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# Medication-induced Nutrient Depletion Chart

Nutrients depleted by the most commonly prescribed medications


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| Drug Class | Subclass/Drug Examples | Nutrients Depleted[2-4] | Diagnostic Considerations[5-7] | Repletion Considerations[4, 8-30] |
|---|---|---|---|---|
| **Analgesics** | Acetaminophen | Glutathione† | | • For superior delivery, absorption, and bioavailability, consider liposomal glutathione to bypass proteolytic degradation in the gastrointestinal (GI) tract to reach target tissues. |
| | **Opioids,** hydrocodone, and tramadol | | | |
| | NSAIDs, ibuprofen, and meloxicam | Vitamin E and folate | | • Tocotrienols have been shown in research to support oxidative status. |
| **Antacids** | **Proton pump inhibitors,** omeprazole, and pantoprazole | Magnesium, vitamin B12, calcium, vitamin C, zinc, iron, and beta-carotene | Methylmalonic acid, serum folate, homocysteine, mean corpuscular volume (MCV) and comprehensive metabolic panel (CMP) | • Methylated forms of cobalamin and folate provide optimal bioavailability and support for methylation and one-carbon metabolism.<br>• Dicalcium malate exhibits the longest half-life and the greatest bioavailability compared with other forms.<br>• Inorganic iron supplements, such as ferrous sulfate, have low bioavailability and often produce unpleasant GI side effects, such as nausea, constipation, and gastric upset. The bisglycinate form is less likely to block the absorption of other nutrients, and is more bioavailable with greater levels being absorbed by individuals with lower iron status. |
| | **H2 antagonist** and ranitidine | Vitamin B12, calcium, folate, iron, zinc, and chromium | | |
| | **Antacid**, aluminum, hydroxide, and magnesium | Calcium, folate, and iron | | |
| **Anti-anxiety drugs** | **Benzodiazepines**, alprazolam, and clonazepam | Vitamin K | | • Certain anticonvulsants, such as clonazepam, may induce insignificant depletions of vitamin K. Although evidence of depletion is mild or insignificant, a focus on ensuring adequate intake of the nutrient through diet or nutritional supplement should be considered and may be warranted in situations where comorbidities occur or where dietary consumption is insufficient.<br>• Vitamin K2 as menaquinone-4 (MK-4) represents 90% of the total vitamin K stored in the body and is the most efficient form of vitamin K2 at supporting bone and arterial health. |
| **Antibiotics** | Amoxicillin, ampicillin, azithromycin, doxycycline, and metronidazole | Beneficial intestinal bacteria, vitamin K, potassium, B vitamins, zinc, magnesium, calcium, folate, and iron | GI-MAP | • Shelf-stabilized probiotic strains are capable of survival and adherence to the intestinal walls where they can proliferate and function effectively to support GI health.†<br>• A high-dose, multi-strain probiotic supplement may provide clinically relevant support for intensive re-colonization due to intestinal microbiome depletion and may also help prevent antibiotic-associated diarrhea.<br>• Chelated minerals may increase bioavailability.<br>• Vitamin K2 as menaquinone-4 (MK-4) represents 90% of the total vitamin K stored in the body and is the most efficient form of vitamin K2 at supporting bone and arterial health. |
| **Anticonvulsants** | Clonazepam and gabapentin | Vitamin K | | • Certain anticonvulsants, such as clonazepam, may induce insignificant depletions of vitamin K. Although evidence of depletion is mild or insignificant, a focus on ensuring adequate intake of the nutrient through diet or nutritional supplement should be considered and may be warranted in situations where comorbidities occur or where dietary consumption is insufficient.<br>• Vitamin K2 as menaquinone-4 (MK-4) represents 90% of the total vitamin K stored in the body and is the most efficient form of vitamin K2 at supporting bone and arterial health. |
| **Anti-inflammatory** | **Systemic corticosteroids**, prednisone, dexamethasone, methylprednisolone, and prednisolone | Calcium, chromium, magnesium, potassium, vitamin D, vitamin C, and vitamin A | CMP and 25(OH)D | • Chelated minerals may increase bioavailability. |
| **Anti-depressants** | **Selective serotonin reuptake inhibitors (SSRIs)**, citalopram, escitalopram, fluoxetine, sertraline, and trazodone | Calcium and vitamin D | 25(OH)D | • Cholecalciferol (D2) is the preferred source of vitamin D supplementation in comparison with ergocalciferol (D3), as research indicates that vitamin D3 is more efficacious at raising serum 25(OH)D concentrations than is vitamin D2. |
| | **Serotonin and norepinephrine reuptake inhibitors (SNRIs)**, duloxetine, and venlafaxine | | | |
| | **Dopamine/norepinephrine reuptake inhibitors** and bupropion | No known nutrient depletions | | |
