



Original Effective Date: 02/01/2022  
Current Effective Date: 04/11/2025  
Last P&T Approval/Version: 01/29/2025  
Next Review Due By: 01/2026  
Policy Number: C22224-A

## Livmarli (maralixibat)

### PRODUCTS AFFECTED

Livmarli (maralixibat)

### COVERAGE POLICY

*Coverage for services, procedures, medical devices, and drugs are dependent upon benefit eligibility as outlined in the member's specific benefit plan. This Coverage Guideline must be read in its entirety to determine coverage eligibility, if any. This Coverage Guideline provides information related to coverage determinations only and does not imply that a service or treatment is clinically appropriate or inappropriate. The provider and the member are responsible for all decisions regarding the appropriateness of care. Providers should provide Molina Healthcare complete medical rationale when requesting any exceptions to these guidelines.*

#### **Documentation Requirements:**

*Molina Healthcare reserves the right to require that additional documentation be made available as part of its coverage determination; quality improvement; and fraud; waste and abuse prevention processes. Documentation required may include, but is not limited to, patient records, test results and credentials of the provider ordering or performing a drug or service. Molina Healthcare may deny reimbursement or take additional appropriate action if the documentation provided does not support the initial determination that the drugs or services were medically necessary, not investigational or experimental, and otherwise within the scope of benefits afforded to the member, and/or the documentation demonstrates a pattern of billing or other practice that is inappropriate or excessive.*

#### **DIAGNOSIS:**

Cholestatic pruritus in patients with Alagille syndrome (ALGS), Progressive familial intrahepatic cholestasis (PFIC)

#### **REQUIRED MEDICAL INFORMATION:**

This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. If a drug within this policy receives an updated FDA label within the last 180 days, medical necessity for the member will be reviewed using the updated FDA label information along with state and federal requirements, benefit being administered and formulary preferencing. Coverage will be determined on a case-by case basis until the criteria can be updated through Molina Healthcare, Inc. clinical governance. Additional information may be required on a case-by-case basis to allow for adequate review. When the requested drug product for coverage is dosed by weight, body surface area or other member specific measurement, this data element is required as part of the medical necessity review. The Pharmacy and Therapeutics Committee has determined that the drug benefit shall be a mandatory generic and that generic drugs will be dispensed whenever available.

#### **A. CHOLESTATIC PRURITUS:**

1. Documented diagnosis of Alagille syndrome

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AND

2. Documentation of ONE of the following that support the diagnosis [DOCUMENTATION REQUIRED]:
  - (a) Clinical features with involvement in 3 of 7 main organ systems (hepatic, ocular, skeletal, vascular, facial, cardiac or renal) or
  - (b) Liver biopsy showing bile duct paucity or
  - (c) Use of an approved genetic test showing mutation/deletion of 1 of 2 known genes (JAG1, NOTCH2)

AND

3. Documentation of members symptoms of moderate to very severe pruritus

AND

4. Prescriber attests to obtaining baseline liver tests, fat-soluble vitamin levels, and hydration status, and monitoring during treatment as recommended per FDA label

AND

5. IF THIS IS A NON-FORMULARY/NON-PREFERRED PRODUCT: Documentation of trial/failure of or serious side effects to a majority (not more than 3) of the preferred formulary alternatives for the given diagnosis (see BACKGROUND). Documentation of medication(s) tried, dates of trial(s) and reason for treatment failure(s) is required.

AND

6. Prescriber attests to (or the clinical reviewer has found that) the member not having any FDA labeled contraindications that haven't been addressed by the prescriber within the documentation submitted for review [Contraindications to Livmarli (maralixibat) include: patients with prior or active hepatic decompensation events (e.g., variceal hemorrhage, ascites, hepatic encephalopathy.)]

