Introduction

Phosphate is an element in the body. Formed from the mineral phosphorous, phosphate is needed to form bones and teeth, help the nerves work, and allow muscles to contract. If a person eats a diet that is too high in phosphorus, the body is usually able to efficiently eliminate the excess amount. For people with severe kidney problems or on dialysis, however, the body can’t easily eliminate excess phosphate. Phosphate binders are drugs that prevent the body from absorbing phosphorus from food. These drugs can help people with serious kidney problems maintain healthy levels of phosphate. This policy described when phosphate binding drugs may be considered medically necessary.

Note: The Introduction section is for your general knowledge and is not to be taken as policy coverage criteria. The rest of the policy uses specific words and concepts familiar to medical professionals. It is intended for providers. A provider can be a person, such as a doctor, nurse, psychologist, or dentist. A provider also can be a place where medical care is given, like a hospital, clinic, or lab. This policy informs them about when a service may be covered.

Policy Coverage Criteria

<table>
<thead>
<tr>
<th>Drug</th>
<th>Medical Necessity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phoslyra® (calcium)</td>
<td>Phoslyra® (calcium acetate), Fosrenol® (lanthanum)</td>
</tr>
<tr>
<td>Drug</td>
<td>Medical Necessity</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>acetate), Fosrenol® (lanthanum carbonate),</td>
<td></td>
</tr>
</tbody>
</table>
| Renagel® (sevelamer HCl), Renvela® (sevelamer carbonate) and Velphoro® (sucroferric oxyhydroxide) may be considered medically necessary for the treatment of hyperphosphatemia when the following criteria are met:  
| • Patient has tried and failed or had an intolerance to sevelamer HCl or sevelamer carbonate. |
| Auryxia® (ferric citrate)                    | Auryxia® (ferric citrate) may be considered medically necessary for the treatment of hyperphosphatemia when the following criteria are met:  
| • Patient has tried and failed or had an intolerance to sevelamer HCl or sevelamer carbonate. |
| Auryxia® (ferric citrate)                    | Auryxia® (ferric citrate) may be considered medically necessary for the treatment of iron deficiency anemia when the following criteria are met:  
| • Patient has tried and failed or had an intolerance to both oral iron and IV iron. |

**Note:** Examples of oral iron include ferrous fumarate, ferrous gluconate and ferrous sulfate. Examples of IV iron include ferric carboxymaltose (Injectafer®), ferric pyrophosphate citrate (Triferic®), ferumoxytol (Feraheme®), iron dextran (INFeD®), iron sucrose (Venofer®), sodium ferric gluconate complex (Ferrlecit®).

<table>
<thead>
<tr>
<th>Drug</th>
<th>Investigational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auryxia® (ferric citrate), Phoslyra® (calcium acetate), Fosrenol® (lanthanum carbonate), Renagel® (sevelamer HCl), Renvela® (sevelamer carbonate), Velphoro® (sucroferric oxyhydroxide)</td>
<td>All other uses of Auryxia® (ferric citrate), Phoslyra® (calcium acetate), Fosrenol® (lanthanum carbonate), Renagel® (sevelamer HCl), Renvela® (sevelamer carbonate) and Velphoro® (sucroferric oxyhydroxide) for conditions not outlined in this policy are considered investigational.</td>
</tr>
</tbody>
</table>
### Length of Approval

<table>
<thead>
<tr>
<th>Approval</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial authorization</td>
<td>Auryxia® (ferric citrate), Phoslyra® (calcium acetate), Fosrenol® (lanthanum carbonate), Renagel® (sevelamer HCl), Renvela® (sevelamer carbonate) and Velphoro® (sucroferric oxyhydroxide) may be approved up to 12 months.</td>
</tr>
<tr>
<td>Re-authorization criteria</td>
<td>Future re-authorization of Auryxia® (ferric citrate), Phoslyra® (calcium acetate), Fosrenol® (lanthanum carbonate), Renagel® (sevelamer HCl), Renvela® (sevelamer carbonate) and Velphoro® (sucroferric oxyhydroxide) may be approved up to 1 year in duration when there is documentation of continued clinical response and that ongoing treatment is required.</td>
</tr>
</tbody>
</table>

### Documentation Requirements

The patient’s medical records submitted for review for all conditions should document that medical necessity criteria are met. The record should include the following:

- Office visit notes that contain the diagnosis and medication history

### Coding

N/A

### Related Information

### Benefit Application

The drugs in this policy are oral medications and managed through the Pharmacy benefit.
Background

Hyperphosphatemia is associated with atherosclerosis, vascular calcification, cardiovascular (CV) events, and increased mortality based on retrospective, cohort, and observational studies. Hyperphosphatemia occurs commonly with chronic kidney disease (CKD), increasing in frequency and severity as CKD worsens. Hyperphosphatemia occurs in 37% of patients on dialysis. The attributable risk of disorders of mineral metabolism in patients in dialysis is 17.5%, driven by increased risks associated with hyperphosphatemia.

