The information contained in this protocol should never be used as a substitute for clinical judgment.

The clinician and the patient need to develop an individual treatment plan that is tailored to the specific needs and circumstances of the patient.
# Surveillance and Treatment of Complications of Diabetes

## Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening For Diabetes and Prediabetes</td>
<td>1-2</td>
</tr>
<tr>
<td>Diabetes Surveillance Overview</td>
<td>3</td>
</tr>
<tr>
<td>Glycemic Control</td>
<td>4</td>
</tr>
<tr>
<td>Lipid Disorders</td>
<td></td>
</tr>
<tr>
<td>Lipid Disorders Protocol</td>
<td></td>
</tr>
<tr>
<td>Retinopathy</td>
<td>5</td>
</tr>
<tr>
<td>Peripheral Neuropathy</td>
<td>6</td>
</tr>
<tr>
<td>Autonomic Neuropathy</td>
<td>7</td>
</tr>
<tr>
<td>Biomechanics of the Feet</td>
<td>8</td>
</tr>
<tr>
<td>Peripheral Arterial Disease (PAD)</td>
<td>9</td>
</tr>
<tr>
<td>Ulceration of Lower Extremities</td>
<td>10</td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
</tr>
<tr>
<td>Nephropathy</td>
<td>11</td>
</tr>
<tr>
<td>Depression</td>
<td>12</td>
</tr>
<tr>
<td>Treatment of Complications</td>
<td>13</td>
</tr>
<tr>
<td>Initial Evaluation and Treatment of Diabetes</td>
<td>14-17</td>
</tr>
<tr>
<td>Glycemic Control</td>
<td>18-40</td>
</tr>
<tr>
<td>Lipid Disorders</td>
<td></td>
</tr>
<tr>
<td>Lipid Disorders Protocol</td>
<td></td>
</tr>
<tr>
<td>Retinopathy</td>
<td>41</td>
</tr>
<tr>
<td>Peripheral Neuropathy</td>
<td></td>
</tr>
<tr>
<td>Autonomic Neuropathy</td>
<td>42</td>
</tr>
<tr>
<td>Abnormal Biomechanics</td>
<td>43</td>
</tr>
<tr>
<td>Peripheral Arterial Disease (PAD)</td>
<td>44</td>
</tr>
<tr>
<td>Ulceration of Lower Extremities</td>
<td>45</td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
</tr>
<tr>
<td>Nephropathy</td>
<td>46-47</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
</tr>
<tr>
<td>Treatment of Complications</td>
<td></td>
</tr>
<tr>
<td>Initial Evaluation and Treatment of Diabetes</td>
<td></td>
</tr>
<tr>
<td>Glycemic Control</td>
<td></td>
</tr>
<tr>
<td>Lipid Disorders</td>
<td></td>
</tr>
<tr>
<td>Lipid Disorders Protocol</td>
<td></td>
</tr>
<tr>
<td>Retinopathy</td>
<td>41</td>
</tr>
<tr>
<td>Peripheral Neuropathy</td>
<td></td>
</tr>
<tr>
<td>Autonomic Neuropathy</td>
<td>42</td>
</tr>
<tr>
<td>Abnormal Biomechanics</td>
<td>43</td>
</tr>
<tr>
<td>Peripheral Arterial Disease (PAD)</td>
<td>44</td>
</tr>
<tr>
<td>Ulceration of Lower Extremities</td>
<td>45</td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
</tr>
<tr>
<td>Nephropathy</td>
<td>46-47</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
</tr>
</tbody>
</table>
Screening for Diabetes and Prediabetes

- Routine yearly screening on anyone overweight (BMI > 25) or with CV risks
- Consider screening every 3 years on adults > 45 years old with BMI < 25 and no CV risk factors

Incidental:

Screen with fasting glucose

FPG < 100

Rescreen in 1 year
• Education message on lifestyle change

Rescreen as indicated based on risk factors

OGTT
Or
Fasting blood sugar and A1c

Diabetes

Bring in for visit to discuss-initiate DM care and surveillance

Refer to nutritionist for DM self management initial visits

Refer to Page 15

If on routine blood work a random blood glucose is > 140

OGTT
Or
Fasting blood sugar and A1c

Incidental:

If on routine blood work a fasting blood glucose is > 100

OGTT
Or
Fasting blood sugar and A1c
New Diagnosis Pre diabetes
Follow Up

- Notify patient they have prediabetes and that it is a risk factor for developing diabetes in the future
- Give/send them info sheet on meal planning and exercise for people with prediabetes or diabetes
- Ensure they have follow up PV within at least 6 months so follow up info/reinforcement can be given

Offer referral to nutritionist for detailed counseling, but notify that this may or may not be a covered service with their insurance

Rescreen at least yearly for development of diabetes
Diabetes Surveillance

- Glycemic Control
- Lipid Disorders
- Retinopathy
- Peripheral Neuropathy
- Autonomic Neuropathy
- Biomechanics of the Feet
- Peripheral Vascular Disease
- Ulceration of Lower Extremity
- Hypertension
- Nephropathy
- Depression
Diabetes Surveillance

- Mandatory for patients using multiple injections or pump therapy
- For patients using less frequent insulin injections, non-insulin therapies or MNT alone SBMG should be recommended on an individual basis if deemed clinically appropriate to guide therapy or reinforce patient compliance
- Consider continuous glucose monitoring one time in conjunction in patients with refractory diabetes, concern about fluctuations in blood sugar, or questions of reliability of SBMG report as a tool to achieve good A1c

**Glycemic Control**

SMBG* & A1c/eAG†

Monitor Preprandial Glucose Daily

- 80 - 120
  - <80 or >120
    - Monitor Preprandial Glucose Daily

Monitor 2 hr. postprandial glucose daily

- ≤140
  - Monitor 2 hr postprandial glucose as necessary
- >140

Monitor Bedtime Glucose Daily

- 100 - 140
  - Monitor Bedtime Glucose Daily
- <100 or >140
  - Monitor HgbA1c Level twice a year

Monitor HgbA1c Level Every 3 Months

- At or below goal
  - Monitor HgbA1c/eAG Level twice a year
- Not at goal

Optimize Care
Refer to Glycemic Control Protocol - Page 14

*SMBG = Self monitoring of blood glucose
†eAG = Estimated average glucose
Diabetes Surveillance

Retinopathy

- Yearly eye exam by ophthalmologist/optometrist
- Instruct patient to report promptly any changes in vision to any member of diabetes management team
  - Immediate ophthalmologist/optometrist evaluation
  - Refer to Retinopathy Protocol Page 41
**Diabetes Surveillance**

