

Community Pharmacy

Meeting unique physician and patient needs

Dennis Wong, B.Sc. (Pharm.)
Specialty Compounding Pharmacist
Consultant Pharmacist
CD Whyte Ridge Pharmacy
123 G Scurfield Blvd., Winnipeg
(204)-488-1819
cindenrx@mts.net

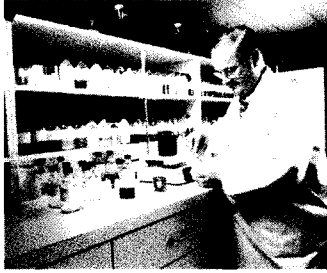
© 2001 PCCA, Inc. All Rights Reserved.

What is Compounding?

- Compounding is the traditional method of preparing customized medications to help meet unique physician and patient needs.



Compounding pharmacists focus on providing innovative patient care. This may involve compounding an eye drop in a sterile compounding lab, an injection for impotency, preparing medications for veterinarians, providing natural hormone replacement therapy, or pain management therapy.



Also known as a problem solver, a compounding pharmacist's ultimate goal in preparing customized medications is to help the physician and patient achieve a more positive therapeutic outcome.

The Triad

The foundation of the profession... the key to compounding

Patient



Pharmacist

Physician

Improve Therapeutic Outcomes...

...by solving the problem:

- Avoidance of dyes, preservatives, fillers, actives
- Palatable liquid medications
- Administrable dosage form
- Avoidance of side effects
- Dose, dosage form, or medication not commercially available
- Combination or sustained release therapy to improve compliance
- Cost effective therapy
- Unique dosage form designed for specific problem

Service Areas

Meeting unique needs in:

- Hospice
- Pain Management
- Natural Bio-identical Hormone Replacement Therapy
- Veterinary applications
 - Household pets
 - Equine
 - Zoos
 - Exotics
- Dental
- Dermatology



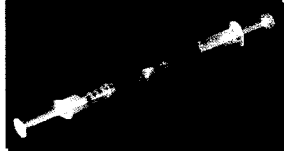
Meeting unique needs in:

- Podiatry
- Oncology
- Ophthalmology
- Pediatrics
- Neurology
- Nutritional
- Sports medicine
- And many more.....



Hospice / Palliative Care

- Alternative routes of administration
- Individualized pain management
- Nausea & vomiting
- Inhalation therapy
- Emergency kits
- Mouth ulcers
- Saliva stimulants
- Adjunctive therapies



Bio-identical Hormone Replacement Therapy

- Same identical hormones as exist in human body
- Natural source
- Individualized therapy
- Avoidance of side effects
- Proven benefits
- Patient consultation



Compounding is Essential in Veterinary Medicine

- Lack of approved veterinary drugs
- Some human drugs inaccessible or no longer available
 - Discontinuation of commercial products by manufacturer
- Weight and species variations
- Compliance problems
 - Taste, dosage form, volume, smell

Veterinary Compounding (*cont'd*)

- Concentration of commercial products
- Efficacy of commercial products
- Appropriate product not available (several drugs not combined as vet needs)
- Appropriate vehicle may be irritating
- Resistance to available preparations



Dental Needs

- Hemostatics
- Bleaching gels
- Root canal & dry socket mixtures
- Topical anesthetics
- Pre-procedure sedatives
- Repository antibiotics for abscesses
- Plaque removal rinses
- Adhesives
- Sedatives

Podiatry

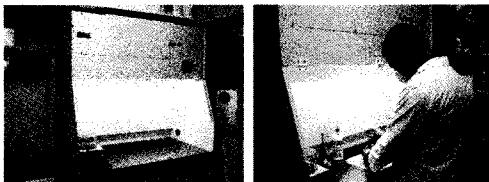
- Fungal infections
- Decubitus ulcers
- Diabetic neuropathy
- Circulation problems
- Warts and calluses
- Heel spurs
- Excessive perspiration
- Muscle and joint pain

