

Prevalence of Diabetes in the United States, 2011

Traditional and Novel Diabetes Medications

Mary Wood, RN, MS, CDE, BC-ADM
Diabetes Clinical Nurse Specialist
Dartmouth-Hitchcock Medical Center

- **Total:** 25.8 million people – 8.3% of the population
- **Diagnosed:** 18.8 million people
- **Undiagnosed:** 7 million people

NIDDK/2011

Direct and Indirect Costs of Diabetes in the United States

- The total annual economic cost of diabetes in 2007 was estimated to be \$174 billion
- The direct costs were estimated at \$116 billion in 2007, compared to \$44 billion in 1997
- 1 out of every 10 health care dollars spent in the United States

ADA, 8/2008

Type 1 Diabetes

- Insulin-Dependent Diabetes Mellitus (IDDM)
- Juvenile Onset Diabetes Mellitus (JODM)
- Ketosis-prone
- Onset usually before age 20
- Abrupt onset
- Insulinopenia
- Islet cell antibodies +
- Generally thin
- 10 % of all diabetes
- 50% concordance in identical twins

Type 2 Diabetes

- Non-Insulin-Dependent Diabetes Mellitus (NIDDM)
- Adult Onset Diabetes Mellitus (AODM)
- Non-ketosis-prone
- Onset at any age
- Gradual onset
- Insulin resistance
- Islet cell antibodies -
- Generally obese
- 90 % of all diabetes
- 90 – 100% concordance in identical twins

Type 1 and Type 2

- Hyperglycemia
- Risk of Vascular and Neuropathic Complications

Diabetes Mellitus: Diagnostic Criteria

	Fasting Plasma Glucose	Random Plasma Glucose	OGTT 2-hour post-load plasma glucose	HbA1c
Normal	< 100 mg/dL		< 140 mg/dL	< 5.7%
Pre-Diabetes	100 – 125 mg/dL		140 – 199 mg/dL	5.7 – 6.4%
Diabetes	≥ 126 mg/dL	≥ 200 mg/dL with classic symptoms	≥ 200 mg/dL	≥ 6.5%

In the absence of unequivocal hyperglycemia, fasting, OGTT or HbA1c should be confirmed by repeat testing.

ADA, 2010

Treatment of Pre-Diabetes

- Healthy diet
- Regular exercise
- Weight loss
- Continued surveillance

“You have diabetes”
Good news, bad news

- Serious
- Treatable
- You are in charge

Goals of Diabetes Treatment

- Feel well today
- Avoid long-term complications

Essential Elements of Diabetes Self-Management

- Healthy Diet
- Regular Exercise
- Medication
- Monitoring
- Frequent Education and Follow-Up

Goals of Healthy Nutrition

- Near-normal glucose levels
- Optimal lipid levels
- Control of hypertension
- Reasonable weight
- Normal growth and development

Nutrition in Type 1 Diabetes

- Synchronize insulin with food
- Appropriate caloric intake
- Prevent hypo- and hyperglycemia

Nutrition in Type 2 Diabetes

- Achieve and maintain desirable weight
- Aim for glucose, BP and lipid goals
- Take medications in relation to meals

Caloric Nutrients

- Carbohydrates: 55 – 60 %
- Protein: 12 – 20 %
- Fat: < 30 %

Nutrition Facts	
Serving Size 1 medium ear Corn (90g)	
Amount Per Serving	
Calories 80	Calories from Fat 10
% Daily Value*	
Total Fat 1g	2%
Saturated Fat 0g	0%
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 18g	6%
Dietary Fiber 3g	12%
Sugars 5g	
Protein 3g	
Vitamin A 2% * Vitamin C 10%	
Calcium 0% * Iron 2%	

Sweeteners

- Caloric
 - Sugar
 - Corn syrup
 - Sugar alcohols
- Non-Caloric
 - Saccharin
 - Aspartame
 - Sucralose
 - Stevia

Physical Activity

- Lowers blood glucose
- Lowers blood pressure
- Lowers cholesterol
- Reduces risk for heart disease and stroke
- Relieves stress
- Strengthens heart, muscles and bones
- Helps insulin work better
- Improves blood circulation
- Keeps joints flexible
- Helps achieve and maintain target weight

Benefits of Exercise

- Increased glucose utilization
- Improved insulin sensitivity

Type 1 Diabetes

- A hormone deficiency
- Replacing that hormone is challenging

Insulin

- Type 1's must have insulin around the clock
- Never hold long-acting insulin
- Cover anticipated meal spikes with short-acting insulin
- Quickly reduce a high sugar with short-acting insulin