- **Peripheral Neuropathy/Foot Care**
  - Monitor response to Semmes-Weinstein 5.07 monofilament and vibration or position sense every 12 months
  - **Normal**
    - Continue to educate regarding proper foot care
    - Brief inspection of feet at every visit
  - **Abnormal**
    - Refer to CIM Peripheral Neuropathy Protocol
    - Biomechanics eval/exam every 3 months
    - Consider repeat monofilament/vibration, position sense evaluation if clinical concern

- **Monitor for symptoms of peripheral neuropathy** (i.e., numbness, pain, muscle weakness or burning of feet)
  - **No**
    - Continue to monitor for symptoms every 3 months
  - **Symptoms**
    - Continue to educate regarding proper foot care
    - Refer to CIM Peripheral Neuropathy Protocol

- See biometrics of feet pathway (Every 3 months)
Diabetes Surveillance

Autonomic Neuropathy
Yearly and if clinical concern

Screen for Postural Hypotension by checking blood pressure supine and after 2 minutes of quiet standing

Systolic pressure falls at least 20 mm Hg or diastolic pressure falls at least 10 mm Hg

No

No Postural Hypotension

Repeat screen yearly

Yes

Postural Hypotension Present

Refer to Autonomic Neuropathy Protocol Page 42

Bladder Scan for PVR If symptoms

Normal (< 90ml)

Repeat bladder scan as clinically indicated

Abnormal (≥ 90ml)

Refer to Autonomic Neuropathy Protocol Page 42
Diabetes Surveillance

Biomechanics of the Feet

Evaluate feet every 3 months for evidence of abnormal biomechanics (i.e. bony deformities, limited joint mobility, callus formation, gait disorder, and/or amputation of lower extremity).

- **Normal**
  - Examine feet every 3 months
  - & Brief inspection at each visit

- **Abnormal**
  - Refer to Abnormal Biomechanics Protocol
    - Page 43
Diabetes Surveillance

Peripheral Arterial Disease (PAD)

Monitor peripheral pulses every 3 months

Pulse Present

Monitor every 3 months

Pulse Absent

Monitor for symptoms of claudication (pain in the calf that develops upon walking and is relieved within 10 minutes of rest)

No symptoms

Monitor every 3 months

Symptoms

Continue to educate regarding proper foot care

Refer to Peripheral Arterial Disease Protocol
Page 44

Continue to educate regarding proper foot care
Diabetes Surveillance

Ulceration of Lower Extremity

Monitor for lower extremity ulceration

- No ulcer: Continue to monitor
- Ulcer: Refer to Ulceration of Lower Extremity Protocol Page 45
Diabetes Surveillance

Nephropathy

Measure albumin/creatinine (A/C) ratio in first voided urine

- **A/C ratio < 30**
  - Measure A/C ratio yearly

- **A/C ratio ≥ 30**
  - Refer to Nephropathy Protocol Page 46
Diabetes Surveillance

**Depression**

All patients are screened with two questions:
1. Have you lost interest in things you used to enjoy?
2. Have you been feeling sad, blue or down in the dumps?

**Patient answers “no” to both questions**
- Repeat screen yearly or as medically indicated

**Patient answers “yes” to one or both questions**
- Refer to CIM Mental Health Protocol
Treatment of Complications

- Glycemic Control
- Lipid Disorders
- Retinopathy
- Peripheral Neuropathy
- Autonomic Neuropathy
- Abnormal Biomechanics
- Peripheral Vascular Disease
- Ulceration of Lower Extremity
- Hypertension
- Nephropathy
- Depression
Initial Evaluation and Treatment of Diabetes

Ketoacidosis (DKA) or
Hyperosmolar (HHS) or
Patient extremely catabolic or
Unable to hydrate themselves adequately

Lifestyle Interventions
Exercise (Refer to Page 15)
Diet (Refer to Page 15)
Consider aspirin 75-162 mg/day or Plavix 75 mg/day (if there is contraindication to aspirin) if age > 40 and/or cardiovascular risk factors
Referral to weight loss program if indicated (Refer to Pages 16-17). Consider referral for bariatric surgery if BMP > 35
Address smoking status/cessation at every visit
Confirm Pneumovax/flu/Hepatitis B vaccinations as indicated

- Yes
- No

Admit to hospital

DKA

- Yes
- No

Refer to page 39

Refer to page 40

Type 2 Diabetes

Fasting plasma glucose levels > 250 mg/dl or
Random glucose levels consistently > 300mg/dl or
HgA1c >10% or
Symptoms of polyuria, polydipsia and weight loss

- Yes
- No

Refer to Page 20

HgA1c at or below goal

Refer to Page 18

HgA1c above goal and ≤ 10%

Refer to Page 19

Long-acting insulin 0.2 units/kg at bedtime or morning with supplemental rapid-acting insulin per protocol

IV normal saline

Type 1 Diabetes

Refer to Page 35
Healthy weight loss, and keeping the weight off requires changes for LIFE! Once you stop working at it, the weight will come back.

**FIRST:** Stop all regular soda, sweetened teas and fruit juice. These are all basically liquid forms of sugar that have a lot of calories. This includes sports drinks, and any juices that say 100% natural or unsweetened. Alcoholic drinks should be avoided.

**SECOND:** Limit carbohydrates (see information on carbohydrates below), watch portion size of all food types.

**THIRD:** Exercise. Try to be active every day. Walking or any activity where you are moving without stopping will work. Start off slowly (10-15 min). Look to add 5 minutes to your time every week until you reach a goal of 45-60 minutes of exercise on most days of the week (yes, more than 30 min is needed if you want to have meaningful weight loss/maintenance). If you have a heart or lung problem or any concerns or problems with exercise talk to your medical provider more about exercise before you start.

**Carbohydrates** are foods that contain natural sugar or turn into sugar after we eat them. Because of this they are high in calories, and we often eat much larger amounts than we should.

<table>
<thead>
<tr>
<th>Examples of carbohydrate foods</th>
<th>Examples of foods without carbohydrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread, rice, pasta, cereal, tortilla chips</td>
<td>Proteins, meats</td>
</tr>
<tr>
<td>Milk, yogurt, ice cream</td>
<td>Non starchy veggies (broccoli, lettuce, green beans)</td>
</tr>
<tr>
<td>Starchy veggies (potatoes, corn, beans)</td>
<td>Fats, oils, butter</td>
</tr>
<tr>
<td>Candy, cakes, cookies, chocolate</td>
<td></td>
</tr>
</tbody>
</table>

How many carbohydrates can you eat? On average men should aim for about 60 grams of carbohydrate per meal, women should aim for about 45 grams of carbohydrate per meal. Examples of serving sizes

- 1/3 cup of rice (cooked) = 15 grams carbs
- ½ cup potatoes or corn = 15 grams carbs
- 1 cup milk = 12 gram carbs
- 1 medium apple = 15 grams carbs
- 1 slice of bread = 12 grams carbs
- ½ cup of pasta = 15 grams carbs

Limiting your serving size and balancing the foods you eat (carbs vs. non carbs) is the key to meeting your meal planning goals!