Dosage Forms

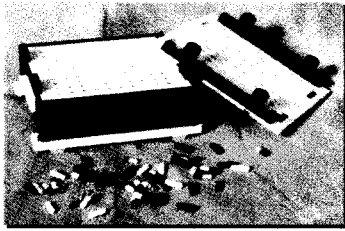
Compounded Dosage Forms

- Oral capsules and liquids
- Transdermals
- Lollipops and popsicles
- Troches, tablet triturates, Rapid Dissolved Tablets and sublingual drops
- Suppositories, enemas and rectal rockets
- Nasal and otic preparations
- Topical creams, ointments, gels, powders and sprays
- Oral adhesives, mouthwashes and rinses
- Sterile products
 - inhalation solutions, injections, ophthalmics, TPNs

Safe Air Powder / Fume Hood

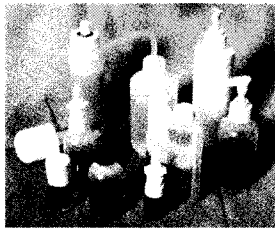


Compounded Capsules



Medications formulated in capsules enable the patient to get the exact dosage needed, while avoiding unwanted dyes and fillers.

Compounded Oral Liquids

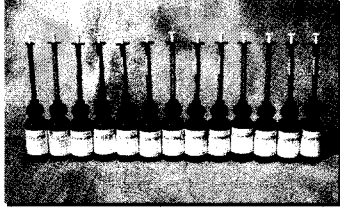


Preparing medications in a liquid form allows the patient who can't swallow pills to get the appropriate medicine in a vast range of flavors, such as tutti-frutti or vanilla butternut.

Compounded Oral Liquids

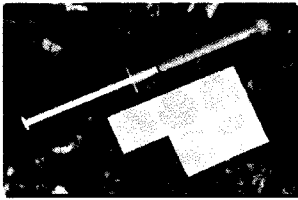
- Difficulty swallowing
 - Medication not available as liquid
 - Infants, children, geriatrics, hospice
- Avoid unwanted ingredients
 - Free of dyes, sugar, alcohol and preservatives
- Increased compliance
 - Much more palatable preparations with choice of multiple sweeteners and flavors
- Anhydrous formulations
 - May be used if aqueous stability a concern

Customized Flavors for People and Pets



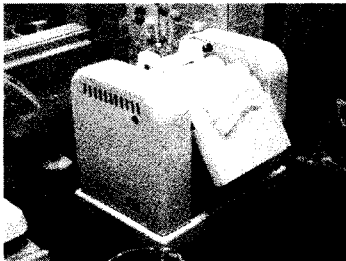
Compounding pharmacists can provide more than 100 human and pet flavors to satisfy patients.

Transdermal Gels



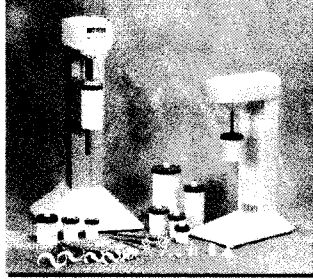
- A specially prepared emulsion that penetrates the skin and gets medications into the bloodstream quickly
- Effective dosage form for the patient who can't swallow
- May be used for systemic or local effects

Ointment Mill



Electronic and Electro Mortar & Pestles

The electronic and electro mortar & pestles provide pharmacists with the modern way to compound creams, gels, ointments and suspensions.



Percutaneous Delivery System

- J Pharm Sci 9/92: The disorganization of the lipid layers of the stratum corneum due to interaction with the phospholipids of the gel may allow the drugs to pass into the systemic circulation
- The Skin
 - Stratum corneum, epidermis, dermis, capillaries
- Stratum corneum: dead cells held together by lipids
 - Mortar and Brick appearance
- J Pharm Sci 9/92: Used Lecithin & Isopropyl Palmitate in an Aqueous system

(38) Willmann H, Walde P, Luisi L et al, Lecithin Organogel as Matrix for Transdermal Transport of Drugs, J Pharm Sci 1992 Sep, Vol 81, No. 9, 871-874.