### B. PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS:

1. Documented diagnosis of progressive familial intrahepatic cholestasis (PFIC), including documented molecular genetic confirmation of diagnosis

AND

2. Documentation member does not have a pathologic variation of the ABCB11 gene that predicts complete absence of the bile salt export pump (BSEP) protein [DOCUMENTATION REQUIRED]

AND

3. Prescriber attests to obtaining baseline liver tests, fat-soluble vitamin levels, and hydration status, and monitoring during treatment as recommended per FDA label

AND

4. Documentation member has the presence of pruritus

AND

5. Prescriber attests that drug-induced pruritus has been ruled out

AND

6. Documentation member: (a) is concurrently using ursodiol OR (b) has tried and failed (1 month at 20-30 mg/kg/day) of ursodiol OR (c) has an FDA labeled contraindication to ursodiol

AND

7. Prescriber attests to (or the clinical reviewer has found that) the member not having any FDA labeled contraindications that haven't been addressed by the prescriber within the documentation submitted for review [Contraindications to Livmarli (maralixibat) include: patients with prior or active hepatic decompensation events (e.g., variceal hemorrhage, ascites, hepatic encephalopathy.)]

### CONTINUATION OF THERAPY:

#### A. CHOLESTATIC PRURITUS, PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS:

1. Adherence to therapy at least 85% of the time as verified by the prescriber or member medication fill history OR adherence less than 85% of the time due to the need for surgery or treatment of an infection, causing temporary discontinuation

AND

2. Prescriber attests to or clinical reviewer has found no evidence of intolerable adverse effects or drug toxicity

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AND

3. Documentation of positive clinical response as demonstrated by low disease activity and/or improvements in pruritus
- AND
4. Prescriber attests to continued monitoring of liver tests, fat-soluble vitamin levels, and hydration status during treatment as recommended per FDA label

### **DURATION OF APPROVAL:**

Initial authorization: 6 months, Continuation of Therapy: 12 months

### **PRESCRIBER REQUIREMENTS:**

Prescribed by or in consultation with a board-certified gastroenterologist or hepatologist [If prescribed in consultation, consultation notes must be submitted with initial request and reauthorization requests]

### **AGE RESTRICTIONS:**

ALGS: 3 months of age and older

PFIC: 12 months of age and older

### **QUANTITY:**

ALGS:

Start dosing at 190 mcg/kg administered orally once daily; after one week, increase to 380 mcg/kg once daily, as tolerated.

Maximum daily dose volume for patients above 70kg is 3 mL/ 28.5 mg per day

Use Livmarli Oral Solution 9.5 mg/mL

PFIC:

Start dosing at 285 mcg/kg orally once daily; increase to 285 mcg/kg twice daily, 428 mcg/kg twice daily, and then to 570 mcg/kg twice daily, as tolerated

Maximum daily dose volume for patients above 60kg is 2 mL/38 mg per day

Use Livmarli Oral solution 19 mg/mL

### **PLACE OF ADMINISTRATION:**

The recommendation is that oral medications in this policy will be for pharmacy benefit coverage and patient self-administered.

## **DRUG INFORMATION**

### **ROUTE OF ADMINISTRATION:**

Oral

### **DRUG CLASS:**

Ileal Bile Acid Transporter (IBAT) Inhibitors

### **FDA-APPROVED USES:**

Indicated for the treatment of cholestatic pruritus in patients 3 months of age and older with Alagille syndrome (ALGS). Indicated for the treatment of cholestatic pruritus in patients 12 months of age and older with progressive familial intrahepatic cholestasis (PFIC).

*Limitations of Use: Livmarli is not recommended in a subgroup of PFIC type 2 patients with specific ABCB11 variants resulting in nonfunctional or complete absence of bile salt export pump (BSEP) protein.*

### **COMPENDIAL APPROVED OFF-LABELED USES:**

None

## **APPENDIX**

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### APPENDIX:

#### Individual Dose Volume by Patient Weight – ALGS

Patient Weight (kg)	Days 1-7 (190 mcg/kg once daily)	Beginning Day 8 (380 mcg/kg once daily)
	V9.5 mg/mL Solution Volume per Dose (mL)	
5 to 6	0.1	0.2
7 to 9	0.15	0.3
10 to 12	0.2	0.45
13 to 15	0.3	0.6
16 to 19	0.35	0.7
20 to 24	0.45	0.9
25 to 29	0.5	1
30 to 34	0.6	1.25
35 to 39	0.7	1.5
40 to 49	0.9	1.75
50 to 59	1	2.25
60 to 69	1.25	2.5
70 or higher	1.5	3

#### Individual Dose Volume by Patient Weight – PFIC

Patient Weight (kg)	285 mcg/kg (once daily titrated to twice daily)	428 mcg/kg (twice daily)	570 mcg/kg (twice daily as tolerated)
	19 mg/mL Solution Volume per Dose (mL)		
5	0.1	0.1	0.15
6 to 7	0.1	0.15	0.2
8	0.1	0.2	0.25
9	0.15	0.2	0.25
10 to 12	0.15	0.25	0.3
13 to 15	0.2	0.3	0.4
16 to 19	0.25	0.4	0.5
20 to 24	0.3	0.5	0.6
25 to 29	0.4	0.6	0.8
30 to 34	0.45	0.7	0.9
35 to 39	0.6	0.8	1
40 to 49	0.6	0.9	1
50 to 59	0.8	1	1
60 or higher	0.9	1	1

## BACKGROUND AND OTHER CONSIDERATIONS

### BACKGROUND:

Alagille syndrome (ALGS) is a rare autosomal dominant genetic disorder caused by pathogenic variants in JAG1 or NOTCH2, which encode fundamental components of the Notch signaling pathway. The specific symptoms and severity of Alagille syndrome can vary greatly from one person to another, even within the same family. Clinical features span multiple organ systems including hepatic, cardiac, vascular, renal, skeletal, craniofacial, and ocular, and occur with variable phenotypic penetrance. Common symptoms,

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which often develop during the first three months of life, include blockage of the flow of bile from the liver (cholestasis), yellowing of the skin and mucous membranes (jaundice), poor weight gain and growth, and severe itching (pruritus).

Additional symptoms include heart murmurs, congenital heart defects, vertebral (back bone) differences, thickening of the ring that normally lines the cornea in the eye (posterior embryotoxon) and distinctive facial features. Most people with Alagille syndrome have changes (mutations) in one copy of the JAG1 gene. A small percentage (2 percent) of patients has mutations of the NOTCH2 gene. These mutations can be inherited in an autosomal dominant pattern, but in about half of cases, the mutation occurs as a new change (“de novo”) in the individual and was not inherited from a parent. The current estimated incidence of ALGS is approximately 1/30,000 –1/45,000.

Alagille syndrome can be associated with abnormalities of the liver, heart, eyes, skeleton, kidneys and other organ systems of the body. A main finding of Alagille syndrome is liver disease that often becomes apparent within the first three months of life. However, individuals with mild liver involvement may not be diagnosed until later in life. Liver disease in Alagille syndrome, if present, may range in severity from jaundice or mild cholestasis to severe, progressive liver disease that can potentially result in liver failure.

Approximately 90 percent of individuals with Alagille syndrome have a reduced number of bile ducts (bile duct paucity) within the liver. Bile ducts are small tube-like structures that carry bile from the liver to the small intestines. The formation of bile is one of the functions of the liver. Bile is a fluid that contains water, certain minerals that carry an electric charge (electrolytes), and other materials including bile salts, phospholipids, cholesterol, and an orange-yellow pigment (bilirubin) that is a byproduct of the natural breakdown of the hemoglobin of red blood cells. Bile flow accomplishes two important tasks within the body: it aids in digestion and absorption of dietary fats, vitamins, and other nutrients and helps eliminate excess cholesterol, bilirubin, waste, and toxins from the body.

Therefore, a problem with bile flow often results in malabsorption of vital nutrients and the accumulation of toxic materials in the body.