**Other strategies that may work for you:**

1) Get a pedometer and aim to get 10,000 steps a day.

2) Replace 1 meal 5 days a week with a shake or bar (slim fast etc.) – very good strategy if you eat out a lot, will save money too.

3) Stick to a meal and exercise plan 6 days a week, and have one day a week be your free/splurge day.

4) Do not buy or store sodas/snack foods at home. Your family/kids do not need them either.

**Resources:** Weight watchers is proven and has been the support group many people need. www.weightwatchers.com; Alli over the counter program and medication to block fat absorption is safe, and may be helpful. Check out www.choosemyplate.org for personalized information.
Note: The American Society of Bariatric Physicians recommendations for overweight and obesity evaluation and management guidelines were reviewed and this proposal is consistent with their recommendations.

Vision: A comprehensive program that includes individually considered diet, exercise, behavior modification with anti-obesity medications and consideration of surgical options where appropriate to achieve a goal of a loss of 5-10% of body weight over 6 months and develop a long term plan for avoidance of weight gain.

Details: Monthly visits specifically to focus on bariatric issues for 6 months. Medications, if prescribed would only be prescribed on the 2nd visit, and refills given at the bariatric visits after that (i.e. pt must commit to and follow up with monthly visits in order to get meds). After 6 months long term f/u would be every 3 months (If controlled meds being used) or every 6 months if non-controlled meds. Coordination of care with specified nutritionists, exercise specialists as well as CDE staff (diabetics) would be a main strategy of the program

30 min MD/40 min PA initial visit then 15/20 min subsequent visits would be time slots.

Outline:

VISIT 1
Focused History (see history/intake forms and screening tools)
- Readiness for change, med/surg hx, mental health hx, eating disorder screen, family/meal structure, fam hx as relates to obesity and cardiac risk factors, present physical activity level, food and drug intolerances and allergies, prior wt loss hx attempts, depression screening, sleep apnea screening.
- Consider referral to psych/counseling if concern eating disorder, thought disorder or severe mood disorder (Dr. Quinn)

Exam to include baseline weight and BMI, waist and hip measurements and ratio, general exam
Diagnostic studies (order or compile results if done in last 6 months)
- CMP, TSH, free T4, A1c, Lipid panel
- Consider EKG AND cardiac stress test if comorbidities, clinical concern, vigorous exercise planned or sympathomimetic drug rx planned
- Consider sleep study if clinically indicated
- Consider 24 hr urine cortisol or dexamethasone suppression test if clinically indicated

Establish goal setting in writing (5-10% loss of body weight over 6 months)
Provide a nutritional plan and recommend a food diary
Refer and set up initial appt with team nutritionist Nurse Lifestyle/Nutrition Counselor (at Dr. Baums office.)
Provide an initial exercise prescription
Refer and set up initial appt with exercise specialist (if no further cardiac testing needed)
- YMCA OR NE Health and Fitness OR individualized

Look to remove/change any meds that may be promoting weight gain
Discuss and assess surgical options and if appropriate initiate referral
Clarify and establish follow-up schedule.

Optional: every 2 week weigh in/nurse visit for patients who want that accountability.
VISIT 2
Interim history as it relates to weight loss and lifestyle change
- Review of diet and exercise diary info, motivational interviewing for behavioral progress, history regarding prior usage, readiness and issues related to anti-obesity medications.
Focused exam including vitals, weight/BMI and waist/hip measurements, CV exam
Review of any interim diagnostic studies ordered on 1st visit
Provide nutritional plan #2 and establish follow up plan with Lifestyle Rn Counselor
Provide exercise prescription #2 and establish follow up plan (w or w/o support)
Consider and if appropriate prescribe an anti-obesity medication and educate patient
  *informed consent document to include on/off label use as well as specific serious side effects and how pt should expect to receive refills (i.e. must show up for bariatric visits)
  *Rx info ed sheet / protocol available (patient/provider)
Document if surgical options being pursued and coordinate care
Reassess pts long term goals and objectives and clarify follow up schedule

Visits 3, 4 and 5
Interim history as it relates to weight loss and lifestyle change
  Review of diet and exercise information, motivational interviewing for behavioral progress.
  Medication eval for effect, tolerance issues etc.
Focused exam including vitals, weight/BMI, waist/hip measurements, CV exam
Consider reorder specific labs if baselines were abnormal (i.e. lipids, A1c)
Provide next step nutritional plan
Provide next step exercise prescription
Consider anti-obesity medication management if being used
  Maintain or adjust dose, consider add on therapy if appropriate and provide prescription
  **Evaluate for appropriate weight loss at least 3% body weight to justify continuation of meds.**
Document if surgical options being considered and coordinate care
Reassess goals and objectives and clarify follow up schedule

Visit 6
Interim history as it relates to weight loss and lifestyle change
  Review of diet and exercise information, motivational interviewing for behavioral progress.
  Medication eval for effect, tolerance issues etc.
Focused exam including vitals, weight/BMI, waist/hip measurements, CV exam
Consider reorder specific labs if baselines were abnormal (i.e. lipids, A1c)
Provide maintenance nutritional plan
Provide maintenance exercise prescription
Consider anti-obesity medication if to be used for maintenance
  Establish dose, and provide prescription
Reassess goals: maintenance goals are maintaining wt loss and avoiding the standard 1 kg/yr wt gain
Document if surgical options being considered and coordinate care.
Clarify follow up schedule
  Every 3 months if controlled medication being prescribed
  Every 6 months if uncontrolled medication being prescribed

Optional: more frequent nurse weigh-ins or follow up visits for patients who desire support and accountability
Glycemic Control

Does patient have active liver disease or cirrhosis of liver or serum creatinine ≥ 1.5 if male or ≥ 1.4 if female or calculated Crcl < 60 or active CHF?

Yes

Patient on Metformin

Yes

Patient intolerant of Metformin

No

Measure HgA1c level every 6 months

HgA1c at or below goal

Refer to Page 19

HgA1c above goal and ≤10%

Refer to Page 19

HgA1c >10%

Refer to Page 20

Refer to Metformin Protocol Page 21
Glycemic Control

HgA1c above goal and \(<10\%

Does patient have severe hepatic impairment?