| **Anti-diabetics** | **Sulfonylurea**, glipizide, and insulin | Coenzyme Q10 and magnesium | Serum magnesium | • GG with ubiquinol (CoQ10) may provide synergistic actions in support of cellular health and endogenous CoQ10 production.† Chelated minerals may increase bioavailability. |
| | **Biguanide** and metformin | B12, folate, calcium, and vitamin D | Methylmalonic acid, serum folate or formiminoglutamic acid (FIGLU), homocysteine, and MCV | • Methylated forms of cobalamin and folate for optimal bioavailability and support for methylation and one-carbon metabolism. |
| **Anti-hyperlipidemics** | **HMG-CoA reductase inhibitor**, atorvastatin, pravastatin, rosuvastatin, and simvastatin | Coenzyme Q10, vitamin D, vitamin E, and beta carotene | 25(OH)D | • Cholecalciferol is the preferred source of vitamin D supplementation in comparison with ergocalciferol, as research indicates that vitamin D3 is more efficacious at raising serum 25(OH)D concentrations than is vitamin D2.<br>• GG with ubiquinol (CoQ10) may provide synergistic actions in support of cellular health and endogenous CoQ10 production.† |
| **Anti-hypertensives** | **ACE inhibitor**, lisinopril, ramipril, and benazepril | Zinc | RBC-zinc and alkaline phosphatase | • Chelated minerals may increase bioavailability.<br>• GG with ubiquinol (CoQ10) may provide synergistic actions in support of cellular health and endogenous CoQ10 production.† |
| | **Angiotensin II receptor blockers**, losartan, irbesartan, and valsartan | Coenzyme Q10 | | |
| | **Calcium channel blocker** and amlodipine | Coenzyme Q10 and vitamin C | | |
| | **Beta blocker**, atenolol, carvedilol, and metoprolol | Coenzyme Q10 | | |
| | **Loop diuretic** and furosemide | Potassium, calcium, magnesium, thiamine, vitamin B6, folate, zinc, and coenzyme Q10 | CMP | |
| | **Thiazide diuretic** and hydrochlorothiazide | | | |
| **Antiplatelets** | **Salicylate** and aspirin | Iron, vitamin C, vitamin B12, and folate | Methylmalonic acid, serum folate or FIGLU, homocysteine, and MCV | • Chelated minerals may increase bioavailability.<br>• Methylated forms of cobalamin and folate provide optimal bioavailability and support for methylation and one-carbon metabolism.<br>• GG with ubiquinol (CoQ10) may provide synergistic actions in support of cellular health and endogenous CoQ10 production.† |
| | **Vitamin K antagonists** and warfarin | Coenzyme Q10 | | |
| **Antirheumatics** | Methotrexate and sulfasalazine | Folate | FIGLU | • Methylated forms of cobalamin and folate provide optimal bioavailability and support for methylation and one-carbon metabolism. |
| **Bisphosphonates** | Alendronate and risedronate | Calcium, iron, magnesium, and zinc | CMP | • Chelated minerals may increase bioavailability. |
| **Bronchodilators** | **Beta-2 agonist** and albuterol | Calcium and vitamin D | 25(OH)D | • Cholecalciferol is the preferred source of vitamin D supplementation in comparison with ergocalciferol, as research indicates that vitamin D3 is more efficacious at raising serum 25(OH)D concentrations than is vitamin D2. |
| **Hormones** | **Oral contraceptives**, ethinyl, and estradiol/norgestimate | Vitamin B6, vitamin B12, folate, calcium, magnesium, vitamin C, and vitamin E | Methylmalonic acid, serum folate or FIGLU, homocysteine, MCV, and CMP | • Methylated forms of cobalamin and folate for optimal bioavailability and support for methylation and one-carbon metabolism. |
| | **Bioidentical hormones** and estradiol | Folate, magnesium, vitamin B6, vitamin C, and zinc | | |
| **Inotropic agents** | **Cardiac glycoside** and digoxin | Magnesium | Serum magnesium | • Chelated minerals may increase bioavailability. |
| **Laxatives** | Laxatives with bisacodyl | Calcium, potassium, and vitamin D | 25(OH)D | • Cholecalciferol is the preferred source of vitamin D supplementation in comparison with ergocalciferol, as research indicates that vitamin D3 is more efficacious at raising serum 25(OH)D concentrations than is vitamin D2. |
| **Thyroid** | Levothyroxine | See considerations | | • Calcium and iron supplementation administered concurrently with oral tablet levothyroxine may impair drug absorption. Clinical studies suggest liquid levothyroxine may improve drug absorption in the presence of calcium and iron supplementation. |

**In instances where a medication induces multiple deficiencies, intervention with a multi-ingredient formula such as a multivitamin or multimineral supplement may support nutrient status and promote compliance in patients with polypharmacy.

***These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**

†Evidence based on murine data.

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The information above is not intended to be exhaustive. Pharmacy staff should consult reputable databases when reviewing customer medication considerations.