Insulin

- **the right type**
- **the right dose**
- **the right time**



For Insulin to be Effective

- Enough insulin when it's needed
 - to avoid hyperglycemia
- Not too much insulin when it's not needed
 - to avoid hypoglycemia

Sliding Scales

- No evidence of effectiveness
- Insulin does not work backwards
- Only advantage is that they're easy
- Basal insulin is needed
- The goal of a good insulin regimen is that no sliding scales coverage is needed
- Add total of SS coverage to the next day's scheduled insulin doses

3 Roles of Insulin

- Basal
- Bolus
- Correction

Instead of a Sliding Scale . . .

Basal – Bolus Insulin

Basal Insulin

- Background insulin
- Long-acting insulin to treat pre-meal glucose levels
- Necessary in type 1 diabetes because of absolute insulin deficiency
- Used in type 2 diabetes to suppress hepatic glucose output between meals and overnight
- 50% of daily needs

Bolus Insulin

- Rapid-acting insulin to cover meals
- Given regardless of pre-meal BG
- Dose adjusted to match to carbohydrate content of the meal
 - CHO:insulin ratio
- Held if the patient is not eating
- 10% to 20% of total daily insulin requirement at each meal

Correction Insulin

- You're in trouble - BG is above the target
- Rapid-acting insulin to reduce a high BG
- If correction doses are needed frequently, consider changing basal insulin dose
- Correction factor can be calculated

Basal - Bolus Insulin

- Most closely mimics normal physiology
- Best achieved with insulin pump or Lantus and Novolog
- Pre- and post-meal BG testing to assess doses
- Difficult for patients who are not independent
 - Four injections per day
 - timing of injections with meals

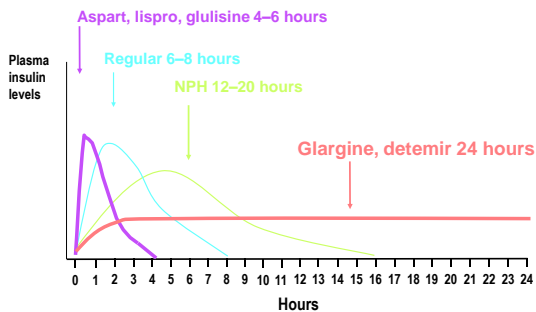
Individualized Insulin Treatment

- Select the appropriate type of insulin
- Choose the appropriate starting dose of insulin
- Titrate doses to achieve the desired glucose control

Insulin Available in the US

	Onset	Peak	Duration
Lispro (Humalog®)	10 mins.	30 – 60 mins.	2 - 4
Aspart (Novolog®)	10 mins.	30 – 60 mins.	2 - 4
Glulisine (Apidra®)	10 mins.	30 – 60 mins.	2 - 4
Regular	½ - 1	2 - 4	5 - 8
NPH	1 - 3	4 - 10	12 - 18
Glargine (Lantus®)	1 - 2	peakless	24 +
Detemir (Levemir®)	1 - 2	6 - 8	up to 24

Action Profiles of Human Insulins and Insulin Analogues



Sensitivity Factor

TDD Insulin (units)	Expected drop per unit lispro/aspart
20	90 mg/dL
30	60 mg/dL
40	45 mg/dL
50	36 mg/dL
60	30 mg/dL
75	24 mg/dL
100	18 mg/dL

Adapted from Insulin Pump Therapy Handbook, Walsh & Roberts, 1992.

Goals for Glycemic Control

	ADA	IDF	ACE
HbA1c	< 7%	≤ 6.5%	≤ 6.5%
Fasting/ pre-meal	90 – 130	< 100	< 110
2-hour post prandial	< 180	< 135	<140

Insulin Delivery Devices

Type 2 Diabetes

- A complex disease
- Insulin resistance
- Relative insulin deficiency
- Hepatic Glucose Output
- Excessive Energy Consumption

Indications for Medications in Type 2 Diabetes

- Diet and exercise habits are optimal in a newly diagnosed patient
- Diet and exercise have not resulted in adequate glycemic control



Goals for Glycemic Control

	ADA	IDF	ACE
HbA1c	< 7%	≤ 6.5%	≤ 6.5%
Fasting/ Pre-meal	80 – 120	< 100	< 110
2-hour post Prandial	NC	< 135	< 140

