**Supplemental Exercise: Effect of denominator metric on Antimicrobial Use (AU) Estimates**

1. In this hypothetical scenario, assume all 7 hospitals in the study had the same AU rate of 900 days of therapy (DOT) per 1000 patient days. Based on their denominator estimates of patient days from the study, this would calculate to days of therapy as follows:

$$DOT=\left(\frac{900}{1000}\right)\*patient days$$

|  |  |  |  |
| --- | --- | --- | --- |
| Hospital | DOT/1000 patient days | Patient Days (from study) | DOT |
| 1C | 900 | 129524 | 116572 |
| 2C | 900 | 212896 | 191606 |
| 3C | 900 | 96439 | 86795 |
| 4C | 900 | 84555 | 76100 |
| 5C | 900 | 171001 | 153901 |
| 6A | 900 | 462920 | 416628 |
| 7A | 900 | 543616 | 489254 |

1. Now we can use the DOT estimate from above and the days present estimate from the study to calculate DOT/1000 days present AU estimates:

|  |  |  |  |
| --- | --- | --- | --- |
| Hospital | DOT | Days Present (from study) | DOT/1000 days present |
| 1C | 116572 | 182967 | 637 |
| 2C | 191606 | 293839 | 652 |
| 3C | 86795 | 131426 | 660 |
| 4C | 76100 | 113417 | 671 |
| 5C | 153901 | 223877 | 687 |
| 6A | 416628 | 576412 | 723 |
| 7A | 489254 | 671546 | 729 |

1. Despite having identical 900 DOT/1000 patient days estimates in the beginning of the exercise, the AU rates using the days present denominator varied by almost 100 among the 7 hospitals. For all hospitals, the AU estimate using days present was lower than the estimate using patient days, but some experienced a greater decline when moving from patient days to days present (e.g. 1C experienced almost 29% decline, while 7A experienced a 19% decline).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Hospital | DOT/1000 patient days | DOT/1000 days present | Difference | % difference (difference/900)% |
| 1C | 900 | 637 | 263 | 29% |
| 2C | 900 | 652 | 248 | 28% |
| 3C | 900 | 660 | 240 | 27% |
| 4C | 900 | 671 | 229 | 25% |
| 5C | 900 | 687 | 213 | 24% |
| 6A | 900 | 723 | 177 | 20% |
| 7A | 900 | 729 | 171 | 19% |