

# Diabetes Care Policies and Practices in Michigan Nursing Homes, 1991

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**OBJECTIVE** — To describe local standards of care for nursing home patients with diabetes, to characterize the care that nursing home patients with diabetes receive in Michigan, and to determine if the care provided meets local and national standards.

**RESEARCH DESIGN AND METHODS** — In March 1991, a questionnaire was administered and chart reviews were conducted as part of the Medical Review and Nursing Evaluation conducted by the Michigan Department of Public Health. The questionnaire was completed by the head nurses at 17 skilled nursing homes to learn about local institutional standards of care. Chart reviews were conducted on a sample of five patients with diabetes from each nursing home to describe the care provided and to compare it with local and national standards.

**RESULTS** — Almost all nursing homes had some diabetes care orders or protocols. Standing orders were most often present to guide nutritional and nursing care (e.g., diet, blood glucose monitoring, foot care). Standing orders were less often present to guide medical care (e.g., blood glucose parameters to contact physician) and surveillance of complications (e.g., eye exams). In general, the care provided did not meet local or national standards for diabetes care. Care practices were closer to national standards when registered dietitians (RDs) participated in meal planning and written institutional policies existed.

**CONCLUSIONS** — In this sample of Michigan nursing homes, those with RDs and standing orders provided care more in keeping with guidelines. There is room for improvement in diabetes care practices in nursing homes. It may be time for diabetes-related organizations to re-examine standards for diabetes care in nursing homes.

People over 45 years of age with diabetes are twice as likely to be admitted to nursing homes as those without diabetes (1). In 1977, the National Nursing Home Survey estimated that 14.5% of U.S. nursing home residents were diagnosed with diabetes. Three-quarters were over 74 years of age, 75%

were female, and 90% were white. In 1992, nursing home-care for people with diabetes cost \$1.83 billion (2).

While patients with diabetes are demographically similar to those without it, those with diabetes are generally in poorer health; 98% have at least one additional chronic disease and about two-thirds have three or more other chronic diseases (1). Nursing home patients with diabetes are more likely to have urinary tract and skin infections than those without diabetes (3). When compared with non-institutionalized older adults with diabetes, nursing home patients experienced more peripheral vascular disease, skin necrosis, and leg ulcers (4) and had more hospitalizations for insulin reactions, ketoacidosis and coma, and amputations. While it could be postulated that nursing home patients were more ill, hospitalizations for acute complications of diabetes may be prevented through early recognition and appropriate treatment (5). Diabetes is also a significant risk factor for pressure sore formation in homes that report a high incidence of ulcers (6).

When admitted to nursing homes, people with diabetes are more likely to need skilled nursing care and receive special diets, laboratory tests, and medications (1). About 90% of patient care in nursing homes is provided by nurses' aides, under the supervision of registered nurses (RNs). The RNs share the supervisory role with licensed practical nurses (LPNs) under the overall direction of the administrator. Physicians are ultimately responsible for patient care through written orders, but are often removed from day-to-day operations. Staffing is a constant problem, with the turnover of nurses' aides as high as 180% per year (7). Staff education in nursing homes tends to occur through interaction with coworkers and in-service education, with RNs responsible for teaching the nurses' aides. Because of the high turnover in personnel, written policies or standing orders are important for continuity and quality of care (7,8).

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Received for publication 19 September 1994 and accepted in revised form 26 January 1995.

ADA, American Diabetes Association; CBGM, capillary blood glucose monitoring; GHb, glycosylated hemoglobin; MRNE, Medical Review and Nursing Evaluation.

Table 1—Areas of diabetes standing care policies

	n	%
Checking of trays for food intake	16	94
Replacement of carbohydrates not eaten	15	88
Quality control of meter	7	41
Foot care	6	35
Treatment of hypoglycemia	6	35
Calling doctor for blood glucose levels	4	25
Diabetes patient education	2	12
Handling of blood samples	1	6
Psychosocial adjustment to diabetes	0	0

n = 17.

