

DADS/DSHS EXECUTIVE FORMULARY COMMITTEE MINUTES
October 12, 2007

The Executive Formulary Committee convened on Friday, October 12, 2007 in Conference Room 240 - CO Building
2. The meeting was called to order by Dr. Matthews, Chair at 9:49 a.m.

Janet Adams, MSN, RN, CNS	Absent	Joe Vesowate (non-voting)	Absent
Rosha Chadwick, R.Ph.	Absent	Bob Burnett (non-voting)	Absent
Jeanna Heidel, Pharm.D.	√	Jay Norwood, MSN, RN (non-voting)	Absent
J. Brett Hood, M.D.	Absent	Fred Bibus, M.D. (non-voting)	Absent
Jeff Matthews, M.D.	√	Nina Muse, M.D. (non-voting)	Absent
Lisa Mican, Pharm.D.	√	Bill Race, M.D. (non-voting)	√
Connie Millhollon, RN,	Absent	Mark Jeffers (non-voting)	Absent
Victoria B. Morgan, M.D.	Absent	Vacant Center Position	
Ann L. Richards, Pharm.D.	√	Vacant Center Position	
Bernardo C. Tarin-Godoy, M.D.	Absent	Vacant Center Position	
Kenny Dudley (non-voting)	Absent	Vacant State School Position	

Guest Present: Sharon Tramonte, Pharm.D., San Antonio State School; Carissa Brewer, Pharm.D., Resident, Austin State Hospital; Theresa Wagner, Pharmacy Student, Austin State Hospital; Alana Abernathy, Pharmacy Volunteer, Austin State Hospital

Introductions

Dr. Jeff Matthews was introduced as the new Chair of the Committee. Dr. Ward has resigned from Kerrville State Hospital and will be working for Hill Country Community MHMR Center. Dr. Matthews is a psychiatrist at Kerrville State Hospital

Approval of Minutes of June 22, 2007

On a motion of Dr. Heidel, seconded by Dr. Mican, the minutes of the June 22nd meeting were approved as previously distributed.

Adverse Drug Reaction Reports

The Executive Formulary Committee received numerous adverse drug reaction reports. In the first case, a 50 year old

male developed priapism secondary to paliperidone (Invega®). The patient had been on paliperidone for approximately 18 days at the time of the adverse drug reaction. The patient complained of a painful erection at 12:30 a.m. At 8:40 a.m., he was reassessed and the erection was still present. He was transferred to the local emergency room where the corpus cavernosorum was decompressed by the extraction of blood followed by a local injection (agent used was not specified). The tumescence shrank and the patient returned to the state hospital with the recommendation to discontinue the paliperidone. The patient was discharged from the state hospital six days later without recurrence of priapism.

In the next case, a 25 year old male developed a possible myoclonus secondary to lithium. The patient was receiving lithium in divided doses (total daily dose ranges from 600 mg/day to 900 mg/day). The father expressed concern regarding the patient's tremors, jerking motions, loss of balance, inability to sustain a conversation and leaning to one side while walking. A neurology consult was obtained and the lithium was discontinued prior to the neurologist appointment. The neurologist reported that the patient was having spinal myoclonus that was a medication side effect. The patient's movements stopped and the patient was eventually discharged.

A 40 year old female was admitted to a state hospital for the treatment of schizoaffective disorder. She was initially prescribed ziprasidone (Geodon®) 120 mg/day and duloxetine (Cymbalta®) 60 mg/day. The ziprasidone dose was increased to 160 mg/day and quetiapine (Seroquel®) was initiated and increased to 300 mg/day. Trazodone (Desyrel®) 100 mg was added at bedtime. An EKG was obtained eleven days after admission and it showed QTc prolongation of 477 msec (QT interval 386 msec). No other cardiac abnormalities were noted. The patient did not complain of syncope, palpitations, or other cardiovascular symptoms during her hospital stay. The patient did not have any history of cardiac conduction abnormalities. No baseline or follow-up EKGs were obtained. The ziprasidone was tapered and discontinued during this hospitalization.

A 44 year old male was admitted to a state hospital for the treatment of schizoaffective disorder, bipolar type. The patient had a history of hypercholesterolemia, myocardial infarction and hypertension. The patient was prescribed the medication regimen that the patient took prior to admission. This included olanzapine (Zyprexa®) 30 mg/day, simvastatin (Zocor®) 20 mg/day, metoprolol (Toprol®) 100 mg/day, lisinopril (Zestril®) 2.5 mg/day, clopidogrel (Plavix®) 75 mg/day, isosorbide dinitrate (Isordil®) 60 mg/day and aspirin 325 mg/day. Clozapine (Clozaril®) was initiated due to severe aggression and continued psychosis despite several trials on antipsychotic medication. The patient was titrated to clozapine 100 mg in the morning and 200 mg at bedtime. Three days after reaching this dose, the patient had a rash localized to the face which appeared red and was dry/peeling. The patient reported urticaria due to the rash. The next day, the rash became more severe and began to spread from the face to the neck and trunk regions. The clozapine was discontinued and the rash began to resolve without further event. The patient was not re-challenged on clozapine and the patient continued with the dosing regimen ordered at admission with the exception of olanzapine which was increased to 40 mg/day and metoprolol which was increased to 150 mg/day.

In the next case, a 52 year old female was admitted to a state hospital for the treatment of bipolar disorder. Upon admission, it was noticed that the patient's RBC, hematocrit and hemoglobin were low. Medications at the time of admission included: duloxetine (Cymbalta®) 60 mg/day, divalproex (Depakote®) EC 1,000 mg/day, levothyroxine (Synthroid®) 0.5 mg/day, amlodipine (Norvasc®) 5 mg/day, labetalol (Trandate®) 200 mg/day and pantoprazole (Protonix®) 40 mg/day. The patient reported a chronic history of NSAID use for many years prior to admission. During her admission, the patient was given doses of naproxen (Naprosyn®) and ibuprofen (Motrin®). A follow up CBC showed a continuous decrease in hemoglobin and the patient complained of dizziness. The patient was transferred to a medical facility where an endoscopic exam showed a large deep ulcer in the gastric antrum with a clean white base and the patient was diagnosed with an upper GI bleed. The patient received 2 units of PRBC. In addition iron supplements were prescribed, the pantoprazole was continued and all NSAIDS were discontinued.

A 15 year old female patient was hospitalized for self-injurious behavior and suicidal ideation. Patient has a history of bipolar disorder. About one month after admission, the patient denied suicidal ideation but was still having persistent thoughts to self-mutilate and would scratch herself. She also voiced cravings for alcohol. Naltrexone was started for self-injurious behavior and alcohol cravings. At this time, the patient was taking ziprasidone (Geodon®) 160 mg/day, topiramate (Topamax®) 200 mg/day, citalopram (Celexa®) 20 mg/day (which was increased to 40 mg/day the next day) and hydroxyzine (Atarax®) 25 mg prn. A week later, the patient continued to self-mutilate and required restraints and emergency medications. The patient expressed increased frustration over the past few days and feelings

of hopelessness, depression and suicidality. The patient cut her wrist with scissors after becoming agitated. The next day, the patient expressed thoughts of killing both of her parents (for past abuse) and thoughts of killing herself. The naltrexone was discontinued and the patient was placed on suicide precaution. The citalopram was discontinued five days later with a note: "worsening hypomania and increased depressive symptoms." The patient's suicide thoughts resolved about eight days later.

At the previous meeting, it was suggested that based on empirical observations that adolescent patients were more prone to have problems with a decrease in WBC or ANC with quetiapine (Seroquel®), oxcarbazepine (Trileptal®) or divalproex (Depakote®). During this discussion, it was suggested that Waco Center for Youth be contacted to determine their frequency. In contacting Waco Center for Youth, they did not report any empirical observation of this side effect. Austin State Hospital is waiting DSHS IRB approval to review neutropenia and leukopenia associated with the use of divalproex and quetiapine in the child and adolescent population.