Because of the relationship between hyperphosphatemia and mortality, hyperphosphatemia is commonly treated in patients with CKD. However, randomized controlled trial data linking serum phosphate to patient outcomes in is lacking in patients with CKD; therefore, treatment of hyperphosphatemia is based on epidemiologic evidence and biological plausibility.

Summary of Evidence

Meaningful Differences in Efficacy in Clinical Trials

All phosphate binders decrease phosphate significantly more than placebo and are approved on this basis for the treatment of hyperphosphatemia in patients with ESRD. A total of four large good-moderate quality meta-analyses and network meta-analysis evaluating the efficacy of phosphate binders have been completed in the last 3 years. Results were inconsistent between the meta-analyses. A single meta-analyses found iron-based binders decreased serum phosphorus more than all other binders (sevelamer, lanthanum, calcium-based binders) (OR 0.09, 95% CI 0.03-0.25). In contrast, another meta-analysis found lanthanum less effective than calcium-based binders (mean difference 0.18, 95% CI 0.10-0.25) but found no difference between sevelamer and all other binders (calcium-based, lanthanum, and iron-based). No other meta-analyses addressed this issue.

The goal of treatment with phosphate binders is to reduce mortality, cardiovascular (CV) outcomes, and bone fractures in patients with hyperphosphatemia. Long-term, placebo-controlled RCT data designed to evaluate these endpoints are lacking. The four meta-analyses mentioned above evaluated the effect of phosphate binders on all-cause mortality as well as CV mortality. Three of four meta-analyses found significantly improved all-cause mortality with sevelamer compared to calcium-based binders (RR 0.53, CI 0.30-0.91 for CKD G5D; OR 0.39, 95% CI 0.21-0.74; RR 1.89, 95% CI 1.02-3.50). The absolute mortality increase with calcium-based
binders ranged from 43-96 per 1,000 patients. The fourth meta-analysis found the same significant difference when only higher quality studies were included (RR 0.51, 95% CI 0.21-0.83; NNT 16). The meta-analysis also found sevelamer decreased mortality in comparison with calcium carbonate (RR 0.44, 95% CI 0.25-0.76) but not in comparison with calcium acetate (RR 0.43, 95% CI 0.13-1.38). Because there is a lack of placebo-controlled study data evaluating mortality, it is not known if the difference in mortality between sevelamer and calcium-based binders represents an increase in mortality with calcium-based binders, a decrease in mortality with sevelamer, or both. Based the above data, the current Kidney Disease: Improving Global Outcomes (KDIGO) guidelines for CKD-mineral and bone disorder (MBD) concluded there is a potential for benefit or an absence of harm with non-calcium-based phosphate binders compared to calcium-based agents and suggested restricting the dose of calcium-based phosphate binders.

Data was insufficient to assess changes in CV mortality in two meta-analyses. Additionally, two meta-analysis found no difference in CV mortality between groups assessed (calcium vs non-calcium-based binders RR 2.54, 95% CI 0.67-9.62; sevelamer vs calcium-based binders (RR 0.29, 95% CI 0.05-1.82). A total of two meta-analyses assessed hospitalizations; results were not consistent between meta-analyses. Sevelamer significantly decreased hospitalizations compared to calcium-based binders (RR 0.50, 95% CI 0.31-0.81, NNT 4) while no difference between lanthanum and calcium-based binders (RR 0.80, 95% CI, 0.34-1.93). Another meta-analysis found no difference in hospitalizations between calcium- and non-calcium-based binders (RR 1.28, 95% CI 0.94-1.74. The meta-analyses either did not evaluate bone fracture data or found insufficient data for evaluation.

**Differences in Safety Profiles**

Adverse events vary between different classes of phosphate binders.

- As discussed above, calcium-based binders are associated with increased risks of hypercalcemia (16.3%) including vascular calcification.

