THIS STRUCTURE

ULTRASOUND
Modalities

DICOM — DICOM

X-RAY
Modalities

DICOM

MRI/CT
Modalities

DICOM

PACS

RIS

Pharmacy

Scheduling
Order Management Admin
**ELECTRONIC
MEDICAL RECORD**

LIS

Expert
Systems

HL7

IEEE

Critical Care
System

Administration
Financial
Systems

Human
Resource
Management

Material Mgmt
Support Service

Images

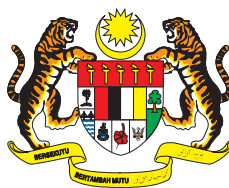**Clinical**

CLINICAL BASED

NON CLINICAL

OPERATING THEATRE MANAGEMENT SYSTEM

Functional Requirements Brief Hospital Information System

Health Informatics Standards
Ministry of Health, Malaysia

FOREWORD

Tan Sri Datuk Dr. Haji Mohd. Ismail Merican
Director General of Health, Malaysia

Malaysia being progressive in the adoption of Information communication "Technology in Health Care" has embarked in the creation of ICT enabled facilities. The Telemedicine blueprint "Leading Healthcare into Information Age" has laid the foundation for the planning and implementation of ICT initiatives in the country. Amongst the building blocks that has been recognised as vital for interoperability was the development and adoption of Health Informatics Standards.

The Ministry of Health has played a leading role in the development of Health Informatics Standards. In collaboration with stakeholders in the public and private sector, several standards have been developed for adoption in the country. Amongst them include the "Functional Requirements Brief" that has been prepared to provide functional requirements of the core business of the hospital as an entity. The business functional model including business functions, operational policies, high level work flows and system functionalities are well documented. This document would provide the health care personnel as to how the work processes and procedures are streamlined in a computerised working environment and for the system developers, it provides an in depth understanding of the user needs.

The documents that have been developed includes the

- Person Management System
- Pharmacy Information System
- Laboratory Information System
- Radiology Information System
- Blood Bank Information System
- Oral Health Information System
- Operation Theatre Management System

I wish this document be used as a generic standard in the development and customization of hospital information system being deployed in the hospitals in the country. I take the opportunity to congratulate the expert group that has put in countless number of man hours for the preparation of the document and all members of the consensus meeting for their participation and contribution.

TAN SRI DATUK DR. HAJI MOHD. ISMAIL MERICAN
DIRECTOR-GENERAL OF HEALTH, MALAYSIA

VISION FOR HEALTH

Malaysia is to be a nation of healthy individuals, families and communities, through a health system that is equitable, affordable, efficient, technologically appropriate, environmentally-adaptable and consumer-friendly, with emphasis on quality, innovation, health promotion and respect of human dignity and which promotes individual responsibility and community participation towards an enhanced quality of life.

MISSION OF THE MINISTRY OF HEALTH

The mission of the Ministry of Health is to build partnership for health to facilitate and support the people to :

- Attain fully their potential in health.
- Motivate them to appreciate health as valuable asset.
- Take positive action to improve further and sustain their health status to enjoy a better quality of life.

This document is intended to define the function of the Operating Department and functionalities for the Operating Theatre Management System (OTMS). The OTMS is a core application under the clinical support services (CSS) functions of the Hospital Information System (HIS).

This document will be used for communicating the OTMS functions to both users as well as the application developers, who will use it for defining the requirement specifications of the proposed OTMS, which eventually will be used to facilitate detailed software design.

As the scope and functionalities of the OTMS detailed in this document are generic; individual hospitals should apply this document within the context of their business functions.
This document is presented in three sections. The sections are as follows:-

Section 1:- Business Functions of the Operating Department.
Section 2:- System Functionalities & System Interface of the OTMS.
Section 3:- Appendices.

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2 METHODOLOGY

2.1 The Function and Functionality Brief for the Operating Theatre Management System developed through a series of meetings and workshops (spanning over a period of 12 weeks) was a collaborative effort between the Core Team Unit (for Total Hospital Information System), Medical Development Division, Ministry of Health and Solutions Protocol Sdn Bhd.

2.2 An expert group made up of clinicians and nursing personnel were formed to examine the current processes in the Operating Department. The group then identified those processes where IT could be deployed. They described the business functions of the Operating Department and mapped the relationship between functions, work processes and workflows, taking into consideration the operational policies and relevant system functionalities required to support the workflows.

2.3 The Function and Functionality Brief was subsequently developed based on a framework encompassing the following elements:-
- Business Functions of the Operating Department.
- Policies and Procedures.
- High Level Workflows.
- System Functionalities.

SECTION 1 : BUSINESS FUNCTIONS

This section describes the "Business Functions" of the Operating Department of a typical "Total Hospital Information System" (THIS) type of hospital.

It provides an overview on the range and type of services of the Operating Department, as well as outlining the scope of the Operating Theatre Management System (OTMS).

3.1   INTRODUCTION.

The Operation Theatre (OT) is a place where surgical operations are performed by surgeons. In addition, specific diagnostic, therapeutic or invasive procedures are also performed by specialists from a variety of disciplines.

