**SUPPLEMENTAL INFORMATION**

**Supplemental table 1:** scoring procedure of the hospital frailty risk score, adapted from ([18](#_ENREF_18))

|  |  |  |
| --- | --- | --- |
| ICD-10 Code | ICD-10 Description | Points |
| F00 | Dementia in Alzheimer’s disease | 7.1 |
| G81 | Hemiplegia | 4.4 |
| G30 | Alzheimer’s disease | 4.0 |
| I69 | Sequelae of cerebrovascular disease (secondary codes) | 3.7 |
| R29 | Other symptoms and signs involving the nervous and musculoskeletal system (R29.6 Tendency to fall) | 3.6 |
| N39 | Other disorders of urinary system (includes urinary tract infection and urinary incontinence) | 3.2 |
| F05 | Delirium, not induced by alcohol and other psychoactive substances | 3.2 |
| W19 | Unspecified fall | 3.2 |
| S00 | Superficial injury oh head | 3.2 |
| R31 | Unspecified hematuria | 3.0 |
| B96 | Other bacterial agents as the cause of diseases classified to other chapters (secondary code) | 2.9 |
| R41 | Other symptoms and signs involving cognitive functions and awareness | 2.7 |
| R26 | Abnormalities of gait and mobility | 2.6 |
| I67 | Other cerebrovascular diseases | 2.6 |
| R56 | Convulsions, not elsewhere classified | 2.6 |
| R40 | Somnolence, stupor and coma | 2.5 |
| T83 | Complications of genitourinary prosthetic devices, implants and grafts | 2.4 |
| S06 | Intracranial injury | 2.4 |
| S42 | Fracture of shoulder and upper arm | 2.3 |
| E87 | Other disorders of fluid, electrolyte and acid-base balance | 2.3 |
| M25 | Other joint disorders, not elsewhere classified | 2.3 |
| E86 | Volume depletion | 2.3 |
| R54 | Senility | 2.2 |
| Z50 | Care involving use of rehabilitation procedures | 2.1 |
| F03 | Unspecified dementia | 2.1 |
| W18 | Other fall on same level | 2.1 |
| Z75 | Problems related to medical facilities and other health care | 2.0 |
| F01 | Vascular dementia | 2.0 |
| S80 | Superficial injury of lower leg | 2.0 |
| L03 | Cellulitis | 2.0 |
| H54 | Blindness and low vision | 1.9 |
| E53 | Deficiency of other B group vitamins | 1.9 |
| Z60 | Problems related to social environment | 1.8 |
| G20 | Parkinson’s disease | 1.8 |
| R55 | Syncope and collapse | 1.8 |
| S22 | Fracture of rib(s), sternum and thoracic spine | 1.8 |
| K59 | Other functional intestinal disorders | 1.8 |
| N17 | Acute renal failure | 1.8 |
| L89 | Decubitus ulcer | 1.7 |
| Z22 | Carrier of infectious disease | 1.7 |
| B95 | Streptococcus and staphylococcus as the cause of diseases classified to other chapters | 1.7 |
| L97 | Ulcer of lower limb, not elsewhere classified | 1.6 |
| R44 | Other symptoms and signs involving general sensations and perceptions | 1.6 |
| K26 | Duodenal ulcer | 1.6 |
| I95 | Hypotension | 1.6 |
| N19 | Unspecified renal failure | 1.6 |
| A41 | Other septicemia | 1.6 |
| Z87 | Personal history of other diseases and conditions | 1.5 |
| J96 | Respiratory failure, not elsewhere classified | 1.5 |
| X59 | Exposure to unspecified factor | 1.5 |
| M19 | Other arthrosis | 1.5 |
| G40 | Epilepsy | 1.5 |
| M81 | Osteoporosis without pathological fracture | 1.4 |
| S72 | Fracture of femur | 1.4 |
| S32 | Fracture of lumbar spine and pelvis | 1.4 |
| E16 | Other disorders of pancreatic internal secretion | 1.4 |
| R94 | Abnormal results of function studies | 1.4 |
| N18 | Chronic renal failure | 1.4 |
| R33 | Retention of urine | 1.3 |
| R69 | Unknown and unspecified causes of morbidity | 1.3 |
| N28 | Other disorders of kidney and ureter, not elsewhere classified | 1.3 |
| R32 | Unspecified urinary incontinence | 1.2 |
| G31 | Other degenerative diseases of nervous system, not elsewhere classified | 1.2 |
| Y95 | Nosocomial condition | 1.2 |
| S09 | Other and unspecified injuries of head | 1.2 |
| R45 | Symptoms and signs involving emotional state | 1.2 |
| G45 | Transient cerebral ischemic attacks and related syndromes | 1.2 |
| Z74 | Problems related to care-provider dependency | 1.1 |
| M79 | Other soft tissue disorders, not elsewhere classified | 1.1 |
| W06 | Fall involving bed | 1.1 |
| S01 | Open wound of head | 1.1 |
| A04 | Other bacterial intestinal infection | 1.1 |
| A09 | Diarrhea and gastroenteritis of presumed infectious origin | 1.1 |
| J18 | Pneumonia, organism unspecified | 1.1 |
| J69 | Pneumonitis due to solids and liquids | 1.0 |
| R47 | Speech disturbance, not elsewhere classified | 1.0 |
| E55 | Vitamin D deficiency | 1.0 |
| Z93 | Artificial opening status | 1.0 |
| R02 | Gangrene, not elsewhere classified | 1.0 |
| R63 | Symptoms and signs concerning food and fluid intake | 0.9 |
| H91 | Other hearing loss | 0.9 |
| W10 | Fall on and from stairs and steps | 0.9 |
| W01 | Fall on same level from slipping, tripping and stumbling | 0.9 |
| E05 | Thyrotoxicosis (hyperthyroidism) | 0.9 |
| M41 | Scoliosis | 0.9 |
| R13 | Dysphagia | 0.8 |
| Z99 | Dependence on enabling machines and devices | 0.8 |
| U80 | Agent resistant to penicillin and related antibiotics | 0.8 |
| M80 | Osteoporosis with pathological fracture | 0.8 |
| K92 | Other disease of digestive system | 0.8 |
| I63 | Cerebral infarction | 0.8 |
| N20 | Calculus of kidney and ureter | 0.7 |
| F10 | Mental and behavioral disorders due to use of alcohol | 0.7 |
| Y84 | Other medical procedures as the cause of abnormal reaction of the patient | 0.7 |
| R00 | Abnormalities of heart beat | 0.7 |
| J22 | Unspecified acute lower respiratory infection | 0.7 |
| Z73 | Problems related to life-management difficulty | 0.6 |
| R79 | Other abnormal findings of blood chemistry | 0.6 |
| Z91 | Personal history of risk-factors, not elsewhere classified | 0.5 |
| S51 | Open wound of forearm | 0.5 |
| F32 | Depressive episode | 0.5 |
| M48 | Spinal stenosis (secondary code only) | 0.5 |
| E83 | Disorders of mineral metabolism | 0.4 |
| M15 | Polyarthrosis | 0.4 |
| D64 | Other anemias | 0.4 |
| L08 | Other local infections of skin and subcutaneous tissue | 0.4 |
| R11 | Nausea and vomiting | 0.3 |
| K52 | Other noninfective gastroenteritis and colitis | 0.3 |
| R50 | Fever of unknown origin | 0.1 |

