

# **Elevated Morbidity and Mortality in Patients with Chronic Idiopathic Hypophosphatemia: A Nationwide Cohort Study**

**Running title:** Korean nationwide study of hypophosphatemia

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## **Supporting Information**

| <b>Contents</b>   | <b>Page</b> |
|---|-------------|
| <b>Table S1.</b> Definitions and codes used for defining key conditions, comorbidities, drug treatments in this study | 2-3         |

**Supplemental Table S1.** Definitions and codes used for defining key conditions, comorbidities, drug treatments in this study

| Definitions                      |   | ICD-10 Codes or conditions  |
|----------------------------------|---|---|
| Comorbidities                    |   |   |
| Diabetes mellitus                | Defined from diagnosis plus treatment ( $\geq 30$ days) at least once   | ICD-10 E10-E14<br>Treatment: various oral antidiabetics (alpha-glucosidase inhibitor, DPP-4 inhibitor, GLP1 agonist, meglitinide, metformin, SGLT2 inhibitor, sulfonylurea, thiazolidinedione) and insulin.   |
| Hypertension                     | Defined from diagnosis plus treatment ( $\geq 30$ days) at least once   | ICD-10 I10<br>Treatment: various antihypertensive agents (ARB, ACE inhibitors, beta blockers, calcium channel blockers, alpha blockers, diuretics, and others)  |
| Dyslipidemia                     | Defined from diagnosis plus treatment ( $\geq 30$ days) at least once   | ICD-10 78<br>Treatment: various lipid lowering agents (statins, fibrates)   |
| Osteoporosis                     | Defined from prescription codes for any treatment received at least once  | ICD-10 M80-M82<br>Treatment: bisphosphonate (alendronate, etidronate, ibandronate, risedronate, pamidronate, zoledronate), selective estrogen receptor modulator (bazedoxifene, raloxifene), or hormone replacement therapy (allylestrenol, chlormadinone, dienogest, diethylstilbestrol, dydrogesterone, estradiol, estrogen, ethynylestradiol, levonorgestrel, medroxyprogesterone) |
| Complications                    |   |   |
| Cardiovascular complications     |   |   |
| Composite cardiovascular disease | Any event of non-fatal myocardial infarction, non-fatal stroke, hospitalization for heart failure or arrhythmia |   |
| Non-fatal myocardial infarction  | Defined from a diagnostic code of MI plus a procedure code of coronary artery angiography                       | ICD-10: I20–I25; claim for coronary revascularization (HA607, E0721, E0723, O1640, O1641, O1642, O1647, O1648, O1649, OA640, OA641, OA642, OA647, OA648, OA649, M6551, M6552, M6553, M6554, M6561, M6562, M6563, M6564, M6565, M6566, M6567, M6571, M6572)  |
| Non-fatal stroke                 | Defined from a diagnostic code of stroke plus a procedure code of brain image                                   | ICD-10: I63–I66; claims for brain image (HE101, HE102, HE135, HE136, HE201, HE202, HE235, HE236, HE301, HE302, HE501, HE502, HE535, HE536)  |
| Heart failure                    | Defined from principal or first secondary admission diagnosis of heart failure                                  | ICD-10: I50, I42, I43   |
| Arrhythmia                       | Defined from diagnosis with one inpatient or two outpatient records   | ICD-10: I44-I45, I47-I49  |
| Renal complications              |   |   |

|                               |   |   |
|-------------------------------|---|---|
| Renal stones                  | Defined from diagnostic codes for at least 2 principal or secondary diagnosis | ICD-10: N20-N23   |
| Chronic kidney disease        | Defined from diagnosis or any procedure code for kidney replacement treatment | ICD-10: N18-N19, Z94.0<br>Claims for kidney replacement treatment (Z49.1-49.2, O7072, O7073-7034, O7071, O7072, R3280)    |
| Hyperparathyroidism           | Defined from diagnostic codes for at least 2 principal or secondary diagnosis | ICD-10: E21   |
| Fracture complications        |   |   |
| Hip fracture                  | Defined from a diagnostic code of hip fracture                                | ICD-10: S72.0, S72.1  |
| Vertebral fracture            | Defined from a diagnostic code of vertebral fracture                          | ICD-10: S22.0, S22.1, S32.0, S32.7, T080, M48.4, M48.5, M49.5, M80.8  |
| Humerus or wrist fracture     | Defined from a diagnostic code of humerus or distal radius fracture           | ICD-10: S42.2, S42.3, S52.5, S52.6  |
| Chronic kidney disease        | Defined from diagnosis or any procedure code for kidney replacement treatment | ICD-10: N18, N18.5, Z94.0<br>Claims for kidney replacement treatment (Z49.1-49.2, O7072, O7073-7034, O7071, O7072, R3280) |
| Periodontitis                 | Defined from diagnostic codes for at least 2 principal or secondary diagnosis | ICD-10: K05.2-K05.6   |
| Enthesopathy                  | Defined from diagnostic codes for at least 2 principal or secondary diagnosis | ICD-10: M46, M76, M77   |
| Cancer                        | Defined from diagnostic codes for at least 2 principal or secondary diagnosis | ICD-10: C00-C97   |
| Mental and behavior disorders |   |   |
| Depression                    | Defined from diagnostic codes for at least 2 principal or secondary diagnosis | ICD-10: F32-F33   |
| Bipolar disease               | Defined from diagnostic codes for at least 2 principal or secondary diagnosis | ICD-10: F30, F31, F34   |
| Anxiety                       | Defined from diagnostic codes for at least 2 principal or secondary diagnosis | ICD-10: F40-F42   |

ICD-10, International Classification of Diseases, 10th revision.