Drug Use Research & Management Program
Oregon State University, 500 Summer Street NE, E35
Salem, Oregon 97301-1079
Phone 503-947-5220 | **Fax** 503-947-2596

Drug Class Literature Scan: Potassium and K-Phos, Oral

Date of Review: August 2026

Literature Search: 1/1/2014 – 6/17/2026
Date of Last Review: September 2014

Current Status of PDL Class:
See **Appendix 1**.

Plain Language Summary:

- The purpose of this literature scan is to review evidence for potassium and phosphorus supplement safety and effectiveness since the last review in 2014.
- Potassium tablets are used to treat or prevent low blood potassium (hypokalemia). Potassium is a mineral that is important for proper functioning of the heart, kidneys, muscles, nerves, and digestive system.
- Most people get enough potassium in their diet; however, low blood potassium can occur with extended vomiting or diarrhea. Some medicines, like diuretics or water pills, can remove potassium from the body, so a potassium supplement must be taken with these types of medicines.
- Side effects with potassium tablets include nausea, gas, vomiting, stomach pain, and diarrhea.
- Low blood phosphorous (hypophosphatemia) can be caused by malnutrition, alcoholism, sepsis, and diabetic ketoacidosis. Certain medications can cause low phosphorus including insulin, diuretics, and antacids. Phosphate supplements contain different ratios of sodium and potassium.
- Phosphate supplements are also used to treat high blood calcium and calcium-based kidney stones.
- Oregon Health Plan (OHP) pays for potassium chloride tablets and all phosphate replacement formulations. Providers must submit documentation to OHP to document why other potassium supplements are medically necessary. This process is called prior authorization.

Conclusions:

- No recently published high-quality systematic reviews or clinical guidelines were identified.

Recommendations:

- No changes to the Preferred Drug List (PDL) are recommended.
- Review drug costs in executive session.

Summary of Prior Reviews and Current Policy

- The Pharmacy and Therapeutics (P & T) Committee reviewed vitamins and electrolytes including potassium and phosphate at the September 2014 meeting. The following conclusions were shared with the Committee:

Author: Deanna Moretz, PharmD, BCPS

- There is moderate- to high-quality evidence that increased potassium intake reduces blood pressure in adults and low-quality evidence for reduced risk of stroke.
- It is recommended to get potassium intake from dietary sources. There is additional evidence that potassium supplementation with oral potassium supplements has no significant effect on blood pressure.
- Patients with drug-related hypokalemia (therapy with a diuretic) should receive potassium supplementation. Potassium chloride is the most effective for replacing acute potassium loss and is effective for the most common causes of potassium depletion.
- All potassium formulations (liquid and tablets) are readily absorbed.
- Potassium phosphate is most commonly used to replace phosphate losses and potassium bicarbonate is recommended in the setting of metabolic acidosis.
- Mild to moderate hypophosphatemia in ambulatory patients can be treated with oral phosphate replacement therapy. There is no evidence of improved outcomes for routine supplementation in patients without hypophosphatemia

- At that time, comparative costs were reviewed in executive session to determine preferred and non-preferred agents on the PDL. Due to different clinical considerations, different formulations of potassium salt supplements were designated as preferred. Potassium chloride packets and potassium gluconate were designated as non-preferred. Over-the-counter potassium supplements are not covered. All phosphorous products were designated as preferred.

Methods:
A Medline literature search for new systematic reviews and randomized controlled trials (RCTs) assessing clinically relevant outcomes to active controls, or placebo if needed, was conducted. The Medline search strategy used for this literature scan is available in **Appendix 3**, which includes dates, search terms and limits used. The OHSU Drug Effectiveness Review Project, Agency for Healthcare Research and Quality (AHRQ), National Institute for Health and Clinical Excellence (NICE), Department of Veterans Affairs, the Scottish Intercollegiate Guidelines Network (SIGN), and the Canada's Drug Agency (CDA-AMA) resources were manually searched for high quality and relevant systematic reviews. When necessary, systematic reviews are critically appraised for quality using the AMSTAR tool and clinical practice guidelines using the AGREE tool. The FDA website was searched for new drug approvals, indications, and pertinent safety alerts.

The primary focus of the evidence is on high quality systematic reviews and evidence-based guidelines. Randomized controlled trials will be emphasized if evidence is lacking or insufficient from those preferred sources.

New Systematic Reviews: No recently published, high-quality systematic reviews were identified that evaluated comparative safety and efficacy of potassium or phosphorous supplements.

