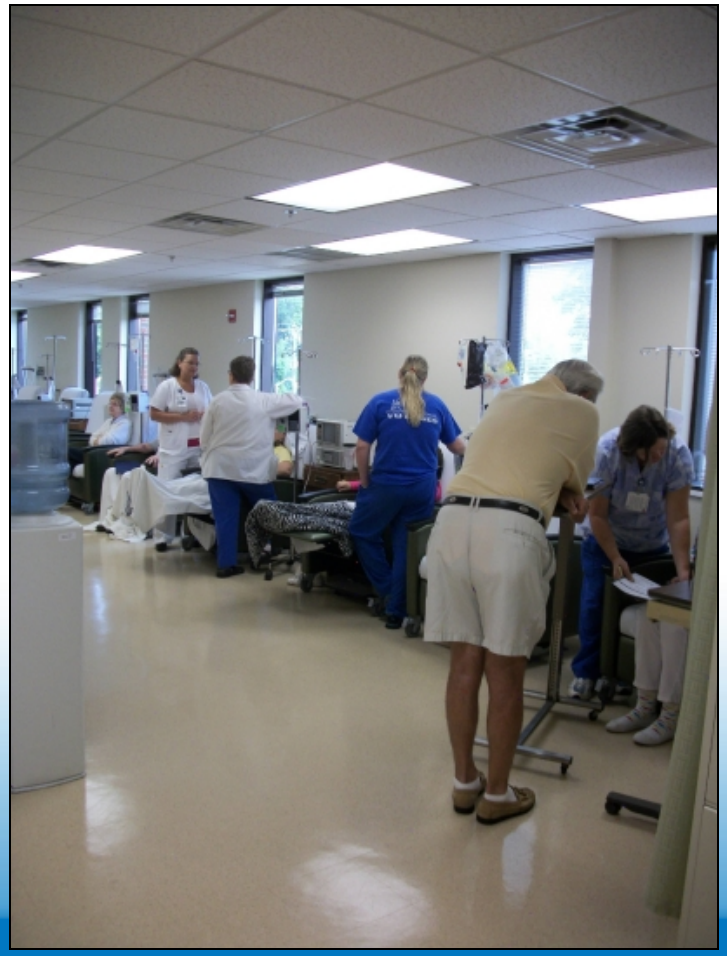
Baptist Hospital - Outpatient Infusion Centers

Supervising Physician Education



BAPTIST HEALTH CARE

Description of Services

Currently, Baptist Hospital has two locations of service:

Baptist Medical Towers, 2nd floor Suite 230

Ciano Cancer Center, Gulf Breeze Hospital

Hours of service for Baptist Medical Towers are:

Monday – Friday: 7:30 AM– 5:00 PM

Saturday and Sunday: 7:30 AM – 1:00 PM

Hours for Ciano Caner Center-Gulf Breeze Hospital are:

Monday – Thursday: 7:30 – 3:30

Description of Services

The infusion center is staffed as follows:

Clinical Nurse Manager – Maria Henderson

- Responsible for daily operations of the BH and GB Infusion Centers and patient coordination

Registered Nurses

- Verification of orders and communications with the ordering physician
- Patient assessment, care and medication administration
- Chemotherapy Certified
- Typically, there are 5-6 RN's at the BH campus during the week and 2-3 RN's at the GB campus.

Patient Care Techs

- Assist the RN's with patient care
- Transports lab work and medications

Unit Coordinator

- Responsible for patient registration and chart documentation.

BAPTIST HEALTH CARE

Description of Services

Infusion orders are received from various physicians who have privileges with Baptist Hospital.

Oncology	**56.87%**
PCP/IM	**8.82%**
Other	**5.97%**
Gastrointestinal	**5.70%**
Rheumatology	**4.93%**
Urology	**3.98%**
Allergy & Immunology	**3.39%**
Infectious Disease	**2.80%**
Pulmonary	**2.80%**
cardiology	**2.49%**
Nephrology	**2.26%**

In the event that the patient receiving treatment in the infusion center shows any type of distress or adverse reaction, the medication is stopped and the ordering physician is called for further treatment orders.

