Supplementary table 1. Proportion of blood transfusion

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Total population | Total transfusion | | RBC | | FFP | | PLT | | CRP | | Autologous transfusion | | Others | |
| N | Proportion† | N | Proportion | N | Proportion | N | Proportion | N | Proportion | N | Proportion | N | Proportion |
| 2009 | 48,613,534 | 376,981 | 77.55 | 354,349 | 72.89 | 69,185 | 14.23 | 51,669 | 10.63 | 3,699 | 0.76 | 12,921 | 2.66 | 2,344 | 0.48 |
| 2010 | 48,906,795 | 401,426 | 82.08 | 377,220 | 77.13 | 73,394 | 15.01 | 57,412 | 11.74 | 4,234 | 0.87 | 15,705 | 3.21 | 2,179 | 0.45 |
| 2011 | 49,299,165 | 406,080 | 82.37 | 382,318 | 77.55 | 73,469 | 14.90 | 60,098 | 12.19 | 4,977 | 1.01 | 10,847 | 2.20 | 2,382 | 0.48 |
| 2012 | 49,662,097 | 422,106 | 85.00 | 397,105 | 79.96 | 76,821 | 15.47 | 63,295 | 12.75 | 5,399 | 1.09 | 10,472 | 2.11 | 2,471 | 0.50 |
| 2013 | 49,989,620 | 418,364 | 83.69 | 393,657 | 78.75 | 74,925 | 14.99 | 63,124 | 12.63 | 5,533 | 1.11 | 9,909 | 1.98 | 2,419 | 0.48 |
| 2014 | 50,316,384 | 418,735 | 83.22 | 393,755 | 78.26 | 74,247 | 14.76 | 64,006 | 12.72 | 5,704 | 1.13 | 9,997 | 1.99 | 2,429 | 0.48 |
| 2015 | 50,490,157 | 430,165 | 85.20 | 404,714 | 80.16 | 74,080 | 14.67 | 66,335 | 13.14 | 5,782 | 1.15 | 10,536 | 2.09 | 2,435 | 0.48 |
| 2016 | 50,763,283 | 438,267 | 86.34 | 412,584 | 81.28 | 74,340 | 14.64 | 68,556 | 13.51 | 6,226 | 1.23 | 11,187 | 2.20 | 2,671 | 0.53 |
| 2017 | 50,940,885 | 435,272 | 85.45 | 409,921 | 80.47 | 72,020 | 14.14 | 70,110 | 13.76 | 6,405 | 1.26 | 11,490 | 2.26 | 2,708 | 0.53 |
| 2018 | 51,071,982 | 440,774 | 86.30 | 414,717 | 81.20 | 71,349 | 13.97 | 73,132 | 14.32 | 6,708 | 1.31 | 11,736 | 2.30 | 2,622 | 0.51 |
| Annual change  (*p*-value\*) | | 0.742 (0.002) | | 0.708 (0.002) | | -0.075 (0.145) | | 0.335 (<.001) | | 0.055 (<.001) | | -0.060 (0.152) | | 0.006 (0.014) | |

†Proportion per 10,000 (=10000 x N / Total population)

\*p-value by linear regression model

RBC; red blood cell

FFP; fresh frozen plasma

PLT; platelet

CRP; cryoprecipitate

Supplementary table 2. Proportion of multicomponent blood transfusion

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Total population | Total | | RBC+FFP | | RBC+PLT | | RBC+FFP+PLT | | RBC+FFP+PLT+CRP | | Other combinations | |
| Total | |
| N | Proportion† | N | Proportion | N | Proportion | N | Proportion | N | Proportion | N | Proportion |
| 2009 | 48,613,534 | 74,585 | 15.34 | 34,427 | 7.08 | 20,007 | 4.12 | 19,899 | 4.09 | 2,550 | 0.52 | 4,126 | 0.85 |
| 2010 | 48,906,795 | 80,812 | 16.52 | 36,461 | 7.46 | 22,350 | 4.57 | 21,756 | 4.45 | 3,010 | 0.62 | 4,228 | 0.86 |
| 2011 | 49,299,165 | 81,750 | 16.58 | 35,508 | 7.20 | 23,624 | 4.79 | 21,753 | 4.41 | 3,624 | 0.74 | 4,384 | 0.89 |
| 2012 | 49,662,097 | 85,784 | 17.27 | 37,250 | 7.50 | 24,969 | 5.03 | 22,663 | 4.56 | 3,872 | 0.78 | 4,684 | 0.94 |
| 2013 | 49,989,620 | 84,300 | 16.86 | 36,003 | 7.20 | 24,917 | 4.98 | 22,167 | 4.43 | 3,867 | 0.77 | 4,967 | 0.99 |
| 2014 | 50,316,384 | 84,577 | 16.81 | 35,588 | 7.07 | 25,745 | 5.12 | 22,034 | 4.38 | 3,946 | 0.78 | 4,938 | 0.98 |
| 2015 | 50,490,157 | 85,967 | 17.03 | 35,321 | 7.00 | 27,342 | 5.42 | 22,192 | 4.40 | 4,071 | 0.81 | 4,864 | 0.96 |
| 2016 | 50,763,283 | 87,372 | 17.21 | 35,282 | 6.95 | 28,580 | 5.63 | 22,250 | 4.38 | 4,569 | 0.90 | 4,838 | 0.95 |
| 2017 | 50,940,885 | 87,021 | 17.08 | 33,942 | 6.66 | 29,914 | 5.87 | 22,093 | 4.34 | 4,629 | 0.91 | 4,879 | 0.96 |
| 2018 | 51,071,982 | 88,110 | 17.25 | 32,647 | 6.39 | 31,511 | 6.17 | 22,529 | 4.41 | 4,908 | 0.96 | 4,894 | 0.96 |
| Annual change  (*p*-value\*) | | 0.142 (0.013) | | -0.089 (0.005) | | 0.201 (<.001) | | 0.008 (0.556) | | 0.042 (<.001) | | 0.012 (0.015) | |

†Proportion per 10,000 (=10000 x N / Total population)

\*p-value by linear regression model

RBC; red blood cell

FFP; fresh frozen plasma

PLT; platelet

CRP; cryoprecipitate

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Other combinations | | Other combinations | | Other combinations | | Other combinations | | Other combinations | | Other combinations | |
| RBC+FFP+CRP | | RBC+PLT+CRP | | RBC+CRP | | FFP+CRP | | FFP+PLT+CRP | | PLT+CRP | |
| N | Proportion | N | Proportion | N | Proportion | N | Proportion | N | Proportion | N | Proportion |
| 390 | 0.08 | 350 | 0.07 | 210 | 0.04 | 101 | 0.02 | 49 | 0.01 | 31 | 0.01 |
| 479 | 0.10 | 290 | 0.06 | 207 | 0.04 | 105 | 0.02 | 62 | 0.01 | 41 | 0.01 |
| 435 | 0.09 | 423 | 0.09 | 223 | 0.05 | 94 | 0.02 | 95 | 0.02 | 45 | 0.01 |
| 478 | 0.10 | 425 | 0.09 | 239 | 0.05 | 128 | 0.03 | 81 | 0.02 | 44 | 0.01 |
| 517 | 0.10 | 519 | 0.10 | 296 | 0.06 | 122 | 0.02 | 91 | 0.02 | 63 | 0.01 |
| 554 | 0.11 | 528 | 0.10 | 313 | 0.06 | 137 | 0.03 | 100 | 0.02 | 77 | 0.02 |
| 521 | 0.10 | 467 | 0.09 | 330 | 0.07 | 140 | 0.03 | 105 | 0.02 | 84 | 0.02 |
| 603 | 0.12 | 422 | 0.08 | 272 | 0.05 | 143 | 0.03 | 117 | 0.02 | 81 | 0.02 |
| 597 | 0.12 | 475 | 0.09 | 267 | 0.05 | 160 | 0.03 | 106 | 0.02 | 92 | 0.02 |
| 688 | 0.13 | 466 | 0.09 | 243 | 0.05 | 153 | 0.03 | 97 | 0.02 | 86 | 0.02 |

