

DIABETES HEALTH CARE - TARGETS & ESSENTIALS FOR TREATMENT

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INTRODUCTION

The following is a short write-up, highlighting within the permitted space some salient points related to the topic that could prove of relevance in the clinical management of both types of diabetes.

Type 1 diabetes.

This condition is predominantly, but not only, found in younger patients. It is typically characterized by a progressively developing destruction of the pancreatic beta cells with resultant insulin deficiency. Dependency on insulin only occurs after the great majority of these cells are lost - when the clinical onset is sudden with marked symptoms and signs. The disorder is subdivided into immune mediated and idiopathic forms, the former being much commoner and at times accompanied by similar involvement of other systems. Although overshadowed by the far more frequent type 2 diabetes, type 1 diabetes is by no means rare. Evidence suggests that in the last decade the incidence in Malta may be increasing, especially in the younger age groups (see Table 1).

Table 1. Mean yearly incidence of Type 1 diabetes in Malta.

Period	0 - 4 years	5 - 9 years	10 - 14 years	0 - 14 years
1980 - 1989	2.0	4.0	5.2	11.2
1990 - 1997	3.3	5.0	5.7	14.0

The basic treatment of this type of diabetes consists essentially in the judicious use of insulin ('human' being preferable because of its lower antigenicity) and a well balanced meal plan (made up of 3 meals and 3 snacks in between). These must be supplemented by exercise, appropriate education, blood glucose self monitoring and psychological counselling. Targets of care should have practical guidelines and realistic standards, involve both the patient and his/her relatives and emphasize the crucial role of the health care team. The aim should be for near-normal glycaemia without undue risks of severe hypoglycaemic episodes. This is usually achieved by means of 2-3 daily short-acting insulin injections with 1-2 intermediate-acting ones, and complimented by nutrition adapted to individual needs and family habits and balanced for optimal health.

The initial treatment of newly diagnosed cases calls for hospitalization if the condition is severe (threatening ketoacidosis), or the referral to a specialist if milder. The follow-up management, once the situation is stabilized, involve medical and paramedical staff as well as the relatives of the patient. Evaluation of control should include the assessment of growth, development and social performance (including at school), regular self

blood glucose monitoring and GHb/HbA1c estimations together with periodic testing for complications (fundoscopy, urinary albumin excretion, neurological exam, blood pressure reading, lipid profiles, thyroid function tests etc).

It must be pointed out that type 1 diabetes often causes a significant impact on the life of both the young patient and his/her immediate environment which can seriously condition the success of treatment - hence the dire need of education and support. Relatives often find difficulty coming to terms with the situation and worry about the future. Friends, teachers etc are unprepared on how to tackle such cases. All this could lead to further insecurity, isolation and frustration in the child. Moreover during development the child passes through stages (school, adolescence..) that require careful attention because of their different but strong potential for disrupting normal relationships between the patient and his/her home, siblings and peers. Therefore the health care team should try to involve all those resources that can provide the necessary aid to the diabetic child and the family.

Type 2 diabetes.

This is common here, and frequently asymptomatic in the early stages. The prevalence increases markedly with age, obesity and positive family history. It is a major health problem due to its complications and concomitant disease both of which are made worse by improper life style habits.

The basics of treatment consist of a proper diet, daily exercise, body weight control and oral hypoglycaemic agents when indicated. These could be used singly or in combination (eg sulphonylurea + biguanide) supplemented if needed by alpha glucosidase inhibitors. Insulin is eventually often needed either in low doses with oral hypo glycaemic agents or on its own. [Type 1 diabetes in adults is more common than formerly believed. This so-called latent auto-immune diabetes of adults (LADA) has its onset after 35 years and initially masquerades as type 2 diabetes but becomes insulin requiring within a few years-evidenced by decreased C-peptide secretion and positive islet cell and anti-GAD antibodies]. Physical exam, biochemical tests (inc.HbA1c), education and blood glucose self monitoring are also requisites of proper management.



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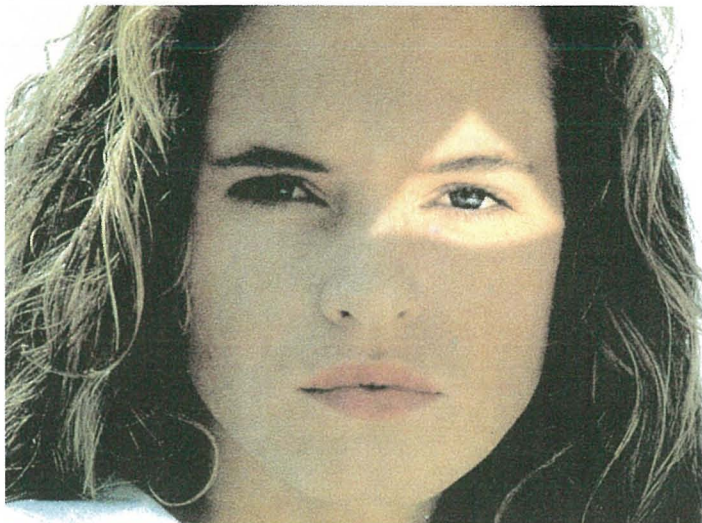
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Complications are common and often present at time of diagnosis of diabetes. They need detecting and treating. Amputations and blindness can be reduced by education (eg foot care), tests (eg. funduscopy), good glycaemic control and timely intervention.

