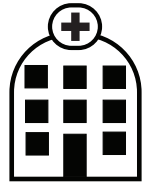


HEALTH INFORMATION TECHNOLOGY STATISTICS



CENSUS STATISTICS

Analyze the operation of health care facilities, examining who uses them, how much and for how long

Daily Inpatient Census

(# of patients TREATED in the census period, AKA Midnight Census)



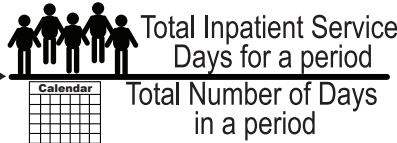
Inpatient Bed Count

(Number of available occupied/vacant inpatient beds on a given day, not including transitional beds such as exam rooms)



Average Daily Inpatient Census

(Avg # of inpatients in a period)



Inpatient Service Day

(Services received during a 24-hour period by one inpatient)



Length of Stay- LOS

(Calendar days from admission to discharge- either day of admission or day of discharge not counted unless it occurs on the same day)

Example:
Discharge- May 5th
- Admission- May 1st
= LOS is 4 Days

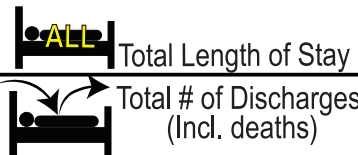
Calendar						
X	X	X	X	X		

Total Length of Stay

(Sum of LOS for ALL inpatients during a given period)
Example: 30 Patients had an LOS of 3 Days= 90 Days

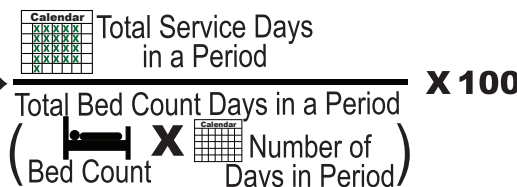
Average Length of Stay

(Inpatients discharged during a period)



Inpatient Bed Occupancy Rate

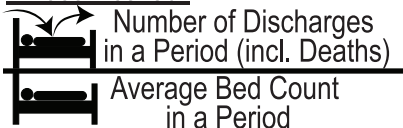
(Ratio of Inpatient Service Days to Inpatient Bed Count)



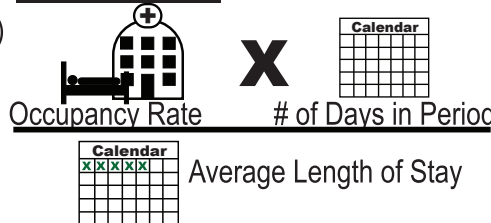
Bed Turnover Rate

(Average Number of Times a Bed Changes Occupants in a Period)

Direct Method:



Indirect Method:



The 500 bed hospital reported a total of 2,850 discharges (including deaths), 12,692 inpatient service days, and 13,760 discharge days in the month of July (31 days).

AVERAGE DAILY INPATIENT CENSUS EXAMPLE:
12,692 (Inpatient Service Days)

$$\frac{12,692}{31} = 409$$

31 (number of days in July)

Indicates the average number of inpatients in July.

AVERAGE LENGTH OF STAY (LOS) EXAMPLE:
13,760 (Discharge Days)

$$\frac{13,760}{2,850} = 4.8 \text{ DAYS}$$

Indicates patients stayed at the hospital an average of 4.8 days during July or the LOS is 4.8 days.

INPATIENT BED OCCUPANCY RATE EXAMPLE:
12,692 (Inpatient Service Days)

$$\frac{12,692}{500 \text{ (Beds)} \times 31 \text{ (Days in July)}} \times 100 = 81.88\%$$

Indicates 81.88% of available beds were occupied in July or the Percentage of Occupancy is 82%.

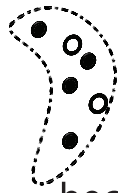
BED TURNOVER RATE DIRECT METHOD

$$\text{EXAMPLE: } \frac{2,850 \text{ (Discharges Incl. Death)}}{500 \text{ (Beds)}} = 5.7$$

BED TURNOVER RATE INDIRECT METHOD

$$\text{EXAMPLE: } \frac{81.88\% \text{ (Percentage of Occupancy)} \times 31 \text{ (Days in July)}}{4.8 \text{ (Average LOS)}} = 5.29$$

Indicates that during July the hospital's beds changed patients and average of 5.7 times according to the direct method and 5.29 times with the indirect method.



