ADULT TRACK

WOMEN'S HEALTH AND DIABETES

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COI (IF ANY)

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OUTLINE

• Menstrual cycles
• Contraception
• Pregnancy
• Menopause
• Mental health in women with diabetes
MENSTRUAL CYCLES

- Women with T1D experience more menstrual irregularity than those without it.

- During menstruation, glucose can range (↑, ↓), depending on the woman.

- Insulin resistance changes over the cycle.

- Not every woman has a consistent pattern in glucose variability.

- The most common glucose pattern is luteal phase hyperglycemia.

MENSTRUAL CYCLES

- Hormone-based contraception can regulate and improve cycle variability and symptoms. Please consult with a medical professional.

- Closely monitor at least 3 menstrual cycles with frequent finger-sticks and/or CGM to identify if a consistent glucose pattern exists.

- Control glucose levels as much as possible.

- Adjust insulin doses to limit the glucose extremes.


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MENSTRUAL CYCLES

- Insulin pumps have some features that could be beneficial:
  - different basal patterns,

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>Basal Trend (rate/hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>04:00 - 06:00</td>
<td>8.00</td>
</tr>
<tr>
<td>06:00 - 08:00</td>
<td>8.00</td>
</tr>
<tr>
<td>08:00 - 10:00</td>
<td>8.00</td>
</tr>
<tr>
<td>10:00 - 12:00</td>
<td>6.00</td>
</tr>
<tr>
<td>12:00 - 14:00</td>
<td>6.00</td>
</tr>
</tbody>
</table>

- temporary basal setting

- active insulin on board.

- When on shots, think ahead to adjust insulin.

CONTRACEPTION

<table>
<thead>
<tr>
<th>Condition</th>
<th>WHO Medical Eligibility Criteria (2015)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 = Use method in any circumstance</td>
</tr>
<tr>
<td></td>
<td>2 = Generally use method</td>
</tr>
<tr>
<td></td>
<td>3 = Use of method not generally</td>
</tr>
<tr>
<td></td>
<td>recommended unless other</td>
</tr>
<tr>
<td></td>
<td>more appropriate methods</td>
</tr>
<tr>
<td></td>
<td>are not available or not</td>
</tr>
<tr>
<td></td>
<td>acceptable</td>
</tr>
<tr>
<td></td>
<td>4 = Method not to be used</td>
</tr>
</tbody>
</table>

- Nonvascular insulin-dependent diabetes
  - 2 (3/4 if DM duration >20 years)
  - 2
  - 2
  - 1
  - 2

- Neuropathy/retinopathy/neuropathy
  - 3/4
  - 2
  - 3
  - 2
  - 1
  - 2

- Other vascular disease
  - 3/4
  - 2
  - 3
  - 2
  - 1
  - 2

Abbreviations: CHC, combined hormonal contraception; DM, diabetic; NET-EN, medroxyprogesterone acetate/norethisterone enanthate; IUD, intrauterine device

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CONTRACEPTION

- Barrier methods of contraception in women with diabetes:
  - Diaphragms
  - Spermicide
  - Cervical caps
  - Natural family planning
  - Male and female condoms

- Female sterilization (1/200 failure rate)

- Male sterilization (1/2,000 failure rate)

- Emergency contraception: CHC, levonorgestrel, ulipristal acetate, copper IUD


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PREGNANCY

Khan Academy, Physiology of Pregnancy, 2018.

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PREGNANCY

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Target with Preexisting Diabetes</th>
<th>Target with Significant Hypoglycemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin A1C (A1C)</td>
<td>&lt;6%</td>
<td></td>
</tr>
<tr>
<td>Fasting glucose</td>
<td>60-99 mg/dL</td>
<td>&lt;105 mg/dL</td>
</tr>
<tr>
<td>Postprandial glucose</td>
<td>100-129 mg/dL</td>
<td>1-hour: &lt;155 mg/dL 2-hour: &lt;130 mg/dL</td>
</tr>
</tbody>
</table>

Aim to achieve these targets if they can be met without significant hypoglycemia.


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Pregnancy

- Increased insulin sensitivity in the first trimester.
  - Predispenses to nocturnal (fasting) hypoglycemia.
- Increased risk for euglycemic DKA.
- Increased insulin resistance 2nd and 3rd trimesters:
  - Hormonal influences: placental growth hormone (hPGH), human placental lactogen, progesterone, TNFα
  - Increased free fatty acid production.
  - Results in 2-3 fold ↑ in insulin doses.

- Increased insulin sensitivity after delivery.


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Pregnancy

- Hyperglycemia is associated with numerous adverse maternal and fetal outcomes.