Supplementary table 3. Proportion of blood transfusion by sex

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Total population\* | Total | | RBCs | | FFP | | PLTs | | CRPs | | Autologous transfusion | | Others | |
| N | Proportion† | N | Proportion | N | Proportion | N | Proportion | N | Proportion | N | Proportion | N | Proportion |
| Male |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2009 | 24,508,172 | 164,265 | 67.02 | 150,254 | 61.31 | 41,178 | 16.80 | 29,811 | 12.16 | 2,197 | 0.90 | 5,381 | 2.20 | 1,063 | 0.43 |
| 2010 | 24,648,532 | 171,972 | 69.77 | 157,448 | 63.88 | 42,829 | 17.38 | 32,935 | 13.36 | 2,415 | 0.98 | 5,797 | 2.35 | 1,019 | 0.41 |
| 2011 | 24,831,251 | 174,670 | 70.34 | 159,842 | 64.37 | 43,456 | 17.50 | 34,470 | 13.88 | 2,908 | 1.17 | 5,108 | 2.06 | 1,108 | 0.45 |
| 2012 | 24,986,667 | 180,496 | 72.24 | 164,882 | 65.99 | 44,594 | 17.85 | 36,243 | 14.50 | 3,161 | 1.27 | 5,194 | 2.08 | 1,187 | 0.48 |
| 2013 | 25,139,916 | 180,065 | 71.63 | 164,431 | 65.41 | 43,394 | 17.26 | 36,152 | 14.38 | 3,232 | 1.29 | 5,173 | 2.06 | 1,200 | 0.48 |
| 2014 | 25,297,656 | 181,045 | 71.57 | 165,323 | 65.35 | 42,994 | 17.00 | 36,487 | 14.42 | 3,295 | 1.30 | 5,245 | 2.07 | 1,136 | 0.45 |
| 2015 | 25,377,945 | 184,259 | 72.61 | 168,265 | 66.30 | 42,653 | 16.81 | 37,996 | 14.97 | 3,437 | 1.35 | 5,909 | 2.33 | 1,167 | 0.46 |
| 2016 | 25,498,572 | 186,076 | 72.98 | 169,977 | 66.66 | 42,532 | 16.68 | 39,080 | 15.33 | 3,667 | 1.44 | 6,343 | 2.49 | 1,317 | 0.52 |
| 2017 | 25,568,633 | 187,144 | 73.19 | 171,408 | 67.04 | 41,409 | 16.20 | 39,951 | 15.63 | 3,891 | 1.52 | 6,629 | 2.59 | 1,370 | 0.54 |
| 2018 | 25,619,518 | 190,811 | 74.48 | 174,678 | 68.18 | 40,964 | 15.99 | 41,846 | 16.33 | 4,145 | 1.62 | 6,916 | 2.70 | 1,324 | 0.52 |
| Annual change  (*p*-value\*) | | 0.638 (0.002) | |  |  |  |  |  |  |  |  |  |  |  |  |
| Female |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2009 | 24,105,362 | 212,716 | 88.24 | 204,095 | 84.67 | 28,007 | 11.62 | 21,858 | 9.07 | 1,502 | 0.62 | 7,540 | 3.13 | 1,281 | 0.53 |
| 2010 | 24,258,263 | 229,454 | 94.59 | 219,772 | 90.60 | 30,565 | 12.60 | 24,477 | 10.09 | 1,819 | 0.75 | 9,908 | 4.08 | 1,160 | 0.48 |
| 2011 | 24,467,914 | 231,410 | 94.58 | 222,476 | 90.93 | 30,013 | 12.27 | 25,628 | 10.47 | 2,069 | 0.85 | 5,739 | 2.35 | 1,274 | 0.52 |
| 2012 | 24,675,430 | 241,610 | 97.92 | 232,223 | 94.11 | 32,227 | 13.06 | 27,052 | 10.96 | 2,238 | 0.91 | 5,278 | 2.14 | 1,284 | 0.52 |
| 2013 | 24,849,704 | 238,299 | 95.90 | 229,226 | 92.24 | 31,531 | 12.69 | 26,972 | 10.85 | 2,301 | 0.93 | 4,736 | 1.91 | 1,219 | 0.49 |
| 2014 | 25,018,728 | 237,690 | 95.00 | 228,432 | 91.30 | 31,253 | 12.49 | 27,519 | 11.00 | 2,409 | 0.96 | 4,752 | 1.90 | 1,293 | 0.52 |
| 2015 | 25,112,212 | 245,906 | 97.92 | 236,449 | 94.16 | 31,427 | 12.51 | 28,339 | 11.28 | 2,345 | 0.93 | 4,627 | 1.84 | 1,268 | 0.50 |
| 2016 | 25,264,711 | 252,191 | 99.82 | 242,607 | 96.03 | 31,808 | 12.59 | 29,476 | 11.67 | 2,559 | 1.01 | 4,844 | 1.92 | 1,354 | 0.54 |
| 2017 | 25,372,252 | 248,128 | 97.80 | 238,513 | 94.01 | 30,611 | 12.06 | 30,159 | 11.89 | 2,514 | 0.99 | 4,861 | 1.92 | 1,338 | 0.53 |
| 2018 | 25,452,464 | 249,963 | 98.21 | 240,039 | 94.31 | 30,385 | 11.94 | 31,286 | 12.29 | 2,563 | 1.01 | 4,820 | 1.89 | 1,298 | 0.51 |
| Annual change  (*p*-value\*) | | 0.833 (0.008) | |  |  |  |  |  |  |  |  |  |  |  |  |

Supplementary Table 4. Proportion of multicomponent blood transfusion by sex

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Total population\* | **Total** | | **RBCs+FFP** | | **RBCs+PLT** | | **RBCs+FFP+PLT** | | **RBCs+FFP+PLT+CRP** | |
| N | Proportion† | N | Proportion | N | Proportion | N | Proportion | N | Proportion |
| **Male** |  |  |  |  |  |  |  |  |  |  |  |
| **2009** | 24,508,172 | 42,405 | 17.30 | 19,569 | 7.98 | 10,624 | 4.33 | 11,783 | 4.81 | 1,522 | 0.62 |
| **2010** | 24,648,532 | 45,319 | 18.39 | 20,253 | 8.22 | 11,971 | 4.86 | 12,753 | 5.17 | 1,742 | 0.71 |
| **2011** | 24,831,251 | 46,330 | 18.66 | 20,068 | 8.08 | 12,607 | 5.08 | 12,878 | 5.19 | 2,123 | 0.85 |
| **2012** | 24,986,667 | 47,770 | 19.12 | 20,282 | 8.12 | 13,372 | 5.35 | 13,383 | 5.36 | 2,262 | 0.91 |
| **2013** | 25,139,916 | 46,776 | 18.61 | 19,485 | 7.75 | 13,249 | 5.27 | 13,067 | 5.20 | 2,252 | 0.90 |
| **2014** | 25,297,656 | 46,782 | 18.49 | 19,234 | 7.60 | 13,565 | 5.36 | 13,048 | 5.16 | 2,258 | 0.89 |
| **2015** | 25,377,945 | 47,513 | 18.72 | 18,875 | 7.44 | 14,581 | 5.75 | 13,113 | 5.17 | 2,438 | 0.96 |
| **2016** | 25,498,572 | 47,978 | 18.82 | 18,618 | 7.30 | 15,249 | 5.98 | 13,089 | 5.13 | 2,699 | 1.06 |
| **2017** | 25,568,633 | 48,127 | 18.82 | 18,067 | 7.07 | 16,034 | 6.27 | 12,995 | 5.08 | 2,824 | 1.10 |
| **2018** | 25,619,518 | 48,806 | 19.05 | 17,333 | 6.77 | 16,971 | 6.62 | 13,314 | 5.20 | 3,007 | 1.17 |
| **Annual change**  **(*p*-value\*)** | | 0.111 (0.039) | | -0.152 (<.001) | | 0.220 (<.001) | | 0.012 (0.466) | | 0.054 (<.001) | |
| **Female** |  |  |  |  |  |  |  |  |  |  |  |
| **2009** | 24,105,362 | 32,180 | 13.35 | 14,858 | 6.16 | 9,383 | 3.89 | 8,116 | 3.37 | 1,028 | 0.43 |
| **2010** | 24,258,263 | 35,493 | 14.63 | 16,208 | 6.68 | 10,379 | 4.28 | 9,003 | 3.71 | 1,268 | 0.52 |
| **2011** | 24,467,914 | 35,420 | 14.48 | 15,440 | 6.31 | 11,017 | 4.50 | 8,875 | 3.63 | 1,501 | 0.61 |
| **2012** | 24,675,430 | 38,014 | 15.41 | 16,968 | 6.88 | 11,597 | 4.70 | 9,280 | 3.76 | 1,610 | 0.65 |
| **2013** | 24,849,704 | 37,524 | 15.10 | 16,518 | 6.65 | 11,668 | 4.70 | 9,100 | 3.66 | 1,615 | 0.65 |
| **2014** | 25,018,728 | 37,795 | 15.11 | 16,354 | 6.54 | 12,180 | 4.87 | 8,986 | 3.59 | 1,688 | 0.67 |
| **2015** | 25,112,212 | 38,454 | 15.31 | 16,446 | 6.55 | 12,761 | 5.08 | 9,079 | 3.62 | 1,633 | 0.65 |
| **2016** | 25,264,711 | 39,394 | 15.59 | 16,664 | 6.60 | 13,331 | 5.28 | 9,161 | 3.63 | 1,870 | 0.74 |
| **2017** | 25,372,252 | 38,894 | 15.33 | 15,875 | 6.26 | 13,880 | 5.47 | 9,098 | 3.59 | 1,805 | 0.71 |
| **2018** | 25,452,464 | 39,304 | 15.44 | 15,314 | 6.02 | 14,540 | 5.71 | 9,215 | 3.62 | 1,901 | 0.75 |
| **Annual change**  **(*p*-value\*)** | | 0.176 (0.006) | | -0.023 (0.460) | | 0.181 (<.001) | | 0.006 (0.648) | | 0.030 (<.001) | |

