<table>
<thead>
<tr>
<th>SERVICE STANDARD 10: ANAESTHETIC SERVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator 01</strong>: Pain score on discharge from recovery room should be less than four (4)</td>
</tr>
</tbody>
</table>

**Rationale**: This indicator was selected because:

- Post-operative patients should be monitored closely and the pain score should be less than four (4) on discharge from the recovery room as sometimes they may not have adequate pain relief despite being managed by the acute pain team in the wards.

**Definition of Terms**:

**Pain Score**: Measures the patients’ pain intensity using the MOH Pain Scale (zero to ten)

**Inclusion Criteria**: All patients who had undergone surgery under general anaesthesia and are resting in the recovery room of the operating theatre

**Exclusion Criteria**: Cases operated under sedation or local anaesthesia administered by surgeons

**Type of Indicator**: Rate Based Process Indicator

| **Numerator**: Number of patients with pain score less than four(4) on discharge from the OT Recovery Room for the month | X100% |
| **Denominator**: Total number of patients observed and monitored in the OT Recovery Room for the month |

**Target**: 100%

**Data Collection**: Monthly

**Comments/Review**: 

---

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SERVICE STANDARD 10: ANAESTHETIC SERVICES

Indicator 02 : Number of adverse events following regional anaesthesia, e.g. prolonged motor blockade, inadvertent dural puncture, Local Anaesthetic (LA) toxicity

Rationale : This indicator was selected because:

- The occurrence of adverse events leading to operative complications of regional anaesthesia may indicate less than optimal anaesthetic care. Patients should receive adequate and effective regional anaesthesia and analgesia for certain types of surgery.

- Epidural anaesthesia is one of the techniques used for instillation of local anaesthetic into the epidural space to provide anaesthesia.

- This indicator measures the clinical effectiveness of care and safety.

Definition of Terms:

Complications of anaesthesia:
Refers to patients experiencing adverse events following regional anaesthesia both intra and post-operative during or after elective surgery. The types of adverse events may vary but the following to be considered:

(i) Prolonged motor blockade following Regional Anaesthesia :
Refers to unexpected prolonged motor and sensory block and delayed recovery following regional anaesthesia. Peripheral nerve blocks enjoy great importance in anaesthesia practice; they can provide safe and effective anaesthesia with long-lasting analgesia.

(ii) Inadvertent dural puncture:
Process whereby epidural needle or catheter accidently punctures the dura at the level of the injection site

(iii) Local Anaesthetic (LA) toxicity:
While generally safe, local anesthetic agents can be toxic if administered inappropriately, and in some cases may cause unintended reactions even when properly administered. The toxicity of local and infiltration anesthetics can be local or systemic. Systemic toxicity of anesthetics most often involves the central nervous system (CNS) or the cardiovascular system.

Inclusion Criteria : Epidural anaesthesia, Epidural analgesia, Obstetric Analgesia Service, Combine Spinal Epidural (CSE), inclusive of day surgery cases

Exclusion Criteria : All general anaesthetic (GA) cases

Type of Indicator : Rate Based Process Indicator
### Prolonged Motor Blockade

**Numerator**: Number of patients who develop prolonged motor blockade

**Denominator**: Total number of patients operated under regional anaesthesia

### Inadvertent Dural Puncture

**Numerator**: Number of cases of inadvertent dural puncture

**Denominator**: Total number of cases received epidural anaesthesia/analgesia and CSE

### Local anaesthesia (LA) toxicity

**Numerator**: Number of patients who developed inadvertent dural puncture

**Denominator**: Total number of patients operated under regional anaesthesia

### Target

- **Data Collection**: Monthly
- **Comments/Review**: Downward Trend

X100%
SERVICE STANDARD 10: ANAESTHETIC SERVICES

Indicator 03: Number of adverse events following positioning during anaesthesia (peroneal nerve injury following lithotomy positioning)

Rationale: This indicator was selected because:

- The occurrence of peripheral nerve injuries following positioning during anaesthesia is a reflection of poor patient care. These injuries may produce lasting disability; hence recognition of risks and prevention is essential.
- This indicator measures the clinical effectiveness of care and patient safety. Positioning is the joint responsibility of the surgeon and anesthesiologist.
- Failure to follow professional standards and guidelines may result in positioning injuries and liability.

Definition of Terms:

1. Surgical Positioning

All positioning have 3 goals:
- Maximum exposure to the surgical area while maintaining homeostasis and preventing injury
- Position must provide the Anesthetist with adequate access to the patient for airway management, ventilation, medications, and monitoring
- Promote the enhancement of a satisfactory surgical result

2. Lithotomy Position

Lithotomy position is used for variety of procedures including gynaecological and urological surgery.

With the patient in the supine position, the hips are flexed from the torso so that legs are parallel to it and legs are abducted by 30 -45 degrees to expose the perineal region. The patient’s buttocks are even with the lower back in the OR bed (to prevent lumbosacral strain). The legs and feet are placed in stirrups that support the lower extremities. The perineum should be in line with the longitudinal axis of the OR bed.

3. Peroneal Injury

Perioperative peripheral neuropathy refers to postoperative signs and symptoms related to peripheral nerve injury and have been associated with use of the lithotomy position; resulting in peroneal injury with foot drop noted within 24 hours post-operatively.
- Caused by direct pressure on the nerve with the legs in lithotomy position.
- Nerve compressed against neck of fibula
- Anesthetists should monitor and assess patient positioning and protective measures at frequent intervals.
- Prevented by adequate padding of lithotomy poles.
### Inclusion Criteria
All patients undergoing surgery in Lithotomy position under General Anaesthesia

### Exclusion Criteria
Pre-existing foot drop prior to surgery

### Type of Indicator
Sentinel Event

### Numerator
Number of cases that developed foot drop within 24 hours post-operatively.

### Target
0

### Data Collection
Monthly

### Comments/Review

---
### SERVICE STANDARD 10: ANAESTHETIC SERVICES

**Indicator 04**: Number of patients having prolonged stay in recovery room for more than two (2) hours (sentinel event)

**Rationale**: This indicator was selected because:

- The occurrence of prolonged stay in the recovery room leading to operative complications of anaesthesia may indicate less than optimal care.

- This indicator measures the clinical effectiveness of care and safety.

**Definition of Terms**:

**Prolonged stay in Recovery Room**:

The occurrence of prolonged stay in the recovery room for more than two (2) hours may be multi-factorial. Patients after surgeries are often kept in the recovery room until their condition is stabilized before shifting them to their designated wards. Patients undergoing extensive surgery will require extended recovery. A prolonged patient stay in the recovery room is a crucial issue as it creates bottlenecks that may result in the slowing down of the surgical schedule, leading to dissatisfaction for surgeons, nurses, patients, and their families. A medically appropriate length of stay in the recovery room needs to be defined.

Ref: Prolonged-stay patients in the Post Anaesthesia Care Unit (PACU): A review of the literature. Lalani SB, Ali F, Kanji Z.

**Inclusion Criteria**: Patients under regional anaesthesia of general anaesthesia

**Exclusion Criteria**: Patients operated under sedation or local anaesthesia administered by surgeons

**Type of Indicator**: Sentinel Event

**Numerator**: Number of patients having prolonged stay in recovery room (≥2 hrs) hours

**Target**: 0

**Data Collection**: Monthly

**Comments/Review**: 
<table>
<thead>
<tr>
<th>SERVICE STANDARD 10: ANAESTHETIC SERVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator 05: Patient satisfaction survey with acute pain service and anaesthetic clinic</td>
</tr>
</tbody>
</table>

**Rationale**: This indicator was selected:

- As proxy to measurement of patient-centred services and level of client satisfaction to meeting patient needs for acute pain service and anaesthetic assessment clinic.

**Definition of Terms**:

1. **Patient Satisfaction Survey on acute pain service**:
   Patient satisfaction survey on acute pain service is a measure of a patient’s need for the pain service being met by the health care provider/service.

2. **Patient satisfaction survey of the anaesthetic clinic**:
   Is a measure of a patient's need for the anaesthetic services being met by the health care provider/service.

**Inclusion Criteria**: All out-patients and in-patients managed by the Pain Management Team and the Anaesthetic Clinic staff.

**Exclusion Criteria**: NA

**Type of Indicator**: Patient Satisfaction Survey

**Numerator**: Numbers of patient satisfaction survey feedback with ≥ 80% satisfaction level

**Denominator**: Total numbers of patient satisfaction survey feedback received

**Target**: Number of patient satisfaction survey feedback with ≥ 80% satisfaction level done every six months (Upward trend)

**Data Collection Comments/Review**: 6 Monthly
### SERVICE STANDARD 10: ANAESTHETIC SERVICES

<table>
<thead>
<tr>
<th>Indicator 06</th>
<th>Percentage of cancellation of elective cases after being passed in the anaesthetic clinic</th>
</tr>
</thead>
</table>

**Rationale**

This indicator was selected because:

- The effectiveness of the anaesthetic clinic service should reflect in the reduced rate of cancellation for elective surgeries.

**Definition of Terms:**

**Elective Cases**

Is defined as planned surgery; patients have been admitted and have been reviewed by the Anaesthetic Team and put on the operating list.

**Inclusion Criteria**

1. Cancellation by Anaesthetic Team
2. Cancellation due to anaesthetic and/or medical reasons such as uncontrolled diabetes, hypertension, heart disease etc

**Exclusion Criteria**

1. Lack of ICU bed
2. URTI
3. Lack of OT time
4. Mechanical and electrical problem
5. Operation is cancelled by surgeon

**Type of Indicator**

Rate Based Process Indicator

**Numerator**

Number of elective surgical cancellations after assessment performed in Anaesthetic Clinic

**Denominator**

Total number of pre-operative assessment performed in the Anaesthetic Clinic X 100%

**Target**

10%

**Data Collection**

Monthly

**Comments/Review**


### SERVICE STANDARD 11: OPERATING SUITE SERVICES

There is tracking and trending of specific performance indicators which include but not limited to at least three (3) of the following indicators:

<table>
<thead>
<tr>
<th>No.</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mandatory indicator Rate of compliance to Safe Surgery Saves Lives (SSSL) practice</td>
<td></td>
<td>Monthly</td>
</tr>
<tr>
<td>2.</td>
<td>Percentage of Elective Operation Cancellation Rate</td>
<td>&lt;10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>3.</td>
<td>Percentage of patients awaiting emergency surgery for more than 24 hours due to lack of OT time</td>
<td>&lt;1%</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Number of patients returning to surgery within 24 hours</td>
<td>sentinelinevent</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Time taken for lower segment caesarean section (LSCS) for fetal distress within 30 minutes of informing operating theatre</td>
<td>sentinelinevent</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Number of unnecessary delay in starting surgery after induction of anaesthesia due to lack or personnel or equipment</td>
<td>sentinelinevent</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Number of incidents reported in the operating room</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Number of peri-operative mortality and morbidity review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Percentage of cases done as day care or Day Of Surgery Admission (DOSA)</td>
<td>30% of all surgeries</td>
<td></td>
</tr>
</tbody>
</table>
STANDARD 11: OPERATING SUITE SERVICES

Indicator 01 : Rate of compliance to Safe Surgery Saves Lives (SSSL) practice

**Rationale**  : This indicator was selected because:

- The 2nd Global Patient Safety Challenge was the safety of surgical care. The goal of the WHO Patient Safety Safe Surgery Saves Lives Challenge is to improve the safety of surgical care around the world by defining a core set of safety standards that can be applied in all countries and settings.

- While surgical procedures are intended to save lives, unsafe surgical care can cause substantial harm. To assist operating teams in reducing the number of adverse events, WHO Patient Safety has identified ten essential objectives for safe surgery. These were compiled into the WHO Surgical Safety Checklist.

- Using the WHO Patient Safety surgical safety checklist ensures that steps to promote safe surgery are accomplished in a systematic and timely fashion.

**Definition of Terms:**

1. **Safe Surgery Saves Lives (SSSL):**

The Safe Surgery Saves Lives programme was established by WHO Patient Safety as part of the World Health Organization’s efforts to reduce the number of surgical deaths across the globe. To assist operating teams in reducing the number of these events, WHO Patient Safety—in consultation with surgeons, anaesthesiologists, nurses, patient safety experts and patients around the world—has identified ten essential objectives for safe surgery. These were compiled into the WHO Surgical Safety Checklist. The aim of this Checklist (available at www.who.int/safesurgery) is to reinforce accepted safety practices and foster better communication and teamwork between clinical disciplines. The Checklist is intended as a tool for use by clinicians in improving the safety of their operations and reducing unnecessary surgical deaths and complications. Its use has been demonstrably associated with significant reductions in complication and death rates in diverse hospitals and settings, and with improvements in compliance to basic standards of care.

