

MAXIMUM UTILIZATION OF THE HANDICAPPED WORKER

EMPLOYMENT AND PLACEMENT OF THE DIABETIC SUBJECT

Lain Tetrick, M.D.

A controlled diabetic is not a handicapped person and is therefore not an employment risk. A diabetic who is not controlled or who has complications secondary to his disease or because of poor control is handicapped and is a very serious employment risk. This entire paper regarding the employment and placement of the diabetic subject could be summed up in one word - CONTROL. What is meant by control? Unfortunately, it has as many connotations as the word control has in regards to behavior patterns of youths. To understand control, we must have a consensus among:

1. The Diabetic Patient.
2. The Family of the Diabetic.
3. The Medical Community.
 - A. Occupational
 - B. Private.
4. and the Employment, Personnel, Insurance and Union People must know what we are talking about.

Prior to World War II, it was practically impossible for a known diabetic to be considered for any line of employment in any kind of industry. Two major reasons existed to account for this:

1. The term diabetes meant a rigid syndrome and usually these were insulin-dependent subjects.
2. Working conditions were not consistent with good diabetic control.

Since then, progress in the understanding of the disease and its treatment, also time, and OSHA, have changed this.

When we look at the incidence of diabetes in our population, it can be appreciated why it is important to pursue the problem of employment. It has been estimated that over 5 million people in the U.S. have diabetes. Only 1.25 million of these take insulin - thus the non-insulin-dependent diabetic outnumbers the insulin-dependent diabetic by a ratio of 4 or 5 to 1 which would, under our classification, diminish the number who can be considered "handicapped". Diabetes is 10 times more prevalent by this concept after the age of 45 than under the age of 45. At least half the known diabetics are in the 45 - 65 age bracket when the disease

is diagnosed. So it is apparent that most diabetics develop their disease while they are employed.

Because of "old" fears of the diabetic, in many of our industries it has been estimated that we in our medical departments in industry know of only 1 diabetic for every 3 or 4 diabetic employees - they may falsify their histories, control the urine, which is still the most common screening test used, for they're afraid they won't be hired. The relationship of diabetes to job capabilities is much talked about as evidenced from the above figure and we still are basing our concept on these facts and figures but we do need more bio-statistical information. It is one of our commonest ailments. The increasing incidence may be accounted for because:

1. People are living longer.
2. Population is increasing (until recently).
3. "Better" detection methods are available.

In 1 of 5, diabetes was discovered at age 65 or older - these are not employment or insurance risks. In about 22% diabetes appeared between the ages of 25 and 44, a definite employment and insurance problem. But in only 8 out of 100 or 8% - it was discovered at an age of less than 25 years. This is where our greatest problem arises concerning employment - the juvenile insulin-dependent diabetic.

In an attempt to gain information for standards on employment and placement of the diabetic in industry because of the high prevalence of diabetes in the general population, several surveys have been done. The first significant one was done by the American Diabetes Association (ADA) in 1957 involving 434 businesses and industries throughout the U.S. Even then there was a somewhat enlightened attitude toward employment of the diabetic. The large companies with the more sophisticated and better equipped medical departments seemed to be the most enlightened. They usually set the pace. That survey indicated that most companies did employ known diabetics and most of the companies which did not continued them in their employ after the condition was diagnosed. From this survey of the ADA, the suggested standards then were:

1. Diabetics should divulge their disease.
2. Diabetics are capable of performing any type of work for which they are physically, mentally, and educationally equipped.
3. Diabetics on insulin should not be assigned to jobs that are hazardous to themselves or others.
4. Diabetics should work steady, regular shifts. (Union problem).
5. Diabetics should carry cards or tags of identification.
6. Plant physicians should perform blood sugar determination when appropriate.

7. Diabetics should have complete examinations regularly.

In 1969 the Committee on Employment of the American Diabetes Association, Greater Chicago and Northern Illinois Affiliate sent out questionnaires to physicians who were members of the Central States Occupational Medical Association. This was the first such survey that dealt directly with the occupational physician. This was published in the Journal of Occupational Medicine in August 1971. We felt that we, the physicians, have the greatest influence in shaping and determining health policy regarding hiring and placement of applicants in the job world. The companies surveyed represented a large variety of industrial concerns from light to heavy and from insurance companies to foundries. Over two million employees were represented. It was found that 60% of the large companies and only 31% of the smaller companies (less than 3,000 employees) did blood sugar tests. Over 76% would recommend a known diabetic for employment who had been certified by his private physician as being in good control.

We asked the question - If your company disqualifies diabetics for employment is it because of:

1. Past poor experience?
2. Insurance reasons?
3. Others?

The responses were about evenly divided among the three categories. This prompted other comments leading to the summarization that disqualification was particularly likely if the diabetic:

1. Were under persistently poor control.
2. Had frequent insulin reactions.
3. Serious vascular complications.
4. Sought hazardous occupation.

