

# AN EDUCATION PROGRAMME FOR TYPE 2 DIABETIC PATIENTS

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## ABSTRACT

This programme is presented to illustrate how a programme for comprehensive diabetes education can be put together. In the Singapore setting, it may be challenging. Nevertheless, it shows what is already in force elsewhere. A 5-day education programme for type 2 diabetes patients is conducted in the Endocrinology Outpatient Clinic in Bispebjerg Hospital, Copenhagen. It can be used as an individual or group educational programme. The aim of the programme is to enable diabetic patients to manage the demands that the disease makes on them everyday. At the end of the programme, the participant should be able to describe: (a) the progressive nature of the disease, (b) hereditary nature, (c) importance of healthy food, exercise, self monitoring, and of making the personal effort, (d) complication prevention, (e) annual screening, (f) establishing support in the primary network, and (g) obstacles and how to overcome them. A patient diary or logbook is used for important information capture, for formulating and documenting treatment objectives and as a shared communication tool. At each contact the diary should form part of the agenda. Evaluation and follow-up is essential and consist of: HbA1c, lipids (first teaching day); blood pressure (the second teaching day); albuminuria (the third teaching day); foot status, ophthalmoscopy (the fourth teaching day); and HbA1C (fifth teaching day). After 3 months, check HbA1c, blood pressure and possibly lipids; after 9 months, check HbA1c, blood pressure, possibly lipids, and U-albumin; and after 24 months check HbA1c, blood pressure, ophthalmoscopy, U-albumin, lipids, ECG, creatinine, and foot status.

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## INTRODUCTION

This programme is documented to illustrate how a programme for comprehensive diabetes education can be put together. In the Singapore setting, it may be challenging. Nevertheless, it shows what is already in force elsewhere.

A 5-day education programme for type 2 diabetes patients from the Endocrinology Outpatient Clinic, Bispebjerg Hospital in Copenhagen, Denmark. (Dorrit Rojen et al, 2003) is described. The attraction of this programme is that it is comprehensive, has a well-defined aim, pays attention to the interconnection of the sessions, the patient and his/her primary network, and also has an evaluation component.

It can be used for individual patients or as a group educational programme. The aim of the programme is to enable diabetic patients to manage the demands that the disease makes on them everyday.

## CRITICAL SUCCESS FACTORS IN PATIENT EDUCATION

There are critical success factors that the educator needs to take note of:

- κ **First, the right provider mindset.** For healthcare staff it can be difficult to understand that type 2 diabetes is often more of a problem to healthcare providers than to many of their patients. This paradox can easily breed frustration, especially when they know that the patient is at high risk of developing late complications.
- κ **Second, recognize the patient can.** Fortunately for many patients, being diagnosed with a chronic illness means a fundamental change to quality of life, which they are prepared to learn to relate to and live with. In many ways this is an easier situation for the healthcare provider since the patient is usually motivated to accept advice and guidance about a change of lifestyle and treatment.
- κ **Third, recognize the stage of behaviour change in the patient.** It is important to know that patients can be at different stages of behavioural change. To achieve co-operation with patients who do not recognise the extent of the potential problems posed by their diabetes, the Prochaska & DiClementi's behaviour change model is useful. The healthcare provider must wait for the patient to start moving towards a behavioural change, and at each meeting with the patient clarify whether a change in motivation for behavioural change has occurred, which will support the education process.
- κ **Fourth, use the patient's logbook or diary.** When in contact with the patient, a shared communication tool is useful. A patient diary or logbook can be used for important information capture, for formulating and documenting treatment objectives. At each contact the diary should form part of the agenda.
- κ **Fifthly, teach facts about the disease also.** In parallel with assessing the stage of behaviour change, the healthcare provider must ensure that the patient acquires knowledge and facts about the disease, whilst recommending the relevant medical treatment. For example, when type 2 diabetes is first diagnosed, patients should be informed about the natural course of the disease. Both healthcare provider and patient should understand that when the treatment needs modification or insulin should be

initiated, it is not the patient, but the beta-cells (the insulin producing cells) that fail.

- κ ***Sixthly, recognise the patient's primary network.*** When educating the diabetes patient it is important to elicit the people who are part of the primary network (spouse, partner, children, siblings, other confidants). Clarification of how this network affects the patient's attitudes and actions regarding self-care can contribute to the patient becoming conscious of who or what pulls them in a positive or negative direction. It is also essential for the healthcare provider to discover the interactions between the patient and the primary social network to be able to support a behavioural change in the best possible way.
- κ ***Finally, encourage openness.*** The patient must be encouraged to be open about his or her needs in connection with the disease since this determines whether the primary network will be able to provide support. Openness will also be a help in the event of conflicts, since it increases the probability of positively affecting the primary network to give the necessary support. If the individual experiences the meaning and effect of treatment advice, he or she will be better equipped to reason with family and friends.

