CENTER FOR DRUG EVALUATION AND RESEARCH

APPLICATION NUMBER: 40226

DRAFT FINAL PRINTED LABELING

Perphenazine Tablets, USP

DESCRIPTION Perphenazine tablets, USP contain perphenazine. USP (4-(3-(2-chlorophenothiazin-10-y))propyl]-1-piperazinee(hanol), a piperazinyl phenothiazine having the molecular formula C₂, H₂CIN₂OS. The structural formula is as follows:



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Each tablet, for oral administration, contains perphenazine 2 mg, 4 mg, 8 mg, and 16 mg, in addition, each tablet contains the following inactive ingredients: acetone, black iron oxide, calcium carbonate, carnauba wax, eudragit, isobutyl alcohol, isopropyl alcohol, tactose monohydrate, magnesium stearate, microcrystatline cellulose, pharmaceutical glaze sheltac, polyethylenegiycol, polyvinylpyrrolidone, povidone, sodium benzoate, sodium starch glycolate, sucrose, sucrose syrup, talc, litanium dioxide and water.

CLINICAL PHARMACOLOGY Perphenazine has actions at all levels of the central nervous system, particularly the hypothalamus. However, the site and mechanism of action of therapeutic effect are not known.

INDICATIONS AND USAGE Perphenazine tablets are indicated for use in the management of the manifestations of psychotic disorders; and for the control of severe nausea and vomiting in adults.

Perphenazine has not been shown effective in the management of behavioral complications in patients with mental retardation.

C21H26CIN30S

CONTRAINDICATIONS Perphenazine tablets are contraindicated in comalose or greatly obtunded patients and in patients receiving large doses of central nervous system depressants (barbiturates, alcohol, narcotics, analgesics, or antihistamines), in the presence of existing blood dyscrasias, bone marrow depression, or liver damage, and in patients who have shown hypersensitivity to perphenazine tablets, their components, or related compounds.

Perphenazine tablets are also contraindicated in patients with suspected or established subcortical brain damage, with or without hypothalamic damage, since a hyperthermic reaction with temperatures in excess of 104°F may occur in such patients, sometimes not until 14 to 16 hours after drug administration. Total body ice-packing is recommended for such a reaction; antipyretics may also be useful.

WARNINGS Tardive dyskinesia, a syndrome consisting of potentially irreversible, involuntary, dyskinetic movements, may develop in patients treated with neurokeptic (antipsychotic) drugs. Although the prevalence of the syndrome appears to be the highest among the elderly, especially elderly women, it is impossible to rely upon prevalence estimates to predict, at the inception of neuroleptic treatment, which patients are ikkely to develop the syndrome. Whether neurokeptic (up product differ in ther potential to cause tardive dyskinesia is unknown.

Both the risk of developing the syndrome and the likelihood that it will become irreversible are believed to increase as the duration of treatment and the total cumulative dose of neuroleptic drugs administered to the patient increase. However, the syndrome can develop, although much less commonly, after relatively brief treatment periods at low doses.

There is no known treatment for established cases of tardive dyskinesia, although the syndrome may remit, partially or completely, if neuroleptic treatment is withdrawn. Neuroleptic treatment itself, however, may suppress (or partially suppress) the signs and symptoms of the syndrome, and thereby may possibly mask the underlying disease process. The effect that symptomatic suppression has upon the long-term course of the syndrome is unknown.

Given these considerations, neuroleptics should be prescribed in a manner that is most likely to minimize the occurrence of tardive dyskinesia. Chronic neuroleptic treatment should generally be reserved for patients who suffer from a chronic illness that, 1) is known to respond to neuroleptic drugs, and, 2) for whom alternative, equally effective, but potentially less harmful treatments are not available or appropriate. In patients who do not require chronic treatment, the smallest dose and the shortest duration of treatment producing a satisfactory clinical response should be sought. The need for continued treatment should be reasessed periodically.