Its main workload is derived from a host of surgical disciplines encompassing general surgery, obstetrical & gynaecological surgery, orthopaedic & trauma surgery, ophthalmic surgery, otorhinolaryngological surgery, urological surgery, neurosurgery, oral & maxillofacial surgery, plastic & reconstructive surgery, breast & endocrine surgery, cardiothoracic surgery and others.

Fundamental to the provision of optimal peri-operative care is the consideration for patient safety during the administration of anaesthesia and the performance of the surgical procedure.

Trained personnel, complete documentation of the procedures performed, the availability of reliable monitoring equipments, good procedure-specific instrumentation and above all, an environment where surgical asepsis is assured by best practices conforming to International Standards are critical success factors in the safe and efficient delivery of peri-operative care. Predefined policies, guidelines and standards are therefore, essential prerequisites.

3.2   RANGE OF SERVICES:-
3.2.1   Daycare Surgery.
3.2.2   Elective Surgery.
3.2.3   Emergency Surgery.

3.3   TYPE OF SERVICES:-
3.3.1   General Surgery.
3.3.2   Gynaecological Surgery.
3.3.3   Obstetrical Surgery.
3.3.4   Orthopaedic Surgery.
3.3.5   Ophthalmic Surgery.
3.3.6   Otorhinolaryngological Surgery.
3.3.7   Cardiothoracic Surgery.
3.3.8   Urological Surgery.
3.3.9   Neurosurgery.

3.3.10   Maxillofacial Surgery.
3.3.11   Plastic & Reconstructive Surgery.

Certain services will be available only at selected hospitals.

3.4   CLIENTS:-
3.4.1   Patients in the clinic.
3.4.2   Patients in the ward.
3.4.3   Private patients (for future consideration).

3.5   OPERATIONAL POLICIES:-
3.5.1   A theatre committee shall be formed and the committee shall review operational policies from time to time. The committee shall comprise the following members:-
- Hospital Director/ Deputy Director.
- Anaesthetists.
- Surgeons.
- Matron in-charge of OT.
- Senior Medical Assistant in-charge of anaesthetic equipments.

3.5.2   The operating department will conform to international standards and follow stringent quality control to ensure the safe and efficient care of the peri-operative patient.
3.5.3   The operating hours for elective/ daycare cases shall be decided by the hospital policy.
3.5.4   In the event that the designated operating room for a specific discipline cannot be used, an alternative operating room shall be made available.
3.5.5   Departments/ disciplines requiring special considerations, such as operating, microscope, operation traction table and heart-lung by-pass machine shall be assigned to designated theatres.
3.5.6   The operation theatre shall be closed for routine cleaning once a week, preferably end of the week; however operating rooms shall be available for emergency cases.
3.5.7   Unauthorized persons, including visitors and relatives shall not be allowed to enter operating room without appropriate clearance. However, exception shall be made to allow parents/guardians to accompany children or adult patients who are mentally incompetent at the time of induction and in the recovery room.
3.5.8   The culturing of air and equipment in operating theatre shall be performed, as and when indicated.

3.6   SCOPE.

The scope for provision of functional requirements under the OTMS is derived from a multitude of activities that take place within the Operation Theatre complex. The activities are as follows:-

3.6.1   Case Management:-
3.6.1.1 Scheduling of case.

3.6.1.2 Patient Tracking (Checking-in/ Checking-out).

3.6.1.3 Monitoring.

3.6.1.4 Performance of Procedure.

3.6.1.5 Handling of Pathological Specimens.

3.6.1.6 Management of Death in OT.

3.6.1.7 Management of Organ and Tissue Procurement in OT.

3.6.2 Documentation.

3.6.3 Quality Control.

3.6.4 Data and Information Management.

3.6.5 Facility and Utility Management.

3.6.6 Material Management.

3.6.7 Human Resource (Rostering).

As documentation pertaining to the peri-operative care of the patient constitutes part of the patient's EMR (electronic patient record), system interface with the Clinical Information System is essential for the end-to-end transmission of the care plan for the patient scheduled for surgery.

3.7 CASE MANAGEMENT:-

3.7.1 SCHEDULING:-

3.7.1.1 Objectives:-

3.7.1.1.1 A methodical and comprehensive approach in scheduling patients for operations.

3.7.1.1.2 Efficient management of OT time and availability.

3.7.1.1.3 Effective planning and coordinated deployment/ utilization of available resources (personnel, supplies, equipment, etc).