**Reference:** WHO Guidelines for Safe Surgery 2009 - Save Surgery Saves Lives

2. **Compliance to Safe Surgery Saves Lives (SSSL) practice:**

Adherence to the use of WHO Surgical Safety Checklist for all patients undergoing surgery by the operating team.

**Inclusion Criteria**  : All cases sent to operating theatre and scheduled for surgery

**Exclusion Criteria**  : Cases operated under sedation or local anaesthesia administered by surgeons

**Type of Indicator**  : This is a Rate Based Process Indicator
<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of cases where WHO Surgical Checklist was used for each patient that had undergone surgery (evidence of copy of the checklist) x 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of cases operated under General/Regional Anaesthesia in a month</td>
</tr>
<tr>
<td>Target</td>
<td>100%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>Monthly</td>
</tr>
<tr>
<td>Comments/Review</td>
<td></td>
</tr>
</tbody>
</table>
**STANDARD 11: OPERATING SUITE SERVICES**

**Indicator 02 : Percentage of Elective Operation Cancellation Rate**

**Rationale**: This indicator was selected because:

- Surgical procedure executed as planned reflects on customer satisfaction. Cancellation may lead to patient’s disappointment and may jeopardise surgeon-patient rapport.
- This indicator reflects the quality of planning for elective operations in surgical based disciplines.

**Definition of Terms:**

1. **Elective Surgery:**

   Surgery is planned for the patient by a surgeon

2. **Operation Cancellation:**

   The surgery is cancelled in spite of already in the list for the operating day. Cancellations maybe due to:
   - Patients not turning up for surgery
   - Inadequate OT time caused by over-listing/interruptions by emergencies
   - Surgeon not available, blood not available, elective operations are common. The rates vary depending on how the elective list is prepared.
   - No consent, instrument failure and other reasons

**Inclusion Criteria**: All elective surgeries scheduled

**Exclusion Criteria**: Cancellation due to acute medical problems rendering patient unfit for surgery or anaesthesia

**Type of Indicator**: Rate Based Outcome Indicator

| **Numerator** | Number of elective surgery cancelled in the corresponding period |
| **Denominator** | Total number of elective surgery scheduled in the corresponding period X 100% |

**Target**: < 10%

**Data Collection**: Monthly

**Comments/Review**:

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*Malaysian Society for Quality in Health*

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## SERVICE STANDARD 11: OPERATING SUITE SERVICES

### Indicator 03: Percentage of patients awaiting emergency surgery for more than 24 hours due to lack of OT time

**Rationale:** This indicator was selected because:

- Emergency surgery has to be performed as early as possible in order to reduce patient morbidity and mortality as well as potential public complaints.
- This indicator also reflects the timely access and patient centeredness.

**Definition of Terms:**

1. **Waiting time:**
   From the time the patient is ready for emergency surgery to the time the operation takes place.

2. **Inclusion Criteria:** Cases with the only reason for delay in Emergency Surgery of more than (>24) hours is due to lack of OT Time.

3. **Exclusion Criteria:** NA

4. **Type of Indicator:** Rate Based Process Indicator

| Numerator | Total number of patients who waited more than (>24) hours for emergency operation under general anaesthesia due to lack of OT time | X 100% |
| Denominator | Total number of emergency surgeries done under general anaesthesia |

**Target:** <1%

**Data Collection:** Monthly

**Comments/Review:**
### SERVICE STANDARD 11: OPERATING SUITE SERVICES

#### Indicator 04 : Number of patients returning to surgery within 24 hours

**Rationale**: This indicator was selected because:

- Any return of patients within 24 hours to the theatre may indicate a quality problem due to occurrence of intra-operative problems that are serious enough to warrant intervention post-operatively.

**Definition of Terms:**

**Returning to surgery within 24 hours:**

Unexpected return to the operating theatre within 24 hours of surgery to address a complication of the original operation/surgery.

**Inclusion Criteria** : Elective surgical procedure performed under general anaesthesia

**Exclusion Criteria** :

1. Endoscopy cases
2. Day Care cases

**Type of Indicator** : Sentinel Event

**Numerator** : Number of patients returning to OT/surgery within 24 hours following an elective surgical procedure

**Target** : 0

**Data Collection** : Monthly

**Comments/Review** : 

<table>
<thead>
<tr>
<th>Service Standard 11: Operating Suite Services</th>
<th>Indicator 04: Number of patients returning to surgery within 24 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rationale</strong></td>
<td>This indicator was selected because:</td>
</tr>
<tr>
<td></td>
<td>Any return of patients within 24 hours to the theatre may indicate a quality problem due to occurrence of intra-operative problems that are serious enough to warrant intervention post-operatively.</td>
</tr>
<tr>
<td><strong>Definition of Terms:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Returning to surgery within 24 hours:</strong></td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td><strong>Inclusion Criteria</strong></td>
<td>Elective surgical procedure performed under general anaesthesia</td>
</tr>
<tr>
<td><strong>Exclusion Criteria</strong></td>
<td>1. Endoscopy cases</td>
</tr>
<tr>
<td></td>
<td>2. Day Care cases</td>
</tr>
<tr>
<td><strong>Type of Indicator</strong></td>
<td>Sentinel Event</td>
</tr>
<tr>
<td><strong>Numerator</strong></td>
<td>Number of patients returning to OT/surgery within 24 hours following an elective surgical procedure</td>
</tr>
<tr>
<td><strong>Target</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Data Collection</strong></td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>Comments/Review</strong></td>
<td></td>
</tr>
</tbody>
</table>
## SERVICE STANDARD 11: OPERATING SUITE SERVICES

**Indicator 05**: Time taken for Lower Section Caesarean Section for Grade 1 Level of Urgency (i.e. immediate danger to mother or fetus) within 30 minutes of informing operating theatre

**Rationale**: This indicator was selected because:

- Good communication is central to timely delivery of the fetus, while avoiding unnecessary risk to the mother. All members of the multidisciplinary team must be informed of the need (or likely need) for caesarean delivery as early as possible, as well as specific instructions on the degree of urgency.

- A target decision-to-delivery interval (DDI) for caesarean section for ‘fetal compromise’ of 30 minutes is an audit tool that allows testing of the efficiency of the whole delivery team and has become accepted practice; however certain clinical situations will require a much quicker DDI than 30 minutes and units should work towards improving their efficiency.

- Once a decision to deliver has been made, therefore, delivery should be carried out with an urgency appropriate to the risk to the baby and the safety of the mother

*Ref: Royal College of Obstetricians & Gynaecologists; Royal College of Anaesthetists: Good Practice No: 11; April 2010.*

**Definition of Terms:**

1. **Lower Section Caesarean Section for Grade 1 Level of Urgency**

   Emergency caesarean section (CS) should be undertaken where the health professional concerned suspects maternal or fetal compromise. Guidelines on electronic fetal monitoring recommend that delivery should occur as soon as possible, ideally within 30 minutes taking into account fetal heart rate and maternal factors. Grades:

   **GRADE 1**: Immediate threat to the life of the mother or fetus. Needs to be done within 30 minutes from decision. Paediatrician should be present for in all cases. Examples:
   - Prolonged fetal bradycardia,
   - Cord prolapse
   - Uterine rupture
   - APH/abruption
   - Cord PH <7.20
   - Pathological CTG

2. **Fetal Distress**

   Fetal distress occurs when the baby's oxygen supply is compromised in utero, usually during labor but occasionally in the third trimester of pregnancy. Oxygen deprivation can result in decreased fetal heart rate and can be serious for the baby. The standard of within 30 minutes for fetal distress on informing the operating theatre for a C-Section has become the criterion by which good and bad practice is being defined both professionally and medico-legally. The implication is that caesarean section for fetal distress that takes longer than 30 minutes represents suboptimal or even negligent care.
### Inclusion Criteria
- All cases of emergency caesarean sections for fetal distress

### Exclusion Criteria
- NA

### Type of Indicator
- Sentinel Event

### Numerator
- Number of emergency caesarean sections done for fetal distress within 30 minutes of informing the operating theatre in proportion to the number of emergency caesarean sections done that exceeded the standard

### Target
- 30 minutes

### Data Collection
- Monthly

### Comments/Review
-
SERVICE STANDARD 11: OPERATING SUITE SERVICES

Indicator 06 : Number of unnecessary delay in starting surgery after induction of anaesthesia due to lack of personnel or equipment

**Rationale** : This indicator was selected because:

- The occurrence of unnecessary delay in starting surgery after induction of anaesthesia indicates less than optimal care.
- This indicator also reflects timeliness of care and patient centeredness.

**Definition of Terms:**

1. **Delay in starting Surgery**

   Start time delays in the operating room have a negative effect on its efficiency and the working environment and are signs of an imperfect system. Starting late means considerable wait time for staff, patients and waste of resources.

2. **Induction of Anaesthesia**

   i) The administration of a drug or combination of drugs at the beginning of an anesthetic that results in a state of general anesthesia.

   ii) The process of causing general anesthesia by the administration of pharmaceutics.

   *Ref: Medical-dictionary.thefreedictionary.com/induction of anesthesia*

**Inclusion Criteria** : All cases listed for surgery under anaesthesia (general or regional)

**Exclusion Criteria** : All cases undergoing surgery under local anaesthesia administered by the surgeon

**Type of Indicator** : Sentinel Event

**Numerator** : Number of cases with delay in starting surgery after induction of anaesthesia

**Target** : 0

**Data Collection** : Monthly

**Comments/Review** : 
**SERVICE STANDARD 11: OPERATING SUITE SERVICES**

**Indicator 07 : Number of incidents reported in the operating room**

**Rationale** : This indicator was selected as a generic indicator of the delivery of safe patient care because:
- A key component of clinical governance is the responsibility of the head of the operating theatre (OT) to ensure that the service monitors and acts on incidents that can potentially compromise patient safety.
- Incident Reporting ensures sharing of lessons learnt from incidents, root cause analysis and best practices in patient safety.
- Incident Reporting facilitates patient safety efforts including the reduction of risk to patients.

**Definition of Terms:**

1. **Incidents occurring in the operating theatre**
   Any deviation from the usual clinical care that causes an injury to the patient or poses risk of harm, that include near misses, errors, preventable Adverse Events and hazards:
   - Near Misses - A ‘near miss’ is an event that might have resulted in harm but the problem did not reach the patient because of timely intervention by healthcare providers or the patient or family, or due to good fortune. Near misses may also be referred to as "close calls" or "good catches." (Ref: Institute of Medicine, USA)
   - Adverse Event - An injury related to medical management rather than complications of disease. Medical management in the operating theatre includes all aspects of care including surgical procedure, wrong patient, wrong surgical site, failure of equipment and the systems used to deliver care. Examples of adverse events include: Respiratory Distress leading to intubation, Cardiac Arrest in the Recovery Room, A stay of > 2 hours in the Recovery Room etc. Adverse events maybe preventable or non-preventable.
   - Errors are mishaps that have the potential to cause an adverse event.
   - Hazard refers to any threat to safety e.g. unsafe practices, staff conduct, equipment, labels and names.

2. **Incident Reporting** :
   An Incident Reporting System refers to the processes and technology involved in the standardization, formatting, communication, feedback, analysis, learning, response and dissemination of lessons learned from reported events; and analysing the incidents scientifically in a structured manner through Root Cause Analysis.

**Inclusion Criteria** : All types of incidents, near misses, adverse events

**Exclusion Criteria** : NA

**Type of Indicator** : Sentinel Event

**Numerator** : Number of incidents (clinical) reported in the operating theatre over a month

**Target** : 0

**Data Collection** : Monthly

**Comments/Review** :
### SERVICE STANDARD 11: OPERATING SUITE SERVICES

**Indicator 08**: Number of peri-operative mortality and morbidity review

**Rationale**: This indicator was selected because:

- The main purpose of the peri-operative mortality and morbidity review is to improve patient management and quality of care.