New Drug Applications

(Please refer to Attachment A for the monographs and applications that were considered when determining action by the committee.)

Tamsulosin (Flomax®) - discussed by Dr. Brewer

Tamsulosin is a selective antagonist of alpha 1A-adrenoreceptor subtype in the prostate. It selectively inhibits alpha 1A-adrenoreceptors in the human prostate allowing the smooth muscle surrounding the neck of the urethra to relax and allow for the normal flow of urine that may be inhibited by the enlarging of the prostate in benign prostatic hypertrophy. Tamsulosin is indicated for the alleviation of urinary symptoms in men including a weak or interrupted urinary stream, a feeling that one cannot empty one's bladder completely, urinary hesitancy, urinary frequency, especially at night and urinary urgency, due to benign prostatic hyperplasia or an enlargement of the prostate. The recommended dose is 0.4 mg once daily 30 minutes after the same meal each day. If the patient fails to respond within 2-4 weeks after initiation of treatment at the 0.4 mg/day, the dose may be increased to 0.8 mg/day.

Following discussion, on motion of Dr. Heidel, seconded by Dr. Mican, the request to add tamsulosin (Flomax®) to the formulary was approved. The Formulary CheckList was completed.

Pregabalin (Lyrica®) - discussed by Dr. Mican

Pregabalin is classified as a miscellaneous anticonvulsant. The mechanism of action is unknown. Results with genetically modified mice and with compounds structurally related to pregabalin (such as gabapentin) suggest that pregabalin's binding to the alpha₂-delta site (an auxiliary subunit of voltage-gated calcium channels in CNS tissues) may allow for its anti-nociceptive and antiseizure effects in animal models. It is possible that pregabalin is a modulator of calcium channel function since it reduces the calcium dependent release of several neurotransmitters *in vitro*. Although the structure of pregabalin is derived from the inhibitory neurotransmitter GABA, it does not bind directly to GABA_A, GABA_B, or benzodiazepine receptors, and it does not alter rate brain GABA concentration or have acute effects on GABA uptake or degradation. Both the density of GABA transporter protein and the rate of functional GABA transport increases in cultured neurons that receive prolonged application of pregabalin. Pregabalin does not block sodium channels, is not active at opiate receptors, and does not alter cyclooxygenase enzyme activity. It is inactive at serotonin and dopamine receptors and does not inhibit dopamine, serotonin, or norepinephrine reuptake. Pregabalin is indicated in neuropathic pain associated with diabetic peripheral neuropathy, post herpetic neuralgia, adjunctive therapy for adult patients with partial onset seizures and fibromyalgia. For monitoring, one needs to obtain a baseline serum creatinine, monitor for edema/weight gain, monitor for myalgia and obtain creatinine kinase when clinically indicated.

Following discussion, on motion of Dr. Heidel, seconded by Dr. Mican, the request to add pregabalin (Lyrica®) to the formulary was approved. The Formulary CheckList was completed.

Psychotropic Audit Criteria – Comparison to TIMA

Dr. Muse requested that the Committee consider comparing the TIMA Guidelines to the monitoring parameters for consistency between the two documents. The TIMA Procedural Manual for the Schizophrenia Module was last updated in 2003. Dr. Crismon reports that the module should be updated soon.

FDA Alerts

The FDA has issued the following alerts that may have impact on our facilities.

For haloperidol (Haldol®), the warning section has been updated to include that Torsades de Pointes and QT prolongation have been observed in patients receiving haloperidol, especially when the drug is administered intravenously or in higher doses than recommended. Haloperidol is not approved for intravenous use. The updated warnings noted that:

- Higher doses and intravenous administration of haloperidol appear to be associated with a higher risk of QT prolongation and Torsades de Pointes (TdP).
- Although cases of sudden death, TDP and QT prolongation have been reported even in the absence of predisposing factors, particular caution is advised in treating patients using any formulation of haloperidol who:
 - have other QT- prolonging conditions, including electrolyte imbalance (particularly hypokalemia and hypomagnesemia),
 - have underlying cardiac abnormalities, hypothyroidism, or familial QT syndrome, or
 - are taking drugs known to prolong QT interval.
- Because of this risk of TdP and QT prolongation, EKG monitoring is recommended if haloperidol is given intravenously.
- Haloperidol is not approved for intravenous administration.

The olanzapine (Zyprexa®) and olanzapine/fluoxetine (Symbyax®) product labels have been updated based on recently completed pooled analysis of Lilly's clinical trial data in adults and adolescents, information from two large non-Lilly studies of atypical antipsychotics (CATIE and CAFÉ) and discussions with the FDA. The new labeling language includes the following:

- Monitoring of glucose, weight, and lipids is recommended during olanzapine and olanzapine/fluoxetine combination treatment.
- Abnormal or borderline glucose levels at baseline are an important risk factor for the further glucose increase.
- While relative risk estimates are inconsistent, the association between atypical antipsychotics and increase in glucose levels appears to fall on a continuum and olanzapine appears to have a greater association than some other atypical antipsychotics.
- Significantly greater mean increases in total cholesterol, LDL cholesterol, and triglycerides were observed in olanzapine-treated patients compared with placebo-treated patients both with and without evidence of dyslipidemia at baseline.
- Labeling provides information on magnitude and distribution of weight gain over a two year period in olanzapine-treated patients.
- Labeling also provides information on glucose, weight gain, and lipids from studies of olanzapine for adolescent patients. Please note that olanzapine and olanzapine/fluoxetine are not approved currently for use in children and adolescents aged less than 18 years old.

This information has been previously distributed to the field.

Annual and Quarterly Non-Formulary Drug Justification Report

The top ten non-formulary drug justification requests by volume for FY07 were reviewed. The top ten include:

- Carisoprodol (Soma®)
- Lactobacillus granules (Lactinex®)
- Levalbuterol (Xopenex®)
- Lovastatin (Mevacor®)
- Tamsulosin (Flomax®)
- Melatonin
- Pregabalin (Lyrica®)
- Propoxyphene/acetaminophen (Darvocet-N®)
- Cetirizine (Zyrtec®)
- Urea (Carmol®) cream

The two products (tamsulosin, pregabalin) were previously added to the Drug Formulary at this meeting are on the list. The Committee discussed the use of carisoprodol and propoxyphene. Carisoprodol has a high abuse potential with many states moving this drug into a controlled substance category. It has been reported that it is marginally effective and that patients with a previous substance abuse history are more likely to abuse carisoprodol. Texas added carisoprodol to inventory requirements of all controlled substances. Memos regarding the use of propoxyphene and propoxyphene containing products have been previously distributed. The Committee recommended that this information be shared with the field again.

Not all facilities are reporting their non-formulary use. Therefore, Dr. Richards will follow up with the Pharmacy Directors that have not been reporting.