Yes

Refer to insulin protocol Page 35

No

Does patient have a serum creatinine of \(\geq 1.5\) if male or \(\geq 1.4\) if female or calculated CrCl \(<60\) or intolerant to Metformin

No

Patient on Metformin

No

Patient intolerant to Metformin

No

Refer to Metformin Protocol Page 21

Yes

Refer to SGLT2 inhibitor Protocol Page 22

Yes

No
Glycemic Control

HgbA1C >10%

- Begin bedtime or morning long-acting insulin. Initiate with 10 units per day or 0.2 units/kg
  - Refer to insulin protocol Page 35
- Does patient have a serum creatinine of ≥ 1.5 if male or ≥ 1.4 if female, calculated GFR < 60, severe hepatic impairment, active CHF or history of intolerance of metformin
  - No
    - Refer to Metformin Protocol-Page 21
  - Yes
    - Refer to SGLT2 Inhibitor Protocol- Page 22
Glycemic Control

**Metformin Protocol**

- Begin Metformin 500 mg twice a day before breakfast and dinner
  - Check serum B12 level once a year on metformin therapy

**GI side effects occur?**

- Yes
  - Trial extended release metformin 1000 mg at bedtime and increase to 2000 mg if tolerates

- No
  - After 7 days, increase Metformin to 850 mg twice a day before breakfast and dinner

**GI side effects occur?**

- Yes
  - Decrease Metformin to 500 mg twice a day with breakfast and dinner. Try to advance dose at a later date
  - OR
  - Trial extended release metformin 1000 mg at bedtime, increase to 2000 mg if tolerates.

- No
  - Initial HgA1c at or below goal
    - Measure HgbA1c every 6 months
  - Initial HgA1c above goal
    - Measure HgbA1c every 3 months

- HgA1c at or below goal
  - Refer to Page 18

- HgA1c above goal and <10%
  - Refer to Page 19

- HgA1c >10%
  - Refer to Page 20

- HgA1c at or below goal
  - Refer to Page 19

- HgA1c above goal and ≤10%
  - Refer to Page 19

- HgA1c >10%
  - Refer to Page 19
**Glycemic Control**

**SGLT2 Inhibitor Protocol**

1. **Measure CMP**
   - **eGFR <45 ml/min/1.73m² or Severe hepatic impairment**
     - **Yes**
       - **Do Not Start/continue SGLT2 inhibitor**
       - Refer to Page 24
     - **No**
       - **eGFR <60 ml/min/1.73 m²**
         - **Yes**
           - Begin/continue canagliflozin (Invokana) 100mg/day taken before the first meal of the day
         - **No**
           - Does patient have active bladder cancer or a prior history of bladder cancer?
             - **Yes**
               - Refer to Page 23
             - **No**
               - Measure BMP one week after beginning canagliflozin

2. **Measure HgbA1c in 3 months**
   - **HgbA1c at or below goal**
     - **Yes**
       - Continue canagliflozin 100 mg/day
       - **No**
         - Measure HgbA1c in 3 months
           - **eGFR > 60**
             - Increase canagliflozin to 300mg/day
           - **eGFR <60**
             - Consider adding another drug to improve glycemic control
       - **Monitor renal status as clinically indicated**
         - **eGFR ≥ 60**
           - Continue present dose canagliflozin
         - **eGFR 45-59**
           - If patient on canagliflozin 300mg/day decrease to 100mg/day
         - **eGFR <45**
           - Stop canagliflozin

3. **Measure HgbA1c in 3 months**
   - **HgbA1c at or below goal**
     - **Yes**
       - Continue canagliflozin 300mg/day
     - **No**
       - Refer to Page ___
Glycemic Control
SGLT2 Inhibitor Protocol-continued

Begin canagliflozin (Invokana) 100mg/daily, taken before the first meal of the day or
dapagliflozin (Farxiga) 5mg/day, taken in the morning with or without food

Measure BMP one week after starting canagliflozin or dapagliflozin

- eGFR <45
  - Stop canagliflozin or dapagliflozin

- eGFR 45-59
  - If patient on dapagliflozin switch to canagliflozin 100mg/day

- eGFR > 60
  - Continue present dose canagliflozin or dapagliflozin

Measure HgbA1c in 3 months

- HgbA1c at or below goal
  - Yes
    - eGFR > 60
    - Increase canagliflozin to 300mg/day or increase dapagliflozin to 10mg/day
  - No
    - eGFR <60
    - Consider adding another drug to improve glycemic control

- HgbA1c above goal
  - Yes
    - Refer to Page 24

Monitor renal status as clinically indicated

- eGFR > 60
  - Continue present dose canagliflozin or dapagliflozin

- eGFR 45-59
  - If patient on canagliflozin 300mg/day decrease to 100mg/day
  - If patient on dapagliflozin stop it and begin canagliflozin 100mg/day

- eGFR <45
  - Stop canagliflozin or dapagliflozin

Continue canagliflozin 100mg/day or dapagliflozin 5mg/day

- eGFR <45
  - Stop canagliflozin or dapagliflozin

- eGFR 45-59
  - If patient on canagliflozin 300mg/day decrease to 100mg/day
  - If patient on dapagliflozin stop it and begin canagliflozin 100mg/day

- eGFR > 60
  - Increase canagliflozin to 300mg/day or increase dapagliflozin to 10mg/day

- eGFR <60
  - Consider adding another drug to improve glycemic control

HgbA1c at or below goal

- Yes
  - Refer to Page 24

- No
  - eGFR > 60
  - Increase canagliflozin to 300mg/day or increase dapagliflozin to 10mg/day

- eGFR <60
  - Consider adding another drug to improve glycemic control

HgbA1c at or below goal

- Yes
  - Refer to Page 24

- No
  - eGFR > 60
  - Increase canagliflozin to 300mg/day or increase dapagliflozin to 10mg/day

- eGFR <60
  - Consider adding another drug to improve glycemic control
Glycemic Control

History of Pancreatitis?

Yes

BMI >25?

No

Yes

Calculate Crcl <45?

No

Yes

Contraindication to liraglutide (Victoza) or cannot afford?

No

Yes

Contraindication to exenatide (Bydureon or Byetta) or liraglutide (Victoza) or cannot afford?

No

Yes

Refer to Victoza Protocol Page 27

No

Refer to page 28

Consider Sulfonylura
Refer to Page 29
Or
TDZ Refer to page 34
Or
Insulin refer to page 35

No

Refer to Page 28

Contraindication to DPP-4 inhibitor or cannot afford?