MORBIDITY RATES

Analyze the diseases or conditions treated at health care facilities and the quality of care provided

Complication Rate

(Occurs during hospital stay and extends LOS by at least 1 day in 75% of cases)

$$\frac{\text{Total \# of Complications}}{\text{Total \# Discharges}} \times 100$$

Postoperative Infection Rate

$$\frac{\text{Total \# Postoperative Infections}}{\text{Total \# of Surgical Operations}} \times 100$$

Community-Acquired Infection Rate

(Infection that occurs in community <72 hours of admission)

$$\frac{\text{Total \# of Community-Acquired Infections}}{\text{Total \# Discharges}} \times 100$$

Nosocomial Infection Rate

(Infection that occurs >72 hours after admission)

$$\frac{\text{Total \# of Infections Occurring > 72 Hours After Admission}}{\text{Total \# Discharges}} \times 100$$

Total Infection Rate

(Incl. Nosocomial and Community-Acquired)

$$\frac{\text{Community-Acquired Infections} + \text{Nosocomial Infections}}{\text{Total \# Discharges}} \times 100$$

Comorbidity Rate

(Preexisting condition that will increase LOS by at least 1 day in 75% of Cases)

$$\frac{\text{Total \# of Comorbidities}}{\text{Total \# Discharges}} \times 100$$

The hospital reported 2345 discharges including deaths, 1632 surgical operations, 245 comorbidities, 112 complications, 19 nosocomial infections (incl. postoperative infections), 10 postoperative infections, and 29 community-acquired infections.

Complication Rate Example :

$$\frac{112 \text{ (Total Complications)}}{2345 \text{ (Discharges Incl. Death)}} \times 100 = 4.78\%$$

Indicates that 4.78% of all discharges in the period had at least one complication.

Postoperative Infection Rate Example :

$$\frac{10 \text{ (Postoperative Infections)}}{1632 \text{ (Surgical Operations)}} \times 100 = 0.61\%$$

Indicates 0.61% of surgical operation patients developed a postoperative infection.

Community-Acquired Infection Example :

$$\frac{29 \text{ (Community-Acquired Infections)}}{2345 \text{ (Discharges Incl. Death)}} \times 100 = 1.24\%$$

Indicates 1.24% of discharges in the period had a community-acquired infection.

Nosocomial Infection Example :

$$\frac{19 \text{ (Nosocomial Infections)}}{2345 \text{ (Discharges Incl. Death)}} \times 100 = 0.81\%$$

Indicates 0.81% of discharges in the period had a nosocomial/hospital-acquired infection.

Total Infection Rate Example :

$$\frac{29 \text{ (Community-Acquired Infections)} + 19 \text{ (Nosocomial Infections)}}{2345 \text{ (Discharges Incl. Death)}} \times 100 = 2.05\%$$

Indicates 2.05% of discharges in the period had an infection.

Comorbidity Rate Example :

$$\frac{245 \text{ (Total Comorbidities)}}{2345 \text{ (Discharges Incl. Death)}} \times 100 = 10.45\%$$

Indicates 10.45% of discharges in the period had comorbidities.

The number of women in the community with osteoporosis was 3579 out of a total population of 100,000 women, with 1256 new cases each year.

PREVALENCE EXAMPLE:

$$\frac{3579 \text{ (Women with Osteoporosis)}}{100,000 \text{ (Women in Population)}} \times 1000 = 35.79$$

Indicates there are 35.79 cases of osteoporosis for every 100,000 women in the community

INCIDENCE EXAMPLE:

$$\frac{1256 \text{ (New Osteoporosis Cases)}}{100,000 \text{ (Women in Population)}} \times 1000 = 12.56$$

Indicates there are 12.56 new cases of osteoporosis for every 100,000 women in the community

Prevalence

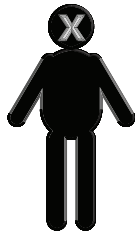
(EXISTING cases of a disease/condition within a period)

$$\frac{\text{\# of Cases in a Population}}{\text{\# of People in a Population}} \times 1000$$

Incidence

(NEW cases of a disease/condition within a period)

$$\frac{\text{\# of NEW Cases in a Population}}{\text{\# of People in a Population}} \times 1000$$



MORTALITY RATES

Analyze outcomes associated with the quality of care provided

Gross Death Rate (Hospital Death Rate)

$$\frac{\text{Total \# of Inpatient Deaths}}{\text{Total \# of Discharges (Incl. Deaths)}} \times 100$$

The hospital reported 862 discharges (including deaths) for the month of September and 15 inpatient deaths (5 occurred <48 hours after admission).