Supplementary Table 5. Proportion of blood transfusion by age

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Age group | | | | | | | | |
| 0-9 | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80- |
| 2009 | 18.5 | 8.3 | 17.0 | 29.2 | 52.4 | 90.3 | 222.1 | 418.2 | 569.5 |
| 2010 | 19.4 | 8.4 | 16.7 | 30.9 | 52.6 | 89.4 | 225.3 | 437.8 | 620.7 |
| 2011 | 20.1 | 8.5 | 16.4 | 30.7 | 50.6 | 85.8 | 215.7 | 426.1 | 626.7 |
| 2012 | 20.8 | 8.4 | 15.6 | 30.2 | 49.1 | 84.1 | 209.9 | 429.1 | 658.5 |
| 2013 | 20.6 | 8.1 | 13.9 | 27.8 | 45.4 | 80.2 | 194.5 | 423.9 | 649.4 |
| 2014 | 20.4 | 8.3 | 13.0 | 27.0 | 43.8 | 77.5 | 181.5 | 411.9 | 642.6 |
| 2015 | 20.5 | 8.1 | 13.3 | 27.4 | 42.8 | 75.5 | 175.8 | 418.7 | 648.9 |
| 2016 | 19.7 | 8.1 | 12.4 | 26.9 | 41.6 | 73.0 | 173.2 | 414.6 | 648.5 |
| 2017 | 19.0 | 7.7 | 11.5 | 25.3 | 41.0 | 69.9 | 160.4 | 390.7 | 645.4 |
| 2018 | 17.8 | 7.2 | 11.4 | 25.0 | 40.4 | 66.6 | 152.4 | 382.3 | 653.8 |
| Annual change  (*p*-value\*) | -0.076 (0.525) | -0.103 (0.004) | -0.696 (<.001) | -0.639 (<.001) | -1.540 (<.001) | -2.690 (<.001) | -8.540 (<.001) | -4.570 (0.004) | 6.090 (0.023) |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Age group | Total population\* | Total | | RBC | | FFP | | PLT | | CRP | | Autologous transfusion | | Others | |
| N | Proportion† | N | Proportion | N | Proportion | N | Proportion | N | Proportion | N | Proportion | N | Proportion |
| 2009 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-9 | 4,818,998 | 8,907 | 18.48 | 8,435 | 17.50 | 3,030 | 6.29 | 2,949 | 6.12 | 356 | 0.74 | 139 | 0.29 | 104 | 0.22 |
| 10-19 | 6,479,368 | 5,359 | 8.27 | 4,825 | 7.45 | 1,545 | 2.38 | 1,577 | 2.43 | 107 | 0.17 | 291 | 0.45 | 104 | 0.16 |
| 20-29 | 7,082,790 | 12,037 | 16.99 | 11,009 | 15.54 | 2,402 | 3.39 | 1,783 | 2.52 | 146 | 0.21 | 312 | 0.44 | 179 | 0.25 |
| 30-39 | 8,410,639 | 24,568 | 29.21 | 22,899 | 27.23 | 5,083 | 6.04 | 3,379 | 4.02 | 284 | 0.34 | 560 | 0.67 | 286 | 0.34 |
| 40-49 | 8,559,897 | 44,833 | 52.38 | 41,761 | 48.79 | 9,594 | 11.21 | 7,060 | 8.25 | 513 | 0.60 | 1,088 | 1.27 | 326 | 0.38 |
| 50-59 | 6,365,416 | 57,482 | 90.30 | 52,673 | 82.75 | 13,578 | 21.33 | 10,383 | 16.31 | 756 | 1.19 | 2,140 | 3.36 | 379 | 0.60 |
| 60-69 | 3,881,944 | 86,224 | 222.12 | 80,689 | 207.86 | 15,810 | 40.73 | 11,892 | 30.63 | 811 | 2.09 | 4,349 | 11.20 | 451 | 1.16 |
| 70-79 | 2,254,480 | 94,290 | 418.23 | 90,209 | 400.13 | 13,523 | 59.98 | 9,479 | 42.05 | 593 | 2.63 | 3,655 | 16.21 | 374 | 1.66 |
| 80- | 760,002 | 43,281 | 569.49 | 41,849 | 550.64 | 4,620 | 60.79 | 3,167 | 41.67 | 133 | 1.75 | 387 | 5.09 | 141 | 1.86 |
| 2010 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-9 | 4,660,658 | 9,041 | 19.40 | 8,527 | 18.30 | 3,032 | 6.51 | 3,080 | 6.61 | 326 | 0.70 | 153 | 0.33 | 66 | 0.14 |
| 10-19 | 6,485,575 | 5,450 | 8.40 | 4,978 | 7.68 | 1,527 | 2.35 | 1,601 | 2.47 | 124 | 0.19 | 291 | 0.45 | 90 | 0.14 |
| 20-29 | 6,892,382 | 11,507 | 16.70 | 10,664 | 15.47 | 2,324 | 3.37 | 1,910 | 2.77 | 181 | 0.26 | 296 | 0.43 | 146 | 0.21 |
| 30-39 | 8,345,447 | 25,781 | 30.89 | 24,137 | 28.92 | 5,127 | 6.14 | 3,629 | 4.35 | 368 | 0.44 | 531 | 0.64 | 298 | 0.36 |
| 40-49 | 8,559,840 | 44,986 | 52.55 | 41,897 | 48.95 | 9,604 | 11.22 | 7,367 | 8.61 | 582 | 0.68 | 1,118 | 1.31 | 355 | 0.41 |
| 50-59 | 6,803,338 | 60,855 | 89.45 | 55,620 | 81.75 | 14,436 | 21.22 | 11,697 | 17.19 | 808 | 1.19 | 2,435 | 3.58 | 417 | 0.61 |
| 60-69 | 3,976,353 | 89,568 | 225.25 | 83,687 | 210.46 | 16,439 | 41.34 | 12,910 | 32.47 | 921 | 2.32 | 5,399 | 13.58 | 378 | 0.95 |
| 70-79 | 2,370,174 | 103,777 | 437.85 | 98,877 | 417.17 | 15,285 | 64.49 | 11,205 | 47.28 | 732 | 3.09 | 4,935 | 20.82 | 314 | 1.32 |
| 80- | 813,028 | 50,461 | 620.66 | 48,833 | 600.63 | 5,620 | 69.12 | 4,013 | 49.36 | 192 | 2.36 | 547 | 6.73 | 115 | 1.41 |
| 2011 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-9 | 4,591,608 | 9,230 | 20.10 | 8,712 | 18.97 | 2,895 | 6.30 | 3,260 | 7.10 | 444 | 0.97 | 138 | 0.30 | 78 | 0.17 |
| 10-19 | 6,368,481 | 5,430 | 8.53 | 4,906 | 7.70 | 1,537 | 2.41 | 1,637 | 2.57 | 142 | 0.22 | 287 | 0.45 | 109 | 0.17 |
| 20-29 | 6,772,641 | 11,106 | 16.40 | 10,227 | 15.10 | 2,285 | 3.37 | 1,856 | 2.74 | 201 | 0.30 | 261 | 0.39 | 183 | 0.27 |
| 30-39 | 8,265,460 | 25,387 | 30.71 | 23,759 | 28.74 | 5,033 | 6.09 | 3,707 | 4.48 | 420 | 0.51 | 496 | 0.60 | 288 | 0.35 |
| 40-49 | 8,613,554 | 43,613 | 50.63 | 40,590 | 47.12 | 9,320 | 10.82 | 7,293 | 8.47 | 616 | 0.72 | 965 | 1.12 | 391 | 0.45 |
| 50-59 | 7,273,734 | 62,410 | 85.80 | 57,055 | 78.44 | 14,863 | 20.43 | 12,612 | 17.34 | 1,057 | 1.45 | 1,968 | 2.71 | 507 | 0.70 |
| 60-69 | 4,014,948 | 86,596 | 215.68 | 81,276 | 202.43 | 15,792 | 39.33 | 13,102 | 32.63 | 1,006 | 2.51 | 3,376 | 8.41 | 384 | 0.96 |
| 70-79 | 2,526,898 | 107,670 | 426.10 | 103,003 | 407.63 | 15,721 | 62.21 | 12,052 | 47.69 | 888 | 3.51 | 2,952 | 11.68 | 295 | 1.17 |
| 80- | 871,841 | 54,638 | 626.70 | 52,790 | 605.50 | 6,023 | 69.08 | 4,579 | 52.52 | 203 | 2.33 | 404 | 4.63 | 147 | 1.69 |
| 2012 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-9 | 4,594,574 | 9,564 | 20.82 | 8,956 | 19.49 | 3,209 | 6.98 | 3,302 | 7.19 | 516 | 1.12 | 157 | 0.34 | 67 | 0.15 |
| 10-19 | 6,173,792 | 5,210 | 8.44 | 4,704 | 7.62 | 1,512 | 2.45 | 1,533 | 2.48 | 164 | 0.27 | 294 | 0.48 | 83 | 0.13 |
| 20-29 | 6,688,951 | 10,412 | 15.57 | 9,659 | 14.44 | 2,191 | 3.28 | 1,734 | 2.59 | 198 | 0.30 | 251 | 0.38 | 148 | 0.22 |
| 30-39 | 8,193,608 | 24,780 | 30.24 | 23,144 | 28.25 | 5,110 | 6.24 | 3,758 | 4.59 | 409 | 0.50 | 488 | 0.60 | 310 | 0.38 |
| 40-49 | 8,639,087 | 42,383 | 49.06 | 39,309 | 45.50 | 9,103 | 10.54 | 7,239 | 8.38 | 661 | 0.77 | 988 | 1.14 | 403 | 0.47 |
| 50-59 | 7,559,008 | 63,605 | 84.14 | 57,915 | 76.62 | 15,269 | 20.20 | 13,295 | 17.59 | 1,075 | 1.42 | 1,968 | 2.60 | 511 | 0.68 |
| 60-69 | 4,141,409 | 86,931 | 209.91 | 81,484 | 196.75 | 15,981 | 38.59 | 13,539 | 32.69 | 1,110 | 2.68 | 3,099 | 7.48 | 420 | 1.01 |
| 70-79 | 2,727,211 | 117,028 | 429.11 | 111,798 | 409.94 | 17,532 | 64.29 | 13,570 | 49.76 | 1,024 | 3.75 | 2,851 | 10.45 | 369 | 1.35 |
| 80- | 944,457 | 62,193 | 658.51 | 60,136 | 636.73 | 6,914 | 73.21 | 5,325 | 56.38 | 242 | 2.56 | 376 | 3.98 | 160 | 1.69 |
| 2013 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-9 | 4,558,479 | 9,394 | 20.61 | 8,737 | 19.17 | 3,423 | 7.51 | 3,281 | 7.20 | 597 | 1.31 | 139 | 0.30 | 78 | 0.17 |
| 10-19 | 5,982,225 | 4,860 | 8.12 | 4,439 | 7.42 | 1,381 | 2.31 | 1,459 | 2.44 | 154 | 0.26 | 281 | 0.47 | 85 | 0.14 |
| 20-29 | 6,664,531 | 9,283 | 13.93 | 8,513 | 12.77 | 1,999 | 3.00 | 1,657 | 2.49 | 226 | 0.34 | 291 | 0.44 | 123 | 0.18 |
| 30-39 | 8,073,843 | 22,408 | 27.75 | 20,882 | 25.86 | 4,615 | 5.72 | 3,507 | 4.34 | 385 | 0.48 | 456 | 0.56 | 271 | 0.34 |
