Diabetes and Coronary Heart Disease

Chronic Condition Management

Part 1

Presented by UIC-CON
Objectives

- Develop an understanding of specified chronic conditions prevalent in the MFP/Pathways population
  - Diabetes
  - Coronary artery disease (CAD)
- Understand the self-management activities related to those conditions including:
  - Medication management and
  - Red flags that signal a worsening of condition or emergent situation (crisis).
80% of US adults over age 50 have at least one chronic condition

MFP Participants
47% have Diabetes
31% have CAD

DMH
49% have Diabetes
20% have CAD

DRS
44% have Diabetes
31% have CAD

DOA
46% have Diabetes
45% have CAD
Diabetes: Facts

- Affects 25.8 million people or 8.3% of the population.
  - Among persons age 20 and older; 11.3% have diabetes.
  - For persons age 65 and older the percent with diabetes more than doubles to 26.9%.
  - Diabetes affects more men than women at 11.8% to 10.2%.
  - About 1.9 million people were newly diagnosed in 2010.

- Diabetes is the leading cause of kidney failure, non-traumatic lower-limb amputation, and new cases of blindness in the U.S.
- Diabetes is a major cause of heart disease and stroke.
- Diabetes is the seventh leading cause of death in the U.S.
- The risk for death among people with diabetes is about twice those without diabetes.

CDC, 2011
Diabetes is a chronic disease that occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin it produces.

Hyperglycemia, or “high blood sugar”, is a common effect of uncontrolled diabetes and over time can lead to serious damage to many of the body's systems, especially the nerves and blood vessels.

Source: http://www.who.int/diabetes/en/
Type 1 and Type 2 Diabetes

**Type 1 diabetes mellitus**
- The body’s immune system destroys pancreatic beta cells, the only cells in the body that make insulin.
- Chronic, earlier onset and more severe than Type 2.
- Those with Type 1 diabetes are dependent upon receiving insulin to survive.

**Type 2 diabetes mellitus**
- The body does not make enough insulin or can not effectively use the insulin it makes. As the need for insulin rises the pancreas slowly loses its ability to produce insulin.
- Later onset, less severe and can be improved with weight loss, diet and exercise.
- These participants may need oral medication to help the body use the insulin it already has, and sometimes they may also need insulin.
The goal of managing diabetes is to keep blood sugar (glucose) levels within an acceptable range.

- Both high and low blood sugars cause complications and can eventually lead to life threatening events.
**Diabetes Treatment**

- **Type 1**
  - To survive people with Type 1 must have insulin.

- **Type 2**
  - Can be controlled with lifestyle modifications: healthy meal plans, exercise, and weight control.
  - Individuals who need medication usually start out on oral medications.
  - If their condition worsens, they may need insulin injections.
  - Many people with diabetes also need medication to control their cholesterol levels and blood pressure.
Diabetes Treatment & Management

Is key to improving health outcomes and quality of life.

Focuses on self-management behaviors: healthy eating, being active, monitoring blood sugar, etc.

Educators assist people to gain knowledge about their disease, learn to problem solve, and learn coping skills to successfully manage the disease and related conditions.

Participants need to learn and engage in self-management activities before transition so they are prepared and knowledgeable after transition.
Before transition participants need a medication management plan that includes taking the medication and monitoring the effects of the medication

- **Insulin**: Is given once to several times a day, measurement needs to be precise, and needs to be given at the correct time.
  - Hypoglycemia (low blood sugar) and hyperglycemia (high blood sugar) can occur rapidly

- **Oral Medications**: Several types available.
  - Metformin: does not cause hypoglycemia
  - Sulfonamides and others: can cause hypoglycemia
    - Sulfonamides can also cause high blood sugars in the am can be caused from blood sugars being too low around 2 am
Participants need a plan for monitoring their blood sugar.