After review, 16 systematic reviews were excluded due to poor quality, wrong study design of included trials (e.g., observational), comparator (e.g., no control or placebo-controlled), or outcome studied (e.g., non-clinical).[1-16]

New Guidelines:
High Quality Guidelines: No new high-quality guidelines have been published to guide management of hypokalemia or hypophosphatemia.

References:

1. Zhang Y, Chen P, Chen J, Wang L, Wei Y, Xu D. Association of Low Serum Potassium Levels and Risk for All-Cause Mortality in Patients With Chronic Kidney Disease: A Systematic Review and Meta-Analysis. *Therap Apher Dial*. 23(1):22-31. doi:https://dx.doi.org/10.1111/1744-9987.12753
2. Cappuccio FP, Buchanan LA, Ji C, Siani A, Miller MA. Systematic review and meta-analysis of randomised controlled trials on the effects of potassium supplements on serum potassium and creatinine. *BMJ Open*. 6(8):e011716. doi:https://dx.doi.org/10.1136/bmjopen-2016-011716
3. Colombo MG, Kirchberger I, Amann U, Dinser L, Meisinger C. Association of serum potassium concentration with mortality and ventricular arrhythmias in patients with acute myocardial infarction: A systematic review and meta-analysis. Meta-Analysis
Systematic Review. *European Journal of Preventive Cardiology*. 25(6):576-595. doi:https://dx.doi.org/10.1177/2047487318759694
4. D'Elia L, Cappuccio FP, Masulli M, La Fata E, Rendina D, Galletti F. Effect of Potassium Supplementation on Endothelial Function: A Systematic Review and Meta-Analysis of Intervention Studies. *Nutrients*. 2023;15(4):08. doi:https://dx.doi.org/10.3390/nu15040853
5. Farapti F, Maulia PH, Fadilla C, et al. Community-level dietary intake of sodium, potassium, and sodium-to-potassium ratio as a global public health problem: a systematic review and meta-analysis. *F1000Res*. 11:953. doi:https://dx.doi.org/10.12688/f1000research.122560.3
6. Filippini T, Violi F, D'Amico R, Vinceti M. The effect of potassium supplementation on blood pressure in hypertensive subjects: A systematic review and meta-analysis. *International Journal of Cardiology*. 230:127-135. doi:https://dx.doi.org/10.1016/j.ijcard.2016.12.048
7. Fremont D, Buh A, Hoar-Stephens C, et al. Eating disorder-related electrolyte abnormalities and adverse outcomes: A systematic review and meta-analysis. *PLoS ONE*. 21(6):e0349826. doi:https://dx.doi.org/10.1371/journal.pone.0349826
8. Hoppe LK, Muhlack DC, Koenig W, Carr PR, Brenner H, Schottker B. Association of Abnormal Serum Potassium Levels with Arrhythmias and Cardiovascular Mortality: a Systematic Review and Meta-Analysis of Observational Studies. *Cardiovascular Drugs & Therapy*. 32(2):197-212. doi:https://dx.doi.org/10.1007/s10557-018-6783-0
9. Huang L, Neal B, Wu JHY, et al. The impact of baseline potassium intake on the dose-response relation between sodium reduction and blood pressure change: systematic review and meta-analysis of randomized trials. *J Hum Hypertens*. 35(11):946-957. doi:https://dx.doi.org/10.1038/s41371-021-00510-x
10. Huo Z, Zhu X, Yang Y, Wang S. Association of Hypokalemia With Mortality in Patients Undergoing Hemodialysis: A Systematic Review and Meta-Analysis. *Semin Dial*. 38(2):85-101. doi:https://dx.doi.org/10.1111/sdi.13234
11. Khan S, Khan SU. Adverse drug event of hypokalaemia-induced cardiotoxicity secondary to the use of laxatives: A systematic review of case reports. *J Clin Pharm Ther*. 45(5):927-936. doi:https://dx.doi.org/10.1111/jcpt.13204
12. Li JW, Xu C, Xiao YB. Serum phosphate concentration and incidence of stroke: a systemic review and meta-analysis. *Neurol Sci*. 35(12):1877-82. doi:https://dx.doi.org/10.1007/s10072-014-1850-1
13. McNally RJ, Farukh B, Chowienczyk PJ, Faconti L. Effects of potassium supplementation on plasma aldosterone: a systematic review and meta-analysis in humans. *J Hypertens*. 42(9):1581-1589. doi:https://dx.doi.org/10.1097/HJH.0000000000003764
14. Palaka E, Grandy S, Darlington O, McEwan P, van Doornewaard A. Associations between serum potassium and adverse clinical outcomes: A systematic literature review. *Int J Clin Pract*. 74(1):e13421. doi:https://dx.doi.org/10.1111/ijcp.13421
15. Poorolajal J, Zeraati F, Soltanian AR, Sheikh V, Hooshmand E, Maleki A. Oral potassium supplementation for management of essential hypertension: A meta-analysis of randomized controlled trials. *PLoS ONE*. 2017;12(4):e0174967. doi:10.1371/journal.pone.0174967
16. Filippini T, Naska A, Kasdagli MI, et al. Potassium Intake and Blood Pressure: A Dose-Response Meta-Analysis of Randomized Controlled Trials. *J Am Heart Assoc*. Jun 16 2020;9(12):e015719. doi:10.1161/jaha.119.015719