## THE PROGRAMME

This diabetes education programme is built up around seven main subjects and contains proposals for planning and carrying out group education over 5 days (teaching days 1-5). The sessions are systematically organised to cover all of the relevant areas. The details on the teaching methods provide information are described to give an idea on how the topics discussed.

### Group education

Group education requires good planning and a good overview, and experience with diabetes and education will be an advantage. To ensure a benefit for patients, educators must be able to establish an atmosphere of trust within the group.

The advantage of group education is that patients have the opportunity to exchange experiences, thoughts and feelings with others who have the same disease, while healthcare providers are able to educate several patients simultaneously.

Before accepting a patient into group session, it is vitally important to assess where the patient is in the change process. To ensure that the patient benefits from the education programme, he/she must be at least at the consideration stage.

A good number of people for group education ranges from eight to ten. As experience has shown, there are advantages to inviting family members to participate. The authors Doritt Rojen et al, recommend education for 2 hours a day, once a week, for 5 weeks. Note that the first and second teaching days are fixed. After that, the rest of the education depends on the dynamics of the group. If fruitful discussions arise in the group, some of the subjects to be covered can be postponed until the next day.

### Individual education

In some cases, individual education is more suitable and the teaching programme can be easily adjusted to the personal needs and characteristics of the patient. The authors of the programme Doritt Rojen et al recommend allocating 45-60 minutes on the first day, and 30-45 minutes for subsequent occasions if individual education is planned. They also recommend that the subjects are covered in the same way as for groups. The first conversation with the dietician will typically last 45-60 minutes and subsequent conversations about 30 minutes. The individual education course can be expected to last for several months.

### Diary

When in contact with the patient, it is very important to have a shared communication tool. A patient diary or logbook can provide important information as well as enabling patients to formulate and document treatment objectives that they and the healthcare provider are working towards: agreements, medications, and test results. At each contact the diary should form part of the agenda.

## AIM OF THE PROGRAMME

The principal aim of this programme is to educate patients about diabetes and to help them manage the demands that the disease makes on them everyday. After completing the programme the patients should be able to describe:

1. the progressive nature of type 2 diabetes and that it is a progressive disease,
2. its hereditary nature,
3. the importance of healthy food, exercise, self monitoring, and of making the personal effort,
4. complication prevention,
5. annual screening,
6. establishing support in the primary network, and
7. obstacles and how to overcome them.

## EVALUATION OF THE PROGRAMME

Since maintenance of knowledge and behaviour is essential, regular follow-up is key to success. For this reason the authors of the programme, Doritt Rojen et al recommend that group education is followed up after 3, 9 and 24 months. These follow-up meetings promote discussion on how the patients manage their diabetes from day-to-day, and are also used for adjusting medical treatment. The following should be viewed as a proposal for measuring the effect of an intervention using a minimum of parameters.

It is recommended that data acquisition for evaluation is carried out as stated below, whether the education takes place in the primary or the secondary care sector. Patients are informed of the follow-up programme, and all available results should be written down for individual patients to see.

The same concept of education should be used in both primary and secondary care sectors to unify the many concepts

that must be communicated to the patients. The following parameters are recommended to be evaluated, at the latest by:

1st teaching day: HbA1c, lipids

2nd teaching day: blood pressure

3rd teaching day: albuminuria

4th teaching day: foot status, ophthalmoscopy

5th teaching day: HbA1c, if education has continued over 5 weeks

After 3 months: HbA1c, blood pressure, possibly check lipids

After 9 months: HbA1c, blood pressure, possibly check lipids and U-albumin

After 24 months: HbA1c, blood pressure, ophthalmoscopy, U-albumin, lipids, ECG, creatinine and foot status.

The follow-up visits could take place every 3 or 4 months, when HbA1c and blood pressure are checked. In addition, U-albumin, lipids, ECG, creatinine and foot status are checked once a year. The patient's eyes should be checked once a year by a practicing ophthalmologist.

If the patient does not have late complications that need treatment, he/she is monitored during the next 24 months and refresher sessions conducted if necessary.

## THE DETAILS ON THE TEACHING PROCESSES

### 1st teaching day

**Introduction.** The educator welcomes the patients, introduces him/herself and states the aims of the education programme (i.e., to inform the patients of diabetes as well as discussing how this knowledge can be translated into practice). The educator should inform the patients of the prepared teaching plan and that some of the subjects will be repeated during the course since they are closely related.

