mupirocin

topical antibiotic

MUPIROCIN + BACTROBAN

Mupirocin Ointment, 2% is indicated for the topical treatment of impetigo due to: *Staphylococcus aureus* and *Streptococcus pyogenes*.

Mupirocin 2% can cause:

+ Application site reactions
+ Pruritus (itchy skin)
+ Rash
+ Contact dermatitis
+ Furunculosis (boils)
+ Exfoliative dermatitis (redness and peeling of the skin over at least 90% of the skin on the surface of your body.)

BACTROBAN ointment is an RNA synthetase inhibitor antibacterial indicated for the topical treatment of impetigo due to susceptible isolates of *Staphylococcus aureus* and *Streptococcus pyogenes*.

Bactroban can cause:

+ Anaphylaxis
+ Urticaria (hives)
+ Angioedema (swelling)
+ Generalized rash
+ Nausea, erythema, dry skin, tenderness
+ Clostridium difficile-Associated Diarrhea (CDAD)
+ Potential for Microbial Overgrowth
+ Risk of Polyethylene Glycol Absorption
+ Burning, stinging/pain, and itching
+ Contact dermatitis
+ Increased exudate (wound fluid)

SOURCES FROM FDA + CLAY-PARK LABS, INC. + GLAXOSMITHKLINE

MUPIROCIN 2% GUIDANCE

This drug is contraindicated in individuals with a history of sensitivity reactions to any of its components.

Each gram of Mupirocin Ointment, 2% contains 20 mg mupirocin in a soft white ointment base consisting of castor oil, oleyl alcohol, hard fat (Softisan® 378) and propylene glycol

If a reaction suggesting sensitivity or chemical irritation should occur with the use of Mupirocin Ointment, 2%, treatment should be discontinued and appropriate alternative therapy for the infection instituted.

As with other antibacterial products, prolonged use may result in overgrowth of nonsusceptible organisms, including fungi. Mupirocin Ointment, 2% is not formulated for use on mucosal surfaces. Mupirocin Ointment, 2% is not intended for nasal use.

Mupirocin Ointment, 2% is not for ophthalmic use.

Drug Interactions: The effect of the concurrent application of Mupirocin Ointment, 2% and other drug products is unknown.

Carcinogenesis, Mutagenesis, Impairment of Fertility: Long-term studies in animals to evaluate carcinogenic potential of mupirocin have not been conducted.

Because animal studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

There are, however, no adequate and well-controlled studies in pregnant women.

BACTROBAN GUIDANCE

BACTROBAN ointment is not for intranasal, ophthalmic, or other mucosal use

Do not apply BACTROBAN ointment concurrently with any other lotions, creams, or ointments

In the event of a sensitization or severe local irritation from BACTROBAN ointment, usage should be discontinued, and appropriate alternative therapy for the infection instituted.

Re-evaluate patients not showing a clinical response within 3 to 5 days.

Each gram of BACTROBAN ointment, 2% contains 20 mg mupirocin in a water-miscible ointment base (polyethylene glycol ointment, N.F.) consisting of polyethylene glycol 400 and polyethylene glycol 3350.

High-level mupirocin resistance (≥512 mcg/mL) may be determined using standard disk diffusion or broth microdilution tests.[1,2] Because of the occurrence of mupirocin resistance in methicillin-resistant *S. aureus* (MRSA), it is appropriate to test MRSA populations for mupirocin susceptibility prior to the use of mupirocin using a standardized method.[3,4,5]

Report to the healthcare provider or go to the nearest emergency room if severe allergic reactions, such as swelling of the lips, face, or tongue, or wheezing occur

Report to the healthcare provider any signs of local adverse reactions. BACTROBAN ointment should be stopped and the healthcare provider contacted if irritation, severe itching, or rash occurs.

CLOSTRIDIUM DIFFICILE-ASSOCIATED DIARRHEA

Clostridium difficile-associated diarrhea (CDAD) has been reported with use of nearly all antibacterial agents and may range in severity from mild diarrhea to fatal colitis. Treatment with antibacterial agents alters the normal flora of the colon leading to overgrowth of *C. difficile*.

C. difficile produces toxins A and B which contribute to the development of CDAD. Hypertoxin-producing strains of *C. difficile* cause increased morbidity and mortality, as these infections can be refractory to antimicrobial therapy and may require colectomy. CDAD must be considered in all patients who present with diarrhea following antibacterial drug use. Careful medical history is necessary since CDAD has been reported to occur over 2 months after the administration of antibacterial agents.