- Obtain blood sugar goal and frequency of monitoring from a medical provider.
- Obtain instructions on how to respond to blood sugars out of goal range. Example <80 or >150
- Check blood sugar according to the schedule and whenever the participant is symptomatic. Include night-time symptoms.
- Record results and take to every provider visit.
- Develop a plan of what to do with the results.
  - Blood sugar is too low: eat a source of sugar or a meal
  - Blood sugar results are too high: decrease intake, increase activity, be assessed for an acute infection
**Diabetes Self-Management: Foot and Skin Checks**

- **Daily** foot and skin checks should be done by participant or caregiver.
  - Inspect daily for red spots, blisters, warmth, open areas. Use mirror to see bottom of feet and other hard to see areas.
  - Do not soak feet.
  - Dry thoroughly after bathing, especially between toes.
  - Wear good fitting footwear at all times. Look inside them before putting them on.
  - Report to provider any wounds or skin changes as soon as possible.
  - Be aware of signs of infection: redness, swelling, foul odor, discolored drainage, fever, chills, elevated blood sugar.
  - May need a foot specialist (aka podiatrist) especially with decreased sensation in feet.
As recommended by a provider, participants with diabetes should:

- **Follow a healthy diet & limit alcohol intake**
  (No more than one alcoholic drink per day (for women) or two (for men) for those who do consume alcohol.)

- **Exercise 30 minutes most days of the week, if possible.**

- **Monitor blood pressure and weight for recommended healthy ranges.**

- **Have an annual eye exam that includes dilating the pupil to look inside the eye for changes.**

- **Keep Immunizations up to date (especially flu, pneumonia, and tetanus).**

- **Understand and monitor for depression or behavioral changes.**
Diabetes Red Flags: Blood Sugar Levels

- Blood sugar level less than 80 or higher than 250
  - Less than 60 can be life threatening.
  - Blood sugar levels that are higher than usual may be a sign of illness or infection.
    - A common illness that can have no symptoms other than elevated blood sugar is a urinary tract infection.
Blood sugar falls below 60 or 80 with symptoms (see next slide).

Insulin reaction usually has a sudden onset and rapid progression.

Hypoglycemia due to not eating can be slower.

Signs and symptoms are due to impaired brain function and nervous system response.
Mild symptoms of hypoglycemia include:
- Shaking, Sweating, Fast heart rate, Dizziness, Hunger, Blurred vision, Irritability

Moderate symptoms of hypoglycemia include:
- Confusion, Tiredness, Yawning, Poor coordination, Headache, Double vision, Combativeness

Severe symptoms of hypoglycemia include:
- Unconscious, Seizures
- Life threatening event call 911.
Diabetes Red Flags: Hyperglycemia (High Blood Sugar)

- Fasting blood sugar > 126; no calorie intake for at least 8 hours.
- Casual blood sugar > 200 at any time of the day.
- 2 hours after eating a meal the blood sugar is still > 200.

- Over time, high blood sugar can cause changes to nerves and blood vessel resulting in long-term complications.
- Blood sugars can rise slowly if a person’s calorie intake increases or quickly if they stop taking their insulin.

http://care.diabetesjournals.org/content/30/suppl_1/S42.full
# Diabetic Red Flags: Hyperglycemia Symptoms

Hyperglycemia symptoms: dry mouth, thirst, frequent urination, extreme hunger, weakness, blurred vision

If not treated hyperglycemia will become **life threatening** (Call 911)

<table>
<thead>
<tr>
<th>Diabetic Ketoacidosis</th>
<th>Hyperosmolar Hyperglycemic Nonketonic Coma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occurs when there is not enough insulin</td>
<td>Occurs when not enough insulin or too much food</td>
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<tr>
<td>Blood sugars can reach 250-1000 or greater</td>
<td>Bloods sugars can reach levels of over 600</td>
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<tr>
<td>Frequent urination, extreme thirst, nausea/vomiting, dehydration, marked fatigue, eventually stupor and coma</td>
<td>Dehydration, seizures, difficulty speaking, muscle twitching, fever, Jerky eye movements, hallucinations, excessive urination, excessive drinking of fluids</td>
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Diabetes Red Flags: Acute Infections

- Acute infections include: colds, influenza, pneumonia, urinary tract infections, prostate infections, cellulitis (skin infection)
- The initial and sometimes the only symptoms are:
  - Elevations in blood sugar with no change in diet or activity.
  - Confusion or behavior changes.
45: Does the participant require a special diet?
   ▪ 23: Arrange for and monitor education on nutrition/food management
   ▪ 21: Arrange for and monitor education on diagnoses/conditions
   ▪ 113: Monitor participant for significant weight loss or gain on a regular basis.
46: Does the participant require regular lab tests or blood work?
   ▪ 70: Educate participant on lab test results and any follow-up instructions. (Have participant request explanations of and copies of their labs from their providers)
49: Does the participant need assistance with or close monitoring of medications?