**Supplemental table 2:** multivariable analysis of theassociations between frailty risk categories and different outcomes, Lausanne university hospital, Lausanne, Switzerland, 2009-2017.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Low** | **Intermediate** | **High** | **P-value for trend** |
| Length of stay (days) | 11.9 ± 0.1 | 15.6 ± 0.1 | 19.7 ± 0.2 | <0.001 |
| ICU stay | 1 (ref.) | 1.57 (1.41 - 1.75) | 2.10 (1.82 - 2.42) | <0.001 |
| ICU stay (hours) \* | 95 ± 4 | 149 ± 5 | 257 ± 11 | <0.001 |
| Mortality |  |  |  |  |
| 30-day | 1 (ref.) | 0.96 (0.87 - 1.06) | 1.22 (1.08 - 1.38) | 0.001 |
| 90-day | 1 (ref.) | 1.04 (0.95 - 1.12) | 1.28 (1.16 - 1.42) | <0.001 |
| One-year | 1 (ref.) | 1.09 (1.02 - 1.17) | 1.39 (1.27 - 1.52) | <0.001 |
| Readmissions § | 1 (ref.) | 1.02 (0.81 - 1.30) | 1.08 (0.69 - 1.68) | 0.743 |
| Costs (CHF) † |  |  |  |  |
| Total | 15,173 ± 127 | 20,687 ± 160 | 29,202 ± 342 | <0.001 |
| Reimbursed | 13,389 ± 137 | 17,587 ± 165 | 24,930 ± 340 | <0.001 |
| Difference | -1304 ± 197 | -2953 ± 174 | -4478 ± 265 | <0.001 |
| Costs >70,000 CHF | 1 (ref.) | 3.46 (2.79 - 4.29) | 10.7 (8.47 - 13.6) | <0.001 |
| Full coverage | 1 (ref.) | 0.70 (0.65 - 0.76) | 0.52 (0.47 - 0.58) | <0.001 |
| DRG highlier | 1 (ref.) | 1.40 (1.27 - 1.53) | 2.15 (1.92 - 2.42) | <0.001 |