| 40-49 | 8,752,108 | 39,768 | 45.44 | 36,849 | 42.10 | 8,664 | 9.90 | 7,069 | 8.08 | 642 | 0.73 | 912 | 1.04 | 423 | 0.48 |
| 50-59 | 7,808,447 | 62,629 | 80.21 | 56,959 | 72.95 | 14,909 | 19.09 | 13,280 | 17.01 | 1,064 | 1.36 | 1,874 | 2.40 | 530 | 0.68 |
| 60-69 | 4,294,057 | 83,524 | 194.51 | 78,158 | 182.01 | 15,179 | 35.35 | 13,325 | 31.03 | 1,133 | 2.64 | 2,827 | 6.58 | 400 | 0.93 |
| 70-79 | 2,833,556 | 120,107 | 423.87 | 114,945 | 405.66 | 17,438 | 61.54 | 13,789 | 48.66 | 1,058 | 3.73 | 2,741 | 9.67 | 360 | 1.27 |
| 80- | 1,022,374 | 66,391 | 649.38 | 64,175 | 627.71 | 7,317 | 71.57 | 5,757 | 56.31 | 274 | 2.68 | 388 | 3.80 | 149 | 1.46 |
| 2014 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-9 | 4,536,499 | 9,252 | 20.39 | 8,540 | 18.83 | 3,546 | 7.82 | 3,335 | 7.35 | 531 | 1.17 | 158 | 0.35 | 76 | 0.17 |
| 10-19 | 5,763,724 | 4,774 | 8.28 | 4,330 | 7.51 | 1,310 | 2.27 | 1,423 | 2.47 | 148 | 0.26 | 309 | 0.54 | 84 | 0.15 |
| 20-29 | 6,729,202 | 8,763 | 13.02 | 8,044 | 11.95 | 1,840 | 2.73 | 1,626 | 2.42 | 185 | 0.27 | 266 | 0.40 | 158 | 0.23 |
| 30-39 | 7,906,987 | 21,312 | 26.95 | 19,855 | 25.11 | 4,494 | 5.68 | 3,514 | 4.44 | 404 | 0.51 | 393 | 0.50 | 317 | 0.40 |
| 40-49 | 8,796,952 | 38,560 | 43.83 | 35,695 | 40.58 | 8,138 | 9.25 | 6,926 | 7.87 | 690 | 0.78 | 929 | 1.06 | 409 | 0.46 |
| 50-59 | 8,023,396 | 62,156 | 77.47 | 56,612 | 70.56 | 14,659 | 18.27 | 13,319 | 16.60 | 1,152 | 1.44 | 1,934 | 2.41 | 535 | 0.67 |
| 60-69 | 4,532,829 | 82,283 | 181.53 | 76,946 | 169.75 | 14,889 | 32.85 | 13,389 | 29.54 | 1,219 | 2.69 | 2,837 | 6.26 | 363 | 0.80 |
| 70-79 | 2,909,707 | 119,856 | 411.92 | 114,410 | 393.20 | 17,456 | 59.99 | 14,173 | 48.71 | 1,059 | 3.64 | 2,766 | 9.51 | 344 | 1.18 |
| 80- | 1,117,088 | 71,779 | 642.55 | 69,323 | 620.57 | 7,915 | 70.85 | 6,301 | 56.41 | 316 | 2.83 | 405 | 3.63 | 143 | 1.28 |
| 2015 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-9 | 4,542,771 | 9,301 | 20.47 | 8,606 | 18.94 | 3,474 | 7.65 | 3,140 | 6.91 | 446 | 0.98 | 159 | 0.35 | 59 | 0.13 |
| 10-19 | 5,490,976 | 4,446 | 8.10 | 4,026 | 7.33 | 1,260 | 2.29 | 1,333 | 2.43 | 164 | 0.30 | 315 | 0.57 | 78 | 0.14 |
| 20-29 | 6,781,715 | 9,027 | 13.31 | 8,285 | 12.22 | 1,868 | 2.75 | 1,685 | 2.48 | 206 | 0.30 | 271 | 0.40 | 145 | 0.21 |
| 30-39 | 7,785,185 | 21,370 | 27.45 | 19,908 | 25.57 | 4,534 | 5.82 | 3,472 | 4.46 | 446 | 0.57 | 417 | 0.54 | 299 | 0.38 |
| 40-49 | 8,732,931 | 37,388 | 42.81 | 34,606 | 39.63 | 7,919 | 9.07 | 6,816 | 7.80 | 683 | 0.78 | 976 | 1.12 | 372 | 0.43 |
| 50-59 | 8,134,255 | 61,424 | 75.51 | 55,852 | 68.66 | 14,318 | 17.60 | 13,429 | 16.51 | 1,155 | 1.42 | 2,087 | 2.57 | 552 | 0.68 |
| 60-69 | 4,879,788 | 85,781 | 175.79 | 80,075 | 164.10 | 15,295 | 31.34 | 14,470 | 29.65 | 1,203 | 2.47 | 3,001 | 6.15 | 416 | 0.85 |
| 70-79 | 2,926,917 | 122,548 | 418.69 | 117,073 | 399.99 | 17,077 | 58.34 | 14,933 | 51.02 | 1,133 | 3.87 | 2,852 | 9.74 | 359 | 1.23 |
| 80- | 1,215,619 | 78,880 | 648.89 | 76,283 | 627.52 | 8,335 | 68.57 | 7,057 | 58.05 | 346 | 2.85 | 458 | 3.77 | 155 | 1.28 |
| 2016 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-9 | 4,518,785 | 8,886 | 19.66 | 8,126 | 17.98 | 3,534 | 7.82 | 3,125 | 6.92 | 421 | 0.93 | 182 | 0.40 | 66 | 0.15 |
| 10-19 | 5,278,989 | 4,284 | 8.12 | 3,832 | 7.26 | 1,198 | 2.27 | 1,354 | 2.56 | 150 | 0.28 | 283 | 0.54 | 85 | 0.16 |
| 20-29 | 6,845,235 | 8,515 | 12.44 | 7,796 | 11.39 | 1,884 | 2.75 | 1,681 | 2.46 | 207 | 0.30 | 284 | 0.41 | 163 | 0.24 |
| 30-39 | 7,674,656 | 20,613 | 26.86 | 19,147 | 24.95 | 4,510 | 5.88 | 3,387 | 4.41 | 442 | 0.58 | 441 | 0.57 | 329 | 0.43 |
| 40-49 | 8,696,072 | 36,173 | 41.60 | 33,421 | 38.43 | 7,548 | 8.68 | 6,612 | 7.60 | 719 | 0.83 | 1,020 | 1.17 | 434 | 0.50 |
| 50-59 | 8,249,304 | 60,187 | 72.96 | 54,645 | 66.24 | 14,258 | 17.28 | 13,687 | 16.59 | 1,264 | 1.53 | 2,164 | 2.62 | 655 | 0.79 |
| 60-69 | 5,185,042 | 89,780 | 173.15 | 83,906 | 161.82 | 15,860 | 30.59 | 15,394 | 29.69 | 1,334 | 2.57 | 3,156 | 6.09 | 482 | 0.93 |
| 70-79 | 2,993,509 | 124,122 | 414.64 | 118,750 | 396.69 | 16,857 | 56.31 | 15,361 | 51.31 | 1,262 | 4.22 | 3,082 | 10.30 | 311 | 1.04 |
| 80- | 1,321,691 | 85,707 | 648.46 | 82,961 | 627.69 | 8,691 | 65.76 | 7,955 | 60.19 | 427 | 3.23 | 575 | 4.35 | 146 | 1.10 |
| 2017 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-9 | 4,397,222 | 8,370 | 19.03 | 7,594 | 17.27 | 3,290 | 7.48 | 2,773 | 6.31 | 282 | 0.64 | 159 | 0.36 | 72 | 0.16 |
| 10-19 | 5,126,764 | 3,951 | 7.71 | 3,577 | 6.98 | 1,124 | 2.19 | 1,276 | 2.49 | 165 | 0.32 | 188 | 0.37 | 85 | 0.17 |
| 20-29 | 6,892,655 | 7,911 | 11.48 | 7,181 | 10.42 | 1,663 | 2.41 | 1,608 | 2.33 | 205 | 0.30 | 262 | 0.38 | 141 | 0.20 |
| 30-39 | 7,534,136 | 19,030 | 25.26 | 17,672 | 23.46 | 4,127 | 5.48 | 3,273 | 4.34 | 429 | 0.57 | 436 | 0.58 | 286 | 0.38 |
| 40-49 | 8,628,547 | 35,401 | 41.03 | 32,750 | 37.96 | 7,468 | 8.65 | 6,622 | 7.67 | 795 | 0.92 | 1,031 | 1.19 | 460 | 0.53 |
| 50-59 | 8,327,327 | 58,180 | 69.87 | 52,850 | 63.47 | 13,422 | 16.12 | 13,586 | 16.31 | 1,299 | 1.56 | 2,169 | 2.60 | 677 | 0.81 |
| 60-69 | 5,471,136 | 87,755 | 160.40 | 81,872 | 149.64 | 15,311 | 27.99 | 16,037 | 29.31 | 1,441 | 2.63 | 3,380 | 6.18 | 561 | 1.03 |
| 70-79 | 3,133,874 | 122,432 | 390.67 | 117,153 | 373.83 | 16,647 | 53.12 | 16,139 | 51.50 | 1,289 | 4.11 | 3,186 | 10.17 | 305 | 0.97 |
| 80- | 1,429,224 | 92,242 | 645.40 | 89,272 | 624.62 | 8,968 | 62.75 | 8,796 | 61.54 | 500 | 3.50 | 679 | 4.75 | 121 | 0.85 |
| 2018 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0-9 | 4,274,182 | 7,587 | 17.75 | 6,915 | 16.18 | 2,829 | 6.62 | 2,517 | 5.89 | 312 | 0.73 | 152 | 0.36 | 62 | 0.15 |
| 10-19 | 4,972,655 | 3,603 | 7.25 | 3,248 | 6.53 | 920 | 1.85 | 1,174 | 2.36 | 156 | 0.31 | 191 | 0.38 | 80 | 0.16 |
| 20-29 | 6,905,433 | 7,840 | 11.35 | 7,148 | 10.35 | 1,691 | 2.45 | 1,613 | 2.34 | 207 | 0.30 | 251 | 0.36 | 147 | 0.21 |
| 30-39 | 7,454,262 | 18,667 | 25.04 | 17,311 | 23.22 | 4,010 | 5.38 | 3,138 | 4.21 | 404 | 0.54 | 419 | 0.56 | 278 | 0.37 |
| 40-49 | 8,441,160 | 34,062 | 40.35 | 31,475 | 37.29 | 7,092 | 8.40 | 6,636 | 7.86 | 740 | 0.88 | 1,065 | 1.26 | 445 | 0.53 |
| 50-59 | 8,473,898 | 56,429 | 66.59 | 51,183 | 60.40 | 12,800 | 15.11 | 13,584 | 16.03 | 1,348 | 1.59 | 2,230 | 2.63 | 654 | 0.77 |
| 60-69 | 5,763,020 | 87,848 | 152.43 | 81,716 | 141.79 | 15,403 | 26.73 | 17,003 | 29.50 | 1,587 | 2.75 | 3,446 | 5.98 | 498 | 0.86 |
| 70-79 | 3,251,119 | 124,294 | 382.31 | 118,621 | 364.86 | 16,764 | 51.56 | 17,281 | 53.15 | 1,371 | 4.22 | 3,197 | 9.83 | 330 | 1.02 |
| 80- | 1,536,253 | 100,444 | 653.82 | 97,100 | 632.06 | 9,840 | 64.05 | 10,186 | 66.30 | 583 | 3.79 | 785 | 5.11 | 128 | 0.83 |