- Multiple mitigation strategies available including review of medication, use of pill organizer or other assistive device, education, visiting nurse, and medication list.

61: Does the participant have diabetes?

- Again multiple strategies available including education on diabetes and medication, delivery of supplies, home care nursing, provider visits for worsening symptoms, yearly eye exams, daily logs, list of emergency contacts.
- Personal emergency response system
Diabetes: Risk Questions & Mitigation Strategies

Other risk questions that could apply depending upon the management and long-term effects of diabetes

- **1:** Caregiver risks: lack of natural supports
- **15:** Scalding: especially if neuropathy present
- **19:** Evacuation when a fire: if visual problems present
- **37 or 38:** Unplanned ED/Hospital visits: not controlled
- **42:** Risk for falls: mobility issues
- **43:** Infection precautions: if wounds present or has recurrent UTIs
- **66:** other serious medical conditions:
  - Indicator 504: HTN
  - Indicator 505: Renal failure
Are there others that TCs have used?
Coronary Artery Disease

Chronic Condition Management
Coronary Artery Disease: Facts

- About 600,000 people die of heart disease in the United States every year—that’s 1 in every 4 deaths.
- Heart disease is the leading cause of death for both men and women. More than half of the deaths due to heart disease in 2009 were in men.
- Coronary heart disease is the most common type of heart disease, killing more than 385,000 people annually.
- Every year about 935,000 Americans have a heart attack. Of these, 610,000 are a first heart attack. 325,000 happen in people who have already had a heart attack.
Coronary artery disease is a disorder in which one or more of the coronary arteries are narrowed by atherosclerotic plaque or vascular spasms.

It is a term that covers many different conditions that involve obstructed blood flow through the coronary arteries.

Coronary artery disease (CAD) is also called coronary heart disease (CHD) and/or ischemic (heart tissue death from lack of oxygen) heart disease.
CAD: Goal of Treatment

- Relieve symptoms of CAD and prevent future cardiac events, such as unstable angina (chest pain due to decrease oxygen), acute heart attack/myocardial infarction (AMI), and death.
- Improve patient outcomes by preventing and/or slowing the process of ischemic heart disease (heart tissue death from not enough oxygen).
The prevention and treatment of atherosclerosis* requires control of the known modifiable risk factors for this disease.

Inactivity | Smoking | Poor diet | Excessive alcohol consumption | Obesity
---|---|---|---|---

This includes therapeutic lifestyle changes and the medical treatment of hypertension (elevated blood pressure), hyperlipidemia (elevated cholesterol levels: LDL and triglycerides), and diabetes mellitus.

*Hardening of the arteries, also called atherosclerosis, is a common disorder. It occurs when fat, cholesterol, and other substances build up in the walls of arteries and form hard structures called plaques.
CAD Self-Management: Medications

- Antiplatelet Agents/Anticoagulation: prevent strokes, improve circulation
  - Aspirin, clopidogrel (Plavix), warfarin (Coumadin)
    - These medications increase the risk for bleeding and should be followed-up on regularly.
    - Participant needs to know the signs of prolonged bleeding to report to his provider:

- Decrease the demands on the heart
  - Ace-inhibitors (lisinopril): decreases blood pressure
  - Angiotensin receptor blockers (losartan): generally for persons who cannot tolerate Ace-inhibitors
  - Beta-Blockers (metoprolol): slows heart rate and is generally given after someone has a MI
  - Calcium Channel Blockers (diltiazem): relaxes coronary arteries and allows more oxygen to the heart muscle.
Decrease cholesterol levels and help prevent plagues from building up in the arteries