3.7.1.1.4 Provision for audit purposes such as number of cases postponed or cancelled.

3.7.1.2 Workflow:-

Please refer to the following workflows on scheduling:-

3.7.1.2.1 HIS/OTMS/WF/2 – High level generic workflow for scheduling surgery.

3.7.1.2.2 HIS/OTMS/WF/3 – High level workflow for scheduling of daycare surgery.

3.7.1.2.3 HIS/OTMS/WF/4 – High level workflow for scheduling of elective inpatient surgery.

3.7.1.2.4 HIS/OTMS/WF/5 – High level workflow for scheduling of emergency cases.

3.7.1.2.5 HIS/OTMS/WF/6 – High level workflow for cancellation and rescheduling of surgery.

3.7.1.3 Policies and Procedure:-

Scheduling of Elective & Daycare Cases:-

3.7.1.3.1	The operating hours for elective/ daycare cases shall be decided by the hospital policy.
3.7.1.3.2	All cases for surgery must be scheduled by authorized personnel.
3.7.1.3.3	Waiting list shall be viewable system-wide (read-only) for clinician awareness.
3.7.1.3.4	Cases should be scheduled according to time allocated.
3.7.1.3.5	When scheduling, a complete set of information should be documented (full name of patient, MRN, diagnosis (indication for surgery), ward, name of surgeon, procedure, age, type of anaesthesia, special instructions/ requirements, estimated time of surgery).
3.7.1.3.6	A designated person shall be responsible for preparing the final list. He/she shall determine whether the patient will be available and had consented for surgery.
3.7.1.3.7	A final list must be prepared based on cases scheduled. The final list shall be endorsed by the surgeon responsible from the respective department and made available to all parties concerned by 12-noon on the day prior to the scheduled operations.
3.7.1.3.8	An order entry for the procedure to be performed shall be made (in Clinical Information System) upon confirmation of the final list by a designated person.
3.7.1.3.9	Amendments to the final list can only be made by authorized personnel following consultation with the relevant parties.
3.7.1.3.10	In the event of a cancellation or postponement of the operation, due explanation shall be given to the patient/ relatives by the attending doctor (surgeon or anaesthetist).
3.7.1.3.11	The reason for cancellation or postponement of the operation shall be appropriately documented.

Scheduling for Emergency Cases:-

3.7.1.3.12	All emergency cases must be scheduled in a single emergency list. The cases should be distributed to all available emergency ORs. This will allow flexible use of available OR.
3.7.1.3.13	Emergency cases shall be prioritized by the anaesthetist in-charge according to agreed policy and after mutual consultation.

3.7.1.3.14   Patient shall be listed in the emergency list as soon as clinical decision has been made.

3.7.2   PATIENT FLOW AND TRACKING (CHECK-IN/ CHECK-OUT/ TRANSFER):-

3.7.2.1 Objectives:-

3.7.2.1.1   An indicator as to the whereabouts of the patient while in the OT complex for both the OT as well as the ward staff.

3.7.2.1.2   Efficient management of patient in relation to time management, safety and accountability.

3.7.2.1.3   Effective planning and coordinated deployment/ utilization of available resources (personnel, supplies, equipment, etc).

3.7.2.1.4   Ensuring a smooth transition of patient movement from one point to another within the OT complex.

3.7.2.2 Objectives:-

Please refer to the following workflows on patient tracking:-

3.7.2.2.1   HIS/OTMS/WF/7 – High level workflow for pre-operative phase of daycare surgery & transfer of patient from Daycare Ward to OT.

3.7.2.2.2   HIS/OTMS/WF/8 – High level workflow for patient transferred from ward to operation theatre.

3.7.2.2.3   HIS/OTMS/WF/14 – High level workflow for patient transferred from OT to ICU.

3.7.2.2.4   HIS/OTMS/WF/15 – High level workflow for patient transferred from OT to Ward.

3.7.2.3 Policies and Procedure:-

General:-

3.7.2.3.1   The whereabouts of all patients within the OT complex shall be made known to relevant care providers.

Elective Cases:-

3.7.2.3.2   The reception nurse/ receptionist calls for the first case of each list/OR at 0715 hours.

3.7.2.3.3   For subsequent cases, the reception nurse will call for the case upon instruction of anaesthetist/ GA nurse of the respective OR.

3.7.2.3.4	For cases not requiring GA/RA, the reception nurse will call for the case upon instruction from surgeon/ circulating nurse of the respective OR.
3.7.2.3.5	The reception nurse instructs the porter to fetch patient from the respective ward with a calling slip and trolley.
3.7.2.3.6	Cases are to be sent to the theatre only upon receiving instructions from the OT reception staff. The nurse in-charge shall verify that the patient is properly prepared using a checklist before transferring the patient to OT trolley.
3.7.2.3.7	The identity of the patient must be verified by both the porter and ward nurse.
3.7.2.3.8	All patients shall be transported to and from the operation theatre on a trolley accompanied by a nurse from the respective ward.
3.7.2.3.9	Upon arrival at the OT air-lock, the patient shall be received by the OT reception staff. She/he, together with the accompanying ward staff, will verify the identity, preparation & consent of the patient using the checklist. The patient shall then be transferred to the OT trolley and sent to the holding bay.
3.7.2.3.10	Parents/guardians are allowed to accompany the paediatric patient to the holding bay, or at the recovery bay in the OT.
3.7.2.3.11	From the holding bay, patient can be sent to the induction room or directly to the OR.
3.7.2.3.12	The patient stays in the OR until the procedure is completed.
3.7.2.3.13	The anaesthetist will decide whether the patient goes to recovery bay or directly to the ICU.
3.7.2.3.14	Patient is accompanied by anaesthetist and his/her nurse during transfer.
3.7.2.3.15	GA nurse passes the patient over to the recovery nurse who will be responsible for monitoring and nursing care of the patient until transferred out from OT.
3.7.2.3.16	The anaesthetist shall certify the patient fit according to a checklist before he/she is transferred out from the OT.
3.7.2.3.17	Once the patient is deemed fit for transfer-out by the anaesthetist, the recovery nurse shall inform the ward nurse and the porter.
3.7.2.3.18	The recovery nurse together with the ward nurse shall verify the identity of the patient and pass over relevant information regarding his/her clinical status (level of consciousness, vital signs) and post-operative orders for the patient at the air-lock. Specific urgent post-operative orders shall be communicated verbally to the ward staff by the recovery nurse/anaesthetist and the orders must