Supplementary Table 6. Proportion of multicomponent blood transfusion by age

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Age group | | | | | | | | |
| 0-9 | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80- |
| 2009 | 7.87 | 2.99 | 3.54 | 6.24 | 11.79 | 22.45 | 43.73 | 64.94 | 67.17 |
| 2010 | 8.14 | 3.06 | 3.82 | 6.53 | 12.05 | 22.76 | 45.27 | 70.76 | 78.57 |
| 2011 | 8.36 | 3.12 | 3.71 | 6.58 | 11.69 | 22.02 | 43.78 | 68.94 | 79.06 |
| 2012 | 8.65 | 3.08 | 3.69 | 6.79 | 11.35 | 22.05 | 43.04 | 71.78 | 84.72 |
| 2013 | 8.91 | 3.01 | 3.42 | 6.26 | 10.80 | 20.99 | 39.66 | 69.64 | 83.14 |
| 2014 | 8.95 | 3.00 | 3.17 | 6.38 | 10.30 | 20.41 | 37.55 | 68.39 | 82.80 |
| 2015 | 8.69 | 3.00 | 3.22 | 6.48 | 10.15 | 19.93 | 36.45 | 69.05 | 82.84 |
| 2016 | 8.62 | 3.06 | 3.24 | 6.52 | 9.75 | 19.73 | 36.28 | 67.59 | 81.99 |
| 2017 | 8.20 | 3.00 | 2.93 | 6.21 | 9.75 | 18.99 | 34.27 | 65.87 | 80.88 |
| 2018 | 7.55 | 2.64 | 2.98 | 6.10 | 9.66 | 18.19 | 33.51 | 65.14 | 83.98 |
| **Annual change**  **(p-value\*)** | -0.006 (0.912) | -0.025 (0.085) | -0.093 (<.001) | -0.028 (0.246) | -0.297 (<.001) | -0.504 (<.001) | -1.380 (<.001) | -0.295 (0.273) | 1.070 (0.049) |

Supplementary table 7. Characteristics of blood transfused patients by clinical context

