The medicine for Stage IA/IB MF-CTCL that is CLEAR

*In a clinical study, 119 VALCHLOR patients were evaluated over a 12-month period. 45.4% (54 out of 119 patients) experienced a partial response to the medication and 14.3% (17 out of 119 patients) achieved a complete response or clear skin in up to 5 index lesions. A complete response was achieved when the Composite Assessment of Index Lesion (CAILS) score was 0, combining skin lesion ratings for redness, scaling, plaque elevation, and surface area.

The information in this brochure is intended for educational purposes only and is not a substitute for medical advice. Patients are advised to talk to their doctor if they have any questions or concerns about their treatment.

VALCHLOR® (mechlorethamine) gel is for use on skin only. Do not get VALCHLOR near or in your eyes, mouth, or nose as it can cause pain, redness, swelling, burning, and ulcers.

Please see additional Important Safety Information on page 2, as well as the accompanying full Prescribing Information and Medication Guide.
VALCHLOR® (mechlorethamine) gel is for use on skin only. Do not get VALCHLOR near or in your eyes, mouth, or nose as it can cause pain, redness, swelling, burning, and ulcers. It can also cause sensitivity to light, blurred vision, and may also cause blindness or permanent eye injury. If VALCHLOR gets in your eyes, rinse your eyes right away for at least 15 minutes with a large amount of water, normal saline, or an eyewash solution. If it gets in your nose or mouth, rinse the affected area right away for at least 15 minutes with a large amount of water. Get medical help right away.

Do not use VALCHLOR if you are severely allergic to mechlorethamine. Tell your healthcare provider if you have had an allergic reaction to mechlorethamine.

Before using VALCHLOR, tell your healthcare provider about all your medical conditions. In addition, if you are pregnant, planning a pregnancy, or breastfeeding:

- VALCHLOR can harm your unborn baby and you should not become pregnant while using VALCHLOR. Tell your healthcare provider if you are planning to get pregnant, are pregnant, or become pregnant while using VALCHLOR.
- It is not known if VALCHLOR passes into breast milk. You and your healthcare provider should decide if you will use VALCHLOR or breastfeed; do not do both.

VALCHLOR is flammable. Avoid fire, flame, and smoking until VALCHLOR has dried.

**SERIOUS SIDE EFFECTS INCLUDE:**

Risk of secondary exposure to VALCHLOR for caregivers who accidentally come into contact with VALCHLOR may include risk of skin inflammation (dermatitis); injury to eyes, mouth, or nose; and certain types of cancer. If accidental contact occurs, wash the affected area with soap and water right away for at least 15 minutes and remove any contaminated clothing. Get medical help right away if VALCHLOR gets in your eyes, mouth, or nose.

**Skin inflammation (dermatitis)** is common with VALCHLOR and may sometimes be severe. Risk for dermatitis is increased if VALCHLOR is applied to your face, genital area, anus, or skin folds. Tell your healthcare provider if you develop skin reactions such as redness, swelling, itching, blisters, ulcers, and skin infections.

**Increased risk of certain types of skin cancers.** Certain types of skin cancer can develop on treated and non-treated areas with VALCHLOR. Your healthcare provider will check your skin for skin cancers during and after treatment. Tell your healthcare provider if you get any new skin lesions.

**Most common side effects include** redness, swelling, itching, skin ulcers or blisters, skin infection, and darkening of areas of your skin. These are not all the possible side effects of VALCHLOR. Call your doctor for medical advice about side effects.

You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch or call 1-800-FDA-1088.

Keep VALCHLOR and all medicines out of the reach of children.

**Applying VALCHLOR**

When applying VALCHLOR, caregivers must wear disposable nitrile gloves, which should be safely thrown away in the household trash. Wash hands with soap and water after touching or applying VALCHLOR. Apply right away or within 30 minutes once taken out of the refrigerator. Refrigerate VALCHLOR right after each use. Apply a thin layer to completely dry skin at least 4 hours before or 30 minutes after showering or washing. Let treated area dry for 5 to 10 minutes after applying VALCHLOR before covering with clothing. Moisturizers may be applied to the treated areas 2 hours before or 2 hours after applying VALCHLOR. Do not use airtight or watertight bandages on areas treated with VALCHLOR.

Please see the accompanying full Prescribing Information and Medication Guide.
What is MF-CTCL?

MF-CTCL is the most common cutaneous T-cell lymphoma. The disease is typically slow growing and may be mistaken for other inflammatory skin conditions, such as eczema or psoriasis. MF-CTCL may be present for years or even decades before it’s diagnosed.

Getting a CLEAR picture of Stage IA/IB MF-CTCL

You are not alone. Stage IA/IB MF-CTCL is thought to affect 16,000 to 20,000 patients in the United States. MF-CTCL is a progressive disease with distinct stages, each of which has a different treatment approach.

Although MF-CTCL can occur anywhere on your body, it often appears on skin that is covered by clothing and unexposed to sunlight.

What Stage IA/IB MF-CTCL looks like

Your stage of MF-CTCL is based on how much of your body has red patches of skin and/or scaly raised scabs called plaques.

Stage IA: patches and/or plaques cover up to 10% of the skin
Stage IB: patches and/or plaques cover 10% or more of the skin

• Most patients have Stage IA/IB MF-CTCL for several years
• In some cases, it can progress to later-stage disease

Living with Stage IA/IB MF-CTCL

You were likely dealing with symptoms (eg, redness, itching, scaling) for a long time before tests showed that you have early MF-CTCL. The good news is now you know what kind of disease you have and that your doctor can select the right medicine that may help give you some relief.