Yes

No

Refer to Bydureon Protocol Page 25
Or
Byetta Protocol Page 26
Or
Victoza Protocol Page 27
Glycemic Control

Bydureon Protocol

Concord Internal Medicine
Diabetes Clinic
704-403-1307

Name:_____________________________________________ Date:__________

Goals

<table>
<thead>
<tr>
<th>HbA1c</th>
<th>LDL</th>
<th>HDL</th>
<th>Triglycerides</th>
<th>B/P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goals</td>
<td>&lt;6.5%</td>
<td>&lt;100/70</td>
<td>&gt;40/&gt;50</td>
<td>&lt;150</td>
</tr>
<tr>
<td>Current Values</td>
<td></td>
<td></td>
<td></td>
<td>&lt;130/80</td>
</tr>
</tbody>
</table>

Medication Recommendations: Bydureon weekly injection

Patient information on Bydureon©:
- Incretin Mimetic,
- Byetta © is supplied as a one-time injection set.
- Each set contains one does to be administered once weekly.
- Throw away Bydureon after administered or if beyond expiration date on label.
- Inject your dose of Bydureon© under the skin of your stomach (abdomen).
- **Do not** take an extra dose to make up for a missed dose.
- Common Side Effects: nausea, vomiting, low blood sugar.
- Store Bydureon© sets in the original carton in the refrigerator (36°F to 46°F) protected from light. Do not freeze. Throw away if it has been frozen.
- Discard pens needles in an appropriate sharps container.

Pharmacist Recommendations:
- Check blood sugars at least 1-2 times per day.
- Call one weeks worth of blood sugars in to the diabetic clinic.

Bydureon © Hotline (24 hrs , 7 days a week): 1-800-868-1190

Measure HgbA1c 4 months after starting Bydureon

- HgbA1c at or below goal
  - Repeat HgbA1c in 6 months

- HgbA1c above goal
  - Refer to Insulin Protocol Page 35
Byetta Protocol

This medication is for diabetics to assist them in weight loss and control sugars

1. When patient starting Byetta it is your choice as to whether or not you choose to show the video first or if you just want to flip to the back of the patient instruction booklet and read from there.
2. Even if you show the video it is good to reinforce the back of the info sheet.
3. Byetta always starts at 5mcg sc twice daily within 1 hour of 2 largest meals= > 6 hours apart. Best results are if you take Byetta then wait 40 minutes to eat. (More weight loss if taken this way). After one month patient should be brought back for follow up. At this time they will be evaluated as to whether or not they will go up to 10mcg. (Usually if they are doing really well at 5mcg they will stay at that dose).
4. You must show how to use the Byetta pen.
   a. The first time any of these pens are used they must do an “air shot”. Once that is done, it will not need it for the remainder of the pen use.
   b. The pen will have enough doses for 1-month supply.
   c. Then the patient will pull off the cover cap.
   d. Screw the needle on the end.
   e. Follow the arrows on the pen to load it for injection. Be sure the patient knows that they must turn the pen until it completely locks into place before trying to turn it to the next arrow.
   f. Clean site (abdomen, thigh or arm –rotate sites) with alcohol.
   g. Pinch skin up and give injection.
   h. Remove needle and place in sharps container or laundry detergent bottle (something hard plastic).
5. If you miss a dose of Byetta and start eating, skip that dose and wait until the next dose is due. If you do not eat, do not take Byetta dose.
6. They should be aware the biggest side effect is nausea and usually lasts for a couple of hours after each injection for the 1st week only. It will subside. If we increase them to 10mcg at 1 month they may have nausea for another week.
7. After first use, Byetta can be kept at room temperature not to exceed 77°F (25°celsius)
8. If patient travels frequently, there is a free travel kit they can send off for. The card containing ordering info is in the Byetta start kit.
9. Byetta is only good for 30 days from opening even if you have missed doses and still have a lot left. Still throw out if it has been 30 days.
10. Do not store Byetta pen with needle attached as it may leak the medication out.

**This medication is FDA approved only for people not on insulin. Be aware Dr.’s Kelling and Eagan are trying it on some patients who are only on Lantus and also overweight, off label.

---

**Glycemic Control**

Measure HgbA1c 4 months after starting Byetta

- HgbA1c at or below goal
  - Repeat HgbA1c in 6 months

- HgbA1c above goal
  - Refer to Insulin Protocol Page 35
Glycemic Control

Victoza Protocol

Concord Internal Medicine
Diabetes Clinic
704-403-1307

Name: ___________________________________________ Date: ____________

Goals

<table>
<thead>
<tr>
<th>Goals</th>
<th>HbA1c</th>
<th>LDL</th>
<th>HDL</th>
<th>Triglycerides</th>
<th>B/P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Values</td>
<td>&lt;6.5%</td>
<td>&lt;100/70</td>
<td>&gt;40/&gt;50</td>
<td>&lt;150</td>
<td>&lt;130/80</td>
</tr>
</tbody>
</table>

Medication Recommendations: Victoza© 0.6mg injected into abdomen once daily x1 week, ten increase to Victoza© 1.2mg injected into abdomen once daily.

Patient information on Victoza©:
- Incretin Mimetic.
- Throw away Victoza© pen after 30 days of use or if beyond expiration date on the label.
- You must prime your Victoza© pen only once when starting a new pen.
- Inject your dose of Victoza© under the skin of your stomach (abdomen) once daily (any time of day regardless of meals).
- Rotate injection sites.
- Do not take an extra dose to make up for a missed dose.
- Common Side Effects: headache, nausea, diarrhea and low blood sugar. Nausea is the most common and will decrease over time in most patients.
- Store Victoza© pens in the original carton in the refrigerator (36°F to 46°F) protected from light. Do not freeze. Throw away if it has been frozen.
- Use each pen needle only once and Discard pens needles in an appropriate sharps container.
- Do not store Victoza© pen with needle attached (medication may leak out or air bubble may form in the cartridge).

Pharmacist Recommendations:
- Check blood sugars at least 1-2 times per day.
- Call 1 weeks worth of blood sugars in to the diabetic clinic after switching to Victoza© 1.2mg dose.
- Call the diabetes clinic sooner if you have any questions or concerns.

Measure HgbA1c 4 months after starting Bydureon

HgbA1c at or below goal
- Repeat HgbA1c in 6 months

HgbA1c above goal
- Refer to Insulin Protocol Page 35
Glycemic Control
DPP-4 Inhibitor Protocol

Crl ≤ 50me/mi
or
patient on a strong cytochrome P450 3A4/5 (CYP 3A 4/5) inhibitor*

Yes

Consider linagliptin (Tradjenta) 5mg po daily

No

Consider Saxagliptin (Onglyza) 5mg po daily
Or
linagliptin (Tradjenta) 5mg po daily

HgbA1c level
3 months

HgbA1c at or below goal
Repeat HgbA1c in 6 months

HgbA1c above goal
Consider sulfonylurea (Refer to Page 29)
Or
TDZ (Refer to Page 34)
Or
Insulin (refer to Page 35)

*ketoconazole, atazanavir, clarithromycin, indinavir, itraconazole, nefazodone, nelfinavir, ritonavir, saquinvir and telithromycin
Glycemic Control

Does patient have an allergy to sulfonylurea or is there a concern about risk of hypoglycemia?