Facts on PLO

The Technical Details

- Easy to make
 - The technique is critical to product efficacy
- Storage
 - Room Temperature
 - Preservatives
 - Stability
- Where to apply
 - 3 most effective sites
 - Cosmetic Problems

Transdermal Drug Delivery

Drug Classes Used in Transdermals

- Analgesics
 - Narcotics
 - Non-narcotics
 - Atypical analgesics
 - Sympatholytic agent
 - NMDA-Calcium channel blocker
 - AMPA-Sodium channel blocker
 - Alpha agonist
 - Gaba agonist
 - Mu agonist
 - Substance P blocker

Transdermal Drug Delivery

Drug Classes Used in Transdermals

- NSAIDs
- Muscle relaxants
- Anti-nausea agents
- Antiviral agents
- Anti-inflammatory agents
- Anesthetics
- Anti-anxiety agents

Transdermal Drug Delivery

Drug Classes Used in Transdermals

- Anti-diabetic agents
- Antidepressant / anti-psychotic agents
- Anti-hypertensive agents
- Thyroid medication
- Antihistamines
- Anti-infective agents

Transdermal Drug Delivery

Drug Classes Used in Transdermals

- Agents used for
 - Autism
 - Erectile dysfunction
 - Psoriasis
 - Arthritis
 - Migraine headaches
 - Cancer
 - Veterinarian use

Transdermal / Topical Bases

- PLO, PCCA Lipoderm, VanPen, Cosmatic HRT Base
- Vanishing Cream, Emollient Cream
- Speed Gel, Kristop, Kris Gel Cream
- Anhydrous Gel
- Versabase Cream, Gel, Foam, Lotion

Anhydrous Gel

- Anhydrous gel bases 2058, 4038, 6633
- 1 to 2 drops (0.05mL to 0.1mL) to trigger point q6h
- Penetrate fast & Localized treatment with minimal systemic effects

Myofascial Pain

- Is caused by Myofascial Trigger Points in Musculature
- Referred from Trigger Points in specific and consistent patterns, characteristic of each muscle
- Patient usually presents with symptoms related to the most recently activated T.P.'s

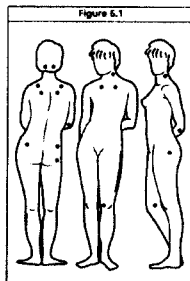
Myofascial Trigger Point

- Hyperirritable spot in skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band
- Painful on compression, referred pain, tenderness, gives motor dysfunction, and autonomic phenomena
- Cluster of electrically active loci with contraction knot and a dysfunctional motor endplate in skeletal muscle

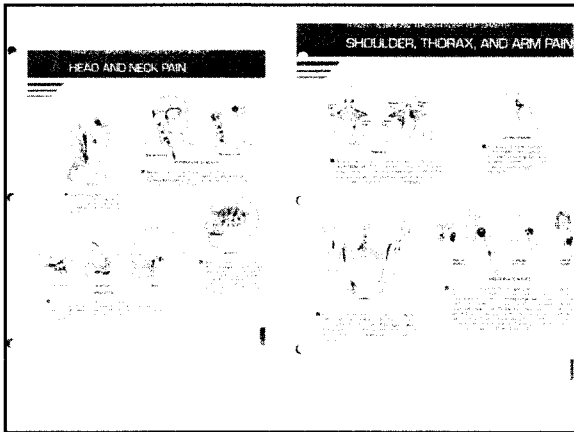
The two most commonly encountered musculoskeletal pain states (outside of osteo- and rheumatoid arthritis) are Fibromyalgia and Myofascial Pain Syndrome. The former is better known, with published diagnostic criteria, while such criteria are still under development for myofascial pain syndrome.¹⁰¹ On the above list (Table 6.1) of commonly encountered pain states, most are, in fact, examples of myofascial pain.