Selective Serotonin Reuptake Inhibitors (SSRI) Drug Review

Ms. Wagner presented the SSRI medication sectional review. See Attachment B. The current drug formulary has the following listing for SSRIs:

Citalopram

Tablet: 10 mg, 20 mg, 40 mg

Liquid, oral: 10 mg/5 ml

Escitalopram

Tablet: 5 mg, 10 mg, 20 mg

Fluoxetine

Tablet: 10 mg, 20 mg

Capsule: 10 mg, 20 mg

Liquid, oral: 20 mg/5 ml

Fluvoxamine

Tablet: 25 mg, 50 mg, 100 mg

Paroxetine

Tablet: 10 mg, 20 mg, 30 mg, 40 mg

Tablet, controlled release: 12.5 mg, 25 mg, 37.5 mg, 50 mg

Sertraline

Tablet: 25 mg, 50 mg, 100 mg

Concentrate, oral: 20 mg/ml

The following recommendations regarding the Formulary listing were made:

- Escitalopram
 - Add 5 mg/5 ml solution to the formulary because it is another dosage form for patients who are unable to swallow tablets or who are suspected of cheeking medication
- Fluoxetine
 - Prozac® 90 mg delayed release – addition is not recommended
 - Sarafem® - addition is not recommended due to cost disadvantage compared to generic fluoxetine
 - fluoxetine 40 mg capsules (\$0.82/day) – addition is not recommended because it is more cost effective to administer two 20 mg capsules (\$0.17/day)
- Paroxetine
 - Controlled release tablet, delete 50 mg as the CR tablet is not available in 50 mg; remove from the formulary 12.5 mg, 25 mg, and 37.5 mg
 - Pexeva® - addition is not recommended due to cost disadvantage compared to generic paroxetine hydrochloride
 - Add 10 mg/5 ml suspension to the formulary because it is another dosage form for patients who are unable to swallow tablets or who are suspected of cheeking medication
- Antidepressants Suggested Maximum Dose
 - If paroxetine controlled release remains on the formulary, add maximum dose of 62.5 mg/day to drug tables.
- SSRI Medication Audit Criteria and Guidelines
 - Title: add escitalopram (Lexapro®) to the list of SSRIs
 - Title: correct spelling of citalopram
 - Indications: change anxiety disorders to generalized anxiety disorder, change social phobia to social anxiety disorder, and add posttraumatic stress disorder
 - Contraindications: add escitalopram to absolute contraindication #2
 - Concurrent administration of MAOI (or within 14 days of receiving citalopram, escitalopram, sertraline, paroxetine, or fluvoxamine; or within 35 days of receiving fluoxetine).
 - Patient monitoring parameters: worsening of depression, suicidality, or unusual changes in behavior was added in the previous meeting.

On a motion of Dr. Heidel, seconded by Dr. Mican, these recommendations were approved.

Since the recommendation for the deletion of paroxetine CR was accepted, feedback will be obtained from the field before the product is deleted.

Drug Formulary Sectional Review-

Dermatological Agents, Part 1

Dr. Tramonte provided the review of the Dermatological Agents, Part 1 with her recommendations. Attachment C. The comparative cost index and dosage availability of these agents was reviewed (included in Attachment C).

Dr. Tramonte recommended that salicylic acid/sulfur, doxepin (Zonalon®) and ciclopirox (Loprox®, Penlac®) be added to the Formulary.

Salicylic acid/sulfur combination products are acne agents, skin cleansers and antiseborrheic agents. Salicylic acid is keratolytic at concentrations of approximately 2% to 6%. These concentrations are generally used for the treatment of dandruff, seborrhea and psoriasis. Sulfur, a keratolytic, provides peeling and drying actions. Although it may help to resolve comedones, it may also promote the development of new ones by increasing horny cell adhesion. Although these products are topical, some systemic absorption is possible if used over a large area of skin or if the skin is inflamed. The salicylic acid/sulfur products are used to treat dandruff, seborrheic dermatitis, acne, tinea infections and psoriasis. These products help relieve the itching

and scalp flaking associated with dandruff and aid in the treatment of mild acne and oily skin by softening the hard shell of acne blemishes, dissolving and removing blackheads, washing away excess oils which may cause blackheads, and refreshes the skin. See Attachment D.

In this recommendation, doxepin is a topical agent. Doxepin does have H1 and H2 histamine receptor blocking actions, the exact mechanism by which doxepin exerts its antipruritic effect is unknown. Doxepin cream can be absorbed percutaneously with plasma concentrations ranging from non-detectable to 47 ng/ml. Topical doxepin is indicated for the short-term (up to 8 days) management of moderate pruritus in adult patients with atopic dermatitis or lichen simplex chronicus. See Attachment E.

Ciclopirox is an anti-infective; antifungal dermatological product. Ciclopirox acts by chelation of polyvalent cations (Fe³⁺ or Al³⁺) resulting in the inhibition of the metal-dependent enzymes that are responsible for the degradation of peroxides within the fungal cell. The nail lacquer topical solution is a component of a comprehensive management program for topical treatment of immunocompetent patients with mild to moderate onychomycosis of fingernails and toenails, without lunula involvement, due to *Trichophyton rubrum*. The shampoo is indicated for the treatment of seborrheic dermatitis of the scalp in adults. See Attachment F.

On a motion of Dr Mican, seconded by Dr. Heidel, the recommendation to add salicylic acid/sulfur, doxepin (Zonalon®) and ciclopirox (Loprox®, Penlac®) was approved. The Formulary CheckLists for these agents were completed.

Dr Tramonte recommended that the following products be deleted from Formulary:

Generic Name	Brand Name	Dosage forms to be deleted	Dosage forms still available
Calcium undecylenate	Caldesene®	Powder, topical: 10%	None
Zinc undecylenate	Desenex®	Cream, topical: 20% Foam, topical: 10% [with 35.2% alcohol] Ointment, topical: 30 gm Powder, topical: 19%	None

The calcium undecylenate did not have any purchases for 12 months and the zinc undecylenate has been reformulated. On a motion of Dr. Mican, seconded by Dr. Heidel, the recommendation to delete these products was approved. Feedback will be obtained from the field.

Dr. Tramonte made the following recommendations:

- Add current formulary agents to additional sections
 - Acne Agents – Tazarotene (Tazorac®, Avage®), Sulfacetamide sodium (Sebizon®)
 - Diaper Rash Agents – Zinc oxide
 - Antiseborrheic Agents – Coal tar
 - Antipsoriatics – Coal tar
- Dosage forms of current formulary agents to add
 - Non-soap cleanser: bar
 - Salicylic acid – Wash, Shampoo, Cleanser
- Additional trade names to add to current formulary agents
 - Abrasive cleanser – Salac®
 - Salicylic acid – Salex®, Neutrogena®
- Move Burn Agents section under Anti-Infective
- Move Antiseptics & Germicides under Anti-Infective

- Consider adding Wound Healing Agents to Dermatological Section

On a motion of Dr. Mican, seconded by Dr. Heidel, these recommendations were approved.

Drug Formulary 2008

The Psychotropic Dosage Tables for the 2008 Drug Formulary were reviewed. The updated Psychotropic Dosage Tables include child and adolescent dosing. In general, it was recommended that numbers be used instead of symbols for footnoting and to leave boxes blank if there is no data. For insufficient data, it was recommended that “ID” be used with the notation that “ID” represents “insufficient data.” For the Antipsychotic Dosage Table, it was recommended that paliperidone (Invega®) be added with a maximum dose of 12 mg/day. In the Antidepressant Dosage Table, it was recommended that for bupropion (Wellbutrin®) SR that a note that “no single dose > 200” be added. It was also recommended that the dose of citalopram (Celexa®) in the adolescent population be 60 mg/day. For the Mood Stabilizer table it was recommended that verapamil (Calan®) be deleted from the Table and that the therapeutic serum concentration column be moved next to the drug column. For the Stimulant Table, it was recommended that the reference to the “suggested maximum dosage in children” be deleted as the Table now contains children and adolescent dosages. For the Sedatives and Hypnotics Table it was recommended that the trazodone (Desyrel®) dose for adults be changed to 200 mg as previously recommended.

For the Reserve Drugs, it was recommended that the clozapine (Clozaril®, Fazacllo®) Guidelines for Use match the clozapine audit criteria. It was recommended that divalproex (Depakote®) ER be removed from the reserve category.

The Drug Formulary 2008 will be updated to include the actions taking at this meeting. On a motion of Dr. Mican, seconded by Dr. Heidel, the recommendation to approve the 2008 Drug Formulary was approved.

The Committee recommended that the purchase history of macrolide antibiotics and amobarbital (Amytal®) be completed for review at the next meeting.

Clozapine Consent – Sharing of Information

Dr. Heidel reported that representatives of Azur Pharma, makers of clozapine (Fazacllo®) oral disintegrating tablet, have been requesting information regarding patients on their products that the facility feels is protected health care information. The company is requesting discharge placement information on the patient stating that it is needed for “continuity of care.” No other brand of clozapine is requesting such information. The Azur representative presented one of our standard consent forms with an additional line typed on it stating that the patient authorizes release of information to the drug company. It was reported by the Azur representative that other state hospitals in our organization are currently using this consent and providing the information to their company. The Committee unanimously agreed that there is no such role of the drug company in the continuity of care for our clozapine patients. In addition, this issue will be discussed at the Pharmacy Directors’ Meeting.