Source: Horizon – FY13

Description of Services

The following services are offered at the Outpatient Infusion Centers:

- Chemotherapy/Biotherapy
- Antibiotic therapy
- Hydration therapy
- Blood product administration
- Other IV targeted therapies
- IM/Sub Q injections
- Care of Venous access devices
- Therapeutic bladder installations

Treatment Protocol

Supervision Protocol for:
Outpatient Infusion Center
Baptist Hospital - Location: Suite 230
(An in hospital department)

Treatment Hours:
Monday – Friday: 7:00AM – 5:30PM
Saturday – Sunday: 7:00AM – noon
(or until treatment is completed)

In the event of a treatment concern, the RN will:

1. Stop the infusion and **call the ordering physician for new orders**
2. ***If*** more assistance is needed, notify physician in the adjacent suite for assistance
3. ***If*** additional assistance is needed, notify Supervising Physician
4. ***For emergencies***, call 333 for a code response by the Emergency Room Physicians.

Supervision Protocol for:
Outpatient Infusion Center
Gulf Breeze Ciano Cancer Center
(A "911" facility)

Treatment Hours:
Monday –Thursday: 8:00AM – 3:30PM

In the event of a treatment concern, the RN will:

1. Stop the infusion and **call the ordering physician for new orders**
2. ***If*** more assistance is needed, notify physician in the suite for assistance
3. ***If*** additional assistance is needed, notify Supervising Physician
4. ***For emergencies***, call 911 for a code response

BAPTIST HEALTH CARE

Chemotherapy

Roles of chemotherapy in cancer care:

- Cure.
- Control: to extend the length and quality of life when hope of cure is not realistic.
- Palliation: to improve comfort when neither cure or control is possible, to provide relief of tumor-related symptoms.

Chemotherapy

- Cancers with a small number of cells in the tumor are more responsive to chemotherapy.
- The larger the tumor, the slower the growth rate, the slower the cell division rate and less responsive to chemotherapy treatment.
- Chemotherapy can be given as a single agent, or in combination with two or more agents to produce synergistic results against tumor cells.
- Combining agents with actions in different phases of the cell cycle increase the number of cells exposed to cytotoxic effects during a given treatment.
- Combining agents may decrease the incidence and severity of side effects in therapy, and drug resistance.

Chemotherapy

- Chemotherapy is a systemic treatment because the drugs are distributed throughout the entire body via the blood stream.
- The purpose of chemotherapy is to induce apoptosis**-***cell death*.
- The amount of chemotherapy that can be given is limited by the toxic effects on normal tissues.
- It can be the only treatment given or, given in combination with other treatments. **When it is given prior to other treatment modalities such as surgery and/or radiation, it is called *neoadjuvant therapy.***
- ***Adjuvant therapy* is done after surgery to prevent the growth and destroy any stray cancer cells that remain in the body.**

Chemotherapy

- Chemotherapy is the treatment of choice for malignancies of the hematopoietic system and as systemic therapy for solid tumors, including those that have metastasized regionally or distally.

- Antineoplastic agents use to treat cancer is based on concepts of cell killing in specific cell cycles.

- The higher the percentage of cells activity dividing, the higher the cell kill with exposure to cell-cycle specific drugs.