No

Is patient >65 years old and/or have a CrCl <50ml/min

Yes

Refer to low dose sulfonylurea Protocol Page 30

No

Refer to standard dose sulfonylurea Protocol Page 32

Yes

History of congestive heart failure-especially Class III or IV? or History of bladder cancer? or Peripheral Edema? or Active Liver Disease? or Osteoporosis? or Macular edema? or concerned about taking pioglitazone?

No

Refer to pioglitazone (Actos) Protocol Page 34

Yes

Refer to Insulin Protocol Page 35
Glycemic Control

Sulfonylurea Protocol
(Low Dose)

Initiate Sulfonylurea

- Glyburide (DiaBeta, Micronase, generic)
  - 1.25mg qam
- Glyburide, micronized (Glynase, PresTabs, generic)
  - 0.75mg qam
- Glipizide (Glucotrol, generic)
  - 2.5mg qam
- Glipizide, extended release (Glucotrol XL)
  - 2.5mg qam
- Glimepiride (Amaryl)
  - 2.5mg qam

Reevaluate patient in 14 days

- Significant hypoglycemia
  - Stop/decrease med, consider IPRO CGM, reevaluate clinically

- Blood sugars under control, continue present dose sulfonylurea
  - Measure HgA1c level in 3 months
    - HgA1c at or below goal
      - Continue present dose sulfonylurea
    - HgA1c above goal
      - Reevaluate patient in 14 days

- Blood sugars not under control, increase dose sulfonylureas
  - Measure HgA1c level in 3 months
    - HgA1c at or below goal
      - Continue present dose sulfonylurea
    - HgA1c above goal
      - Reevaluate patient in 14 days

- Glimepiride (Amaryl)
  - 2.5mg qam
- Glipizide, extended release (Glucotrol XL)
  - 5mg qam
- Glipizide (Glucotrol, generic)
  - 5mg qam
- Glyburide, micronized (Glynase, PresTabs, generic)
  - 1.5mg qam

Reevaluate patient in 14 days

Refer to Page 31
Glycemic Control

**Sulfonylurea Protocol** – continued

**(Low Dose)**

- **Significant hypoglycemia**
  - Decrease dose of sulfonylurea by 50%
  - If blood sugar not under control, decrease dose by 50% and consider IPRO, continuous glucose monitoring, and clinically re-evaluate.
  - If blood sugar under control, continue present dose of sulfonylurea.
  - If blood sugar not under control, stop sulfonylurea.
  - If history of Congestive heart failure, especially class III or IV, or History of bladder cancer, or Peripheral Edema, or Active liver disease, or Osteoporosis, or Macular edema, or concerned about taking pioglitazone (Actos), refer to pioglitazone (Actos) Protocol Page 34.
  - If history of Congestive heart failure, especially class III or IV, or History of bladder cancer, or Peripheral Edema, or Active liver disease, or Osteoporosis, or Macular edema, or concerned about taking pioglitazone (Actos), refer to Insulin Protocol Page 35.

- **Blood sugar under control**
  - Continue present dose of sulfonylurea.
  - Measure HgA1c in 3 months.
  - If HgA1c at or below goal, repeat HgA1c in 6 months.
  - If HgA1c above goal, repeat HgA1c in 6 months.

- **Blood sugar not under control**
  - Stop sulfonylurea.

---

**Notes:**
- Refer to pioglitazone (Actos) Protocol Page 34
- Refer to Insulin Protocol Page 35
Glycemic Control

**Sulfonylurea Protocol**
(Standard Dose)

**Initiate Sulfonylurea**

- Glyburide (DiaBeta, Micronase, generic)
- Glyburide, micronized (Glynase, PresTabs, generic)
- Glipizide (Glucotrol, generic)
- Glipizide, extended release (Glucotrol XL)
- Glimepiride (Amaryl)

- **5mg qam**
- **3mg qam**
- **5mg qam**
- **5mg qam**
- **2mg qam**

**Reevaluate patient in 14 days**

- **Blood sugars under control, continue present dose**
  - Sulfonylurea

- **Blood sugars not under control, increase dose**
  - Sulfonylurea

- **Measure HgA1c level in 3 months**

- **Significant hypoglycemia**
  - See low dose sulfonylurea protocol Page 25

- **HgA1c at or below goal**
  - Continue present dose sulfonylurea

- **HgA1c above goal**
  - Repeat HgA1c in 6 months

- **Blood sugars not under control, increase dose**
  - Sulfonylurea

- **HgA1c at or below goal**
  - Continue present dose sulfonylurea

- **HgA1c above goal**
  - Repeat HgA1c in 6 months

- **Glyburide (DiaBeta, Micronase, generic)**
- **Glyburide, micronized (Glynase, PresTabs, generic)**
- **Glipizide (Glucotrol, generic)**
- **Glipizide, extended release (Glucotrol XL)**
- **Glimepiride (Amaryl)**

- **10mg qam**
- **6mg qam**
- **10mg qam**
- **10mg qam**
- **4mg qam**

**Reevaluate patient in 14 days**

Refer to Page 25

Refer to Page 33
Glycemic Control

Sulfonylurea Protocol – continued
(Standard Dose)

Significant hypoglycemia

Blood sugar under control

Blood sugar not under control

Decrease dose of sulfonylurea by 50%

Continue present dose of sulfonylurea

Measure HgA1c in 3 months.

HgA1c at or below goal

HgA1c above goal

Repeat HgA1c in 6 months

HISTORY OF CONGESTIVE HEART FAILURE
Especially class III or IV?

History of bladder cancer?

Peripheral Edema?

Active liver disease?

Osteoporosis?

Macular edema?

concerned about taking pioglitazone (Actos)?