Because of the reduced number of bile ducts, individuals with Alagille syndrome can develop jaundice and cholestasis usually during the first four months of life. Cholestasis refers to reduced or obstructed flow of bile from the liver. Cholestasis can cause yellowing of the skin (jaundice) or whites of the eyes (icterus), itching (pruritus) that may be intense, pale-colored stools, dark urine, fatty bumps (xanthomas) just under the surface of the skin, and an abnormally enlarged liver (hepatomegaly) and/or enlarged spleen (splenomegaly). Because the body cannot properly absorb fats and fat-soluble vitamins (vitamins A, D, E, and K), affected children may also experience growth deficiencies and failure to thrive. Malabsorption of vital nutrients can also lead to rickets, a condition marked by softened, weakened bones (vitamin D deficiency), vision problems (vitamin A deficiency), poor coordination and developmental delays (vitamin E deficiency) and blood clotting problems (vitamin K deficiency).

In approximately 15 percent of patients, progressive liver disease results in scarring of the liver (cirrhosis) and liver failure. There is no way to tell which children are at risk for serious, progressive liver disease in Alagille syndrome.

Many individuals with Alagille syndrome have heart (cardiac) abnormalities that can range from benign heart murmurs to serious structural defects. A heart murmur is an extra sound that is heard during a heartbeat. Heart murmurs in children with Alagille syndrome are usually caused by narrowing of the blood vessels of the lungs (pulmonary artery stenosis). The most common heart abnormality is peripheral pulmonary stenosis in which some of the blood vessels carrying blood to the lungs (pulmonary arteries)

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are narrowed (stenosis). Some children with Alagille syndrome may have complex heart defects, the most common of which is tetralogy of Fallot. Tetralogy of Fallot is a rare form of cyanotic heart disease. Cyanosis is abnormal bluish discoloration of the skin and mucous membranes that occurs due to low levels of circulating oxygen in the blood.

Tetralogy of Fallot consists of a combination of four different heart defects: ventricular septal defect, obstructed outflow of blood from the right ventricle to the lungs due to an abnormal narrowing of the opening between the pulmonary artery and the right ventricle of the heart (pulmonary stenosis), displaced aorta that causes blood to flow into the aorta from both the right and left ventricles, and abnormal enlargement of the right ventricle.

Additional heart defects that can occur in Alagille syndrome include ventricular septal defects, atrial septal defects, patent ductus arteriosus, and coarctation of the aorta. Some studies have shown that in rare cases there is an association with Wolff-Parkinson-White syndrome, a condition characterized by electrical disturbances in the heart. (For more information on these disorders, choose the specific disorder name as your search term in the Rare Disease Database.)

Some individuals with Alagille syndrome may have eye (ocular) abnormalities, especially posterior embryotoxon, a condition marked by thickening of the ring that normally lines the cornea in the eye. The cornea is the thin, transparent membrane that covers the eyeballs. In most cases, posterior embryotoxon is a benign finding that primarily helps to establish a clinical diagnosis and vision is usually unaffected, although mild decreases in the clarity of vision may occur. Less commonly, other eye abnormalities may occur such as Axenfeld anomaly, a condition in which strands of the iris are abnormally attached to the cornea, or progressive degeneration of the retina (pigmentary retinopathy). The retina is the thin layers of nerve cells that lines that inner surface of the back of the eyes and senses light and converts it to nerve signals, which are then relayed to the brain through the optic nerve.

Individuals with Alagille syndrome usually have distinctive facial features including deeply set and widely spaced (hypertelorism) eyes, a pointed chin, broad forehead, and low-set, malformed eyes. In older individuals and adults, the chin may appear larger and more prominent (prognathia).

Skeletal abnormalities may occur in some individuals with Alagille syndrome including butterfly vertebrae, a condition in which certain bones of the spinal column are irregularly shaped. This condition is often noted on an x-ray, but usually does not cause any symptoms or problems (asymptomatic).