Medication

- Metformin
- Sulfonylureas
- Meglitinides
- Alpha-Glucosidase Inhibitors
- Thiazolidinediones
- Incretin Mimetics
- DPP-IV Inhibitors
- Insulin

Biguanide

- **Glucophage**
- Typically the first line agent
- Suppresses hepatic glucose production
- Improves insulin sensitivity
- Expected HbA1c reduction of 1.5%

Metformin

Metformin Dosing

- **Adults** – maximum dose
2550 mg/day PO for regular-release tablets and oral solution; 2000—2500 mg/day PO for extended-release tablets
- Contraindicated with excess alcohol
- Contraindicated with renal Impairment
– serum creatinine ≥ 1.4 mg/dl in females and ≥ 1.5 mg/dl in males

Metformin Side Effects

- Mild and temporary nausea and diarrhea
- Rare but serious risk of lactic acidosis
- Withhold before and for 48 hours after the administration of IV contrast

Insulin Secretagogues

Sulfonylureas

- **Glyburide, Glipizide, Glimepiride**
- Introduced or added when beta cell function is waning
- Stimulate insulin secretion
- Expected HbA1c reduction of 1.5%

Sulfonylurea Dosing

- **Glyburide (Micronase, Diabeta, Glynase)**
- Adults and Elderly Maximum dose: 20 mg/day PO for conventional glyburide (Micronase, Diabeta); 12 mg/day PO for micronized glyburide (Glynase)
- Initial dose: Adults: 2.5—5 mg PO once daily, with breakfast The usual dosage is 1.25—20 mg/day PO, given in single or divided doses
Elderly: A lower initial dosage of 1.25 mg PO once daily may be considered, with gradual dosage titration to attain clinical goals
- Hepatic Impairment: reduce starting dose to 1.25 mg/day PO
- Renal Impairment: avoid glyburide if CrCl < 50 mL/min. since it is 50% renally excreted and drug accumulation may cause prolonged hypoglycemia

Sulfonylurea Dosing

- **Glipizide (Glucotrol)**
- Adults and Elderly Maximum dose: 20 mg/day PO for extended-release tablets (e.g., Glucotrol XL); 40 mg/day PO for regular-release glipizide tablets (e.g., Glucotrol)
- Initial dose Adults: 5 mg PO once daily, before breakfast. Elderly: Reduce initial dose to 2.5 mg PO once daily, with careful dosage titration based on fasting blood glucose
- Renal Impairment: No specific dosage adjustment is needed; however the manufacturer recommends conservative initial and maintenance glipizide doses as well as careful blood glucose monitoring to avoid hypoglycemic reactions

Sulfonylurea Dosing

- **Glimepiride (Amaryl)**
- Adults and Elderly Maximum dose: 8 mg/day PO
Initial dose Adults: Initially 1–2 mg PO once daily, administered with breakfast. Patients with risk factors for hypoglycemia may be started at 1 mg PO once daily. The usual dosage range is 1–4 mg once daily
Initial dose Elderly: Begin dosage at the lowest adult dosage, 1 mg PO once daily. Elderly patients may be more sensitive to the hypoglycemic effects of the usual adult dosage
- Hepatic or Renal Impairment: Initiate therapy conservatively (1 mg PO once daily); titrate the dosage based on fasting blood glucose concentrations.

Sulfonylurea Side Effects

- Hypoglycemia
- Weight gain

Meglitinides

- **Repaglinide (Prandin)**
- Adults and Elderly Maximum dose: 16 mg/day PO
Initial dose Adults: For oral hypoglycemic-naïve patients or for patients whose hemoglobin A1c (HbA1c) is < 8%, start with 0.5 mg PO preprandially (immediately before a meal) with every meal, up to 4 times a day. For patients who have taken oral hypoglycemics and whose HbA1c is > 8%, the initial dose is 1 or 2 mg preprandially with every meal, up to 4 times a day.
- If another oral hypoglycemic is to be replaced by repaglinide, begin repaglinide the day after the final dose of the other agent.
- Hepatic or Renal Impairment: Use with caution; begin with 0.5 mg PO preprandially, followed by slow and careful dosage titration to desired clinical response

Meglitinides

- **Nateglinide (Starlix)**
- Adults and Elderly Maximum dose: 360 mg/day PO
- Initial dose Adults and Elderly: 120 mg PO three times daily before meals. If patients are near the goal HbA1c when treatment is initiated, 60 mg PO three times daily before meals may be used.
- Hepatic or Renal Impairment: it appears that no dosage adjustments are needed.