be documented. The entire process of passing over relevant information and patient to the ward staff shall be documented as per post-operative checklist.

3.7.2.3.19   The ward nurse shall acknowledge receiving the patient.

3.7.2.3.20   The porter shall transfer patient to the ward accompanied by the ward nurse.

3.7.2.3.21   The anaesthetist shall directly communicate with the ICU staff regarding any transfer of patient from OT to the ICU. The respective ward staff shall be informed of the transfer.

3.7.2.3.22   Patients being transferred to ICU will be received and accompanied by ICU staff.

Alternative policies and procedures for dire-emergencies:-

3.7.2.3.23   For patients with life-threatening situations who need to be rushed to OT such as cases of polytrauma from emergency department and obstetric emergency, the doctor and nurse managing the case shall send the patient directly to the OT, after informing the anaesthetist on-call.

3.7.2.3.24   Doctors on-call and nurses on-shift duty will cater for emergency surgeries after office hours.

Alternative policies and procedures for Caesarean Section:-

3.7.2.3.25   All newborns delivered by Caesarean Section shall be attended to by a trained maternity nurse and a paediatric doctor.

3.7.2.3.26   The baby shall be received and transferred from the OT to the labour/ delivery suite by the labour-room maternity nurse.

3.7.2.3.27   If the baby requires intensive care, the paediatric doctor and labour-room maternity nurse shall receive and transfer the baby in an incubator to the NICU.

Alternative policies and procedures for Daycare Surgery:-

3.7.2.3.28   Daycare procedures are scheduled on a staggered time basis.

3.7.2.3.29   The patient presents himself/herself to the reception counter. The receptionist registers the patient.

3.7.2.3.30   The nurse will verify the patient's identity. She will perform a pre-procedure assessment and complete a checklist.

3.7.2.3.31   The nurse will notify the OT reception of the patient's arrival.

3.7.2.3.32	Patient will be notified in advance of their turn to allow them time to change into the patient's gown.
3.7.2.3.33	The patient will wait in the designated area until his/her turn comes.
3.7.2.3.34	The patient will be transferred to the OT when OT receptionist calls for the case.
3.7.2.3.35	The patient will be transferred from the recovery bay of the OT to the Daycare Ward upon recovery from anaesthesia. Cases performed under local anaesthesia may be transferred directly from the OR to the Daycare Ward.
3.7.2.3.36	The patient who requires admission after daycare surgery must be discharged from Daycare Unit and be admitted to an inpatient ward.

3.7.3 MONITORING.

Monitoring requirements will be addressed under the Critical Care Information System.

3.7.3.1 Objectives:-

3.7.3.1.1	Ensuring patient safety during the peri-operative period while undergoing surgery and anaesthesia.
3.7.3.1.2	Detecting any untoward incident/complication early to allow timely intervention to reduce adverse consequences.
3.7.3.1.3	Ensuring treatment rendered is effective.

3.7.3.2 Workflow.

The Monitoring work process is embedded in the workflows of the various peri-operative activities.

3.7.3.3 Policies & Procedure:-

3.7.3.3.1	Patients arriving at the holding bay will have their vital signs checked and recorded.
3.7.3.3.2	All patients undergoing anaesthesia (GA, RA) or sedation must be monitored.
	• Minimal monitoring includes non-invasive monitoring of blood pressure, ECG, pulse oximetry (oxygen saturation) and respiratory rate.
	• End-tidal carbon dioxide monitoring is essential for patients intubated and ventilated under general anaesthesia.
3.7.3.3.3	Patients undergoing procedure under LA shall be adequately monitored during the entire procedure and resuscitation facilities must be made available.