Sectional Review for Next Meeting

The second part of dermatological agents will be reviewed at the next meeting.

Dr. Mican will present the non-SSRI antidepressants.

Miscellaneous Items

The Committee recommended that fenofibrate (Tricor®) and the omega-3 fatty acids be reviewed at the next meeting.

Next Meeting Date

The next meeting was scheduled for February 8, 2008.

Adjourn

There being no further business, the meeting was adjourned at 1:50 p.m.

APPROVED:



Jeffery Matthews, M.D., Chair
Executive Formulary Committee

Attachments

- Attachment A – New Drug Applications
- Attachment B – Selective Serotonin Reuptake Inhibitors (SSRIs) Medication Sectional Review
- Attachment C – Dermatological Part 1 Class Review & Cost Review and Alphabetical Listing
- Attachment D – Salicylic acid/sulfur Monograph
- Attachment E – Doxepin (Zonalon®) Monograph
- Attachment F – Ciclopirox (Loprox®, PenLac®) Monograph

Minutes Prepared by:

Ann L. Richards, Pharm.D., BCPP

APPENDIX 1: NEW DRUG APPLICATION FORM

415 — C
EXHIBIT A

TEXAS DEPARTMENT OF MENTAL HEALTH AND MENTAL RETARDATION

NEW DRUG APPLICATION
(for inclusion in the *TDMHMR Drug Formulary*)

** (THE NEW DRUG APPLICATION PROCESS IS DESCRIBED ON THE BACK OF THIS FORM.) **

Date: 9/25/07

Name of practitioner submitting the application: Dr. Larry Hawkins

Name of entity with which the practitioner is associated by employment or contract (i.e., state hospital, state school, state center, or local authority (state-operated community services (SOCS) or community MHMR center)):

Information regarding new drug:

Therapeutic Classification	<i>anticonvulsant and antineuralgic</i>
Generic Name	<i>pregabalin</i>
Trade Name(s)	<i>Lyrica</i>
Manufacturer(s)	<i>Pfizer</i>
Dosage Form(s)	<i>Capsules; 25mg, 50mg, 75mg, 100mg, 150mg, 200mg, 225mg, 300mg</i>

Explain the pharmacological action or use of this drug: *A GABA derivative that binds to alpha-delta sites (calcium channels) in CNS tissue. Reduces the calcium dependent release of several neurotransmitters.*

Explain the advantages of this drug over those listed in the formulary:

see attached

State which drugs this new drug would replace or supplement:

see attached

application is approved

[Signature]
signature of chairman of facility pharmacy and therapeutics committee

OR

application is appropriate and complete

signature of clinical/medical director or designee

Selective Serotonin Reuptake Inhibitors (SSRIs) Medication Sectional Review

Medication	Dosage Form	Usual Frequency	Cost/Day*	FDA Indications	F/NF
Celexa (citalopram)	10, 20, 40 mg tablets 10mg/5mL solution	QD	\$0.09	depression	F
Lexapro (escitalopram)	5, 10, 20 mg tablets [♦] 5mg/5mL solution [♦]	QD	\$2.28	depression, GAD	F NF
Prozac (fluoxetine)	10, 20 mg tablets 10, 20, 40 mg capsules 20mg/5mL solution 90 mg delayed release capsules [♦]	QD Q week	\$0.08	bulimia nervosa, depression, OCD, panic disorder, PMDD [†]	F, 40mg NF F NF
Sarafem (fluoxetine)	10, 20 mg tablets [♦]	QD	\$5.07	PMDD	NF
Luvox (fluvoxamine)	25, 50, 100 mg tablets 10, 20, 30, 40 mg tablets	BID	\$1.25	OCD	F F
Paxil (paroxetine hydrochloride)	10mg/5mL suspension [♦] 12.5, 25, 37.5 mg controlled release tablets [♦]	QD	\$0.86	depression, GAD ^{IR} , OCD ^{IR} , panic disorder, PMDD ^{CR} , PTSD ^{IR} , social anxiety disorder	F NF F
Pexeva (paroxetine mesylate)	10, 20, 30, 40mg tablets [♦]	QD	\$3.48	depression, OCD, panic disorder	NF
Zoloft (sertraline)	25, 50, 100 mg tablets 20mg/mL concentrated solution [♦]	QD	\$0.11	depression, OCD, panic disorder, PMDD, PTSD, social anxiety disorder	F

F=Formulary, NF=Non-Formulary

*DSHS acquisition cost from McKesson, cost based on generic where applicable, total daily cost calculated as average daily dose for treatment of depression or usual daily dose

[♦]Available only in Brand

[†]Sarafem only

^{IR} Immediate release only

^{CR} Controlled release only

GAD – generalized anxiety disorder

OCD – obsessive compulsive disorder

PMDD – premenstrual dysphoric disorder

PTSD – posttraumatic stress disorder

Citalopram

Tablet: 10mg, 20mg, 40mg

Liquid, oral: 10mg/5mL

Escitalopram

Tablet: 5mg, 10mg, 20mg

Fluoxetine

Tablet: 10mg, 20mg

Capsule: 10mg, 20mg

Liquid, oral: 20mg/5mL

Fluvoxamine

Tablet: 25mg, 50mg, 100mg

Paroxetine

Tablet: 10mg, 20mg, 30mg, 40mg

Tablet, controlled release: 12.5mg, 25mg, 37.5mg, 50mg

Sertraline

Tablet: 25mg, 50mg, 100mg

Concentrate, oral: 20mg/mL

Recommendations:

- Escitalopram
 - Add 5mg/5mL solution to the formulary because it is another dosage form for patients who are unable to swallow tablets or who are suspected of cheeking medication
- Fluoxetine
 - Prozac® 90mg delayed release – addition is not recommended (see attached)
 - Sarafem® - addition is not recommended due to cost disadvantage compared to generic fluoxetine
 - fluoxetine 40mg capsules (\$0.82/day) – addition is not recommended because it is more cost effective to administer two 20mg capsules (\$0.17/day)
- Paroxetine
 - Controlled release tablet, delete 50mg as the CR tablet is not available in 50mg; remove from the formulary 12.5mg, 25mg, and 37.5mg (see attached)
 - Pexeva® - addition is not recommended due to cost disadvantage compared to generic paroxetine hydrochloride (see attached pharmacokinetic comparison)
 - Add 10mg/5mL suspension to the formulary because it is another dosage form for patients who are unable to swallow tablets or who are suspected of cheeking medication
- Antidepressants Suggested Maximum Dose
 - If paroxetine controlled release remains on the formulary, add maximum dose of 62.5mg/day to drug tables.
- SSRI Medication Audit Criteria and Guidelines
 - Title: add escitalopram (Lexapro®) to the list of SSRIs
 - Title: correct spelling of citalopram
 - Indications: change anxiety disorders to generalized anxiety disorder, change social phobia to social anxiety disorder, and add posttraumatic stress disorder
 - Contraindications: add escitalopram to absolute contraindication #2
 - Concurrent administration of MAOI (or within 14 days of receiving citalopram, escitalopram, sertraline, paroxetine, or fluvoxamine; or within 35 days of receiving fluoxetine).
 - Patient monitoring parameters: worsening of depression, suicidality, or unusual changes in behavior was added in the previous meeting.

