



ADA 2010 Clinical Practice Recommendations

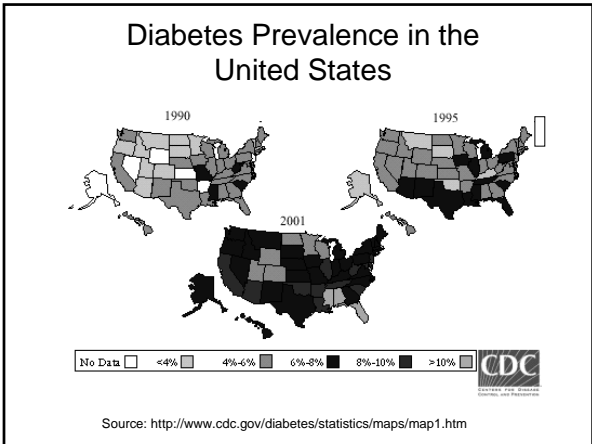
Mercy Nurse Practitioner Conference
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Diabetes Resources

- ❖ ADA - American Diabetes Association
<http://www.diabetes.org>
- ❖ ADA - American Diabetes Association (for professionals)
<http://professional.diabetes.org>
Diabetes Care January, 2010, Supplement 1
- ❖ AACE - American Association of Clinical Endocrinologists (ACE-American College of Endocrinology)
<http://www.aace.com/index.php>

Importance of Standards

- ◆ Updated and published yearly
- ◆ Evidenced based
- ◆ Guide clinical practice
- ◆ Guide insurance and policy makers
- ◆ Pay for performance
- ◆ Legal considerations



Prevalence, Complications and Cost of Diabetes

- Diabetes rates are on the rise, along with obesity
- As of 2007 it was estimated that 23.6 million people (or 7.8% of the U.S. population) have diabetes
- Of those 5.7 million cases are undiagnosed

Source - http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2007.pdf

Prevalence, Complications and Cost of Diabetes (continued)

- For every 1% drop in A1c the risk of microvascular complications (eye, kidney, and nerve damage) can be reduced by up to 40%.
- In type 1 diabetics, intensive insulin therapy has shown a reduction in the risk of cardiovascular disease.

Source - http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2007.pdf

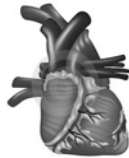
Prevalence, Complications and Cost of Diabetes (continued)

- Estimated costs in the United States for diabetes for 2007 totaled \$174 billion (direct and indirect)
- Indirect costs accounted for \$58 billion from things such as disability, work loss, premature death

Source - http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2007.pdf

Relationship Between Diabetes, Heart disease, and Stroke

- Adults with diabetes are 2-4 times more likely to die from heart disease than those without diabetes.
- Stroke risk is 2 to 4 times greater in people with diabetes.



Source - http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2007.pdf

DIABETES – diseases within a disease

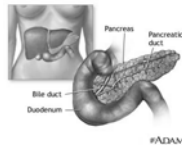
Organs/Systems Involved:

MUSCLE



LIVER

PANCREAS



KIDNEYS



NERVOUS SYSTEM



SUMMARY OF CHANGES FOR 2010

- Use of HgbA1C for diagnosis
- Recommendation for use of aspirin for primary prevention
- Changes regarding Diabetes Self-Management Education (DSME)
- Tight glucose control for critically ill hospitalized patients

CLINICAL PRACTICE RECOMMENDATIONS

- **Diagnosis and screening for diabetes**
- **Glucose testing, glycemic goals, hypoglycemia**
- **Medical nutrition therapy, physical activity, weight control**
- **Education, prevention, pre-conception**
- **Immunizations**
- **Medical assessments and treatment- (lipids, hypertension, ASA, CVD)**
- **Complication management-(retinopathy, neuropathy, nephropathy)**
- **Psychosocial assessments, smoking cessation**
- **Pharmacological interventions**

Diagnosis of Diabetes

- HgbA1c of $\geq 6.5\%$ is new diagnostic criterion
Needs to be done in a lab setting using NGSP certified method and following DCCT standard (point of care tests are not accepted)
- HgbA1C cannot be used to diagnose diabetes in pregnancy nor in patients with anemia from iron deficiency or hemolysis Increased rate of red cell turnover
- Fasting Plasma Glucose ≥ 126 (no calories for 8 hours)
- 2 hour plasma glucose ≥ 200 mg/dl using 75gm OGTT
- Random plasma glucose ≥ 200 with hyperglycemia symptoms

Source: Diabetes Care, Volume 33, Supplement 1, January 2010, p. S4.