3.7.3.3.4	More intensive and invasive monitoring shall be provided for patients who are more critical or undergoing complicated procedure.
3.7.3.3.5	Induction of general anaesthesia shall be done in the operating room. However, regional anaesthesia can be instituted in the induction room, if adequate facilities and staff are available to monitor the patient.
3.7.3.3.6	The anaesthetist must be in attendance to monitor the patient throughout the entire duration of anaesthesia. In the event that the anaesthetist has to leave the patient for a short duration, the task shall be delegated to a trained and reliable assistant.
3.7.3.3.7	Following general anaesthesia, patients shall be given oxygen supplement and monitored during transportation from the OR to the recovery bay.
3.7.3.3.8	All patients must be monitored in the recovery bay by dedicated OT staff. Monitoring parameters shall include the patients general condition (airway, breathing, circulation), NIBP, pulse oximetry, blood loss from wound site and drains, fluid input/output and signs of distress/pain. Any change in patient's general condition and/or vital signs shall be reported immediately to the anaesthetist.
3.7.3.3.9	**Pertinent monitoring data captured through the CCIS shall be automatically sent to the patients' EMR.**

Alternative policies and procedures on monitoring for patients transferredin from ICU to OT or transferred out from OT to ICU.

3.7.3.3.10	In the event, the patient is transferred from ICU to OT or transferred from OT to ICU, where monitoring is required as a continuous activity, the ICU bed shall be brought directly into the OR for the purpose of transfer.

3.7.4 PROVISION OF ANAESTHESIA, PERFORMANCE OF SURGICAL PROCEDURE & PERI-OPERATIVE NURSING:-

3.7.4.1 Objectives:-

3.7.4.1.1	Ensuring procedure is performed in accordance with best practices (according to established protocols/guidelines and conformance with International Standards).
3.7.4.1.2	Avoidance of complications during provision of anaesthesia and performance of surgery.
3.7.4.1.3	Ensuring patient safety during the peri-operative period while undergoing surgery and anaesthesia.

3.7.4.2 Workflow.

Workflows listed below refer to processes for the provision of anaesthesia, the performance of surgical procedures and peri-operative nursing activities:-

3.7.4.2.1	HIS/OTMS/WF/9 – High level workflow for administration of anaesthesia.
3.7.4.2.2	HIS/OTMS/WF/10 – High level workflow for performance of surgery.
3.7.4.2.3	HIS/OTMS/WF/11 – High level workflow for reversal of anaesthesia.
3.7.4.2.4	HIS/OTMS/WF/12 – High level workflow for patient in recovery bay.
3.7.4.2.5	HIS/OTMS/WF/16 – High level workflow for intra-operative inter-departmental referral.
3.7.4.2.6	HIS/OTMS/WF/17 – High level workflow for swab & instrument count.

3.7.4.3 Policies & Procedure:-

Provision of Anaesthesia:-

3.7.4.3.1	The anaesthetist shall perform a complete check of anaesthetic machine before commencement of the list and a quick check before the start of each case.
3.7.4.3.2	The anaesthetic nurse shall prepare the equipment, instruments and other accessories required for the planned type of anaesthesia, as ordered by the anaesthetist.
3.7.4.3.3	The anaesthetist is responsible for preparing, administering and recording the drugs used throughout the entire process of anaesthesia.
3.7.4.3.4	On arrival of patient in the OR, the anaesthetist shall verify:-

- The identity of the patient.
- The procedure to be performed.
- The site & side of surgery.
- The consent.

3.7.4.3.5	The anaesthetic nurse shall initiate and continue the monitoring of patient throughout the operation according to policies and procedures described in section 5.6.4.
3.7.4.3.6	The anaesthetist shall ensure that adequate functioning intravenous access lines are in place.
3.7.4.3.7	**Prior to starting the case, the anaesthetic nurse shall confirm the availability of blood/ blood products if these had been ordered.**

3.7.4.3.8 The anaesthetic nurse shall assist the anaesthetist during the conduct of anaesthesia including the positioning and monitoring of the patient.

3.7.4.3.9 The anaesthetist shall administer general or/and regional anaesthesia according to established guidelines/ protocols.

3.7.4.3.10 The anaesthetist shall be the clinician responsible for the overall care of patient throughout the procedure and until the patient is certified fit to be transferred from the recovery bay to the respective ward.

3.7.4.3.11 If blood transfusion is required, the anaesthetist shall ensure that policies relating to blood transfusion are adhered to.

3.7.4.3.12 The anaesthetist is responsible for documenting the details of anaesthetic procedures and intra-operative monitoring in accordance with the policies and procedures described under section 3.6.4.

3.7.4.3.13 The anaesthetist shall give specific instructions regarding the post-anaesthetic care (oxygen administration, positioning of patient, maintenance of airway, pain management, etc) for the patient.

3.7.4.3.14 In the recovery bay, the patient shall be monitored according to the policies and procedures described under section 3.6.4.

Peri-operative nursing:-

3.7.4.3.15 On arrival in OR, the scrub nurse shall verify:-
- The identity of the patient.
- The procedure to be performed.
- The site & side of surgery.
- The consent.

3.7.4.3.16 The circulating nurse shall acknowledge the arrival of the patient after verifying the patient (refer to section 2.3).

3.7.4.3.17 The patient is transferred onto the OT table and positioned according to the need of anaesthesia and type of surgery. The surgeon, his/her assistant and circulating nurse are responsible for supervising and assisting the attendants in positioning of the patient.