• MF-CTCL is a serious chronic disease, but it doesn’t have to change everything about your life
• You will need to use medications on an ongoing basis to help manage the disease, so it’s important to consider a treatment that fits into your daily routine

Please see Important Safety Information on page 2, as well as the accompanying full Prescribing Information and Medication Guide.
VALCHLOR® (mechlorethamine) gel is made specifically to help fight the skin symptoms of Stage IA/IB MF-CTCL, and the gel formulation can be applied at home.

**VALCHLOR is the first and only FDA-approved gel form of a medicine** for patients with Stage IA/IB MF-CTCL who have already been on skin treatment. It received FDA approval after validated testing to prove that it was an effective treatment for up to 12 months.

**VALCHLOR is a clinically proven medicine that:**

- Provides mechlorethamine in a gel form
- Helps clear the signs of MF-CTCL from skin
- Can be used at home or wherever you need it
  (Refrigeration required. Please see page 7 for handling and storage information)

**It can take time to see results with VALCHLOR**

MF-CTCL can be unpredictable. Seeing and feeling the impact of VALCHLOR may take time, but it’s important to stick with the treatment for as long as your doctor recommends.

Please see Important Safety Information on page 2, as well as the accompanying full Prescribing Information and Medication Guide.
Inflammation of your skin (dermatitis) is a common side effect with VALCHLOR® (mechlorethamine) gel

Dermatitis is the most common side effect while using VALCHLOR. Immediately tell your doctor if you develop skin reactions such as redness, swelling, itching, blisters, ulcers, and skin infections. Your doctor can help you manage side effects, including dermatitis (inflammation of the skin), which may help you to continue with your treatment.

• Do not apply VALCHLOR to your face, genital area, anus, or in skin folds, as there is a high risk for skin irritation in these areas
• Speak to your doctor or nurse about any concerns with your treatment
• Immediately tell your doctor or nurse if you see any signs of dermatitis

Please see Important Safety Information on page 2, as well as the accompanying full Prescribing Information and Medication Guide.
Use VALCHLOR® (mechlorethamine) gel exactly as your doctor tells you. Tell your doctor right away if you are pregnant, plan to become pregnant, are breastfeeding, or plan to breastfeed. Tell your doctor if you get any new lesions.

**Once-daily application**

- Moisturizers may be used on affected areas of your skin 2 hours before or 2 hours after using VALCHLOR
- Air-tight or water-tight bandages should not be used on areas of the skin that are treated with VALCHLOR
- VALCHLOR is flammable; avoid fire, flame, and smoking until VALCHLOR has dried

**Non-greasy gel**

(once dry, unlikely to stain clothing or bedsheets)

Quick drying within 10 minutes
(you can put it on and go about your day)

**How to use VALCHLOR**

VALCHLOR is for topical use only. Please follow the important instructions for application, handling, and disposal procedures.

1. **Open tube.** Apply VALCHLOR right away or within 30 minutes of taking it out of the refrigerator.

2. **Squeeze a small amount on your fingertip.** Caregivers must wear disposable nitrile gloves when applying VALCHLOR.

3. **Gently spread a thin layer of VALCHLOR on dry skin.** Apply a thin layer of VALCHLOR to completely dry skin at least 4 hours before or 30 minutes after showering or washing.

4. **Allow the gel to dry before getting dressed.** Let the treated areas dry for 5 to 10 minutes after applying VALCHLOR before covering with clothing.

5. **Throw away tubes that are empty or 90 days old in the trash.** VALCHLOR expired product or used tubes and disposable nitrile gloves should be safely thrown away in household trash in a manner that prevents accidental application or ingestion by others, including children and pets.

6. **Wash your hands thoroughly with soap and water after touching or applying VALCHLOR.** If there is accidental skin exposure to VALCHLOR, caregivers must immediately wash exposed areas thoroughly with soap and water for at least 15 minutes and remove contaminated clothing. With clean hands, place VALCHLOR back in the box it came in and return it to the refrigerator right after each use.

Please see Important Safety Information on page 2, as well as the accompanying full Prescribing Information and Medication Guide.
How to store VALCHLOR®

Store VALCHLOR® (mechlorethamine) gel in the refrigerator between 36°F and 46°F (2°C and 8°C).

Keep VALCHLOR from touching food when stored in the refrigerator.

With clean hands, place VALCHLOR in the box it came in and return it to the refrigerator right after each use.

Talk with your pharmacist before you use VALCHLOR that has been outside of the refrigerator for more than 1 hour in a day.

Safely throw away any VALCHLOR that is not used within 90 days.

Unused VALCHLOR, empty tubes and used disposable nitrile gloves should be safely thrown away in household trash.

Keep VALCHLOR and all medicines out of the reach of children.

Please see Important Safety Information on page 2, as well as the accompanying full Prescribing Information and Medication Guide.
The VALCHLOR Support™ team is here to help you with your treatment

- When your doctor prescribes VALCHLOR® (mechlorethamine) gel, the two of you will fill out and sign a form that authorizes a specialty pharmacy to ship VALCHLOR directly to you
- A nurse from the specialty pharmacy will call you to arrange delivery and answer any questions you may have about your prescription
- Please note that VALCHLOR is not available at your local pharmacy

VALCHLOR is delivered directly to you

Please read the VALCHLOR Medication Guide that comes with your VALCHLOR prescription.

It is important to remember that you should talk to your doctor if you have any questions about your medical condition or treatment.

