**What is Cancer?**

- An abnormal growth of cells
  - Your immune system usually recognizes abnormalities in cells and repairs them or forces them to die (apoptosis)
  - If abnormal cell growth goes undetected, cell overgrowth can occur
    - Benign tumor
      - Confined growth
    - Malignant tumor
      - Cells may remain in one area
      - Have the ability to invade neighboring tissue, enter blood vessels or travel to different sites in the body.
**CELL GROWTH: NORMAL VS. CANCER**

**Loss of Normal Growth Control**

- **Normal cell division**
  - Normal growth control
  - Cells divide and grow in a balanced way
- **Cancer cell division**
  - Loss of normal growth control
  - Cells divide uncontrollably

**How does Chemo Work?**

- Abnormal cells go through the life cycle more rapidly than normal cells.
- Chemotherapy is designed to interrupt the life cycle of cells.
  - Stops the cancer’s ability to grow and spread.
  - Can affect fast growing healthy cells as well.
    - Hair (scalp, beard, underarms, etc.)
    - GI system (mouth, stomach, and bowel)
    - Bone marrow (red blood cells, platelets, white blood cells)
WHY CHEMO AND NOT JUST SURGERY OR RADIATION?

**Local Therapy**
- Surgery
- Radiation
- Treats local cancer cells by either removing them or treating with high-energy x-rays or other particles

**Systemic Therapy**
- Chemotherapy
- Immunotherapy
- Anti-hormonal therapies
- Treats not only local cancer cells but also cells that may have escaped to distant sites in the body

If appropriate, patients are treated in multiple ways to improve their outcomes.

AM I GOING TO GET SICK?
- Depends on your specific chemotherapy drugs
- Common side effects you may or may not get:
  - Hair loss
  - Nausea
  - Heartburn
  - Mouth sores
  - Constipation
  - Diarrhea
  - Dehydration
  - Fatigue
  - Peripheral neuropathy
  - Chemo brain

Our goal is to prevent and/or treat side effects before they have an impact on quality of life.
WILL I LOSE MY HAIR?

- Depends on your chemotherapy
  - Complete hair loss or only thinning
  - Facial hair, eyebrows, eyelashes may be affected
- Usually starts 2-3 weeks after first treatment
  - Dry/itchy scalp: mild shampoo
  - Red/tender scalp: ALRA lotion
- Skin can sunburn more easily
  - Protect scalp; head covering, sunscreen, etc.
- Please do not tattoo eyebrows or other parts during treatment

WHEN WILL MY HAIR COME BACK?

- Recovery starts about 4-6 weeks after last treatment
  - Hair may come back a different tint or texture
  - Use light, non-toxic coloring rinse for first few months
- Keep head warm and dry with scarf, hat, or wig
- American Cancer Society provides free wigs through local hospitals
  - See headwear resources handout
Am I going to be nauseated?

- Nausea is due to chemotherapy stimulating nausea receptors in the brain and GI tract
  - Medications are given to target the different pathways
    - IV anti-nausea medications are given the day of chemo
    - At home anti-nausea medications are used as needed
      - Please take as directed by your provider
  - Nausea is better controlled when it starts vs. later on

How else can I treat nausea?

- Ginger has been shown to help
  - Ginger ale, ginger tabs, chews, etc.
  - Please discuss with your provider
- Small frequent meals
  - An empty stomach makes nausea worse
- Avoid strong food and drink smells
- Avoid constipation

When do I call my oncologist?

- Persistent nausea
- Inability to keep food/fluids down

See NCI Eating Hints page 27-29 for additional suggestions
HOW DO I AVOID CONSTIPATION?

- Medications can slow down the gut
  - Some chemo agents
  - Pain medications
  - Anti-nausea medications
- Over the counter stools softeners are recommended
  - Senokot-S
  - Colace
- Activity and hydration are crucial

WHEN DO I CALL MY ONCOLOGIST?

- No stool for 2 days
- Only hard small stools for 2 days

See NCI Eating Hints page 17-19 for additional suggestions

WHAT ABOUT DIARRHEA?

- Characterized as loose, watery stools
- Can be caused by some chemotherapy agents, antibiotics, or cancer location
- Diarrhea leads to dehydration and loss of electrolytes
- Over the counter medications are available - please discuss with your provider

WHEN DO I CALL MY ONCOLOGIST?

- More than 2-3 diarrhea episodes in the same day

See NCI Eating Hints page 20-22 for additional suggestions
HOW DO I AVOID DEHYDRATION?