GROSS DEATH RATE EXAMPLE:

$$\frac{15 \text{ (Inpatient Deaths)}}{862 \text{ (Discharges incl. death)}} \times 100 = 1.74\%$$

Indicates the hospital death rate is 1.74% or 1.74% of total discharges ended in death

Net Death Rate

(Does not include deaths that occurred < 48 hours after admission)

$$\frac{\text{Total \# Inpatient Deaths} - \text{Inpatient Deaths < 48 Hours}}{\text{Total \# of Discharges (Incl. Deaths)} - \text{Inpatient Deaths < 48 Hours}} \times 100$$

NET DEATH RATE EXAMPLE:

$$\frac{15 \text{ (Inpatient Deaths)} - 5 \text{ (Deaths < 48hrs)}}{862 \text{ (Discharges)} - 5 \text{ (Deaths < 48hrs)}} \times 100 = 1.17\%$$

Indicates the hospital net death rate is 1.17% or 1.17% of the deaths of discharges occurred more than 48 hours after admission.

ANESTHESIA DEATH RATE EXAMPLE:

The hospital reported that it administered 495 anesthetics and there were 2 reported deaths from administration of anesthetics during that time.

$$\frac{2 \text{ (Anesthetic Deaths)}}{495 \text{ (Anesthetics Administered)}} \times 100 = 0.4\%$$

Indicates 0.4% of anesthetics administered resulted in a patient's death.

Anesthesia Death Rate

(Cause Specific Death Rate)

$$\frac{\text{Total \# of Anesthetic Deaths}}{\text{Total \# of Anesthetics Administered}} \times 100$$

POSTOPERATIVE DEATH RATE EXAMPLE:

The hospital reported that surgery was performed on 563 patients and 25 of those patients died within 10 days of surgery.

$$\frac{25 \text{ (Postoperative Deaths)}}{563 \text{ (Surgeries)}} \times 100 = 4.44\%$$

Indicates 4.44% of the patients who underwent surgery died within 10 days of the procedure during the time period.

Postoperative Death Rate

(Cause Specific Death Rate - the # of Patients that Die Within 10 Days of Surgery)

$$\frac{\text{Total \# of Deaths Within 10 Days of Surgery}}{\text{Total \# of Patients Who Received Surgery}} \times 100$$

AUTOPSY RATES

Gross Autopsy Rate

(Inpatient autopsies to inpatient deaths ratio)

$$\frac{\text{Total Inpatient Autopsies}}{\text{Total \# Inpatient Deaths}} \times 100$$

The hospital reported 55 inpatient deaths (including 2 coroner cases) and conducted 12 autopsies on inpatients.

GROSS AUTOPSY RATE EXAMPLE:

$$\frac{12 \text{ (Inpatient Autopsies)}}{55 \text{ (Total Inpatient Deaths)}} \times 100 = 21.8\%$$

Indicates 21.8% of hospital inpatients who died during the period received an autopsy.

Net Autopsy Rate

$$\frac{\text{Total Inpatient Autopsies}}{\text{Total \# Inpatient Deaths} - \text{Unautopsied Coroner's Cases}} \times 100$$

NET AUTOPSY RATE EXAMPLE:

$$\frac{12 \text{ (Inpatient Autopsies)}}{55 \text{ (Inpatient Deaths)} - 2 \text{ (Unautopsied Coroner Cases)}} \times 100 = 22.6\%$$

Indicates 22.6% of hospital inpatients who died during the period received an autopsy within the hospital.