- Regular peri-operative mortality and morbidity reviews serve to examine the weakness and shortfalls in the clinical care of the patients. These reviews are not punitive and serve to improve management of the patients; hence the same mistakes could be prevented and would not be repeated in the future.

**Definition of Terms:**

1. **Perioperative Mortality**: Is death in relation to surgery. An important consideration in the decision to perform any surgical procedure is to weigh the benefits against the risks. Anesthesiologists and surgeons employ various methods in assessing whether a patient is in optimal condition from a medical standpoint prior to undertaking surgery.

2. **Peri-Operative Mortality Review**: Review of all deaths occurring within total length of hospital stay following a surgical or gynaecological procedure performed under general or regional anaesthesia. Also included are deaths in operation theatre before induction of anaesthesia.

3. **Length of Hospital Stay**: Is defined as “a hospital admission during the course of which surgery was performed FOR WHATEVER REASON”. Death during this period is considered a ‘POMR death’ regardless of the period of death from the time of surgery provided it occurs WITHIN THE SAME ADMISSION.

Ref: PERI-OPERATIVE MORTALITY REVIEW MINISTRY OF HEALTH, MALAYSIA.

**Inclusion Criteria**: All deaths occurring within total length of hospital stay following a surgical or gynaecological procedure performed under general or regional anaesthesia. Also included are deaths in the operation theatre before induction of anaesthesia.
### Exclusion Criteria

1. Surgery performed elsewhere/during previous admission but patient was admitted and died during the present admission WITHOUT SURGICAL INTERVENTION.
2. Diagnostic and/or therapeutic procedures carried out by physician and other non-surgeons.
3. Radiological procedures performed solely by the Radiologist without a surgeon’s involvement.
4. Endoscopy (e.g., OGDS/Colonoscopy/ERCP) performed under sedation or/and LA.
5. Surgery performed outside OT complex. Eg. Procedure room.

### Type of Indicator

This is a Process Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of peri-operative mortality and morbidity reviews in six (6) months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td></td>
</tr>
<tr>
<td>Data Collection</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>Comments/Review</td>
<td></td>
</tr>
</tbody>
</table>
## SERVICE STANDARD 11: OPERATING SUITE SERVICES

### Indicator 09: Percentage of cases done as day care or day of surgery admission (DOSA)

**Rationale**: This indicator was selected because:

- This indicator measures the use of appropriate resources in the hospital for surgery

**Definition of Terms:**

**Day Care/ Day of surgery admission (DOSA)**

Day surgery or Day of surgery admission (DOSA) describes the process whereby patients are admitted to hospital and have surgery, and discharged home on the same day. Hospital management has embraced the concept of DOSA. If the DOSA policy is to continue it is imperative that an adequate preoperative assessment clinic is established to prevent negative outcomes for our patients.

**Inclusion Criteria**: All surgeries done (day care cases & inpatients)

**Exclusion Criteria**: NA

**Type of Indicator**: Rate Based Process Indicator

| Numerator | Total number of surgeries done as day care/ DOSA in the month |
| Denominator | Total number of surgeries (inpatients & DOSA) done in a month X 100% |

**Target**: 30% of all surgeries

**Data Collection**: Monthly

**Comments/Review**: 

SERVICE STANDARD 12: AMBULATORY CARE SERVICES

There is tracking and trending of specific performance indicators which include but not limited to at least two (2) of the following:

<table>
<thead>
<tr>
<th>No.</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Unplanned admissions of Ambulatory Care patients as in-patients (Sentinel Event)</td>
<td>0</td>
<td>Monthly</td>
</tr>
<tr>
<td>2.</td>
<td>Cancellation Rate of Ambulatory Care Cases</td>
<td></td>
<td>Monthly</td>
</tr>
</tbody>
</table>
SERVICE STANDARD 12: AMBULATORY CARE SERVICES

Indicator 01 : Unplanned admissions of Ambulatory Care patients as inpatients (Sentinel Event)

**Rationale**

- Ambulatory Care patients are usually more stable and can be treated on an out-patient basis. Proper screening and selection of the patient with set criteria should be a prerequisite to select patients for Ambulatory Care.
- This indicator can be used to assess the quality of Ambulatory Care services by the number of unplanned admissions as inpatients.
- Generally, patients receiving safe clinical services as per protocol unless due to patient factor should not be subjected to unplanned admissions, which is a sentinel event.

**Definition of Terms:**

1. **Ambulatory Care**:

   Health services or acute care services that are provided on an outpatient basis e.g. Endoscopy Services, Day Surgery, Medical Day Care, Paediatric Day Care for Thalasemia cases etc.

2. **Unplanned Admission**:

   Admission of Ambulatory Care cases as in-patients that was not planned for during initial screening. Admitted to any clinical discipline/ward regardless of length of stay and diagnosis that was unplanned.

**Inclusion Criteria**

- All types of Ambulatory Care registered patients within the ambulatory care unit.

**Exclusion Criteria**

- Patients who request for admission for varying reasons e.g. for purpose of insurance claims.

**Type of Indicator**

- Sentinel Event

**Numerator**

- Number of unplanned admissions of Ambulatory Care patients as inpatients.

**Target**

- Sentinel Event

**Data Collection**

- Monthly

**Comments/Review**

-
### SERVICE STANDARD 12: AMBULATORY CARE SERVICES

<table>
<thead>
<tr>
<th>Indicator 02</th>
<th>Ambulatory Care Cases cancellation rate</th>
</tr>
</thead>
</table>

**Rationale**: This indicator was selected because:

- This indicator reflects the quality of planning for Ambulatory Care procedures.
- The cancellation of cases listed for elective procedures is common. The rates vary depending on how the list and patients have been prepared.
- Proper screening and selection of the patient with set criteria should be a prerequisite to select patients for Ambulatory Care.

**Definition of Terms:**

**Case Cancellation:**
Cases listed on the Ambulatory Care list but the procedure is not done on that particular schedule. Cancellations maybe due to:

- Patients not turning up for procedure/surgery
- Patients found unfit for procedure/surgery on the day of surgery
- Inadequate Operating Theatre time caused by over-listing, interruptions by emergencies or inefficiency related
- Surgeon not available, no consent, instrument failure and other less common reasons

**Inclusion Criteria**: All types of Ambulatory Care registered patients within the Ambulatory Care Unit.

**Exclusion Criteria**: NA

**Type of Indicator**: Rate Based Process Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of Ambulatory Care patients scheduled for surgery/procedure and cancelled X 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total Number of Ambulatory Care patients scheduled for surgery/procedures</td>
</tr>
</tbody>
</table>

**Target**

**Data Collection**: Monthly

**Comments/Review**: 

## SERVICE STANDARD 13: CRITICAL CARE (ICU/CCU/CICU/CRW/HDU/BURNS CARE UNIT)

There is tracking and trending of specific performance indicators which include but not limited to at least three (3) of the following:

<table>
<thead>
<tr>
<th>No.</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rate of pressure ulcers</td>
<td>&lt; 3%</td>
<td>Monthly</td>
</tr>
<tr>
<td>2.</td>
<td>Rate of unplanned extubation</td>
<td>&lt;3%</td>
<td>Monthly</td>
</tr>
<tr>
<td>3.</td>
<td>Rate of Ventilator Associated Pneumonia (VAP)</td>
<td>&lt; 10 per 1000 ventilator days</td>
<td>Monthly</td>
</tr>
<tr>
<td>4.</td>
<td>Rate of Catheter Related Blood Stream Infection</td>
<td>&lt;5 per 1000 catheter days</td>
<td>Monthly</td>
</tr>
<tr>
<td>5.</td>
<td>Compliance rate to hand hygiene</td>
<td>&gt; 75%</td>
<td>Monthly</td>
</tr>
<tr>
<td>6.</td>
<td>For Level 2 &amp; 3 Care, standardized mortality ratio and benchmarking with other Units</td>
<td></td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>
## SERVICE STANDARD 13: CRITICAL CARE (ICU/CCU/CICU/CRW/HDU/BURNS CARE UNIT)

### Indicator 01: Rate of Pressure Ulcers

**Rationale**: This indicator was selected because:

- Pressure ulcers/sores result in patient discomfort, increased length of stay, morbidity and mortality
- This indicator looks at patient safety and measures the quality of nursing care.

**Definition of Terms:**

**Pressure Ulcer/Sore**: Pressure ulcer/sore is defined as a localized injury to the skin and/or underlying tissue usually over the bony prominence as a result of pressure or pressure in combination with shear and/or friction. It is a circumscribed area in which cutaneous tissue has been destroyed and there is progressive destruction of underlying tissue caused by interference with circulation and nutrition to the area. Signs include blister or broken skin or sore formation over pressure areas (redness is excluded).

**Inclusion Criteria**: All patients who develop new pressure ulcers during their stay in the critical care unit (including those with pre-admission pressure sores which have worsened during the stay in critical care unit)

**Exclusion Criteria**: All patients with pre-admission pressure sores which have become better

**Type of Indicator**: Rate Based Process Indicator

| Numerator | Number of patients who developed new pressure ulcers (including those with pre-admission pressure sores which have worsened) during their stay in the critical care unit in the month | X 100% |
| Denominator | Total number of patients admitted to the critical care unit during the month |

**Target** : < 3%

**Data Collection** : Monthly

**Comments/Review** : 

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Performance Indicators - MSQH Hospital Accreditation Standards 5th Edition  
2017
## SERVICE STANDARD 13: CRITICAL CARE (ICU/CCU/CICU/CRW/HDU/BURNS CARE UNIT)

### Indicator 02 : Rate of unplanned extubation

**Rationale** : This indicator was selected because:

- Unplanned extubation in the critical care unit is associated with increased risk of reintubation, aspiration pneumonia and ventilator associated pneumonia.
- This indicator measures patient safety and quality of care.

**Definition of Terms:**

**Unplanned Extubation:** (UEX)

Unplanned extubation refers to unintended or accidental dislodgement or removal of endotracheal or tracheostomy tube from the trachea by the patient or staff. Simple measures should be adopted to minimize the incidence of UEX and its related complications: more vigilance during procedures at patients’ bedsides, appropriate management of agitated patients, strong fixation of the tracheal tube, attention to the oral endotracheal tube in terms of anchorage and level of tube, and daily assessment of the possibility of weaning from the ventilator.

**Inclusion Criteria** : All patients who are on invasive ventilator

**Exclusion Criteria** : NA

**Type of Indicator** : Rate Based Process Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of unplanned extubation in the Critical Care Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of patients invasively ventilated in the Critical Care Unit \times 100%</td>
</tr>
</tbody>
</table>

**Target** : <5%

**Data Collection** : Monthly

**Comments/Review** : 

SERVICE STANDARD 13: CRITICAL CARE (ICU/CCU/CICU/CRW/HDU/BURNS CARE UNIT)

Indicator 03 : Rate of Ventilator Associated Pneumonia

_Rationale_ : This indicator was selected because:

- Ventilator-associated pneumonia (VAP) is a complication in invasively ventilated patients which carries high morbidity and mortality. Ventilator Care Bundle (VCB) is a set of 4 evidence-based interventions to reduce the incidence of VAP. The 4 interventions are:
  - Head of bed elevation > 30 degrees
  - Use of stress ulcer prophylaxis
  - Use of deep vein thrombosis prophylaxis
  - Daily sedation vacation

- This indicator measures patient safety and quality of care.

**Definition of Terms:**

_Ventilator-associated pneumonia_

Ventilator-associated pneumonia is defined as pneumonia occurring more than 48 hours of invasive mechanical ventilation. Patients who have been ventilated before admission should be determined if they have ventilator-associated pneumonia. Those patients who have ventilator-associated pneumonia on admission to a critical care unit are excluded.

**Inclusion Criteria** : All invasively ventilated patients who developed ventilator-associated pneumonia after 48 hours of ventilation.

**Exclusion Criteria** : All patients who have been ventilated before ICU admission and are diagnosed to have developed ventilator-associated pneumonia on admission to the critical care unit.