ICU, intensive care unit, DRG, diagnosis-related groups. \*, among patients who were admitted to ICU only; §, only considering the first hospitalization, analysis by competing risks regression (Fine-Gray model) and results are expressed as subhazard ratios and (95% confidence intervals); †, data for period 2012-2017. Results are expressed as multivariable-adjusted odds ratio (95% confidence interval) for categorical variables and as multivariable-adjusted average (95 confidence interval) for continuous variables. Between-group comparisons performed using logistic regression for categorical variables (except readmissions) , analysis of variance for cost difference, and negative binomial regression for the other continuous variables. Multivariable models were adjusted on year of discharge (categorical); gender (man, woman); age group (65-74, 75-84, 85+) and Charlson index categories (0, 1-2, 3-4, 5+). Except for readmissions, a further adjustment on the number of previous hospitalizations (continuous) was also performed.

**Supplemental table 3:** multivariable analysis of theassociations between frailty risk categories and different outcomes, Lausanne university hospital, Lausanne, Switzerland, 2009-2017.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Low** | **Intermediate** | **High** | **P-value for trend** |
| Mortality (%) |  |  |  |  |
| 30-day | 1 (ref.) | 1.02 (0.93 - 1.13) | 1.35 (1.19 - 1.53) | <0.001 |
| 90-day | 1 (ref.) | 1.05 (0.96 - 1.14) | 1.29 (1.16 - 1.43) | <0.001 |
| One-year | 1 (ref.) | 1.07 (0.99 - 1.15) | 1.32 (1.20 - 1.45) | <0.001 |
| Readmissions  § | 1 (ref.) | 1.02 (0.81 - 1.29) | 1.07 (0.69 - 1.66) | 0.767 |
| Costs (CHF) † |  |  |  |  |
| Total | 19,333 ± 76 | 19,119 ± 63 | 20,090 ± 94 | <0.001 |
| Reimbursed | 16,316 ± 116 | 16,286 ± 98 | 17,290 ± 146 | <0.001 |
| Difference | -2439 ± 192 | -2670 ± 167 | -3129 ± 256 | 0.041 |
| Costs >70,000 CHF | 1 (ref.) | 1.72 (1.35 - 2.21) | 4.08 (3.09 - 5.38) | <0.001 |
| Full coverage | 1 (ref.) | 0.98 (0.90 - 1.08) | 0.89 (0.79 - 1.01) | 0.070 |

§, only considering the first hospitalization, analysis by competing risks regression (Fine-Gray model) and results are expressed as subhazard ratios and (95% confidence intervals); †, data for period 2012-2017. Results are expressed as multivariable-adjusted odds ratio (95% confidence interval) for categorical variables and as multivariable-adjusted average (95% confidence interval) for continuous variables. Between-group comparisons performed using logistic regression for  categorical variables (except readmissions) , analysis of variance for cost difference, and negative binomial regression for the other continuous variables. Multivariable models were adjusted on year of discharge (categorical); gender (man, woman); age group (65-74, 75-84, 85+); Charlson index categories (0, 1-2, 3-4, 5+); intensive care unit stay (yes, no) and length of stay (quartiles). As DRG classification takes into account intensive care unit stay and length of stay, no analysis was performed for highliers. Except for readmissions, a further adjustment on the number of previous hospitalizations (continuous) was also performed.

