**Supplement 1.**

The diagnosis of comorbidities was defined using ICD-9 codes, which included hepatitis B virus infection (HBV, ICD-9 codes 070.2, 070.3, or 070.4), hepatitis C virus infection (HCV, ICD-9 codes 070.7-070.9, 070.41,070.42, 070.44, 070.45, 070.51, 070.52, 070.54, 070.55, or V02.62), chronic liver disease and cirrhosis (ICD-9 codes 571.2, 571.5, 571.6), drug-induced liver injury (ICD-9 codes 570, 573.3, 573.8, 573.9), non-alcoholic fatty liver disease (NAFLD, ICD-9 codes:571.8, 571.9), acquired immune deficiency syndrome (AIDS, ICD-9 codes 042), coronary artery disease (CAD, ICD-9 codes: 410-414), hemorrhagic stroke (ICD-9 codes 430-432), cerebral infarction (ICD-9 codes 430-438), peripheral artery occlusive disease (PAOD, ICD-9 codes 443.9), deep vein thrombosis (DVT, ICD-9 codes 451-453), arterial embolism and thrombosis (ICD-9 codes 444), hypertension (ICD-9 codes 401), hyperlipidemia (ICD-9 codes272), heart failure (ICD-9 codes 272), diabetes (ICD-9 codes 249, 250, a181, A181), chronic obstructive pulmonary disease (COPD, ICD-9 codes 491, 492), osteoporosis (ICD-9 codes 733.0), arthritis and arthropathy (ICD-9 codes 715, 713.8, 716.4-716.9), other disorder of joints (ICD-9 codes 719), epistaxis (ICD-9 codes 784.7), hematuria (ICD-9 codes 599.7, 791.2), depression (ICD-9 codes 311, 296.2, 296.3, 300.4), anxiety (ICD-9 codes 300.0, 300.2, 300.3, 308.3), bipolar disorder (ICD-9 codes 296.0, 296.1, 296.4, 296.5, 296.6, 296.7, 296.8).

**Supplement Table 1.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | PWH with prophylaxis(N=42) | PWH without prophylaxis(N=329) | Adjusted hazard ratio |
| Comorbidities | N (%) | N(%) | HR (95% CI) |
| Hemorrhagic stroke | 1 (6.25) | 15 (93.75) | 0.53 (0.07-3.95)a |
| Arthritis/ arthropathy | 29 (17.37) | 138 (82.63) | 0.88 (0.55-1.40)b |
| Knee & hip replacement | 11 (26.83) | 30 (73.17) | 1.18 (0.89-1.55)c |

aAdjusted for hypertension, coronary artery disease, hyperlipidemia, diabetes,

atrial fibrillation, COPD, NAFLD, PAOD

bAdjusted for diabetes, other disorders of joints, osteoporosis, hip and knee replacement, COPD, NAFLD

cAdjusted for diabetes, arthritis/arthropathy, other disorders of joints, osteoporosis,

COPD, NAFLD

**Supplement Table 2.** Cox proportional hazard ratio of major comorbidities among 159 unemployed persons with hemophilia and 636 age-, gender-, and employment-matched persons in the general population

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Hemophilia nonworkers | Non-hemophilia nonworkers | Crude hazard ratio |  |
| Comorbidities | N (%) | N(%) | HR (95% CI) | p-value |
| Hemorrhagic stroke | 17 (4.29) | 15 (0.97) | 2.75 (1.39-5.43) | 0.0037 |
| Osteoporosis | 14 (3.54) | 18 (1.16) | 0.85 (0.21-3.38) | 0.8154 |
| Arthritis/ arthropathy | 189 (48.71) | 190 (12.25) | 4.21 (3.22-5.49) | <.0001 |
| Other disorders of joints | 106 (27.11) | 162 (10.44) | 4.18 (3.02-5.78) | <.0001 |