This pretty well makes the kind of sense most doctors use in determining the qualifications of fitness of any worker for any kind of job. We also asked if the insulin-dependent diabetic was placed on rotating shifts. Over 40% answered "Yes" to this query. To the question: Do you find the diabetic either better or worse? or no difference? 87.5% found diabetics either better (5.6%) or no worse (81.9%) than non-diabetics regarding reliability and absenteeism.

In a recent article, December 1974, JOM - a sub-committee of the ADA Committee on Employment and Insurance has attempted to present guidelines to the physician for the diabetic in industry. These guidelines are intended to:

1. Encourage enlightened employment attitudes and hiring of diabetics.

2. Provide a yardstick of proper medical maintenance for the benefit of both the hired diabetic and the industry. But first of all we must identify the diabetic. We must have a diagnosis. This should be relatively standard in the light of our present knowledge and statistics; however it is not easy to make the diagnosis of diabetes. It is actually one of the most difficult diseases to diagnose. Guidelines for diagnosis using the Glucose Tolerance Test are being re-examined. A screening test of the urine is not a diagnostic procedure. However, a glucose tolerance test is usually performed to rule out or confirm the diagnosis of diabetes. Some feel that fasting hyperglycemia must be present to diagnose diabetes mellitus. Criteria for the interpretation of oral glucose tolerance tests in use in the U.S. most commonly accepted are those proposed by:

TABLE I

References:	University of Michigan *		
	(1, 2, 3, 4)		
	Whole Blood mg/100	Plasma or Serum ml	Diagnostic Criteria
Fasting	---	---	All Levels At or Above
1 Hour	160	185	
1½ Hour	140	160	
2 Hour	120	140	
3 Hour	---	---	

* Glucose load 1.75 mg/kg ideal body weight as 25% solution. In otherwise healthy and ambulatory individuals under age fifty. For all procedures: Venous blood, Autoanalyzer (Ferricyanide) or Somogyi-Nelson Methods.

TABLE II

United States Public Health Service ** (USPHS) (5)			
Whole Blood mg/100	Plasma or Serum ml	Points	Diagnostic Criteria
110 or above	125	= 1	Total of 2 Points or more - Definite Diabetes
170 or above	195	= $\frac{1}{2}$	
---	---		
120 or above	140	= $\frac{1}{2}$	1 Point - Possible Diabetes
110 or above	125	= 1	

** Glucose load 100 gm. For all procedures: Venous blood, Autoanalyzer (Ferricyanide) or Somogyi-Nelson Methods.

TABLE III

University Group Diabetes Program + (6)	
Diagnostic Criteria	
Sum of F,1,2,3, Hour Glucose Values mg/100 ml	
Whole Blood	Plasma or Serum
500 or more	600

+ Glucose load 40 gm/sq meter of body surface. For all procedures: Venous blood, Autoanalyzer (Ferricyanide) or Somogyi-Nelson Methods.

We used the U.S.P.H.S. criteria as we feel we therefore would not "over-diagnose" and thus not penalize the job seeker. Utilizing these guidelines also helps us to have a handle on the employed diabetic, as well, in order to properly place him or even change his position in the course of his employment.

GUIDELINES FOR CONTROL

All diabetics in ideal and acceptable control categories are employable. A diabetic in the Unacceptable category, which I will describe, may be rejected for employment. We have attempted for many years to dispel the concept and the stigma that a diabetic is a handicapped person, for is the diabetic really handicapped?

Webster states that the word figuratively means "any disadvantage that renders an achievement, or especially successes in competition - more difficult."

"To place at a disadvantage".

Synonyms - encumber, burden, impede, hinder.

The Federal directive on the affirmative action program to employ the handicapped may handicap our educational program to which I have just alluded.

1. Ideal Control

- A. Has stable blood sugar values.
 - 1. Less than 160 plasma fasting.
 - 2. Less than 230 two-hour P.P.
- B. Has no insulin reactions.
- C. Has no acetonuria, and
- D. Has proof of good medical supervision with visits to his physician at least every three months or more often (some will maintain that they are able to control a diabetic with fewer visits).

2. Acceptable Control

Higher blood sugar values than above if:

- A. No more than mild acetonuria occurring infrequently.
- B. No more than 2 insulin reactions a month which are mild and easily corrected.
- C. Proof of good medical supervision with visits once a month or more.

3. Unacceptable Control

- A. Plasma blood sugar values greater than 230 with inadequate medical supervision (a redundant statement in most instances).

- B. More than 2 insulin reactions a month.
- C. Severe reactions difficult to control.
- D. Evidence of frequent or severe acetonuria.

