SUMMARY OF PROCEEDINGS OF ANNUAL MEETING OF THE EUROPEAN DIABETES EPIDEMIOLOGY STUDY GROUP (EDESG), BADEN, AUSTRIA, APRIL 29 TO MAY 2, 1984

There is an evolving concept at present for scientific meetings to be topic oriented and to provide a greater scope of discussion amongst the investigators. Study of epidemiology of diabetes has only recently drawn global attention while its mentors in Europe were meeting this spring for l9th annual meeting in Austria. For the developing countries, greater awareness of the relevance and potential of such information for future health planning, seeking primary preventive measures and working out cost effectiveness in combating non-communicable disease is indeed essential. In future greater consideration and urgency is required in such. important health matters. This is a summary of the Baden conference-intended to provide uptodate information on the status of epidemiological studies on diabetes in the Western world.

The main headings have been rearranged :

1. WHO diagnostic criteria (need for revision).

2. Prevalence data (from countries where there was earlier lack of such information or follow up studies of IGT).

3. Classification (inherent and unresolved problems after recognizing Type I or Type II Diabetes).

4. Morbidity data (employing classical WHO criteria introduced in 1977-78).

5. Intervention studies (does any benefit arise from present therapeutic regime).

6. Mortality (Are there any reasons for have geographic differences).

I.   Diagnostic Criteria

There were suggestions made for revision of the WHO criteria (Tech. Report 646).

a) The main issues were for greater convenience to employ values of the blood glucose in rounded figures.

b) To introduce concept of stepwise diagnosis of diabetes mellitus.

c) In office practice to qualify fasting or non-fasting blood glucose and to designate groups as diabetes, diabetes unlikely and borderline diabetes. Values of blood glucose stated for different categories being :

	Venus whole blood m.mol.	Capilary whole blood	Venous plasma	Capillary plasma
Diabetes FBS mellitus or	> 6.6	6.6	> 7.7	> 7.7
NFBS	> 10.0	11.1	> 11.l	> 12.2
Diabetes FBS mellitus or	< 4.4	< 4.4	< 5.5	< 5.5
unlikely NFBS	< 6.6	< 7.7	< 7.7	< 8.8
Borderline* FBS	4.4-6.6	4.4-6.6	5.5-7.7	5.5-7.7
NFBS	6.6-10.0	7.7-11.1	7.7-11.1	8.8-12.0

* Borderline profile was to be re-tested after standardized preparation and qualified as Diabetes, Impaired Glucose Tolerance and Diabetes Mellitus excluded.

Essential features of epidemiological studies of small vessel include validity, specificity and reproducibility. For retinopathy, retinal photograph on 60° non-mydriatic camera provided comparison with other methods of retinal evaluation. Similarly quantitative assessment of turbidity (nephelometry) in the urine reflected efficient assessment of renal (kidney involvement).

Reproducibility of IGT was sought. Repeat values in 2 years being normal in 31.6 %, diabetes in 19.6%, remaining 49%, continuing in the IGT group. The indication for improvement were insulin and BMI being in the lower range, while those with raised 2 hour blood glucose value progressing to diabetes. Reproducibility of IGT may thus be lacking in uniformity.

II. Epidemiological Information

New geographical areas are included. Hungary 2.17% (IGT 3.6%), France 1.3% and 0.2% (NIDDM and IDDM), Norway 3.8%, Malta 7.7% (IGT 5.6%). In children prevalence is as follows : Poland 3.5-6.8 per 100,000 (1980-1983), Cuba 1.3 to 3.9 per 100,000 (depending on region).

III. Classification

Classification based on :

a) Metabolic evaluation, glucose, Hb A_lC, triglycerides, cholesterol, HDL cholesterol, serum ketones, residual beta cell function, C-peptide fasting and following glucose, glucagon stimulation, (b) Immunological status; islet cell surface antibodies and cytoplasmic islet cell antibodies employing immunofluorescence methods and HLA-DR typing with viral titres for Coxsackie 1-6 and mumps infection was performed to try to differentiate Type I and Type II diabetes (73 IDDM and 11 NIDDM). At diabetes onset a significantly reduced CP secretion and I-ILA DRs-DR4 seemed good markers for Type I of diabetes However, metabolic or immunological parameters have too many limitations to distinguish for the two types of diabetes.

Phenotype fast acetylators were related to chlorpropamide alcohol flush (CPAF) to distinguish Type II from Type I diabetes. 60% of CPAF positives were fast acetylators while 37% of CPAF negative were also fast acetylators (acetylation has bimodal distribution, 52% Type I, 37% Type II). There was no relationship of acetylation with family history, present age, age of onset duration, sex or metabolic control.

IV.   Morbidity Data

Risk factors for cardiovascular events, i.e. smoking, hypertriglyceridaemia, low serum HDL and HDL cholesterol seem to be firmly established.

Similarly microalbuminuria (overnight albumin excretion rate AER) was shown to indicate substantially increased mortality risk in NIDDM.

