AlohaCare Hawaii

Clinical Practice Guideline: **Diabetes Mellitus**	
Section: **Care Management**	Total Number of Pages: **8**
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INTRODUCTION

PURPOSE OF RECOMMENDATIONS

These recommendations were originally developed in 1998 by the Hawaii State Diabetes Task Force, a volunteer committee of professionals in the field of diabetes. These updated guidelines reflect changes in standards of care that have since come to pass; however, they do not address all the care a patient with diabetes may need, nor should they override good clinical judgment in the care of any individual patient. Rather, these recommendations focus on procedures which form the basis of providing good medical care to people with diabetes and are intended to assist health care providers in delivering quality medical care to people with diabetes.

Hawaii State Diabetes Task Force was reconvened in the spring of 2006 to review the results of recent clinical trials, many of which have demonstrated significant effects on the development or progression of diabetes complications. Updates to the existing recommendations were therefore made to reflect the new findings and to provide practitioners with the most current standards of care for people with diabetes.

This version of the recommendations is presented in a format similar to the original. The recommendations are summarized for easy reference on a detachable poster; however, when further detail or explanation is required regarding a procedure, a citation is made to appendices. Providers are encouraged to remove and post the summary table in a highly viewable area within their practices.

These recommendations are intended to be used in many ways. It is the hope of the Task Force that practitioners will make these procedures routine in their care of patients with diabetes through system-level change. Furthermore, health plans, managed care organizations, and quality management committees can utilize these recommendations to monitor standards of care currently implemented and to plan for improvements in specific processes of diabetes care.

HAWAII STATE DIABETES TASK FORCE

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APPENDIX A – A1c

The American Diabetes Association (ADA) recommends a goal of <7.0% and the American Association of Clinical Endocrinologists (AACE) suggests a goal of <6.5%. Physicians should re-evaluate the treatment regimen of patients with A1C values that are consistently >8.0%. Although near-normal A1C levels provide even greater benefit to patients, the risks of hypoglycemia and weight gain should be considered in designing individual treatment regimens and goals.

CATEGORY OF PATIENT	RECOMMENDED PROCEDURE	SCHEDULE
≤8.0% Lower Risk / Stable	A1C	Every 6 Months
>8.0% Higher Risk / Poor Control	1) A1C 2) Assessment and management of specific behavioral and physiological reasons for poor control	Every 3 Months

APPENDIX B – COMPLETE FOOT EXAMINATION

Early detection and management of diabetic neurovascular foot complications have been shown to decrease the incidence of diabetic foot ulcers and lower limb amputations.

CATEGORY OF PATIENT	RECOMMENDED PROCEDURE	SCHEDULE
0 No loss of protective sensation (LOPS)	1) Visual Exam with shoes and socks off, by MD, RN, or trained personnel. 2) Complete exam including visual inspection, neurovascular examination and risk categorization.	1) At all regularly scheduled diabetic visits. 2) Annually and with each new abnormality.
1 LOPS	1) Complete exam as above 2) Soft Insoles	At all regularly scheduled diabetic visits
2 LOPS Pressure (callus/deformity), or Decreased circulation.	1) Complete exam as above 2) Specialty care by podiatrist, orthopedic surgeon, vascular surgeon, or physiatrist experienced in the management of diabetes. 3) Custom Insoles 4) Prescription Footwear	1) At all scheduled diabetic visits. 2)Every 3-4 Months
3 LOPS Plantar Ulcer (or history) Or neuropathic fracture	Same as Risk Category 2	As Above More Frequent Specialty Care prn.

APPENDIX C – BLOOD PRESSURE SCREENING

Early detection and treatment of hypertension decreases the risk of vascular complications of diabetes.