**Supplemental table 4:** bivariate analysis of theassociations between frailty risk categories and different outcomes, Lausanne university hospital, Lausanne, Switzerland, 2009-2017. Only first admissions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Low** | **Intermediate** | **High** | **p-value** |
| N | 5913 | 5050 | 1058 |  |
| Length of stay (days) | 9.4 [6.0 - 15.0] | 12.2 [8.0 - 19.45] | 15.5 [9.9 - 26.9] | <0.001 ǂ |
| ICU stay (%) | 544 (9.2) | 618 (12.2) | 190 (18.0) | <0.001 |
| ICU stay (hours) \* | 70 [28 ; 124] | 101 [48 ; 191] | 188 [76 ; 433] | <0.001 ǂ |
| Destination at discharge (%) |  |  |  | <0.001 |
| Deceased | 455 (7.7) | 375 (7.4) | 110 (10.4) |  |
| Returned home | 4002 (67.7) | 2180 (43.2) | 251 (23.7) |  |
| Institutionalized | 1456 (24.6) | 2495 (49.4) | 697 (65.9) |  |
| Mortality (%) |  |  |  |  |
| 30-day | 617 (10.4) | 497 (9.8) | 132 (12.5) | 0.037 |
| 90-day | 988 (16.7) | 851 (16.8) | 205 (19.4) | 0.096 |
| One-year | 1635 (27.6) | 1478 (29.3) | 383 (36.2) | <0.001 |
| Costs (N) † |  |  |  |  |
| Total (CHF) | 11,240 [7409 ; 18,497] | 13,833 [9155 ; 23,591] | 17,190 [11484 ; 33,720] | <0.001 ǂ |
| Reimbursed (CHF) | 9553 [7442 ; 14,686] | 10,556 [8622 ; 17,786] | 12,386 [9615 ; 23,213] | <0.001 ǂ |
| Difference (CHF) | -914 [-4612 ; 2196] | -2360 [-6670 ; 1303] | -4036 [-10,520 ; 915] | <0.001 ǂ |
| Costs ≥70,000 CHF (%) | 100 (1.7) | 247 (4.9) | 139 (13.1) | <0.001 |
| Full coverage (%) | 1554 (41.8) | 1068 (33.2) | 194 (28.8) | <0.001 |
| DRG category (%) |  |  |  | <0.001 |
| Lowlier | 109 (2.9) | 36 (1.1) | 3 (0.5) |  |
| Inlier | 2908 (78.2) | 2414 (75) | 419 (62.2) |  |
| Highlier | 701 (18.9) | 768 (23.9) | 252 (37.4) |  |

ICU, intensive care unit, DRG, diagnosis-related groups. \*, among patients admitted to ICU; §, considering the first hospitalization; †, data for period 2012-2017. Results are expressed as number of patients (column percentage) for categorical variables and as average ± standard deviation or median and [interquartile range] for continuous variables. Between-group comparisons performed using chi-square for categorical variables and analysis of variance or Kruskal-Wallis test (ǂ) for continuous variables.

**Supplemental table 5:** multivariable analysis of theassociations between frailty risk categories and different outcomes, Lausanne university hospital, Lausanne, Switzerland, 2009-2017. Only first admissions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Low** | **Intermediate** | **High** | **P-value for trend** |
| Length of stay (days) | 12.1 ± 0.1 | 16.5 ± 0.2 | 23.5 ± 0.5 | <0.001 |
| ICU stay | 1 (ref.) | 1.71 (1.50 - 1.95) | 2.91 (2.38 - 3.56) | <0.001 |
| ICU stay (hours) \* | 98 ± 4 | 155 ± 6 | 336 ± 23 | <0.001 |
| Mortality |  |  |  |  |
| 30-day | 1 (ref.) | 0.94 (0.83 - 1.08) | 1.18 (0.96 - 1.46) | 0.124 |
| 90-day | 1 (ref.) | 1.02 (0.91 - 1.14) | 1.12 (0.93 - 1.34) | 0.236 |
| One-year | 1 (ref.) | 1.08 (0.99 - 1.19) | 1.38 (1.18 - 1.61) | <0.001 |
| Costs (CHF) † |  |  |  |  |
| Total | 15,982 ± 159 | 22,984 ± 250 | 38,716 ± 892 | <0.001 |
| Reimbursed | 14,068 ± 171 | 19,579 ± 259 | 34,444 ± 961 | <0.001 |
| Difference | -1553 ± 235 | -3702 ± 251 | -5530 ± 553 | <0.001 |
| Costs >70,000 CHF | 1 (ref.) | 4.07 (3.20 - 5.18) | 15.5 (11.7 - 20.7) | <0.001 |
| Full coverage | 1 (ref.) | 0.70 (0.63 - 0.77) | 0.54 (0.45 - 0.65) | <0.001 |