**Type of Indicator** : Rate Based Output Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of patients who developed ventilator associated pneumonia in the Critical Care Unit in the month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of patient ventilated days in the month x100%</td>
</tr>
</tbody>
</table>

**Target** : < 10 per 1000 ventilator days

**Data Collection** : Monthly

**Comments/Review** :
SERVICE STANDARD 13: CRITICAL CARE (ICU/CCU/CICU/CRW/HDU/BURNS CARE UNIT)

Indicator 04 : Rate of Catheter Related Blood Stream Infection

**Rationale** : This indicator was selected because:

- Catheter-related bloodstream infection (CRBSI) represents a serious complication in a critical care unit and is potentially lethal. Central venous catheter care bundle consists of 5 evidence-based interventions as having the greatest effect on the rate of CRBSI and the lowest barrier to implementation. The 5 interventions are:
  - Hand hygiene
  - Maximal barrier precautions upon insertion
  - Chlorhexidine skin antisepsis
  - Optimal catheter site selection, with subclavian vein as the preferred site of non-tunneled catheters
  - Daily review of line necessity with prompt removal of unnecessary lines
- This indicator measures patient safety and quality of care.

**Definition of Terms:**

**Catheter Related Blood Stream Infection (CRBSI):**

Catheter Related Blood Stream Infection (CRBSI) is defined as bacteremia/fungemia in a patient with a central catheter for more than 48 hours. The following criteria must be met before the diagnosis of CRBSI is made:

1. The catheter must be in use for more than 48 hours
2. Patients have clinical signs of sepsis
3. Blood culture taken from the catheter and a peripheral vein grow the same organisms
4. There is no apparent source for the bloodstream infection except the catheter

**Inclusion Criteria** : All patients with central venous catheter/s in the critical care unit

**Exclusion Criteria** : NA

**Type of Indicator** : Rate Based Output Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>: Number of patients who developed catheter-related bloodstream infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>: Total number of patients with central venous catheter/s in the critical care x 100 %</td>
</tr>
</tbody>
</table>

**Target** : <5 per 1000 catheter days

**Data Collection** : Monthly

**Comments/Review** : 
### SERVICE STANDARD 13: CRITICAL CARE (ICU/CCU/CICU/CRW/HDU/BURNS CARE UNIT)

#### Indicator 05 : Compliance rate to hand hygiene

**Rationale** : This indicator was selected because:
- Healthcare Associated Infection (HAI) is a significant problem in hospitals and has an impact on the safety of patient, staff and visitor.
- The Hospital Infection and Antibiotic Control Committee (HIACC) must undertake intense surveillance of all staff including staff of contracted services to ensure the effectiveness of the hospital’s Prevention and Control of Infection programme as well as the implementation of WHO Patient Safety Solution on ‘Improved Hand Hygiene to Prevent Healthcare Associated Infections’
- Compliance to Hand Hygiene should be compulsory rather than optional for all relevant staff to avoid transmission of harmful germs and prevent healthcare associated infections.

**Definition of Terms:**

1. **Hand Hygiene:**
   Any action of hygienic hand antisepsis in order to reduce transient microbial flora (generally performed either by hand rubbing with an alcohol-based formulation or handwashing with plain or antimicrobial soap and water).

2. **Compliance to Hand Hygiene:**
   Hand hygiene (HH) is the single most important factor in the prevention of healthcare associated infections. The 3 most frequently reported methods of measuring HH compliance are: (1) direct observation, (2) self-reporting by health care workers (HCWs), and indirect calculation based on HH product usage. A compliance audit is a comprehensive review of staff adherence to regulatory guidelines/ protocols/directives/initiatives etc.

3. **The Opportunity:**
   Is an accounting unit for action; it determines the need to perform hand hygiene action, whether the reason (the indication that leads to the action) be single or multiple.

**Inclusion Criteria** : All staff including specialists, medical officers, house officers, nursing staff, allied health staff and students (undergraduate and post graduate medical students, student nurses and students of allied health) and staff of the privatised services (housekeeping, linen service, Facility and Biomedical equipment maintenance services) involved in direct or indirect patient care.

**Exclusion Criteria** : NA

**Type of Indicator** : Rate Based Process Indicator.

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of hand hygiene actions performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Number of opportunities observed</td>
</tr>
<tr>
<td>Target</td>
<td>&gt; 75%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>Monthly</td>
</tr>
<tr>
<td>Comments/Review</td>
<td>Ref: 1. Hand Hygiene Performance “ My 5 moments for Hand Hygiene”</td>
</tr>
<tr>
<td></td>
<td>2. Technical Specification: Performance Indicators For Medical Programme 2012, Medical Development Division Ministry of Health</td>
</tr>
</tbody>
</table>
## SERVICE STANDARD 13: CRITICAL CARE (ICU/CCU/CICU/CRW/HDU/BURNS CARE UNIT)

<table>
<thead>
<tr>
<th>Indicator 06</th>
<th>For Level 2 &amp; 3 Care, standardized mortality ratio and benchmarking with other Units</th>
</tr>
</thead>
</table>

**Rationale**: This indicator was selected because:
- Standardized mortality ratio (SMR) takes into account varying case-mix of different Critical care units and is a useful performance indicator for different units over time.
- SMR also allows benchmarking with other units so as to improve product and service quality.

**Definition of Terms:**

**Standardized Mortality Ratio (SMR):**

SMR is the ratio of observed deaths in the study group to expected deaths in the general population. This ratio can be expressed as a percentage simply by multiplying by 100. The expected deaths are calculated by a formula which utilizes severity scoring systems e.g SAPS or APACHE. All patients must be scored within 24 hours of admission using SAPS or APACHE to obtain the expected deaths.

The SMR may be quoted as either a ratio or a percentage. If the SMR is quoted as a ratio and is equal to 1.0, then this means the number of observed deaths equals that of expected deaths. If higher than 1.0, then there is a higher number of deaths than is expected.

**Inclusion Criteria**: The SMR for all Level 2 & 3 Critical Care Units

**Exclusion Criteria**: NA

**Type of Indicator**: Process Based Indicator

**Target**

**Data Collection**: Yearly

**Comments/Review**
STANDARD 13A: CRITICAL CARE SERVICES (SCN/NICU/PICU/PHDW)

There is tracking and trending of specific performance indicators which include but not limited to at least two(2) of the following:

<table>
<thead>
<tr>
<th>No.</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rate of central line associated blood stream infection (CLABSI)</td>
<td>Downward Trend</td>
<td>Monthly</td>
</tr>
<tr>
<td>2.</td>
<td>Rate of Ventilator Associated Pneumonia (VAP)</td>
<td>Downward Trend</td>
<td>Monthly</td>
</tr>
<tr>
<td>3.</td>
<td>Percentage of survival of inborn very low birth weight infants between 1000 –1499 gm birthweight</td>
<td>Facility with neonatologists: &gt;85% Facility without neonatologists: &gt; 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>4.</td>
<td>Number of mortality/morbidity audits/meetings being conducted in the unit with documentation of cases discussed</td>
<td></td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>
SERVICE STANDARD 13A: CRITICAL CARE SERVICES (SCN/NICU/PICU/PHDW)

Indicator 01 : Rate of central line associated blood stream infection (CLABSI)

**Rationale**

This indicator was selected because:

- Catheter-related bloodstream infection (CRBSI) represents a serious complication in a critical care unit and is potentially lethal. Central venous catheter care bundle consists of 5 evidence-based interventions as having the greatest effect on the rate of CRBSI and the lowest barrier to implementation. The 5 interventions are:
  - Hand hygiene
  - Maximal barrier precautions upon insertion
  - Chlorhexidine skin antisepsis
  - Optimal catheter site selection, with subclavian vein as the preferred site of non-tunneled catheters
  - Daily review of line necessity with prompt removal of unnecessary lines

- This indicator measures patient safety and quality of care.

**Definition of Terms:**

**Catheter Related Blood Stream Infection (CRBSI):**

CRBSI is defined as bacteremia/fungemia in a patient with a central catheter for more than 48 hours. The following criteria must be met before the diagnosis of CRBSI is made:

1. The catheter must be in use for more than 48 hours
2. Patients have clinical signs of sepsis
3. Blood culture taken from the catheter and a peripheral vein grow the same organisms
4. There is no apparent source for the bloodstream infection except the catheter

**Inclusion Criteria**

- All patients with central venous catheter/s in the critical care unit (SCN/NICU/PICU/PHDW)

**Exclusion Criteria**

- NA

**Type of Indicator**

- Rate Based Output Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of paediatric patients that developed catheter-related blood stream infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of paediatric patients with central venous catheter/s in the NICU/PICU x 100 %</td>
</tr>
<tr>
<td>Target</td>
<td>Downward Trend</td>
</tr>
<tr>
<td>Data Collection</td>
<td>Monthly</td>
</tr>
<tr>
<td>Comments/Review</td>
<td></td>
</tr>
</tbody>
</table>
## SERVICE STANDARD 13: CRITICAL CARE SERVICES (SCN/NICU/PICU/PHDW)

### Indicator 02: Rate of Ventilator Associated Pneumonia

**Rationale**: This indicator was selected because:

- Ventilator-associated pneumonia (VAP) is a complication in invasively ventilated patients which carries high morbidity and mortality. Ventilator Care Bundle (VCB) is a set of 4 evidence-based interventions to reduce the incidence of VAP.

- This indicator measures patient safety and quality of care.

**Definition of Terms:**

**Ventilator-associated pneumonia**

Ventilator-associated pneumonia is defined as pneumonia occurring more than 48 hours of invasive mechanical ventilation. Patients who have been ventilated before admission should be determined if they have ventilator-associated pneumonia. Those patients who have ventilator-associated pneumonia on admission to a critical care unit are excluded.

**Inclusion Criteria**

- All invasively ventilated patients who developed ventilator-associated pneumonia after 48 hours of ventilation

**Exclusion Criteria**

- All patients who have been ventilated before ICU admission and are diagnosed to have developed ventilator-associated pneumonia on admission to the critical care unit

**Type of Indicator**

- Rate Based Output Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of patients who developed ventilator associated pneumonia in the Critical Care Unit (SCN/NICU/PICU/PHDW) in the month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of patient ventilated days in the critical care unit (SCN/NICU/PICU/PHDW) in the month x100%</td>
</tr>
</tbody>
</table>

**Target**

- Downward Trend

**Data Collection**

- Monthly

**Comments/Review**

- :
**SERVICE STANDARD 13: CRITICAL CARE SERVICES (SCN/NICU/PICU/PHDW)**

<table>
<thead>
<tr>
<th>Indicator 03 : Percentage of survival of inborn very low birth weight infants between 1000 – 1499 gm birthweight</th>
</tr>
</thead>
</table>

**Rationale**: This indicator was selected because:

- This group of infants comprises a significant proportion of patients who utilize NICU and special care nursery resources.
- The survival of these infants impacts significantly on the under 5 survival target.

**Definition of Terms:**

1. **Very Low Birth (VLBW)** : Birth weight below 1500 gm
2. **Live Birth** : Born alive
3. **Inborn** : Born in the same hospital

**Inclusion Criteria**:

1. Inborn infants of birth weight between 1000-1499 gm
2. Livebirths

**Exclusion Criteria**:

- Babies born with major/lethal congenital anomalies (LCM)

**Type of Indicator** : Rate Based Process Indicator

<table>
<thead>
<tr>
<th><strong>Numerator</strong> : Number of inborn livebirths of birthweight between 1000-1499 gm, without lethal congenital malformations, who survive to discharge</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Denominator</strong> : Total number of inborn livebirths of birthweight between 1000-1499 gm without lethal congenital malformations</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Target</strong> :</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Facility with neonatologists: &gt;85%</td>
</tr>
<tr>
<td>- Facility without neonatologists: &gt; 80%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Data Collection</strong> : Monthly</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Comments/Review</strong> :</th>
</tr>
</thead>
</table>
SERVICE STANDARD 13 A: CRITICAL CARE SERVICES (SCN/NICU/PICU/PHDW)

Indicator 04 : Number of mortality and morbidity audits/meetings being conducted in the department with documentation of cases discussed

**Rationale** : This indicator was selected because:

- Regular mortality and morbidity meetings among department staff examine weaknesses and shortfalls in the overall management of patients. These meetings are not punitive and serve to improve management of patients.

- Majority of children die below the age of 5 years. Review of all deaths among children will enable healthcare providers to rectify and improve services to children.

- This indicator measures Clinical Effectiveness and Safety in reducing mortality and morbidity.

**Definition of Terms:**

1. **Mortality and morbidity audits/meetings:**

Discussion of case management in regards to patient morbidity, incidence reporting, issue of patient safety, clinical audit (at the department/hospital level).