In spite of the high morbidity, requirement for skilled care, and need for written policies for nursing home patients with diabetes, little has been written about appropriate standards of care in this population. In 1981, the American Diabetes Association (ADA) and the American Association of Diabetes Educators developed guidelines for diabetes care in skilled nursing homes (9). These guidelines include nine diabetes care criteria, with guidelines for staff education, staff action, reporting and recording, and desired outcomes. The Colorado Diabetes Control program used these guidelines to develop 125 written policies and procedures that were then taught to nursing home personnel, resulting in a significant improvement (from 33 to 50%) in the number of criteria met (1,3,8). While this demonstrated that a targeted program of written policies and procedures can produce positive results, little is known about how widely such programs were implemented.

Since 1981, there have been major advances in diabetes care and ADA has continued to revise their guidelines and standards of care. While there have been no new guidelines specific to nursing home care, more recent clinical practice recommendations for diabetes management (10) and guidelines for the prevention and treatment of complications of diabetes (11) would seem to apply to people with diabetes in nursing homes,

although this has not been explicitly stated.

The extent to which these standards of care were being met in Michigan nursing homes was unknown. The purpose of this study was to determine if local institutional standards of care for nursing home patients with diabetes exist, to characterize diabetes care in Michigan nursing homes, and to determine if the care provided meets both local and national standards.

### RESEARCH DESIGN AND METHODS

Before 1992, the Michigan Department of Public Health conducted chart reviews in all nursing homes that received Medicaid funding. This process, the Medical Review and Nursing Evaluation (MRNE), was carried out in randomly selected nursing homes each month by nurses trained to conduct chart reviews. To examine diabetes care practices in skilled nursing homes, additional data were collected during the MRNE process March 1 through 31, 1991.

To characterize diabetes care policies and practices in Michigan, two instruments were developed. The first was designed to be completed by the head nurse of the nursing home. It sought to describe existing care protocols, plans, and standing orders, one means by which standards of care can be measured (6). The head nurse was asked about written policies related to diabetes care and edu-

cation and to attach copies of all policies, plans, and standing orders. In addition, data related to the facility and diabetes-related in-service education were collected. The second instrument was used to collect data from the charts of the first five patients with diabetes encountered during the routine chart audit in an effort to describe the actual level of diabetes care provided. Areas assessed in the chart review were similar to those on the questionnaire, with the addition of specific laboratory values. Nursing home administrators and head nurses signed informed consent. No patient identifiers were collected.

**RESULTS**— Data from 17 nursing homes and 80 nursing home residents with diabetes were obtained from these surveys. The 17 nursing homes were drawn from 10 of the 81 counties in Michigan. Ten nursing homes were in urban areas and seven in rural areas. The number of beds per nursing home ranged from 64 to 338 (mean = 137). The number of patients with diabetes per nursing home ranged from 1 to 46 (mean = 19), representing 14% of all nursing home residents. There was no relationship between facility size (number of beds) and any of the other variables, including proportion of patients with diabetes.

Data about institutional standards of care were obtained from policies, nursing care plans, and standing orders for residents with diabetes (Table 1). Standing orders were most common in the area of nutrition. All homes had blood glucose meters available and capillary blood glucose monitoring (CBGM) was done by either an RN or LPN but not by nurses' aides and patients. No homes reported protocols for insulin dose adjustment based on CBGM, although four of the six homes with hypoglycemia treatment protocols also had orders for calling the physician based on CBGM.

Podiatry services were available in 16 (94%) of the homes. Foot and toenail care were provided by a podiatrist in 15 (88%) and by an RN in 11 (65%) homes.