ICU, intensive care unit, DRG, diagnosis-related groups. \*, among patients who were admitted to ICU only; §, only considering the first hospitalization; †, data for period 2012-2017. Results are expressed as multivariable-adjusted odds ratio (95% confidence interval) for categorical variables and as multivariable-adjusted average (95 confidence interval) for continuous variables. Between-group comparisons performed using logistic regression for categorical variables, analysis of variance for cost difference, and negative binomial regression for the other continuous variables. Multivariable models were adjusted on year of discharge (categorical); gender (man, woman); age group (65-74, 75-84, 85+) and Charlson index categories (0, 1-2, 3-4, 5+).

**Supplemental table 6:** multivariable analysis of theassociations between frailty risk categories and different outcomes, Lausanne university hospital, Lausanne, Switzerland, 2009-2017. Only first admissions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Low** | **Intermediate** | **High** | **P-value for trend** |
| Mortality (%) |  |  |  |  |
| 30-day | 1 (ref.) | 0.99 (0.86 - 1.13) | 1.25 (1.00 - 1.57) | 0.049 |
| 90-day | 1 (ref.) | 1.02 (0.91 - 1.14) | 1.08 (0.89 - 1.30) | 0.426 |
| One-year | 1 (ref.) | 1.05 (0.95 - 1.16) | 1.28 (1.09 - 1.50) | 0.003 |
| Costs (CHF) † |  |  |  |  |
| Total | 19,943 ± 102 | 19,823 ± 95 | 21,207 ± 202 | <0.001 |
| Reimbursed | 16,835 ± 147 | 16,907 ± 142 | 18,726 ± 319 | <0.001 |
| Difference | -2572 ± 230 | -3009 ± 243 | -3215 ± 539 | 0.282 |
| Costs >70,000 CHF | 1 (ref.) | 2.05 (1.55 - 2.71) | 5.33 (3.74 - 7.59) | <0.001 |
| Full coverage | 1 (ref.) | 1.00 (0.89 - 1.12) | 1.01 (0.82 - 1.25) | <0.001 |

§, only considering the first hospitalization; †, data for period 2012-2017. Results are expressed as multivariable-adjusted odds ratio (95% confidence interval) for categorical variables and as multivariable-adjusted average (95% confidence interval) for continuous variables. Between-group comparisons performed using logistic regression for mortality,  analysis of variance for cost difference, and negative binomial regression for the other continuous variables. Multivariable models were adjusted on year of discharge (categorical); gender (man, woman); age group (65-74, 75-84, 85+); Charlson index categories (0, 1-2, 3-4, 5+); intensive care unit stay (yes, no) and length of stay (quartiles). As DRG classification takes into account intensive care unit stay and length of stay, no analysis was performed for highliers.