Prozac® (fluoxetine) delayed release 90mg capsules

Efficacy and Safety:

Prozac (fluoxetine) 90 mg delayed release capsules has been studied to be used as maintenance therapy for the prevention of relapse in major depressive disorder (MDD).¹ Switching to once weekly fluoxetine has been studied after remission has occurred with patients taking fluoxetine 20mg/day, paroxetine 20mg/day, citalopram 20-40mg/day, and sertraline 50-100mg/day.²⁻⁴ Seventy-nine percent of the patients switched from paroxetine, citalopram, and sertraline successfully completed the 12 week follow-up without relapse.² After 13 weeks of open-label treatment with 20 mg/day of fluoxetine, responders (n=501) were randomized to either receive fluoxetine 20mg/day, fluoxetine 90mg/week, or placebo for 25 weeks. Relapse rates for either fluoxetine treatment were significantly lower than placebo, and safety and tolerability profiles were similar between treatment groups.³ Compliance was also compared over 12 weeks for patients taking fluoxetine 20 mg once daily and fluoxetine 90 mg once weekly. Mean compliance was 85.9% for patients taking 90 mg/week and 79.4% for patients taking 20 mg/day. There was not a statistically significant difference in rates of compliance between the two groups.⁵

Peak and trough plasma concentrations have increased fluctuations for once weekly fluoxetine compared with daily dosing.^{1,4} Average steady-state fluoxetine concentrations are approximately 50% lower with once weekly dosing compared with once daily dosing.^{1,4} The average fluoxetine trough concentrations decreased by 76% and norfluoxetine decreased by 47% when patients were switched from 20 mg once daily to 90 mg once weekly.^{1,4}

Conclusion:

Fluoxetine 90 mg delayed release is for use in maintenance therapy with an equivalency to only 20mg/day of fluoxetine, has only been studied in patients without a history of psychiatric disorders or bipolar disorders, and currently does not have a generic available. The daily cost would be \$3.28 compared to \$0.08 for fluoxetine 20mg making it a more expensive alternative.⁶

Recommendation:

I would not recommend adding fluoxetine 90 mg delayed release capsules to the formulary.

References:

1. Prozac® (fluoxetine) [prescribing information]. Indianapolis, IN. Eli Lilly and Company. Revised June 21, 2007.
2. Miner CM, Brown EB, Gonzales JS, Munir R. Switching patients from daily citalopram, paroxetine, or sertraline to once-weekly fluoxetine in the maintenance of response for depression. *J Clin Psychiatry*. 2002;63(3):232-40.
3. Schmidt ME, Fava M, Robinson JM, Judge R. The efficacy and safety of a new enteric-coated formulation of fluoxetine given once weekly during the continuation treatment of major depressive disorder. *J Clin Psychiatry*. 2000;61(11):851-57.
4. Wagstaff AJ, Goa KL. Once-weekly fluoxetine. *Drugs*. 2001;61(15):2221-8.
5. Claxton A, de Klerk E, Parry M, et al. Patient compliance to a new enteric-coated weekly formulation of fluoxetine during continuation treatment of major depressive disorder. *J Clin Psychiatry*. 2000;61(12):928-32.
6. DSHS acquisition cost from McKesson, total daily cost calculated as one 90mg capsule/week.

Paxil CR® (paroxetine)

Efficacy and Safety:

Data was combined from two identical, randomized, double-blind, flexible-dose, placebo controlled, 12 week studies comparing paroxetine controlled release (CR), paroxetine immediate release (IR), and placebo. After a screening period and one-week placebo washout phase, adult patients (18 to 65 years old) with major depressive disorder (MDD) were assigned to receive either paroxetine CR, paroxetine IR, or placebo. Evaluation of HAM-D score, vital signs, and adverse events occurred at baseline and at weeks 1, 2, 3, 4, 6, 8, and 12. Patients were initiated on 25mg/day of paroxetine CR, 20mg/day of paroxetine IR, or placebo and titrated weekly for efficacy and tolerability (CR max 62.5mg/day, IR max 50mg/day).¹

Paroxetine CR and paroxetine IR were both significantly more efficacious at treating MDD than placebo. Response rates for patients who completed the study were 74% for paroxetine CR ($p \leq 0.05$ vs. placebo), 73% for paroxetine IR ($p \leq 0.05$ vs. placebo), and 61% for placebo. Nausea rates during the first week of treatment were 14% for paroxetine CR ($p \leq 0.05$ vs. paroxetine IR), 23% for paroxetine IR, and 4% for placebo ($p \leq 0.05$ vs. paroxetine CR and IR). By the second week of treatment and for the rest of the study, there were no significant differences in nausea rates between paroxetine treated groups. Treatment discontinuation due to nausea was 3% for paroxetine CR, 4% for paroxetine IR, and 0.5% for placebo treated patients. Overall withdrawal rates due to side effects were 10% for paroxetine CR, 16% for paroxetine IR, and 6% for placebo ($p = 0.0008$ vs paroxetine IR).¹

Adverse Events were reported as follows:¹

	Paroxetine CR n=212	Paroxetine IR n=217	Placebo n=211
	N(%)	N(%)	N(%)
Nausea	50(23.6)*	67(30.9)*	30(14.2)
Somnolence	49(23.1)*	47(21.7)*	17(8.1)
Dizziness	41(19.3)*	36(16.6)*	10(4.7)
Diarrhea	39(18.4)*	29(13.4)*	15(7.1)
Constipation	22(10.4)*	26(12.0)*	9(4.3)
Sweating	14(6.6)*	21(9.7)*	6(2.8)
Tremor	15(7.1)*	15(6.9)*	5(2.4)

CR-controlled release

IR-immediate release

*- $p < 0.05$ vs. placebo

In a similar study, efficacy and tolerability of paroxetine CR, paroxetine IR, and placebo were compared for the treatment of major depressive disorder in 319 elderly patients (≥ 60 years) in a 12-week, multisite, double-blind, placebo-controlled, flexible-dose, randomized trial. After a screening period and one-week placebo washout phase, patients were initiated on 12.5mg/day paroxetine CR (n=104), 10mg/day paroxetine IR (n=106), or placebo (n=109). The doses were titrated weekly based on therapeutic response and tolerability to a max of 50mg/day of paroxetine CR and 40mg/day paroxetine IR. Evaluation of HAM-D score, CGI-S, vital signs, and adverse events occurred at baseline and at weeks 1, 2, 3, 4, 6, 8, and 12.²

Paroxetine CR and paroxetine IR were both significantly more efficacious at treating MDD than placebo. The primary endpoint was average change from baseline in total HAM-D scores. For patients completing the study the adjusted difference between change from baseline for paroxetine

CR and placebo was -3.8 (p<0.001) and -3.5 (p<0.001) for paroxetine IR and placebo. Response rates for patients who completed the study were 86% for paroxetine CR (p<0.001 vs. placebo), 73% for paroxetine IR (p=0.04 vs. placebo), and 55% for placebo. Remission rates for patients who completed the study were 55% for paroxetine CR (p=0.003 vs. placebo), 51% for paroxetine IR (p=0.02 vs. placebo), and 29% for placebo. Overall withdrawal rates due to side effects were 12.5% for paroxetine CR, 16% for paroxetine IR, and 8.3% for placebo.²

Conclusion:

Paroxetine CR and IR are both dosed once daily, efficacious in treating major depressive disorder, have comparable rates of adverse events, and have similar overall tolerability. Paroxetine CR does not have a generic equivalent and the daily cost for 25mg is \$2.73 compared to \$0.86 for paroxetine IR 20mg.³

Recommendation:

I would recommend removing paroxetine CR from the formulary.