No

Refer to pioglitazone (Actos) Protocol Page 34

Stop sulfonylurea

Yes

Refer to Insulin Protocol Page 35
Glycemic Control

Pioglitazone (Actos) Protocol

Initiate pioglitazone (Actos)

HgA1c 7-8
Begin 15 mg daily
Repeat HgA1c in 3 months and Check AST/ALT
HgA1c above goal
Patient on 15 mg daily
Increase to 30 mg daily
Repeat HgA1c in 3 months
HgA1c ≥ 7
Begin Insulin Refer to Page 35

HgA1c > 8-10
Begin 30 mg daily
Repeat HgA1c in 3 months and Check AST/ALT
HgA1c above goal
Patient on 30 mg daily

HgbA1c at or below goal
Continue present dose of pioglitazone
Repeat HgA1c in 6 months

HgA1c > 7
Consider stopping pioglitazone (Actos)
Glycemic Control

Insulin Protocol

Start with bedtime or morning long-acting insulin; can initiate with 10 units or 0.2 units per kg

Check fasting glucose (fingerstick) usually daily and change dose per protocol. - Refer to Page 36

If hypoglycemia occurs, or fasting glucose levels < 70 mg/dl, reduce bedtime dose by 4 units, or 10% whichever is greater

A1c above goal after 3 months

No

Yes

If fasting blood glucose in target range (70-120 mg/dl), check blood glucose pre-lunch, -dinner, and -bed; depending on blood glucose results, add second injection; can usually begin with 4 units and adjust by 2 units every 3 days until blood glucose in range

Continue regimen; check A1C every 6 months

Pre-lunch blood glucose out of range: add rapid-acting insulin at breakfast

Pre-dinner blood glucose out of range: add NPH insulin at breakfast or rapid acting at lunch

Pre-bed blood glucose out of range: add rapid-acting insulin at dinner

A1C above goal after 3 months

No

Yes

Recheck pre-meal blood glucose levels and if out of range, may need to add another injection; if A1C continues to be out of range, check 2-h postprandial levels and adjust preprandial rapid-acting insulin

Consider adding Symlin Refer to Pages 37 & 38

Consider switching patient to rapid acting insulin by V-Go if patient is taking between 40 and 120 units of insulin/24 hrs and diabetes not under control and/or patient does not want to take more than one shot of insulin/24 hrs
Glycemic Control

Patient instructions for beginning Lantus or Levemir

Start with _____ units at bedtime

Check morning fasting glucose daily

Increase the dose by 2 units every 3 days if blood sugars 121-140 mg/dl on the 3rd day.

Increase the dose by 4 units every 3 days if blood sugar > 141-160 mg/dl on the 3rd day.

Increase the dose by 6 units every 3 days if blood sugar > 161-180 mg/dl on the 3rd day.

Increase the dose by 8 units every 3 days if blood sugar > 181 mg/dl on the 3rd day.

If hypoglycemia occurs, or fasting glucose level < 70 mg/dl reduce dose by 4 units or 10%, whichever is greater
Glycemic Control

**Symlin Protocol**

1. Once provider gives order to start Symlin, pull out patient instruction sheet.
2. Fill out patient name and SSN.
3. Cut all scheduled insulin (Lantus, Leveimir, 70/30, 75/25, or schedule NovoLog TID) by half the dose currently on (i.e. if on Lantus 25 units, and NovoLog 10 units with each meal, they will now be on 12 units Lantus and 5 units of NovoLog with meals). (Since \( \frac{1}{2} \) of 25 fell at 12.5, round down to 12).
4. Dosing:
   - **Type I DM** – Sub Q: initial: 15 mcg immediately prior to meals; titrate in 15 mcg increments every 3 days (if no significant nausea occurs) to target dose of 30-60 mcg.
   - **Type II DM** – Sub Q: initial: 60 mcg immediately prior to meals; increase to 120 mcg prior to meals if no significant nausea occurs.
5. Patient will continue to use their sliding scale for elevated blood sugars.
6. They must take Symlin within 15 minutes before eating.
7. They should be instructed that it might cause nausea, but usually only for a few hours after taking each dose and usually goes away. If the nausea is too great they can back the dose up a step for an additional week then try to increase again.
8. They must continue to check blood sugars preferably TID when starting med to be sure they are at proper doses of all meds to be effective.
9. They also can call our office if they still have questions.
Glycemic Control

Symlin Protocol

Patient ___________________________  ID ___________________________

Date ________________________________

______________________ Insulin, decrease to ________ units _________

______________________ Insulin, decrease to ________ units _________

Continue _____________________ Insulin for sliding scale if blood sugar 240 and above.

Start Symlin BEFORE each meal as follows:

  __5__ units before each meal for 7 days, then increase to:
  __10__ units before each meal for 7 days, then increase to:
  __15__ units before each meal for 7 days, then increase to:
  __20__ units before each meal for 7 days

Continue on 20 units before each meal.

Do not mix in same syringe with any insulin.

Do not take after a meal, only BEFORE a meal and take only when eating at least 250 calories at a meal or 30 grams of carbohydrates.

May cause nausea. Do not stop Symlin, decrease to lower dose if needed.

Call our office with any questions at 704-403-1307.

Continue to check blood sugars.
Diabetic Ketoacidosis (DKA)

**Glycemic Control**

**IV Fluids**
- Determine hydration status
  - Severe hypovolemia
    - Administer 0.9% NaCl (1.0 L/hr)
  - Mild dehydration
    - Evaluate corrected serum Na⁺
    - Serum Na⁺ high
      - 0.45% NaCl (250-500 ml/hr) depending on hydration state
    - Serum Na⁺ normal
    - Serum Na⁺ low
      - 0.9% NaCl (250-500 ml/hr) depending on hydration state
  - Cardiogenic shock
    - Administer 0.9% NaCl (1.0 L/hr)

**Insulin**
- IV Route
  - Insulin: Regular 0.1 U/kg B. Wt, as IV bolus
  - 0.1 U/kg B. Wt, then 0.2 U/kg 1 hr later
  - 0.1 U/kg/hr IV continuous insulin infusion
- Uncomplicated DKA-SC route
  - Rapid-acting insulin: 0.3 U/kg B. Wt., then 0.2 U/kg 1 hr later
  - Rapid acting insulin: 0.2 U/kg SC every 2 hrs
- If serum glucose does not fall by 50-70 mg/dl in first hour, double IV or SC insulin bolus

**Potassium**
- Establish adequate renal function (urine output — 50 ml/hr)
  - pH < 6.9
    - Dilute NaHCO₃ (100 mmol) in 400 ml H₂O with 20 mEq KCL
    - Infuse for 2 hrs.
  - pH < 6.9-7.0
    - Dilute NaHCO₃ (50 mmol) in 200 ml H₂O with 10 mEq KCL
    - Infuse for 2 hrs.
  - pH > 7.0
    - Repeat NaHCO₃ administration every 2 hrs until pH > 7.0. Monitor serum K⁺.

**Assess need for Bicarbonate**
- pH < 6.9
- pH < 6.9-7.0
- pH > 7.0

**Check electrolytes, BUN, venous pH, creatinine and glucose every 2-4 hrs until stable. After resolution of DKA and when patient is able to eat, initiate SC multidose insulin regimen. Continue IV insulin infusion for 1-2 hr after SC insulin begun to ensure adequate plasma insulin levels. In insulin naïve patients, start at 0.5 U/kg to 0.8 U/kg body weight per day and adjust insulin as needed. Look for precipitation cause(s).**
Glycemic Control

**Hyperosmolar (HHS)**

**IV Fluids**
- Determine hydration status

**Insulin**
- 0.1 U/kg/hr IV continuous insulin infusion
  - If serum glucose does not fall by 40-50 mg/dl in first hour, double insulin dose
  - When serum glucose reaches 300 mg/dl, reduce regular insulin infusion to 0.05-0.1 U/kg/hr IV. Keep serum glucose between 250 and 300 mg/dl until plasma osmolality is < 315 mOsm/kg and patient is mentally alert.