- Control nausea and diarrhea
- Recommendation is for 8-10 (8oz) glasses of fluid/day
  - ½ should be water
  - Other servings could be flavored water, broth, pedia-lyte, milk, etc.
- Caffeinated beverages should be limited to 1-2 cups/day
  - Replace 2 non-caffeinated beverages for every 1 caffeinated

WHEN DO I CALL MY ONCOLOGIST?

- Lightheadedness
- Dizziness
- Urinary changes

WHAT CAN I EAT DURING CHEMOTHERAPY?

- If you’re feeling well, we recommend a well balanced diet
  - Choosemyplate.gov
  - NCI Eating Hints

- REPORT ALL HERBAL AND NUTRITIONAL SUPPLEMENTS TO YOUR ONCOLOGIST
  - HIGH DOSE VITAMINS may interfere with the effectiveness of your chemotherapy and need approval from your oncologist
WHY IS MY TASTE ALTERED?

- Chemo can affect the lining of the mouth leading to mouth sores, pain, dryness, and taste changes
  - Sores will present as blisters or ulcerations
- Throat symptoms can include soreness, tightness, and/or spasms

WHEN DO I CALL MY ONCOLOGIST?

- Mouth sores are affecting your ability to eat or drink
- Emergent dental work is needed

See NCI Eating Hints book for additional suggestions

HOW DO I TAKE CARE OF MY MOUTH?

- Oral hygiene to prevent issues
  - Gently brush twice a day and floss regularly
  - Gentle toothpaste
    - Avoid whiteners, tartar control or sodium laurel sulfate
  - Use mouthwash at least twice daily
    - Avoid anything containing alcohol
- Salt water and baking soda rinse for mouth sores
  - ¼ tsp baking soda, 1/8 tsp salt, 1 cup warm water
- Avoid anything that dries out or irritates the mouth
  - Soda, fruit juice, alcohol, spicy or acidic foods
WHY IS MY BLOOD DRAWN ALL THE TIME?

- Oncology team monitors 2 panels closely:
  - CMP: kidney and liver function, electrolyte levels
  - CBC: red blood cells, platelets, and white blood cells
- Make sure everything is at a safe level to proceed with chemo
- Labs may be weekly or monthly depending on your chemotherapy course

RED BLOOD CELLS

- Carry oxygen throughout the body
- Blood transfusion can be done if needed based on symptoms and oncologist’s discretion

<table>
<thead>
<tr>
<th>Normal Range</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin</td>
<td>14-18</td>
<td>12-16</td>
</tr>
<tr>
<td>(g/dL)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hematocrit</td>
<td>42-52</td>
<td>37-18</td>
</tr>
<tr>
<td>(%)</td>
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</tbody>
</table>

WHEN DO I CALL MY ONCOLOGIST?

- Shortness of breath/difficulty breathing
- Dizziness
- Lightheadedness
- Very weak or tired
- Racing heartbeat
**PLATELETS**

- Help the blood clotting process
- Protect yourself: use electric shaver, soft toothbrush, blow your nose gently

<table>
<thead>
<tr>
<th>Normal Range</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platelets</td>
<td>150-350</td>
<td>150-350</td>
</tr>
</tbody>
</table>

**WHEN DO I CALL MY ONCOLOGIST?**

- Unusual bleeding or bruising
- Tiny, red pinpoint spots on your skin
- Frequent nosebleeds
- Blood in your urine or stools

**WHITE BLOOD CELLS**

- Protect us against infection
- Chemo can damage the bone marrow causing a decreased production of WBCs
- This “count” drops to its low point about 7-10 days after chemo and then starts to recover

<table>
<thead>
<tr>
<th>Normal Range</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC (White Blood Cells)</td>
<td>4.5-11</td>
<td>4.3-11</td>
</tr>
<tr>
<td>ANC (Absolute Neutrophil Count)</td>
<td>1.5-8.0</td>
<td></td>
</tr>
</tbody>
</table>
**How do I avoid infection?**

- May receive a medication to prevent WBC from getting too low for too long
  - Can cause bone aches, pains because it’s stimulating the bone marrow to produce more WBCs
- Hand Hygiene
- Avoid people who are ill
- Wash raw fruits and vegetables well

**When do I call my oncologist?**

- Fever over 100.4
- Chills or sweats
- Cough, sore throat, cold/flu symptoms
- White coating in your mouth
- Urinary changes
- Red or draining wound

**What am I going to feel like after chemo?**

- Day 1: Generally you feel good
- Day 2: You may start winding down
- Day 3: This is often the “down day” when you will want to stay in bed
  - Get out of bed and at least into a recliner or chair.
  - Every 1-2 hours get up and move for at least 15 to 20 minutes, then return to rest. (Set an alarm if needed)
  - Eat more food, drink more fluids!
  - The more you move, eat, drink and rest, the quicker you will recover from your “down day”.
WILL I BE TIRED?