Screening for Diabetes

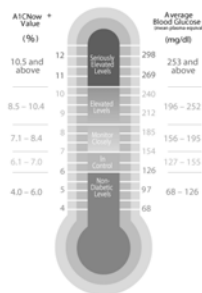
- Consider screening for diabetes in any adult with BMI 25 or higher with 1 or more risk factors for diabetes, otherwise start at age 45 (If normal, repeat testing every 3 years)
- Monitor for diabetes development annually in pre-diabetics (IFG, IGT, or A1c 5.7-6.4%)
- Use risk factor analysis: Screen for overt diabetes in high risk pregnant women early in pregnancy-severely obese, prior GDM or prior delivery of LGA baby, PCOS, glycosuria, strong family history of DM2

Diagnosis and screening for Gestational Diabetes (GDM)

- ❖ Perform OGTT at 24-28 weeks on all women with more than low risk for GDM (ADA has criteria)
- ❖ 1 or 2 step approach for OGTT: diagnosis of GDM comes from meeting at least 2 criteria:
 - FPG \geq 95mg/dl
 - 1-h \geq 180
 - 2-h \geq 155
 - 3-h \geq 140
- ❖ Screen for diabetes or pre-diabetes at 6-12 weeks post-partum in all cases of GDM and thereafter following standard guidelines

Glucose monitoring, glycemic goals, hypoglycemia

- A1c recommended at least twice a year (in office) and every 3 months if not in range, unstable control or with change in therapy (non-pregnant goal is $<$ 7% ADA, $<$ 6.5% ACE)



Glucose monitoring, glycemic goals, hypoglycemia (continued)



- Self-monitoring of blood glucose (SMBG) recommended at least T1D for patients on MDI insulin or pump therapy (non pregnant goals-ADA: pre-meal 70-130mg/dl, 1-2 hr post-meal under 180, ACE: pre-meal under 110, 2 hr post-meal under 140)
- SMBG including post-meal testing can be helpful in patients on simpler medication or diet regimens



Glucose monitoring, glycemic goals, hypoglycemia (continued)

- Continuous glucose monitoring (CGM) can help lower A1c in some type 1 diabetics over age 25; also may aid in hypoglycemia unawareness or frequent hypoglycemia



Glucose monitoring, glycemic goals, hypoglycemia (continued)

- Relaxed A1C goals may be appropriate for those with history of severe hypoglycemia, elderly or those whose life expectancy is short, patients with advanced micro and/or macrovascular complications
- Hypoglycemia treatment (Rule of 15), glucagon Rx and training for high risk patients



Medical nutrition therapy, physical activity, weight control

- ✓ MNT should be available to those with pre-diabetes or diabetes as needed to meet goals and should be paid for by insurance
- ✓ Saturated fat should be <7% of calories, and trans fat should be minimal (raises LDL and lowers HDL)
- ✓ Alcohol intake- <1 drink/day for women and 2 drinks/day for men
- ✓ Exercise 150 mins / week, weight training for those without contraindications
- ✓ Modest weight loss (5-10%) in overweight/obese patients can improve insulin sensitivity, so wt loss is recommended for all overweight/ obese patients with DM2 or at risk

Medical nutrition therapy, physical activity, weight control

- > Monitoring carbohydrate intake is the basis for controlling blood sugars
- > Low carbohydrate or low fat diets may aid wt loss in short term (up to 1 year)
- > Sugar alcohols and calorie-free sweeteners are safe when used per FDA guidelines
- > Consider bariatric surgery for adults with BMI > or = 35 with DM2, especially if comorbidities are hard to control

Education, prevention, pre-conception counseling

- ✿ DSME should be given at diagnosis and PRN and should be covered by insurance
- ✿ DSME has shifted to help patients make informed decisions and perform appropriate self-care behaviors
- ✿ Lifestyle modification is the most important feature of prevention
- ✿ Preventive screening should be done on any adult if at risk (obesity, risk factors)
- ✿ Consider metformin for prevention of DM2 in those with combined IFG and IGT, obesity and under age 60

Education, prevention, pre-conception counseling



- Education for preconception includes A1c at near normal levels before conception is attempted (at least under 7%), medication risk assessment, complication assessments and treatment
- Pre-conception counseling should begin at puberty and continue at each diabetes visit for all women with child-bearing potential (congenital anomalies are the biggest cause of death or problems in infants born to diabetic mothers-associated with A1c >1% over normal during the period 6-8 weeks after conception)

Immunizations

Annual flu vaccine for all diabetics at or over age 6 months

One lifetime pneumonia vaccine for diabetics at or over age 2 years. Revaccinate for those age 64 or older if immunized before age 65 and vaccine given > 5 years ago

