Home Care Pharmacy Practice
Learning Outcomes

• Identify reasons for establishing home care services & growth of home care industry
• Cite 7 goals of home care therapy
• Identify members & roles of home care team
• Identify conditions treated with home care services
• Identify top drugs used in home infusion therapy
• List 1-2 parameters for these drugs in home care
Learning Outcomes

• Compare infusion systems for use in patient’s home
• List labeling requirements for sterile products in home care
• Outline important factors for determining expiration dates for sterile products used in home care setting
Key Terms

• Case manager
• Elastomeric balloon system
• Extravasation
• Intake coordinator
• Patient controlled analgesia (PCA)
• Patient service representative
• Peripherally inserted central catheter (PICC)
• Rate restricted IV administration set systems
• Smart pumps
• Universal precautions
Historical Overview

• First home therapy in 1970s
  – less expensive & less hardship for patient
• Currently estimated $9 - $11 billion dollars per year
• Serviced by 700 to 1,000 infusion pharmacies
• Home infusion
  – safe & effective
  – less expensive
  – pumps are portable, small, easily programmable
  – avoid nosocomial infections
Home Infusion Services

• Provided by
  – hospitals, community pharmacies, home health nursing companies, integrated health care systems, and independent home infusion companies

• Technician roles
  – preparation of parenteral products
  – inventory maintenance & control
  – creating & maintaining patient supply inventory
  – making deliveries to patients’ homes
The Home Care Process

• Entering home care process
  – physician recommendation
  – patient, patient’s family advocate home therapy
  – patient’s insurance company may dictate
  – case manager will mediate location of therapy
  – hospital may also initiate process
Intake coordinator

• Retrieves patient’s pertinent information
• Nurse or technician specially trained for job
• Technician involved in preparing drugs
• Registered nurse makes initial patient visit
Steps in Home Care Services

• Initial referral process usually takes 24 to 48 hours
• Members of team must be available to patient 24/7
• Care plan
  – home care team monitors patient’s therapy
  – watch for complications of therapy
  – signs that therapy is effective
  – visit or contact patients on regular basis
  – supplies & drugs are prepared & delivered weekly
Home Care Team

- Physician
- Nurses
- Pharmacists
- Pharmacy technicians
- Registered dietitians
- Respiratory therapists
- Social workers
- Physical & occupational therapists
- Certified nursing assistants
Physician

• Leader of the team
  – Major changes in therapy need physician’s approval
  – Signs “Certificate of Medical Necessity & Plan of Treatment”

• Physician drug orders (prescriptions)
  – via phone as in community pharmacy setting.
  – via facsimile machine

• Rules & regulations for narcotics specific to state
Nurse & Pharmacist

- Coordinate patient supplies
- Develop plan of care
- Monitor, document patient’s status
- Communicate with physician
- Coordinate physician orders
- Make appropriate interventions
- Assess & educate home care patients
- Work jointly to perform organization’s clinical quality assurance activities

Work jointly to perform organization’s clinical quality assurance activities
Nurse

• Primary patient educator
• Assesses
  – patient’s physical status
  – patient’s adherence to treatment plan
  – condition of catheter
  – psychosocial issues
• Maintenance of intravenous catheters
• Placement of peripheral catheter
• Insertion of peripheral long-term catheters or PICC
Pharmacist

- Responsible for proper acquisition, compounding, dispensing, & storage of drugs
- Responsible for instructing patient & nurse on drugs being administered
- Clinical pharmacy roles
  - pharmacokinetic dosing of vancomycin & aminoglycosides
  - nutritional support services
  - input in selection of most appropriate drug for patient
- Pharmacist is drug information source for all other team members
Pharmacy Technician

• Generates medication labels
• Prepares & labels medications
• Maintains clean room & drug storage areas
• Coordinator of IV room
• Works with pharmacist on
  – mixing schedule, ordering & maintaining drug & mixing supplies, performing quality assurance on compounding activities
• Manage warehouse/inventory of non-drug supplies
Reimbursement Specialist

• Key to economic viability of company
• Interface among insurer, home infusion company, & patient
• Coordinate all billing for services
• Negotiate price of services with insurers
• Well-versed in public aid & government reimbursement programs (Medicaid & Medicare)
Patient Service Representative