You can depend on VALCHLOR Support™

VALCHLOR is a special medicine and it comes with a lot of support. Contacting VALCHLOR Support™ at 1-855-4-VALCHLOR (1-855-482-5245) can help you with the following:

- Help answer questions about your prescription, VALCHLOR, and what to expect during treatment
- Outreach from pharmacists to check on treatment
- Reimbursement specialists can assist you with:– Initial prescription enrollment and insurance verification for VALCHLOR– Scheduling of VALCHLOR shipments directly to you– VALCHLOR refill reminders– Financial assistance if you are eligible (see below)– Assistance with claims support

Eligible patients* are provided with financial assistance

- If you are privately insured, VALCHLOR is covered by most health plans
- If you don’t have a prescription plan, you may be eligible for a patient assistance program
- If you have limited coverage, alternative funding resources may be available

Eligible patients pay no more than $10 per prescription fill*

*The VALCHLOR copay program is only available for US and Puerto Rico residents who are 18 or older and have commercial health insurance with copay/coinsurance exceeding $10 per prescription fill. Patients ineligible for the VALCHLOR copay program include those enrolled in Medicare, Medicaid, VA/DoD (Tricare), the Indian Health Service, or any other federal- or state-funded healthcare program, or where prohibited by law. The VALCHLOR copay program is not prescription drug coverage or insurance. Helsinn Therapeutics, Inc. reserves the right to terminate or modify this program at any time without notice. Other terms and conditions apply.
VALCHLOR® (mechlorethamine) gel is a prescription medicine used on the skin to treat patients with Stage IA and IB mycosis fungoides-type cutaneous T-cell lymphoma (MF-CTCL) who have received previous skin treatment. It is not known if VALCHLOR is safe and effective in children.

The medicine for Stage IA/IB MF-CTCL that is CLEAR®

**VALCHLOR Support™** is here for you if you have questions along your treatment journey

Call 1-855-4-VALCHLOR (1-855-482-5245) for more information. Visit www.valchlor.com today to learn more.

The Cutaneous Lymphoma Foundation offers information, support, and other resources at www.clfoundation.org and 1-248-644-9014.

**IMPORTANT SAFETY INFORMATION**

VALCHLOR® (mechlorethamine) gel is for use on skin only. Do not get VALCHLOR near or in your eyes, mouth, or nose as it can cause pain, redness, swelling, burning, and ulcers.

Please see additional Important Safety Information on page 2, as well as the accompanying full Prescribing Information and Medication Guide.

*In a clinical study, 119 VALCHLOR patients were evaluated over a 12-month period. 45.4% (54 out of 119 patients) experienced a partial response to the medication and 14.3% (17 out of 119 patients) achieved a complete response or clear skin in up to 5 index lesions. A complete response was achieved when the Composite Assessment of Index Lesion (CAILS) score was 0, combining skin lesion ratings for redness, scaling, plaque elevation, and surface area.
VALCHLOR® (mechlorethamine) gel

0.016%

HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use VALCHLOR® safely and effectively. See full prescribing information for VALCHLOR.

VALCHLOR (mechlorethamine) gel, for topical use
Initial U.S. Approval: 1949

INDICATIONS AND USAGE

VALCHLOR is an alkylating drug indicated for the topical treatment of Stage IA and IB mycosis fungoides-type cutaneous T-cell lymphoma in patients who have received prior skin-directed therapy (1).

DOSAGE AND ADMINISTRATION

• For topical dermatological use only (2.1).
• Apply a thin film once daily to affected areas of the skin (2.1, 2.2).

DOSAGE FORMS AND STRENGTHS

• Gel: 0.016% w/w of mechlorethamine (equivalent to 0.02% mechlorethamine HCl) in 60g tubes (3)

CONTRAINDICATIONS

• Severe hypersensitivity to mechlorethamine (4)

WARNINGS AND PRECAUTIONS

• Mucosal or eye injury: VALCHLOR exposure to mucous membranes, especially of the eyes, can cause mucosal injury which may be severe. Eye injury may lead to blindness. Immediately irrigate for at least 15 minutes followed by immediate medical consultation (5.1).

• Secondary exposure to VALCHLOR: individuals other than the patient must avoid skin contact with VALCHLOR (2.2, 5.2).
• Dermatitis: Monitor patients for redness, swelling, inflammation, itchiness, blisters, ulceration, and secondary skin infections. Stop treatment or reduce dose frequency (2.1, 5.3).
• Non-melanoma skin cancer: Monitor patients during and after treatment (5.4).
• Embryo-fetal toxicity: Can cause fetal harm. Advise women of potential hazard to a fetus (5.5, 8.1).
• Flammable gel: VALCHLOR is an alcohol-based gel. Avoid fire, flame, and smoking until the gel has dried (2.2, 5.6).

ADVERSE REACTIONS

The most common adverse reactions (≥5%) are dermatitis, pruritus, bacterial skin infection, skin ulceration or blistering, and hyperpigmentation (6.1).

To report SUSPECTED ADVERSE REACTIONS, contact Helsinn Therapeutics (U.S.), Inc., at 1-855-482-5245 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

USE IN SPECIFIC POPULATIONS

• Nursing Mothers: Discontinue drug or nursing (5.2, 8.3).

See 17 for PATIENT COUNSELING INFORMATION and Medication Guide.

Revised: [11/2018]
**INDICATIONS AND USAGE**

VALCHLOR is an alkylating drug indicated for the topical treatment of Stage IA and IB mycosis fungoides-type cutaneous T-cell lymphoma in patients who have received prior skin-directed therapy.

**DOSAGE AND ADMINISTRATION**

**2.1 Dosing and Dose Modification**

*For Topical Dermatological Use Only*

Apply a thin film of VALCHLOR gel once daily to affected areas of the skin.

Stop treatment with VALCHLOR for any grade of skin ulceration, blistering, or moderately-severe or severe dermatitis (i.e., marked skin redness with edema) [see Warnings and Precautions (5.3)]. Upon improvement, treatment with VALCHLOR can be restarted at a reduced frequency of once every 3 days. If reintroduction of treatment is tolerated for at least one week, the frequency of application can be increased to every other day for at least one week and then to once daily application if tolerated.