3.7.4.3.18 The scrub nurse shall scrub, gown and glove.

3.7.4.3.19 The scrub nurse shall prepare the appropriate instrument sets, drapes and supplementary items required for the surgery.

3.7.4.3.20 The scrub nurse shall assist the surgeon throughout the performance of the procedure.

3.7.4.3.21 The circulating nurse shall supply the scrub nurse any additional requirements such as sutures, swabs, implants,

etc. She is also responsible for the tracking of the number of items used, handling of the specimens, adjusting the setting of equipment and the operation lights.

3.7.4.3.22   For some operations, other staff (medical assistant/ nurse/attendant) may assist in the handling of special equipment such as operating microscopes, endoscope equipment, etc.

3.7.4.3.23   For operations requiring intra-operative imaging (fluoroscopy, C-arm, plain x-ray, ultrasound, etc), a radiographer may assist in the performance of the imaging procedure.

Performance of Surgical Procedure:-

3.7.4.3.24   The surgeon/assistant shall verify the identity of the patient, procedure to be performed, site & side of surgery.

3.7.4.3.25   There shall be good communication between anaesthetist and surgeon in the best interest of patient and an efficient time management.

3.7.4.3.26   The surgeon shall discuss with the scrub nurse regarding the conduct of the procedure, the equipment & instruments to be used. He/she shall inform the scrub nurse of any further special requirements or instructions.

3.7.4.3.27   The surgeon shall review patient's clinical notes including laboratory and imaging results, before the commencement of the procedure and if necessary at any time during performance of surgery.

3.7.4.3.28   The surgeon and his/her assistant shall scrub, gown and glove.

3.7.4.3.29   The surgeon and his/her assistant shall prepare and drape the operation site.

3.7.4.3.30   The surgeon shall perform the procedure with the appropriate assistant(s).

3.7.4.3.31   If specimens are taken for pathological examination, the surgeon shall follow the policies and procedures as prescribed.

3.7.4.3.32   The surgeon is responsible for documenting details of the procedure and related operative findings.

3.7.4.3.33   The surgeon shall place appropriate orders for post-operative management of the patient.

3.7.5   HANDLING OF PATHOLOGICAL SPECIMEN:-

3.7.5.1 Objectives:-

3.7.5.1.1   Ensuring pathological specimens are identified correctly,

handled appropriately and accounted for.

3.7.5.1.2	Ensuring complete and correct documentation on specimen collected.
3.7.5.1.3	Efficient despatch of specimen to the respective laboratory.
3.7.5.1.4	**Preventing risk of contamination and cross infection from bio-hazard specimen within the OT complex in particular and hospital in general.**

3.7.5.2 Workflow.

Please refer to HIS/OTMS/WF/18 – High level workflow for handling pathology specimen in operating theatre.

3.7.5.3 Policies & Procedure:-

Specimen Collection:-

3.7.5.3.1	The surgeon shall handover the specimen taken to the scrub nurse. He shall inform the personnel handling the specimen (his assistant, scrub nurse and circulating nurse) the nature of the specimen and the site from which it is taken and the test to be done. The surgeon shall apply appropriate markers (e.g. silk sutures) to denote orientation and site of special interest.
3.7.5.3.2	The circulating nurse shall prepare the appropriate container and label it with a temporary label. The temporary label shall contain the following information:-

- Patient's name.
- MRN.
- Nature of specimen.
- Site of specimen.
- Test to be performed.

3.7.5.3.3	The temporary label is necessary to avoid mix-up and mislabeling.
3.7.5.3.4	The scrub nurse shall handover the specimen to the circulating nurse who shall place the specimen in the prepared container and add the recommended preservative. If the surgeon wishes to inspect the specimen, he should do so before the specimen is placed in the container.
3.7.5.3.5	Upon completion of surgery, the surgeon or his assistant shall place orders for the tests. At this point, proper specimen labels shall be generated for each of the specimen collected.
3.7.5.3.6	The circulating nurse shall collect the labels and affix them to the right specimen.

Specimen Despatch:-

3.7.5.3.7   All specimens must be logged in by the circulating nurse.

3.7.5.3.8   All specimens shall be sent to the designated holding area before being dispatched to the laboratory.

3.7.5.3.9   A designated nurse shall be responsible for the despatch of all specimens to the laboratory. She should ensure that the number of specimens dispatched tally with the number of specimens logged in.

3.7.5.3.10   All specimens shall be handled with the utmost care and shall be accounted for.

3.7.5.3.11   All specimens shall be promptly delivered to the **Pathology Department.**

3.7.5.3.12   Specimen taken after-hours must be delivered first thing in the next working morning.

3.7.5.3.13   All specimens shall be considered as bio-hazards and standard precautions shall be followed when handling them. Specimens taken from known cases of infectious diseases should be double packed and a label with the words "Bio-hazard" affixed onto them.

3.7.5.3.14   All pathological specimens shall be sent from the OT to the pathology department using pneumatic tube with the exception of CSF, GXM, urine culture, tissue specimens **in formalin and frozen section for HPE which shall be** sent by hand.