	BLOOD PRESSURE	
	Systolic	Diastolic
Goal (mmHg)	<120	<80
Prehypertension	120-139	80-89
Behavioral therapy alone (maximum 3 months) then add pharmacologic treatment*	130-139	80-89
Behavioral therapy and pharmacologic treatment*	≥140	≥90

*FIRST LINE DRUGS: *Angiotensin converting enzyme (ACE) inhibitors*
Angiotensin receptor blockers (ARB)
Beta-blockers
Low-dose thiazide diuretics

*SECOND LINE DRUGS: *Non-dihydropyridine calcium channel blockers (NDCCB)*

APPENDIX D – EARLY NEPHROPATHY DETECTION

If microalbumin or gross proteinuria is detected and confirmed, begin treatment with ACE Inhibitor (type 1 diabetes) or ARBs (type 2 diabetes). Early detection of diabetic nephropathy can lead to treatment interventions and improved glycemic control, which have been shown to retard the progression of renal disease even in normotensive patients.

To reduce the risk of nephropathy, protein intake should be limited to the Recommended Dietary Allowance (RDA) (0.8 g/kg) in those with any degree of chronic kidney disease (CKD) (B)

Serum creatinine should be measured at least annually for the estimation of glomerular filtration rate (GFR) in all adults with diabetes regardless of the degree of urine albumin excretion. The serum creatinine alone should not be used as a measure of kidney function but rather used to estimate GFR and stage the level of CKD (E)

CATEGORY OF PATIENT	RECOMMENDED PROCEDURE	SCHEDULE
Persons with type 1 or type 2 diabetes and no known proteinuria	**Option 1:** A two-step screening for proteinuria: a) Standard urinalysis or dipstick to determine gross proteinuria (exclude transient causes and verify). b) For those negative for gross proteinuria, test for microalbuminuria* **If positive for microalbuminuria, see figure below*	type 1: Start 5 years after diagnosis, then annually type 2: Annually beginning at diagnosis.