Table 2—Diabetes care practices

	n	%
Treatment		
Diet only	29	36
Sulfonylureas	21	26
Insulin	20	25
Insulin and oral agents	3	4
Glucose monitoring		
CBGM	54	68
GHb measurements	11	14
Complications monitoring (in past year)		
Routine foot care	60	76
Eye exam	29	36
Eye exam by ophthalmologist	5	6
Serum creatinine measurement	49	61
Blood pressure measurement	66	81

n = 80.

Skin care was provided by RNs in 12 homes (71%). In homes where RNs provided foot or skin care, LPNs did also.

Sixty-five percent of the nursing homes indicated that they had held at least one (mean = 2,  $r = 1-6$ ) diabetes in-service program in the previous year. The majority were provided by a nurse or dietitian from the facility and were generally attended by all levels of nursing and dietary staff.

The chart review was completed for the first five patients encountered with a diagnosis of diabetes. The 80 patients in this sample were for the most part white (80%), female (79%), and ranged in age from 59 to 100 years (mean = 81). Table 2 summarizes the care these patients received. More than half were treated with insulin or oral agents, and only 7 (9%) received no treatment. There was no relationship between type of treatment and the likelihood of having CBGM or glycosylated hemoglobin (GHb) measurements performed. All homes had CBGM available, but only 40% had CBGM readings on all of the patient records reviewed. Thirteen percent had CBGM recorded on none of the records reviewed. Of the eleven patients with GHb readings, 6 (55%) were above normal. Six (8%) of the patients were reported to have foot lesions.

There were 15 nursing homes and 75 patients for whom both instruments were available to compare reported standards of care and the actual diabetes care practices. Meals were planned by a dietitian in 80% ( $n = 12$ ) of the homes. In homes where a registered dietitian (RD) planned the meals, 60% of patients received ADA diets, compared with 93% where a RD did not plan the meals. In 12 of the 14 homes where there were standing orders to check trays for missed meals, 100% of the patient records had notations regarding meals missed/not missed and incorrect meals. Having standing orders to replace uneaten carbohydrates and to record missed meals was not related to recording of missed or incorrect meals. In the five homes with standing orders for foot care, three had notations of foot care given and four of foot condition on all five patient records. Six (60%) of the homes without standing foot care orders had individual foot care orders on all records. All five patients had notations of foot care given and foot condition in seven (64%) of the homes without standing orders for foot care.

**CONCLUSIONS**— We have described diabetes care policies and practices in a sample of nursing homes in Michigan in 1991. Almost all homes had

some diabetes care protocols, plans, or standing orders, covering similar aspects of care. Standing orders were most often present for nutritional care, which may be a reflection of state guidelines, and major aspects of nursing care (e.g., CBGM, foot care). Standing orders were least often present for aspects of medical care (e.g., CBGM parameters to contact physician) and surveillance of complications (e.g., eye exams).

In these nursing homes, the majority of diabetes care was provided by RNs or LPNs. This differs from the earlier finding that 90% of nursing home care is provided by nurses' aides, but is consistent with the finding that patients with diabetes are more likely to require skilled nursing care (1). Despite the fact that RDs spend only a small amount of time in nursing homes and even less time in developing diet plans and in diet counseling (12,13), reported dietary treatment was related to the participation of an RD. It has been suggested that the ADA diet has little place in the nursing home setting (14,15) because no special dietary restrictions are needed (16). Regular diets in nursing homes are generally provided at consistent times, meet recommendations for nutrient content, and are planned so that similar types and amounts of foods are provided at each meal (14,16). There is little evidence that a regular diet will result in glycemic decompensation among nursing home patients (14), and a regular diet may prevent the weight loss that is common upon admission to a nursing home (17). Because the majority of nursing home patients are of normal weight or underweight, eating similar amounts of carbohydrates at regular times throughout the day may be optimal (18). Thus, the presence of an RD appears to result in more appropriate meal plans for nursing home residents with diabetes.