- Sevelamer is associated with more constipation than any other class of phosphate binders. Common AEs (≥10%) include vomiting (22%), nausea (20%), diarrhea (19%), and dyspepsia (16%). Sevelamer HCl (Renagel®) is associated with metabolic acidosis; however, this risk is not present with sevelamer carbonate (Renvela®).

- Lanthanum is associated with more nausea than other phosphate binders and more GI events than calcium-based binders. Common AEs (≥10%) include nausea (11%).
• Iron-based binders as associated with an increased risk of diarrhea compared with calcium-based agents; common AEs (≥10%) include diarrhea (21%), discolored feces (19%), and nausea (11%). Monitoring for iron accumulation is recommended and fatal poisoning is possible in children.

Evidence of Real-World Comparative Effectiveness

Data from a Phase IV, 5-year, observational cohort study comparing lanthanum and other phosphate binders found no difference in all-cause mortality (adjusted HR 0.94, 95% CI 0.88-1.01) or bone fractures requiring hospitalization (adjusted HR 0.86, 95% CI 0.71-1.05) as well as no increased risk of GI disease, liver disease, malignancy, or major infection with lanthanum.

Practice Guidelines and Position Statements

The Kidney Disease: Improving Global Outcomes (KDIGO) guidelines for mineral and bone disorder were last updated in 2017 (see Table 1). The guidelines do not support the idea that all phosphate binders are interchangeable. Due to concerns about adverse events seen with calcium-based phosphate binders, the committee suggests excess exposure to calcium through diet, medications, or dialysate maybe be harmful for all patients with CKD. Of note, significant survival benefit was noted with sevelamer compared to calcium-based binders. Based on trial data, the committee concluded there is a potential for benefit or an absence of harm with calcium-free phosphate binders compared to calcium-based agents. Evidence gaps include uncertainty if effects differ between formulations of calcium-based binders and a lack of hard clinical outcomes and comparative effectiveness between binder classes. Lastly, the committee noted a lack of long-term patient centered outcomes in published Phase III trials with iron-containing phosphate binders.

Table 1. Selected KDIGO Guidelines for Lowering High Serum Phosphate and Maintaining Serum Calcium in Patients with CKD G3a-G5D

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.1</td>
<td>Base treatment of CKD-MBD on serial assessments of phosphate, calcium, and PTH levels, considered together.</td>
</tr>
<tr>
<td>4.1.2</td>
<td>Suggest lower elevated phosphate towards the normal range.</td>
</tr>
<tr>
<td>4.1.3</td>
<td>Suggest avoiding hypercalcemia.</td>
</tr>
<tr>
<td>4.1.5</td>
<td>Base treatment decisions on phosphate-lowering on progressively or persistently elevated serum phosphate.</td>
</tr>
</tbody>
</table>
Table 1. Selected KDIGO Guidelines for Lowering High Serum Phosphate and Maintaining Serum Calcium in Patients with CKD G3a-G5D\textsuperscript{15}

<table>
<thead>
<tr>
<th>4.1.6</th>
<th>Suggest restricting the dose of calcium-based phosphate binders.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.7</td>
<td>Avoid long-term use of aluminum-containing phosphate binders.</td>
</tr>
<tr>
<td>4.1.8</td>
<td>Suggest limiting dietary phosphate intake.</td>
</tr>
</tbody>
</table>

**Notes:** G3a = GFR 45-59 ml/min/1.73m\textsuperscript{2}, G5D = GFR <15 ml/min/1.73m\textsuperscript{2} and on dialysis

**Abbreviations:** CKD = chronic kidney disease, GFR = glomerular filtration rate, KDIGO = Kidney Disease: Improving Global Outcomes, MBD = mineral bone disease, PTH = parathyroid hormone

### References

2. Phoslyra\textregistered{} (calcium acetate solution) prescribing information. Fresenious Medical Care North American; Waltham, MA. October 2015.
9. Velphoro\textregistered{} (sucroferric oxyhydroxide) chewable tablet prescribing information. Fresenius medical Care North America; Waltham, MA. April 2018.