Alpha-Glucosidase Inhibitors

Alpha-Glucosidase Inhibitors

- **Acarbose, Miglitol**
- Used as monotherapy or in combination with sulfonylurea, metformin or insulin
- Delay the digestion and inhibit the absorption of polysaccharides
- Expected HbA1c reduction of 0.5 – 0.8%

Alpha-Glucosidase Inhibitors

- **Acarbose (Precose)**
- Adults and Elderly Maximum dose: 150 mg/day PO if patient weighs <= 60 kg. 300 mg/day PO if patient weighs > 60 kg
- Initial dose Adults: 25 mg PO TID, with first bite of each meal
To reduce GI side effects, try an initial dose of 25 mg PO once daily for 1 week; titrated up as tolerated to 25 mg PO TID
- Hepatic Impairment:
Contraindicated in patients with cirrhosis.
For abnormal LFT's during treatment, reduce dose or D/C acarbose
- Renal Impairment:
CrCl >= 25 ml/min: No dosage adjustments necessary
CrCl < 24 ml/min: acarbose not recommend
- If acarbose is used in combination with sulfonylureas or insulin, acarbose will cause a further lowering of blood sugar that may lead to hypoglycemia. Adjustments of the sulfonylurea or insulin may be necessary

Alpha-Glucosidase Inhibitors

- Caution – if used in combination with a sulfonylurea or insulin, hypoglycemia may occur
- Glucose (not sucrose) is necessary for treatment, as the absorption of other sugars would be inhibited

Thiazolidinediones (TZD's)

- Improve the sensitivity of liver, fat and muscle to endogenous and exogenous insulin
- Thereby improving insulin sensitivity and decreasing insulin levels
- Not first-line therapy in patient with glucose toxicity as full effect may take 4 – 8 weeks
- Expected HbA1c reduction of 0.5 – 1.4%

Alpha-Glucosidase Inhibitors

- **Miglitol (Glyset)**
- Adults and Elderly Maximum dose: 300 mg/day PO
- Use as monotherapy or in combination with sulfonylurea
- Initial dose Adults: 25 mg PO TID, with first bite of each meal
To reduce GI side effects, try an initial dose of 25 mg PO once daily for 1 week, titrated to 25 mg PO TID
- Hepatic Impairment:
No dosage adjustments are needed; the liver does not metabolize miglitol
- Renal Impairment:
CrCl ≥ 25 ml/min: No dosage adjustments necessary
CrCl ≤ 24 ml/min: miglitol not recommend

Thiazolidinediones

Thiazolidinediones

- **Rosiglitazone (Avandia)**
- Adults and Elderly Maximum dose: 8mg/day PO
- Initial dose as monotherapy: 4 mg PO daily, given as a single dose or in two divided doses
- Adults with symptomatic heart disease, CHF NYHA Class I or II: Initially, 2mg PO once daily
- Adults with symptomatic heart disease, CHF NYHA Class III or IV: Safety and efficacy have not been established
- Initial dose in combination with metformin and/or sulfonylurea: 4 mg/day PO, given as a single dose or in two divided doses
- Hepatic Impairment:
Mild impairment: Start and continue rosiglitazone cautiously; periodically check LFTs
Moderate or severe impairment: Do not start or continue rosiglitazone
- Renal Impairment:
No dosage adjustment required
- Heart failure and possibly myocardial ischemia are increased with combined use, so do not give insulin and rosiglitazone together

Thiazolidinediones

***In July 2010 an FDA advisory panel reviewed evidence citing the increased risk of heart attack with rosiglitazone. The panel voted not to withdraw the drug, but to continue to market it with additional restrictions and warnings. ***

- **Pioglitazone (Actos)**
- Adults and Elderly Maximum dose: 45mg/day PO
- Initial dose as monotherapy: 15 mg or 30 mg PO once daily.
- *Adults without symptomatic heart disease but one or more risk factors for CHF or an ejection fraction < 40%:*
Initially, 15 mg PO once daily
- *Adults with symptomatic heart disease, CHF NYHA Class I or II:* Initially, 15 mg PO once daily
- *Adults with symptomatic heart disease, CHF NYHA Class III or IV:* Safety and efficacy have not been established
- Initial dose in combination with metformin: 15 mg or 30 mg PO once daily; continue current metformin dose unless patient reports hypoglycemia
- Initial dose in combination with sulfonylurea: 15 mg or 30 mg PO once daily; continue current sulfonylurea dose
- Initial dose in combination with insulin: 15 mg or 30 mg PO once daily; the current insulin dose can be continued. Reduce insulin dose if the patient reports hypoglycemia
- **Hepatic Impairment:**
Mild impairment: Start and continue pioglitazone cautiously; periodically check LFTs.
Moderate or severe impairment Do not start or continue pioglitazone .
- **Renal Impairment**
No dosage adjustment required
- Increased risk of edema, weight gain, or congestive heart failure when higher doses of pioglitazone are used in combination with insulin in patients at risk of CHF
- Discontinue pioglitazone with any deterioration in cardiac status