**Supplemental table 7:** bivariate analysis of theassociations between frailty risk categories and different outcomes, Lausanne university hospital, Lausanne, Switzerland, 2011-2017.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Low** | **Intermediate** | **High** | **p-value** |
| N | 5979 | 7380 | 3770 |  |
| Length of stay (days) | 9.0 [6.0 ; 14.3] | 11.7 [7.7 ; 17.9] | 13.7 [9.0 ; 21.1] | <0.001 ǂ |
| ICU stay (%) | 497 (8.3) | 803 (10.9) | 476 (12.6) | <0.001 |
| ICU stay (hours) \* | 74 [39 ; 129] | 100 [48 ; 185] | 149 [65 ; 307] | <0.001 ǂ |
| Destination at discharge (%) |  |  |  | <0.001 |
| Deceased | 419 (7.0) | 577 (7.8) | 413 (11.0) |  |
| Returned home | 4040 (67.6) | 3312 (44.9) | 1144 (30.4) |  |
| Institutionalized | 1517 (25.4) | 3486 (47.3) | 2212 (58.7) |  |
| Mortality (%) |  |  |  |  |
| 30-day | 603 (10.1) | 807 (10.9) | 539 (14.3) | <0.001 |
| 90-day | 1005 (16.8) | 1363 (18.5) | 876 (23.2) | <0.001 |
| One-year | 1689 (28.3) | 2389 (32.4) | 1521 (40.3) | <0.001 |
| Readmissions (N) § | 5625 | 6872 | 3398 |  |
| Rate | 192 (3.4) | 252 (3.7) | 141 (4.2) | 0.197 |
| Costs (N) † |  |  |  |  |
| Total (CHF) | 10789 [7272 ; 17448] | 13087 [8787 ; 21459] | 15115 [10281 ; 26570] | <0.001 ǂ |
| Reimbursed (CHF) | 9553 [7604 ; 14366] | 10516 [8591 ; 16518] | 11630 [9419 ; 18543] | <0.001 ǂ |
| Difference (CHF) | -846 [-4491 ; 2231] | -2176 [-6532 ; 1439] | -3216 [-8548 ; 1068] | <0.001 ǂ |
| Costs ≥70,000 CHF (%) | 87 (1.5) | 248 (3.4) | 247 (6.6) | <0.001 |
| Full coverage (%) | 2204 (42.8) | 2143 (34.8) | 923 (30.4) | <0.001 |
| DRG category (%) |  |  |  | <0.001 |
| Lowlier | 157 (3.1) | 104 (1.7) | 32 (1.1) |  |
| Inlier | 4036 (78.4) | 4612 (74.9) | 2094 (68.9) |  |
| Highlier | 956 (18.6) | 1442 (23.4) | 913 (30.0) |  |

ICU, intensive care unit, DRG, diagnosis-related groups. \*, among patients admitted to ICU; §, considering the first hospitalization; †, data for period 2012-2017. Results are expressed as number of patients (column percentage) for categorical variables and as average ± standard deviation or median and [interquartile range] for continuous variables. Between-group comparisons performed using chi-square for categorical variables and analysis of variance or Kruskal-Wallis test (ǂ) for continuous variables.

**Supplemental table 8:** multivariable analysis of theassociations between frailty risk categories and different outcomes, Lausanne university hospital, Lausanne, Switzerland, 2011-2017.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Low** | **Intermediate** | **High** | **P-value for trend** |
| Length of stay (days) | 11.5 ± 0.1 | 15.0 ± 0.1 | 19.1 ± 0.2 | <0.001 |
| ICU stay | 1 (ref.) | 1.7 (1.49 - 1.93) | 2.39 (2.04 - 2.79) | <0.001 |
| ICU stay (hours) \* | 102 ± 4 | 146 ± 5 | 264 ± 12 | <0.001 |
| Mortality |  |  |  |  |
| 30-day | 1 (ref.) | 1.10 (0.98 - 1.24) | 1.49 (1.30 - 1.72) | <0.001 |
| 90-day | 1 (ref.) | 1.13 (1.03 - 1.25) | 1.45 (1.29 - 1.64) | <0.001 |
| One-year | 1 (ref.) | 1.20 (1.10 - 1.30) | 1.49 (1.35 - 1.66) | <0.001 |
| Readmissions § | 1 (ref.) | 1.05 (0.87 - 1.27) | 0.96 (0.75 - 1.22) | 0.748 |
| Costs (CHF) † |  |  |  |  |
| Total | 14,762 ± 145 | 20,242 ± 180 | 29,141 ± 375 | <0.001 |
| Reimbursed | 13,309 ± 136 | 17,559 ± 164 | 25,239 ± 347 | <0.001 |
| Difference | -1302 ± 198 | -2950 ± 174 | -4489 ± 267 | <0.001 |
| Costs >70,000 CHF | 1 (ref.) | 3.39 (2.64 - 4.36) | 11.1 (8.44 - 14.6) | <0.001 |
| Full coverage | 1 (ref.) | 0.70 (0.65 - 0.76) | 0.52 (0.47 - 0.58) | <0.001 |