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Total cancer  (except hematologic cancer) | | | | Gastrointestinal cancer | | | | Other cancer | | | Hematologic disease | | | Child birth | | | | End stage renal disease | | | | Heart failure | | | Liver Disease | | | Cardiovascular disease | | | | Trauma | | | | Others | | |
| Patients number | 635,214 | | | | 368,730 | | | | 279,645 | | | 239,910 | | | 78,776 | | | | 114,739 | | | | 32,615 | | | 183,954 | | | 153,400 | | | | 460,046 | | | | 2,173,503 | | |
| *Demography* | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |
| Sex |  | |  | |  | |  | |  | |  |  |  | |  | |  | |  | |  | |  | |  |  |  | |  | |  | |  | |  | |  | |  |
| Male | 376,143 | | (59.2) | | 235,183 | | (63.8) | | 149,219 | | (53.4) | 104,210 | (43.4) | | 0 | | (0) | | 62,639 | | (54.6) | | 11,601 | | (35.6) | 87,430 | (47.5) | | 84,256 | | (54.9) | | 177,650 | | (38.6) | | 839,991 | | (38.6) |
| Female | 259,071 | | (40.8) | | 133,547 | | (36.2) | | 130,426 | | (46.6) | 135,700 | (56.6) | | 78,776 | | (100.0) | | 52,100 | | (45.4) | | 21,014 | | (64.4) | 96,524 | (52.5) | | 69,144 | | (45.1) | | 282,396 | | (61.4) | | 1,333,512 | | (61.4) |
| Age, mean ± SD | 64.4 | | ± 14.1 | | 66 | | ± 12.7 | | 62.2 | | ± 15.4 | 59.4 | ± 21.8 | | 32.3 | | ± 4.7 | | 64.9 | | ± 14.9 | | 76.9 | | ± 12.0 | 59.6 | ± 22.3 | | 71.2 | | ± 11.7 | | 69.8 | | ± 17.6 | | 62.5 | | ± 22.0 |
| 0-9 | 2,794 | | (0.4) | | 217 | | (0.1) | | 2,769 | | (1.0) | 7,023 | (2.9) | | 0 | | (0) | | 160 | | (0.1) | | 70 | | (0.2) | 6,773 | (3.7) | | 80 | | (0.1) | | 1,859 | | (0.4) | | 70,087 | | (3.2) |
| 10-19 | 2,939 | | (0.5) | | 181 | | (0.0) | | 2,785 | | (1.0) | 7,127 | (3.0) | | 795 | | (1.0) | | 390 | | (0.3) | | 39 | | (0.1) | 5,745 | (3.1) | | 79 | | (0.1) | | 6,099 | | (1.3) | | 25,055 | | (1.2) |
| 20-29 | 4,232 | | (0.7) | | 1,038 | | (0.3) | | 3,259 | | (1.2) | 9,125 | (3.8) | | 19,301 | | (24.5) | | 1,527 | | (1.3) | | 79 | | (0.2) | 6,919 | (3.8) | | 198 | | (0.1) | | 10,270 | | (2.2) | | 48,068 | | (2.2) |
| 30-39 | 17,823 | | (2.8) | | 7,099 | | (1.9) | | 11,056 | | (4.0) | 17,096 | (7.1) | | 54,113 | | (68.7) | | 4,687 | | (4.1) | | 231 | | (0.7) | 11,448 | (6.2) | | 1,053 | | (0.7) | | 14,091 | | (3.1) | | 106,915 | | (4.9) |
| 40-49 | 59,921 | | (9.4) | | 30,031 | | (8.1) | | 31,098 | | (11.1) | 33,948 | (14.2) | | 4,558 | | (5.8) | | 11,137 | | (9.7) | | 692 | | (2.1) | 20,649 | (11.2) | | 5,945 | | (3.9) | | 28,237 | | (6.1) | | 215,589 | | (9.9) |
| 50-59 | 126,800 | | (20.0) | | 74,559 | | (20.2) | | 55,033 | | (19.7) | 32,709 | (13.6) | | 9 | | (0.01) | | 20,579 | | (17.9) | | 1,612 | | (4.9) | 26,227 | (14.3) | | 17,667 | | (11.5) | | 45,684 | | (9.9) | | 289,803 | | (13.3) |
| 60-69 | 164,783 | | (25.9) | | 95,923 | | (26.0) | | 72,630 | | (26.0) | 37,428 | (15.6) | | 0 | | (0) | | 25,915 | | (22.6) | | 3,544 | | (10.9) | 31,916 | (17.3) | | 34,269 | | (22.3) | | 63,147 | | (13.7) | | 464,264 | | (21.4) |
| 70-79 | 175,777 | | (27.7) | | 105,556 | | (28.6) | | 73,903 | | (26.4) | 53,617 | (22.3) | | 0 | | (0) | | 31,459 | | (27.4) | | 10,556 | | (32.4) | 43,328 | (23.6) | | 55,400 | | (36.1) | | 136,114 | | (29.6) | | 614,454 | | (28.3) |
| 80- | 79,965 | | (12.6) | | 54,126 | | (14.7) | | 27,112 | | (9.7) | 41,837 | (17.4) | | 0 | | (0) | | 18,885 | | (16.5) | | 15,792 | | (48.4) | 30,949 | (16.8) | | 38,669 | | (25.2) | | 154,545 | | (33.6) | | 339,268 | | (15.6) |
| *Transfusion component* | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |
| RBC | 589,799 | | (92.9) | | 336,740 | | (91.3) | | 264,455 | | (94.6) | 222,766 | (92.9) | | 75,038 | | (95.3) | | 112,225 | | (97.8) | | 30,775 | | (94.4) | 166,948 | (90.8) | | 144,306 | | (94.1) | | 446,491 | | (97.1) | | 2,064,676 | | (95.0) |
| FFP | 166,323 | | (26.2) | | 114,024 | | (30.9) | | 53,563 | | (19.2) | 35,879 | (15.0) | | 11,819 | | (15.0) | | 13,595 | | (11.8) | | 4,440 | | (13.6) | 35,269 | (19.2) | | 31,310 | | (20.4) | | 68,191 | | (14.8) | | 368,408 | | (16.9) |
| PLT | 146,030 | | (23.0) | | 77,749 | | (21.1) | | 69,835 | | (25.0) | 88,930 | (37.1) | | 6,111 | | (7.8) | | 10,822 | | (9.4) | | 3,042 | | (9.3) | 88,344 | (48.0) | | 24,166 | | (15.8) | | 40,703 | | (8.8) | | 270,156 | | (12.4) |
| CRP | 7,528 | | (1.2) | | 5,203 | | (1.4) | | 2,331 | | (0.8) | 6,214 | (2.6) | | 575 | | (0.7) | | 1,559 | | (1.4) | | 408 | | (1.3) | 6,210 | (3.4) | | 4,153 | | (2.7) | | 2,080 | | (0.5) | | 32,069 | | (1.5) |
| Autologus transfusion | 4,082 | | (0.6) | | 1,843 | | (0.5) | | 2,242 | | (0.8) | 235 | (0.1) | | 313 | | (0.4) | | 68 | | (0.1) | | 686 | | (2.1) | 231 | (0.1) | | 27,593 | | (18.0) | | 1,848 | | (0.4) | | 85065 | | (3.9) |
| Others | 2,256 | | (0.4) | | 1,659 | | (0.4) | | 599 | | (0.2) | 5,763 | (2.4) | | 861 | | (1.1) | | 3,191 | | (2.8) | | 51 | | (0.2) | 5,639 | (3.1) | | 535 | | (0.3) | | 698 | | (0.2) | | 11,464 | | (0.5) |
| Multicomponent transfusion |  | |  | |  | |  | |  | |  |  |  | |  | |  | |  | |  | |  | |  |  |  | |  | |  | |  | |  | |  | |  |
| Yes† | 190,561 | | (30.0) | | 111,449 | | (30.2) | | 80,757 | | (28.9) | 77,423 | (21.0) | | 12,561 | | (15.9) | | 16,421 | | (14.3) | | 4,152 | | (12.7) | 76,457 | (41.6) | | 34,522 | | (22.5) | | 72,345 | | (15.7) | | 388,577 | | (17.9) |
| PLT+CRP | 87 | | (0.05) | | 55 | | (0.05) | | 32 | | (0.04) | 194 | (0.3) | | 10 | | (0.1) | | 14 | | (0.1) | | 4 | | (0.1) | 194 | (0.3) | | 27 | | (0.1) | | 5 | | (0.01) | | 316 | | (0.1) |
| FFP+CRP | 302 | | (0.2) | | 206 | | (0.2) | | 96 | | (0.1) | 178 | (0.2) | | 7 | | (0.1) | | 42 | | (0.3) | | 10 | | (0.2) | 178 | (0.2) | | 22 | | (0.1) | | 32 | | (0.04) | | 594 | | (0.2) |
| FFP+PLT | 9,430 | | (4.9) | | 7,700 | | (6.9) | | 1,769 | | (2.2) | 1,884 | (2.4) | | 101 | | (0.8) | | 279 | | (1.7) | | 177 | | (4.3) | 1,879 | (2.5) | | 521 | | (1.5) | | 1,570 | | (2.2) | | 14,201 | | (3.7) |
| FFP+PLT+CRP | 211 | | (0.1) | | 138 | | (0.1) | | 73 | | (0.1) | 164 | (0.2) | | 1 | | (0.01) | | 9 | | (0.1) | | 3 | | (0.1) | 164 | (0.2) | | 25 | | (0.1) | | 13 | | (0.02) | | 478 | | (0.1) |
| RBC+CRP | 331 | | (0.2) | | 189 | | (0.2) | | 142 | | (0.2) | 410 | (0.5) | | 19 | | (0.2) | | 518 | | (3.2) | | 15 | | (0.4) | 408 | (0.5) | | 111 | | (0.3) | | 88 | | (0.1) | | 1,206 | | (0.3) |
| RBC+PLT | 69,418 | | (36.4) | | 28,407 | | (25.5) | | 41,361 | | (51.2) | 61,912 | (80.0) | | 1,172 | | (9.3) | | 5,428 | | (33.1) | | 1,027 | | (24.7) | 61,515 | (80.5) | | 6,262 | | (18.1) | | 11,916 | | (16.5) | | 87,234 | | (22.4) |
| RBC+PLT+CRP | 324 | | (0.2) | | 173 | | (0.2) | | 151 | | (0.2) | 1,406 | (1.8) | | 9 | | (0.1) | | 140 | | (0.9) | | 20 | | (0.5) | 1,406 | (1.8) | | 293 | | (0.8) | | 35 | | (0.05) | | 2,334 | | (0.6) |
| RBC+FFP | 87,509 | | (45.9) | | 57,982 | | (52.0) | | 29,885 | | (37.0) | 7,200 | (9.3) | | 8,775 | | (69.9) | | 7,143 | | (43.5) | | 1,686 | | (40.6) | 6,666 | (8.7) | | 13,013 | | (37.7) | | 39,062 | | (54.0) | | 181,416 | | (46.7) |
| RBC+FFP+CRP | 1,061 | | (0.6) | | 719 | | (0.6) | | 343 | | (0.4) | 365 | (0.5) | | 122 | | (1.0) | | 285 | | (1.7) | | 33 | | (0.8) | 365 | (0.5) | | 396 | | (1.1) | | 305 | | (0.4) | | 2,712 | | (0.7) |
| RBC+FFP+PLT | 43,893 | | (23.0) | | 28,420 | | (25.5) | | 15,633 | | (19.4) | 22,814 | (29.5) | | 1,996 | | (15.9) | | 3,561 | | (21.7) | | 1,045 | | (25.2) | 22,762 | (29.8) | | 11,843 | | (34.3) | | 20,444 | | (28.3) | | 107,467 | | (27.7) |
| RBC+FFP+PLT+CRP | 5,125 | | (2.7) | | 3,689 | | (3.3) | | 1,440 | | (1.8) | 3,790 | (4.9) | | 398 | | (3.2) | | 415 | | (2.5) | | 322 | | (7.8) | 3,789 | (5.0) | | 3,278 | | (9.5) | | 1,553 | | (2.1) | | 24,212 | | (6.2) |

Supplementary table 8. Proportion of blood transfusion by clinical context

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Total | Gastrointestinal cancer | | Other cancer | | | Total cancer | | | Child birth | | | End stage renal disease | | | Hear failure | | | | Hematologic disease | | Liver Disease | | | Trauma | | | | Cardiovascular disease | | Others | | |
| N | N | % | N | | % | N | | % | N | | % | N | | % | N | | % | | N | % | N | | % | N | | % | | N | % | N | | % |
| 2009 | 376,981 | 44,588 | 11.83 | 30,189 | | 8.01 | 74,219 | | 19.69 | 7,769 | | 2.06 | 14,532 | | 3.85 | 2,387 | | 0.63 | | 23,558 | 6.25 | 11,100 | | 2.94 | 37,580 | | 9.97 | | 15,007 | 3.98 | 214,517 | | 56.90 |
| 2010 | 401,426 | 46,017 | 11.46 | 31,618 | | 7.88 | 77,009 | | 19.18 | 9,322 | | 2.32 | 15,287 | | 3.81 | 2,621 | | 0.65 | | 25,184 | 6.27 | 11,045 | | 2.75 | 41,641 | | 10.37 | | 15,481 | 3.86 | 229,424 | | 57.15 |
| 2011 | 406,080 | 45,463 | 11.20 | 32,814 | | 8.08 | 77,612 | | 19.11 | 9,390 | | 2.31 | 15,766 | | 3.88 | 2,796 | | 0.69 | | 26,490 | 6.52 | 11,184 | | 2.75 | 42,807 | | 10.54 | | 14,953 | 3.68 | 232,220 | | 57.19 |
| 2012 | 422,106 | 45,754 | 10.84 | 33,514 | | 7.94 | 78,568 | | 18.61 | 9,150 | | 2.17 | 16,025 | | 3.80 | 2,944 | | 0.70 | | 28,823 | 6.83 | 11,181 | | 2.65 | 46,194 | | 10.94 | | 15,754 | 3.73 | 242,844 | | 57.53 |
| 2013 | 418,364 | 44,579 | 10.66 | 33,336 | | 7.97 | 77,189 | | 18.45 | 7,285 | | 1.74 | 15,796 | | 3.78 | 2,984 | | 0.71 | | 30,405 | 7.27 | 11,124 | | 2.66 | 47,219 | | 11.29 | | 14,992 | 3.58 | 242,174 | | 57.89 |
| 2014 | 418,735 | 43,215 | 10.32 | 33,348 | | 7.96 | 75,835 | | 18.11 | 7,080 | | 1.69 | 15,856 | | 3.79 | 3,252 | | 0.78 | | 32,327 | 7.72 | 11,213 | | 2.68 | 47,789 | | 11.41 | | 15,177 | 3.62 | 243,293 | | 58.10 |
| 2015 | 430,165 | 42,549 | 9.89 | 33,524 | | 7.79 | 75,337 | | 17.51 | 7,751 | | 1.80 | 17,051 | | 3.96 | 3,317 | | 0.77 | | 34,061 | 7.92 | 11,529 | | 2.68 | 49,202 | | 11.44 | | 15,344 | 3.57 | 251,228 | | 58.40 |
| 2016 | 438,267 | 42,650 | 9.73 | 35,384 | | 8.07 | 77,103 | | 17.59 | 7,223 | | 1.65 | 16,705 | | 3.81 | 3,696 | | 0.84 | | 35,458 | 8.09 | 11,497 | | 2.62 | 49,116 | | 11.21 | | 15,818 | 3.61 | 257,528 | | 58.76 |
| 2017 | 435,272 | 42,256 | 9.71 | 35,350 | | 8.12 | 76,741 | | 17.63 | 6,239 | | 1.43 | 16,189 | | 3.72 | 3,915 | | 0.90 | | 36,403 | 8.36 | 11,952 | | 2.75 | 50,166 | | 11.53 | | 15,948 | 3.66 | 255,260 | | 58.64 |
| 2018 | 440,774 | 41,941 | 9.52 | 35,172 | | 7.98 | 76,365 | | 17.33 | 6,009 | | 1.36 | 16,442 | | 3.73 | 4,555 | | 1.03 | | 37,973 | 8.62 | 11,945 | | 2.71 | 51,322 | | 11.64 | | 15,853 | 3.60 | 260,073 | | 59.00 |
| Annual change  (*p*-value\*) | | -0.264 (<.001) | | | 0.006 (0.614) | | | -0.263 (<.001) | | | -0.103 (<.001) | | | -0.010 (0.251) | | | 0.039 (<.001) | | 0.288 (<.001) | | | | -0.016 (0.106) | | | 0.170 (<.001) | | -0.034 (0.009) | | | |  | |