Only 55% were treated with either insulin or oral hypoglycemic agents, as compared with other reports where two-thirds of nursing home residents with diabetes are treated with medications (1). Among the few patients with

GHb levels recorded, fewer than half had values in the normal range. While definition of appropriate blood glucose goals for this population is controversial, it has been shown that in adequately staffed nursing homes, excellent blood glucose control can be achieved with only rare occurrences of hypoglycemia (3,7).

The optimal method and frequency of monitoring glycemic control has not been established for nursing home residents, but would appear to depend on the clinical stability of the patient (19). In this study, 68% of nursing home patients had orders for CBGM and only 4% had orders for urine testing, a vast improvement from 72% reported in a 1986 study (20). Urine testing fails to meet ADA guidelines, can provide inaccurate information, and is more time consuming than blood testing in this population (21). In this study, type of diabetes treatment was not related to type of monitoring. It would thus appear that the choice of monitoring was more dependent on facility or provider than on treatment. Almost all patients had laboratory glucose determinations performed, but very few had glycohemoglobin levels ordered. Although fasting glucose values are highly correlated to glycohemoglobin levels in many patients with NIDDM, standards of care (22) and recent results of the Diabetes Control and Complications Trial would indicate the need for closer monitoring of glycemic control. Since CBGM was available in all of these homes, it would appear that a combination of CBGM and glycohemoglobin determinations is feasible and would provide the best picture of diabetes control. In addition to performing CBGM, protocols are needed to guide interventions in the event of abnormal values (20). Hypoglycemia and hyperglycemic hyperosmolar nonketotic coma may occur in older adults and represents a significant risk for them (23). While the testing is done by nursing personnel who can presumably interpret results, standing orders to treat and/or contact physicians would decrease the risk of delayed treatment.

ADA nursing home guidelines state that foot inspections should be done on a weekly basis under the direction of an RN and that daily foot care should be provided (9). More recently, ADA recommended that high-risk individuals perform daily foot inspections (24). Although podiatry services were available for the majority, the infrequency of these services suggests that it cannot substitute for daily foot inspection and care. Written policies seemed to have less impact on actual performance in this area than in the others. This may be related to the fact that podiatric care was not dependent on written foot care policies, but on written foot care orders for reimbursement.

Screening for the long-term complications of diabetes is recommended so that treatment can be initiated early, when it is most likely to be effective. The comprehensive annual visit should include eye and visual examination and measurement of blood pressure and serum creatinine if microalbuminuria is present (11,22). Blood pressure measurements were ordered for the majority of the patients and serum creatinine levels were ordered for more than half of the patient records reviewed. However, only 38% of patients had an eye exam in the past year. This is less frequent than in the general diabetes population (25) and contrary to ADA (26) and Centers for Disease Control guidelines (11). Decreased visual acuity and blindness increase the likelihood for extended nursing home stays and contribute to decreased quality of life and sensory deprivation.

In summary, many people with diabetes reside in nursing homes, suffer substantial morbidity, and account for substantial health care costs. Employing an RD and having standing orders appear to have some impact on actual care provided. Yet, there is room for improvement in diabetes care practices in nursing homes. While many nursing homes had policies for some components of diabetes care (e.g., nutrition, foot care), written standing orders were generally not available for other important aspects (e.g.,

monitoring of complications). Nutrition guidelines, standards of care, and standards for diabetes self-management education programs have been recently revised. During this time of re-examination, it is time to review the need for new standards of diabetes care in nursing homes.

**Acknowledgments**—Supported in part by grant NIH-5P60 DK-20572 from the National Institute of Diabetes, Digestive, and Kidney Diseases.

We gratefully acknowledge the assistance of Anna Brown, RN, BSN, Nurse Consultant, Division of Federal Support Services, Sue Haviland, RNC, MSN, and Kathleen M. Haynes, PhD, of the Michigan Department of Public Health and the MRNE nurses for their support and assistance with this project. We also wish to thank Amy Bonneau and Kelly Fearer for their secretarial support.

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