If signs and symptoms of lardive dyskinesia appear in a patient on neuroleptics, drug discontinuation should be considered. However, some patients may require treatment despite the presence of the syndrome.

(For further information about the description of tardive dyskinesia and its clinical detection, please refer to PRECAUTIONS, Information for Patients and ADVERSE REACTIONS.)

Neuroleptic Melignent Syndrome (NMS): A potentially fatal symptom complex, sometimes referred to as Neuroleptic Malignant Syndrome (NMS), has been reported in association with antipsychotic drugs. Clinical manifestations of NMS are hyperpyrexia, muscle rigidity, allered mental status and evidence of autonomic instability (irregular pulse or blood pressure, tachycardia, diaphoresis, and cardiac dysrythmias).

The diagnostic evaluation of patients with this syndrome is complicated. In arriving at a diagnostic tris important to identity cases where the clinical presentation includes both serious medical illness (e.g. pneumonia, systemic infection, etc.) and untreated or inadequately treated extrapyramidal signs and symptoms (EPS). Other important considerations in the differential diagnosis include central anticholinergic toxicity, heat stroke, drug lever and primary central nervous system (ONS) pathology.

The management of NMS should include 1) immediate discontinuation of antipsychotic drugs and other drugs not essential to concurrent therapy, 2) intensive symptomatic treatment and medical monitoring, and 3) treatment of any concomitant serious medical problems for which specific treatments are available. There is no general agreement about specific pharmacological treatment regimes for uncomplicated NMS.

If a patient requires antipsychotic drug treatment after recovery from NMS, the potential reintroduction of drug therapy should be carefully considered. The patient should be carefully monitored, since recurrences of NMS have been reported.

If hypotension develops, epinephrine should not be administered since its action is blocked and partially reversed by perphenazine. If a vasopressor is needed, norepinephrine may be used. Severe, acute hypotension has occurred with the use of phenothiazines and is particularly likely to occur in patients with mitral insufficiency or pheochromocytoma. Rebound hypertension may occur in pheochromocytoma patients.

Perphenazine tablets can lower the convulsive threshold in susceptible individuals: they should be used with caution in alcohol withdrawal and in patients with convulsive disorders. If the patient is being treated with an anticonvulsant agent, increased dosage of that agent may be required when perphenazine tablets are used concomitantly.

Perphenazine tablets should be used with caution in patients with psychic depression.

Perphenazine may impair the mental and/or physical abilities required for the performance of hazardous tasks such as driving a car or operating machinery, therefore, the patient should be warned accordingly.

Perphenazine lablets are not recommended for children under 12 years of age

Usage in Pregnancy Sale use of perphenazine during pregnancy and lactation has not been established, therefore, in administering the drug to pregnant patients, nursing mothers, or women who may become pregnant, the possible benefits must be weighed against the possible hazards to mother and child.

PRECAUTIONS. The possibility of suicide in depressed patients remains during treatment and until significant remission occurs. This type or patient should not have access to large quantities of this drug.

As with all phenothiazine compounds, perphenazine should not be used indiscriminately. Caution should be observed in giving it to patients who have As with all prenotifiazine compounds, perprenazine should not be used indiscriminately. Gaution should be doserved in giving it to patients who have previously exhibited severe adverse reactions to other phenothiazines. Some of the untoward actions of perphenazine lend to appear more frequently when high doses are used. However, as with other phenothiazine compounds, patients receiving perphenazine tablets in any dosage should be kept under close.