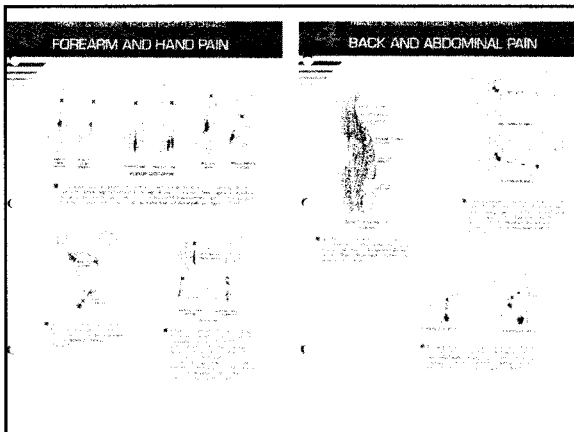
Fibromyalgia (FM)

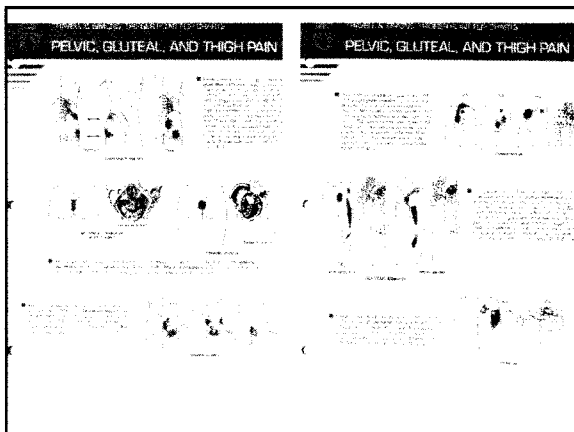
Patients with FM complain of widespread pain in at least three quadrants of the body, present for at least 3 months. Specific tender points are located in 18 paired locations (see Figure 6.1), 11 of which should be present to make the diagnosis. Patients often complain of stiffness and a sense of swelling in the limbs. Associated features include: non-restorative sleep, disabling fatigue, irritable bowel syndrome, problems with memory and concentration, low-grade fevers and variable lymphadenopathy.



Managing Pain — The Canadian Healthcare Professionals' Reference

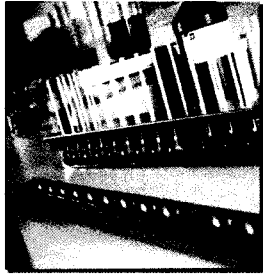




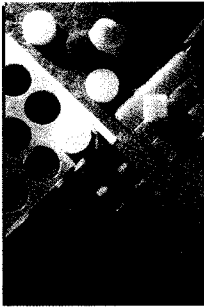


Medicated Lollipops

- Combination effects
 - Smoking deterrent
 - Cold preparations
 - Cough suppressant
 - Decongestant
 - Antihistamine
 - Sore throat
 - Antibiotic
 - Antihistamine



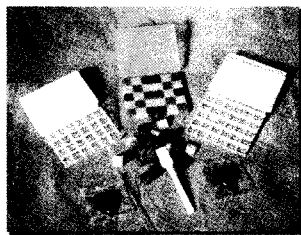
Troches / Lozenges



Soft gelatin-flavored troches, like gummy bears, or chewable troches, provide medication in an easy-to-take and good tasting form.

Troches

- Local effects for better therapeutic outcome
 - Antiviral or antifungal Anti-inflammatory
 - Anesthetic Healing agents
 - Saliva stimulant
- Sublingual / buccal absorption
 - Convenience
 - Faster onset of action
 - No “first pass” effect
 - No stomach acid degradation



Tablet Triturates / SL Tablets

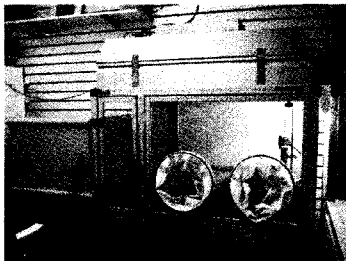
- Rapid onset
 - Migraine headache
 - Emesis (canine use)
 - Erectile dysfunction
- Sublingual absorption
 - No first pass effect
 - No stomach acid degradation
- Cost effective
- Convenient