Morbidity studies have been carried out employing the criteria of MNSVD-WHO and data from certain geographic population not included in the original study substantiate overall results of the study.

Amongst Greek diabetics, ECG studies showed major ECG alterations in Q wave (Minnesota code 1.1 and 1.2) in 5.8% males and 1.6% females, and major ECG abnormal (Minnessota code 1.1, 1.2, 1.3, 4.1, 4.2, 5.1, 5.2, 6.2, 7.1, 7.2, 7.4. 8.1 and 8.3) in 17.2% males and 16.4% females. In contrast to the WHO study, high blood pressure, cholesterol, triglyceride were not related to ECG abnormalities in this study. Those with ECG abnormalities were more often on insulin therapy compared to those without ECG changes.

Hypertensive patients when screened for diabetes have a prevalence rate of diabetes 6-22%. In another series, diabetes is recognized prior to hypertension in 10.5%, at times of diagnosis of hypertension in 16.5% and remaining (73%) within 1-20 years (duration related). Again age adjusted relative risk of death in hypertensive non-diabetics was 1.9 compared to 2.9 in hypertensive diabetics (relative risk of cardiovascular death being 2.3 and 4.2 respectively).

Cardiovascular morbidity (Odense University, Denmark) was examined in a cohart of 5,699 patients (age 60-74% years). 236 were previously known diabetics, 88 newly diagnosed diabetics. Probable myocardial infraction was present in 10.5% males, 8.5% females of newly diagnosed diabetics, 7.8% males, 9.8% females of known diabetics while in control population myocardial infraction frequency was males 3.2%, females l.l%.

Retinopathy-In IDDM (Fyn, Denmark) 727 diabetics with onset of disease < 30 years of age in 8 year follow up, 57% had background and 18% poliferative retinopathy. A multivariant analysis revealed smoking, insulin dosage and duration to be important risk factors. In an Italian multicentric study (1428 screened), background retinopathy was present in 28.0% and proliferative in 2.83%. It was duration, glycaemic and insulin therapy related.

V.   Intervention Studies

Diabetes Intervention Study (DIS)-Medical Academy, Dresden, GDR-Diabetes Type II, 1139 patients were allocated randomly for interventions such as lipid lowering diets, reduction of body weight, avoidance of smoking and use of BP lowering drugs and or lipid lowering drugs (Clofibrate) or placebo or control group (population study). At entry associated risk factors were hypertension 53%, obesity 49%, smoking 34%, hyperuricaemia 22.5% and hyperlipoproteinaemia 17.6% . In the first years, body weight, blood pressure, blood glucose and lipids improved. though no further improvement was forthcoming in the second year follow up. In NlDDM short term effects were impressive but were lost in 6 months. Improvement in weight, metabolic control relates to intervention steps, reinforcement and individual time spent with each subject.

ICT or CSII were compared as regards metabolic control and their effects on complications. In 6 months, Hb A_1C improved in half the patients on ICT and 80% of patients of CSII. ADN of the heart improved in half the patients on ICT but in all except one of the patients on CSII. Vitreous bleeding was observed in 3 patients of ICT but in one of the patients on CSII. Nerve conduction velocity and vibration threshold remained unchanged. Three groups of patients with diabetic retinopathy, I-pump treated (12), II. intraperitoneal delivery of insulin (12), III. implanted constant rate insulin delivery (31), were followed for one year. Low leakage (vitreorofluorometry assessment) improved in 80% within one year while high leakage group deteriorated in 50% within one year inspite of improved metabolic control.

VI.   Mortality Data
IDDM

2000 children from Pittsburgh and 1300 children from Allegberty county in U.S.A. with IDDM have shown mortality of 8.7%, rising to 10% with 25 year duration of diabetes, excess death being amongst blacks, sex showing no differences. Other contributory factors were hypertension, retinopathy and family history of diabetes.

Denmark (2193 children followed in 1933-83) in two coharts were compared. Lower age of onset was significant risk, loss of life in first year was substantial while maximum mortality was in those with 20 years duration of diabetes.

Sweden-242 IDDM (diagnosed as from 1935-40, 1945-50, 1955-60, 1965-70 were followed). Predominant cause of death was renal failure.

Paris prospective study on 7535 men (age 43-54 years) over 10 years indicated 10.6% mortality. Coronary artery disease, sudden deaths and cardiovascular disease was 3 times more frequent in diabetics compared to non-diabetics. However, age, systemic blood pressure and severity of glycaemia had non-linear relationship.

In Warsaw, overall follow up of 4553 diabetics over 9.5 years brought a crude mortality rate of 31.6% (3 times the standardized mortality rate in control population). More cardiovascular deaths especially categorized as 'other heart diseases' were observed. Similarly deaths from renal cause, or cirrhosis were significant.

WHO-MNSVD-In follow up 6695 instances from 14 countries of 6-7 yrs. duration, mean mortality is 9.2%. Males exceed females. Cardiovascular causes are predominant for loss of diabetic lives. Other correlative factors are being analysed.