**2.2 Application Instructions**

VALCHLOR is a cytotoxic drug. Follow applicable special handling and disposal procedures.¹

Patients must wash hands thoroughly with soap and water after handling or applying VALCHLOR.

Caregivers must wear disposable nitrile gloves when applying VALCHLOR to patients and wash hands thoroughly with soap and water after removal of gloves. If there is accidental skin exposure to VALCHLOR, caregivers must immediately wash exposed areas thoroughly with soap and water for at least 15 minutes and remove contaminated clothing [see Warnings and Precautions (5.2)].

Patients or caregivers should follow these instructions when applying VALCHLOR:

- Apply immediately or within 30 minutes after removal from the refrigerator. Return VALCHLOR to the refrigerator immediately after each use.
- Apply to completely dry skin at least 4 hours before or 30 minutes after showering or washing. Allow treated areas to dry for 5 to 10 minutes after application before covering with clothing.
- Emollients (moisturizers) may be applied to the treated areas 2 hours before or 2 hours after application.
- Do not use occlusive dressings on areas of the skin where VALCHLOR was applied.
- Avoid fire, flame, and smoking until VALCHLOR has dried [see Warnings and Precautions (5.6)].

**3 DOSAGE FORMS AND STRENGTHS**

The active ingredient in VALCHLOR is mechlorethamine. Each tube of VALCHLOR contains 60g of 0.016% w/w mechlorethamine clear gel (equivalent to 0.02% mechlorethamine HCl).

**CONTRAINDICATIONS**

The use of VALCHLOR is contraindicated in patients with known severe hypersensitivity to mechlorethamine. Hypersensitivity reactions, including anaphylaxis, have occurred with topical formulations of mechlorethamine.

**WARNINGS AND PRECAUTIONS**

**5.1 Mucosal or Eye Injury**

Exposure of the eyes to mechlorethamine causes pain, burns, inflammation, photophobia, and blurred vision. Blindness and severe irreversible anterior eye injury may occur. Advise patients that if eye exposure occurs, (1) immediately irrigate for at least 15 minutes with copious amounts of water, normal saline, or a balanced salt ophthalmic irrigating solution and (2) obtain immediate medical care (including ophthalmologic consultation).

Exposure of mucous membranes such as the oral mucosa or nasal mucosa causes pain, redness, and ulceration, which may be severe. Should mucosal contact occur, immediately irrigate for at least 15 minutes with copious amounts of water, followed by immediate medical consultation.

**5.2 Secondary Exposure to VALCHLOR**

Avoid direct skin contact with VALCHLOR in individuals other than the patient. Risks of secondary exposure include dermatitis, mucosal injury, and secondary cancers. Follow recommended application instructions to prevent secondary exposure [see Dosage and Administration (2.2)].

**5.3 Dermatitis**

The most common adverse reaction was dermatitis, which occurred in 56% of the patients [see Adverse Reactions (6.1)]. Dermatitis was moderately severe or severe in 23% of patients. Monitor patients for redness, swelling, inflammation, itchiness, blisters, ulceration, and secondary skin infections. The face, genitalia, anus, and intertriginous skin are at increased risk of dermatitis. Follow dose modification instructions for dermatitis [see Dosage and Administration (2.1)].

**5.4 Non-Melanoma Skin Cancer**

Four percent (4%, 11/255) of patients developed a non-melanoma skin cancer during the clinical trial or during one year of post-treatment follow-up: 2% (3/138) of patients receiving VALCHLOR, and 6% (8/127) of patients receiving the mechlorethamine ointment comparator. Some of these non-melanoma skin cancers occurred in patients who had received prior therapies known to cause non-melanoma skin cancer. Monitor patients for non-melanoma skin cancers during and after treatment with VALCHLOR. Non-melanoma skin cancer may occur on any area of the skin, including untreated areas.

**5.5 Embryo-fetal Toxicity**

Based on its mechanism of action, case reports in humans, and findings in animals, VALCHLOR can cause fetal harm when administered to a pregnant woman. There are case reports of children born with malformations in pregnant women systemically administered mechlorethamine.
Mechlorethamine was teratogenic and embryo-lethal after a single subcutaneous administration to animals. Advise women to avoid becoming pregnant while using VALCHLOR. If this drug is used during pregnancy or if the patient becomes pregnant while taking this drug, the patient should be apprised of the potential hazard to a fetus [see Use in Specific Populations (8.1)].

5.6 Flammable Gel

Alcohol-based products, including VALCHLOR, are flammable. Follow recommended application instructions [see Dosage and Administration (2.2)].

6 ADVERSE REACTIONS

The following adverse reactions are discussed in greater detail in other sections of the prescribing information:

- Mucosal or eye injury [see Warnings and Precautions (5.1)]
- Secondary exposure to VALCHLOR [see Warnings and Precautions (5.2)]
- Dermatitis [see Warnings and Precautions (5.3)]
- Non-melanoma skin cancer [see Warnings and Precautions (5.4)]

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared with rates in the clinical trials of another drug and may not reflect the rates observed in clinical practice.

6.1 Clinical Trials Experience

In a randomized, observer-blinded, controlled trial, VALCHLOR 0.016% (equivalent to 0.02% mechlorethamine HCl) was compared to an Aquaphor®-based mechlorethamine HCl 0.02% ointment (Comparator) [see Clinical Studies (14)]. The maximum duration of treatment was 12 months. Sixty-three percent (63%) of patients in the VALCHLOR arm and 67% in the comparator arm completed 12 months of treatment.

The body system associated with the most frequent adverse reactions was skin and subcutaneous tissue disorders. The most common adverse reactions (occurring in at least 5% of the patients) are shown in Table 1.