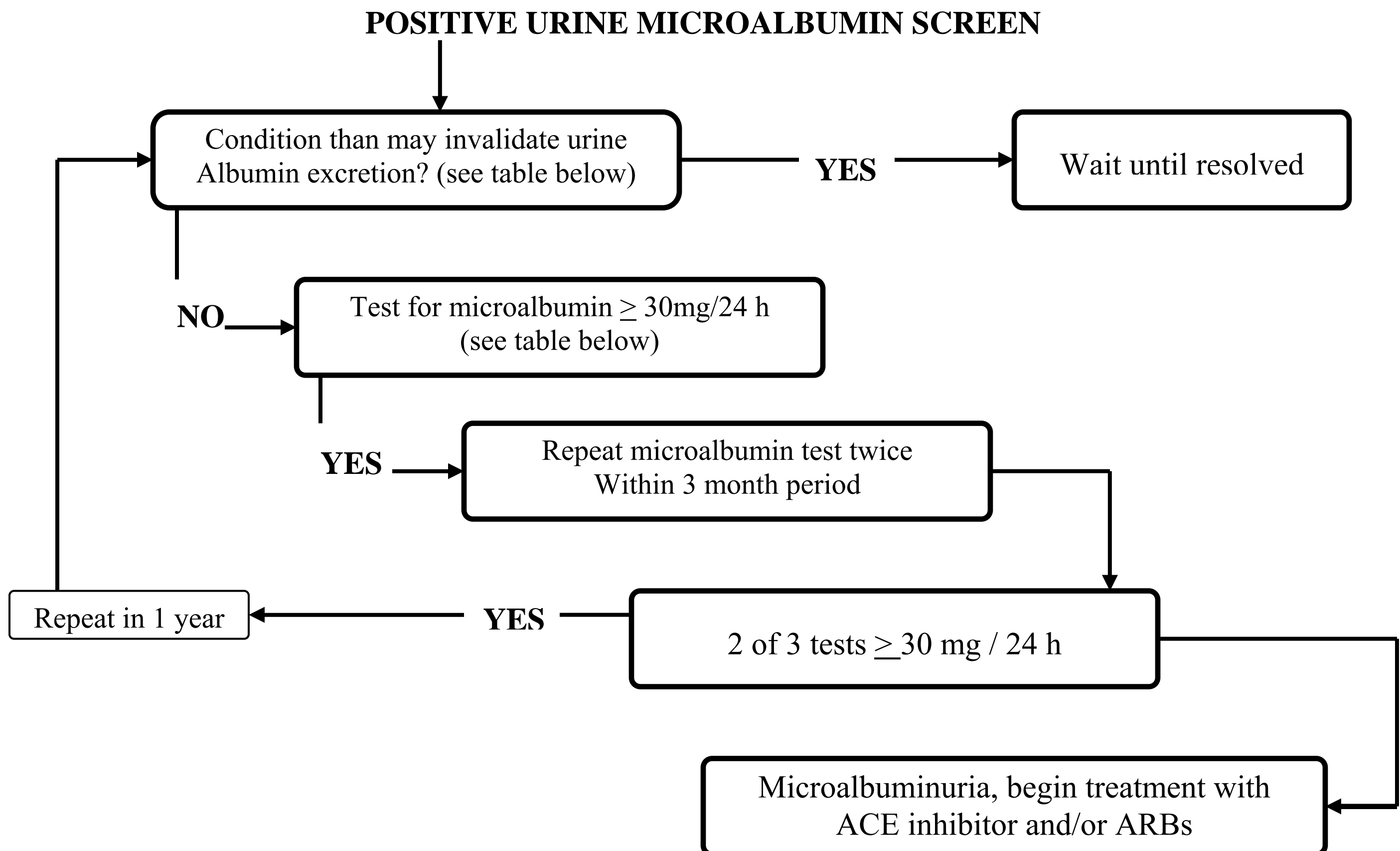

TABLE 1. DEFINITIONS OF ABNORMALITIES IN ALBUMIN EXCRETION

CATEGORY	24-H COLLECTION	TIMED COLLECTION	SPOT COLLECTION
Normal	<30 mg/ 24 h	<20 ug/ min	<30 ug/ mg creatinine
Microalbuminuria	30-300 mg/ 24h	20-200 ug/ min	30-300 ug/ mg creatinine
Clinical Albuminuria	>300 mg/ 24h	>200 ug/ min	>300 ug/ mg creatinine

Because of variability in urinary albumin excretion, two of three specimens collected within a 3 to 6 month period should be abnormal before considering a patient to have crossed one of these diagnostic thresholds. Exercise within 24h, infection, fever, congestive heart failure, marked hyperglycemia, and marked hypertension may elevate urinary albumin excretion over baseline values.

APPENDIX E – LIPID PROFILE

Table 2 – Treatment decisions based on LDL cholesterol level in adults with diabetes*

MEDICAL NUTRITION THERAPY				DRUG THERAPY
	Initiation Level	LDL Goal	Initiation Level	LDL Goal
With CHD, PVD, or CVD	≥100	<100	≥100	<100
Without CHD, PVD, or CVD	≥100	<100	≥130	<100

Table 3 – Order of Priorities for treatment of diabetic dyslipidemia in adults**

I.	LDL Cholesterol lowering	
	First Choice	HMG CoA reductase inhibitor (statin)
	Second Choice	Bile acid binding resin (resin) or fenofibrate
II.	HDL cholesterol raising	
	Behavioral interventions such as weight loss, increased physical activity and smoking cessation may be useful	
	Difficult except with fibrates or nicotinic acid, which should be used with caution	
III.	Triglyceride lowering	
	Glycemic control first priority	
	Fibric Acid derivative (gemfibrozil, fenofibrate)	
	Statins are moderately effective at high dose in hypertriglyceridemic subjects who also have high LDL Cholesterol	
IV.	Combined hyperlipidemia	
	First Choice:	Improved glycemic control plus high-dose statin.
	Second Choice:	Improved glycemic control plus statin plus fibric acid derivate (gemfibrozil, fenofibrate)
	Third Choice:	Improved glycemic control plus resin plus fibric acid derivative (gemfibrozil, fenofibrate)
		Improved glycemic control plus statin plus nicotinic acid (glycemic control must be monitored carefully)

**from page S-75 of the ADA Dyslipidemia Position Statement*
***from page S-76 of the ADA Dyslipidemia Position Statement*

APPENDIX F – SELF-MONITORING OF BLOOD GLUCOSE

PLASMA GLUCOSE GOALS (MG/DL): 2 HOURS POST-PRNDIAL	
Normal	<120
Goal	<140

FREQUENCY: Frequency of SMBG should be individualized for each patient based on clinical circumstances, type pf treatment, and treatment response. More frequent testing is indicated with changes in therapy, changes in activity level, changes in meals, when hypoglycemia is suspected, on travel days, or on sick days.