Chemotherapy

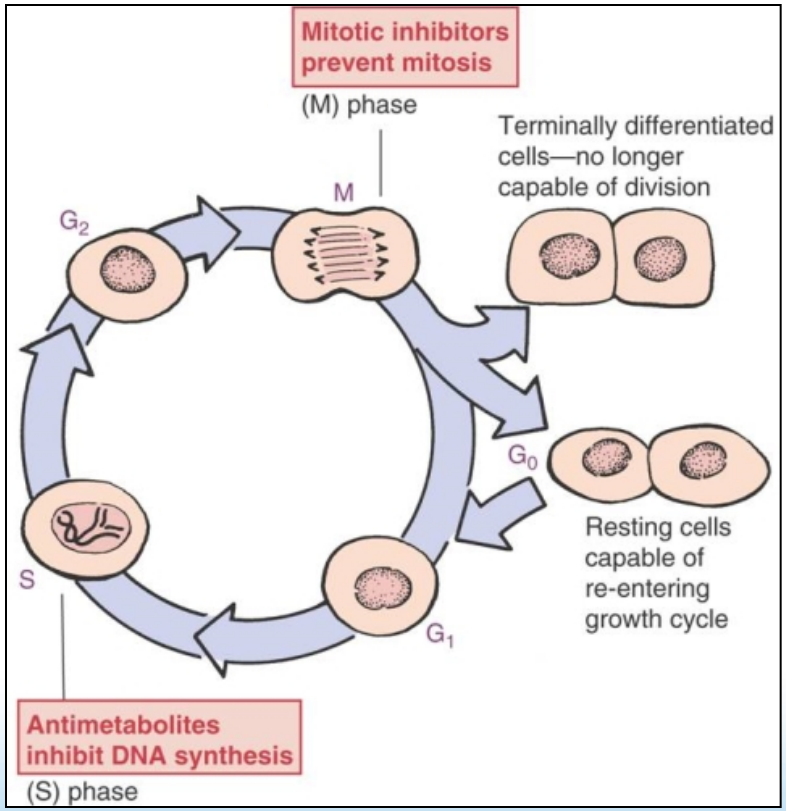
Chemotherapy is either cell cycle specific or non cell cycle specific.

Cell cycle specific agents:

- Cytoxic effects during phases where cell is actively dividing.
- Agents are not active against cells when they are in a resting phase.
- Agents are schedule dependent and most effective if given in divided doses or continuous infusions.

Non cell cycle specific agents:

- Cytoxic effects during all phases of the cell cycle.
- Agents are dose dependent and most effective when given by a bolus.
- The cell effect is directly proportional to the amount of drug given.



Types of Chemotherapy and Biotherapy

Chemotherapy drugs are cytoxic agents that are classified according to their pharmacologic action on cellular activities - which specific phases of the cell cycle the drug affects.

- Alkylating Agents
- Antimetabolites
- Antitumor Antibiotics
- Plant Alkaloids
- Nitrosoureas

Biotherapy drugs are derived from biologic sources or agents that affect biologic responses. They may enhance the immune system, modifying the actions of surrounding cells, or changing cells to behave like normal cells.

- Targeted Therapies
- Stimulating Factors
- Immunotherapy
- Hormones

Chemotherapy - Classifications of antineoplastic agents

1. Alkylating Agents – interferes with DNA replication

- Nitrogen mustards: Melphalan, Cyclophosphamide, Ifosfamide
- Nitrosoureas
- Alkylsulfonates
- Ethyleneimines
- Triazene
- Methyl Hydrazines
- Platinum Coordination complexes: Cisplatin, Carboplatin, Oxaliplatin

2. Antimetabolites – inhibits protien synthesis and DNA synthesis

- Folate Antagonists: Methotrexate
- Purine antagonists
- Pyrimidine antagonists: 5-Fluorouracil, Cytarabibe

3. Natural Products – interferes with RNA and DNA synthesis

a. Microorganism Products

- Antibiotics: Doxorubicin, Bleomycin
- Enzymes: L-Asparaginase

b. Plant Products

- Vinca Alkaloids: Vincristine, Vinblastine
- Taxanes: Paclitaxel, Docetaxel
- Epipodophyllotoxins: Etoposide
- Camptothecins: Irinotecan

4. Miscellaneous

- Hydroxyurea
- Imatinib Mesylate
- Rituximab
- Epirubicin
- Bortezomib
- Zoledronic Acid