- Fatigue #1 side effect from treatment
  - Multiple factors contribute: chemotherapy, hormone therapy, radiation, uncontrolled symptoms, anemia, nutritional deficiencies, depression, stress
- Cumulative effect
- Data shows that moderate exercise is a great way to combat acute fatigue and prevent chronic fatigue
  - We recommend you stay active (Walking, Yoga, Tai-Chi, swimming, etc.)
    - 4 to 5 times per week
    - Up to 1 hour each day
    - Can be 15-20 minutes at a time

WHAT ABOUT “CHEMO BRAIN”?

- Cause is not fully understood
- Often described as “Fuzzy headedness”
  - Difficulty word finding
  - Decreased ability to multi-task
- Duration
  - Last weeks to months after treatment completed
- Prevention/Minimization:
  - Keep the mind active by doing puzzles such as word games, Sudoku, etc.
WILL I GET NEUROPATHY?

- Depends on your specific chemotherapy
  - Some can cause dysfunction of the nerves which results in numbness/tingling and difficult with dexterity or fine motor skills
- Neuropathy can be cumulative and usually improves once chemotherapy is complete
  - Small percentage of patients will experience worse or persistent neuropathy

WHEN DO I CALL MY ONCOLOGIST?

- Neuropathy is worsening or affecting quality of life

WHAT ABOUT FERTILITY?

<table>
<thead>
<tr>
<th>Risks for Men and Women</th>
<th>Preservation Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemotherapy</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>Sperm banking</td>
</tr>
<tr>
<td>Radiation</td>
<td>Female</td>
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<tr>
<td></td>
<td>Embryo freezing</td>
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<tr>
<td>Surgery</td>
<td>Ovarian suppression</td>
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<tr>
<td>Other</td>
<td>Radiation shielding</td>
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<tr>
<td>Age</td>
<td></td>
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<tr>
<td>Pre-treatment fertility status</td>
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<tr>
<td>Cancer type</td>
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</tbody>
</table>

Please discuss treatment impact and preservation options with your provider
WHEN DO I CALL MY PROVIDER?

- Shaking chills or fever over 100.4
- Productive cough
- Poorly controlled diarrhea, constipation, nausea, or vomiting
- Poorly controlled neuropathy or pain
- Swelling, redness, or pain of an arm or leg
- Shortness of breath / chest pain
- Dizziness or lightheadedness
- Any urinary changes
- Mouth sores effecting your ability to eat or drink
- Abnormal bleeding or unexplained bruising

HOW DO I CONTACT MY PROVIDER?

- Office hours Monday-Friday (8am-5pm)
  - Call the main office number
  - Provide your name, physician’s name, reason for your call and concerning symptoms
  - Most needs can be handled over the phone
- Most calls will be transferred to our voicemail
  - Please leave name, DOB, physician’s name, reason for your call, and best number to reach to you
- Triage voicemail messages left before 4:30 pm will be returned by the close of business the same day. Voicemail messages left after 4:30 pm may not be returned until the next business day.
WHAT ABOUT AFTER HOURS?
- You will call the main office number
- You will reach the answering service
  - The service will contact the physician on-call who will return your call.

IN AN EMERGENCY:
Call 911 or go directly to the emergency department for new chest pain, new or sudden onset shortness of breath, uncontrolled bleeding, sudden loss of ability to speak, sudden loss of movement in one side of the face, arm, or leg.

COMMON QUESTIONS
- Can I work?
  - Most likely, yes
  - If unable, staff can assist with FMLA, etc.
  - www.cancerandcareers.org
- Can I travel?
  - Depends; discuss with your provider
- Can I be with my family?
  - Of course! Use common sense to avoid infection
- What about intimacy?
  - DON’T BE AFRAID TO TALK TO YOUR PROVIDER!
  - Use barrier method for 48 hours after chemo
- Can I drink alcohol?
  - In moderation;
  - Max 1 serving and not every day