Medical assessments and treatment- (lipids, hypertension, ASA, CVD)

⌘ Lipids - Measure fasting lipids annually-every 2 years if lipids at goal (LDL <100, TG <150, HDL >50)

Treat with lifestyle modification, statin if CVD (goal LDL under 70) or over age 40 without CVD but with 1 or more CVD risks; other cases to reach goals or use clinical judgement

⌘ HTN – goal is < 130/80; 2 readings on different days over 130/80 in a diabetic confirms diagnosis of HTN

Treat BP 130-139/80-89 with lifestyle for up to 3 months and then start meds, for 140/90+ initiate medications ACE-I or ARB should be first line treatment of HTN-if one not tolerated, change to the other; thiazides or loop diuretics can be added depending on renal function

**Medical assessments and treatment-
(lipids, hypertension, ASA, CVD)**

- ⌘ Aspirin-consider 75-162mg daily for primary prevention in DM1 or 2 with 10 year risk for CVD >10% (most men over age 50, women over age 60 or who have one more major risk factor –family hx of CVD, smoking, HTN, dyslipidemia, microalbuminuria)
- ⌘ There is not enough evidence to recommend aspirin for primary prevention in younger individuals without major risk factors-clinical judgement required for those with multiple risk factors
- ⌘ Use aspirin for secondary prevention in CVD; in patients allergic to aspirin and having CVD-use clopidogrel
- ⌘ CVD- Evaluate and treat risk factors, ACE-I, aspirin and statins unless contraindicated

**Disease management-(retinopathy,
neuropathy, nephropathy)**

- Key component of complication management is good glycemic control
- Neuropathy - screen at diagnosis and annually, prevention-teach about foot care, medications for pain, podiatry referral
- Retinopathy - Optimize BP control; Annual dilated eye exam (> age 10 & DM1 for 5 years) for DM2 adults at diagnosis and annually, and in 1st trimester of pregnancy (retinopathy can worsen in pregnancy)
- Nephropathy - Annual microalbumin-DM2 at Dx, DM1 after 5 years, annual creatinine, treat with ACE-I or ARB, referral to nephrologist as indicated, control BP

**Psychosocial assessments, smoking
cessation**

- Routinely assess patients' attitudes about diabetes and its management, financial and social issues, mood/affect, psychiatric status, self-care abilities-provide referrals as needed
- Smoking-Advise patients to quit smoking
- Discuss smoking cessation routinely along with diabetes care

Pharmacological Interventions

TIER 1 (well-validated therapies)

Step 1

- Diet, increased activity, weight loss
- Metformin

Step 2

- SFU (glipizide, glyburide, glimepiride)
- Insulin (basal, prandial)



Pharmacological Interventions (continued)

TIER 2 (less well-validated treatments)

- TZDs
- GLP-1 agonists (Byetta, Victoza - new)

Other Treatments

- Alpha-glucosidase inhibitors (Precose, glyset)
- Glinides (Prandin, Starlix)
- Pramlintide (Symlin)
- DPP-4 inhibitors (Januvia, Onglyza)

Pharmacological Interventions (continued)

Tier	Decrease in A1c (monotherapy-%)	Advantages	Disadvantages
Lifestyle	1.0-2.0	many	effects rarely last beyond 1 st year
Metformin	1.0-2.0	weight neutral	GI side effects, can't use in CKD
Insulin	1.5-3.5	no limit, rapid effect, +lipids	injections, monitor, wt gain, lows, cost
Tier 2			
TZDs	0.5-1.4	+ lipid effect, ? Reduced MIs	wt gain, edema, CHF, bone fractures
GLP-1 agonists	0.5-1.0 (1.0-1.5-Victoza)	wt loss	injections, GI SE, ? Long-term safety

Pharmacological Interventions (continued)

OTHER	Decrease in A1c (monotherapy-%)	Advantages	Disadvantages
alpha-glucosidase inhibitors	0.5-0.8	wt neutral GI SE, TID dosing, \$	
Glinides	0.5-1.5	rapid effects	wt gain, TID dosing, lows, \$
Pramlintide	0.5-1.0	wt loss	injections, GI SE, \$? Long-term safety
DPP-4 inhibitors	0.5-0.8	wt neutral	? Long-term safety, \$
(Welchol)	0.5	oral suspension	GI SE, multiple tablets, \$

Inpatient Diabetes Management

- Glycemic control in the critically ill-insulin should be started if sugars over 180; target is 140-180mg/dl
- Best to use an IV insulin protocol to help prevent hypoglycemia
- Tighter glucose control in critically ill hospitalized patients may lead to increased morbidity and mortality

QUESTIONS? ???

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