- Geftinib
- Leucovorin
- Pamidronate
- Gemcitabine

Chemotherapy - Classifications of antineoplastic agents

4. Hormones and Antagonists – Alters internal/extracellular environment

- Corticosteroids: Prednisone, Dexamethasone
- Estrogens: Ethinyloestradiol
- Antiestrogens: Tamoxifen
- Progesteron derivative: Megestrol Acetate
- Androgen: Testosterone propionate
- Antiandrogen: Flutamide , Bicalutamide
- Aromatase inhibitor: Letrozole , Anastrazole
- 5-alpha reductase inhibitor: Finasteride
- GnRH Analogue: Leuprolide, Buserelin
- Growth Hormone, glucagon and insulin inhibitor: Octreotide

Other: Chemoprotective agents

Agents designed to protect against specific toxic effects of chemotherapy:

•Dexrazoxane (Zinecard): Cardioprotective agent against doxorubicin, given 30 minutes prior

•Amifostine (Ethyol): Cytoprotective agent fo cisplatin-related renal toxicities, given 30 minutes prior

Cycles and Doses

- Dosage and timing of drug delivery can be modified to affect chemotherapy response rates.
- Schedules must be kept to kill the cell in the appropriate cell cycle.
- The higher the dose of chemotherapy, the greater the number of cells killed.
- TOXICITY of the drug is the ***dose limiting factor***, as it can lead to increased mortality.
- **Dose intensity** is the total prescribed amount of chemotherapy delivered in a specific amount of time.
- Dose reductions, decreased dose rate and breaks in cycles create a

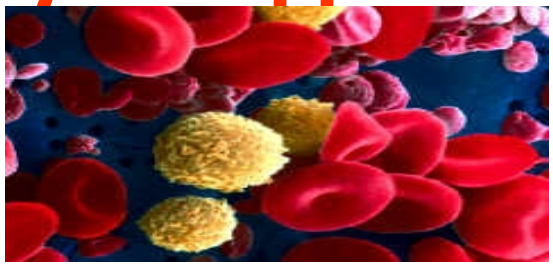
Chemotherapy

Factors influencing the response to antineoplastic agents:

- Characteristics of the tumor: location, size, growth rate, ration of cancer cells to normal cells, hormone receptor status, blood supply
- Characteristic of the patient: physical status, performance status, age, co-morbidities, prior therapies, psychosocial status
- Administration schedule: bolus, continuous infusion, combination therapy

Side Effects of Chemotherapy

Myelosuppression



Effects to the GI System

Drug Toxicities

Hypersensitivity reactions

Possible Side Effects of Chemotherapy

- Traditional chemotherapeutic agents act by killing cells that divide rapidly, one of the main properties of most cancer cells. This means that chemotherapy also harms cells that divide rapidly under normal circumstances: cells in the bone marrow, digestive tract and hair follicles.

- The most common side-effect of chemotherapy is myelosuppression/ immunosuppression followed by mucositis and alopecia.

- Some newer anticancer drugs (for example, various monoclonal antibodies) are not indiscriminately cytotoxic, but rather target proteins that are abnormally expressed in cancer cells and that are essential for their growth.

- Such treatments are often referred to as targeted therapy (as distinct from classic chemotherapy) and are often used alongside traditional chemotherapeutic agents in antineoplastic treatment regimens.

- Many GI side effects can be effectively managed with medications.

Chemotherapy – Possible Side Effects

Myelosuppression

- Thrombocytopenia
- Neutropenia
- Anemia
- Pancytopenia
- Polycythemia Vera

Drug Toxicities

- Cardiac Toxicity
- Pulmonary Toxicity
- Nephrotoxicity
- Hemorrahagic Cystitis
- Neurotoxicity
- Hepatotoxicity

GI Side Effects

- Nausea and vomiting
- Diarrha
- Constipation
- Taste changes
- Loss of appetite
- Feeling of bloating or fullness
- Sore mouth or throat
- Chewing difficulty

Other Side Effects

- Hair loss – Alopecia
- Ear ringing
- Fatique
- Reproduction changes
- Sexual changes

Chemotherapy – Acute Reactions

- Hypersensitivity reactions to chemotherapy agents are defined as unexpected reactions with signs and symptoms not consistent with known toxicity of these drugs. These reactions range from mild to life-threatening and are difficult to predict.