Handling of Medico-legal specimen:-

3.7.5.3.15   Items such as bullets, knives or blades removed from a patient or body that are deemed to be of forensic importance shall be handled as per policy and procedure defined by legal requirements (addressed by Laboratory Information System).

Handling of Amputated Body Parts:-

3.7.5.3.16   Amputated limbs shall be properly wrapped, labelled and documented before being sent out of the theatre via the dirty corridor to the ward for appropriate disposal.

Handling of Specimen not Requiring Analysis and Used Implants:-

3.7.5.3.17   Specimen not requiring analysis (e.g. stones, foreign body, placenta, prepuce, etc.) and used implants must be wrapped, appropriately labelled and documented before being given to the patient.

3.7.6 MANAGEMENT OF DEATH IN OT:-

3.7.6.1 Objectives:-

3.7.6.1.1	Compliance with established guidelines on declaration of death, documentation of the cause of death and the issuance of burial permit.
3.7.6.1.2	Efficient transfer of body to mortuary.
3.7.6.1.3	Maintaining the dignity, decency and respect for the deceased.
3.7.6.1.4	Empathy for the grieving relatives.
3.7.6.1.5	**Provision of adequate information and attending to the needs of the relatives.**

3.7.6.2 Workflow.

Please refer to HIS/OTMS/WF/19 – High level workflow for management of death occurring in operation theatre.

3.7.6.3 Policies & Procedure

3.7.6.3.1	Death occurring in OT shall be declared as such and **properly documented. Patient without life signs shall not** be moved to the ward or ICU.
3.7.6.3.2	The declaration and documentation of death shall be done in the theatre by the surgeon.
3.7.6.3.3	For death of newborn following Caesarean Section in OT, declaration and documentation of death shall be done in the theatre by the attending paediatrician.
3.7.6.3.4	An incident report is made using the appropriate forms and the Consultant in-charge/Head of Department, Matron in-charge of the theatre complex and the Hospital Director shall be notified as soon as possible.
3.7.6.3.5	Relatives/next-of-kin shall be informed of the death by the attending doctors in the "grief/counselling room" within the OT complex following consultation with consultant in-charge/ Head of Department.
3.7.6.3.6	All deaths occurring in the theatre shall be reported to the police immediately. The police will decide whether a post-mortem is required, based on information provided **by the attending doctor, in which case police Form P61** shall be issued if a post-mortem is required.
3.7.6.3.7	If post-mortem is required, the burial permit shall be issued by the forensic department of the hospital after the post-mortem.
3.7.6.3.8	If post-mortem is not required, the attending surgeon

shall be responsible for issuing the burial permit.

3.7.6.3.9   Relatives are allowed to view the deceased at a designated area, as per hospital policy.

3.7.6.3.10   The deceased shall be sent directly from the theatre to the mortuary together with the burial permit following last office.

3.7.7   DOCUMENTATION:-

3.7.7.1 Objectives:-

3.7.7.1.1   Comprehensive documentation of care rendered to patient during the peri-operative period.

3.7.7.1.2   Facilitate case study, generation of medical reports and provision for future references for the continuum of care.

3.7.7.1.3   For audit purposes.

3.7.7.2 Workflow.

Please refer to HIS/OTMS/WF/13 – High level workflow for post-operative documentation by surgeon.

3.7.7.3 Policies & Procedure:-

Documentation of procedures performed on individual patient:-

3.7.7.3.1   Patient care must be considered as continuously provided regardless of the location of the patient. While in the OT, documentation of care, including progress of patient, monitoring parameters (fluid intake/ output, vital signs) and relevant events of significance must be recorded in the EMR.

3.7.7.3.2   Nursing care rendered during the peri-operative period shall be documented in the EMR as per nursing care provided in the ward.

3.7.7.3.3   All procedures performed must be documented in accordance with pre-defined format containing data elements as specified by MOH, such as:-

     o   Surgical Report - PER-SUR-202.

     o   Obstetric Report - PER-OBST-305.

     o   Anaesthetic Record - PER-ANES-301.

and other pertinent data, as required by various specialities. Data captured will become part of the EMR.

3.7.7.3.4   The documentation of care is a joint responsibility between nursing personnel, surgical team and anaesthetic team.

3.7.7.3.5   Documentation shall include the following data:-

Patient Details:-
- Patient name.
- MRN.
- I/C.
- Age.
- Gender.
- Race.
- Ward.
- Department.
- Place (OT).
- Case (Elective/ Emergency).
- Date.

Surgical Notes:-
- Time surgery start.
- Time surgery end.
- Surgeon.
- Supervisor.
- Assistants.
- Name of procedure performed (Operation).
- Pre-op diagnosis.
- Post-op diagnosis.
- Peri-operative procedures (peri-operative antibiotics).
- Operative findings.
- Complication of surgery.
- Operative procedures performed.
- Closure of incision.
- Pathological examination.
- Post-operative instructions.
- Report written by.
- Report certified by.