References:

1. Golden RN, Nemeroff CB, McSorley P, et al. Efficacy and tolerability of controlled-release and immediate-release paroxetine in the treatment of depression. *J Clin Psychiatry*. 2002;63(7):577-584.
2. Rapaport MH, Schneider LS, Dunner DL, Davies JT, Pitts CD. Efficacy of controlled-release paroxetine in the treatment of late-life depression. *J Clin Psychiatry*. 2003;64(9):1065-1074.
3. DSHS acquisition cost from McKesson, cost based on generic where applicable

Paxil® (paroxetine hydrochloride) vs Pexeva® (paroxetine mesylate) Pharmacokinetics

Formulation	C_{max}	T_{max}	C_{min}	Half-life (t_{1/2})	Time to steady state
Paroxetine hydrochloride	61.7 ng/mL	5.2 hours	30.7 ng/mL	21 hours	~10 days
Paroxetine mesylate	81.3 ng/mL	8.1 hours	43.2 ng/mL	33.2 hours	~13 days

*Patients received 30mg/day

References:

1. Paxil® (paroxetine hydrochloride) [prescribing information]. Research Triangle Park, NC. GlaxoSmithKline. August 2007.
2. Pexeva® (paroxetine mesylate) [prescribing information]. New York, NY. JDS Pharmaceuticals, LLC. 2007.
3. Drug Facts and Comparisons. Facts and Comparisons 4.0 [online]. 2007. Available from Wolters Kluwer Health, Inc. Accessed October 8, 2007.

Memorandum

To: Executive Formulary Committee
From: Sharon M. Tramonte, Pharm.D.
Through: Ann L. Richards, Pharm.D.
Subject: Class Review
Date: 11 October 2007



Upon review, the following is a synopsis of recommended changes to the DSHS/DADS Formulary.

Recommended for addition:

- ◆ Salicylic Acid/Sulfur
- ◆ Doxepin
- ◆ Ciclopirox

Recommended for deletion:

- Calcium Undecylenate (Caldesene) – no purchases in 2007
- Zinc Undecylenate (Desenex) – formulation change

Other Recommendations:

- Add current formulary agents to additional sections
 - ◆ Acne Agents – Tazarotene (Tazorac, Avage), Sulfacetamide Sodium (Sebizon)
 - ◆ Diaper Rash Agents – Zinc Oxide
 - ◆ Antiseborrheic Agents – Coal Tar
 - ◆ Antipsoriatics – Coal Tar
- Dosage forms of current formulary agents to add
 - ◆ Non-soap cleanser: bar
 - ◆ Salicylic Acid – Wash, Shampoo, Cleanser
- Additional trade names to add to current formulary agents
 - ◆ Abrasive cleanser – Salac
 - ◆ Salicylic Acid – Salax, Neutrogena
- Move Burn Agents section under Anti-Infectives
- Move Antiseptics & Germicides under Anti-Infectives
- Consider adding Wound Healing Agents to Dermatological Section

DERMATOLOGICALS

Acne Agents

Adapalene (Differin)	\$\$\$\$\$\$\$
Benzoyl Peroxide	\$ - \$\$
Benzoyl Peroxide/Clindamycin (BenzaClin)	\$\$\$\$\$\$\$
Clindamycin (Cleocin T)	\$\$\$ - \$\$\$\$\$
Erythromycin/Benzoyl Peroxide (Benzamycin)	\$\$\$\$\$\$\$
Metronidazole (Noritate, MetroGel)	\$\$\$\$\$\$\$
Sulfur/Resorcinol (Sulforcin, Rezamid)	\$\$\$\$
Tretinoin Gel (Retin-A) - RESERVE USE	\$\$\$\$\$ - \$\$\$\$\$\$\$

Skin Cleansers

Abrasive Cleanser (Brasivol, Pernox)	\$\$\$\$
Non-Soap Cleanser (Cetaphil)	\$\$\$ - \$\$\$

Sunscreens

Cream/Lotion: contains a minimum SPF of 15	\$\$\$\$
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Burn Agents

Bacitracin (Baciguent)	\$
Silver Sulfadiazine (Silvadene)	\$\$ - \$\$\$\$\$

Diaper Rash Agents

Diaper Rash Ointment (Desitin, Vitamin A&D Ointment, Diaperene)	\$ - \$\$
Diaper Rash Powder (Mexsana)	\$\$

Antiseborrheic Agents

Selenium Sulfide (Selsun)	\$\$ - \$\$\$
Sulfacetamide Sodium (Sebizon)	\$\$\$\$\$

Antipsoriatics

Calcipotriene (Dovonex)	\$\$\$\$\$
Methotrexate	\$\$\$\$
Selenium Sulfide (Selsun)	\$\$ - \$\$\$
Tazarotene (Tazorac, Avage)	\$\$\$\$\$

Anti-Histamine Agents

Calamine/Zinc Oxide/Glycerin (Calamine Lotion)	\$
Calamine/Pramoxine (Caladryl)	\$\$\$
diphenhydrAMINE (Benadryl)	\$

Antiseptics & Germicides

Benzalkonium Chloride (Zephiran)	\$\$ - \$\$\$
Chlorhexidine (Hibiclens, Bactoshield)	\$\$ - \$\$\$
Hexachlorophene (pHisoHex)	\$\$\$ - \$\$\$\$\$
Povidone-Iodine (Betadine)	^s - \$\$\$

Anti-Infectives

Antibiotics

Bacitracin (Baciguent)	\$
Bacitracin/Polymyxin B (Polysporin)	\$\$\$ - \$\$\$\$
Clindamycin (Cleocin T)	\$\$\$ - \$\$\$\$\$
Gentamicin (Garamycin)	\$\$\$
Metronidazole (Noritate, MetroGel)	\$\$\$\$\$\$
Mupirocin (Bactroban)	\$\$\$\$\$\$
Neomycin/Polymyxin B/Bacitracin (Triple Antibiotic Ointment)	\$
Polymyxin B/Neomycin (Neosporin)	\$\$ - \$\$\$\$\$

Antiviral

Acyclovir (Zovirax)	\$\$\$\$\$\$
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Antifungals

Calcium Undecylenate (Caldesene)	\$\$
Clotrimazole (Lotrimin, Fungoid)	\$\$\$\$\$
Ketoconazole (Nizoral)	\$\$\$\$\$ - \$\$\$\$\$
Miconazole (Monistat)	\$\$\$ - \$\$\$\$\$
Nystatin (Mycostatin)	\$\$ - \$\$\$\$
Terbinafine (Lamisil)	\$\$\$\$\$
Tolnaftate (Tinactin)	\$\$ - \$\$\$
Zinc Undecylenate (Desenex)	\$\$\$ - \$\$\$\$

Abrasive Cleanser (Brasivol, Pernox)

Pernox Cleanser (contains sulfur, salicylic acid, EDTA): 56 g, 113 g

Brasivol Cleanser (contains aluminum oxide): fine (153 g), medium (180 g), rough (195 g) textures

Acyclovir (Zovirax)

Capsule: 200 mg

Cream: 0.5%

Powder for injection: 500 mg, 1000 mg

Ointment, topical 5% [50 mg/g]: 3 gm, 15 gm

Suspension, oral: 200 mg/5 mL

Tablet: 400 mg, 800 mg

Adapalene (Differin)

Cream: 0.1%

Gel, topical: 0.1%

Bacitracin (Baciguent)

Injection: 50,000 units

Ointment, ophthalmic: 500 units/g

Ointment, topical: 500 units/g

Bacitracin/Polymyxin B (Polysporin)

Ointment, ophthalmic: Bacitracin 500 units/Polymyxin B 10,000 units/g

Ointment, topical: Bacitracin 500 units/Polymyxin B 10,000 units/g

Powder, topical: Bacitracin 500 units/Polymyxin B 10,000 units/g

Benzalkonium Chloride (Zephiran)

Concentrate, topical: 17%

Solution, topical, aqueous: 1:750

Spray, topical: 1:750

Benzoyl Peroxide

Bar: 5%

Cream, topical: 10%

Gel, topical: 2.5%, 5%, 10%

Liquid, topical: 5%, 10%

Lotion: 10%

Pads: 9%

Wash, topical: 2.5%, 4%, 5%, 10%

Benzoyl Peroxide/Clindamycin (BenzaClin)

Gel, topical: Benzoyl Peroxide 5%/Clindamycin 1%

Calamine/Zinc Oxide/Glycerin (Calamine Lotion)

Lotion, topical: 120 mL, 240 mL, 480 mL

Calamine/Pramoxine (Caladryl)