POST-PRANDIAL MONITORING: Post-prandial monitoring is indicated in pregnancy and may be helpful in people with diabetes who have normal fasting blood glucose but elevated A1C, or with treatment specifically targeted at post-prandial control. In non-pregnant patients, the goal is a 2 hour postprandial glucose of <140 mg/ dl.

APPENDIX G – DIABETES EDUCATION

Diabetes Self-Management Education (DSME) is defined as an interactive, collaborative and ongoing process involving the person with diabetes, family members, care providers, and the educator, preferably a certified diabetes educator (CDE). Diabetes education is an integral part of the treatment plan of people with diabetes.

The goals of diabetes education include:

- optimization of metabolic control.
- prevention of acute and chronic complications
- an optimum quality of life

The process of diabetes education includes:

- assessment of individual's specific learning needs
- identification of the individual's specific diabetes self-management goals
- education and behavioral interventions based on patient's values, beliefs and culture, and directed toward helping the individual achieve identified goals.
- evaluation based on outcome criteria

In order to successfully achieve the goals and outcomes of diabetes education, national standards have identified the following content areas, which should be assessed to determine individual learning needs of each patient with diabetes:

- describing the diabetes disease process and treatment process
- incorporating appropriate nutritional management into lifestyle
- incorporated physical activity into lifestyle
- utilizing medication (if applicable) for therapeutic effectiveness
- monitoring blood glucose and urine ketones, as appropriate, and using the results to improve control
- preventing, detecting, and treating acute complications
- preventing (through risk reduction behavior), detecting, and treating chronic complications
- goal setting to promote health and problem solving for daily living
- integrating psycho-social adjustment into daily life.
- promoting preconception care, management during pregnancy, and gestational diabetes management (if applicable)

Medicare pays for 10 hours of DSME upon diagnosis, the initial hour for individual assessment of training needs and the remaining 9 hours for group sessions or individual training if deemed necessary by provider / educator. Qualified beneficiaries are allowed 2 hours of follow-up training per year if so ordered by the patient's primary care provider. Although the addition of these benefits. Reimbursement can only occur if services are provided at a facility with an ADA-recognized program. Recognition is a long and costly process, limiting patients at smaller, more rural clinics from accessing these benefits.

APPENDIX H – MEDICAL NUTRITION THERAPY

Many medical conditions and illnesses can be managed, improved, and even corrected by a specific diet. Medical Nutrition Therapy (MNT) service is nutritional diagnostic, therapy and counseling services for the purpose of disease management. MNT is a key component of diabetes care and is a Medicare Part B benefit for eligible patients if provided by a Registered Dietician. MNT should seek the following goal:

- Provision of individualized meal planning advice and guidelines to accommodate lifestyle, age, and overall health status.
- Balancing food intake with drug therapy and exercise
- Optimal nutrient intake for control of glycemia and comorbidities such as obesity, hyperlipidemia, renal impairment, and hypertension.
- Nutritional Goals

  10% to 20% of calories from protein
  <10% calories from saturated fat, minimize trans fats
  ~10% of calories from polyunsaturated
  60% to 70% of calories from monounsaturated fat and carbohydrate
  <300 mg cholesterol per day
  <2400 mg sodium daily for hypertension

APPENDIX I – PRECONCEPTION COUNSELING

CATEGORY OF PATIENT	RECOMMENDED PROCEDURE	SCHEDULE
Women with type 1 or type 2 diabetes	Preconception counseling to include 1. Assessment and optimization of glucose control. 2. Evaluation of macrovascular and microvascular complications including dilated eye exam. 3. Cardiac risk factor evaluation including ECG in women with diabetes longer than 10 years 4. Family Planning method 5. Potential risks to fetus and mother 6. Education regarding importance of preconception control of blood glucose and blood glucose goals during pregnancy. 7. Medication change during pregnancy to include discontinuing ACE inhibitors and ARB's and substituting insulin for oral medications.	Counseling should occur when the young woman with diabetes reaches childbearing age or as an adult, during the first visit, or whenever the woman's potential for child bearing increases.