Keely and Barbour, EndoText, 2014; Kitzmiller JL et al, Diabetes Care, 2008; Evers IM et al, Diabetes Care, 2002.

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PREGNANCY

- Obstetrician or maternal-fetal specialist (preferably high-risk providers)
- Diabetes provider (diabetologist or endocrinologist)
- Certified diabetes educator
- Registered dietician
- Nurse
- Social worker
- Ophthalmologist or optometrist
- Nephrologist (if needed)
- Cardiologist (if needed)
- Pediatrician or neonatologist

Medical Management of Type 1 Diabetes, 6th Ed. 2012.

MENOPAUSE

- Natural menopause is defined as the permanent cessation of menstrual periods for 12 months, without other obvious pathologic or physiologic causes.
- The menopausal transition can take years.
- Symptoms include hot flashes, sweating, sleep disturbance, depression, vaginal dryness, sexual dysfunction, changes in thinking (memory, concentration), and joint pain.
- Symptoms common to menopause and hypoglycemia: hot flashes, sweating.
- Symptoms common to menopause and diabetes complications: vaginal dryness and decreased libido.
- It is unclear if women with T1D and T2D undergo menopause earlier than women without diabetes (studies are inconsistent).

MENOPAUSE

• There are multiple options (prescribed and over-the-counter) available to treat symptoms.
• Hormone replacement therapy (HRT) includes estrogen. Progesterin is added (all the time or cyclically) to protect the uterine lining in women who still have a uterus.
  o Can only be used for a limited time period around menopause.
  o Consult a medical professional.
  o Can increase the risk for some serious medical conditions.
  o There aren’t enough studies in women with diabetes, so guidelines are sparse.
• Other vulnerable conditions during menopause: osteopenia/osteoporosis, cardiovascular disease, dementia, cancer, etc.


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With the right tools, education, and partnership with a provider, women with diabetes can often overcome challenges during menstrual cycles, pregnancy, and menopause.

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MENSTRUAL AND EMOTION

Typical PMS Symptoms
- Mood swings
- Depression/sadness
- Tension, anxiety
- Angry, irritable
- Fatigue, low energy
- Appetite changes

Diabetes and PMS
- Mood shifts create fluctuating blood sugars
- Fluctuating blood sugars cause increased anxiety, diabetes distress
- Feeling depressed can cause decrease in motivation to take care of diabetes
- Variable bg per cycle causes discouragement, feelings of failure
- Hunger, higher bg, more insulin, more insulin resistance, weight gain
- Too tired to deal with diabetes demands

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PREGNANCY AND DIABETES
- Joy and fear at the same time
- Self-doubt about ability to handle the challenging guidelines
- Overwhelmed that your blood sugars are affecting the life inside of you
- Feeling pressure to do everything as perfectly as possible
- Constant worry over having a healthy baby
- Diabetes specific distress greater than before
- Stress of managing diabetes and daily life
- Anxiety about increased medical expenses
STRATEGIES FOR MANAGING PREGNANCY CHALLENGES

• Pre-conception counseling/planning → sense of control, establishes expectations
• Share your thoughts and fears with your healthcare team: doctors, diabetes educator, social worker → relieve anxiety, gain support/validation
• Ask someone to come to appointments with you
• Ask for and accept help from family and friends
• For pre-existing depression, talk to your OB about medications you are on
• Consider diabetes technology → better sense of control over bg and ability to feel connected and to get frequent feedback from healthcare team

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MENOPAUSE

Typical emotional symptoms menopause: unusually moody, depressed, irritable, forgetful, body changes

With diabetes:

“"My blood sugars are increasingly variable, without any rhyme or reason" → self-blame, feeling of failure, diabetes distress

"I'm not myself, I'm anxious and depressed" → feeling out of control, less motivated for diabetes care, isolated

"I'm eating the same as I always have and I'm gaining weight" → discouraged, hopeless, angry

"These hot flashes make me feel like I have a low bg" → confused, out of control

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A WOMAN'S JOURNEY WITH DIABETES:

- Experience of diabetes in women is unique
- Hormonal issues are related to diabetes care
- Menopause is not a bad word!
- Emotional/mental health as important as physical health
- Mental health professionals can help
- No textbook/rules for diabetes and emotional health
- Talk, open up about your own experiences

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Thank You

Questions?

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MENSTRUAL CYCLES

Follicular phase:
- from bleeding to just before ovulation (~half the cycle, 14-21 days)
- some follicles inside the ovary grow

Ovulation:
- occurs around the mid-point of the cycle
- one follicle or "egg" is released

Luteal phase:
- the last 14 days of the cycle
- the corpus luteum, remains of released follicle within the ovary, decays and the lining of the uterus thickens


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