The patients' attention should be drawn to the fact that by enrolling in these education sessions they have already made a significant step towards managing their diabetes and the educator should acknowledge this effort. A brief overview of the different stages of behavioural change can be presented in order to illustrate the difficulties associated with living with a chronic disease.

**Pathophysiology (What is type 2 diabetes?).** In both individual and group education set-up it can be difficult to inform patients about the biological background of type 2 diabetes. Both insulin resistance and progressive beta-cell dysfunction<sup>2</sup> should be covered as major take home messages on the pathophysiology.

**Heredity.** Since the incidence of type 2 diabetes is rapidly growing, it is important that the patients are informed about its hereditary nature: that the lifetime risk of an individual developing type 2 diabetes is 40% if one parent has the disease.

**Serious nature of the disease.** Try to create an understanding

in the group that type 2 diabetes is a serious disease. Make use of the interaction between individuals to encourage a useful discussion. However, be aware of the risk of frightening the patients.

**Exercise.** When covering this subject, the group can benefit from discussing the experiences that each participant has had. A number of people, especially older people, may not have a companion to exercise with. The educator can make use of the group situation to propose that patients go for a walk together, and measure blood sugar before and after to help them understand the benefits of exercise.

**Measuring blood-sugar.** Show the patients how to take a blood-sugar reading, and hand out a meter that they can take home with them during the teaching period. During this session it is best to have two instructors in the group, since it is important to individualise the guidance. Ask the patients to take a blood-sugar reading every morning before breakfast and bring the recorded results to the next teaching day for discussion with the group. Supply the patients with a diary and take a blood sample from them to determine the HbA1c. Explain that the purpose of this test is to show how the individual's average blood sugar level has been over the past 3 months. Tell patients that the test will be covered thoroughly the next time, when the test results are available.

**Close.** Provide a summary of the day. State that type 2 diabetes is a progressive and serious disease that can give rise to many complications. Emphasise the importance of recognizing that the disease can be treated and that they can prevent complications from arising. The patients' own effort and the gains of a lifestyle change are of the greatest importance, and this should be stressed.

### 2nd teaching day

**Blood-sugar values and HbA1c.** Start with questions on blood-sugar measurement. Ask the group's permission to write each individual's blood-sugar values on the blackboard, so that all can see each other's values. Use these values to illustrate what high blood-sugar is, and at the same time involve the patients by referring to their own measurements.

Explain that the target blood-sugar level is 4-7 mmol/l before a main meal and below 9 mmol/l 1.5 hours afterwards. Explain the HbA1c value and inform all patients about their average blood-sugar reading. They should understand that the aim is to reduce HbA1c to 6.5% (average blood-sugar of 7 mmol/l) so that the risk of late complications is lowered<sup>3</sup>. Besides the daily fasting blood-sugar measurements, the group should also be encouraged to take blood-sugar readings a couple of times, 1.5 hours after a main meal, to see how large the rise is in connection with the meal.

**Pathophysiology.** Repeat the pathophysiology information,

“Remember, you have diabetes because your insulin functions poorly while at the same time your pancreas produces too little insulin in relation to your needs. It is important to take this into account in your everyday life, which is why you should follow the advice about healthy food and exercise.”

**Dyslipidaemia.** Patients should be informed about their latest lipid status (cholesterol level). Discuss the lipid level and emphasise which measures are advised to protect against cardiovascular disease as effectively as possible.

**Smoking.** Enquire into the patients' smoking habits. If one or several smoke, inform the group of the established facts concerning the detrimental effects of smoking.

**Healthy food.** The patients' eating habits should be enquired into. Try to start a discussion in the group. Some questions that can help to create a useful debate are:

- κ Are you satisfied with your weight?
- κ How much would you like to weigh?
- κ If you think you weigh too much - where on the body do the surplus kilos lie?
- κ Have you tried to lose weight before?
- κ What was the result?
- κ Do you eat more if you feel sad or nervous?
- κ Who prepares the food?
- κ How often do you normally eat during the day?
- κ Do you eat in the night?
- κ Who among your family and friends is more likely to support you?
- κ Can you speak to your partner/family - can you expect support?

**Close.** Summarise the day: “Now you know how your blood sugar and cholesterol levels have been over the recent months, and which levels are recommended. Diet is very important, and we have generally covered what is most healthy for you to eat on an everyday basis”. Hand out a leaflet on healthy food (e.g. eating out guide)<sup>4</sup> if available.