Table 1. Most Commonly Reported (≥5%) Cutaneous Adverse Reactions

<table>
<thead>
<tr>
<th></th>
<th>VALCHLOR N=128 % of patients</th>
<th>Comparator N=127 % of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Any Grade</td>
<td>Moderately-Severe or Severe</td>
</tr>
<tr>
<td>Dermatitis</td>
<td>56</td>
<td>23</td>
</tr>
<tr>
<td>Pruritus</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Bacterial skin infection</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Skin ulceration or blistering</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Skin hyperpigmentation</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

In the clinical trial, moderately-severe to severe skin-related adverse events were managed with treatment reduction, suspension, or discontinuation. Discontinuations due to adverse reactions occurred in 22% of patients treated with VALCHLOR and 18% of patients treated with the comparator. Sixty-seven percent (67%) of the discontinuations for adverse reactions occurred within the first 90 days of treatment. Temporary treatment suspension occurred in 34% of patients treated with VALCHLOR and 20% of patients treated with the comparator. Reductions in dosing frequency occurred in 23% of patients treated with VALCHLOR and 12% of patients treated with the comparator.

Reductions in hemoglobin, neutrophil count, or platelet count occurred in 13% of patients treated with VALCHLOR and 17% treated with Comparator.

7 DRUG INTERACTIONS

No drug interaction studies have been performed with VALCHLOR. Systemic exposure has not been observed with topical administration of VALCHLOR; therefore, systemic drug interactions are not likely.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Pregnancy Category D [see Warnings and Precautions (5.5)]

Risk Summary

Mechlorethamine can cause fetal harm when administered to a pregnant woman. There are case reports of children born with malformations in pregnant women systemically administered mechlorethamine. Mechlorethamine was teratogenic in animals after a single subcutaneous administration. If this drug is used during pregnancy or if the patient becomes pregnant while taking this drug, the patient should be apprised of the potential hazard to a fetus [see Warnings and Precautions (5.5)].

Animal Data

Mechlorethamine caused fetal malformations in the rat and ferret when given as single subcutaneous injections of 1 mg/kg. Other findings in animals included embryolethality and growth retardation when administered as a single subcutaneous injection.

8.3 Nursing Mothers

It is not known if mechlorethamine is excreted in human milk. Due to the potential for topical or systemic exposure to VALCHLOR through exposure to the mother’s skin, a decision should be made whether to discontinue nursing or the drug, taking into account the importance of the drug to the mother.

8.4 Pediatric Use

Safety and effectiveness in pediatric patients have not been established.

8.5 Geriatric Use

A total of 79 patients age 65 and older (31% of the clinical trial population) were treated with either VALCHLOR or the comparator in the clinical trial. Forty-four percent (44%) of patients age 65 or older treated with VALCHLOR achieved...
a CAILS response compared to 66% of patients below the age of 65. Seventy percent (70%) of patients age 65 and older experienced cutaneous adverse reactions and 38% discontinued treatment due to adverse reactions, compared to 58% and 14% in patients below the age of 65, respectively. Similar differences in discontinuation rates between age subgroups were observed in the comparator group.

11 DESCRIPTION

VALCHLOR is a topical product that contains mechlorethamine HCl, an alkylating drug. Mechlorethamine HCl is a white to off white solid that is very soluble in water and methanol, partially soluble in acetone, and generally not soluble in organic solvents.

Mechlorethamine HCl is designated chemically as 2-chloro-N-(2-chloroethyl)-N-methylethanamine hydrochloride. The molecular weight is 192.52 and the melting point is 108-111°C. The empirical formula is C\textsubscript{2}H\textsubscript{5}Cl\textsubscript{2}N•HCl, and the structural formula is: CH\textsubscript{2}N(CH\textsubscript{2}CH\textsubscript{2}Cl)\textsubscript{2}•HCl.

Each tube of VALCHLOR contains 60g of a gel containing 0.016% w/w of mechlorethamine (equivalent to 0.02% mechlorethamine HCl) in a base of the following inactive ingredients: diethylene glycol monooctyl ether, propylene glycol, isopropl alcohol, glycerin, lactic acid, hydroxypropylcellulose, sodium chloride, menthol, edetate disodium, butylated hydroxytoluene.

12 CLINICAL PHARMACOLOGY

12.1 Mechanism of Action

Mechlorethamine, also known as nitrogen mustard, is an alkylating agent which inhibits rapidly proliferating cells.

12.3 Pharmacokinetics

Systemic exposure was undetectable after topical administration of VALCHLOR to patients. Blood samples were analyzed from 16 and 15 patients following treatment with VALCHLOR (mechlorethamine gel 0.016%) and an identical formulation consisting of mechlorethamine 0.032% w/w, respectively. For patients who received mechlorethamine 0.016%, samples were collected to measure mechlorethamine concentrations prior to dosing, on day 1, and at the first month visit. Following the topical administration of mechlorethamine 0.016%, there were no detectable plasma mechlorethamine concentrations observed in any of the patients. Patients who received mechlorethamine 0.032% had no measurable concentrations of mechlorethamine or half-mustard after 2, 4, or 6 months of treatment.

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility

Mechlorethamine is a probable carcinogen in humans. There are reports of non-melanoma skin cancer with the use of topical mechlorethamine in patients [see Warnings and Precautions (5.4)]. Mechlorethamine was carcinogenic in mice when injected intravenously with four doses of 2.4 mg/kg (0.1% solution) at 2-week intervals with observations for up to 2 years. An increased incidence of thymic lymphomas and pulmonary adenomas was observed. Painting mechlorethamine on the skin of mice at a dose of 4 mg/kg for periods of up to 33 weeks resulted in squamous cell tumors in 9 of 33 mice.

