

# Compounding for Neuropathy

Dr. Lance Campbell

Campbell's Compounding Pharmacy

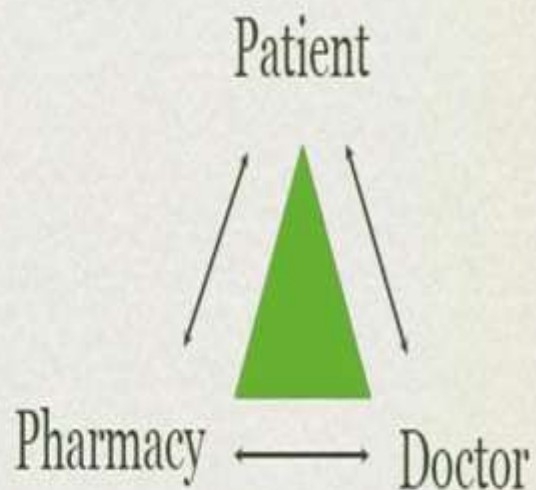
## Purpose

- To introduce the concept of compounding pharmacy and its utility for patients suffering from neuropathy
- To explain some of the therapies involved in neuropathy treatments
- Develop a relationship that you can utilize to have questions answered and problems solved!!!

# Definition

- *What is a COMPOUNDING pharmacy?*
  - A Compounding Pharmacy is a full service pharmacy that specializes in creating custom medications based on the specific needs of its patients.
  - We make medications from scratch! Starting with bulk active powders we prepare the medication depending on what our patients may need (ex. capsule, creams, etc).

## Compounding triad



Consists of a direct relationship between the Patient, the Doctor, and the Pharmacy

# History

- In the beginning...
  - Pharmacy was all compounding!
- Off to war!!
  - Because of WWII pharmaceutical companies were developed
- Present day compounding...

# Current events

- Compounding pharmacies have had some negative publicity in the past in an effort to make some patients skeptical.
- This was primarily due to pressure from large pharmaceutical companies in an effort to limit their competition.
- Result?

## Reasons to compound

- To change a medication's flavor
- To combine multiple medications
- To alter the dosage form (capsule to cream, etc)
- To remove an ingredient (allergy or intolerance)
- To provide a discontinued medication
- ***TO SOLVE A PATIENT'S PROBLEM...***

## Who do we serve?

Natural Hormones (aka  
Bio-Identical)

Pediatrics

Veterinary

Pain Management

Dermatology

and many more...

# Dosage forms

# How Do we Do it?

- Capsules
  - Creams/Ointments
  - Injections
  - Suppositories
  - Troches
  - Lollipops
  - Oral solutions/suspensions
- All compounds start with a prescription from a physician
  - The pharmacist will then write a formula based on what the physician has prescribed
  - All the drugs are then weighed with an electronic balance that is accurate to the 0.001 measurement
  - We combine all the ingredients in a mortar and mix with a pestle
  - We then incorporate our desired base and again mix well and/or run through an ointment mill if necessary
  - We transfer our product to the desired dosage form

# What about Neuropathy?

- Oral medications vs. Transdermal delivery (TD)
- Goal of therapy with both is to reduce the neuropathy symptoms while minimizing the medication's side-effects

## ORAL THERAPIES

- |                                                                                                                                                                               |                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>● <b>Benefits:</b></li><li>● Easy to use</li><li>● Easy to travel with</li><li>● Comfort level</li><li>● <i>Gold Standard</i></li></ul> | <ul style="list-style-type: none"><li>● Include medications like Neurontin, and Lyrica to name a few</li><li>● Have side-effects that many patients do not tolerate very well (dizziness, falling spells, and weight gain).</li><li>● Not the primary focus of this presentation</li></ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# Transdermal goals

- Through transdermal therapy we try to combine several different drugs and therefore utilize various mechanisms of action to treat the problem.
- This approach creates synergy and allows us to use the smallest possible dose necessary.
- We attack the way a well trained

## Transdermal Therapy

- Definition: This simply means we will be delivering the medication across the skin barrier.
- Limitations: Transfer depends on the fat soluble nature of the drug and the drugs molecular size.
- How do we accomplish this? By researching the above 2 limitations and placing the appropriate medications into a base that allows for the transfer across the skin.