Thiazolidinedione Side Effects

- Weight gain
- Edema
- Possible increase in liver function enzymes

Incretins

- GLP-1 and GIP are GI hormones that stimulate insulin secretion after eating, even before the BG rises
- Incretins also inhibit glucagon secretion, slow gastric emptying and inhibit appetite
- GLP-1 and GIP are quickly inactivated by DPP-IV, so have little effect
- GLP-1 = glucagon-like peptide-1
- GIP = gastric inhibitory peptide (glucose-dependent insulinotropic peptide)
- DPP-IV = dipeptidyl peptidase-IV

Incretin Mimetics

- Exenatide (Byetta)
 - Subcutaneous injection, twice daily
 - 0 – 60 minutes before largest meals
 - Starting dose 5 mcg, titrate to 10 mcg
- Liraglutide (Victoza)
 - Subcutaneous injection, once daily
 - Given independent of meals
 - Starting dose 0.6 mg, titrate to 1.2 mg, then 1.8 mg
- Expected HbA1c reduction of 0.5 – 1%

Incretin Mimetic Side Effects

- Nausea
- Hypoglycemia is uncommon

DPP-IV Inhibitors

- Sitagliptin (Januvia)
 - Saxagliptin (Onglyza)
 - Promote insulin production by inhibiting DPP-IV, the enzyme that inactivates GLP-1 and GIP
 - Increased GLP-1 and GIP levels result in increased insulin release, decreased glucagon release and slowed gastric emptying
 - No differences in safety or effectiveness in elderly patients
 - Assess renal function before starting and periodically during treatment and adjust dosing as needed
- Sitagliptin (Januvia)
 - 100 mg once daily with or without food
 - Saxagliptin (Onglyza)
 - 2.5 or 5 mg once daily with or without food

Combination Therapy

- Begin with one, add a second and third as needed until glycemic targets are met
- Healthy diet and regular exercise remain imperative in diabetes management

Medication Combinations

- **FDA Indications for many combinations**
- **Pre-mixed combinations**
 - Glucovance
 - Avandamet
 - Metaglip
 - Actoplus met
 - Avandaryl
 - Duetact
 - Janumet
 - Prandimet
 - Kombiglyze

Patient Education with all Oral Agents

Pills don't take the place of a healthy diet and regular exercise in controlling diabetes.



Selecting the best agent

- Natural progression of diabetes
- Blood glucose trends
- Side-effect profile
- Cost considerations
- Aggressive dose adjustments
- Treat to target



It's time for Insulin

- Maximum doses of 2 or 3 agents fail to reach glucose targets
- Secondary failure of insulin secretagogues



Insulin Use in Type 2

- Does not become type 1
- Often seen as last resort
- The most aggressive treatment
- Individualized regimen

Patient Response to Insulin

- Feel much better
- Less bothered by injections than by fingersticks



Individualize Therapy

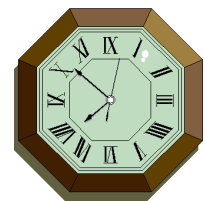
- **Greatest benefit**
- **Fewest side effects**
- **Reasonable cost**
- **Aggressive adjustment to target**

Remember, Diabetes is a Cardiac Disease

- **Blood pressure medications**
- **Cholesterol-lowering agents**
- **Aspirin**
- **Nicotine replacement**
- **Anti-depressant**

When to monitor?

- Before insulin injection
- After meals
- To answer a question



The Target Range

- ability to detect symptoms and properly treat hypoglycemia
- life expectancy
- recent level of blood glucose control
- willingness to follow a complex regimen

Blood Glucose Log

Mon.	137	160	144	158
Tues.	119	153	127	166
Wed.	146	181	188	244
Thurs.	121	214	176	193
Fri.	125	187	149	151

Monitoring My Type 1 Diabetes

Home Blood Glucose Monitoring

I will check my blood sugar _____ times per day.