Additional symptoms may occur in some individuals with Alagille syndrome including kidney (renal) abnormalities, pancreatic insufficiency, vascular anomalies, mild developmental delays and cognitive impairment. Kidney abnormalities may be more prevalent in individuals with Alagille syndrome caused by mutations in the NOTCH2 gene and include abnormally small kidneys, the presence of cysts on the kidneys and decreased or impaired kidney function. The pancreas is a small organ located behind the stomach that secretes enzymes that travel to the intestines and aid in digestion. The pancreas also secretes other hormones such as insulin, which helps to break down sugar. Pancreatic insufficiency is when the pancreas cannot produce or transport enough enzymes to the intestines to aid in the breakdown and absorption of food and nutrients.

Individuals with Alagille syndrome can also develop abnormalities of certain blood vessels (vascular anomalies) including those in the brain, liver, lungs, heart, and kidneys. Vascular anomalies in the brain can lead to bleeding inside the brain (intracranial bleeding) and stroke. Some individuals with Alagille syndrome have developed a condition known as Moyamoya syndrome. Moyamoya syndrome is a progressive disorder that is characterized by narrowing (stenosis) and/or closing (occlusion) inside the skull of the carotid artery, the major artery that delivers blood to the brain.

Intracranial bleeding and other vascular anomalies are potentially life-threatening complications and

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account for a significant percentage of mortality and morbidity in Alagille syndrome.

Medical management is supportive, focusing on specific symptoms of disease. Treatment may require the coordinated efforts of a team of specialists. Pediatricians, gastroenterologists, cardiologists, ophthalmologists, and other healthcare professionals may need to systematically and comprehensively plan an affect child's treatment. Individuals with Alagille syndrome should have a baseline echocardiogram (ultrasound of the heart) to screen for heart involvement, ultrasound of the abdomen to screen for liver and kidney anomalies, and a screening eye (ophthalmology) exam, In addition, if not previously obtained for specific symptoms, a screening imaging study of the blood vessels of the head (MRI/MRA) is recommended for children who are old enough to sit through the study without need for anesthesia or sedation. Supplemental treatment with vitamins and nutrients is essential for individuals with malabsorption. Such treatment may include restoring vitamins A, D, E and K. Young children may be given formula with medium chain triglycerides because this form of fat is better absorbed by individuals with Alagille syndrome who have cholestasis. Some affected children may need to receive extra calories through a tube that runs from the nose to the stomach (nasogastric tube) or through a tube placed directly into the stomach through a small incision in the abdominal wall and stomach (gastrostomy tube).

**Specific treatment may be indicated for individuals with cholestatic liver disease. The drug ursodeoxycholic acid is given to help improve bile flow, which can lead to a reduction in some symptoms such as itching (pruritus) or cholesterol deposits (xanthomas). However, pruritus associated with Alagille syndrome often is resistant to therapy. Additional drugs that have been used to treat pruritus include antihistamines, rifampin, cholestyramine, and naltrexone. Keeping the skin properly hydrated with moisturizers is also recommended. Cholestyramine may also be indicated for individuals with elevated cholesterol levels or xanthomas.**

Some affected infants and children with Alagille syndrome who do not respond to drug and dietary therapies may be treated by a surgical procedure known as partial biliary diversion. This surgical procedure is used to disrupt or divert recirculation of bile acids between the liver and the gastrointestinal tract. This therapy has demonstrated that, in some children, it can improve certain symptoms such as reducing itchiness or xanthoma formation.

In severe cases of Alagille syndrome (i.e., cases that have progressed to cirrhosis or liver failure or in which other therapies were unsuccessful), liver transplantation may be required.

Additional complications that can be associated with Alagille syndrome including heart, blood vessel and kidney abnormalities are treated in the standard manner. In some cases, this may include surgery.

In March 2023, based on positive data from the phase 2 RISE study, the indication for Livmarli was expanded to include infants as young as 3 months with cholestatic pruritus with ALGS. The RISE study evaluated the safety and tolerability of Livmarli in infants less than 1 year of age with ALGS or PFIC. Patients received 380 mcg/kg once daily.