**Potassium**
- Establish adequate renal function (urine output – 50 ml/hr)
  - K⁺ is < 3.3 mEq/L
    - Hold insulin and give 20-30 mEq/K⁺/hr until K⁺ > 3.3 mEq/L
  - K⁺ is ≥ 5.3 mEq/L
    - Do not q/K⁺ but check serum K⁺ every 2 hrs.
  - K⁺ = 3.3-5.3 mmEq/L
    - Give 20-30 mEq K⁺ in each liter of IV fluid to keep serum K⁺ between 4-5 mEq/L

Check electrolytes, BUN, venous pH, creatinine and glucose every 2-4 hrs until stable. After resolution of DKA and when patient is able to eat, initiate SC multidose insulin regimen. Continue IV insulin infusion for 1-2 hr after SC insulin begun to ensure adequate plasma insulin levels. In insulin naïve patients, start at 0.5 U/kg to 0.8 U/kg body weight per day and adjust insulin as needed. Look for precipitation cause(s).
Retinopathy Protocol

Annual dilated eye exam and complete vision exam by ophthalmologist/optometrist

Normal

Retinopathy

Follow up visits to Ophthalmologist/optometrist per his/her instruction

Instruct patient to report promptly any changes in vision to any member of diabetes management team

Immediate ophthalmologist/optometrist evaluation

Document findings of retinopathy in medical record

- Review and readdress all CV risk factors
- Consider referral for supervised cardiac stress test if not done in last 5 years
Autonomic Neuropathy Protocol

Clinical symptoms of concern for autonomic neuropathy

Postural Hypotension present

Refer to supervised graded exercise test

PVR > 90 ml

90 ml – 149 ml

Repeat bladder scan in 6 months or as clinically indicated

≥ 150 ml

Refer to urologist

Negative

Positive

- Positional education/isometric exercises
- Fall precaution education
- Consider referral to MD or neurology if problematic symptoms for consideration of medical therapies

Cardiology evaluation
Biomechanics of the Feet Protocol

Evaluate feet every 3 months for evidence of abnormal biomechanics (i.e. bony deformities, limited joint mobility, callus formation, gait disorder, and/or amputation of lower extremity).

**Normal**
- Examine feet every 3 months
- Education message about foot care to patient

**Abnormal**
- Refer to podiatry for full clinical evaluation and for therapeutic shoes if indicated
- Intensive foot care instructions
Peripheral Arterial Disease (PAD) Protocol

Monitor peripheral pulses and symptoms of claudication (pain in the calf that develops upon walking and is relieved within 10 minutes of rest)

- Pulses absent or symptoms of claudication or ulceration of lower extremity
  - Obtain ABI at rest if pulses absent or ABI at rest and with exertion if patient has symptoms of claudication
  - Ensure on ASA daily unless contraindicated
  - Optimized other CVD risk factors

  Abnormal
  - Asymptomatic
    - Refer for supervised graded cardiac exercise test and if OK recommend exercise/walking program as a therapeutic intervention
    - Refer to podiatry if clinical concern regarding biomechanics
  - Symptomatic foot/leg pain
    - Intensive foot care program
  - Normal
    - Continue to check peripheral pulses every 3 months & document results
    - Refer to podiatry for evaluation and therapeutic shoes

- Pulses present and no symptoms claudication
  - Continue to check peripheral pulses every 3 months & document results
  - Continue to educate regarding proper foot care

- Refer for supervised graded cardiac exercise test
  - If no evidence of significant ischemia recommended exercise/walking program
  - Refer for angiography/vascular evaluation

Continue to check peripheral pulses every 3 months & document results
Continue to educate regarding proper foot care
Ulceration of Lower Extremity Protocol

Ulceration of foot noted on physical examination

Physician to assess for evidence of infection, peripheral neuropathy, PAD using ABI (Refer to page 43) and foreign bodies by x-rays

ABI of leg showing no evidence of arterial insufficiency

No apparent infection (no sign of inflammation or drainage or evidence of osteomyelitis on plain radiography)

Refer to wound care center

Mild infection (superficial < 2cm of cellulitis, no serious ischemia, no bone or joint involvement); patient reliable with good home support

Refer to wound care center

ABI of leg showing evidence of arterial insufficiency

Limb-threatening infection (full thickness ulcer, > 2cm of cellulitis, with or without lymphangitis, bone or joint involvement and systemic toxicity, or serious ischemia); patient unable to care for self and has poor home support

Admission to hospital, strict non-weight bearing regimen, metabolic or glycemic control, appropriate cultures, empirical antimicrobial therapy, early surgical intervention (debridement, drainage and amputation as indicated), and meticulous wound care (later revascularization, amputation and revision as indicated)

Resolution of infection

Healing

Refer to vascular surgeon

Refer to podiatry for biomechanical evaluation and therapeutic footwear

Lifelong program of proper footwear, education and close follow-up for routine callous and nail care
Nephropathy Protocol

Measure albumin/creatinine (A/C) ratio in first voided urine yearly

A/C ratio ≥ 30

Emphasis on tighter control of DM and blood pressure
1. Closely monitor GBS
2. Follow HgBA1c
3. Follow blood pressures

Repeat A/C ratio Within 3 months

A/C ratio < 30

A/C ratio > 30

Refer to Page 47

A/C ratio > 30

Contraindication or intolerance to ACEI

Yes

Contraindication or intolerance to ARB

Yes

Refer to Page 47

No

Begin ACEI. Maximize dose as tolerated

A/C ratio < 30

Contraindication or intolerance to ARB

Yes

Refer to Page 47

No

Begin ARB. Maximize dose as tolerated

A/C ratio > 30

Repeat A/C ratio in 3 months

A/C ratio ≥ 30

A/C ratio < 30

Measure BMP one week after starting or increasing ACEI OR ARB or as clinically indicated

Repeat A/C ratio in 3 months

Refer to Page 47
Nephropathy Protocol - continued

A/C ratio persistently ≥ 30

Contraindication to calcium channel blocker CCB

No

Consider adding CCB
Maximize dose as tolerated

Repeat A1c ratio in 3 months

A1c Ratio < 30

A1c Ratio ≥ 30

Continue present medications
Repeat A1c ratio yearly

A1c Ratio < 30

A1c Ratio ≥ 30

Repeat A1c ratio 3 months

A1c Ratio < 30

A1c Ratio ≥ 30

Yes

Physician to re-evaluate patient