Hospital Autopsy Rate

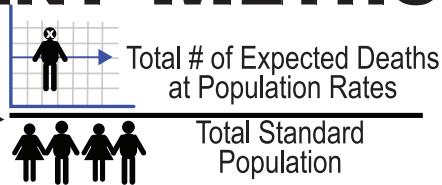
(Adjusted)

$$\frac{\text{Total Hospital Autopsies}}{\text{\# of Deaths of Hospital Patients Whose Bodies are Available for Hospital Autopsy}} \times 100$$

AGE ADJUSTMENT METHODS

Age-Adjusted Death Rate

(Uses standardized age specific rates for each population)



STANDARDIZED MORTALITY RATIO EXAMPLE:

The hospital reported 24 deaths for heart failure for the period. The expected number of deaths was 21.03.

$$\frac{24 \text{ (Actual Deaths)}}{21.03 \text{ (Expected Deaths)}} = 1.14$$

Indicates the hospital had a 14% higher mortality rate for heart failure than expected

Standardized Mortality Ratio- SMR

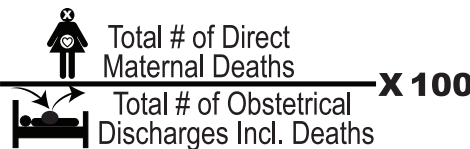
(Most common- For sample sizes with less than 5 deaths per age category)



FETAL & MATERNAL MORTALITY RATES

Maternal Mortality Rate

(Death from Causes associated with pregnancy and its management only)



MATERNAL DEATH RATE EXAMPLE:

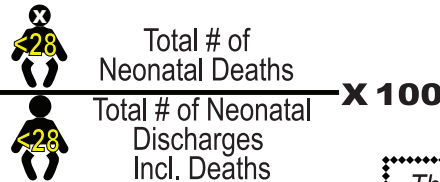
The hospital reported 159 obstetrical discharges (including death) and 1 maternal death.

$$\frac{1 \text{ (Maternal Death)}}{159 \text{ (Obstetrical Discharges)}} \times 100 = 0.62\%$$

Indicates 0.62% of obstetrical patients discharged during the time period died.

Neonatal Mortality Rate

(Death of Infant within first 27 days, 23 hours, and 29 minutes of life)



The hospital reported: 127 Live Births, 116 Neonatal Discharges, 2 Neonatal Deaths (before 28 days), 48 Infant Discharges, 4 Infant Deaths, and 11 Intermediate Fetal Deaths.

NEONATAL MORTALITY RATE EXAMPLE:

$$\frac{2 \text{ (Neonatal Deaths)}}{115 \text{ (Neonatal Discharges)} + 2 \text{ (Neonatal Deaths)}} \times 100 = 1.71\%$$

Indicates 1.71% of Neonates discharged died.

INFANT MORTALITY RATE EXAMPLE:

$$\frac{4 \text{ (Infant Deaths)}}{48 \text{ (Infant Discharges)} + 4 \text{ (Infant Deaths)}} \times 100 = 7.69\%$$

Indicates 7.69% of infants discharged died.

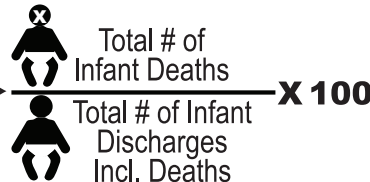
INTERMEDIATE FETAL DEATH RATE EXAMPLE:

$$\frac{11 \text{ (Intermediate Fetal Deaths)}}{127 \text{ (Live Births)} + 11 \text{ (Intermediate Fetal Deaths)}} \times 100 = 7.97\%$$

Indicates 7.97% of Live Births were intermediate fetal deaths.

Infant Mortality Rate

(Birth through first year of life)



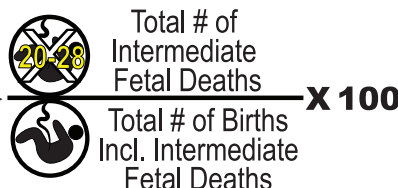
Early Fetal Death (Abortion) Rates

(>20 Weeks Gestation or weight ≤ 500 grams)



Intermediate Fetal Death Rates

(20 to 28 Weeks Gestation or weight 501 to 1000 grams)



Late Fetal Death (Stillborn) Rates

(28+ Weeks Gestation and weight > 1001 grams)

