

# A DESKTOP GUIDE FOR MANAGING TYPE 2 DIABETES

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## ABSTRACT

A desktop guide facilitates the patient education by introducing visual input and focus to the communication and skills building process. A 13-panel guide has been developed jointly by Novo Nordisk and the College of Family Physicians, Singapore. The guide covers: what is diabetes and what targets of control to set (Panels 1 & 2); lifestyle changes to make for diet, smoking, drinking, and carbohydrate choices (Panels 3 & 4); care of skin and feet (Panel 5); oral diabetic agents (Panel 6); insulin and its use (Panels 7 & 8); insulin filled pens (Panel 9); insulin delivery with syringe (Panel 10); blood glucose monitoring (Panel 11); managing low glucose, travels, and sick days (Panel 12); and a diabetes monitoring checklist (Panel 13). The desktop guide is meant to be used in a flexible way depending on the educational needs of the patient and his/her caregivers.

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## INTRODUCTION

There is a need for a desktop guide that is pictorial, informative, flexible and succinct. The guide developed jointly by Novo Nordisk and the College of Family Physicians is targeted to meet these needs. It is meant to be used in a flexible way depending on the educational needs of the patient and his or her caregiver.

## DESCRIPTION OF THE PANELS

The desktop guide consists of 13 panels. The backing of the guide also has a 3-year calendar which will increase its utility when not used as a guide.

### What is diabetes and what targets of control to set (panels 1 & 2)

The messages on panel 1 are answers to the question “What is diabetes?”:

- κ Insulin keeps glucose levels normal.

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- κ In diabetes, there is either a shortage of insulin (type 1), or insulin resistance (type 2). The result is blood glucose stays high.
- κ The prevalence of diabetes in Singapore is 1 in 12 adults. Of these 85-90% are type 2 diabetes.

The messages on panel 2 are answers to “What should I target?”:

- κ Blood sugar targets
  - Fasting plasma glucose (FPG) 6.1-8.0 mmol/l
  - Post-prandial plasma glucose (PPG) 7.1 – 10.0 mmol/l
  - HbA1c 6.5 - 7.0%.
- κ Blood pressure target – 130/80 mmHg.

### Lifestyle changes to make for diet, smoking, drinking, and carbohydrate choices (panels 3 & 4)

The messages in panel 3 are:

- κ Have a balanced and varied diet
  - Eat less food high in sugar and oil
  - Choose lean meat and low fat items
  - Choose 2 servings of fruits and vegetables per day; control the fruit serving portions
  - Control carbohydrate portions to control glycemic level.

The messages in panel 4 are:

- κ Choose more often – carbohydrate items that raise blood glucose slowly – brown rice, brown bread, white tofu
- κ Take in moderation – carbohydrate items that raise blood glucose moderately – white rice, white bread, noodles
- κ Take sparingly – carbohydrate items that raise blood glucose rapidly – sweet desserts, sweetened soft drinks, sweet cakes, and condensed milk.

### Care of skin and feet (panel 5)

The messages in panel 5 are things the patient needs to pay attention to:

- κ Skin and feet
  - Check the skin daily for cuts and wounds
  - Cut toe nails straight across
  - Wear covered shoes.
- κ Attend regular check ups as advised by the doctor
- κ Maintain a healthy weight
- κ Avoid:
  - Going barefoot
  - Forgetting to take medicines
  - Overeating.

### Oral diabetic agents (panel 6)

The message of this panel is to know the class of oral medications, the action of the medications, and the possible side effects:

- κ Insulin secretagogues – drugs that increase insulin release from the pancreas – e.g. glibenclamide, repaglinide – “squeeze out” insulin from the islet cells – side effects: low blood sugar.
- κ Insulin sensitisers – drugs that insulin work better – e.g. metformin – increase insulin response in muscles and liver – side effects: stomach discomfort, metallic taste in the mouth; e.g. rosiglitazone – increase insulin response in muscles and liver – side effects: water retention.
- κ Alpha-glucosidase blocker – slows digestion of carbohydrate in the gut – side effects: stomach discomfort, bloatedness, and diarrhea.
- κ As time goes on, the progression of disease will result in deficiency of insulin production – leading to the need for insulin therapy.

### Insulin and its use (panels 7 & 8)

The messages in panel 7 are related to insulin and its actions:

- κ Knowing that insulin sitting on the receptor in the cell e.g. muscle or liver cell, allows the entry of glucose into the cell.
- κ A night dose insulin controls glucose while the patient sleeps and prevents early morning high glucose.
- κ Why insulin needs to be injected – because it is destroyed in the stomach.
- κ Where to inject insulin – thighs and abdominal wall avoiding 2 fingers around the navel.