### **Progressive familial intrahepatic cholestasis (PFIC)**

Progressive familial intrahepatic cholestasis (PFIC) is a heterogeneous group of liver disorders of autosomal recessive inheritance, presenting as intrahepatic cholestasis in infancy or early childhood and resulting in end stage liver disease (ESLD) and death or liver transplantation in infancy to adulthood. The disease has been classified into three types (types 1, 2 and 3) based on the genetic defect involved in bile

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transport. All the three types of PFIC are caused by defects in bile secretion from hepatocyte to canaliculi. The defects are in form of penetrant mutations in genes encoding proteins associated with hepatocellular transport system.

PFIC is typically diagnosed using liver function tests (e.g., gamma-glutamyl transferase [GGT], aspartate aminotransferase [AST], alanine transaminase [ALT]), bile acid tests, liver biopsy, and genetic testing. While PFIC types 1–3 are the most common, new types are still being discovered. In types 1–3, benign recurrent intrahepatic cholestasis (BRIC), a transient presentation of PFIC, has occurred. PFIC accounts for 10–15% cases of neonatal cholestasis syndrome<sup>2,3</sup> and 10–15% of children requiring liver transplantation. It is a rare disease with an estimated incidence of 1 per 50,000 to 1 per 100,000 births although the exact prevalence is not known. The disease affects both genders equally and has been reported from around the world. Patients typically develop fibrosis and end-stage liver disease before adulthood, which can be fatal if untreated. Most patients with PFIC require biliary diversion surgery or liver transplant by 30 years of age.

**Treatment-** Medical therapy is the first line of treatment in patients with all types of PFIC. The objectives are to provide relief from pruritus, improve the nutritional status, correct vitamin deficiencies and treat complications of advanced liver disease like ascites and variceal bleeding if present. Simple measures like keeping the skin moisturized and trimming the fingernails are helpful to provide symptomatic relief. The total caloric intake should be around 125% of the recommended daily allowance (RDA). Dietary fat should be provided largely as medium chain triglycerides (MCT oil) as they do not require bile salts for absorption and help in improving nutrition. Water soluble vitamins are given at 1–2 times of the age-appropriate RDA. The fat soluble vitamins are usually supplemented in the following dosage in children: vitamin A—5000–25,000 IU/day PO, vitamin D 400–800 IU/day PO, vitamin E 50–100 IU/day PO and vitamin K 2.5–5 mg/day PO or 2–5 mg intravenous every 3–4 weeks. Adequate sunlight exposure and dietary intake of calcium (800–2000 mg/day PO) is also essential. It is important to evaluate the child both clinically as well as biochemically (serum levels of vitamins) for signs of specific vitamin deficiencies and adjust the supplements accordingly. The most commonly used drug for pruritus is ursodeoxycholic acid (Ursodiol) which is a hydrophilic bile acid, non-toxic to hepatocytes.

Ursodeoxycholic acid (Ursodiol) is a safe drug with no major side effects and has been shown to be effective in all forms of PFIC. Patients with total defect in MDR3 gene expression are usually nonresponders to ursodeoxycholic acid (Ursodiol) therapy.

Overall, complete or partial response is seen in approximately 35–40% of low GGT PFIC and 70% cases of high GGT PFIC.

Ileal bile acid reabsorption transporters were not included in the 2018 Hepatology guidelines as these agents were still investigational at the time of publication.

### **Surgical Management**

**Nasobiliary drainage:** Nasobiliary drainage involves inserting a tube into the nose that reaches the bile ducts to drain them. This temporarily relieves itching and may predict the patient's response to biliary diversion.

**Partial external biliary diversion (PEBD):** PEBD entails attaching a portion of the intestine between the gallbladder and an ostomy, which allows bile acids to drain externally. By stopping some bile acids from re-entering the intestine and passing into the liver, patients may experience a reduction in pruritus. Partial internal biliary diversion and ileal exclusion are procedures that do not require an ostomy but have fewer data support in their use.