2. **Mortality Review:**

Discussions related to the management of the case and cause of death of the patient [e.g. Clinical Audit, PMOR, Dengue Mortality, Mortality under 5 years of age (MDG5), Perinatal Mortality Reviews (MDG4), Inquiries] at department/hospital level.

**Inclusion Criteria** : Number of mortality & morbidity meetings conducted at department/hospital Level

**Exclusion Criteria** : Time period when the hospital was unable to function as usual due to mass casualty/disaster/crisis

**Type of Indicator** : This is a Process Indicator

**Numerator** : Number of mortality and morbidity meetings in 6 months period

**Target** :

**Data Collection** : 6 Monthly

**Comments/Review** :
<table>
<thead>
<tr>
<th>No</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Incidence of massive Post-Partum Haemorrhage (PPH) of total deliveries should be less than 1% (exclusion criteria: placenta previa and adherence placenta)</td>
<td>&lt; 1%</td>
<td>Monthly</td>
</tr>
<tr>
<td>2.</td>
<td>Complication rate from instrumental/vaginal deliveries: incidence of 3rd and 4th degree tears</td>
<td>&lt; 10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>3.</td>
<td>Maternal Mortality</td>
<td>Sentinel Event</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>
## SERVICE STANDARD 13B: CRITICAL CARE SERVICES (LABOUR DELIVERY SERVICES)

**Indicator 01**: Incidence of massive Post-Partum Haemorrhage (PPH) of total deliveries should be less than 1% of cases delivered in hospital

**Rationale**: This is an indicator of the quality of obstetric care because:

- The incidence of massive obstetric haemorrhage is reflective of the effectiveness of the management of haemorrhage at delivery. Post-partum haemorrhage occurs in 3-5% of pregnant mothers and is still the leading cause of maternal death in Malaysia.
- The use of this indicator would be reflective of prompt diagnosis and speed of instituting multidisciplinary care.

### Definition of Terms:

**Massive Post-Partum Haemorrhage (PPH):**

Total amount of blood loss of more than 1.5 litres within (≤) 24 hours of delivery. Delivery includes both the vaginal and abdominal routes.

**Inclusion Criteria**: All deliveries conducted in the hospital both vaginal and abdominal routes.

**Exclusion Criteria**: Patients with placenta previa and adherent placenta

**Type of Indicator**: Rate Based Process Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of patients with massive Primary Post-Partum Haemorrhage</th>
<th>X 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of deliveries (all modes of delivery)</td>
<td></td>
</tr>
</tbody>
</table>

**Target**: ≥ 1%

**Data Collection**: Monthly

**Comments/Review**: As PPH remains the leading cause of Maternal mortality, an indicator measuring the effectiveness and efficiency of care in this condition should be measured in all hospitals.
SERVICE STANDARD 13B: CRITICAL CARE SERVICES (LABOUR DELIVERY SERVICES)

| Indicator 02 | Complication rate from instrumental/vaginal deliveries: Incidence of 3rd and 4th degree tears |

Rationale: This indicator was selected because:
- This indicator was selected to ensure good care to the mother and baby during delivery. With effective obstetric care, most of the complications during instrumental delivery can be anticipated and reduced or avoided.
- Obstetric Trauma is a debilitating injury to the patient. The injury of third and fourth degree perineal tears during vaginal delivery may lead to possible long term complications. These types of tears can be prevented/reduced by employing appropriate labour management and care standards.

Definition of Terms:

1. **An instrumental delivery**, or also called-assisted birth or operative vaginal birth: Is one where a pair of forceps or ventouse is used when the baby needs help to be born.
2. **3rd and 4th degree perineal tear**: Refers to incidence of Perineal Laceration/tear following vaginal delivery.
3. **Complications of instrumental deliveries**:
   a) **Ventouse (Vacuum)**:
      - **Maternal**: Vaginal laceration due to entrapment of vaginal mucosa between suction cup and foetal head
      - **Foetal Complications**: scalp injuries, cephalohaematoma, intracranial haemorrhage, subgaleal haemorrhage, birth asphyxia, retina haemorrhage neonatal jaundice
   b) **Forceps**:
      - **Maternal**: Trauma to soft tissue, bleeding from laceration, trauma to urethra and bladder-fistula, pain
      - **Foetal**: Bruising and laceration to the face, injury to the foetal scalp, cephalohaematoma, retina haemorrhage, skull fracture, permanent nerve damage. The risk of shoulder dystocia is increased following instrumental deliveries.

**Inclusion Criteria**: Patients who underwent vaginal deliveries in the hospital:
- With instrumentation/without instrumentation
- Sustained third(3rd) degree and fourth (4th) degree perineal laceration/tear
- Complications from instrumental delivery i.e. cephalohaematoma, intracranial haemorrhage etc

**Exclusion Criteria**: Patients who delivered outside of the hospital

**Type of Indicator**: Rate Based Process Indicator

**Numerator**: Total number of patients with complications from instrumental/vaginal deliveries

**Denominator**: Total number of instrumental/vaginal deliveries

**Target**: < 10%

**Data Collection**: Monthly

**Comments/Review**: 
### SERVICE STANDARD 13B: CRITICAL CARE SERVICES (LABOUR DELIVERY SERVICES)

**Indicator 03 : Maternal Mortality**

**Rationale** : This indicator was selected because:

- This indicator reflects maternal health and enables safety considerations in reducing maternal mortality.
- Most maternal deaths are avoidable, as the health-care solutions to prevent or manage complications are well known. All women need is access to antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after childbirth. It is particularly important that all births are attended by trained and skilled health professionals, as timely management and treatment can make the difference between life and death. To improve maternal health, barriers that limit access to quality maternal health services must be identified and addressed at all levels of the health system.

**Definition of Terms:**

**Maternal Death**

According to the World Health Organization (WHO), **maternal death** is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Generally, there is a distinction between a direct maternal death resulting from complications arising during pregnancy, labour or during the post-partum period. Deaths may result from interventions, omissions, incorrect treatment or from a chain of events resulting from any of the above. The indirect obstetric deaths may result from previous existing disease or diseases, which are aggravated by the pregnancy resulting in her death. An example would be heart disease. Fortuitous deaths are those deaths that occur in a pregnant woman which are unrelated to her pregnancy and may have caused her death even if she were not pregnant.

**Inclusion Criteria** : All direct and indirect maternal deaths

**Exclusion criteria** : Fatalities during but unrelated to a pregnancy are termed fortuitous maternal deaths.

**Type of Indicator** : Sentinel Event

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Denominator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of Maternal Deaths</td>
<td>Total number of Live Births</td>
</tr>
</tbody>
</table>

**Remarks** : Maternal Mortality Rate is expressed as per 100,000 live births. \( \times 1000 \)

**Target** : Sentinel Event

**Data Collection** : Monthly

**Comments/Review** : 
### SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES  
(Facility with Radiologist)

There is tracking and trending of specific performance indicators which include but not limited to at least two (2) of the following indicators:

<table>
<thead>
<tr>
<th>No</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>FACILITY WITH RADIOLOGIST</td>
<td>Percentage of Plain Films/Images Reported by Radiologists</td>
<td>Monthly</td>
</tr>
</tbody>
</table>
| 2. | Percentage of Normal:  
   i. Magnetic Resonance Imaging (MRI)  
   ii. Computed Axial Tomography (CT) Scans reported by radiologist | Monthly |
<p>| 3. | Percentage of Radiological Examination Errors i.e. wrong marker, use of primary markers, wrong site X-rayed, wrong patient X-rayed | Monthly |
| 4. | Complication rate for Post-Interventional Procedures | Monthly |
| 5. | Perfect, Good, Moderate, Inadequate (PGMI) audits for mammography | 97% for Perfect, Good &amp; Moderate | Monthly |
| 6. | Percentage of patients with significant pneumothorax/haemorrhage requiring intervention following percutaneous interventional procedures in the thorax, abdomen and pelvis | ≤10% | Monthly |
| 7. | Percentage of patients with waiting time of ≤60 minutes for commencement of ultrasound examination | ≥80% | Monthly |
| 8. | Turnaround time of ≤2 working days for final report of special radiological examination done on inpatients | ≥97% | Monthly |
| 9. | Turnaround time of ≤14 days for final report of special radiological examination done on outpatients | ≥90% | Monthly |</p>
<table>
<thead>
<tr>
<th></th>
<th>Percentage of patients developed significant contrast media extravasation following CT examination with intravenous (IV) contrast media</th>
<th>&lt;1%</th>
<th>Monthly</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACILITY WITHOUT RESIDENT RADIOLOGIST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Percentage of x-ray films sent for reporting</td>
<td></td>
<td>Monthly</td>
</tr>
<tr>
<td>2.</td>
<td>Percentage of accurate interpretation of x-rays films by medical officers as reported by radiologist [in reference to indicator (i)]</td>
<td></td>
<td>Monthly</td>
</tr>
<tr>
<td>3.</td>
<td>Percentage of radiographic errors, i.e. wrong marker, use of primary markers, wrong site x-rayed, wrong patient x-rayed</td>
<td></td>
<td>Monthly</td>
</tr>
<tr>
<td>Indicator 01 : Percentage of plain films/images reported by Radiologists</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Rationale** : This indicator was selected because:

- For radiological examination to have an impact on patient management, the films/images should be reported by radiologists and in a timely manner.

**Definition of Terms:**

A **Radiological Report**:

Is a clinical and source document that provides interpretation and describes any radiology procedure conducted by a radiologist. The only person who is privileged to prepare and document a radiology report is a qualified physician (radiologist) who has been granted specific clinical privileges in that hospital or clinical settings. It is an official medical document that provides description and interpretation for any officially requested radiological exam.

**Inclusion Criteria** : All inpatients and out patients undergoing radiological examinations

**Exclusion Criteria** : Cases done when the resident radiologist is not available in the hospital.

**Type of Indicator** : Rate Based Process Indicator

**Numerator** : Total number of radiological examinations (plain images and special examination) reported by Radiologist

**Denominator** : Total number of patients undergoing radiological examinations (plain images and special examination) X 100 %

**Target** :

**Data Collection** : Monthly

**Comments/Review** :
SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES
(Facility with Radiologist)

Indicator 02 : Percentage of Normal:
   i) Magnetic Resonance Imaging (MRI)
   ii) Computed Axial Tomography (CT) scans

**Rationale** : This indicator was selected because:

- Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) are special radiological examinations and should be used for the determination of intervention in association with clinical findings.
- This indicator was selected as a generic indicator to assess the appropriate use of high end radiological equipment and special radiological examinations as they have an impact on the cost of medical care.

**Definition of Terms:**

**Normal MRI and CT Scans:**

*Refers to* normal findings in the images of patients undergoing magnetic resonance images and Computed Tomography scans; no abnormalities were detected in the images.

**Inclusion Criteria** : All inpatients and out patients undergoing MRI and CT scans

**Exclusion Criteria** : Cases done when the resident radiologist is not available in the hospital.

**Type of Indicator** : Rate Based Output Indicator

**Magnetic Resonance Imaging (MRI)**

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Total number of MRI with normal findings as reported by the Radiologist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of patients undergoing MRI in the same period</td>
</tr>
</tbody>
</table>

**Computed Axial Tomography (CT)**

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Total number of CT scan with normal findings as reported by the Radiologist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of patients undergoing CT scan in the same period</td>
</tr>
</tbody>
</table>

**Target**

Data Collection : Monthly

Comments/Review :
### SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES (Facility with Radiologist)

**Indicator 03**: Percentage of Radiological Examination Errors i.e. wrong marker, use of primary markers, wrong site x-rayed, wrong patient x-rayed

**Rationale**: This indicator was selected because:

- There is a need for adequate quality control in performing Radiological examinations to ensure the effectiveness of the Radiological Services.
- This indicator is a reflection of the many processes carried out in an imaging department. In a conventional imaging department this indicator has great relevance as it reflects on all the processes namely radiographic techniques, performance of x-ray machines, film processing and storage of films. It also takes into account instances when the radiological examination was not performed according to what was requested by the referring doctor.

**Definition of Terms:**

**Radiological Examination Errors:**

Errors in performing Radiological Examinations that include a repeat of plain x-rays and all contrast examinations, CT, MRI, and ultrasound due to wrong marker or use of primary marker, wrong part or wrong view, wrong site or wrong patient.