### 3rd teaching day

**Blood-sugar values.** Start by asking about the previous week's blood-sugar measurements, write them down and relate them to the individual's level of activity. At this point the group can be expected to understand the connection between food, physical activity and glycaemic control. Try to create a dialogue around changes in eating habits and level of activity in relation to the measured blood-sugar values:

- κ Have you altered your consumption of fat?
- κ Are you eating more vegetables?
- κ Is the leaflet about healthy food useful?
- κ Are you taking more exercise?

**Frequency of meals.** It is useful to start by asking the group how many times they eat during each day. Education and discussion can start from here.

**Medication.** Explain that most of the medication given to patients with type 2 diabetes acts to reduce the risk of late complications, and that preventative treatment benefits patients enormously. Be aware that patients often want to discuss their treatments in detail, so try to keep any discussions focused on this subject.

**Albuminuria.** The group's interest can be increased by using the patients' own albumin values as the basis of teaching.

**Cardiovascular disease and hypertension.** Type 2 diabetes and cardiovascular disease are very closely connected. When discussing this subject be aware that one or several patients may have severe cardiovascular disease and might find the session difficult.

**Close.** Summarise the day: “The most important treatment of type 2 diabetes is weight loss, which is achieved by exercise and eating healthy food. You have seen how food and exercise affects your blood-sugar readings. If blood-sugar levels remain high, medication will be recommended. High blood-sugar and blood pressure can, over several years, damage the blood vessels, which promotes hardening of the arteries. However, medication can prevent or delay the development of these late complications.”

### 4th teaching day

**Blood-sugar values.** Ask the patients about their blood-sugar values taken during the previous week, and whether they have made changes regarding food and exercise. Ensure that the group understands the importance of having a blood sugar level of 4-7 mmol/l before a main meal and a maximum level of 9 mmol/l 1.5 hours afterwards.

**Retinopathy.** Patients with diabetes can be very worried about the possibility of reduced vision or becoming blind. If a member of the group has had laser treatment other patients may find it helpful to hear about this person's experiences.

**Peripheral neuropathy/foot care.** Diabetic neuropathy is characterised by damage to the nerves and nerve sheaths, which causes them to malfunction. Start by asking the patients whether they are aware of their sense of feeling in their feet.

**Close.** Summarise the day: “A high blood-sugar level over several years is strongly related to the development of eye disease and neuropathy. Therefore, it is important that your eyes are checked every year. Even if you already have eye complications, a reduction of your blood-sugar level is always beneficial. There



are many treatments available that can help maintain your vision. You should also be aware of your blood circulation and the sense of feeling in your feet. Try to examine your feet every day.”

### 5th teaching day

**Blood-sugar values.** Ask the patients about their blood-sugar values taken in the previous week, and remember to commend their efforts when the values have decreased. Use this time to discuss the causes of high and low blood-sugar values.

**Pregnancy.** This subject can be useful to the group even though most of the women will not be of childbearing age. Knowledge of this subject will help patients if a family member with diabetes is planning a pregnancy.

**Erectile dysfunction/female sexual dysfunction.** The term ‘erection problem’ is the best term to use since impotence can be a taboo term.

**Questions and evaluation.** Before ending the session give the patients an opportunity to have their final questions answered. When a patient is evaluated it is important to be able to adjust the continued teaching.

**Close.** At the end of the session, agree the times of the follow-up meetings at 3, 9 and 24 months. Tell the patients the aims of these three meetings:

- κ Assessment of diabetes regulation
- κ Possible adjustment of medication
- κ To refresh their knowledge of diabetes.

### Follow-up meetings

A constructive debate about how things have been since the last meeting: “Which obstacles have been experienced in everyday life and how have they been overcome to maintain lifestyle changes?” Ask the patients how they will manage their disease until they meet up again. Point out to the group that you hope they are now well on their way to giving their body the help that it needs to regulate their blood’s sugar and fat content.

## DISCUSSION

A teaching programme to be effective needs several elements to be in place. First, the programme objectives, teaching methods, and evaluation need to be worked out. Next, the critical success factors in the educator, patient and primary network need to be thought through.

The linking up of one lesson with another and with the follow-up sessions will ensure that the participants are able to refresh what has been learnt and also to relate the parts to the whole. Using the experiences of the group helps the participants to appreciate the relevance of the things taught in the real world. Finally, assessment enables the educator and the learners to assess how effective the programme has been.

## CONCLUSIONS

This 5-day programme for type 2 diabetes mellitus has the elements that will make it effective. It can provide the template for similar programmes to be put together and taught to Singapore patients.

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