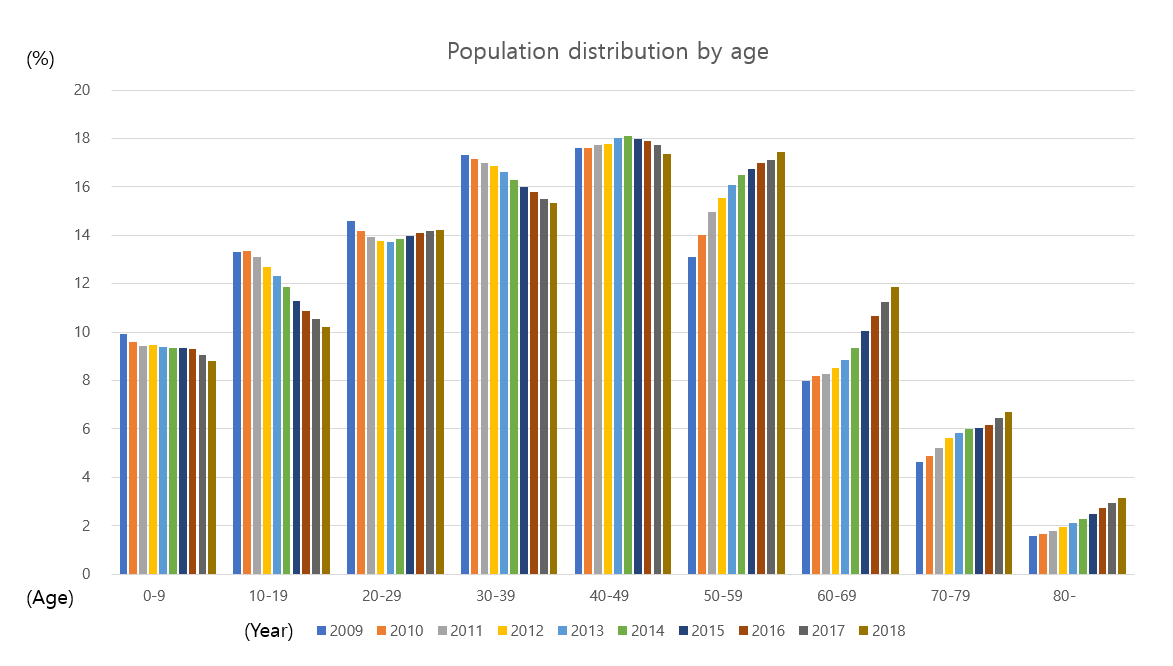
Supplementary table 9. Proportion of blood transfusion component by disease

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Gastrointestinal cancer | | RBC | | | | | FFP | | | | PLT | | | | | | CRP | | | | | Autologous transfusion | | | | |
| N | | N | | | % | | N | | % | | N | | | % | | | N | | | % | | N | | | % | |
| 2009 | 44,588 | | 39,679 | | | 89.0 | | 13,235 | | 29.68 | | 8,115 | | | 18.20 | | | 374 | | | 0.84 | | 170 | | | 0.38 | |
| 2010 | 46,017 | | 41,058 | | | 89.2 | | 13,466 | | 29.26 | | 8,808 | | | 19.14 | | | 444 | | | 0.96 | | 177 | | | 0.38 | |
| 2011 | 45,463 | | 40,368 | | | 88.8 | | 13,190 | | 29.01 | | 9,159 | | | 20.15 | | | 491 | | | 1.08 | | 157 | | | 0.35 | |
| 2012 | 45,754 | | 40,444 | | | 88.4 | | 13,406 | | 29.30 | | 9,632 | | | 21.05 | | | 592 | | | 1.29 | | 169 | | | 0.37 | |
| 2013 | 44,579 | | 39,282 | | | 88.1 | | 12,628 | | 28.33 | | 9,190 | | | 20.62 | | | 541 | | | 1.21 | | 171 | | | 0.38 | |
| 2014 | 43,215 | | 38,218 | | | 88.4 | | 11,829 | | 27.37 | | 8,661 | | | 20.04 | | | 536 | | | 1.24 | | 171 | | | 0.40 | |
| 2015 | 42,549 | | 37,702 | | | 88.6 | | 11,237 | | 26.41 | | 8,446 | | | 19.85 | | | 473 | | | 1.11 | | 162 | | | 0.38 | |
| 2016 | 42,650 | | 37,704 | | | 88.4 | | 11,179 | | 26.21 | | 8,735 | | | 20.48 | | | 500 | | | 1.17 | | 147 | | | 0.34 | |
| 2017 | 42,256 | | 37,665 | | | 89.1 | | 10,534 | | 24.93 | | 8,728 | | | 20.66 | | | 532 | | | 1.26 | | 187 | | | 0.44 | |
| 2018 | 41,941 | | 37,442 | | | 89.3 | | 9,974 | | 23.78 | | 8,841 | | | 21.08 | | | 483 | | | 1.15 | | 221 | | | 0.53 | |
| Year | Hematologic disease | RBC | | | | | FFP | | | | PLT | | | | | | CRP | | | | | Autologus transfusion | | | | |
| N | N | | | % | | N | | % | | N | | | | | % | N | | | % | | N | | % | | |
| 2009 | 23,558 | 21,681 | | | 92.0 | | 3,334 | | 14.2 | | 9,421 | | | | | 40.0 | 363 | | | 1.54 | | 31 | | 0.13 | | |
| 2010 | 25,184 | 23,081 | | | 91.6 | | 3,814 | | 15.1 | | 10,387 | | | | | 41.2 | 471 | | | 1.87 | | 40 | | 0.16 | | |
| 2011 | 26,490 | 24,157 | | | 91.2 | | 3,695 | | 13.9 | | 10,764 | | | | | 40.6 | 549 | | | 2.07 | | 30 | | 0.11 | | |
| 2012 | 28,823 | 26,255 | | | 91.1 | | 3,915 | | 12.9 | | 11,448 | | | | | 39.7 | 535 | | | 1.86 | | 43 | | 0.15 | | |
| 2013 | 30,405 | 27,875 | | | 91.7 | | 3,728 | | 12.5 | | 11,554 | | | | | 38.0 | 606 | | | 1.99 | | 21 | | 0.07 | | |
| 2014 | 32,327 | 29,694 | | | 91.9 | | 3,798 | | 12.3 | | 12,222 | | | | | 37.8 | 688 | | | 2.13 | | 13 | | 0.04 | | |
| 2015 | 34,061 | 31,275 | | | 91.8 | | 3,964 | | 11.8 | | 13,064 | | | | | 38.4 | 738 | | | 2.17 | | 18 | | 0.05 | | |
| 2016 | 35,458 | 32,565 | | | 91.8 | | 4,034 | | 11.0 | | 13,732 | | | | | 38.7 | 717 | | | 2.02 | | 7 | | 0.02 | | |
| 2017 | 36,403 | 33,336 | | | 91.6 | | 3,901 | | 10.5 | | 14,247 | | | | | 39.1 | 796 | | | 2.19 | | 11 | | 0.03 | | |
| 2018 | 37,973 | 34,839 | | | 91.7 | | 3,840 | | 10.1 | | 14,734 | | | | | 38.8 | 760 | | | 2.00 | | 14 | | 0.04 | | |
| Year | Trauma | RBCs | | | | | FFP | | | | PLTs | | | | | | CRPs | | | | | Autologus transfusion | | | | |
| N | N | | | % | | N | | % | | N | | | % | | | N | | | % | | N | | | % | |
| 2009 | 37,580 | 36,660 | | | 97.6 | | 4,962 | | 13.2 | | 2,638 | | | 7.0 | | | 110 | | | 0.29 | | 208 | | | 0.55 | |
| 2010 | 41,641 | 40,548 | | | 97.4 | | 5,903 | | 14.2 | | 3,260 | | | 7.8 | | | 141 | | | 0.34 | | 328 | | | 0.79 | |
| 2011 | 42,807 | 41,583 | | | 97.1 | | 6,091 | | 14.2 | | 3,421 | | | 8.0 | | | 126 | | | 0.29 | | 241 | | | 0.56 | |
| 2012 | 46,194 | 44,670 | | | 96.7 | | 6,829 | | 14.7 | | 3,831 | | | 8.3 | | | 137 | | | 0.30 | | 180 | | | 0.39 | |
| 2013 | 47,219 | 45,722 | | | 96.8 | | 6,798 | | 14.5 | | 4,020 | | | 8.5 | | | 134 | | | 0.28 | | 156 | | | 0.33 | |
| 2014 | 47,789 | 46,274 | | | 96.8 | | 6,856 | | 14.8 | | 3,945 | | | 8.3 | | | 146 | | | 0.31 | | 145 | | | 0.30 | |
| 2015 | 49,202 | 47,700 | | | 96.9 | | 7,089 | | 13.6 | | 4,188 | | | 8.5 | | | 144 | | | 0.29 | | 139 | | | 0.28 | |
| 2016 | 49,116 | 47,698 | | | 97.1 | | 6,669 | | 13.8 | | 4,118 | | | 8.4 | | | 233 | | | 0.47 | | 130 | | | 0.26 | |
| 2017 | 50,166 | 48,669 | | | 97.0 | | 6,799 | | 13.7 | | 4,495 | | | 9.0 | | | 327 | | | 0.65 | | 138 | | | 0.28 | |
| 2018 | 51,322 | 49,729 | | | 96.9 | | 6,875 | | 13.4 | | 4,712 | | | 9.2 | | | 348 | | | 0.68 | | 111 | | | 0.22 | |
| Year | Child birth | RBCs | | | | | FFP | | | | PLTs | | | | | | CRPs | | | | | Autologus transfusion | | | | |
| N | N | | % | | | N | | % | | N | | % | | | | N | | % | | | N | | % | | |
| 2009 | 7,769 | 7,451 | | 95.9 | | | 923 | | 11.9 | | 539 | | 6.9 | | | | 34 | | 0.44 | | | 19 | | 0.24 | | |
| 2010 | 9,322 | 8,955 | | 96.1 | | | 1,130 | | 12.1 | | 639 | | 6.9 | | | | 38 | | 0.41 | | | 31 | | 0.33 | | |
| 2011 | 9,390 | 8,953 | | 95.3 | | | 1,168 | | 12.4 | | 703 | | 7.5 | | | | 68 | | 0.72 | | | 25 | | 0.27 | | |
| 2012 | 9,150 | 8,724 | | 95.3 | | | 1,284 | | 11.6 | | 714 | | 7.8 | | | | 56 | | 0.61 | | | 33 | | 0.36 | | |
| 2013 | 7,285 | 6,918 | | 95.0 | | | 1,058 | | 14.9 | | 593 | | 8.1 | | | | 48 | | 0.66 | | | 21 | | 0.29 | | |
| 2014 | 7,080 | 6,733 | | 95.1 | | | 1,086 | | 17.7 | | 593 | | 8.4 | | | | 58 | | 0.82 | | | 16 | | 0.23 | | |
| 2015 | 7,751 | 7,354 | | 94.9 | | | 1,254 | | 15.4 | | 654 | | 8.4 | | | | 60 | | 0.77 | | | 9 | | 0.12 | | |
| 2016 | 7,223 | 6,767 | | 93.7 | | | 1,195 | | 15.2 | | 652 | | 9.0 | | | | 58 | | 0.80 | | | 23 | | 0.32 | | |
| 2017 | 6,239 | 5,851 | | 93.8 | | | 1,101 | | 16.7 | | 557 | | 8.9 | | | | 57 | | 0.91 | | | 57 | | 0.91 | | |
| 2018 | 6,009 | 5,625 | | 93.6 | | | 1,040 | | 17.3 | | 498 | | 8.3 | | | | 55 | | 0.92 | | | 62 | | 1.03 | | |