APPENDIX J – (ASA) PROPHYLAXIS

Low dose aspirin therapy is effective in reducing cardiovascular events in persons with diabetes who have known cardiovascular disease or risk factors for cardiovascular disease. [22, 23]

RISK CATEGORY	PROCEDURE	FREQUENCY
SECONDARY PREVENTION Persons with type 1 or type 2 diabetes with coronary artery disease, cerebrovascular disease, or peripheral vascular disease.	Start low-dose ASA prophylaxis (75-325 mg) unless contraindicated.	At onset, or documentation of positive past history of coronary artery disease, cerebrovascular disease, or peripheral vascular disease.
PRIMARY PREVENTION Persons with type 1 or type 2 diabetes with vascular risk factors.*	Start low-dose prophylaxis (75-325 mg) unless contraindicated.	At onset of vascular risk factors.
Persons with type 1 or type 2 diabetes 40 years of age or older.	Start low-dose prophylaxis (75-325 mg) unless contraindicated.	Beginning at age 40 years.

**** Hypertension, cigarette smoking, obesity, (BMI ≥ mg/24 hours).***

REFERENCES

A1C

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  Diabetes Care 2008: (Suppl 1): S33-49

COMPLETE FOOT EXAM

- American Diabetes Association. Prevention Foot Care in People with Diabetes (Position Statement).

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DILATED EYE EXAM

- American Diabetes Association. Diabetic Retinopathy (Position Statement) *Diabetes Care 2008 (Suppl 1): S90-93*

BLOOD PRESSURE

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- Revisions for the 2006 Clinical Practice Recommendations, Diabetes Care, Vol 29 S3 2006
- American Diabetes Association. Diabetic Nephropathy (Position Statement) *Diabetes Care 2008: 25 (Suppl1): S85-89*

LIPID PROFILE

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  Diabetes Care 2008: 25 (Suppl 1): S33-49
- American Diabetes Association. Management of Dyslipidemia in Adults with Diabetes (Position Statement).
  Diabetes Care 2008: 25 (Suppl 1): S74—79

SELF MONITORING OF BLOOD GLUCOSE (SMBG)

- American Diabetes Association. Standards of medical care for patients with diabetes mellitus (Position Statement).
  Diabetes Care 2008: 25 (Suppl 1): S33-49

EDUCATION

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- American Diabetes Association. National Standards for Diabetes Self-Management Education (Standards for Review Criteria).
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MEDICAL NUTRITION THERAPY

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  Diabetes Care 2008: 25(Suppl 1): S33-49
- American Diabetes Association. Evidence-based Nutrition Principals and Recommendations for the Treatment and Prevention of Diabetes and Related Complications (Position Statement). *Diabetes Care 2008: 25(Suppl1): S50-60)*

TOBACCO USE ASSESSMENT

- American Diabetes Association. Standards of medical care for patients with diabetes mellitus. (Position Statement).
  Diabetes Care 2008: 25 (Suppl 1): S33-49

PRECONCEPTION COUNSELING

- American Diabetes Association. Preconception Care of Women with Diabetes (Position Statement).
  Diabetes Care 2008: 25 (Suppl 1): S82-84

IMMUNIZATIONS

- American Diabetes Association. Standards of medical care for patients with diabetes mellitus Position Statement).
  Diabetes Care 2008: 25 (Suppl 1): S33-49

ORAL/DENTAL SCREENING

- Finney L.S., Finney M.O., & Gonzales-Campoy, J.M. What the mouth has to say about diabetes. Careful examinations can avert serious complication. *Postgrad Med 1997; 102(6): 117-126*
- Maely BL. Impact on advances in diabetes care on dental treatment of the diabetic patient. *Compend Contin educ. Dent 1998; 19(1): 41-44*