Mechlorethamine was genotoxic in multiple genetic toxicology studies, which included mutations in the bacterial reverse mutation assay (Ames test) and chromosome aberrations in mammalian cells. Dominant lethal mutations were produced in ICR/Ha Swiss mice.

The reproductive effects of VALCHLOR have not been studied; however, published literature indicates that fertility may be impaired by systemically administered mechlorethamine. Mechlorethamine impaired fertility in the rat at a daily dose of 500 mg/kg intravenously for two weeks. Treatment with intravenous mechlorethamine has been associated with delayed catamenia, oligomenorrhea, and temporary or permanent amenorrhea.

13.2 Animal Toxicology and/or Pharmacology

Animal studies have shown mechlorethamine to be corrosive to skin and eyes, a powerful vesicant, irritating to the mucous membranes of the respiratory tract, and highly toxic by the oral route.

14 CLINICAL STUDIES

The efficacy of VALCHLOR was assessed in a randomized, multicenter, observer-blind, active-controlled, non-inferiority clinical trial of 260 patients with Stage IA, IB, and IIA mycosis fungoides-type cutaneous T-cell lymphoma (MF-CTCL) who had received at least one prior skin-directed therapy. Qualifying prior therapies included topical corticosteroids, phototherapy, Targretin® gel, and topical nitrogen mustard. Patients were not required to be refractory to or intolerant of prior therapies.

Patients were stratified based on Stage (IA vs. IB and IIA) and then randomized to receive VALCHLOR 0.016% (equivalent to 0.02% mechlorethamine HCl) or Aquaphor®-based mechlorethamine HCl 0.02% ointment (Comparator) at 13 centers in the United States. Eighteen patients were excluded from the efficacy analysis due to protocol violations involving randomization at a single site.

Study drug was to be applied topically on a daily basis for 12 months. Concomitant use of topical corticosteroids was not permitted during the study. Dosing could be suspended or continued with reduced frequency for dermatitis. The mean daily usage of VALCHLOR gel was 2.8 g (1 to 2 tubes per month). The maximum daily usage was 10.5 g (5 to 6 tubes per month).

Patients were evaluated for a response on a monthly basis for the first 6 months and then every 2 months for the last 6 months using the Composite Assessment of Index Lesion Severity (CAILS) score. The CAILS score is obtained by adding the severity score of each of the following categories for up to 5 index lesions: erythema, scaling, plaque elevation, and surface area. Severity was graded from 0 (none) to 8 (severe) for erythema and scaling; 0 to 3 for plaque elevation; and 0 to 9 for surface area. A response was defined as greater than or equal to 50% reduction in baseline CAILS score which was confirmed at the next visit at least 4 weeks later. A complete response was defined as a confirmed CAILS score of 0. Non-inferiority was considered to have been demonstrated if the lower bound of the 95% confidence interval (CI) around the ratio of response rates (VALCHLOR/Comparator) was greater than or equal to 0.75.

Patients were also evaluated using the Severity Weighted Assessment Tool (SWAT). The SWAT score is derived by measuring each involved area as a percentage of total body surface area (%BSA) and multiplying it by a severity weighting factor (1=patch, 2=plaque, 3=tumor or ulcer). A response was defined as greater than or equal to 50% reduction in baseline SWAT score which was confirmed at the next visit at least 4 weeks later.
The baseline demographics and disease characteristics were balanced between treatment arms. The median age was 57 years in the VALCHLOR arm and 58 years in the comparator arm. The majority of the patients were male (60% in VALCHLOR arm, 59% in Comparator arm) and white (75% in both treatment arms). The median number of prior therapies was 2 in both treatment arms. The most common prior therapy was topical corticosteroids (used in 86% of patients in both treatment arms). The median body surface area (BSA) involvement at baseline was 8.5% (range 1%, 61%) in the VALCHLOR arm and 9% (range 1%, 76%) in the comparator arm.

Sixty percent (60%) of the patients on the VALCHLOR arm and 48% of patients on the comparator arm achieved a response based on the CAILS score. VALCHLOR was non-inferior to the comparator based on a CAILS overall response rate ratio of 1.24 (95% CI 0.98, 1.58). Complete responses constituted a minority of the CAILS or SWAT overall responses (Table 2). The onset of CAILS overall response for both treatment arms showed a wide range from 1 to 11 months.

### Table 2. Efficacy in Patients with Mycosis Fungoides-Type Cutaneous T-Cell Lymphoma (MF-CTCL)

<table>
<thead>
<tr>
<th>Response Rates</th>
<th>VALCHLOR N=119</th>
<th>Comparator N=123</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAILS Overall Response</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Response (CR)</td>
<td>60%</td>
<td>48%</td>
</tr>
<tr>
<td>Partial Response (PR)</td>
<td>14%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>45%</td>
<td>37%</td>
</tr>
<tr>
<td><strong>SWAT Overall Response</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Response (CR)</td>
<td>50%</td>
<td>46%</td>
</tr>
<tr>
<td>Partial Response (PR)</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>43%</td>
<td>43%</td>
</tr>
</tbody>
</table>

15 REFERENCES


16 HOW SUPPLIED/STORAGE AND HANDLING

VALCHLOR is supplied in 60g tubes of 0.016% w/w mechlorethamine as a clear gel [NDC 69639-120-01].

Prior to dispensing, store in the freezer at -13°F to 5°F (-25°C to -15°C). Advise patients that adherence to the recommended storage condition will ensure VALCHLOR will work as expected. Patients should consult a pharmacist prior to using VALCHLOR that has been left at room temperature for longer than one hour per day. Unused product should be discarded after 90 days [see How Supplied/Storage and Handling (16)].

With clean hands, replace tube in the original box, then place in the refrigerator. Keep VALCHLOR in its original box out of the reach of children and avoid contact with food when storing in the refrigerator.