# TD benefits

- **Benefits of Transdermal Therapy include:**
  - no oral or GI side-effects
  - quick onset of action
  - no drowsiness
  - can apply right where the pain occurs
  - the medications used are adjustable
  - no drug interactions

## Lipoderm

- We use a base called Lipoderm to accomplish TD delivery.
- Developed from the PLO (Pluronic Lecithin Organogel)base which is a two

# Application

- Application is simple!
  - The cream will be dispensed in a special container called an EMP jar. There will be a hole in top of the container and a button on the bottom. Simply push on the button and the cream will come out on the top.
  - You will use a small “pea-sized” amount on the skin and spread it out as needed to cover the entire surface. It may be necessary to use the “patch work quilt” approach if it is a large area.
  - Once on the skin, gently massage the cream until it completely disappears.

# What to expect



# Some Common Drugs

## For Transdermal Neuropathy Treatment

- Some of the most common drugs used are:
  - Ketamine (5-10%)
  - Ketoprofen (20%)
  - Clonidine (0.2%)
  - Gabapentin (6%)
  - Baclofen (5%)
  - Nifedipine (2%)
  - Amitriptylline (2%)
  - Nif

## ketamine

- ***Non-competitive NMDA antagonist***
- Known for blocking Morphine tolerance
- A 1998 study showed that a peripheral nerve insult induces NMDA receptor-mediated, delayed degeneration in spinal neurons.
- Study results showed that intervention with Ketamine can block the glutamate shower of the NMDA receptor, therefore preventing the Calcium intracellular cascade of events that result in long-term potentiation and/or cell death.

# Ketoprofen

- Non-Steroidal Anti-Inflammatory
- decreases the inflammation associated with injury
- decrease pain associated with injury

# Clonidine

- *alpha-2 agonist*
- blocks NE release from SNS endings
- potentiates the effects of anesthetics and opiates
- also has mu agonist activity

# Gabapentin

- *Glutamate antagonist*
- *AMPA (sodium channel) antagonist*
- decreases NMDA activity

# Baclofen

- *Muscle relaxant GABA-b agonist*
- possesses pre-synaptic depressing action at NMDA and non-NMDA receptors
- thought to have inhibitory action on pain signals

# Nifedipine

- non-NMDA Calcium channel blocker
- blocks the calcium intracellular cascade of events resulting in apoptosis (programmed cell death)

# Amitriptyline

- *NE reuptake inhibitor*
- has been shown to *have neurotrophic activity*
  - Neurotrophic factors are secreted by target tissue and act by preventing the associated neuron from initiating apoptosis (programmed cell death) - thus allowing the neurons to survive.

## Common dosing Guidelines

- The theory of low-dose, multiple, complimentary therapy starts with 3 drugs incorporated into the Lipoderm base.
- Normally applied at 8 hr intervals on a regular basis.
- Dose escalation can occur daily or every other day until pain is relieved.
- Additional medications can be added if another MOA is needed within 2 weeks.

- Ketamine 10%, Gabapentin 6%, Clonidine 0.2% # 60 gms
  - To be applied to affected area 2 - 3 times a day
  - Can add additional drugs as needed once pain is assessed in 7-14 days

## What about the cost?

- TD therapy can become a bit expensive as multiple drugs are involved.
- Average beginning prescription is around **\$65 for a 3 drug regimen** and usually increases in price by about \$15 per drug after that.
- Price may vary based on use and arrangement with insurance company
- We will provide an already completed insurance form for you to send in for reimbursement



Who we are...



family owned

*and operated*



# Our staff

*if we can't make it...you probably don't  
need it*

## 2 locations to serve you

- Medical Center
  - **6603 Kirby Drive** (near Kirby and Holcombe)
- Sugar Land
  - **4760 Sweetwater Blvd, ste 103** (behind Starbucks)