ASA PROPHYLAXIS

- American Diabetes Association. Aspirin Therapy in Diabetes (Position Statement). *Diabetes Care 2008; 25(Suppl 1): S78-79*
- American Diabetes Association. Standards of medical care for patients with diabetes mellitus (Position Statement).
  Diabetes Care 2008 (Suppl 1): S33-49

Practice Recommendations
Diabetes Mellitus: Type 1 and Type 2

PROCEDURE	FREQUENCY	ACTION
AIC Formerly referred to as Hemoglobin A1c, or HbA1c	At least twice a year.	Normal: < 6.0% Goal: < 7.0% (American Diabetes Association) < 6.5% (American Diabetes Assoc. Clinical Endocrinologists Action if: > 8.0% (see Appendix A)
Complete Foot Examination Including visual inspection and neurovascular examination	At least once a year.	Sensory testing with a 5.07 (10 gm) nylon monofilament, applied perpendicularly until monofilament buckles. Loss of protective sensation (LOPS) if no perception present at ≥ 1 site (plantar surface of 1st or 5th toes, or 1st, 3rd, or 5th metatarsal heads). (see Appendix B)
Dilated Eye Examination By an opthalmologist or optometrist knowledgeable and experienced in diagnosing diabetic retinopathy	**Type 1:** Annually beginning 5 years after onset. **Type 2:** Annually beginning at diagnosis	If diabetic retinopathy is detected, follow-up referral to an opthalmologist who is knowledgeable and experienced in treating diabetic retinopathy.
Blood Pressure	Every Office visit	If BP> 130/80. (see Appendix C)
Urine Microalbumin	**Type 1:** Annually beginning 5 years after onset.* **Type 2:** Annually beginning at diagnosis *If gross proteinuria is present earlier, see Appendix D	If microalbuminuria or gross proteinuria is detected and confirmed, begin treatment with ACE inhibitor (type 1) or ARB's (type 2) (see Appendix D)
Lipid Profile	Annually. If lipid levels within target guidelines for two consecutive years, may decrease frequency to every 2 years.	If LDL > 100 mg /dl or If HDL < 45 mg/dl (men), or < 55 mg/dl (women, or If TG > 150 mg/dl. (see Appendix E)
Self-Monitoring of Blood Glucose (SMBG)	Should be encouraged in all patients to help reach and maintain treatment goals.	SMBG logs should be reviewed at all regularly scheduled diabetes visits. (see Appendix F)
Education – Provided by a registered, licensed, or certified health professional with training in diabetes, preferably a CDE.	At diagnosis and annually thereafter.	At diagnosis, individual or group instruction, as needed, and annually thereafter based on assessment. (see Appendix G)
Medical Nutrition Therapy (MNT) Individual MNT, as needed, to achieve treatment goals, preferably provided by a registered dietician familiar with the components of diabetes MNT.	At diagnosis, and ongoing at 6 month to 1 year intervals as needed.	1. Reasonable weight is not maintained. 2. Food intake is not balanced with drug therapy and/or exercise. 3. Patient expresses desire for nutrition information. (see Appendix H)
Tobacco Use Assessment	Initially and annually thereafter.	1. Strongly urge all smokers to quit. 2. Identify smokers willing to make a quit attempt. 3. Assist the patient in quitting (pharmacologic therapy, referral, etc.) 4. Schedule follow-up contact. (see Appendix 1)
Preconception Counseling	At time of initial visit in all women of childbearing potential or upon reaching childbearing age.	
Flu Immunizations	Annually.	Administer in the Fall (October is optimal).
Pneumococcal Immunization	At diagnosis if not already vaccinated.	Revaccinate if patient ≥ 65 AND first vaccination was more than 5 years ago when patient was 64 years or younger.
Oral/Dental Screening Oral screening of teeth and soft tissue	Annual visit to dentist.	
(ASA) Prophylaxis	In patients ages 21-39 with vascular risk factor and in all patients ≥ 40 years	Low dose 75-325 mg/day. (see Appendix J)