The times of day I will check my blood sugar are _____

I will also check my blood sugar if I feel symptoms that may be high or low blood sugar.

I will call my doctor if my blood sugar is:

higher than _____ on more than _____ occasions in one week.

lower than _____ on more than _____ occasions in one week.

I will call my doctor **immediately** if my blood sugar is:

higher than _____ or lower than _____

* * * My target range is _____ * * *

Hemoglobin A1c Monitoring

I will have my Hemoglobin A1c tested every _____ months.

The normal range for this test at my lab is _____ % to _____ %

My goal for my Hemoglobin A1c is _____ %

Urine Ketone Monitoring

I will test my urine for ketones when:

_____ I have a blood sugar of >= 240

_____ I feel sick or have an infection

_____ I am vomiting

_____ I am under a lot of stress

_____ I am pregnant

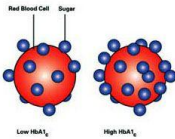
I will call my doctor **immediately** if moderate or large ketones are present.

BG Testing is best when

- It is done frequently
- The results are useful to the patient
- The data guides treatment
- The patient feels empowered

Hemoglobin A_{1c}

- measures average blood sugar over the past 3 months
- fasting and post-meal sugars
- use along with home blood glucose monitoring
- know your number
- goal: 6.5 - 7%
- surrogate measure of complications



Correlation between HbA_{1c} and Estimated Average Glucose

HbA _{1c} (%)	Estimated Average Glucose (mg/dL)
5	97
6	126
7	154
8	183
9	212
10	240
11	269
12	298

Nathan, DM, et al., Diabetes Care, 2008

Recommended Frequency for HbA_{1c} Testing

- Type 1 -- every three months
- Type 2 -- every six months if stable and no change in treatment

HbA_{1c} Results Too High?

- not enough exercise
- too much food or wrong kinds of foods
- not enough insulin or other medication
- stress
- illness
- infection

With type 1 diabetes, test for ketones:

- during illness
- if blood glucose > 250
- until ketones have cleared
- patient education for indications to test, actions if positive

Testing for Ketones

- **Urine ketone tests**
 - Chemstrip K
 - Ketostix
- **Blood ketone test**
 - Precision Xtra



Interpretation of Ketone Test Results

- Inadequate insulin
- Fats are energy source
- If untreated, could progress to DKA

If Ketones are Positive

- Drink plenty of sugar-free fluids
- Rest
- Test blood glucose often
- Call physician - more insulin is needed

**“If the blood sugar is high
and you don’t know why . . .
test for ketones.”**

What is good diabetes control?

- HbA1c is close to 6.5%
- Weight is stable
- BP and cholesterol levels are good
- Proper nutrition & regular exercise
- Regular visits with health care team
- Patient feels in good control

Patient Education/Follow-Up

- **A process**
- **Strive to achieve goals**
- **Monitor for complications**

Diabetes Survival Skills

- **When and what to eat**
- **Medication action and administration**
- **Hypoglycemia symptoms and treatment**
- **Who and when to call for help**

Patient Education

- **Assess readiness to learn**
- **Set goals**
- **Teach in brief sessions**
- **Determine what has been learned**
- **Follow-up plan**

Refer for Diabetes Education

- **All NH hospitals offer diabetes education**
- **www.aadenet.org has directory of diabetes educators**

Acute Complications

- Hypoglycemia
- Hyperglycemia
- Illness/Surgery
- DKA
- HHNS

Chronic Complications

- Microvascular
 - Retinopathy
 - Nephropathy
 - Neuropathy
- Macrovascular
 - Heart attack
 - Stroke
 - Peripheral Vascular Disease

Non-Modifiable Risk Factors

- Duration of diabetes
- Age
- Genetics
- Race
- Gender

Modifiable Risk Factors

- Hyperglycemia
- Hypertension
- Dyslipidemia
- Smoking
- Obesity
- Inactivity
- Stress

Every Three Months

- Blood pressure and weight
- Fundoscopic exam
- Foot exam
- HbA_{1c}
- Review of treatment plan and goals

Every Year

- Dilated eye exam
- Microalbumin test
- Fasting lipid profile
- Oral exam
- Flu Vaccine (fall)

Changing Behavior

People will change not so much because they see the light, but rather because they feel the heat.

Goals of Diabetes Treatment

- Adequate energy
- Avoidance of acute complications
- Prevention of chronic complications

Diabetes Doesn't Hurt

Keeping patients motivated

“The man who knows the most about his diabetes lives the longest”

E. P. Joslin, 1928