supervision. Neuroleptic drugs elevate prolactin levels, the elevation persists during chronic administration. Tissue culture experiments indicate that approximately one-Neuroleptic drugs elevate protection revers, the elevation persists during current autimistration. Taske current experiments indexed what approximately one that approximately one of the second secon third of human breast cancers are protactin dependent *in vitro*, a factor or potential importance in the prescription of mess drugs is comempiated in a patient with a previously detected breast cancer. Although disturbances such as galactorrhea, amenorrhea, gynecomastia, and impotence have been reported, the clinical significance of elevated serum protactin levels is unknown for most patients. An increase in mammary neoplasms has been found in rodents after chronic administration of neuroleptic drugs. Neither clinical studies nor epidemiologic studies conducted to date, however, have shown an association between chronic administration of these drugs inventier cancer stories for epidemologic stories conducted to date, nowever, have shown an association between chronic administration of these drugs and mammary tumorigenesis. The available evidence is considered too timiled to be conclusive at this time The antiemetic effect of perphenazine may obscure signs of toxicity due to overdosage of other drugs, or render more difficult the diagnosis of disorders

A significant, not otherwise explained, rise in body temperature may suggest individual intolerance to perphenazine, in which case it should be discontinued. Patients on large doses of a phenothiazine drug who are undergoing surgery should be watched carefully for possible hypotensive phenomena. Moreover,

reduced amounts of anesthetics or central nervous system depressants may be necessary. Since phenothiazines and central nervous system depressants (opiates, analgesics, antihistamines, barbiturates) can potentiate each other less than the usual dosage of the added drug is recommended and caution is advised when they are administered concomitantly

Use with caution in patients who are receiving atropine or related drugs because of the additive anticholinergic effects and also in patients who will be exposed to extreme heat or phosphorus insecticides.

The use of alcohol should be avoided, since additive effects and hypotension may occur. Patients should be cautioned that their response to alcohol may The use of accuror should be avoided, since additive effects and hypotension may becur. Patterns should be cardinated that men response to accuror may be increased while they are being treated with perphenazine lablets. The risk of suicide and the danger of overdose may be increased in patients who use

alcohol excessively due to its potentiation of the drug's effect. Blood counts and hepatic and renal functions should be checked periodically. The appearance of signs of blood dyscrasias requires the discontinuance of pipoo counts and neparic and renar unreliant should be checked periodically. The appearance or signs of blood dyscrastas requires the discontinuance of the drug and institution of appropriate therapy. If abnormalities in hepatic tests occur, phenothiazine treatment with the drug should be discontinued. Renal function in patients on long-term therapy should be monitored; if blood urea nilrogen (BUN) becomes abnormal, treatment should be discontinued.

The use of phenothiazine derivatives in patients with diminished renal function should be undertaken with caution.

Use with caution in patients suffering from respiratory impairment due to acute putmonary infections, or in chronic respiratory disorders such as severe asthma or emphysema.

In general, phenothiazines, including perphenazine, do not produce psychic dependence. Gastritis, nausea and vomiting, dizziness, and tremulousness have been reported following abrupt cessation of high-dose therapy. Reports suggest that these symptoms can be reduced by continuing concomitant antiparkinson agents for several weeks after the phenothiazine is withdrawn.

The possibility of liver damage, corneal and lenticular deposits, and irreversible dyskinesias should be kept in mind when patients are on long-term therapy Because photosensitivity has been reported, undue exposure to the sun should be avoided during phenothiazine treatment.

Information for Patients: This information is intended to aid in the safe and effective use of this medication. It is not a disclosure of all possible adverse

Given the likelihood that a substantial proportion of patients exposed to neuroleptics will develop tardive dyskinesia, it is advised that all patients in whom chronic use is contemplated be given, if possible, full information about this risk. The decision to inform patients and/or their guardians must obviously take into account the clinical circumstances and the competency of the patient to understand the information provided.