**Inclusion Criteria**: All radiological examinations that had to be repeated due to the Wrong Part or Wrong View being taken by the radiographer/radiologist.

**Exclusion Criteria**: NA

**Type of Indicator**: Rate Based Output Indicator

**Numerator**: Total number of radiological examinations that had to be repeated due to wrong part, wrong view, wrong site or wrong patient X-rayed

**Denominator**: Total number of radiological examinations/imaging done in the same period X 100 %

**Target**

**Data Collection**: Monthly

**Comments/Review**
## SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES
(Facility with Radiologist)

### Indicator 04 : Complication rate for post interventional procedures

**Rationale**: This indicator was selected because:

- Commonly performed interventional radiological procedures may be associated with morbidity such as pneumothorax and haemorrhage. Thus the morbidity arising from these procedures should be kept to an absolute minimum.
- This indicator addresses the safety of the process of diagnostic procedures in patient management.

### Definition of Terms:

1. **Radiological Interventional Procedure**: Radiological Interventional Procedures include the performance of biopsy of lung, mediastinum or abdominal organs under image guidance. The first post-procedural chest imaging is defined as occurring from 0-4 hours after the procedure.

2. **Post interventional procedural complications**: This refers to unexpected complications of interventional radiological procedures, typically met in the monitoring of patients during and after interventional procedures. Examples are pneumothorax or haemorrhage following percutaneous interventional procedures of the thorax/abdomen/pelvis.

### Inclusion Criteria:
All patients undergoing interventional radiological procedures

### Exclusion Criteria:
NA

### Type of Indicator:
Rate Based Outcome Indicator

### Numerator:
Number of patients with post procedural complications following interventional radiological procedures

### Denominator:
Total number of patients underwent interventional radiological procedures X 100%

### Target:

### Data Collection:
Monthly

### Comments/Review:

---

**PLEASE NOTE**: This indicator is only applicable to hospitals with an in-house internist or radiologist.
SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES
(Facility with Radiologist)

Indicator 05 : Perfect, Good, Moderate, Inadequate (PGMI) audits for mammography

**Rationale** : This indicator was selected because:

- Breast cancer is one of the most frequent cancers among women in both developed and developing countries. In Malaysia breast cancer is the most commonly diagnosed cancer among women of all ethnic groups.
- Mammography remains the most effective screening tool in comparison to clinical breast examination and breast self-examination.
- Radiology and allied professionals in the field of mammography needs to carry out appropriate radiologic practice that is as effective as possible and safe for the patient. Mammography, as in other fields of radiologic practice requires specific training, skills and techniques.
- Image classification in relation to PGMI system maximizes high quality of images and minimizes technical repeats.

**Definition of Terms:**

1. **Mammogram**

Mammograms are used as a screening tool to detect early breast cancer in women experiencing no symptoms. They can also be used to detect and diagnose breast disease in women experiencing symptoms such as a lump, pain, skin dimpling or nipple discharge.

2. **Perfect, Good, Moderate, Inadequate (PGMI)**

PGMI is a method of evaluation of clinical image quality in mammography developed by the United Kingdom Mammography Trainers Group with the support of the Royal College of Radiographers, aimed to ensure the maintenance of a high standard of mammography in Breast Screening and to facilitate a method of external audit.

**Inclusion Criteria** : All mammogram images for breast screening taken in the month

**Exclusion Criteria** : NA

**Type of Indicator** : Audit on Quality of Mammogram images

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of mammogram images with PGM results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of mammogram images taken in the month X 100%</td>
</tr>
</tbody>
</table>

**Target** : ≥ 97% for Perfect, Good & Moderate

**Data Collection** : Monthly

**Comments/Review** : 

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*Malaysian Society for Quality in Health*

*2017*

*Performance Indicators - MSQH Hospital Accreditation Standards 5th Edition*
### SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES
(Facility with Radiologist)

**Indicator 06**: Percentage of patients with significant pneumothorax/haemorrhage requiring intervention following percutaneous interventional procedures in the thorax, abdomen and pelvis

**Rationale**: This indicator was selected because:

- Commonly performed interventional radiological procedures may be associated with morbidity such as pneumothorax and haemorrhage. Thus the morbidity arising from these procedures should be kept to an absolute minimum.
- This indicator addresses the safety of the process of diagnostic procedures in patient management.

**Definition of Terms**:

1. **Pneumothorax**: Defined as the presence of air in FIRST post-procedural chest imaging. The first post-procedural chest imaging is defined as occurring from 0-4 hours after the procedure.

2. **Significant pneumothorax**: One that requires chest tube insertion.

3. **Significant Haemorrhage**: Defined as bleeding requiring fluid resuscitation within (≤) 24 hours of the procedure.

4. **Percutaneous Interventional Procedures**: Include the performance of biopsy of lung, mediastinum, pelvis or abdominal organs under image guidance.

**Inclusion Criteria**: All percutaneous interventional procedures performed on organs within the thorax/abdomen/pelvis.

**Exclusion Criteria**: Procedures performed on breasts, superficial lesions and for vascular access.

**Type of Indicator**: Rate Based Outcome Indicator

**Numerator**: Number of patients with significant pneumothorax/haemorrhage requiring intervention following percutaneous interventional procedures in the thorax, abdomen and pelvis X 100%

**Denominator**: Total number of patients underwent percutaneous interventional procedures in the thorax, abdomen and pelvis

**Target**: ≤10%

**Data Collection**: Monthly

**Comments/Review**: 
### SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES
(Facility with Radiologist)

<table>
<thead>
<tr>
<th>Indicator 07</th>
<th>Percentage of patients with waiting time of ≤60 minutes for commencement of ultrasound examination</th>
</tr>
</thead>
</table>

**Rationale**: This indicator was selected because:

- Waiting time for patient to undergo an ultrasound examination should be kept to a minimum.
- This indicator measures Patient Satisfaction.

**Definition of Terms:**

**Waiting Time:**
Time of appointment/registration (whichever is later) to the time the ultrasound examination is performed

**Inclusion Criteria**: All patients with scheduled appointments

**Exclusion Criteria**: 1. Patients without prior appointments/unscheduled  
2. Unprepared cases

**Type of Indicator**: Rate Based Process Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of patients with waiting time of ≤ 60 minutes for commencement of ultrasound examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of patients commenced ultrasound examination</td>
</tr>
</tbody>
</table>

**Target**: ≥80%

**Data Collection**: Monthly

**Comments/Review**: 
### SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES
(Facility with Radiologist)

**Indicator 08** : Turnaround time of ≤ 2 working days for final report of special radiological examination done on inpatients

**Rationale** : This indicator was selected because:

- For a radiological examination to have any impact on patient management, it should be available to the clinician in a timely manner.

**Definition of Terms:**

1. **Turnaround time:**

   The time taken between completion of the examination to the availability of report (not including public holidays and weekend).

2. **Final Report:**

   Reports that have been verified by a radiologist.

3. **Special Radiological Examinations:**

   All contrast examinations, CT, MRI, Ultrasound, Mammograms and Angiograms

**Inclusion Criteria** : All special radiological examinations performed on inpatients

**Exclusion Criteria** : Cases done when the resident radiologist is not available in the hospital

**Type of Indicator** : Rate Based Process Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of special radiological examinations performed on inpatients reported within (≤) 2 working days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of special radiological examinations performed on inpatients  ( \times 100% )</td>
</tr>
</tbody>
</table>

**Target** : ≤ 97%

**Data Collection** : Monthly

**Comments/Review** :
**SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES**  
(Facility with Radiologist)

**Indicator 09**: Turnaround time of ≤14 days for final report of special radiological examination done on outpatients

**Rationale**: This indicator was selected because:

- For a radiological examination to have any impact on patient management, it should be available to the clinician in a timely manner.

**Definition of Terms**:

1. **Turnaround time**:
   
The time taken between completion of the examination to the availability of report (not including public holidays and weekend).

2. **Final Report**:
   
Reports that have been verified by a radiologist.

3. **Special Radiological Examinations**:
   
All contrast examinations, CT, MRI, Ultrasound, Mammograms and Angiograms

**Inclusion Criteria**: All special radiological examinations performed on outpatients.

**Exclusion Criteria**: NA

**Type of Indicator**: Rate Based Process Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of special radiological examinations performed on inpatients reported within (≤ ) 14 working days X 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of special radiological examinations performed on outpatients</td>
</tr>
</tbody>
</table>

**Target**: ≤ 90%

**Data Collection**: Monthly

**Comments/Review**: 
SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES
(Facility with Radiologist)

Indicator 10: Percentage of patients developed significant contrast media extravasation following CT examination with intravenous (IV) contrast media

**Rationale**: This indicator was selected because:
- CT with intravenous (IV) contrast media is a commonly performed procedure in the Department of Radiology.
- Contrast extravasation is a known complication which occurs more frequently with power injection. It may also occur with hand injections.
- Large volumes (usually > 50 mls) of contrast media are known to induce significant tissue damage. However smaller volumes may also have adverse outcomes especially in paediatric patients.
- Contrast media are known to induce significant tissue damage such as:
  a) Skin ulceration
  b) Soft tissue necrosis
  c) Compartment syndrome
- The incidence of contrast media extravasation should be kept to the minimum.

**Definition of Terms**:

1. **Contrast media extravasation**: Contrast leaks into the tissue around the vein where the intravenous needle is inserted.

2. **Significant contrast media extravasation**: Volume of > 50mls which necessitate referral to the primary team or volumes not more than 50mls but requiring referral to the primary team.

**Inclusion Criteria**: All CT examinations performed involving intravenous (IV) contrast media.

**Exclusion Criteria**:
- 1. Patients with comorbidity that prone to have extravasation
- 2. History of receiving chemotherapy/Radiotherapy
- 3. Intravenous Drugs Users (IVDU)
- 4. Age > 60 years old
- 5. Emaciated patients
- 6. Oedematous patients

**Type of Indicator**: Rate Based Process Indicator

**Numerator**: Number of patients developed significant contrast media extravasation following CT examination with intravenous (IV) contrast media

**Denominator**: Total number of patients undergo CT examination with intravenous (IV) contrast media

**Target**: <1%

**Data Collection**: Monthly

**Comments/Review**: 
## SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES  
*(Facility without Radiologist)*

There is tracking and trending of specific performance indicators which include but not limited to at least two (2) of the following:

<table>
<thead>
<tr>
<th>No</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Percentage of x-ray films sent for reporting</td>
<td></td>
<td>Monthly</td>
</tr>
<tr>
<td>2.</td>
<td>Percentage of accurate interpretation of x-rays films by medical officers as reported by radiologist [in reference to indicator (i)]</td>
<td></td>
<td>Monthly</td>
</tr>
<tr>
<td>3.</td>
<td>Percentage of radiological examination errors i.e. wrong marker, use of primary markers, wrong site X-rayed, wrong patient X-rayed</td>
<td></td>
<td>Monthly</td>
</tr>
</tbody>
</table>
**SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES**  
*(Facility without Radiologist)*

<table>
<thead>
<tr>
<th>Indicator 01</th>
<th>Percentage of X-ray films sent for reporting</th>
</tr>
</thead>
</table>

**Rationale**: This indicator was selected because:

- In hospitals without a resident radiologist, only selective films are sent for reporting by the radiologist as per request of the Medical Officer.
- For radiological examination to have an impact on patient management, the films/images should be reported by a radiologist.

**Definition of Terms:**

**X-ray Film Reporting:**

This is a clinical interpretation of the radiography film. The only person who is privileged to prepare and document a radiology report is a qualified physician (radiologist) who has been granted specific clinical privileges in that clinical setting. The Radiological Report is an official medical document that provides description and interpretation for any officially requested radiological examinations.

**Inclusion Criteria**: All X-rays done for inpatients and outpatients in the facility

**Exclusion Criteria**: NA

**Type of Indicator**: Rate Based Process Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of X-ray films sent for reporting to the Radiologist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of X-ray films taken for inpatients and outpatients in the month X 100%</td>
</tr>
</tbody>
</table>

**Target**

**Data Collection**: Monthly

**Comments/Review**: 

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*Malaysian Society for Quality in Health* 2017
SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES (Facility without Radiologist)

Indicator 02: Percentage of accurate interpretation of x-rays films by medical officers as reported by radiologist [in reference to indicator (i)]

Rationale: This indicator was selected because:

- In hospitals without a resident radiologist, this indicator reflects the accuracy of the interpretation of the x-ray films by medical officers with reference to the films reported by radiologist.