Together with the need of screening for complications there is the strong indication in adult diabetic subjects to look for, diagnose early and treat aggressively concomitant disease especially those that form part of the so called metabolic syndrome X. This condition is associated with heart disease - the major cause of morbidity and mortality in Maltese diabetic patients- and consists of insulin resistance with hyperinsulinaemia, accompanied by obesity (esp. the android central type), abnormal glucose tolerance, dyslipidaemia (esp raised triglycerides and low HDL-cholesterol levels) and high blood pressure. Other known cardiovascular risk factors include increased total cholesterol levels, smoking, personal or family history of early heart disease, lack of exercise and raised serum fibrinogen levels. A recent study in local middle-aged diabetics revealed high rates of most of these risk markers with important gender differences (see Tables 2 and 3). Indeed only 11% of these patients were still free of other risk factors whilst more than 1/3 had 3 or more risk factors over and above their diabetes. This clearly highlights the importance of focusing on these factors as much as on blood glucose control in the management of type 2 diabetes.

Table 2. Prevalence (%) of Syn. X components in adult Maltese diabetics

factors	males	females	total
obesity ↑BMI	23	46	34
↑W/H ratio	29	47	38
triglycerides >2.2	11	11	11
HDL-cholesterol <0.9	34	18	26
current BP >160/95	12	20	16

present ↑BP made up of 1/4 of known cases + 1/9 of unknown cases
PH of ↑BP = 38%; of which 1/2 were on diuretics &/or β blockers

Table 3. Prevalence (%) of other C.V. risk factors in adult Maltese diabetics

factor	males	females	total
total chol > 6.7	15	28	22
TC/HDL-C >5.5	51	47	50
smoking	29	13	21
IHD personal	31	23	27
FH < age 65	31	33	32
Fibrinogen >400	25	33	29
lack of exercise	51	21	36

Hyperlipidaemic pts: only 17% on therapy, of which 1/3 still TC ↑, & 1/6 still TG ↑

The degree of attention needed to pay both to glycaemia and co-existing pathology is clearly outlined in international guidelines for control in diabetes - a summary of which is shown in Table 4.

In practice this means that the initial evaluation of a newly diagnosed type 2 diabetic patient needs a complete medical history, a full physical exam (inc. eyes, feet, nerves) and a biochemical assessment particularly blood glucose, GHb estimation,

Table 4. Targets for control in diabetes

	Good	Poor
Glycaemia fasting mmol/l	4.4 - 6.1	>7.8
random mmol/l	4.5 - 8.0	>10.0
HbA1c %	<6.5	>7.5
Total cholesterol mmol/l	<5.2	>6.5
HDL-cholesterol men/women	>1.1 / >1.4	<0.9 / <1.2
Triglycerides mmol/l	<1.7	>2.2
B.M.I. kg/m ² men/women	20-25 / 19-24	>27 / >26
Blood pressure mmHg	≤ 140/90	>160/95

No smoking
Regular exercise

lipid profile, renal function tests, and urinary albumin excretion. Advice about diet, and education on diabetes, blood glucose self monitoring and healthy life style are also to be started.

At follow-up body weight, glycaemic and GHb levels have to be checked, education assessed, and repeat of previously abnormal biochemical tests done. A search for early co-morbidity especially in high risk cases should be done. Periodic repeat physical exams and re-evaluation of therapy and the teaching programme are indicated too.

Conclusion.

Type 1 diabetes needs appropriate insulin treatment together with a balanced meal plan, education of the patient and relatives, blood glucose self monitoring, HbA1c tests and psychological support. This requires the combined efforts of various specialized staff to sustain near normoglycaemia and promote growth and development. Management should also involve regular checks for and proper treatment of related complications.

Type 2 diabetes management includes diet, exercise, body weight control, oral hypoglycaemic agents and/or insulin to keep glycaemic levels close to normal for the patient's age and condition. It must be admitted however that satisfactory treatment for many of these cases remains problematic. Early detection and aggressive treatment of incipient complications and concomitants (particularly cardiovascular risk factors) are management essentials too. Continuous education of the patient and the public is also important, as is the screening of high risk subjects, including the obese, IGT cases and females with past gestational diabetes.