ADVERSE REACTIONS Not all of the following adverse reactions have been reported with this specific drug; however, pharmacological similarities among various phenothiazine derivatives require that each be considered. With the piperazine group (of which perphenazine is an example), the extrapyramidal symptoms are more common, and others (e.g., sedative effects, jaundice, and blood dyscrasias) are less frequently seen

CNS Effects: Extrapyramidal reactions: opistholonus, trismus, loritcollis, retrocollis, aching and numbness of the limbs, motor restlessness, oculogyric

crisis, hyperreflexia, dystonia, including protrusion, discoloration, aching and rounding of the longue, lonic spasm of the masticatory muscles, tight feeling in the throat, slurred speech, dysphagia, akathisia, dyskinesia, parkinsonism, and alaxia. Their incidence and severity usually increase with an increase in in the throat, source speech, bysphagia, akatilista, byshillesta, parkitisultiant, and ataka. The inclusive time development of the second provided the controlled by the dosage, but there is considerable individual variation in the tendency to develop such symptoms. Extrapyramidal symptoms can usually be controlled by the concomitant use of effective antiparkinsonian drugs, such as benztropine mesylate, and/or by reduction in dosage. In some instances, however, these concomitant use of effective antiparkinsonian drugs, such as benztropine mesylate, and/or by reduction in dosage. In some instances, however, these

extrapyramidal reactions may persist after discontinuation of treatment with perphenazine. Persistive lardive dyskinesia: As with all antipsychotic agents, tardive dyskinesia may appear in some patients on long-term therapy or may appear after Persistive tardive dyskinesia: As with all antipsychotic agents, tardive dyskinesia may appear in some patients on long-term therapy or may appear after drug therapy has been discontinued. Although the risk appears to be greater in elderly patients on high-dose therapy, especially females, it may occur in either sex and in children. The symptoms are persistent and in some patients appear to be irreversible. The syndrome is characterized by thythmical, involuntary movements of the tongue, lace, mouth or just (e.g., portional of the tongue, puffing of the checks, puckering of mouth, chewing movements). Sometimes these may be accompanied by involuntary movements of the extremities. There is no known effective treatment for tardive dyskinesia, antiparkinsonism agents usually do not alleviate the symptoms of this syndrome. It is suggested that all antipsychotic agents be discontinued if these symptoms appear. Should it has hear contrad that line verticular movements of the longue may be an early sign of the syndrome and if the medication syndrome may be masked. It has been reported that line, vermicular movements of the longue may be an early sign of the syndrome, and if the medication

is stopped at that time the syndrome may not develop. Other CNS effects include cerebral edema; abnormality of cerebrospinal fluid proteins; convulsive seizures, particularly in patients with EEG abnormalities or a history of such disorders; and headaches.

Neuroleptic Malignant Syndrome (MNS) has been reported in patients treated with neuroleptic drugs (see WARNINGS section for further information). Drowsiness may occur, particularly during the first or second week, after which it generally disappears. If troublesome, lower the dosage. Hypnotic effects

appear to be minimal, especially in patients who are permitted to remain active. Adverse behavioral effects include paradoxical exacerbation of psychotic symptoms, catatonic-like states, paranoid reactions, lethargy, paradoxical excite-

ment, restlessness, hyperactivity, nocturnal confusion, bizarre dreams, and insomnia

Hyperreflexia has been reported in the newborn when a phenothiazine was used during pregnancy. Autonomic Effects: dry mouth or salivation, nausea, vomiting, diarrhea, anorexia, constipation, obstipation, fecal impaction, urinary retention, frequency or incontinence, bladder paralysis, polyuria, nasal congestion, pallor, myosis, mydriasis, blurred vision, glaucoma, perspiration, hypertension, hypotension, and change in pulse rate occasionally may occur. Significant autonomic effects have been intrequent in patients receiving less than 24 mg perphenazine

Adynamic ileus occasionally occurs with phenothiazine therapy and if severe can result in complications and death. It is of particular concern in psychiatric patients, who may fail to seek treatment for the condition.

Allergic Effects: urticaria, erythema, eczema, extoliative dermatitis, pruritus, photosensitivity, asthma, fever, anaphylactoid reactions, laryngeal edema, and angioneurotic edema; contact dermatitis in nursing personnel administering the drug; and in extremely rare instances, individual idiosyncrasy or hypersensitivity to phenothiazines has resulted in cerebral edema, circulatory collapse, and death.