Lotion, topical: 180 mL

Calcipotriene (Dovonex)

Cream, topical: 0.005%

Ointment, topical: 0.005%

Calcium Undecylenate (Caldesene)

Powder, topical: 10%

Chlorhexidine (Peridex, Hibiclens, Bactoshield)

Liquid, topical, with 4% isopropyl alcohol: 4%

Rinse, oral, with 12% alcohol: 0.12%

Clindamycin (Cleocin, Cleocin T)

Capsule: 75 mg, 150 mg, 300 mg

Gel, topical: 1% [10 mg/g]

Granules for oral solution: 75 mg/5 mL

Injection: 150 mg/mL

Lotion: 1% [10 mg/mL]

Solution, topical: 1% [10 mg/mL]

Clotrimazole (Lotrimin, Mycelex, Gyne-Lotrimin, Fungoid)

Cream, topical: 1%
Cream, vaginal: 1%, 2%
Lotion: 1%
Solution, topical: 1%
Suppository, vaginal: 100 mg, 200 mg
Tablet, vaginal: 100 mg, 500 mg
Troche: 10 mg

Coal Tar (Ionil-T, Tegrin, Pentrax, Polytar)

Liquid, topical: 30%
Shampoo: 1%, 2%, 2.5%, 5%
Solution, topical: 120 mL, 480 mL

Diaper Rash Ointment (Desitin, Diaperene, Vitamin A&D)

see Cod Liver Oil/Zinc Oxide/Talc (Desitin)
see Vitamin A&D Ointment
see Zinc Oxide/Petrolatum/Imidazolidinyl Urea (Diaperene)

Diaper Rash Powder (Mexsana)

Powder: contains kaolin, eucalyptus oil, camphor, corn starch, lemon oil, zinc oxide

diphenhydrAMINE (Benadryl)

Capsule: 25 mg, 50 mg
Cream, topical: 2%
Injection: 50 mg/mL
Liquid, oral: 12.5 mg/5 mL
Lotion: 1%
Tablet: 25 mg, 50 mg

Erythromycin/Benzoyl Peroxide (Benzamycin)

Gel, topical: Erythromycin 30 mg/Benzoyl Peroxide 50 mg per gram (with 16% alcohol)

Gentamicin (Garamycin)

Cream, topical: 0.1%
Infusion, premixed in D5W: 60 mg, 80 mg, 100 mg
Infusion, premixed in NS: 40 mg, 60 mg, 80 gm, 90 mg, 100 mg, 120 mg
Injection: 10 mg/mL, 40 mg/mL
Injection, intrathecal (preservative free): 2 mg/mL
Ointment, ophthalmic: 0.3% [3 mg/g]
Ointment, topical: 0.1%
Solution, ophthalmic: 0.3% [3 mg/mL]

Hexachlorophene (pHisoHex)

Liquid, topical: 3%

Ketoconazole (Nizoral)

Cream, topical: 2%
Shampoo: 2%
Tablet: 200 mg

Methotrexate

Injection: 2.5 mg/mL, 25 mg/mL
Injection, preservative free: 25 mg/mL
Powder for injection: 20 mg, 25 mg, 50 mg, 100 mg, 250 mg, 1 g
Tablet: 2.5 mg

Metronidazole (Flagyl, Noritate, MetroGel)

Capsule: 375 mg
Cream, topical: 0.75%, 1%
Gel, topical: 0.75% [7.5 mg/mL]
Gel, vaginal: 0.75%
Injection: 5 mg/mL
Powder for injection: 500 mg
Tablet: 250 mg, 500 mg

Miconazole (Monistat)

Cream, topical: 2%
Cream, vaginal: 2%
Injection: 10 mg/mL
Lotion: 2%
Powder, topical: 2%
Spray, topical: 2%
Suppository, vaginal: 100 mg, 200 mg

Mupirocin (Bactroban)

Cream, topical: 2%
Ointment, intranasal: 2%
Ointment, topical: 2%

Neomycin/Polymyxin B/Bacitracin (Triple Antibiotic Ointment)

Ointment, topical: Neomycin 3.5 mg/Polymyxin B 5000 units/Bacitracin 400 units

Non-Soap Cleanser (Cetaphil)

Lotion

Nystatin (Mycostatin)

Cream, topical: 100,000 units/g
Ointment, topical: 100,000 units/g
Powder for oral suspension: 50 million units, 1 billion units, 2 billion units, 5 billion units
Powder, topical: 100,000 units/g
Suspension, oral: 100,000 units/mL
Tablet, oral: 500,000 units
Troche: 200,000 units

Polymyxin B/Bacitracin (Polysporin)

Ointment, ophthalmic: Polymyxin B 10,000 units/Bacitracin 500 units
Ointment, topical: Polymyxin B 10,000 units/Bacitracin 500 units
Powder, topical: Polymyxin B 10,000 units/Bacitracin 500 units

Polymyxin B/Neomycin (Neosporin)

Cream: Polymyxin B 10,000 units/Neomycin 3.5 mg

Povidone-Iodine (Betadine)

Cleanser, topical: 60 mL, 240 mL
Ointment, topical: 10%
Solution, prep: 30 mL, 60 mL, 240 mL, 473 mL, 1000 mL, 4000 mL
Solution, topical: 10%

Salicylic Acid (Compound W, DuoFilm, Mediplast)

Gel, topical: 17%
Liquid, topical: 17%
Lotion: 3%
Plaster: 40%
Soap: 2%

Selenium Sulfide (Selsun)

Shampoo: 1%, 2.5%

Silver Sulfadiazine (Silvadene)

Cream, topical: 1%

Sulfacetamide Sodium (Sulamyd, Sebizon)

Gel: 10%
Lotion: 10%
Ointment, ophthalmic: 10%
Solution, ophthalmic: 10%

Sulfur/Resorcinol (Sulforcin, Rezamid)

Lotion: Sulfur 5%/Resorcinol 2% [with up to 28% alcohol]

Sunscreen/block

Cream/Lotion: contains a minimum SPF of 15

Tazarotene (Tazorac, Avage)

Cream, topical: 0.05%, 0.1%
Gel, topical: 0.05%, 0.1%

Terbinafine (Lamisil)

Cream, topical: 1%
Tablet: 250 mg

Tolnaftate (Tinactin)

Aerosol, topical, liquid: 1%
Aerosol, topical, powder: 1%
Cream, topical: 1%
Powder, topical: 1%
Solution, topical: 1%

Tretinoin Gel (Retin-A) - RESERVE USE

Cream, topical: 0.025%, 0.05%, 0.1%
Gel, topical: 0.01%, 0.025%, 0.1%
Liquid, topical: 0.05%

Zinc Oxide

Ointment, topical: 20% in white ointment
Paste, topical: 25% in white petrolatum

Zinc Undecylenate (Desenex)

Cream, topical: 20%
Foam, topical: 10% [with 35.2% alcohol]
Ointment, topical: 30 gm
Powder, topical: 19%

SALICYLIC ACID - SULFUR TOPICAL

Classification: Topicals; Dermatologicals; Acne Agents, Skin Cleansers, Antiseborrheic Agents

Description: SALICYLIC ACID and SULFUR are used for antiseborrheic and keratolytic/keratoplastic actions.

Pharmacology: Salicylic acid is keratolytic at concentrations of approximately 2% to 6%. These concentrations are generally used for treatment of dandruff, seborrhea and psoriasis.

Sulfur, a keratolytic, provides peeling and drying actions. Although it may help to resolve comedones, it may also promote the development of new ones by increasing horny cell adhesion.

Pharmacokinetics: Topical; some systemic absorption is possible if used over large areas or if skin is inflamed.

Indications:

Salicylic acid – Sulfur preparations are used to treat dandruff, seborrheic dermatitis, acne, tinea infections and psoriasis. These preparations help relieve the itching and scalp flaking associated with dandruff and aid in the treatment of mild acne and oily skin by softening the hard shell of acne blemishes, dissolving and removing blackheads, washing away excess oils which may cause blackheads, and refreshes skin.