---

**History**

<table>
<thead>
<tr>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/01/19</td>
<td>New policy, approved April 9, 2019. Add to Prescription Drug section. Auryxia® (ferric citrate), Phoslyra, Fosrenol, Renagel, Renvela, and Velphoro may be considered medically necessary when criteria are met, considered investigational when criteria not met.</td>
</tr>
</tbody>
</table>

**Disclaimer:** This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. The Company adopts policies after careful review of published peer-reviewed scientific literature, national guidelines and local standards of practice. Since medical technology is constantly changing, the Company reserves the right to review and update policies as appropriate. Member contracts differ in their benefits. Always consult the member benefit booklet or contact a member service representative to determine coverage for a specific medical service or supply. CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). ©2019 Premera All Rights Reserved.

**Scope:** Medical policies are systematically developed guidelines that serve as a resource for Company staff when determining coverage for specific medical procedures, drugs or devices. Coverage for medical services is subject to the limits and conditions of the member benefit plan. Members and their providers should consult the member benefit booklet or contact a customer service representative to determine whether there are any benefit limitations applicable to this service or supply. This medical policy does not apply to Medicare Advantage.
Discrimination is Against the Law

Premera Blue Cross complies with applicable Federal civil rights laws and does not discriminate on the basis of race, color, national origin, age, disability, or sex. Premera does not exclude people or treat them differently because of race, color, national origin, age, disability or sex.

Premera:
• Provides free aids and services to people with disabilities to communicate effectively with us, such as:
  • Qualified sign language interpreters
  • Written information in other formats (large print, audio, accessible electronic formats, other formats)
• Provides free language services to people whose primary language is not English, such as:
  • Qualified interpreters
  • Information written in other languages

If you need these services, contact the Civil Rights Coordinator.

If you believe that Premera has failed to provide these services or discriminated in another way on the basis of race, color, national origin, age, disability, or sex, you can file a grievance with:
Civil Rights Coordinator - Complaints and Appeals
PO Box 91102, Seattle, WA 98111
Toll free 855-332-4535, Fax 425-918-5592. TTY 800-842-5357
Email AppealsDepartmentInquiries@Premera.com

You can file a grievance in person or by mail, fax, or email. If you need help filing a grievance, the Civil Rights Coordinator is available to help you.

You can also file a civil rights complaint with the U.S. Department of Health and Human Services, Office for Civil Rights, electronically through the Office for Civil Rights Complaint Portal, available at https://ocrportal.hhs.gov/ocr/portal/lobby.jsf, or by mail or phone at:
U.S. Department of Health and Human Services
200 Independence Avenue SW, Room 509F, HHH Building
Washington, D.C. 20201, 1-800-368-1019, 800-537-7697 (TDD)

Getting Help in Other Languages

This Notice has Important Information. This notice may have important information about your application or coverage through Premera Blue Cross. There may be key dates in this notice. You may need to take action by certain deadlines to keep your health coverage or help with costs. You have the right to get this information and help in your language at no cost.

Call 800-722-1471 (TTY: 800-842-5357).

Oromo (Cushite):

Français (French):
Appelez le 800-722-1471 (TTY: 800-842-5357).

Deutsche (German):

Ilokano (Ilocano):
Daytoy a Pakdaa kat naglaon iti Napateg nga Impomasion. Daytoy a pakdaa marabal na nga adda kat naglaon iti napateg nga impomasion maipanggep iti aplayakowyon nyo coverage babaen iti Premera Blue Cross. Daytoy ket marabal dagiti importante a pelta iti daytoy a pakdaar. Marabal nga adda rumbeng nga aramidenyon nga addang sabbay dagiti partikular a naituding nga aladd nga tapaw tapam apallatalaeydo ti coverage iti salun-atyo wenn oswa pakdaar dagiti tulong kadagiti gastos. Adda karbenganyo a mangala iti daytoy nga impomasion ken tulong iti bukodyo a pagasasao nga awan ti bayadanyon. Tumawag ti numero nga 800-722-1471 (TTY: 800-842-5357).

Italiano (Italian):
Questo avviso contiene informazioni importanti. Questo avviso può contenere informazioni importanti sulla tua domanda o copertura attraverso Premera Blue Cross. Potrebbe essere necessario un tuo intervento entro una scadenza determinata per consentirti di mantenere la tua copertura o sovvenzione. Hai il diritto di ottenere queste informazioni e assistenza nella tua lingua gratuitamente.
Chiama 800-722-1471 (TTY: 800-842-5357).


This notice may have important informations or dates on it. You have the right to get this information and assistance in your language for free.
Call 800-722-1471 (TTY: 800-842-5357).