- ***Severe hypersensitivity reactions are rare, with an incidence of < or =5%, provided patients receive proper premedication, close monitoring, and prompt intervention when symptoms occur.***

- Symptoms can include flushing, nausea, difficulty breathing, back pain, hypotension and tachycardia.

- Reactions to taxanes usually occur during the first few minutes of the first or second infusion, whereas acute reactions to platinum agents usually occur after multiple cycles of therapy.

- Basic principles that allow management and possible completion of the regimen should be followed. Mild-to-moderate reactions can be managed by temporary infusion interruption, reduction of the infusion rate, and symptom management

- Certain protocols aim to prevent acute reactions by slowing the infusion rate and by administering steroid and histamine receptor antagonists.

Source: NCBI

BAPTIST HEALTH CARE

Hypersensitivity and Anaphylaxis

Clinical Manifestations

- Uneasiness or agitation
- Tightness in the chest
- Shortness of breath, with or without wheezing.
- Hypotension
- Hives or rash, localized or generalized itching
- Peri-orbital or facial edema
- Lightheadedness or dizziness abdominal cramping, diarrhea, N/V

Hypersensitivity and Anaphylaxis

RN protocol for hypersensitive reactions

- Stop infusion immediately.
- Maintain an IV line with NS or another appropriate solution.
- Stay with the patient. Have a co-worker notify the MD.
- Place the patient in a supine position if possible.
- Monitor vital signs every 2 minutes until the patient is stable, then every 5 minutes for 30 minutes, then every 15 minutes.
- Maintain airway. Administer O2 if needed. Anticipate the need for CPR.
- Administer medications per MD order.
- Provide emotional support for patient and family.
- Document all treatments and the patients' response in your nurses' notes.
- Symptoms of anaphylaxis may recur hours after initial intervention. Therefore, these patients must be closely monitored for up to 24 hours.

Chemotherapy – Treatment of Acute Reactions

The following drugs may be prescribed or recommend to minimize the effects of chemotherapy induced allergic reactions.

Antihistamines - diphenhydramine (Benadryl):

For symptoms such as redness, urticaria, or shortness of breath.

- ***Dosage:*** 25mg – 50mg IV: > age 65 administer 25mg
  < age 65 administer 50 mg

Corticosteroids - Methylprednisolone (Solumedrol):

Given along with Benadryl.

- ***Dosage:*** Solumedrol 40-125mg IV, depending on severity

Histamine H2-receptor antagonist - Famotidine (Pepcid):

Given primarily for a reaction to Taxol

- ***Dosage:*** Dose: 20 mg IV

Immediate Complications of Chemotherapy

Immediate complications can depend on the type of drug given: Vesicant, Non-Vesicant, or Irritant

Vesicant: **Any agent that has the potential to cause blistering, severe tissue injury or tissue necrosis when extravasated.**

Irritant: **Any agent that causes aching, tightness, and phlebitis along the vein or at the injection site, with or without a local inflammatory reaction, but does not cause tissue necrosis**

Extravasation

- Extravasation: Inadvertent administration of a vesicant medication or solution into surrounding tissues due to the dislodgement of the IV cannula. When a vesicant medication or solution extravasates, it can cause blister formation with sloughing of tissue and tissue necrosis.

Policy:

Obtain physician order for appropriate antidote. Refer to the current extravasation management chart as provided by pharmacy for the correct treatment and andidote.

Extravasation – Nursing Procedure

- At the first sign of infiltration, stop the infusion.
- Disconnect the IV tubing from the IV catheter. Do not remove the IV catheter.
- Attempt to aspirate the residual drug from the catheter by using a small syringe.
- Notify the ordering physician and verify with pharmacy for correct antidote.
- Administer the appropriate antidote, if there is one:
  - If antidote is to be given IV, instill the antidote and discontinue the IV catheter.
  - If antidote is to be given subQ, discontinue the IV catheter and inject the antidote into the subcutaneous tissue using a 25 gauge needle.
  - Apply heat or cold to the site, as appropriate.
- Instruct the patient to rest and elevate the site for 48 hours.
- Avoid pressure to extravasation site.
- Document the site, amount that infiltrated, amount aspirated, size, intervention, patient education.
- Monitor site with routine assessments and PRN. Notify the physician of any changes.

