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The Economics of Diabetes Mellitus

An Annotated Bibliography

August 1999

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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National Center for Chronic Disease Prevention and Health Promotion
Division of Diabetes Translation

Preface

Diabetes mellitus is a common, serious, and costly disease. An estimated 16 million Americans, or nearly 6 percent of the population, have diabetes, and the disease costs the nation nearly \$100 billion annually. The prevalence has increased dramatically over the last three decades, and minority groups are disproportionately affected. Diabetes is the seventh leading cause of death and can decrease the life expectancy by 5 to 15 years. It is the leading cause of nontraumatic lower extremity amputations, renal failure, and blindness in working-age adults. Diabetes is also a major cause of premature mortality, stroke, cardiovascular disease, peripheral vascular disease, congenital malformations, perinatal mortality, and long- and short-term disability. In addition, persons with diabetic complications have a lower quality of life compared with persons without diabetes.

Interventions to reduce the burden of diabetes currently exist. Early detection and treatment of eye disease, kidney disease, and lower extremity disease can prevent or delay the development of blindness, kidney failure, and amputation. However, far too often, the level of care needed to decrease these complications is not reached. Because of the serious acute and chronic complications, persons with diabetes tend to use more health services than persons without diabetes. These resources include hospitalizations, emergency room and outpatient clinic visits, laboratory tests, medication, and self-management supplies (e.g., equipment to self-monitor blood glucose). The cost to care for diabetes exacts a tremendous burden on both the patient and payor. Several studies over the years have found that the direct health care costs (costs of medical treatment and services) related to diabetes are high.

In this era of limited resources and escalating costs, it is critical to have an understanding of the economics of diabetes in order to develop and implement sound public health and prevention policies. However, studying these economics presents several challenges, such as collecting the appropriate epidemiologic and cost data, determining the diabetes attributable factors for premature morbidity and mortality, and determining methods to account for premature mortality, disability, and reduced quality of life.

This bibliography includes most of the important economic studies currently available. In the past, methods used for conducting economic research were not well standardized. Although recent efforts, such as those by the Panel on Cost Effectiveness in Health and Medicine, have moved forward the use of standard methodologies, much of the current literature in this bibliography and elsewhere still requires careful review of the methods. Preparation of this bibliography included contributions by experts in the field who reviewed the entries for pertinency and accuracy. We acknowledge and appreciate the contributions of

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It is hoped that this bibliography will help identify major gaps in our knowledge and will assist with the development of future diabetes economic research. It also should be of assistance to public health professionals, clinicians, insurers, economists, and researchers in their efforts to create effective policy and to answer preventive practice questions.

How to Use This Publication

Arrangement of Items

Items in this publication are arranged in four sections: (1) Types of Intervention; (2) Costs of Diabetes; (3) Policy/ Position Statements Related to Diabetes; and (4) Expert Opinion.

The sections are divided into several parts. Items in each part are listed in alphabetical order by title. The items are numbered sequentially, beginning with 1.

Indexes

This publication contains three indexes. The *Author Index* lists personal and corporate authors. The *Subject Index* lists selected key words describing the content of the publications. The *Title Index* lists document titles. If you are looking for a publication produced by a particular person or agency, use the *Author Index*. If you want to identify items in a specific subject area, such as diabetes education programs, use the *Subject Index*. If you know the title of a publication, use the *Title Index*.

Data Elements

A citation and abstract are listed for each item in this publication. Data elements include the abstract number, title, objective, category, conclusion, recommendation, and abstract.

Sample Description:

Abstract Number	65
Title	TITLE: Cost Savings Associated with Detection and Treatment of Diabetic Eye Disease. Javitt, J.C. <i>PharmacoEconomics</i> . 8 (Supplement 1): 33-39. 1995.
Objective	OBJECTIVE: To estimate current and potential savings in the United States and Sweden from screening and treating retinopathy in persons with diabetes.
Category	CATEGORY: Tertiary intervention. Type of Study: Epidemiological cohort model. Methodology: Cost-benefit analysis. Perspective: Societal.
Conclusion	CONCLUSION: Treatment of retinopathy in patients with diabetes mellitus yields substantial savings of sight years and money.
Recommendation	RECOMMENDATION: Eye care for patients with diabetes must emphasize patient identification, carefully maintained follow-up, and prompt, appropriate treatment.
Abstract	ABSTRACT: The author describes the use of the PROPHET modeling system, a program designed to model the progression of a chronic, irreversible disease, to estimate savings from recruiting, screening, and treatment programs for diabetic eye disease. Data from cross-sectional and longitudinal studies and clinical trials are used in the model. The analysis derives the costs of screening and treatment from average Medicare charges for 1990; savings as well as costs are expressed in 1990 U.S. dollars using a discount rate of 5 percent. An annual federal expenditure of \$14,296 is predicted for blind

persons with diabetes under 65 years of age, just \$32 (not counting Medicare, Social Security, income tax exemption) for those 65 and over. Based on studies by Klein et al. (1987) in Wisconsin, the implementation rate of eye screening is currently 60 percent. Even at this suboptimal level, screening and treatment for eye disease in patients with diabetes generates annual savings of \$350 million to the federal budget and 100,000 person-years of sight. Each additional person (beyond the 60 percent level) enrolled in appropriate screening and treatment is associated with net lifetime savings of \$9,571 (type 1 diabetes) or \$973 (type 2 diabetes). The Swedish Council on Technology Assessment in Health Care repeated this analysis and found that 60 percent implementation of screening could potentially save 22 million SEK. Their analysis found that savings associated with detection and treatment were 10 times greater than costs. The authors of the present study found that changing the frequency of screening for patients with no or mild background retinopathy from 1 to 2 years does not reduce years of sight saved and reduces screening costs if the sensitivity of eye screening is 80 percent or greater. 3 figures, 43 references.

Obtaining Additional Information

Questions about this publication may be directed to:

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