**Liver transplant:** A liver transplant is reserved for severe cases in which patients have advanced cirrhosis, liver failure, or liver cancer, or are unresponsive to other interventions. It may worsen or fail to improve extrahepatic manifestations, such as diarrhea, liver steatosis, and short stature, particularly patients with

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PFIC type 1.

### Common Types of PFIC

Common Name	Protein Deficiency	Mutated Gene	Clinical Presentation	Clinical Outcomes and Management
PFIC1	FIC1	ATP8B1	<ul style="list-style-type: none"> <li>• Intense pruritus</li> <li>• Extrahepatic symptoms</li> <li>• Diarrhea</li> <li>• Sometimes pancreatitis</li> <li>• Sometimes cough, wheezing</li> <li>• Sometimes hearing loss</li> <li>• Sometimes stunted growth</li> <li>• Normal GGT cholestasis</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate progression</li> <li>• May progress to cirrhosis and end stage liver disease, most often in the second or third decade of life</li> <li>• Can develop posttransplant hepatic steatosis and diarrhea</li> <li>• Extrahepatic symptoms may develop or worsen post- transplant</li> </ul>
PFIC 2	BSEP	ABCB11	<ul style="list-style-type: none"> <li>• Intense pruritus</li> <li>• Potential to develop hepatocellular carcinoma and cholangiocarcinoma</li> <li>• Gallstones</li> <li>• Normal GGT cholestasis</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate to rapid progression</li> <li>• Biliary diversion surgery success can be dependent on the genetic defect</li> <li>• Liver transplant may lead to</li> <li>• antibody-induced BSEP deficiency, which may lead to disease recurrence</li> </ul>
PFIC 3	MDR3	ABCB4	<ul style="list-style-type: none"> <li>• Mild to moderate pruritus</li> <li>• Reduced bone density</li> <li>• Potential to develop hepatocellular carcinoma and cholangiocarcinoma</li> <li>• Gallstones</li> <li>• Elevated GGT cholestasis</li> </ul>	<ul style="list-style-type: none"> <li>• Extremely variable progression</li> <li>• Patients with MDR3 expression have better responses to ursodiol</li> <li>• Biliary diversion may not work as well compared to other types</li> <li>• Liver transplant is curative</li> </ul>

The safety and efficacy of LIVMARLI was assessed in Trial 2 (NCT03905330), a 26-week randomized, placebo-controlled trial. Efficacy was evaluated in 64 patients with documented molecular diagnosis of PFIC with presence of biallelic known pathogenic variants; this included 31 non-truncated PFIC2 patients (i.e., excluding patients with BSEP3) and 33 patients with PFIC1 (n=13), PFIC3 (n=9), PFIC4 (n=7), or PFIC6 (n=4). Pruritus symptoms were assessed on a 5-point ordinal response scale, with scores ranging from 0 (none observed or reported) to 4 (very severe). Patients were included in Trial 2 if their average pruritus score was greater than or equal to 1.5 in the 4 weeks prior to baseline. Patients treated with LIVMARLI demonstrated greater improvement in pruritus compared with placebo.

### CONTRAINDICATIONS/EXCLUSIONS/DISCONTINUATION:

All other uses of Livmarli (maralixibat) are considered experimental/investigational and therefore, will follow Molina's Off- Label policy. Contraindications to Livmarli (maralixibat) include: patients with

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prior or active hepatic decompensation events (e.g., variceal hemorrhage, ascites, hepatic encephalopathy).

### OTHER SPECIAL CONSIDERATIONS:

None

## CODING/BILLING INFORMATION

**CODING DISCLAIMER.** Codes listed in this policy are for reference purposes only and may not be all-inclusive or applicable for every state or line of business. Deleted codes and codes which are not effective at the time the service is rendered may not be eligible for reimbursement. Listing of a service or device code in this policy does not guarantee coverage. Coverage is determined by the benefit document. Molina adheres to Current Procedural Terminology (CPT®), a registered trademark of the American Medical Association (AMA). All CPT codes and descriptions are copyrighted by the AMA; this information is included for informational purposes only. Providers and facilities are expected to utilize industry-standard coding practices for all submissions. Molina has the right to reject/deny the claim and recover claim payment(s) if it is determined it is not billed appropriately or not a covered benefit. Molina reserves the right to revise this policy as needed.