Endocrine Effects: lactation, galactorrhea, moderate breast enlargement in females and gynecomastia in males on large doses, disturbances in the menstrual cycle, amenorrhea, changes in libido, inhibition of ejaculation, syndrome of inappropriate ADH (antidiuretic hormone) secretion, false positive preg-

Cardlovascular Effects: postural hypotension, tachycardia (especially with sudden marked increase in dosage), bradycardia, cardiac arrest, faintness and dizziness. Occasionally the hypotensive effect may produce a shock-like condition. ECG changes, nonspecific (quindine-like effect) usually reversible. have been observed in some patients receiving phenothiazine tranquilizers.

Sudden death has occasionally been reported in patients who have received phenothiazines. In some cases the death was apparently due to cardiac arrest; in others, the cause appeared to be asphyxia due to failure of the cough reflex. In some patients, the cause could not be determined nor could it be established that the death was due to the phenothiazine.

Hematological Effects: agranulocytosis, eosinophilia, leukopenia, hemolytic anemia, thrombocytopenic purpura and pancytopenia. Most cases of agranu-Increase of sore throat or signs of infection. If the white blood cell and differential cell counts show significant cellular depression, discontinue the drug

and start appropriate therapy. However, a slightly lowered white count is not in itself an indication to discontinue the drug. Other Effects: Special considerations in long-term therapy include pigmentation of the skin, occurring chiefly in the exposed areas; ocular changes consist-Other Energies, opecial considerations in long-term merapy include pigmentation of the skin, occuring chear in the opposed teast, coale changes containing and interpretent of the skin, occuring the skin occurin swelling (rare), hyperpyrexia, systemic lupus erythematosus-like syndrome, increases in appetite and weight, polyphagia, photophobia, and muscle weak-

Liver damage (biliary stasis) may occur. Jaundice may occur, usually between the second and fourth weeks of treatment, and is regarded as a hypersensiciren oamage contary statisy may occur, oaunore may occur, usoany oerween me second and rourn weeks of realment, and is regarded as a hypersensi-tivity reaction. Incidence is low. The clinical picture resembles infectious hepatitis but with laboratory features of obstructive jaundice. It is usually revers-ible, however, chronic jaundice has been reported.

OVERDOSAGE In the event of overdosage, emergency treatment should be started immediately. All patients suspected of having taken an overdose should be hospitalized as soon as possible.

Manifestations. Overdosage of perphenazine primarily involves the extrapyramidal mechanism and produces the same side effects described under AD-VERSE REACTIONS, but to a more marked degree. It is usually evidenced by stupor or coma, children may have convulsive seizure:

Treatment: Treatment is symptomatic and supportive. There is no specific antidote. The patient should be induced to vomit even if emesis has occurred Insument: Insument is symptomatic and supportive. There is no specific annuale, the planet is should be induced to yonit even in emersis has accorded spontaneously. Pharmacologic vomiting by the administration of jpecac sympt is a preferred method. It should be noted that (pecac has a central mode of action in addition to its local gastric irritant properties, and the central mode of action may be blocked by the antiemetic effect of perphenazine tablets. Yoniting should not be induced in patients with impaired consciousness. The action of ipecac is facilitated by physical activity and by the administration of Yoniting should not be induced in patients with impaired consciousness. The action of ipecac is facilitated by physical activity and by the administration of 8 to 12 lluid ounces of water. If emersis does not occur within 15 minutes, the does of ipecac should be repeated. Precautions against aspiration must be altered emerged by induced to additionate and childred content and the attemption of the attemption of the actionate by activated observed administration at a should be repeated. Precautions against aspiration must be an administration and by the administration and the attemption of the attemption o to 12 non ounces of water. If emesis does not occur within 13 minutes, the does of needed should be repeated. Instantial against asymptotic market as a taken, especially in infants and children. Following emesis, any drug remaining in the stomach may be absorbed by activated charcoal administered as a slurry with water. If vomiting is unsuccessful or contraindicated, gastric lavage should be performed. Isotonic and one-half isotonic saline are the lavage slurry with water. If vomiting is unsuccessful or contraindicated, gastric lavage should be performed. Isotonic and one-half isotonic saline are the lavage solutions of choice. Saline cathartics, such as milk of magnesia, draw water into the bowel by osmosis and, therefore, may be valuable for their action in