中文 (Chinese):
本通知有重要的訊息。本通知可能有關於您透過 Premera Blue Cross 提交的申請或保險的重要訊息。本通知內可能有重要日期。您可能需要在截止日期之前採取行動。以保留您的健康保險或補助。您有權利免費以您的母語得到本訊息和幫助。請撥電話 800-722-1471 (TTY: 800-842-5357).
Japanese (Japanese):
この通知には重要な情報が含まれています。この通知には、Premera Blue Crossの申請または補償範囲に関する重要な情報が含まれている場があります。この通知に記載されている内容は重要な日付をご確認ください。健康保険や無料サポートを維持するには、特定の期限までに行動を起こすことが必要とされます。この言語による情報とサポートが無料で提供されます。800-722-1471 (TTY: 800-842-5357)までお電話ください。

한국어 (Korean):
본 통지서에는 중요한 정보가 들어 있습니다. 즉 이 통지서는 귀하의 신청에 관련하여 그리고 Premera Blue Cross를 통해 커버지에 관한 정보를 포함하고 있습니다. 본 통지서에는 빈칸이 되는 날짜들이 있을 수 있습니다. 귀하는 귀하의 건강 커버지를 계속 유지하거나 비용을 절감하기 위해서 일정한 마감일까지 조치를 취해야 할 필요가 있을 수 있습니다. 귀하의 이러한 정보는 귀하의 만족도 비용 부담없이 있을 수 있는 권리가 있습니다. 800-722-1471 (TTY: 800-842-5357)로 전화하십시오.

Polski (Polish):

Português (Portuguese):
Este aviso contém informações importantes. Este aviso poderá conter informações importantes a respeito de sua aplicação ou cobertura por meio do Premera Blue Cross. Poderão existir datas importantes neste aviso. Talvez seja necessário que você tome providências dentro de determinados prazos para manter sua cobertura de saúde ou ajuda de custos. Você tem o direito de obter esta informação e ajuda em seu idioma e sem custos. Ligue para 800-722-1471 (TTY: 800-842-5357).

Română (Romanian):

Русский (Russian):
Настоящее уведомление содержит важную информацию. Это уведомление может содержать важную информацию о вашем заявлении или страховом покрытии через Premera Blue Cross. В настоящем уведомлении могут быть указаны ключевые даты. Вам, возможно, потребуется принять меры к определенным предельным срокам для сохранения страхового покрытия или помощи с расходами. Вы имеете право на бесплатное получение этой информации и помощь на вашем языке. Звоните по телефону 800-722-1471 (TTY: 800-842-5357).

Español (Spanish):
Este Aviso contiene información importante. Es posible que este aviso contenga información importante acerca de su solicitud o cobertura a través de Premera Blue Cross. Es posible que haya fechas clave en este aviso. Es posible que deba tomar alguna medida antes de determinadas fechas para mantener su cobertura médica o ayuda con los costos. Usted tiene derecho a recibir esta información y ayuda en su idioma sin costo alguno. Llame al 800-722-1471 (TTY: 800-842-5357).


ไทย (Thai):
ประกาศนี้มีข้อมูลสำคัญ ประกาศนี้มีข้อมูลสำคัญเกี่ยวกับการขอสิทธิ์การรักษาพยาบาลของสัญญาของ Premera Blue Cross และการมีส่วนร่วมในการค้นหา คุณควรจะดูด้วยดีในการกำกับเวลาที่มีมิติเพื่อให้ทราบเกี่ยวกับสัญญาของสิทธิการรักษาพยาบาลที่ มีให้ใช้ คุณมีสิทธิ์ที่จะใช้สิทธิ์การรักษาพยาบาลที่มีในสัญญาและค่าใช้จ่าย โทร 800-722-1471 (TTY: 800-842-5357).

Український (Ukrainian):
Це повідомлення містить важливу інформацію. Це повідомлення може містити важливу інформацію про Ваше звернення щодо страхувального покриття через Premera Blue Cross. Зверніть увагу на ключові дати, які можуть бути вказані у цьому повідомленні. Існує імовірність того, що Вам треба буде здійснити певні кроки у конкретні кінцеві строки для того, щоб зберегти Ваше медичне страхування або отримати фінансову допомогу. У Вас є право на отримання цієї інформації та допомоги безкоштно на Вашій рідній мові. Дозвоніться за номером телефону 800-722-1471 (TTY: 800-842-5357).