The messages in panel 8 relate to the types of insulin to meet patient needs:

- κ Rapid and short acting insulin
  - short acting human insulin (e.g. regular or soluble insulin) – onset 30-60 min, peak 2-4 hr, duration of action 6-8 hr;
  - short action human insulin analogue (e.g. insulin lispro, insulin aspart) – onset 5-20 min, peak 1-3 hr, duration of action 3-5 hr.
- κ Intermediate and long acting insulin
  - intermediate acting human insulin (e.g. NPH or Lente insulin) – onset 1-4 hr, peak 8-12 hr, duration of action 12-20 hr;
  - long acting insulin analogue (e.g. insulin glargine, insulin detemir) – onset 4-8 hr, peakless, 20-24 hr.
- κ Premixed or biphasic insulin
  - premixed human insulin (e.g. NPH/regular 70/30);
  - premixed insulin analogue (e.g. biphasic insulin lispro 75/25).

Also, important hygiene and care points:

- κ use needles once only
- κ mix well by turning insulin bottle or pen from one end to the other – 20 times
- κ discard insulins 4-6 weeks after opening
- κ never freeze insulins
- κ refrigerate unused insulins
- κ do not expose insulins to heat.

### Insulin delivery with pen-filled device (panel 9)

- κ The insulin injection steps are
  - Step 1 – wash hands
  - Step 2 – invert pen at least 20 times to mix contents
  - Step 3 – uncap pen and attach needle
  - Step 4 – prime pen by pushing the pen knob all the way down
  - Step 5 – dial insulin dose needed
  - Step 6 – clean and swab
  - Step 7 – pinch and hold injection site
  - Step 8 – plunge, inject, hold for 10 counts before withdrawing
- κ Other points
  - Only use the needle once
  - Learn the syringe and vial technique in case the pen device fails
  - Always change injection spot.

### Insulin delivery with syringe (panel 10)

- κ The steps for injecting insulin with syringe and vial are shown in this panel:
  - Step 1 – wash hands
  - Step 2 – gather supplies
  - Step 3 – roll or invert insulin at least 20 times to mix the contents
  - Step 4 – swab cap
  - Step 5 – draw air for cloudy insulin dose
  - Step 6 – push air into cloudy insulin
  - Step 7 – repeat Step 5 but draw air for clear insulin dose
  - Step 8 – plunge, push air into clear insulin
  - Step 9 – invert, draw clear insulin dose
  - Step 10 – plunge into cloudy insulin
  - Step 11 – invert, draw clear insulin dose
  - Step 12 – clean and swab
  - Step 13 – pinch and hold injection site
  - Step 14 – plunge and push
  - Step 15 – release pinch on the injection site and pull the needle out.
- κ Other points to note
  - Use syringe only once.

### Blood glucose monitoring (panel 11)

The messages for blood glucose monitoring in this panel are:

- κ Glucose monitoring = insert strip accurately + record accurately
- κ Glucose monitoring is done:
  - Before/after meals
  - Before/after exercise
  - When feeling giddy, confused – to confirm low blood sugar
  - During sick days, not eating well – to establish blood sugar level.
- κ Understand what the level of HbA1c mean in glucose control.

**Managing low glucose, travels, and sick days (panel 12)**

The messages for managing low glucose, travels and sick days are covered in this panel:

- κ Managing hypoglycemia
  - Take one of these: 4 sweets (not sugar free) or half cup (125 ml) fruit juice plus one slice of bread
  - Important tip – if not better, get help from friends and relatives immediately.
- κ Preparing for travels and holidays:
  - Travel tip – always hand carry – do not check them in – doctor's letter, medications, test strips, and snacks for long trips
  - Have extra medicines – hand carry them
  - Get a pre-travel check up
  - Pack covered shoes
  - Keep cabin staff informed if traveling by air.
- κ Preparing for period of lower food intake – sick days, fasting
  - Take smaller, more frequent meals e.g. soups – if appetite is low
  - Include some “slow glucose” type food in the meal (e.g. brown rice, brown bread)
  - Take small portion of fruits or juices
  - Test glucose levels more often
  - Drink enough water.

**A diabetes monitoring checklist (panel 13)**

The messages in this panel are:

- κ Every 3 months
  - Regular check up
  - Weight check
  - Blood pressure check
  - Foot check up
  - HbA1c check if unstable
- κ Every 6 months
  - Check HbA1c if blood glucose is well controlled
  - Dental check

- κ Every year
  - Eye check
  - Kidney check
  - Physical check
  - Complete foot check
- κ Always have a positive attitude
  - Enjoy a balanced meal
  - Recognise you are never alone
  - Learn to manage your medicines
  - Join your friends in an exercise you enjoy
  - Work with your doctors.

**USE OF DESKTOP GUIDE**

The desktop guide is meant to be used in a flexible way to meet the needs of the patient. It can be used for individual education or for small group education. For a larger group of more than 2 or 3 persons, there may be a need to present the material as a powerpoint or give a copy of the guide to each participant.

The amount to be covered will depend on the capacity of the patient to understand the messages communicated. It would nevertheless be useful to plan the number of sessions that the education process will require. A recap of the things covered in a previous session is useful in checking the patient's recall, understanding and also application of the information. An example of the latter will be the interpretation of the HbA1c readings, and the blood pressure readings.

**CONCLUSIONS**

The desktop guide on managing type 2 diabetes is comprehensive in coverage. The aim is to assist the family physician to impart over several lessons, all the things that every type 2 diabetic must know about self management.