Dosage:

For specific instructions for use of these products, refer to individual product labeling.

- **Shampoo:** Shake well. Wet hair and vigorously massage a small amount of shampoo into hair and scalp working up a lather. Rinse thoroughly with warm water. Repeat procedure.
- **Soap:** Use twice daily. Work up lather with hands or washcloth and apply to affected areas without scrubbing. Let dry about 1 minute, rinse thoroughly, and pat dry.

Patient Information:

- For external use only. Avoid contact with eyes, face, genitals, mucous membranes and normal skin surrounding warts.
- Medication may cause reddening or scaling of skin when used on open skin lesions.
- Contact with clothing, fabrics, plastics, wood, metal or other materials may cause damage; avoid contact.
- Stop use and ask doctor if excessive skin irritation develops or increases.
- Keep out of reach of children. If swallowed, get medical help or contact a poison control center immediately.

Contraindications and Precautions:

- Use with caution if sensitivity to salicylic acid
- Do not use for extended periods, especially in infants, diabetics, and patients with impaired circulation
- Do not use on moles, birthmarks or warts with hair growing from them, genital or facial warts or warts on mucous membranes,
- Do not use on irritated skin or any area that is infected or reddened.
- Prolonged use over large areas, especially in young children and those patients with significant renal or hepatic impairment, could result in salicylism. Limit the area to be treated and be aware of

signs of salicylate toxicity (eg, nausea, vomiting, dizziness, loss of hearing, tinnitus, lethargy, hyperpnea, diarrhea, psychic disturbances). In the event of salicylic acid toxicity, discontinue use.

- **For external use only:** Avoid contact with eyes, mucous membranes and normal skin surrounding warts. If contact with eyes or mucous membranes occurs, immediately flush with water for 15 minutes. Avoid inhaling vapors.
- **Shampoo:** For external use only. Avoid contact with the eyes; if this happens, rinse thoroughly with water. If condition worsens or does not improve after regular use of this product as directed, consult a physician. Do not use on children under 2 years of age except as directed by a physician.
- **Soap:** Use with other topical acne medications at the same time or immediately following use of this product may increase dryness or irritation of the skin. If this occurs, use only 1 medication unless directed by a doctor. Do not get into eyes.

Adverse Reactions: Local irritation may occur from contact with normal skin surrounding the affected area. If irritation occurs, temporarily discontinue use and take care to apply only to wart site when treatment is resumed.¹

Costs and Monitoring: prices range from \$1.50 to \$20.00

Product Identification: Shampoos, soaps

Recommendation: Add to formulary.

Prepared by:
Sharon M. Tramonte, Pharm.D.
Clinical Pharmacologist
San Antonio State School
14 November 2007

DOXEPIN HYDROCHLORIDE TOPICAL

Classification: Topical; Dermatologicals; Anti-Histamine Agents

Pharmacology: Although doxepin does have H1 and H2 histamine receptor blocking actions, the exact mechanism by which doxepin exerts its antipruritic effect is unknown.

Pharmacokinetics:

Absorption: doxepin cream can be absorbed percutaneously with plasma concentrations ranging from nondetectable to 47 ng/mL

Metabolism / Excretion: Once absorbed into the systemic circulation, doxepin undergoes hepatic metabolism that results in conversion to pharmacologically active desmethyldoxepin. Further glucuronidation results in urinary excretion of the parent drug and its metabolites. Desmethyldoxepin has a half-life that ranges from 28 to 52 hours and is not affected by multiple dosing. Plasma levels of both doxepin and desmethyldoxepin are highly variable and are poorly correlated with dosage.

Indications: Pruritus: Short-term (up to 8 days) management of moderate pruritus in adult patients with atopic dermatitis or lichen simplex chronicus.

Dosage: Apply a thin film up to 4 times each day with at least a 3- to 4-hour interval between applications. Occlusive dressings may increase the absorption of most topical drugs; therefore, do not use occlusive dressings with doxepin cream.

Contraindications and Precautions:

- Pregnancy Category B.
- There are no data to establish the safety and effectiveness of doxepin cream when used for greater than 8 days. Chronic use beyond 8 days may result in higher systemic levels and should be avoided and could result in an increased likelihood of contact sensitization.
- Untreated narrow angle glaucoma or a tendency to urinary retention; sensitivity to any of its components.
- Hypersensitivity reactions: Use of doxepin cream can cause Type IV hypersensitivity reactions (contact sensitization) to doxepin.

Interactions: Studies have not been performed examining drug interactions with doxepin cream.

Adverse Reactions:

The most common systemic adverse event reported was drowsiness. The most common local site adverse event reported was burning or stinging.

Costs and Monitoring: 45 gm tube = \$38.00

Product Identification: Cream: 5%

Recommendation: Add to formulary.

Prepared by:

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San Antonio State School
14 November 2007

CICLOPIROX TOPICAL (Loprox, PenLac)

Classification: Dermatologicals; Anti-Infectives; Antifungals

Pharmacology: Ciclopirox acts by chelation of polyvalent cations (Fe³⁺ or Al³⁺) resulting in the inhibition of the metal-dependent enzymes that are responsible for the degradation of peroxides within the fungal cell.

Pharmacokinetics:

Nail lacquer topical solution: Systemic absorption of ciclopirox was determined in 5 patients with dermatophytic onychomycoses, after application of ciclopirox 8% topical solution nail lacquer to all 20 digits and adjacent 5 mm of skin once daily for 6 months. Based on urinary data, mean absorption of ciclopirox from the dosage form was less than 5% of the applied dose. One month after cessation of treatment, serum and urine levels of ciclopirox olamine were below the limit of detection.

Indications:

Nail lacquer topical solution: As a component of a comprehensive management program for topical treatment of immunocompetent patients with mild to moderate onychomycosis of fingernails and toenails, without lunula involvement, due to *Trichophyton rubrum*.

Shampoo: For the treatment of seborrheic dermatitis of the scalp in adults.

Dosage:

Nail lacquer topical solution: Applied once daily over the entire nail plate and to the nail bed, hyponychium, and the under surface of the nail plate when it is free of the nail bed (preferably at bedtime or 8 hours before washing) to all affected nails with the applicator brush provided.

- Do not remove on a daily basis. Daily applications should be made over the previous coat and removed with alcohol every 7 days. This cycle should be repeated throughout the duration of therapy.

Shampoo: Apply twice daily, in the morning and evening, for 4 weeks.

- Wet hair and apply approximately 5 mL of ciclopirox shampoo to the scalp. Up to 10 mL may be used for long hair. Lather and leave on hair and scalp for 3 minutes. Avoid contact with eyes. Rinse off.
- Repeat treatment twice per week for 4 weeks, with a minimum of 3 days between applications.

Contraindications and Precautions:

- Pregnancy Category B
- For external use only Nail lacquer topical solution: For use on nails and immediately adjacent skin only.
- Know hypersensitivity

Interactions:

Systemic antifungals: No studies have been conducted to determine whether ciclopirox might reduce the efficacy of systemic antifungal agents for onychomycosis. Therefore, the concomitant use of ciclopirox 8% topical solution and systemic antifungal agents for onychomycosis is not recommended

Adverse Reactions:

Nail lacquer topical solution: Primarily dermatologic including rash-related adverse events: periungual erythema and erythema of the proximal nail fold. Other treatment-emergent adverse reactions thought to be causally related included nail disorders such as shape change, irritation, ingrown toenail, and discoloration.

Costs and Monitoring:

Nail lacquer topical solution: 131.76

Shampoo: 63.71

Efficacy: Ciclopirox has been shown to be effective in the treatment of for topical treatment mild to moderate onychomycosis, and for the treatment of seborrheic dermatitis of the scalp in adults. Relative comparative data with other antifungal agents is lacking.

Recommendation: Add to formulary

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