

# Asante Teaching Hospital

## Activity Based Costing

### Challenges

#### Problems for Asante Hospital

Asante Teaching Hospital is a not-for-profit hospital in an area where for-profit hospitals thrive. As a not-for-profit hospital, Asante does not have the opportunity to seek out investors or invest surplus funds as a means of managing unexpected expenses. Rather, the hospital is reliant on insurance payouts, patient out of pocket payments, and financial support from a private foundation. Along with the challenges associated with bringing in funding, Asante is a premier hospital that provides a superior level of care. To ensure that level of care can be maintained, the hospital uses a meticulous billing process that is challenging for the hospital to compile, problematic for insurance companies who prefer bundled pricing, and stressful for patients.

#### Problems with patient billing

People like to have a feeling of control and know what to expect. This is particularly true when being discharged from a hospital after a stressful medical procedure, such as giving birth. As such, having to wait for hours after discharge to get and pay for a lengthy and detailed hospital bill, while not knowing the whole time what will be contained on it, is both overwhelming and frustrating. However, that is exactly what patients of Asante Teaching Hospital experience. Rather than using a normal costing method, where a patient could both be provided with anticipated expenses before admission and be discharged quickly, Asante uses actual costing and creates a thorough bill containing every line item and expense unique to a particular patient after their stay is complete. This process is not sustainable or helpful to either patients or the hospital itself.

### Recommendations

#### Pooling cost drivers

As there are standard expected annual expenses for the maternity ward, those expenses can be broken up into two main pools: Building-Based Expenses and Patient-Based Expenses (exhibit 2.1). The Building-Based expenses will not adjust according to the number of patients using the space (eg. building insurance is the same month by month), however Patient-Based Expenses may change depending on how many patients are in the hospital (eg. more laundry is washed the more patients there are). In the selected hospital information in Exhibit 1, there are two potential cost drivers associated with each of those expenses: the number of patients using the ward and the number of square feet in the ward.

Regarding the number of patients, we also want to take into account their stay length, which averages to 3 days for this hospital. From this, we have two activity rates as shown in exhibit 2.2. The first is the rate of R1,042.04 per square foot used by the patient (so patients with larger,

private rooms can be billed accordingly). The second is the base cost per patient per day of their stay, which is R52.28. These expenses do not change depending on the type of labor and delivery, so can remain static no matter the medical interventions needed; the only things needed to calculate these costs are the size of the room/part of the room used and the number of days a patient stays.

#### Staff salaries calculated using ABC

Regarding staff salaries, we need to breakdown how many minutes each staff member is actually available to provide care, which is shown in exhibit 3.1. This shows the anticipated number of days in their standard workweek, broken out into the total number of minutes they are paid for (including personal time, sick time, holiday, and training). We then remove those expenses to determine a final set of available care minutes for both residents and all other staff. It is important to note that personal, sick, holiday, and training time has an addition of 23% to the time, to account for taxes and benefit expenses.

Using that information, we can compare staff care availability to their annual salary in exhibit 3.2 to see the cost of each employee's time on a per-minute basis, based on employee type. With that information, we can compare employee's minute-by-minute expenses to how many minutes each employee type spends working on different delivery types (levels 1-3). When totaled, this then provides the anticipated employee expense for each of the three delivery types. This does not change whether the patient has more or less space, or stays more or fewer days. As such, this can be a direct line item depending on the delivery type.

#### Recommendation summary

With the pooled overhead expenses and ABC costing for employee salaries per delivery type, billing will be simpler since the accounting department will only need to determine the delivery type, number of stays stayed, and square footage used. However, these are all baseline anticipated expenses and do not account for an employee that needs additional sick days, hallway and office space, when a delivery requires more employee time than needed, or other unanticipated expenses. As such, we recommend using this as a base costing method with an additional 20% addition to account for these unanticipated expenses in order to assure the maternity ward remains self-sufficient.

## Exhibits

### Exhibit 1 – Selected hospital information

| <b>Selected Hospital Information</b> |                |                |                |
|--------------------------------------|----------------|----------------|----------------|
| <i>Statistic</i>                     | <i>Level 1</i> | <i>Level 2</i> | <i>Level 3</i> |
| Average days in maternity ward       | 3              | 3              | 4              |
| Total natural birth patients         | 4,160          | 240            | 390            |
| Total maternity ward patients        |                | 11,975         |                |
| total maternity ward sqft            |                | 30,294         |                |
| total hospital sqft                  |                | 455,000        |                |