Appendix 1: Current Preferred Drug List

Generic	Brand	Form	PDL
potassium bicarbonate/cit ac	EFFER-K	TABLET EFF	Y
potassium bicarbonate/cit ac	KLOR-CON-EF	TABLET EFF	Y
potassium chloride	KLOR-CON M10	TAB ER PRT	Y
potassium chloride	KLOR-CON M15	TAB ER PRT	Y
potassium chloride	KLOR-CON M20	TAB ER PRT	Y
potassium chloride	POTASSIUM CHLORIDE	TAB ER PRT	Y
potassium chloride	KLOR-CON 10	TABLET ER	Y
potassium chloride	KLOR-CON 8	TABLET ER	Y
potassium chloride	POTASSIUM CHLORIDE	TABLET ER	Y
potassium phosphate,monobasic	K-PHOS ORIGINAL	TABLET SOL	Y
potassium phosphate,monobasic	PHOSPHO-TRIN K500	TABLET SOL	Y
sod phos di, mono/K phos mono	K-PHOS NEUTRAL	TABLET	Y
sod phos di, mono/K phos mono	PHOSPHA 250 NEUTRAL	TABLET	Y
sod phos di, mono/K phos mono	PHOSPHO-TRIN 250 NEUTRAL	TABLET	Y
sod phos di, mono/K phos mono	WES-PHOS 250 NEUTRAL	TABLET	Y
sod phos,m-b/K phos,monob	K-PHOS NO.2	TABLET	Y
potassium bicarbonate/cit ac	EFFER-K	TABLET EFF	N
potassium chloride	POTASSIUM CHLORIDE	CAPSULE ER	N
potassium chloride	KAOCHLOR	LIQUID	N
potassium chloride	POTASSIUM CHLORIDE	LIQUID	N
potassium chloride	K-LOR	PACKET	N
potassium chloride	KLOR-CON	PACKET	N
potassium chloride	K-VESCENT	PACKET	N
potassium chloride	POKONZA	PACKET	N
potassium chloride	POTASSIUM CHLORIDE	PACKET	N
potassium chloride	POTASSIUM CHLORIDE	TABLET ER	N
potassium gluconate	KAON	ELIXIR	N
potassium	POTASSIUM	TABLET	
potassium chloride	POKONZA	LIQUID	

Appendix 2: New Comparative Clinical Trials

A total of 236 citations were manually reviewed from the initial literature search. After further review, 236 citations were excluded because of wrong study design (e.g., observational), comparator (e.g., no control or placebo-controlled), or outcome studied (e.g., non-clinical).

Appendix 3: Medline Search Strategy

Ovid MEDLINE(R) ALL <1946 to June 16, 2026>

1	potassium bicarbonate.mp. or Potassium Compounds/ or Potassium/	111099
2	Potassium Chloride/	18381
3	potassium phosphate.mp. or Phosphates/	73071
4	potassium gluconate.mp. or Hypokalemia/	9567
5	1 or 2 or 3 or 4	202788
6	limit 5 to (english language and humans and yr="2014 -Current")	12327
7	limit 6 to (guideline or practice guideline or "systematic review")	236

Ovid MEDLINE(R) ALL <1946 to June 16, 2026>

1.	exp Hypokalemia/th [Therapy]	418
2.	Hypophosphatemia/th [Therapy]	170
3.	1 or 2	579
4.	limit 3 to (english language and humans and yr="2014 -Current")	164
5.	limit 4 to (guideline or practice guideline or "systematic review")	4