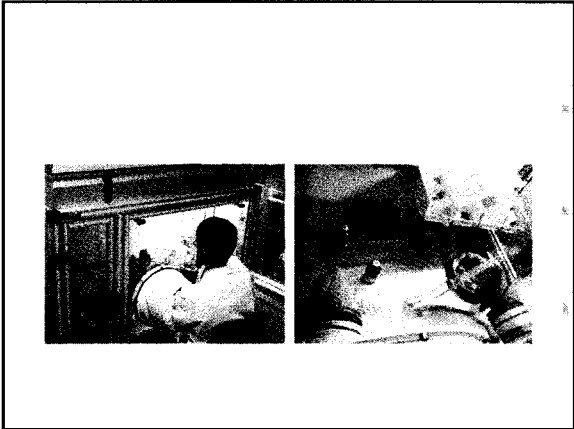
Compounded Sterile Products

- Injections -- aqueous and oil vehicles
- Ophthalmics -- solutions, suspensions, sprays, and ointments
- TPNs and IV admixtures, Infusion Solution, PCA
- Inhalation solutions
 - Combine multiple ingredients to improve compliance
- Irrigating solutions

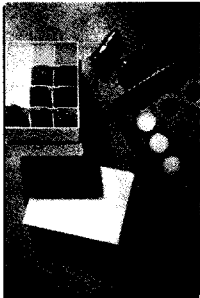


Convection Oven / Incubator Barrier Isolator Sterile Hood





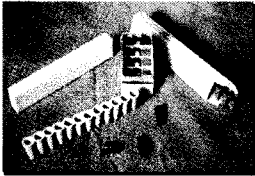
Suppositories



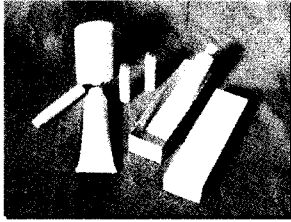
Putting medicine into suppositories allows the patient who can't swallow to receive the required drug.

Suppositories and Enemas

- Rectal or vaginal use
- Difficulty in swallowing
- Nausea/vomiting
- Injections cause pain, anxiety
- Rapid local affect
 - Hemorrhoids
 - Irritable Bowel Syndrome (Crohn's disease)
 - Anesthetic, anti-inflammatory, steroid agents
- Good absorption route for many drugs
 - Prevents 2/3 of first pass effect



Topical Sticks and Tubes



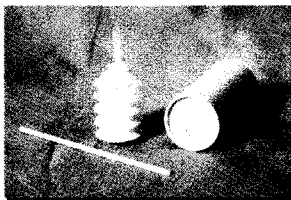
Dispensing medication in deodorant stick or chapstick-like containers allows the patient to self-administer drugs easily for PRN doses. Tubes allow creams, ointments and gels to be relatively light and oxidation free.

Tube Sealer



The tube sealer provides an efficient way to seal plastic tubes, bags, suppository shells and sleeves.

Medicated Powders



Try a combination of an antifungal, antibiotic, antiviral, steroid and an anesthetic with an oral adhesive for canker sores or other oral lesions.

Compounded Topical Formulations

- Creams
 - Water-in-oil emulsions
 - Oil-in-water emulsions
- Ointments
 - Anhydrous vehicles:
 - PEG, Petrolatum
- Gels
 - Carbomer, HEC, HPC, HPMC
- Sprays
- Specialty deodorant stick or lipstick forms
- Penetration agents to enhance effects



The Polyox Bandage

- Designed for oral use
- Superior oral bandage
 - Stays in place for hours even if “rubbed”
- Used for any drug therapy desired
 - Antihistamine, anesthetic, antiviral, antifungal, anti-inflammatory, etc., or combinations
- Also used for wound care
 - No touching of wound for application
 - No removal of new tissue growth
 - Advantageous in oozing wound