Unused VALCHLOR, empty tubes, and used application gloves should be discarded in household trash in a manner that prevents accidental application or ingestion by others, including children and pets.

**Mucosal or Eye Injury**

Exposure of the eyes to mechlorethamine causes pain, burns, inflammation, photophobia, and blurred vision. Blindness and severe irreversible eye injury may occur. Should eye contact occur, immediately irrigate for at least 15 minutes with copious amounts of water, normal saline, or a balanced salt ophthalmic irrigating solution, followed by immediate ophthalmologic consultation [see Warnings and Precautions (5.1)].

Exposure of mucous membranes such as the oral mucosa or nasal mucosa causes pain, redness, and ulceration, which may be severe. Should mucosal contact occur, immediately irrigate for at least 15 minutes with copious amounts of water, followed by immediate medical consultation [see Warnings and Precautions (5.1)].

**Secondary Exposure to VALCHLOR**

Avoid direct skin contact with VALCHLOR in individuals other than the patient. Risks of secondary exposure include dermatitis, mucosal injury, and secondary cancers. Caregivers who help apply VALCHLOR to patients must wear disposable nitrile gloves when handling VALCHLOR. If secondary exposure occurs to eyes, mouth, or nose, immediately irrigate the exposed area for at least 15 minutes with copious amounts of water. Thoroughly wash affected areas of the skin with soap and water [see Dosage and Administration (2.2) and Warnings and Precautions (5.2)].

17 PATIENT COUNSELING INFORMATION

**See FDA-approved patient labeling (Medication Guide)**

Advise patients of the following and provide a copy of the Medication Guide.

**Instructions for Patients and Caregivers for Application of VALCHLOR:**

Apply a thin film of VALCHLOR once daily to affected areas of the skin [see Dosage and Administration (2.1)].

Patients must wash hands thoroughly with soap and water after handling or applying VALCHLOR. Caregivers must wear disposable nitrile gloves when applying VALCHLOR to patients and wash hands thoroughly with soap and water after removal of gloves. If there is accidental skin exposure to VALCHLOR, caregivers must immediately wash exposed areas thoroughly with soap and water and remove contaminated clothing [see Dosage and Administration (2.2)].

Patients and caregivers should follow these instructions when applying VALCHLOR [see Dosage and Administration (2.2)]:

- Apply immediately or within 30 minutes after removal from the refrigerator. Return VALCHLOR to the refrigerator immediately after each use.
- Apply VALCHLOR to completely dry skin at least 4 hours before or 30 minutes after showering or washing. Allow treated areas to dry for 5 to 10 minutes after application before covering with clothing.
- Emollients (moisturizers) may be applied to the treated areas 2 hours before or 2 hours after application of VALCHLOR.
- Occlusive (air or water-tight) dressings should not be used on areas of the skin where VALCHLOR was applied.

**Mucosal or Eye Injury**

Exposure of the eyes to mechlorethamine causes pain, burns, inflammation, photophobia, and blurred vision. Blindness and severe irreversible eye injury may occur. Should eye contact occur, immediately irrigate for at least 15 minutes with copious amounts of water, normal saline, or a balanced salt ophthalmic irrigating solution, followed by immediate ophthalmologic consultation [see Warnings and Precautions (5.1)].

Exposure of mucous membranes such as the oral mucosa or nasal mucosa causes pain, redness, and ulceration, which may be severe. Should mucosal contact occur, immediately irrigate for at least 15 minutes with copious amounts of water, followed by immediate medical consultation [see Warnings and Precautions (5.1)].

**Secondary Exposure to VALCHLOR**

Avoid direct skin contact with VALCHLOR in individuals other than the patient. Risks of secondary exposure include dermatitis, mucosal injury, and secondary cancers. Caregivers who help apply VALCHLOR to patients must wear disposable nitrile gloves when handling VALCHLOR. If secondary exposure occurs to eyes, mouth, or nose, immediately irrigate the exposed area for at least 15 minutes with copious amounts of water. Thoroughly wash affected areas of the skin with soap and water [see Dosage and Administration (2.2) and Warnings and Precautions (5.2)].
Dermatitis
If patients experience skin irritation after applying VALCHLOR, such as redness, swelling, inflammation, itchiness, blisters, ulceration, or secondary skin infections, instruct patients to discuss with their physician options for changes in the treatment plan. The face, genitalia, anus, or intertriginous skin (skin folds or creases) are at increased risk of skin irritation [see Warnings and Precautions (5.3)].

Non-Melanoma Skin Cancers
Instruct patients to notify their physician of any new skin lesions and to undergo periodic assessment for signs and symptoms of skin cancer. Non-melanoma skin cancers have been reported in patients receiving the active ingredient in VALCHLOR. Non-melanoma skin cancer may occur at multiple areas, including areas not directly treated with VALCHLOR [see Warnings and Precautions (5.4)].

Embryo-fetal Toxicity
Advise women of the potential hazard to a fetus and to avoid pregnancy while using VALCHLOR [see Warnings and Precautions (5.5)].

Nursing Mothers
Advise women to discontinue nursing due to the potential for topical or systemic exposure to VALCHLOR [see Use in Specific Populations (8.3)].
VALCHLOR® (mechlorethamine) gel

MEDICATION GUIDE
VALCHLOR® (val-klor)
(mechlorethamine) gel

Important information: VALCHLOR is for use on skin only. Do not get VALCHLOR near or in your eyes, mouth, or nose.

