Complications of Diabetes: The Diabetic Foot
Problems associated with Diabetes

• High blood sugar levels cause many problems, including
  – Heart disease
  – Kidney failure
  – Eye problems

• But did you know that the complication of diabetes **most likely to send you to the hospital** is problems with the feet?

• In fact, **$80 billion dollars a year** - 1/3 of the cost of ALL diabetic health problems - is associated with diabetic foot treatments
The Diabetic Foot

• High blood sugar (which also causes inflammation) can damage nerves, especially nerves in the feet

• This is called “peripheral neuropathy”

• Symptoms:
  – Burning and tingling in the feet “pins and needles”
  – Pain when walking
  – Eventually lose feeling (have numbness) in the feet and toes
Why diabetic foot is such a problem

• If feeling begins to be lost in the foot and toes it is difficult to tell when there is an injury
• Even a tiny blister from shoes can turn into a large wound
• Because of poor circulation in the diabetic foot, wound healing can be difficult
• If the wound does not heal, amputation of the foot may be required
• It is VITAL to take care of your feet if you have diabetes
Preventing Foot Problems

• Get blood sugar levels under control
  – Diet is crucial
• Take good care of your feet – check them regularly for any signs of injuries and treat any wound, no matter how small, quickly.
  – see a doctor if necessary
• 3 Areas which need to be addressed in the diabetic foot:
  – Circulation – proper blood flow carries nutrients and oxygen to the nerves
  – Inflammation – plays a significant role in the development and progression of nerve damage
  – Repair of nerves and nerve sheath (myelin)
Bioactive B Vitamins

• Benefits:
  – No liver conversion required
  – Increase nitric oxide, which expands blood vessels and improves blood circulation
  – Reduce nerve pain and allow nerve healing to occur

• What to look for
  – Methylcobalamin: most effective form of B12 in treating nerve pain; essential for nerve repair and regeneration; shown in clinical trials to ease nerve pain, tingling and burning associated with neuropathy
  – P-5-P: reduces nerve pain; shown to prevent progression of nerve damage associated with diabetes
  – L-methylfolate reduces homocysteine; homocysteine interferes with nitric oxide activity

• This specific combination shown in a clinical trial to reduce nerve pain by almost 90%

• Combine with other B vitamins for best results: thiamin, riboflavin, biotin, niacin, pantothenic acid
Zinc and Chromium

- Diabetes is frequently associated with low zinc and chromium levels
- Zinc supplements have been shown to improve blood sugar control
- Chromium is very effective at reducing blood sugar levels by increasing the effectiveness of insulin (increasing transport of sugar into cells)
- Additionally, chromium reduces inflammation associated with diabetes
Alpha Lipoic Acid

- Antioxidant that is both fat and water-soluble
- Shown to lower blood sugar levels in people with diabetes
- Regularly used in Germany to treat diabetic neuropathy
  - Shown in clinical trials to reduce symptoms of neuropathy and slow its progression
Curcumin and Diabetes

• Curcumin has been shown to reduce the risk of developing diabetes
  – In a study of people at risk of diabetes, 16% of the people in the control group developed diabetes, while NO ONE in the curcumin group did

• In an experimental model of diabetes, curcumin was compared to the drug rosiglitazone (Avandia),
  – found to be **equally as effective** in reducing insulin resistance, inflammatory markers, and fats in the bloodstream

• Curcumin gas also been shown to improve insulin response and reduce blood sugar levels as well as reduce inflammation
Summary

• Foot care is very important for people with diabetes
  – Check your feet regularly and get any sores or wounds treated immediately

• Get blood sugar levels down
  – Diet is critical

• 4-6 capsules daily of a combination of bioactive B vitamins, chelated minerals, alpha lipoic acid, chromium and boswellia

• 500 mg of bioavailable curcumin daily
Magnesium and Your Heart
A closer look at: magnesium

• Aids in the function of every organ in the body

• Magnesium intake has declined severely
  – Refining whole grains causes a magnesium loss of up to 80%
  – Boiling vegetables can lead to a 50% magnesium loss
  – Most Americans do not eat large quantities (or any) of the foods high in magnesium
    • Seeds, nuts, whole grains, green leafy vegetables
Magnesium & Heart Disease

• In a recent study, every small increase (0.2 mmol/L) in magnesium intake was associated w/ 30% lower risk of cardiovascular disease

• High intakes of magnesium linked to 22% reduction in risk of ischemic heart disease
  – NOTE: research was linked to dietary magnesium rather than supplements
What can magnesium do for you?