The Rectal Rocket



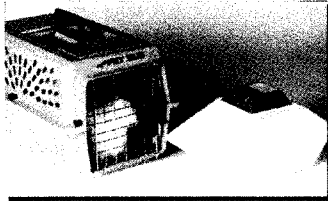
- Designed to get the drug(s) to the *site of action*
- Holds drug(s) at site of action for an *extended period* of time (air vent included)
- Combine anesthetic and anti-inflammatory drugs, or use for healing

Nasal and Otic Preparations



- Nasal
 - Rapid absorption of drug
 - Pump metered spray bottle delivers accurate dose of drug
 - Studies show good absorption route
- Otic
 - Anhydrous vehicles
 - PEG, Sweet Oil, Propylene Glycol, Glycerin
 - Combine multiple medications
 - Anesthetic, anti-inflammatory, anti-biotic, anti-fungal, anti-viral, steroid, etc.
- Gels
 - Carbomer, HEC, HPC, HPMC

Compounded Inhalation Solutions



- Combination therapies for improved compliance
- Formulations not commercially available
- Veterinary applications

Need to try something unique?

TALK TO US !!!

Work with you to create a unique compound
to meet your patients' needs

Member of Professional Compounding Centre
of America (PCCA)

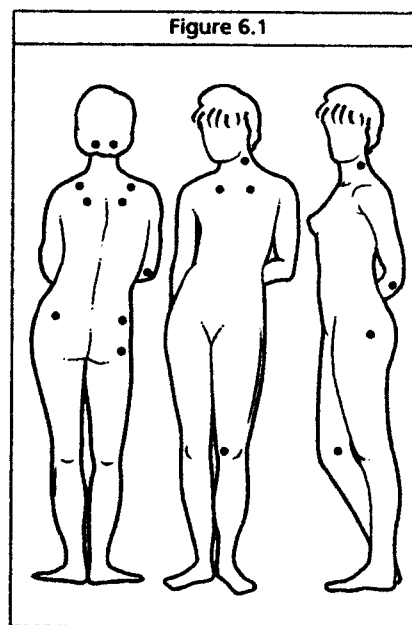
Questions???

© 2001 PCCA, Inc. All Rights Reserved.

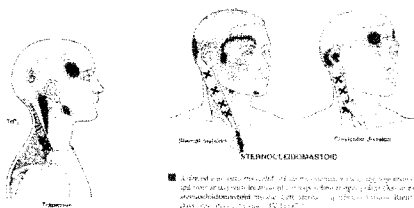
The two most commonly encountered musculoskeletal pain states (outside of osteo- and rheumatoid arthritis) are **Fibromyalgia** and **Myofascial Pain Syndrome**. The former is better known, with published diagnostic criteria, while such criteria are still under development for myofascial pain syndrome.^{10,11} On the above list (Table 6.1) of commonly encountered pain states, most are, in fact, examples of myofascial pain.

Fibromyalgia (FM)

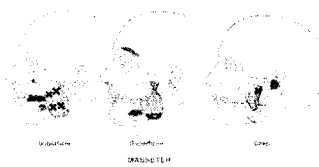
Patients with FM complain of widespread pain in at least three quadrants of the body, present for at least 3 months. Specific tender points are located in 18 paired locations (see Figure 6.1), 11 of which should be present to make the diagnosis. Patients often complain of stiffness and a sense of swelling in the limbs. Associated features include: non-restorative sleep, disabling fatigue, irritable bowel syndrome, problems with memory and concentration, low-grade fevers and variable lymphadenopathy.



HEAD AND NECK PAIN



■ Refer to page 17 for the location of the trigger point. The trigger point is located in the upper part of the neck, just below the ear.

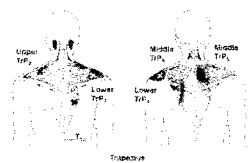


■ The trigger point is located in the lower part of the face, just below the ear.



■ The trigger point is located in the forehead and temples.

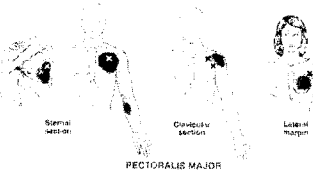
SHOULDER, THORAX, AND ARM PAIN



■ The trigger point is located in the upper part of the neck, just below the ear.