HCPCS CODE	DESCRIPTION
NA	

### AVAILABLE DOSAGE FORMS:

Livmarli SOLN 9.5MG/ML

Livmarli SOLN 19MG/ML

## REFERENCES

1. Livmarli (maralixibat) oral solution [prescribing information]. Foster City, CA: Mirum Pharmaceuticals Inc; November 2024.
2. Ayoub MD, et al. Alagille syndrome: diagnostic challenges and advances in management. *Diagnostics (Basel)*. 2020;10(11):907. Published November 6, 2020. doi:10.3390/diagnostics10110907
3. Beuers U, et al. Pruritus in cholestasis: Facts and fiction. *Hepatology*. 2014; 60:399-407. doi:10.1002/hep.26909
4. Kamath BM, et al. Outcomes of childhood cholestasis in Alagille syndrome: Results of a multicenter observational study. *Hepatology*. 2020; 4:387-398. <https://doi.org/10.1002/hep4.1468>
5. Kamath BM, et al. Systematic review: The epidemiology, natural history, and burden of Alagille syndrome. *J Pediatr Gastroenterol Nutr*. 2018; 67:148-156. doi: 10.1097/MPG.0000000000001958
6. Mirum Pharmaceuticals Corporate Presentation, September 2021. Accessed October 12, 2021. <https://ir.mirumpharma.com/static-files/f4ced0da-a226-4817-9e93-704a0255a43f>
7. National Organization of Rare Disorders (NORD). Alagille syndrome. <https://rarediseases.org/rare-diseases/alagille-syndrome/>
8. Spinner NB, et al. Alagille syndrome. May 19, 2000 [Updated December 12, 2019]. In: Adam MP, et al, editors. *GeneReviews* [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2021. <https://www.ncbi.nlm.nih.gov/books/NBK1273/>
9. Kohut TJ, Gilbert MA, Loomes KM. Alagille Syndrome: A Focused Review on Clinical Features, Genetics, and Treatment. *Semin Liver Dis*. 2021 Nov;41(4):525-537. doi: 10.1055/s-0041-1730951. Epub 2021 Jul 2. PMID: 34215014.
10. Emerick KM, Rand EB, Goldmuntz E, et al. Features of Alagille syndrome in 92 patients: frequency and relation to prognosis. *Hepatology*. 1999;29:822-829.
11. Shneider, B. L., Spino, C. A., Kamath, B. M., Magee, J. C., Ignacio, R. V., Huang, S., Thompson, R. J.

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Drug and Biologic Coverage Criteria

(2022). Impact of long-term administration of Maralixibat on children with cholestasis secondary to Alagille syndrome. *Hepatology Communications*, 6(8), 1922-1933. doi:10.1002/hep4.1992

SUMMARY OF REVIEW/REVISIONS	DATE
REVISION- Notable revisions: References	Q1 2025
REVISION- Notable revisions: Age Restrictions Quantity FDA-Approved Uses Appendix Available Dosage Forms	Q4 2024
REVISION- Notable revisions: Required Medical Information Continuation of Therapy Age Restrictions Quantity FDA-Approved Uses Appendix Background Contraindications/Exclusions/Discontinuation References	Q2 2024
REVISION- Notable revisions: Required Medical Information Continuation of Therapy Other Special Considerations	Q1 2024
REVISION- Notable revisions: Required Medical Information Continuation of Therapy Age Restrictions FDA-Approved Uses Background References	Q2 2023
REVISION- Notable revisions: Required Medical Information Continuation of Therapy Prescriber Requirements Contraindications/Exclusions/Discontinuation Other Special Considerations References	Q1 2023
Q2 2022 Established tracking in new format	Historical changes on file