### Exhibit 2.1 – Pooled annual maternity ward overhead

| <b>Pooled Annual Maternity Ward Overhead</b> |          |                   |
|--|----------|-------------------|
| <i>Overhead Item</i>                         |          | <i>Total</i>      |
| <b>Building-based Costs</b>                  |          |                   |
| Equipment Depreciation                       | R        | 363,672           |
| Insurance                                    | R        | 233,991           |
| Utilities                                    | R        | 7,454,026         |
| Rent   | R        | 16,195,458        |
| Groundskeeping                               | R        | 898,940           |
| Security                                     | R        | 302,076           |
| Information Tech                             | R        | 6,119,349         |
| <i>Subtotal - Building</i>                   | <i>R</i> | <i>31,567,512</i> |
| <b>Patient-based Costs</b>                   |          |                   |
| Marketing                                    | R        | 105,412           |
| General/Admin                                | R        | 314,622           |
| Housekeeping                                 | R        | 206,241           |
| Laundry                                      | R        | 395,295           |
| Dining Hall                                  | R        | 856,684           |
| <i>Subtotal - Patient</i>                    | <i>R</i> | <i>1,878,254</i>  |
| <b>Total</b>                                 | <b>R</b> | <b>33,445,766</b> |

### Exhibit 2.2 – Cost drivers (overhead)

| <b>Cost Drivers - Overhead</b> |                      |                 |
|--------------------------------|----------------------|-----------------|
| <i>Cost Driver</i>             | <i>Activity Rate</i> | <i>Unit</i>     |
| Building-Based Costs           | R 1,042.04           | sqft used       |
| Patient-based Costs            | R 52.28              | patient per day |

Exhibit 3.1 – Employee availability (in minutes)

| <b>Employee Availability (in minutes)</b> |                   |                   |
|---|-------------------|-------------------|
| Resident                                  | Resident          | All others        |
| Daily worked time                         | 960.00            | 504.00            |
| Annual payout of time                     | 249,600.00        | 131,040.00        |
| Annual personal leave*                    | 9,446.40          | 4,959.36          |
| Annual sick leave*                        | 7,084.80          | 3,719.52          |
| Annual holiday time*                      | 14,169.60         | 7,439.04          |
| Total annual training*                    | 7,675.20          | 7,675.20          |
| <b>Total available time</b>               | <b>211,224.00</b> | <b>107,246.88</b> |

\*with 23% addition for benefits/taxes

Exhibit 3.2 – Employee annual salaries

| <b>Annual Salaries for Maternity Ward Staff by Position</b> |               |                     |
|---|---------------|---------------------|
| <i>Position</i>   | <i>Salary</i> | <i>Note</i>         |
| OBGYN   | R 35,403,451  | Total for team of 3 |
| Paediatrician   | R 23,477,139  | Total for team of 4 |
| Midwife/Nurse   | R 114,557     |                     |
| Resident  | R 231,841     |                     |
| Registration Clerk  | R 9,092       |                     |
| Practical Nurse   | R 7,122       |                     |

Exhibit 3.3 – Cost drivers (employee salaries)

| <b>Cost Drivers - Employee Salaries</b> |                      |        |               |
|---|----------------------|--------|---------------|
| <i>Cost Driver</i>                      | <i>Activity Rate</i> |        | <i>Unit</i>   |
| OBGYN                                   | R                    | 110.04 | minute worked |
| Paediatrician                           | R                    | 54.73  | minute worked |
| Midwife/Nurse                           | R                    | 1.07   | minute worked |
| Resident                                | R                    | 1.10   | minute worked |
| Registration Clerk                      | R                    | 0.08   | minute worked |
| Practical Nurse                         | R                    | 0.07   | minute worked |

Exhibit 4.1 – Maternity staff time per delivery (in minutes)

| <b>Breakdown of Maternity Staff Time Per Delivery (Minutes)</b> |                |                |                |
|---|----------------|----------------|----------------|
| <i>Position</i>   | <i>Level 1</i> | <i>Level 2</i> | <i>Level 3</i> |
| OBGYN   | 30             | 37             | 80             |
| Paediatrician   | 43             | 55             | 71             |
| Midwife/Nurse   | 1,422          | 1,422          | 1,600          |
| Resident  | 225            | 240            | 412            |
| Registration Clerk  | 43             | 43             | 60             |
| Practical Nurse   | 99             | 99             | 110            |

Exhibit 4.2 – Maternity staff costs per delivery

| Maternity Staff Costs Per Delivery |         |          |         |          |             |
|------------------------------------|---------|----------|---------|----------|-------------|
| Position                           | Level 1 |          | Level 2 |          | Level 3     |
| OBGYN                              | R       | 3,301.12 | R       | 4,071.38 | R 8,802.98  |
| Paediatrician                      | R       | 2,353.25 | R       | 3,009.98 | R 3,885.61  |
| Midwife/Nurse                      | R       | 1,518.93 | R       | 1,518.93 | R 1,709.06  |
| Resident                           | R       | 246.96   | R       | 263.43   | R 452.21    |
| Registration Clerk                 | R       | 3.65     | R       | 3.65     | R 5.09      |
| Practical Nurse                    | R       | 6.57     | R       | 6.57     | R 7.30      |
| Total per delivery type            | R       | 7,430.48 | R       | 8,873.93 | R 14,862.25 |