If CDAD is suspected or confirmed, ongoing antibacterial drug use not directed against *C. difficile* may need to be discontinued. Appropriate fluid and electrolyte management, protein supplementation, antibacterial treatment of *C. difficile*, and surgical evaluation should be instituted as clinically indicated.

https://www.cdc.gov/cdiff/pdf/Cdiff-progression-H.pdf

C. diff develops within a few days or up to several weeks after you take antibiotics. Symptoms can include:

- Diarrhea
- Fever
- Stomach tenderness or pain
- Loss of appetite
- Nausea

About 1 in 6 people who get _C. diff_ infection will get it again in the subsequent 2-8 weeks.

C. diff is contagious, but you can keep others from getting it.

- Wash your hands with soap and water every time you use the bathroom and always before you eat.
- Try to use a separate bathroom if you have diarrhea.
- Take showers and use soap.

GUT CONCERNS

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7732679/

The intestine is populated by a complex microbial community that is organized around a network of metabolic interdependencies. It is now understood that the gut microbiota is vital for normal development and functioning of the human body, especially for the priming and maturation of the adaptive immune system. Antibiotic use can have several negative effects on the gut microbiota, including reduced species diversity, altered metabolic activity, and the selection of antibiotic-resistant organisms, which in turn can lead to antibiotic-associated diarrhea and recurrent *Clostridioides difficile* infections. There is also evidence that early childhood exposure to antibiotics can lead to several gastrointestinal, immunologic, and neurocognitive conditions. The increase in the use of antibiotics in recent years suggests that these problems are likely to become more acute or more prevalent in the future.

Antibiotic treatment reduces the overall diversity of gut microbiota species, including loss of some important taxa, which causes metabolic shifts, increases gut susceptibility to colonization, and stimulates the development of bacterial antibiotic resistance

PEDIATRIC CONCERNS

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7732679/

Antibiotic use is associated with reduced microbiota diversity. In children, restoration of microbial diversity following antibiotic treatment has been reported to take approximately 1 month

Antibiotic use in childhood has been associated with several negative outcomes later in life, including the development of obesity, asthma, allergy, and IBD

Exposure to antibiotics during infancy has been associated with delayed gut microbiota development. In a study of infants aged ≤2 years, the delay in microbiota development after antibiotic use was particularly pronounced between the ages of 6 and 12 months

Human genetics and diet are known to play an important role in determining body weight; however, it is now widely accepted that the increased prevalence of obesity over the past 30 years may also be attributable to alterations in gut microbiota composition (Biedermann and Rogler, 2015). In particular, early-life antibiotic exposure has been associated with the development of adiposity in humans (Trasande et al., 2013).

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3424456/

The fact that high levels of adiposity are associated with poor health has led to many considering adipose tissue a ‘toxic’ tissue, a perspective that is supported by growing evidence of obesity as a chronic inflammatory state

MICROBIAL OVERGROWTH

As with other antibacterial products, prolonged use of BACTROBAN ointment may result in overgrowth of nonsusceptible microorganisms, including fungi

BACTROBAN ointment should not be used with intravenous cannulae or at central intravenous sites because of the potential to promote fungal infections and antimicrobial resistance.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7491661/

Community antibiotic resistance is in the news, with many warnings about the increasing prevalence of and potential for multidrug-resistant infections with no available antibiotic treatment options and the risk of secondary infection (most notoriously from *Clostridium difficile*).[4–11] This antibiotic resistance occurs not only at the societal level but also at individual level; those who take more antibiotics might be more likely to develop another infection and might have more resistant bacterial flora when they next need antibiotics.[8,9]

POLYETHYLENE GLYCOL ABSORPTION

Polyethylene glycol can be absorbed from open wounds and damaged skin and is excreted by the kidneys. In common with other polyethylene glycol-based ointments, BACTROBAN ointment should not be used in conditions where absorption of large quantities of polyethylene glycol is possible, especially if there is evidence of moderate or severe renal impairment.

WHAT IS IMPETIGO?

https://www.ncbi.nlm.nih.gov/books/NBK430974/

Impetigo is a common infection of the superficial layers of the epidermis that is highly contagious and most commonly caused by gram-positive bacteria. It most commonly presents as erythematous plaques with a yellow crust and may be itchy or painful. The lesions are highly contagious and spread easily. Diagnosis is typically based on the symptoms and clinical manifestations alone.

infection may be bullous or nonbullous. The infection typically affects the face but can also occur in any other part of the body that has an abrasion, laceration, insect bite or other trauma.

Nonbullous impetigo is most commonly caused by *S aureus* which is responsible for 80% of cases. Group A beta-hemolytic *Strep* (GABHS) accounts for 10% of cases and the causative agent is a combination of *S. aureus* and GABHS 10% of the time. Methicillin-resistant *S aureus* (MRSA) has become more prevalent, especially in hospitalized patients. Today, community-acquired MRSA is rapidly increasing. The condition is more common in populations living in close quarters, daycare centers and prisons.