• Helps reduce blood pressure
• Dialates coronary arteries increasing oxygen flow to the heart
  – Reduces risk of heart attack, stroke, and other heart disease
• Also use it for
  – Asthma
  – Diabetes
  – Restless leg syndrome
  – Migraine headaches
  – PMS

Magnesium glycinate chelate is well absorbed and easy on the stomach
Magnesium’s partner – P-5-P

• Pyridoxal-5-Phosphate or P5P – active form of vitamin B6
• Does not need to be converted by the liver
• Use in combination with magnesium for
  – Carpal tunnel syndrome
  – Fluid retention
  – PMS
  – Nerve pain
Dosage

- 100 – 400 mg of magnesium glycinate daily, with 30 – 120 mg P-5-P
- Take with food
Strokes and High Blood Pressure
What is a Stroke

- **Stroke**: blood supply to the **brain** is severely limited or cut off
  - With no blood to carry oxygen to them, brain cells will die
  - A **heart attack** is when blood supply to the **heart** is cut off
- Most strokes are caused by a clot in a vessel carrying blood to the brain
- Some strokes occur when an artery ruptures or blood vessel in the brain breaks
  - This is an aneurysm or brain hemorrhage
Stroke Statistics

• According to American Heart Association one in 25 people will have a stroke
• 25% of people will die within the first year of having their stroke
  – Stroke leaves the body weakened and more vulnerable to infections such as pneumonia
  – Depression is very common after a stroke
• Stroke is second only to Alzheimer’s disease as the leading cause of dementia
• By 2030 stroke incidence is expected to rise by 20%
Warning Signs of a Stroke

• Remember **FAST**
  – **Face**: ask the person to smile. Is one side of the mouth drooping down?
  – **Arms**: ask person to raise their arms away from their sides. Is one arm weak or lower than the other?
  – **Speech**: is the person’s speech slurred or confusing?
  – **Time**: note the time when you noticed the symptoms and get help quickly! There are medications which can be helpful but must be administered within hours of the stoke to be effective. **Do not delay** if you experience or observe symptoms of a stroke.
Soda Increases Risk

- 20 oz soda has 16 tsp of sugar
- Average American consumes 45 gallons of sugary drink each year
  - 39 lbs of sugar just from drinks
- Adults who drink one or more sodas a day have a 16% higher risk of having a stroke
  - Sugary sodas increase blood sugar and insulin which leads to insulin resistance and inflammation which leads to cardiovascular damage
- Did you know? Low-calorie soda is associated with higher rates of obesity and chronic disease
Reducing Risk

• Up to 80% of strokes are preventable - especially strokes associated with diabetes
• Even a small change can significantly reduce risk of stroke
• One of the best ways to reduce risk of stroke is to get blood pressure down
  – Reduce sodium (not “salt”) and increase potassium
  – Olive leaf and hibiscus
  – Curcumin
Sodium – did you know?

• Recommended daily sodium intake
  – 2300 mg for most adults
  – 1500 mg for those over the age of 50

• Typical daily intake
  – 3400 mg

• Processed foods have lots of sodium, especially
  – Canned soup (890 mg)
  – Frozen prepared meals (850-1000 mg per serving)
  – Processed meats (450-500 mg per serving)
Potassium: How Does it Work?

• Potassium helps keep sodium levels in check

• Too much sodium causes
  – Fluid retention
  – Which increases blood volume
  – Which increases blood pressure
  – Which puts strain on the kidneys, heart and blood vessels and makes them work harder
Clinical Research on Potassium

- In women with high blood pressure, those who consumed plenty of potassium cut their risk of a stroke by almost 40%
- Very similar findings were reported in an earlier study – women who increased potassium intake reduced risk of dying from a stroke by 40%
- Effect of potassium may be greatest in people who have problems reducing their sodium intake

Olive Leaf

• Mechanism of action
  – Antioxidant: protects the walls of blood vessels
  – Vasodilator: causes blood vessels to relax so that blood can pass through more easily

• Specialized, standardized extract clinically tested to reduce blood pressure
  – lowered systolic pressure by 11 points and diastolic pressure by 5 points
  – no significant adverse effects
  – standardized to 18% oleuropein
Hibiscus: How Does it Work?

• Mechanism of action
  – Contains high levels of anthocyanins
  – Natural ACE inhibitors (angiotensin-converting enzyme)
    • enzyme which causes blood vessels to contract and blood pressure to increase
• Clinically shown to reduce blood pressure
  – 7 point drop in systolic pressure in people with mild hypertension
  – 14 point drop in systolic pressure in people with severe hypertension
• Comparison test with the prescription mediation lisinopril
  – Better reduction than the drug, with no side effects
Curcumin: How Does it Work?

• Curcumin
  – Reduces vascular oxidative stress – one of the primary causes of high blood pressure
  – Reduces levels of systemic inflammation
    • Inflammatory cytokines
    • C-reactive protein
Summary

• To reduce risk of stroke
  – Make dietary changes – reduce intake of sodium filled processed foods and soda, and increase consumption of potassium and fresh foods
  – Get blood pressure down – olive leaf/hibiscus and curcumin
  – Look at other lifestyle changes you can make
    • Stop smoking
    • Lose weight
    • Get blood sugar levels down
    • Get moving – increase exercise