• Controls patient’s inventory of supplies
• Contacts patient or caregiver on routine basis
• Coordinate pickup of supplies at end of therapy
• Pharmacy technician may be responsible for this job
Patient and Caregiver

• Involved in development of care plan
• Patient has right to be involved
• Clearly stated in rights & responsibilities document
• Established on initial visit
Antibiotics

• Account for 40% - 70% of current home infusions
  – Cephalosporins
    • ceftriaxone (Rocephin)
    • cefazolin (Ancef)
    • cefepime (Maxipime)
    • low incidence of adverse reactions
    • require minimal monitoring
    • stable for 10 days - ideal for weekly deliveries
    • ceftriaxone is often prescribed - given once daily,
    • many cephalosporins can be administered as IV push
Penicillins

• Common IV antibiotics
• Difficult to use in home
  – frequency of dose
  – stability of medication
  – allergies
  – Phlebitis
• Ambulatory pumps—often used with penicillins
• Other systems used
  – ADD-Vantage®
  – Add-Ease®
Vancomycin

• Red Man Syndrome
• Individualized dosing
• Irritating to veins
Other Antibiotics

- Azithromycin (Zithromax)
- Doxycycline
- Fluoroquinolones
- Carbapenems
- Daptomycin (Cubicin)
- Linezolid (Zyvox)
- Quinupristin/dalfopristin (Synercid)
Antifungals

• **Uses**
  - transplant patient
  - immunocompromised patient

• **Common medications**
  - Intravenous amphotericin B
    * premedication for reactions
      - oral acetaminophen and diphenhydramine.
    * meds for severe reactions
      - IV meperidine & hydrocortisone
    * flush with Dextrose 5 % (incompatible with saline)
Other Antifungals

• Intravenous azole antifungal agents
  – fluconazole (Diflucan)
  – voriconazole (Vfend)

• Echinocandins
  – anidulafungin (Eraxis),
  – caspofungin (Cancidas)
  – micafungin (Mycamine)
Antivirals & Other Meds

• Ganciclovir
  – HIV with cytomegalovirus (CMV) infection
  – cytotoxic -causes bone marrow toxicity in AIDS patients
• Filgrastim (Neupogen)
  – offsets bone marrow toxicity
• Foscarnet
  – hydrate with 1,000 mL of normal saline
• Acyclovir
• Pentamidine via a special nebulizer Respigard®
Parenteral Nutrition (TPN)

- Crohn’s disease
- Malnutrition
- Infusion options
  - Over 24 hours
  - Cyclically
- Catheter Flush
Typical TPN Ingredients

• Dextrose
• Amino acids
• Electrolytes
• Trace minerals,
• Multivitamins
• 3-in-1
• Clinimix®
Drugs Added to TPN

• Insulin
• Heparin
• Vitamins
• H2-receptor antagonists
Monitoring of TPN Patients

• Laboratory tests
  – chemistry and complete blood count (CBC)
  – blood glucose
  – fluid status
  – patient weights
  – liver toxicity
  – bone breakdown

• Pharmacist may consult with dietician
Enteral Nutrition Therapy

• Nutrients given via
  – stomach
  – part of small intestine (jejunum)
• Nasogastric tube (NG tube)
• Gastrostomy tube (G tube)
• Jejunostomy (J tube)
Chemotherapy

- 5-fluorouracil
- Cyclophosphamide
- Doxorubicin (Adriamycin)
- Oxaliplatin (Eloxatin)
- Vincristine
- Vinblastine
- Paclitaxel (Taxol)
Complications of Chemo

• Extravasation

• Bone marrow toxicity
  – low platelets (thrombocytopenia)
  – low white blood cells (neutropenia)
  – low red blood cells (anemia)
Supportive Therapies for Chemo

- Filgrastim (Neupogen)
- Sargramostim (Leukine)
- IV fluids
- Anti-nausea medications
  - prochlorperazine (Compazine)
  - metoclopramide (Reglan)
  - ondansetron (Zofran)
Biological Response Modifiers

• High-technology or biotech drugs
  – filgrastim (Neupogen)
  – pegfilgrastim (Neulasta)
  – erythropoietin (Epogen, Procrit)
  – darbepoetin alfa (Aranesp)
  – interferons
  – growth hormone
Pain Management

• Morphine accounts for 90% home care narcotics

• Others:
  – hydromorphone (Dilaudid)
  – fentanyl
  – fentanyl with bupivacaine,