- Statin drugs (simvastatin), fibrates (fenofibrates), bile acid sequestrants (cholestyramine), and niacin

- Nitroglycerin
  - Sublingual nitro or nitro spay for immediate relief of angina
  - Nitroglycerine and nitrates (isosorbide) both reduce the myocardial oxygen requirement and improve myocardial perfusion. Angina. In long-term use nitrate tolerance can occur.
**Engage in Exercise/Activity**

- **Goal:** 30 minutes a day 7 days a week (at least 5 days a week)
- Brisk walking in addition to increased daily activities (gardening, housework)
- High-risk patients should attend a medically supervised program (cardiac rehabilitation)

**Manage weight**

- **Goal:** Body Mass Index (BMI) 18.5 to 24.9 kg/m²; Waist circumference: men <40 inches, women <35 inches
- The initial goal of weight loss therapy should be to reduce body weight by approximately 10% from baseline

**Limit alcohol intake**

- Limit alcoholic drinks. Men should have no more than 2 alcoholic beverages a day and women no more than 1.

**Smoking Cessation**

- **Goal:** Complete cessation including no exposure to second-hand/environmental smoke.

**Limit or stop caffeine use**
Control Diabetes

- **Goal:** Glycosylated hemoglobin (HgbA1c) <7%.

Control Blood pressure

- **Goal:** <140/90 or <130/80 in presence of diabetes or chronic kidney disease.
- Initiate and maintain life style modifications: weight control, exercise/increased activity, alcohol in moderation, sodium <2.4 grams/24 hours, healthy diet.

Manage cholesterol

- **Goal:** LDL <100 mg/dL; if triglycerides >200 mg/dL non-HDL-C <130 mg/dL; reduce LDL to <70 in presence of diabetes or chronic kidney disease; total cholesterol >200 mg/dL.
- Dietary therapy: decrease intake of saturated fats to <7% of total caloric intake
- Daily exercise and weight management.
- Omega-3 fatty acids 1 g/day for risk reduction, higher doses are need for elevated triglyceride treatment.
CAD Self-Management: Other Activities

Stay up to date on provider visits

- Primary care, cardiology

Stay up to date on laboratory testing (request copies from the providers and put in a notebook)

- Lipid profile (cholesterol levels: LDL, HDL, triglycerides)
- Thyroid function tests: To exclude thyroid disorders
- Blood glucose and hemoglobin A$_{1C}$ (HbA$_{1C}$) measurement: Appropriate in patients with diabetes mellitus

Stay up to date on diagnostic testing

- EKGs, Echocardiography, CTs, MRIs, Ultrasounds

Stay up to date on Influenza and other vaccines

- All patients with CAD should receive yearly influenza vaccine
CAD Self-management: Red Flags

- Signs of worsening conditions:
  - Shortness of breath, weakness, tiredness, reduced ability to exercise, dizziness, palpitations, leg swelling, weight gain, diaphoresis, chest pain, tachycardia, changes in blood pressure

- Signs of heart attack to access emergent care for:
  - The pain can be severe or mild. It can feel like: squeezing or heavy pressure, a tight band around the chest, something heavy sitting on your chest, bad indigestion
  - Shortness of breath, nausea or vomiting, anxiety, cough, fainting, lightheadedness-dizziness, palpitations (feeling like you heart is beating too fast), sweating.
**CAD: Risk Questions & Mitigation Strategies**

45: Does the participant require a special diet?
- 23: Arrange for and monitor education on nutrition/food management
- 21: Arrange for and monitor education on diagnoses/conditions
- 113: Monitor participant for significant weight loss or gain on a regular basis.

46: Does the participant require regular lab tests or blood work?
- 70: Educate participant on lab test results and any follow-up instructions. (Have participant request explanations of and copies of their labs from their providers)
48 or 49: Medication management risks?
- Multiple mitigation strategies available including review of medication, use of pill organizer or other assistive device, education, visiting nurse, and medication list.

