curriculum

A detailed plan for the educational programme which describes the overall aims of the course, the content (usually divided into topics/modules, each with its own set of objectives), the method of selecting students, details about the faculty and resources, references and texts, evaluation processes and, where appropriate, the process for allocating recognition of prior learning

Diabetes self-management

The actions and choices, employing a range of skills, knowledge and behavioural change strategies (healthy eating, being active, monitoring, taking medicines, problem solving, reducing risks, healthy coping), that are undertaken by people with diabetes in response to their condition.

Diabetes self-management education (DSME)

A process by which people with diabetes, their family and/or significant social contacts are engaged as active participants in the acquisition and application of the knowledge and practical, problem-solving and coping skills needed to achieve optimal health outcomes.

Diabetes educator

A person who has undertaken specialised training and experience in providing DSME and support to people with diabetes, their family and/or significant social contacts – a nurse, dietitian, psychologist, physician, pharmacist or other healthcare provider

Empower

Make a person stronger and more confident, especially in controlling their life and claiming their rights.

Evaluation

A process by which the success, impact, outcomes and/or satisfaction with a set programme are determined

Evidence

The results of scientific studies, such as randomised controlled trials, that have been produced from a sound study design and deemed to be clinically relevant

Health professional

An individual who provides preventive, curative, promotional or rehabilitative health care services in a systematic way to people, families or communities

Indicator

A measurable variable that provides information on whether the programme has achieved the desired outcomes

Institute

An established organisation or body, such as a research or educational entity

Learner-centred

Describes an activity, programme or lesson plan that is based on the assessed needs and goals of the individual learner, where the learner is in command of the learning experience

Multidisciplinary team

A team consisting of professionals from different disciplines who, in partnership with the person with diabetes, plan and implement treatment, DSME and ongoing care to manage diabetes and related complications

Population needs assessment

A study in which data are collected to evaluate the needs of a defined population

Professional standards of practice

Standards developed by professional bodies to guide and to advise on accepted conduct of members of that profession Code of professional conduct

Organisation

A group of people who work together in a structured way with a shared goal or purpose, such as a diabetes service

Research

The systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions

Stakeholders

Any person or group with a voiced or demonstrated interest in a particular programme or cause; in this context, may include people with diabetes, staff, community members, representatives of partner organisations and/or sponsors



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