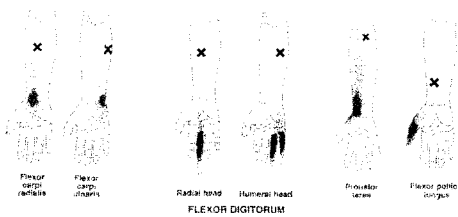


■ The trigger point is located in the upper part of the arm, just below the shoulder.

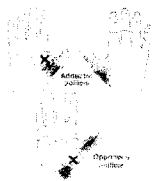


■ The trigger point is located in the chest and shoulder area.

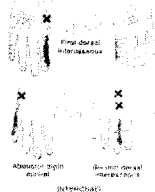
TRAVELL & SIMONS' TRIGGER POINT FLIP CHARTS
FOREARM AND HAND PAIN



Examples of referred pain patterns and location of trigger points. X marks right hand and target fingers. Pain in left Flexor carpi radialis and Flexor carpi ulnaris. Pain in wrist, Flexor digitorum superficialis and superficialis muscle finger pain in left hand. Pain in left finger pain in right hand. Hand pain in pronator teres and Flexor pollicis longus. (11) (12) (13)

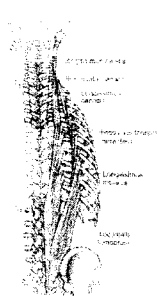


Examples of referred pain patterns and location of trigger points. X marks hand and target fingers. Pain in thumb, Adductor pollicis and Opponens pollicis. (14) (15) (16)

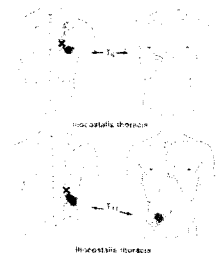


Examples of referred pain patterns and location of trigger points. X marks hand and target fingers. Pain in first dorsal web space, Abductor digiti minimi and Extensor digiti minimi. (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

TRAVELL & SIMONS' TRIGGER POINT FLIP CHARTS
BACK AND ABDOMINAL PAIN



Examples of referred pain patterns and location of trigger points. X marks neck and target fingers. Pain in neck, Supraclavicular muscles, Trapezius, Levator scapulae and Splenius. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

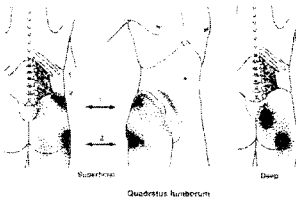


Examples of referred pain patterns and location of trigger points. X marks neck and target fingers. Pain in neck, Rhomboid muscles, Trapezius, Levator scapulae and Splenius. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

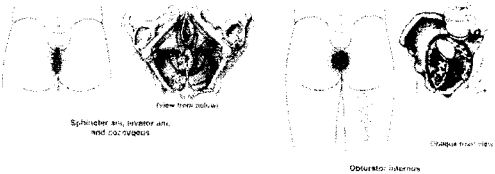


Examples of referred pain patterns and location of trigger points. X marks neck and target fingers. Pain in neck, Rhomboid muscles, Trapezius, Levator scapulae and Splenius. (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

PELVIC, GLUTEAL, AND THIGH PAIN

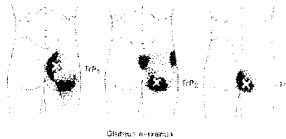


Referred pain patterns of trigger points in quadratus lumborum muscle. Superior view shows pain patterns typical of sacral pain. Inferior view shows pain patterns of central trigger points that are palpable. Inferior view shows pain patterns of distal points that may have associated pain from lower extremities. See separate flip charts for trigger points in piriformis, gluteus medius, gluteus minimus, and gluteus maximus muscles. (From Travell & Simons, 1999, p. 143, Fig. 12.12.)