GUIDELINES FOR JOB PLACEMENT

Again the status of diabetic control is the most important factor for determining placement of the diabetic in industry. This is dependent upon:

- 1. The severity of the disease.
- 2. Adequacy of medical management.
- 3. Presence of complications.

Thus it is important that close communication exists among the private physician, the occupational physician and the employee.

CLASSIFICATIONS OR GUIDELINES FOR JOB PLACEMENT

I. Diet alone - with documentation of ideal control. These people are capable of performing any type of work for which they are physically and educationally qualified.

II. Diet and oral blood sugar lowering agent. These are capable of performing any job for which they are physically and educationally qualified.

III. Diet and insulin with documentation of ideal or acceptable control.

A. These are capable of performing any job for which they are physically and educationally qualified except:

1) They are not permitted to drive heavy vehicles, cranes, tractors, or commercial vehicles engaged in transporting passengers or freight. (This is mandated by the D.O.T. criteria for interstate commerce vehicular drivers).

B. There should be no assignment at unsafe distance from ground or near heavy moving machinery.

C. They probably should not work 12-8 shift as this tends to disrupt the diet-insulin-rest cycle.

IV. Presence of significant complications, regardless of treatment group. Same restrictions apply here as would be applicable to disease of the cardiovascular, visual, renal, nervous and other systems of other etiologies.

PROGNOSIS FOR WORK ATTENDANCE

It appears that poor attendance and absenteeism is no higher for the majority of diabetics than it is for the non-diabetic worker. The work of Moor, Buschbom at Richland, in 1974 in which a diabetic study group was age-matched to other studies of absenteeism in non-diabetics showed a favorable comparison with the non-diabetic. This study pointed up the importance of doing an age-matched comparison. I would like to see a larger study done matching the age, sex, job classification, and anniversary dates of hire. This would then give us a true picture of what happens. This contrasts with that of Nasr, Block, and Magnuson who in 1966 reported on "Absenteeism Experience in a Group of Diabetic Employees at the Ford Motor Plant". In this study the sickness absence of 213 known diabetics employed at Ford Motor continuously from January 1, 1959 to January 1, 1964 was compared with that observed in a presumably non-diabetic population matching for age, sex, race, job and duration of employment. They found among the white employees, sickness absence in the diabetic was twice that of control. Among the black diabetics, sickness absences were increased threefold. Absences of more than sixty days in any one year were six times more frequent in the diabetic. They concluded, however, that that study did not indicate whether better medical control would reduce the absence of diabetics, but did indicate that under existing conditions the loss experienced by the company and employee was such as to suggest more intensive measures for the early identification of these employees and increased medical supervision to lessen the impact.

We could, therefore, advance a more simplified classification to help the physician to determine the employability of a diabetic - much in the same fashion that the American Heart Association did long ago in categorizing the therapeutic and functional status of heart disease. I have summarized our concepts, which have not, I hasten to mention, been approved by my co-authors or the ADA for I have not presented it to them. However, it merely represents a capsulized summary of our paper and is not in conflict with it. A survey is presently being conducted by the Greater Chicago and Northern Illinois Affiliate of ADA, of physicians in our area to determine if they do or do not agree with this concept.

We would categorize the diabetic by these previously mentioned standards into a therapeutic and a functional classification.

Therapeutic Classification:

- I. Diet alone.
- II. Diet and oral hypoglycemic medication.
- III. Diet and insulin without complications.
- IV. Any of the above with complications.

Functional Classification:

A. Capable of performing any job for which the diabetic is physically and educationally qualified - i.e., I and II no restrictions.

B. Capable of performing any job for which the diabetic is physically and educationally qualified, but should not work 12-8 shift, i.e., III.

C. Incapable of performing work above ground level, operate mobile equipment, or work with mobile equipment, because of insulin requirement, i.e., III.

D. Incapable of performing any job because of poor control and/or complications, i.e., IV.

Thus we could have 2 categories of classification:

1. Employable:

I A

II A, II B, III B, III C.

2. Not employable:

IV D.

Almost any profession, avocation or trade is available to the diabetic - all he has to do is to pursue it. If every parent of every diabetic child (this is where the problem lies) would accept the mandate - to see to it that his child is prepared in some area so that he can avoid the shift working, unskilled and insecure laboring jobs, the problem of employment of the diabetic would be greatly minimized, and our entire nation would reap the rewards. Diabetics make excellent physicians, lawyers, teachers, clergymen, executives, administrators, nurses, plumbers, electricians, bricklayers, architects, carpenters. Parents should not rely solely on schools, doctors, or television to motivate their child. The home exerts the greatest influence of all, so parent group teaching is essential to the future of the diabetic child.

The only truly handicapped diabetic belongs to the: 1) 8% juvenile diabetic group if they are not motivated to pursue a profession, trade, skill or art in which, as I mentioned, they can avoid the demands of the unskilled shifting laboring jobs; or, 2) Those who have complications so great that they fall into Class IV-D.