What is the most important information I should know about VALCHLOR?
Keep VALCHLOR away from your eyes, mouth, and nose.
- If VALCHLOR gets in your eyes it can cause eye pain, burning, swelling, redness, sensitivity to light, and blurred vision. It may also cause blindness and permanent injury to your eyes. If VALCHLOR gets in your eyes, rinse your eyes right away for at least 15 minutes with a large amount of water, normal saline, or an eye wash solution.
- If VALCHLOR gets in your mouth or nose it can cause pain, redness, and ulcers. Rinse the affected area right away for at least 15 minutes with a large amount of water.

Get medical help right away if VALCHLOR gets in your eyes, mouth, or nose. Talk with your healthcare provider before using VALCHLOR about how to get medical help.

What is VALCHLOR?
VALCHLOR is a prescription medicine used on the skin to treat people with Stage 1A and 1B mycosis fungoides-type cutaneous T-cell lymphoma who have received previous skin treatment. It is not known if VALCHLOR is safe and effective in children.

Who should not use VALCHLOR?
Do not use VALCHLOR if you are severely allergic to mechlorethamine. Tell your healthcare provider if you have had an allergic reaction to mechlorethamine.

What should I tell my healthcare provider before using VALCHLOR?
Before using VALCHLOR, tell your healthcare provider about all of your medical conditions, including if you:
- are pregnant or plan to become pregnant. VALCHLOR can harm your unborn baby. You should not become pregnant while using VALCHLOR. Tell your healthcare provider right away if you become pregnant while using VALCHLOR.
- are breastfeeding or plan to breastfeed. It is not known if VALCHLOR passes into your breast milk. You and your healthcare provider should decide if you will use VALCHLOR or breastfeed. You should not do both.

Tell your healthcare provider about all the medicines you take including prescription and over-the-counter medicines, vitamins, and herbal supplements.

How should I use VALCHLOR?
- Use VALCHLOR exactly as your healthcare provider tells you.
- Caregivers must wear disposable nitrile gloves when applying VALCHLOR.
- Wash your hands with soap and water after touching or applying VALCHLOR.
- Safely throw away used disposable nitrile gloves in household trash.
- Apply VALCHLOR right away or within 30 minutes after you take it out of the refrigerator.
- Return VALCHLOR to the refrigerator right after each use.
- Apply a thin layer of VALCHLOR to completely dry skin at least 4 hours before or 30 minutes after showering or washing.
- Let the treated areas dry for 5 to 10 minutes after applying VALCHLOR before covering with clothing.
- Moisturizers may be applied to the treated areas 2 hours before or 2 hours after applying VALCHLOR.
- You should not use air or water-tight bandages on areas of the skin treated with VALCHLOR.

What should I avoid while using VALCHLOR?
VALCHLOR is flammable. Avoid fire, flame, and smoking until VALCHLOR has dried.

What are the possible side effects of VALCHLOR?
See “What is the most important information I should know about VALCHLOR?”
VALCHLOR can cause serious side effects, including:
- Risk of Secondary Exposure to VALCHLOR. You may have a risk of inflammation of your skin (dermatitis), injury to your eyes, mouth, or nose, and certain types of cancers. Caregivers who accidentally come into contact with VALCHLOR must wash the affected area with soap and water right away for at least 15 minutes and remove any contaminated clothing. Get medical help right away if VALCHLOR gets in your eyes, mouth, or nose.
- Inflammation of your skin (dermatitis) is common with VALCHLOR and may sometimes be severe. Your risk for dermatitis is increased if VALCHLOR is applied to your face, genital area, anus, or skin folds. Tell your healthcare provider if you develop skin reactions such as redness, swelling, itching, blisters, ulcers, and skin infections.
- Increased risk of certain types of skin cancers. Certain types of skin cancer can develop on areas of your skin that are treated with VALCHLOR and areas of your skin that are not treated with VALCHLOR. Your healthcare provider will check your skin for skin cancers during and after your treatment with VALCHLOR. Tell your healthcare provider if you get any new skin lesions.

The most common side effects of VALCHLOR include: redness, swelling, itching, skin ulcers or blisters, skin infection, and darkening of areas of your skin.

These are not all the possible side effects of VALCHLOR. Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

How should I store VALCHLOR?
- Store VALCHLOR in the refrigerator between 36°F to 46°F (2°C to 8°C).
- Keep VALCHLOR away from food in the refrigerator.
- With clean hands, place VALCHLOR back in the box it came in and return it to the refrigerator right after each use.
- Talk with your pharmacist before you use VALCHLOR that has been out of the refrigerator for more than one hour a day.
- Safely throw away VALCHLOR that is not used after 90 days. Unused VALCHLOR, empty tubes, and used disposable nitrile gloves should be safely thrown away in household trash.
- Keep VALCHLOR and all medicines out of the reach of children.

General information about the safe and effective use of VALCHLOR. Medicines are sometimes prescribed for purposes other than those listed in a Medication Guide. You can ask your pharmacist or healthcare provider for information about VALCHLOR that is written for health professionals. Do not use VALCHLOR for a condition for which it was not prescribed. Do not give VALCHLOR to other people, even if they have the same symptoms that you have. It may harm them.

This Medication Guide summarizes the most important information about VALCHLOR. If you would like more information about VALCHLOR, talk to your healthcare provider. You can ask your healthcare provider or pharmacist for information about VALCHLOR that is written for health professionals.

What are the ingredients in VALCHLOR?
Active ingredient: mechlorethamine
Inactive ingredients: diethylene glycol monoethyl ether, propylene glycol, isopropyl alcohol, glycerin, lactic acid, hydroxypropylcellulose, sodium chloride, menthol, edetate disodium, butylated hydroxytoluene

Manufactured for: Helsinn Therapeutics (U.S.), Inc. Iselin, NJ 08830
V-WACL-US-0107 issued: 11/2018
For more information, go to www.VALCHLOR.com or call 1-855-482-5245.
This Medication Guide has been approved by the U.S. Food and Drug Administration.