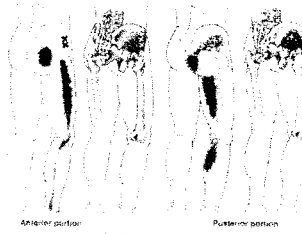
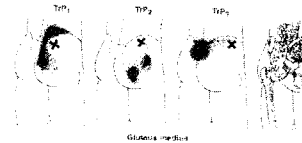
Referred pain patterns of trigger points in piriformis, gluteus medius, and gluteus minimus muscles. Right: in right obturator foramen. Left: in right obturator foramen. (From Travell & Simons, 1999, p. 143, Fig. 12.13.)

Referred pain patterns of trigger points in gluteus medius muscle. Superior view shows pain patterns of central trigger points that are palpable. Inferior view shows pain patterns of distal points that may have associated pain from lower extremities. (From Travell & Simons, 1999, p. 143, Fig. 12.14.)



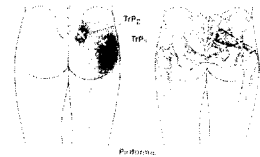
PELVIC, GLUTEAL, AND THIGH PAIN

Pain patterns of right trigger points in right gluteus medius muscle. Superior view shows pain patterns of central trigger points that are palpable. Inferior view shows pain patterns of distal points that may have associated pain from lower extremities. (From Travell & Simons, 1999, p. 143, Fig. 12.15.)



Referred pain patterns of trigger points in gluteus minimus muscle. Superior view shows pain patterns of central trigger points that are palpable. Inferior view shows pain patterns of distal points that may have associated pain from lower extremities. (From Travell & Simons, 1999, p. 143, Fig. 12.16.)

Referred pain patterns of trigger points in gluteus minimus muscle. Superior view shows pain patterns of central trigger points that are palpable. Inferior view shows pain patterns of distal points that may have associated pain from lower extremities. (From Travell & Simons, 1999, p. 143, Fig. 12.17.)



Guidelines for the use of pharmacological agents that may be used topically. Any combination of drugs may be used upon the discretion of the prescribing physician. The base for such type formulation will depend on the target tissue of the pain. Bases may include DEEP GEL, KRISGEL, KRISTOP, VAN PEN, or the ANHYDROUS BASES. We are available to guide you in the selection of the appropriate delivery vehicle.

Drug	Range Percent	Frequency	Mechanism of Action
Naproxen Na ⁺	10-20	BID –TID	Propionic Acid NSAID
Iuprofen	10-30	TID – QID	Propionic Acid NSAID
Ketoprofen	5 – 10	TID	Propionic Acid NSAID
Diclofenac Na ⁺	2-10	TID	Cyclooxygenase Inhibitor
Piroxicam	0.5-2	BID	Oxicam NSAID
Meloxicam	0.5-2	BID	COX-2 Inhibitor
Indomethacin	15-20	BID	Methylated Indole NSAID
Cyclobenzaprine	1-4	BID-TID	Muscle Relaxant
Guafenesin	10	BID-QID	Muscle Relaxant
Dextromethorphan	10	BID-QID	NMDA receptor antagonist local action
Ketamine	0.5-15	BID-QID	NMDA receptor antagonist
Nifedipine	10-16	TID	Non-NMDA Ca ⁺² Channel Antagonist
Clonidine	0.1-0.3	TID	Alpha-2 Agonist
Capsaicin	0.025-0.1	TID-QID	Substance P Blockade
Amitriptyline	1-3	TID	NE reuptake inhibitor (Most TCA's)
Baclofen	2-5	TID	GABA _b agonist
Gabapentin	5-10	TID	Voltage regulated Na ⁺ & Ca ⁺² Blockade, Glutamate Antagonist
Pentoxifylline	5-10	TID	TNF α Inhibitor, Peripheral Vasodilator
Guanethidine	0.1-0.2	TID	Sympathetic Inhibition
Diphenhydramine	5-10	TID	Voltage regulated Na ⁺ & Ca ⁺² Blockade
Flurbiprofen	5-10	BID	Propionic Acid NSAID
Loperamide	5-10	TID	Mu Agonist