I have attempted to stress the importance of:

1) Re-examining our criteria for the diagnosis of Diabetes Mellitus. As Siperstein suggests - to under-diagnose diabetes mellitus probably does little harm, whereas to over-diagnose, the harm to the patient can be enormous.

2) Having guidelines which are liberal but realistic regarding the employment and placement of the diabetic.

3) Minimizing the stigma placed on the diabetic which has been brought about by over-diagnosing, misunderstanding, and unfounded concepts that diabetes is a universally disabling ailment - for it is not in the majority of those presently labeled as diabetic.

4) And the importance of control regarding the diabetic and his job.

REFERENCES

1. Alexander, R.W., L. Tetrick and G.J. Friedman. "Physicians Guidelines for the Diabetic in Industry." JOM 16:802-803, Dec. 1974.
2. Bradley, R.F. and J.O. Partomian. "Coronary Heart Disease in the Diabetic Patient." Med. Clin. N. Amer. 49:1093, 1965.
3. Feldman, J.M. and F.L. Lebowitz. "Tests for Glycosuria." Diabetes 22:115, 1973.
4. Friedman, G.J. "Employability of Diabetic Persons." NY State J Med 66:1662, 1966.
5. Moor, R. and M.A. Buschbom. "Richland, Washington - Work Absenteeism in Diabetes." Diabetes 23:947-61, Dec. 1974.
6. Nasr, A.N., D.L. Block and H.J. Magnuson. "Absenteeism Experience in a Group of Employed Diabetics." JOM 8:621-625, 1966.
7. Pell, S and C.A. D'Alonzo. "Diabetes in Industry." Arch Environ Hlth 17:425, 1968.
8. Pell, S. "The Identification of Risk Factors in Employed Populations." Section of Environmental Sciences Oct. 17, 1973 (Transaction NY Acad of Sciences)
9. Pell, S and C.A. D'Alonzo. "Sickness Absenteeism in Employed Diabetics." Am J Pub Hlth 57:253, 1967.
10. Pollack, A.A., T.J. McCurl and N. McIntyre. "Diabetes Mellitus - A review of mortality experience." Arch Int Med 119:161, 1967.
11. Remein, Q.R. and H.L.C. Wilkerson. "The Efficiency of Screening Tests for Diabetes." J Chron Dis 13:6, 1961.
12. Siperstein, M.D. "The Glucose Tolerance Test: A Pitfall in the Diagnosis of Diabetes Mellitus." Advances in Int Med 20:297-323, 1975.

13. Stewart, W.W. and C.S. Ryan. "Recommended Medical Standards for Examination of Job Applicants and Employees with Diabetes Mellitus." Industr Med Surg 39:179-180, Aug. 1970.
14. Tetrick, L. and J.A. Colwell. "Employment of the Diabetic Subject." JOM Vol 13, No 8:380-84, Aug. 1971.
15. Weinstock, M and J.I. Haft. "The Effect of Illness on Employment Opportunities." Arch Environ Hlth, 29:79-83, Aug. 1974.
16. "Employing the Diabetic." Mich Med 67:734-735, 1968.
17. "Employment of Diabetics." A Statement of the Committee on Employment and Insurance, American Diabetes Association, Diabetes 21:834, 1972.
18. Employment of Diabetics in the Federal Service CSC 533, Jan. 1971.
19. National Center for Health Statistics: Glucose Tolerance of Adults, United States 1960-62, U.S. Public Health Service Publication 1000, Ser. 11, No. 2, May 1964.
20. Report of Committee on Statistics to the General Council of the American Diabetes Association, Atlanta, June 13, 1974.

OCCUPATIONAL HEALTH AND SAFETY SYMPOSIA

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health
Division of Technical Services
Cincinnati, Ohio 45202

February 1976

This publication contains major papers presented at the 35th AMA Congress on Occupational Health, held September 29 to 30, 1975 in Cincinnati, Ohio. The Congress was supported by NIOSH/CDC Cost-Sharing Contract No. 210-75-0033. Dr. Henry Howe was AMA Project Director and compiled the initial proceedings from submitted papers and verbatim transcripts.

Marilyn K. Hutchison, M.D. NIOSH Project Officer

The assistance of the following individuals is gratefully acknowledged:

AMA

James H. Sammons, M.D.
William R. Barclay, M.D.
Asher J. Finkel, M.D.
Henry F. Howe, M.D.
Barbara Jansson

CDC-NIOSH

David J. Sencer, M.D.
John F. Finklea, M.D.
Marilyn K. Hutchison, M.D.
Leo Sanders
Marilyn Hodge

HEW Publication No. (NIOSH) 76-136