- For radiological examination to have an impact on patient management, the films/images should be accurately interpreted.

Definition of Terms:

A Radiological Report:

A Radiological Report is a clinical document that provides interpretation to any radiological films/images by a radiologist. The only person who is privileged to prepare and document a radiology report is a qualified physician (radiologist) who has been granted specific clinical privileges in that hospital or clinical settings. It is an official medical document that provides description and interpretation for any officially requested radiological exam.

Inclusion Criteria: All x-rays films sent to the radiologist for reporting

Exclusion Criteria: NA

Type of Indicator: Rate based Process Indicator

Numerator: Number of radiological reports (for X-rays films sent for reporting) from the Radiologist that corresponds to the Medical Officers findings X 100%

Denominator: Total number of X-ray films sent to the Radiologist for reporting

Target: Data Collection: Monthly

Comments/Review:
**SERVICE STANDARD 14: RADIOLOGY/DIAGNOSTIC IMAGING SERVICES**  
(Facility without Radiologist)

| Indicator 03 | Percentage of Radiological Examination Errors i.e. wrong marker, use of primary markers, wrong site x-rayed, wrong patient x-rayed |

**Rationale**: This indicator was selected because:

- There is a need for adequate quality control in performing Radiological examinations to ensure the effectiveness of the Radiological Services.
- This indicator is a reflection of the many processes carried out in an imaging department. In a conventional imaging department this indicator has great relevance as it reflects on all the processes namely radiographic techniques, performance of x-ray machines, film processing and storage of films. It also takes into account instances when the radiological examination was not performed according to what was requested by the referring doctor.

**Definition of Terms:**

**Radiological Examination Errors:**

Errors in performing Radiological Examinations that include a repeat of plain x-rays and all contrast examinations and ultrasound due to wrong marker or use of primary marker, wrong part or wrong view, wrong site or wrong patient.

**Inclusion Criteria**: All radiological examinations that had to be repeated due to the Wrong Part or Wrong View being taken by the radiographer.

**Exclusion Criteria**: NA

**Type of Indicator**: Rate Based Process Indicator

| Numerator | Number of radiological examinations/ imaging that had to be repeated due to wrong part, wrong view, wrong site or wrong patient X-rayed X 100% |
| Denominator | Total number of radiological examinations/imaging done in the same period |

**Target**

**Data Collection**: Monthly

**Comments/Review**: 
<table>
<thead>
<tr>
<th>No</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Laboratory Turnaround Time (TAT) for urgent Full Blood Count within 45 minutes</td>
<td>&gt; 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>2</td>
<td>Notification of neonatal serum bilirubin result &gt;300 umol/L within 30 minutes</td>
<td>within 30 minutes</td>
<td>Monthly</td>
</tr>
<tr>
<td>3</td>
<td>Rejection Rate of specimens</td>
<td>&lt;1%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>
SERVICE STANDARD 15: PATHOLOGY SERVICES

Indicator 01 : Laboratory turnaround time (LTAT) for urgent Full Blood Count (FBC) within 45 minutes

Rationale : This indicator was selected because:

- One of the objectives of a haematology laboratory is to provide fast laboratory results for the management of medical emergency
- Timeliness of the services is the capability of the laboratory providing fast results.
- A fast laboratory turnaround time (LTAT) is desirable and is one of the indicators of efficient laboratory services
- Full Blood Count is a basic and commonly requested test provided in all healthcare facilities
- This indicator measures the clinical effectiveness of care and is expected to reflect the time taken for urgent request for tests and the corresponding results to institute the appropriate care.

Definition of Terms:

1. Laboratory Turnaround Time (LTAT):
   Refers to the time the specimen is received in the laboratory to the time the test results is validated and dispatched or available in the system. This should be within the agreed target time and quality objective of the service.

2. Full Blood Count (FBC):
   Automated measurement of blood cell parameters.

3. Urgent FBC:
   FBC requested as urgent for immediate management of patient or emergency cases

Inclusion Criteria : All requests sent for full blood counts (FBC) that are labelled as urgent

Exclusion Criteria : 1. Request for non- urgent FBC
   2. Request short turnaround time (STAT) not for immediate management of patient or emergency cases
   3. FBC done at POCT site

Type of Indicator : Rated Based Process Indicator

Numerator : Number of urgent Full Blood Count (FBC) with LTAT within (≤ ) 45 minutes

Denominator : Total number of urgent Full Blood Count (FBC) requested

Target : 

Data Collection : Monthly

Comments/Review :
SERVICE STANDARD 15: PATHOLOGY SERVICES

Indicator 02 : Notification of neonatal serum bilirubin result >300 µmol/L within 30 minutes

Rationale :

This indicator was selected because:

- Neonatal jaundice is a common medical condition in newborn babies. High levels of unconjugated bilirubin may lead to acute and chronic bilirubin encephalopathy if appropriate treatment is not promptly instituted. Prolonged hyperbilirubinaemia in neonates may cause neurodevelopmental problem including athetoid cerebral palsy, hearing loss and visual impairment. Acute hyperbilirubinaemia can result in kernicterus.

- Active communication of critical results is part of overall responsibilities of patient care in clinical pathology service. Requestor has a responsibility to ensure contact details are clear. Individual laboratory must define their pathway for critical result reporting and define a failsafe system.

- This is in line with the Malaysian Patient Safety Goal No. 8 which requires critical result to be notified within 30 minutes when is ready to be reported. Failure of timely communication and follow up of critical laboratory values (results) can lead to errors and increased morbidity and mortality.

- Hyperbilirubinaemia 300 µmol/L is indication for urgent medical intervention e.g. exchange transfusion to avoid complication. Therefore it is important to ensure timely critical result communication between the laboratory and the clinician.


Definition of Terms:

1. **Critical Result**: Test result or value that falls outside the critical limits or the presence of any unexpected abnormal findings which may cause imminent danger to the patient and/or require immediate medical attention.

2. **Critical Limit**: Boundaries of low and high laboratory test results beyond which may cause imminent danger to the patient and/or require immediate medical attention.

3. **Result Verification**: Means results analysed, confirmed and ready to be reported.

4. **Neonate**: Day 1 to day 28 of life

5. **Notification**: Any mode of communication e.g. telephone, SMS. All communication must be documented.
<table>
<thead>
<tr>
<th><strong>Inclusion Criteria</strong></th>
<th>First sample of neonatal total bilirubin results &gt; 300 µmol/L</th>
</tr>
</thead>
</table>
| **Exclusion Criteria**| 1. Neonatal total bilirubin results > 300 µmol/L in babies more than 28 days old  
2. Neonatal total bilirubin results > 300 µmol/L but the requesting location (ward or clinic) cannot be identified from the request form.  
3. Subsequent sample of neonatal total bilirubin results > 300 µmol/L  
4. Unable to contact after 2 attempts within 15 minutes. Results will be reported with the comment. |
| **Type of Indicator** | Rate Based Process Indicator |
| **Numerator** | Number of neonatal total bilirubin results > 300 µmol/L notified within 30 minutes after result verification |
| **Denominator** | Total number of neonatal total bilirubin results > 300 µmol/L |
| **Target** | ≥ 95% |
| **Data Collection** | Monthly |
| **Comments/Review** | |
## SERVICE STANDARD 15: PATHOLOGY SERVICES

### Indicator 03 : Rejection Rate of Specimens

**Rationale** : This indicator was selected because:

- There is a need for validity and reliability in performing laboratory testing of specimens to ensure appropriate patient care and effectiveness of the Pathology Services.
- This indicator and has great relevance as it reflects on the processes of collection of specimens and transportation, techniques of testing, performance of machines and processing to obtain accurate and reliable results to provide effective patient care. It also takes into account instances when the specimen was not obtained as per technical instruction for the specific specimen.

**Definition of Terms:**

*Specimens rejected* by the laboratory and testing needing to be repeated.

**Inclusion Criteria** : All testing done for in-patients and the testing is done within the same admission.

**Exclusion Criteria** : NA

**Type of Indicator** : *Rate Based Process Indicator*

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Total number of specimens rejected</th>
<th>X 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of specimens sent for testing in the same period</td>
<td></td>
</tr>
</tbody>
</table>

**Target** : <1%

**Data Collection** : Monthly

**Comments/Review** :
### SERVICE STANDARD 16: BLOOD TRANSFUSION SERVICES

There is tracking and trending of specific performance indicators which include but not limited to at least two (2) of the following indicators:

<table>
<thead>
<tr>
<th>No</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cross-Match Transfusion Ratio</td>
<td>≤ 2.0</td>
<td>Monthly</td>
</tr>
</tbody>
</table>
| 2. | Expiry rates of different blood components  
- red cell: ≤ 2.5%  
- platelet concentrates: ≤ 15%  
- apheresis (platelet or plasma): 0% | red cell: ≤ 2.5%  
platelet concentrates: ≤ 15%  
apheresis (platelet or plasma): 0% | Monthly |
| 3. | Number of adverse events in donors  
(adverse donor reactions and seroconversion) | | Monthly |
| 4. | Number of Adverse Events in patients  
[near misses, transfusion errors (incorrect blood component transfused), transfusion reactions, transfusion transmitted infections] | 0 | Monthly |
## SERVICE STANDARD 16: BLOOD TRANSFUSION SERVICES

### Indicator 01 : Cross- Match Transfusion Ratio

**Rationale** : This indicator was selected because:

- Cross-match transfusion ratio is an indicator of appropriateness of blood ordering. A ratio of more than 2.5 reflects excessive ordering of blood cross matching tests, thus imposing inventory problems for blood banks, an increase in workload, cost and wastage.

- This indicator is intended to assist in the enhancement of the cost efficiency of cross-matching process, avoid unnecessary additional workload on laboratory personnel and results in better management of blood stocks.

- This indicator has great relevance on the judicial use of blood and blood products which carries high risks when not administered appropriately as well as assesses the performance of the Blood Transfusion Services.

### Definition of Terms:

1. **Cross- Match:**
   A compatibility test carried out on patient's serum with donor red blood cells before blood is transfused.

2. **Transfusion:**
   The infusion of crossed- matched whole blood or red blood cell concentrates to the patient.

3. **Cross-matched transfusion ratio:**
   A ratio of the number of red blood cell units crossed matched to the number of red blood cell units transfused.

**Inclusion Criteria** : All units of packed red blood cells that are cross-matched in the blood bank for potential transfusion.

**Exclusion Criteria** : Safe Group O blood given without cross match in an emergency situation.

**Type of Indicator** : Rate Based Process Indicator

**Numerator** : Number of red cell units cross matched

**Numerator** : Number of red cell units transfused

**CT Ratio is** : Total number of units cross matched : Total number of units transfused

**Target** : $\leq 2.0$

**Data Collection** : Monthly

**Comments/Review** : 
<table>
<thead>
<tr>
<th>SERVICE STANDARD 16: BLOOD TRANSFUSION SERVICES</th>
</tr>
</thead>
</table>
| **Indicator 02**: Expiry rates of different blood components:  
  - red cell: ≤ 2.5%  
  - platelet concentrates: ≤ 15%  
  - apheresis (platelet or plasma): 0%  |

**Rationale**: This indicator was selected because:
- Utilization of donated blood can be fully optimized by preparing blood components from the collected whole blood.
- This indicator reflects safety precautions and standards on the use of blood and blood products which can be life threatening when not administered appropriately.
- This indicator reflects the increasing expectations of safety standards in the blood transfusion services.

**Definition of Terms:**

1. **Blood Components**: Therapeutic components of blood (red cell, white cell, platelets, plasma) that can be prepared by centrifugation, filtration and freezing using conventional blood bank methodology.

2. **Inclusion Criteria**: All units of blood components prepared/kept in the blood bank.