Other cancer support therapies

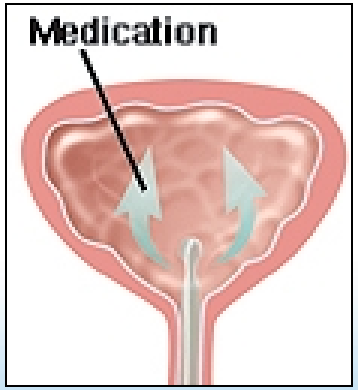
- **Blood Product Transfusions**
- **Drugs that treat nausea**
- **Hydration therapy**
- **Meds that ease the pain of peripheral neuropathy**
- **Colony-Stimulating Factors**
- **Biotherapy** (**biological therapy**) refers to the therapeutic use of biological materials or biological response modifiers. Examples of biological therapy include anti-cancer immunotherapy (using therapeutic monoclonal antibodies, growth factors or vaccines) and gene therapy.

Other types of targeted therapies administered:

- Remicade – Chron's disease, ulcerative colitis, arthritis
- Benlysta – Lupus
- Actemra – Rheumatoid Arthritis
- Xolair – Asthma
- IVIG – Neurological disorders

Bladder Instillations

- Most bladder cancers (85-90%) are limited to the lining of the bladder and are called superficial bladder cancer. Most superficial bladder cancers are easily treated by scraping out the cancer from inside the bladder.
- The bad news about superficial bladder cancer is that the tumors will recur in 70% of patients if no other treatment is given.
- A series of bladder instillations of medication can be used to prevent recurrence of the cancer. There are several different medications which can be used. Typically either Mitomycin or BCG or DSMO is used.



Bladder Instillations

After the Bladder Installation

- The patient should try to hold the medication for 2 full hours if possible.
- If the medication instilled was BCG, the patient should pour 2 cups of household bleach into the toilet before flushing, allow the bleach and urine to sit for 20 minutes, and then flush.
- After the bladder is emptied for the first time after the instillation, the patient should flush out their bladder by drinking plenty of liquids for the next 12 hours.
- Most patients will have some side effects from bladder instillation, but fortunately they are usually minor and short-lived. The side effects may increase as the patient nears the end of the course of treatments.

Bladder Instillations

Common side effects

- Fever, & Flu-like symptoms. Tylenol is usually effective, usually resolves in 1-2 days.
- Burning with urination. If severe, may use Pyridium as needed.
- Urgent need to urinate, incontinence. Usually resolves within 2-3 days.
- Blood in urine. Usually starts within 24 hours of instillation and resolves within 24 hours. Patient should drink plenty of fluids to keep bladder flushed.
- Urinary tract infection. Occurs 2% of time after bladder instillation. If symptoms persist beyond 2-3 days patient may be asked to give a urine specimen to check for infection.
- BCG sepsis blood infection, can happen with BCG in 0.4% of patients. Symptoms: high fever, chills, headaches or other symptoms and will feel very ill.
- Arthritis or skin rash (0.5% of patients). These are forms of allergic reaction and will usually resolve without treatment or with Benadryl.

IV Infiltration

- Infiltration is the inadvertent administration of **nonvesicant** drugs or fluids into the subcutaneous tissue.
- If any signs and symptoms of infiltration are present, the nurse will immediately stop the infusion and remove the catheter.
- Common intervention for infiltration is thermal manipulation at the site.
- For certain nonvesicant drugs, heat will be applied to increase blood flow and the amount of interstitial tissue in contact with the fluid.
- For hypertonic or hyperosmolar fluids, cold will be applied to restrict contact with additional tissue, thus limiting the tissue affected by osmotic fluid shift.
- For isotonic or hypotonic fluid, choose heat or cold based on patient comfort

This concludes the education for the Baptist Hospital Outpatient Infusion Center

BAPTIST HEALTH CARE