63: Does the participant have chest pain/heart burn/ or have small, frequent vomiting, or have unusual burping or have they been diagnosed with GERD?
- Indicator 346: Participant takes nitro for chest pain
  - 22: Arrange and monitor education on medications
  - 62: Arrange, verify and monitor appointments
  - 40: Personal emergency response system
CAD: Risk Questions & Mitigation Strategies

Other risk questions that could apply depending upon the management and long-term effects of CAD

- **1**: Caregiver risks: lack of natural supports
- **37 or 38**: Unplanned ED/Hospital visits: not controlled/recurrent chest pain/anxiety
- **40**: Other conflicting diagnoses/conditions: depression
- **41**: Dementia or other related neurological condition: plaques in arteries can also occur in the brain
- **58**: Chronic pain-medicine to help manage pain: chest pain and nitro
  - Indicator 504: HTN
  - Indicator 508: Stroke
CAD: Risk Questions and Mitigation Strategies

- Are there others that you the TCs have used?
Adherence

- **Engagement**: If the participant is not actively engaged in the development of his/her plan of care he/she will be unlikely to participate in the implementation and self-management of care.
  - Activity: Establish Rapport with participant and assist participant in understanding purpose of visit.
  - Activity: Explain what is involved in a plan of care and why a plan is important.
  - Activity: Engage participants in the development of the plan of care during the first visit.
  - Activity: Have the participant develop and prioritize his/her own goals. Assist when needed.

Note: A lot of people do not return after the first meeting, so it is extremely important to begin developing a relationship and start working together on setting goals with the participant.
### Adherence

- **Health literacy:** The ability to understand materials provided.
  - Activity: Indirectly determine if the participant can read.
  - Activity: Determine the participant’s level of education.
  - Activity: Determine the participant’s preferred method of learning. For example, does the participant learn best by doing (i.e., manually), by listening (i.e., auditory), or by observing (i.e., visually).

- **Lack of knowledge about disease:** definition, red flags, prognosis, medications, self-management
  - Activity: Determine the gaps in knowledge.
  - Activity: Set up or provide education
Adherence

**Distractions that affect self-management:**
External and internal stressors can affect the participant’s ability to perform self-management activities (e.g., take medications, check blood sugar)

- Activity: Help the participant identify the external or internal stressors that affect self-management strategies. This will help in the identification of an appropriate strategy.
- Activity: Coordinate caregiver services and/or recommend counseling.
- Activity: Develop simple strategies with the participant, call and remind the participant, and develop a crisis management plan.
Co-morbid conditions that affect self-management: Mental health conditions or disorders that affect the participant’s ability to self-manage his or her health condition

Depression: Depression can impact the participant’s cognitive, emotional, and performance functioning. Overall, it can impact an individual’s motivation and level of adherence to treatment or desire to engage in treatment or services.

• Activity: Perform depression screening, provide to PCP, and follow-up with participant to see what plan is and assist them to implement the plan
**Substance use:** Initial indication may be behavior change

- Activity: Perform Substance Abuse screen. Report use to prescribers, encourage participation in AA or NA.

**Poor provider-patient communication:**

- Activity: Assist participant’s to write down questions prior to appointments and review after appointment. Someone attend appointments with providers.
Sudden death is a possibility in people with diabetes, coronary artery disease, and heart failure.

Have the participant and family/caregiver complete a Living Will and Power of Attorney for Healthcare.

Consider Hospice care. A hospice provider can visit and assist in determining if hospice is right for this particular person. It does not mean they stop all treatment, it is a support service to the person and family.

- When participant has severe symptoms at rest and nothing really seems to help make them better.
References: Diabetes

- www.cdc.gov/diabetes/
References: CAD

- National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III)
  [Link](http://www.nhlbi.nih.gov/guidelines/cholesterol/atp3full.pdf)

  [Link](http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.pdf)

- U.S. Department of Health and Human Services; National Heart, Lung, and Blood Institute; National Institute of Health
  [Link](http://www.nhlbi.nih.gov/health/dci/Diseases/Hbp/HBP_WhatIs.html)

  [Link](http://www.nhlbi.nih.gov/hbp/prevent/q_smoke/plan.htm)
  [Link](http://www.cdc.gov/heartdisease/facts.htm)
  [Link](http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001224/)

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