Supplementary Table 10. Blood transfusion compared to the hospitalized patients by type of medical institution

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | Senior general hospitals | | | General hospitals | | | Hospitals | | | Long term care hospital | | | Clinics | | | others  (dental hospital, health care center, oriental medicine hospital) | | |
| Total\* | N | % | Total\* | N | % | Total\* | N | % | Total\* | N | % | Total\* | N | % | Total\* | N | % |
| 2009 | 1,207,000 | 153,223 | 12.7 | 1,723,000 | 156,442 | 9.1 | 1,542,000 | 75,756 | 6.3 | 157,000 | 3,692 | 0.31 | 1,385,000 | 8,525 | 0.71 | 70,000 | 146 | 0.01 |
| 2010 | 1,245,000 | 158,482 | 12.7 | 1,900,000 | 166,953 | 8.8 | 1,709,000 | 84,362 | 6.8 | 174,000 | 4,028 | 0.32 | 1,435,000 | 9,002 | 0.72 | 86,000 | 147 | 0.01 |
| 2011 | 1,233,000 | 157,988 | 12.8 | 1,929,000 | 172,560 | 8.9 | 1,881,000 | 85,233 | 6.9 | 196,000 | 3,823 | 0.31 | 1,454,000 | 9,000 | 0.73 | 96,000 | 174 | 0.01 |
| 2012 | 1,287,000 | 166,457 | 12.9 | 2,005,000 | 176,169 | 8.8 | 2,074,000 | 90,530 | 7.0 | 229,000 | 4,425 | 0.34 | 1,445,000 | 8,084 | 0.63 | 110,000 | 153 | 0.01 |
| 2013 | 1,335,000 | 161,907 | 12.1 | 2,117,000 | 177,712 | 8.4 | 2,149,000 | 90,148 | 6.8 | 260,000 | 4,783 | 0.36 | 1,386,000 | 7,437 | 0.56 | 123,000 | 131 | 0.01 |
| 2014 | 1,518,000 | 161,268 | 10.6 | 2,421,000 | 180,786 | 7.5 | 2,308,000 | 88,011 | 5.8 | 292,000 | 5,232 | 0.34 | 1,342,000 | 7,166 | 0.47 | 128,000 | 171 | 0.01 |
| 2015 | 1,308,000 | 168,218 | 12.9 | 2,198,000 | 183,757 | 8.4 | 2,343,000 | 90,274 | 6.9 | 315,000 | 5,772 | 0.44 | 1,325,000 | 6,708 | 0.51 | 148,000 | 129 | 0.01 |
| 2016 | 1,633,000 | 172,377 | 10.6 | 2,777,000 | 187,955 | 6.8 | 2,381,000 | 90,941 | 5.6 | 338,000 | 5,874 | 0.36 | 1,296,000 | 5,943 | 0.36 | 160,000 | 115 | 0.01 |
| 2017 | 1,533,000 | 177,669 | 11.6 | 2,782,000 | 186,173 | 6.7 | 2,271,000 | 85,977 | 5.6 | 374,000 | 6,254 | 0.41 | 1,254,000 | 5,285 | 0.34 | 175,000 | 164 | 0.01 |
| 2018 | 1,720,000 | 177,680 | 10.3 | 2,879,000 | 193,058 | 6.7 | 2,356,000 | 84,711 | 4.9 | 394,000 | 6,972 | 0.41 | 1,236,000 | 4,953 | 0.29 | 175,000 | 229 | 0.01 |

Supplementary Figure 1



|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| total population | 48613534 | 48906795 | 49299165 | 49662097 | 49989620 | 50316384 | 50490157 | 50763283 | 50940885 | 51071982 |
| 0-9 (%) | 9.91 | 9.59 | 9.45 | 9.45 | 9.38 | 9.33 | 9.34 | 9.30 | 9.05 | 8.79 |
| 10-19 (%) | 13.33 | 13.34 | 13.10 | 12.70 | 12.31 | 11.86 | 11.30 | 10.86 | 10.55 | 10.23 |
| 20-29 (%) | 14.57 | 14.18 | 13.93 | 13.76 | 13.71 | 13.84 | 13.95 | 14.08 | 14.18 | 14.20 |
| 30-39 (%) | 17.30 | 17.17 | 17.00 | 16.85 | 16.61 | 16.26 | 16.01 | 15.79 | 15.50 | 15.33 |
| 40-49 (%) | 17.61 | 17.61 | 17.72 | 17.77 | 18.00 | 18.10 | 17.96 | 17.89 | 17.75 | 17.36 |
| 50-59 (%) | 13.09 | 13.99 | 14.96 | 15.55 | 16.06 | 16.50 | 16.73 | 16.97 | 17.13 | 17.43 |
| 60-69 (%) | 7.99 | 8.18 | 8.26 | 8.52 | 8.83 | 9.32 | 10.04 | 10.67 | 11.25 | 11.85 |
| 70-79 (%) | 4.64 | 4.88 | 5.20 | 5.61 | 5.83 | 5.99 | 6.02 | 6.16 | 6.45 | 6.69 |
| 80- (%) | 1.56 | 1.67 | 1.79 | 1.94 | 2.10 | 2.30 | 2.50 | 2.72 | 2.94 | 3.16 |

Supplementary Table 11. Transfusion code generated by the Korean Health Insurance Corporation and diseased code according to the ICD-10 codes

|  |  |
| --- | --- |
| Category | Code |
| Red blood cell (RBC) | X2021, X2022, X2031, X2032, X2091, X2092, X2111, X2112, X2131, X2132, X2512, X2515 |
| Fresh frozen plasma (FFP) | X2011, X2012, X2041, X2042, X2051, X2052, X2071, X2072, X2141, X2142, X2504, X2514 |
| Platelet (PLT) | X2081, X2082, X2121, X2122, X2501, X2511, X2513 |
| Cryoprecipitate (CRP) | X2061, X2062 |
| Whole blood | X1001, X1002 |
| Autologous whole blood | X6001, X6002 |
| Autologous PLT | X6005 |
| Autologous RBC | X6006 |
| Cancer | C00-C97, except C81-C96 |
| Gastrointestinal cancer | C15-C26 |
| End-stage renal disease | N18.5 |
| Liver disease | K70-K77 |
| Hematological disease | D50-D77, C81-C96 |
| Trauma | S00-S99, T00-T14, V01-V99 |
| Child birth | O60-O75, O80-O84 |
| Cardiovascular disease | I20-I25, I70.0, I70.2, I70.8, I70.9, I63 |
| Heart failure | I50 |