ICU, intensive care unit, DRG, diagnosis-related groups. \*, among patients who were admitted to ICU only; §, only considering the first hospitalization, analysis by competing risks regression (Fine-Gray model) and results are expressed as subhazard ratios and (95% confidence intervals); †, data for period 2012-2017. Results are expressed as multivariable-adjusted odds ratio (95% confidence interval) for categorical variables and as multivariable-adjusted average (95 confidence interval) for continuous variables. Between-group comparisons performed using logistic regression for categorical variables (except readmissions), analysis of variance for cost difference, and negative binomial regression for the other continuous variables. Multivariable models were adjusted on year of discharge (categorical); gender (man, woman); age group (65-74, 75-84, 85+) and Charlson index categories (0, 1-2, 3-4, 5+). Except for readmissions, a further adjustment on the number of previous hospitalizations (continuous) was also performed.

**Supplemental table 9:** multivariable analysis of theassociations between frailty risk categories and different outcomes, Lausanne university hospital, Lausanne, Switzerland, 2011-2017.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Low** | **Intermediate** | **High** | **P-value for trend** |
| Mortality (%) |  |  |  |  |
| 30-day | 1 (ref.) | 1.15 (1.02 - 1.30) | 1.62 (1.40 - 1.87) | <0.001 |
| 90-day | 1 (ref.) | 1.13 (1.02 - 1.25) | 1.44 (1.28 - 1.63) | <0.001 |
| One-year | 1 (ref.) | 1.16 (1.07 - 1.27) | 1.42 (1.27 - 1.57) | <0.001 |
| Readmissions § | 1 (ref.) | 1.15 (0.95 - 1.39) | 1.13 (0.88 - 1.44) | 0.336 |
| Costs (CHF) † |  |  |  |  |
| Total | 19,003 ± 87 | 18,934 ± 71 | 20,094 ± 103 | <0.001 |
| Reimbursed | 16,274 ± 116 | 16,275 ± 97 | 17,363 ± 147 | <0.001 |
| Difference | -2447 ± 192 | -2669 ± 167 | -3117 ± 259 | 0.050 |
| Costs >70,000 CHF | 1 (ref.) | 1.71 (1.28 - 2.29) | 4.00 (2.91 - 5.51) | <0.001 |
| Full coverage | 1 (ref.) | 0.98 (0.90 - 1.08) | 0.90 (0.79 - 1.02) | 0.089 |

§, only considering the first hospitalization, analysis by competing risks regression (Fine-Gray model) and results are expressed as subhazard ratios and (95% confidence intervals); †, data for period 2012-2017. Results are expressed as multivariable-adjusted odds ratio (95% confidence interval) for categorical variables and as multivariable-adjusted average (95% confidence interval) for continuous variables. Between-group comparisons performed using logistic regression for categorical variables (except readmissions), analysis of variance for cost difference, and negative binomial regression for the other continuous variables. Multivariable models were adjusted on year of discharge (categorical); gender (man, woman); age group (65-74, 75-84, 85+); Charlson index categories (0, 1-2, 3-4, 5+); intensive care unit stay (yes, no) and length of stay (quartiles). As DRG classification takes into account intensive care unit stay and length of stay, no analysis was performed for highliers. Except for readmissions, a further adjustment on the number of previous hospitalizations (continuous) was also performed.

**Supplemental table 10:** survival analysis for the different frailty risk categories, Lausanne university hospital, for the 2011-2017 period.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Low** | **Intermediate** | **High** | **P-value for trend** |
| 30-day | 1 (ref.) | 1.15 (1.03 - 1.29) | 1.52 (1.33 - 1.73) | <0.001 |
| 90-day | 1 (ref.) | 1.12 (1.03 - 1.21) | 1.34 (1.21 - 1.48) | <0.001 |
| One-year | 1 (ref.) | 1.13 (1.06 - 1.21) | 1.29 (1.20 - 1.40) | <0.001 |

Results are expressed as multivariable-adjusted relative risk (95% confidence interval). Between-group comparisons performed using Cox survival analysis adjusted on year of discharge (categorical); gender (man, woman); age group (65-74, 75-84, 85+); Charlson index categories (0, 1-2, 3-4, 5+); ICU stay (yes, no) , number of previous hospitalizations (continuous) and length of stay (quartiles).