3. **Exclusion Criteria**: NA

4. **Type of Indicator**: Rate based Process Indicator

5. **Red cell blood component**
   - **Numerator**: Number of expired units of red cell blood component
   - **Denominator**: Total number of units of red cell blood component prepared/available
   
   Target: - red cell: ≤ 2.5%
   - platelet concentrates: ≤ 15%
   - apheresis (platelet or plasma): 0%

6. **Platelet concentrates**
   - **Numerator**: Number of expired units of platelet concentrates blood component
   - **Denominator**: Total number of units of platelet blood component prepared/available

   Target: - platelet concentrates: ≤ 15%

7. **Apheresis (platelet or plasma)**
   - **Numerator**: Number of expired units of Apheresis (platelet or plasma)
   - **Denominator**: Total number of units of Apheresis (platelet or plasma) prepared/available

   Target: - platelet concentrates: ≤ 15%  
   - apheresis (platelet or plasma): 0%

8. **Type of Indicator**: Rate based Process Indicator

9. **Data Collection**: Monthly

10. **Comments/Review**:
**SERVICE STANDARD 16: BLOOD TRANSFUSION SERVICES**

**Indicator 03** : Number of adverse events in donors (adverse donor reactions and seroconversion)

**Rationale** : This indicator was selected because:

- Regular voluntary non-remunerated blood donors are safer source of blood for transfusion as they have lower risk of carrying any agents of blood borne infection.
- Donor safety is of paramount importance during blood donation sessions and is assured, in so far as it can be, by donor selection guidelines, SOPs, adequately trained staff and appropriate facilities. Despite these measures, various adverse events and reactions can and do occur during and after blood donation. These complications can be a negative experience for donors. Hence Blood Centres have a duty of care to minimise the risks to donors.
- This indicator reflects the effectiveness of care of blood donors and the increasing expectations of safety standards and cost.

**Definition of Terms:**

1. **Regular Blood Donors**:
   Qualified blood donors who have donated their blood at a minimum frequency of 2 times within two years in the same blood centre.

2. **Adverse Events/Adverse reactions in Donors**:
   Refers to any unintended response in donor from complications related to blood donation. The complications are grouped into two main categories: those with predominantly local symptoms and those with predominantly generalized symptoms. The most common systemic adverse events were fatigue, vasovagal symptoms and nausea and vomiting. The most common arm findings were bruise arm soreness and haematoma. The more serious complications are specific to aphaeresis donations, e.g. citrate reactions, haemolysis, air emboli, allergic reactions to ethylene oxide used in the sterilization of the harness, and thrombocytopenia and protein deficiency from excessive platelet or plasma donations respectively.

Ref: Manual on Adverse events and reactions during blood donation- EU definition.

A surveillance program on blood donor reactions needs to be established especially on seroconversion.

<table>
<thead>
<tr>
<th><strong>Inclusion Criteria</strong></th>
<th>All types of blood donors (e.g. new, regular, relapsed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exclusion Criteria</strong></td>
<td>Deferred donor due to temporary and permanent deferral.</td>
</tr>
<tr>
<td><strong>Type of Indicator</strong></td>
<td>Rate Based Process Indicator</td>
</tr>
</tbody>
</table>

| **Numerator** | Number of cases of adverse events in donors reported in a given period of time |

<table>
<thead>
<tr>
<th><strong>Target</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Collection</strong></td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>Comments/Review</strong></td>
<td>:</td>
</tr>
</tbody>
</table>
SERVICE STANDARD 16: BLOOD TRANSFUSION SERVICES

Indicator 04: Number of Adverse Events in patients [near misses, transfusion errors (incorrect blood component transfused), transfusion reactions, transfuse transmitted infections]

Rationale: This indicator was selected because:

- Blood transfusion is a complex process which involves several personnel in the blood bank and clinical departments. Transfusion error can occur at any phase of the transfusion chain. It can be divided into 3 phases:
  i. Incidence of sampling and labelling error (clinical departments)
  ii. Incidence of laboratory error
  iii. Incidence of administrative error

- Adverse events related to blood transfusion reflects safety precautions on the use of blood and blood products which can be life threatening and contribute to patient morbidity and mortality when not administered appropriately. Incidences of adverse events related to blood transfusion i.e. near misses, transfusion errors (incorrect blood component transfused), transfusion reactions, transfuse transmitted infections) must be monitored for the purpose of implementing corrective and preventive measures.

- This indicator reflects the clinical effectiveness of care and increasing expectations of safety standards and cost. Patients and family members have high expectations of safety and quality of blood.

Definition of Terms:

Adverse Events related to Blood Transfusion

i. Any untoward occurrence associated with the collection, testing, processing, storage and distribution, of blood and blood components that might lead to death or life-threatening, disabling or incapacitating conditions for patients or which results in, or prolong hospitalization or morbidity.

ii. Outcomes that are not intended or desired to occur as a result of transfusion of blood and blood products that include transfusion errors, transfusion reactions and transfusion transmitted infections. Transfusion errors can arise from mislabeling sample tubes, mislabeling blood packs, donor grouping, patient ABO typing compatibility testing and transcription errors.

Ref: Manual on Adverse events and reactions during blood donation- EU definition.

Inclusion Criteria: All patients transfused with blood and blood products
Exclusion Criteria: NA
Type of Indicator: Sentinel Event

Numerator: Number of incidences of blood transfusion related adverse events in patients
### SERVICE STANDARD 17: REHABILITATION MEDICINE SERVICES

There is tracking and trending of specific performance indicators which include but not limited to at least two (2) of the following indicators:

<table>
<thead>
<tr>
<th>No</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Percentage of inpatients with timely establishment of an interdisciplinary Rehabilitation Plan within seven (7) days of admission/referral (MOH is ≤ 5 working days of admission)</td>
<td>≤ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>2.</td>
<td>Percentage of inpatients receiving timely functional measure assessment within seven (7) days of admission/referral (MOH ≤ 5 days of admission/referral)</td>
<td>≤ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>3.</td>
<td>Percentage of inpatients with functional measure assessment prior to cessation of patient rehabilitation programme</td>
<td>≤ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>4.</td>
<td>Percentage of inpatients with length of stay of ≥ 120 days for Spinal Rehabilitation Program</td>
<td>&lt; 20%</td>
<td>6 monthly</td>
</tr>
</tbody>
</table>
**SERVICE STANDARD 17: REHABILITATION MEDICINE SERVICES**

| Indicator 01: Percentage of inpatients with timely establishment of an interdisciplinary Rehabilitation Plan within seven (7) days of admission/referral |

**Rationale**: This indicator was selected because:

- In Rehabilitation Medicine, the Rehabilitation Plan for inpatient care requires a documented and agreed plan that specifies goals, interventions and time frame established via interdisciplinary consultation.
- This indicator reflects Timely Access of Care and Patient Centeredness

**Definition of Terms:**

1. **Rehabilitation Medicine**: May be defined as the multi- and interdisciplinary management of a person's functioning and health. Rehabilitation medicine defines itself with respect to concepts of functioning, disability and health. Assessment and intervention management rely on these concepts and may use the WHO International Classification of Functioning, Disability, and Health (ICF) Model of Functioning and Disability and therefore facilitates multidisciplinary responsibility and coordination of interventions.

2. **Rehabilitation Plan**: Documented evidence of consultation, communication between the disciplines involved in the rehabilitation plan.

**Inclusion Criteria**: All referral/admission for inpatient rehabilitation care.

**Exclusion Criteria**: All inpatients for rehabilitation care with length of stay of less than Seven working days of admission.

**Type of Indicator**: Rate Based Process Indicator

**Numerator**: Number of in-patients established interdisciplinary rehabilitation plan within seven working days of admission

**Denominator**: Total number of patients admitted/ referred for in-patient rehabilitation care during the specified period of time

**Target**: ≤ 90%

**Data Collection**: Monthly

**Comments/Review**: 

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*Performance Indicators - MSQH Hospital Accreditation Standards 5th Edition*
## SERVICE STANDARD 17: REHABILITATION MEDICINE SERVICES

### Indicator 02: Percentage of inpatients receiving timely functional measure assessment within seven (7) days of admission/referral

**Rationale**: This indicator was selected because:

- Rehabilitation Medicine prioritizes function as the objective of service delivery.
- The use of objective measure of function enables assessment of this and subsequent audit of clinical effectiveness of service delivery.

**Definition of Terms:**

1. **Functional Measure Assessment:**
   
   Documented evidence of assessment including functional scales e.g. Modified Barthel Index (BMI), Spinal Cord Independence Measure (SCIM), Functional Independence Measure (FIM), Modified Rankin Scale (MRS), Functional Capacity etc.

2. **Inclusion Criteria**: All inpatients referral/admission for inpatient rehabilitation care.

3. **Exclusion Criteria**:
   1. Patients where there is interruption of rehabilitation care within seven days of admission.
   2. Patients with length of stay of less than 7 days of admission

4. **Type of Indicator**: Rate Based Outcome Indicator

   **Numerator** : Number of inpatients received timely functional measure assessment within ≤ 7 working days of admission/referral X 100%

   **Denominator** : Total number of inpatients admitted or referred for rehabilitation care during the specified period of time

**Target** : ≤ 90%

**Data Collection** : Monthly

**Comments/Review** :
## SERVICE STANDARD 17: REHABILITATION MEDICINE SERVICES

<table>
<thead>
<tr>
<th>Indicator 03</th>
<th>Percentage of inpatients with functional measure assessment prior to cessation of patient rehabilitation programme</th>
</tr>
</thead>
</table>

### Rationale

This indicator was selected because:

- Rehabilitation Medicine prioritizes function as the objective of service delivery.
- The use of objective measure of function enables assessment of this and subsequent audit of clinical effectiveness of service delivery in adequate discharge planning and minimization of risk of readmission.

### Definition of Terms:

1. **Functional Measure Assessment:**
   
   Documented evidence of assessment including functional scales e.g. Modified Barthel Index (BMI), Spinal Cord Independence Measure (SCIM), Functional Independence Measure (FIM), Modified Rankin Scale (MRS), Functional Capacity etc.

2. **Inclusion Criteria:**
   
   All inpatients referral/admission for inpatient rehabilitation care.

3. **Exclusion Criteria:**
   
   1. Patients who have an unplanned cessation of in-patient rehabilitation care.
   2. All inpatients for rehabilitation care with length of stay of less than 7 days of admission

### Type of Indicator

Rate Based Outcome Indicator

### Numerator

Number of inpatients with functional measure assessment prior to cessation of inpatient rehabilitation care X 100%

### Denominator

Total number of inpatients who ceased an inpatient rehabilitation care during the specified period

### Target

>90%

### Data Collection

Monthly

### Comments/Review


## SERVICE STANDARD 17: REHABILITATION MEDICINE SERVICES

### Indicator 04: Percentage of inpatients with length of stay of ≥ 120 days for Spinal Rehabilitation Program

**Rationale**: This indicator was selected because:

- Length of Stay is a reflection of effectiveness of care delivered to clients within specified criteria.
- This indicator reflects the clinical effectiveness of care and Patient Centeredness.


### Definition of Terms:

1. **Length of Stay**: Period of program commencement until cessation which may include temporary interruptions that should not be more than one week. The number of days the inpatient is hospitalized (LOS), day of admission to day of discharge describes the length of stay in hospital.

2. **Spinal Rehabilitation Program**: An individualized, goal directed rehabilitation program that is coordinated by a rehabilitation physician in optimizing functional outcome and or quality of life of the individual with a spinal cord impairment.

### Inclusion Criteria: All patients admitted for a spinal rehabilitation program

### Exclusion Criteria: Occurrence of an event/complication that causes interruption of spinal rehabilitation program of 7 days or more.

### Type of Indicator: Rate Based Process Indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of patients for spinal rehabilitation program whose length of stay exceeded 120 days X 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of patients for spinal rehabilitation program during the specified period</td>
</tr>
</tbody>
</table>

### Target: < 20%

### Data Collection: 6 Monthly

### Comments/Review: 
### SERVICE STANDARD 17A: PHYSIOTHERAPY SERVICES

There is tracking and trending of specific performance indicators which include but not limited to at least two (2) of the following indicators:

<table>
<thead>
<tr>
<th>No</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Incidence of Burns sustained during delivery of Electrotherapeutic Modalities or Thermal Agents</td>
<td>Sentinel Event</td>
<td>Monthly</td>
</tr>
<tr>
<td>2.</td>
<td>Percentage of inpatient referrals seen on time (≤ 24 hours) by the physiotherapist</td>
<td>≥ 85%</td>
<td>Monthly</td>
</tr>
<tr>
<td>3.</td>
<td>Rate of positive outcomes from cases referred for chest physiotherapy by Intensive Care Unit</td>
<td></td>
<td>Monthly</td>
</tr>
</tbody>
</table>