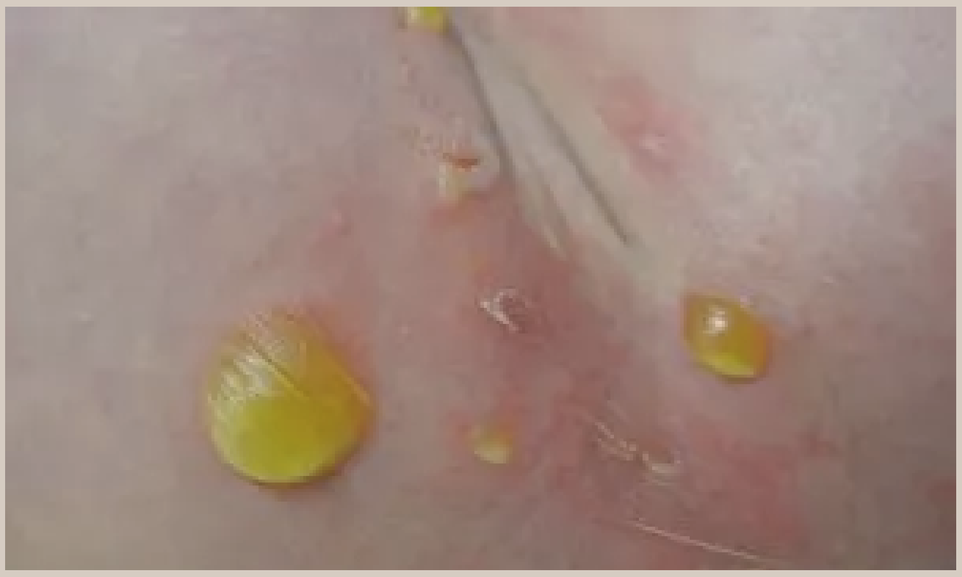
Bullous impetigo is caused almost exclusively by *S aureus*. Sometimes a deep ulcerated infection may occur known as ecthyma, which is a complication of bullous impetigo.

CONTINUED ON NEXT SLIDE

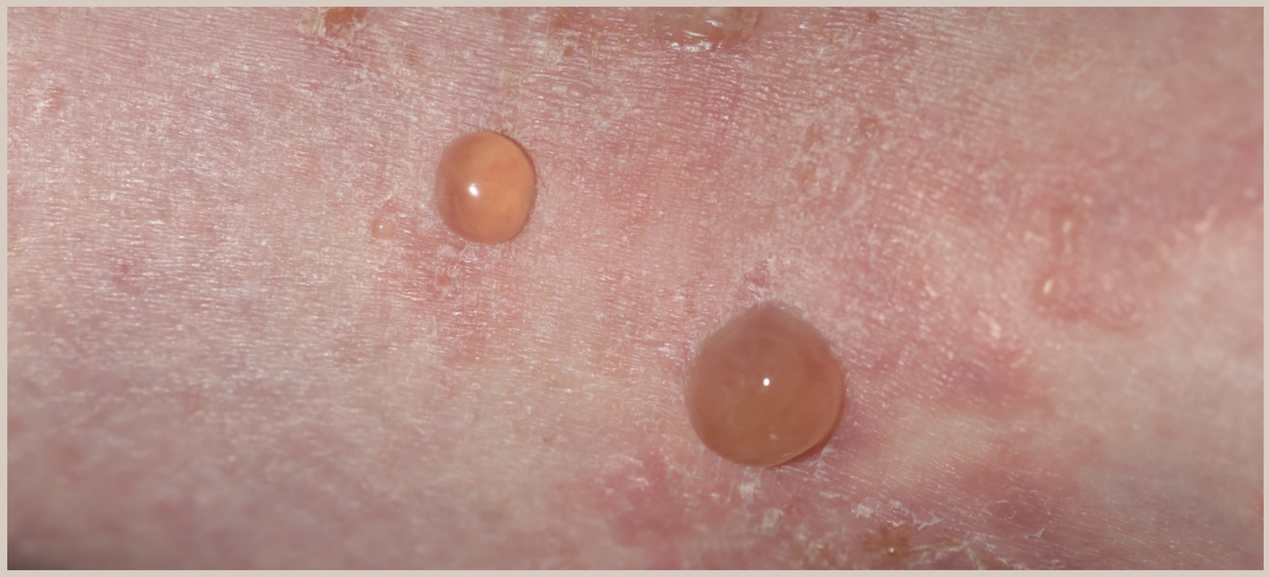
WHAT IS IMPETIGO?

NONBULLOUS IMPETIGO

BULLOUS IMPETIGO



https://www.primehealthchannel.com/bullous-impetigo-pictures-causes-treatment-and-natural-remedies.html



https://healthjade.net/wp-content/uploads/2018/04/bullous-pemphigoid.jpg