• Routes of administration
  – intravenously
  – subcutaneously
  – intrathecally
Cardiovascular Agents

- Congestive heart failure (CHF)
- Continuous infusions of parenteral inotropic agents
  - dobutamine
  - dopamine
  - inamrinone (Inocor)
  - milrinone
Other Therapies

• Intravenous immunoglobulin (IVIG)
• Anticoagulants
• Intravenous corticosteroids
• Deferoxamine
• Blood factor replacement products
• Alemtuzumab (Campath)
Other Therapies

- Anakinra (Kineret)
- Infliximab (Remicade)
- Nesiritide (Natrecor)
- Pantoprazole (Protonix IV)
- Treprostinil sodium (Remodulin)
- Zoledronic acid (Zometa)
High-Technology Systems

• Five types of home infusion systems
  (1) minibag infusion via gravity system
  (2) syringe infusion via syringe device
  (3) syringe infusion via IV push method
  (4) rate-restricted IV administration set systems
  (5) ambulatory electronic infusion pumps
  (6) elastomeric balloons systems
Mechanical Systems

- Paragon® Ambulatory Infusion
- I-Flow’s ON-Q®
- PainBuster®
- SilvaGard® catheter
- Fixed Flow
- Select-a-Flow™
- ONDEMAND™
Controlled Pressure Systems

• Eureka™ infusion pump
• Eureka-LF (low flow) infusion pump
• beeLINE®
Ambulatory Infusion Pumps

• More than 30 ambulatory electronic infusion devices available
  – small
  – lightweight
• Therapy-specific devices
• Multiple-therapy devices
Guidelines Sterile Compounding

• American Society of Health-System Pharmacists (ASHP)
  – quality assurance

• United States Pharmacopeial Convention (USP) Chapter 797
  – practices of personnel
  – potentially enforceable FDA & BOPs
ASHP Guidelines: Sterile Products

• 3 risk levels
  – risk categories: least (level 1) to greatest (level 3)
  – related to
    • chance of contamination
    • risk of microbial growth

• Methods to assess aseptic technique

• Environmental monitoring
Sterile Compounding Devices

- Laminar Airflow Workbench (LAFW)
- Biological Safety Cabinets (BSC)
- Barrier Isolators Barrier isolators
  - glove boxes /compounding aseptic isolators (CAI)
- Automated Compounding Devices
- Automated Filling Devices
Required Labeling

1 - Prescription number, date, prescribing physician
2 - Patient name & address
3 - Directions to patient for use of medication
4 - Name & volume of admixture solution
5 - Beyond-use date
6 - Initials of persons who prepare/check IV admixture
7 - Name, address, telephone number of compounding facility/pharmacy
Expiration Dating

• New guidelines for BUD
• References listing expiration dates
  – *Trissel’s Handbook on Injectable Drugs*
  – *Extended Stability for Parenteral Drugs*
Deterioration

• pH
• Temperature
• Drug adsorption-absorption
  – leaching out of product containers
• Hydrolysis
• Oxidation
• Reduction
• Exposure to light
Packaging & Transport

- Temperature control-coolers
- Zip-loc bag to control leakage
- Hazardous substances-double bagged
- Pre-filled syringes-in hard plastic or cardboard tubes or within bubble packs
Venous Access Devices

- Tunneled central venous catheters
  - Broviac & Hickman catheters
- Subcutaneous vascular access ports
- Peripherally inserted central venous catheters (PICC)
- Heparin 100 units/mL “locked”
Other Supplies

- Alcohol pads
- Injection caps (caps that go onto the end of the catheters)
- Non sterile gloves
- Sharps container
- Medical waste bags
- Tubing
- Filter
- IV start kit
- Batteries
Miscellaneous Supplies

• Heparin
  – 10 units/mL used for peripheral catheters
  – 100 units/mL used for central venous catheters

• Needleless system
  – injection caps
  – vial adaptors
  – syringes
  – syringe cannulas
Infection Control & Disposal

• Universal precautions
  – wear gloves
  – use appropriate sterile techniques

• Collection & Disposal of Medical Waste
  – dispose of hazardous & non-hazardous waste properly
  – needles – in hard plastic or cardboard sharps container

• Isolated area - storage of medical waste

• Schedule for waste removal