

Tools of the Trade:

AVERAGE LENGTH of STAY in HOSPITALS

The average length of stay in hospitals is a statistical calculation often used for health planning purposes. There is current belief that the type of reimbursement system or health insurance plan now plays a more significant role in the patient length of stay in hospitals. Therefore, with increased interest in the average length of a hospital stay, a review of this calculation in a "Tools of the Trade" article seems very appropriate.

There are two methods of calculating average length of stay. The formula for each method follows:

METHOD 1: (TOTAL DISCHARGE DAYS / TOTAL DISCHARGES) = AVERAGE LENGTH OF STAY (IN DAYS)

METHOD 2: (TOTAL INPATIENT DAYS OF CARE / TOTAL ADMISSIONS) = AVERAGE LENGTH OF STAY (IN DAYS)

Below are the definitions for each of the four data items included in the above calculations:

TOTAL DISCHARGE DAYS - The sum of the number of days spent in the hospital for each inpatient who was discharged during the time period examined regardless of when the patient was admitted. For instance, if 5 persons were discharged after 10 days in the hospital and 3 were discharged after 7 days in the hospital, the number of discharge days for these patients would be 71 days ($5 \times 10 = 50$, $3 \times 7 = 21$, $50 + 21 = 71$).

TOTAL DISCHARGES - The number of inpatients released from the hospital during the time period examined. This figure includes deaths. Births are excluded unless the infant was transferred to the hospital's neonatal intensive care unit prior to discharge.

TOTAL INPATIENT DAYS OF CARE - Sum of each daily inpatient census for the time period examined. For instance, if the time period examined was a week, and the daily inpatient census was as follows: Day 1=30, Day 2=28, Day 3=26, Day 4=35, Day 5=35, Day 6=25, Day 7=25, then the total inpatient days of care for that week would be $30 + 28 + 26 + 35 + 35 + 25 + 25$ or 204 total inpatient days. As opposed to discharge days which count all days the patient was in the facility regardless of the date of admission, inpatient days of care are days of service for those patients admitted during a specified time period.

TOTAL ADMISSIONS - The total number of individuals formally accepted into inpatient units of the hospital during the time period examined. Births are excluded from this figure unless the infant was admitted to the hospital's neonatal intensive care unit.

Because of the different data items used to calculate average length of stay in the two methods, it is important to note that there may be significantly different results depending on the type of facility for which average length of stay is being calculated. In a general acute care hospital

where the number of admissions and discharges during any given time period are fairly similar, the results from these two different calculation methods will also be similar. The following example of actual data for an acute care general hospital demonstrates this:

METHOD 1: (DISCHARGE DAYS 48,579) / (DISCHARGES 6,246) = 7.8 DAYS

METHOD 2: (INPATIENT DAYS OF CARE 48,090) / (ADMISSIONS 6,206) = 7.7 DAYS

As you can see, the results are almost the same and either calculation method may be used, but it should always be noted which one is being used.

When calculating average length of stay for a hospital with a large proportion of long-stay patients (e.g. a state psychiatric hospital), these methods will produce very different results as demonstrated in the following example of actual data from such a hospital.

METHOD 1: (DISCHARGE DAYS 393,552) / (DISCHARGES 534) = 737.0 DAYS

METHOD 2: (INPATIENT DAYS OF CARE 214,371) / (ADMISSIONS 558) = 384.2 DAYS

When analyzing the results, Method 2 does not reflect patients that remain in the facility over a long period of time which is often the case in long term care hospitals. This is due to the fact that Method 2 only counts inpatient days of care and admissions for a specified time period. However, Method 1 does reflect long stay patients because discharge days include all days the patient was in the facility regardless if the date of admission was months or even years prior to the time period being examined. In the case of a hospital with a large proportion of long stay patients, it would not be appropriate to use Method 2 unless you limited your calculation to units of the facility that did not have long stay patients and noted such exclusions.

How average length of stay is calculated may be contingent upon what data are available. For instance, in the Annual Hospital Questionnaire, discharges and discharge days are available for the entire facility, but not collected on a unit specific basis. To show average length of stay by specific inpatient unit, such as medical/surgical, obstetric, etc., inpatient days of care and admissions must be used (Method 2). In general acute care and other short stay hospitals, using this method is appropriate and will provide a fairly accurate result for all but the long term care unit. For a long stay psychiatric or other specialty hospital, using Method 2 will result in a lower average length of stay than truly representative since patients staying in the facility from year to year will not be reflected.

It is important to be aware that the two methods of calculating length of stay are both valid in most instances. Although Method 1 is considered more accurate, data at the inpatient unit level needed for Method 1 are not available. Because of this, Method 2 for calculating average length of stay is often used and is reasonably accurate for all facilities except those hospitals with a large proportion of long stay patients.