Standard measures (oxygen, intraveneous fluids, corticosteroids) should be used to manage circulatory shock and metabolic acidosis. An open airway and adequate fluid intake should be maintained. Body temperature should be regulated. Hypothermia is expected, but severe hyperthermia may occur and must adequate fluid intake should be maintained. Body tem be treated vigorously. (See CONTRAINDICATIONS.)

An electrocardiogram should be taken and close monitoring of cardiac function instituted if there is any sign of abnormality. Cardiac arrhythmias may be treated with neostigmine, pyridostigmine, or propranoiol. Digitalis should be considered for cardiac tailure. Close monitoring of cardiac function is advisable for not less than five days. Vasopressors such as norepinephrine may be used to treat hypotension, but epinephrine should NOT be used.

Anticonvulsants (an inhalation aneshetic, diazepam, or paraldehyde) are recommended for control of convulsions, since perphenazine increases the central nervous system depressant action, but not the anticonvulsant action of barbiturates.

If acute parkinson-like symptoms result from perphenazine intoxication, benztropine mesylate or diphenhydramine may be administered Central nervous system depression may be treated with nonconvulsant doses of CNS stimulants. Avoid stimulants that may cause convulsions (e.g., picrotoxin

and pentylenetetrazol).

Signs of arousal may not occur for 48 hours. Dialysis is of no value because of low plasma concentrations of the drug.

Since overdosage is often deliberate, patients may attempt suicide by other means during the recovery phase. Deaths by deliberate or accidental overdos-

age have occurred with this class of drugs.

DOSAGE AND ADMINISTRATION Dosage must be individualized and adjusted according to the severity of the condition and the response obtained. As with all potent drugs, the best dose is the lowest dose that will produce the desired clinical effect. Since extrapyramidal symptoms increase in frequency and severity with increased dosage, it is important to employ the lowest effective dose. These symptoms have disappeared upon reduction of dosage, with-drawal of the drug, or administration of an antiparkinsonian agent. Prolonged administration of doses exceeding 24 mg daily should be reserved for hospitalized patients or patients under continued observation for early detection and management of adverse reactions. An antiparkinsonian agent, such as inhexphenidy! hydrochloride or benztropine mesylate, is valuable in controlling drug-induced extrapyramidal symptoms. Suggested dosages for various conditions follow: Moderately disturbed nonhospitalized psychotic patients: Tablets 4 to 8 mg t.i.d initially; reduce as soon as possible to minimum effective dosage.

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Hospitalized psychotic patients: Tablets 8 to 16 mg b.i.d. to q.i.d.; avoid dosages in excess of 64 mg daily Severe nausea and vomiting in adults: Tablets 8 to 16 mg daily in divided doses; 24 mg occasionally may be necessary, early dosage reduction is desirable.

HOW SUPPLIED Perpheratine tables, USP; gray, sugar-coated, unscored tables branded in black with the following markings: 2 mg *4940 V*, 4 mg *4941 V*, 8 mg *4942 V*, 16 mg *4943 V*. Available in bottles of 100, 500 and 1000. Store at controlled room temperature 15*C-30*C (59*F-86*F).

Manufactured By: Vintage Pharmaceuticals, Inc. Charlotte, NC 28206

Dispense in a tight, light-resistant container.

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CAUTION: Federal law prohibits dispensing without a prescription.

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