Anaesthesia Notes:-
- Patient ASA Classification.
- Time anaesthesia start.
- Time anaesthesia end.
- Type of anaesthesia.
- Technique of anaesthesia.
- Complication of anaesthesia.
- Estimated blood loss.

- Anaesthetist/ Assistant/ Supervisor.
- Report written by.
- Report certified by.

Nursing Notes:-
- Nurses (Scrub/ Circulating/ GA).
- Disposal of body parts.
- Implants used.
- Swab & instrument count (correct/ incorrect).
- Report written by.
- Report certified by.

3.8 MULTI-ORGAN PROCUREMENT FROM BRAIN DEAD DONOR IN OT:-

3.8.1 Objectives:-
3.8.1.1   Ensuring the process of organ procurement is performed in conformity with legal requirements.

3.8.1.2   Facilitating the coordination of the multidisciplinary teams involved in the procurement process.

3.8.1.3   Ensuring the procurement process is carried out methodically, expediently and efficiently so that tissues and organs procured are in the optimal state for transplantation.

3.8.1.4   Ensuring the dignity, decency and respect for the deceased is maintained at all times.

3.8.1.5   Ensuring the relevant document is appropriately furnished.

3.8.2 Workflows.
Please refer to HIS/OTMS/WF/19 – High level workflow for multi-organ and tissue procurement of the brain dead donor in OT.

3.8.3 Policies and Procedures:-

3.8.3.1   These policies and procedures apply to the procurement of organs and/or tissues in OT from brain dead donors.

3.8.3.2   Tissues/Organs Procurement shall be scheduled in the emergency scheduler.

3.8.3.3   Before the body is brought to the OT, the following documents shall be available:-
- Death certificate.
- Consent for the tissues/organs to be donated.
- Burial Permit unless pending post-mortem.

3.8.3.4   The above documents must accompany the donor to the OT for verification by the procurement teams.

3.8.3.5   The procurement will take place in the largest operation room (OR) most proximal to where the patient was ventilated. The procurement process shall be initiated as fast as possible to

ensure the optimal state of the tissues/organs.

3.8.3.6 The procurement teams shall be ready and waiting in OT before the body is brought to the OT complex.

3.8.3.7 The donor shall be continued on full support and monitoring during transfer from ICU to OT.

3.8.3.8 The procurement teams shall verify the relevant documents to confirm the death of the donor and consent for the donation prior to the procurement surgery.

3.8.3.9 During the procurement process, the donor shall be fully supported and intensively monitored until the time the organs are procured.

3.8.3.10 Printed results of serology tests {HIV, Hep B, Hep C, VDRL, Cytomegalovirus (CMV) and Toxoplasmosis} performed earlier in the workup of the donor shall accompany each organ and tissue procured to the respective recipient centre.

3.8.3.11 All the organs procured by the various team shall be appropriately documented.

3.9 QUALITY CONTROL:-

3.9.1 Objectives:-

3.9.1.1 Ensuring the correct procedure is performed on the correct site and side of the correct patient.

3.9.1.2 Safety of patient is ensured throughout the peri-operative care.

3.9.1.3 Mishaps and complications are avoided and their effects are minimized.

3.9.1.4 Comfort and well-being of patient is ensured.

3.9.1.5 Privacy and confidentiality is assured.

3.9.1.6 Unnecessary delay, cancellation and postponement of surgery are avoided to ensure optimal utilization of space and time.

3.9.1.7 Litigations are minimized by strict compliance to all legal requirements.

3.9.2 Workflows.
The Quality Control work process is embedded in the workflows of the various peri-operative activities.

3.9.3 Policies & Procedures:-

3.9.3.1 The procedure performed must be correct and consistent with the diagnosis, done on the correct site and side of the correct patient.

3.9.3.2 The consent must be properly taken according to "Policies and Procedures of Taking Consent" and is valid for the procedure.

3.9.3.3 The type of procedure, site and side where the operation is to be performed must be appropriate to the diagnosis and accurately entered in the schedule.

3.9.3.4 Upon admission:-

  3.9.3.4.1 The nurse attending to the patient will ensure that the right patient is admitted. The patient is identified by asking for his/her name and his/her identity is verified by cross-checking with the wristband and the admission slip.

  3.9.3.4.2 The doctor responsible for the case will reconfirm the diagnosis, and determine whether the procedure, site and side listed are appropriate and correct.

3.9.3.5 The OT list should be verified when the patient is listed for surgery by the person preparing the list and endorsed by the surgeon responsible from the respective department.

3.9.3.6 When calling for the patient:-

  3.9.3.6.1 The reception nurse shall call for the case and send the porter to fetch the patient based on a system-generated Call Slip.

  3.9.3.6.2 The identity of patient must be verified by both the porter and ward nurse.

  3.9.3.6.3 The nurse in-charge shall verify the patient is **properly prepared and document it in the Pre-**operative Checklist before transferring the patient to OT trolley.

3.9.3.7 At the OT reception:-

  3.9.3.7.1 The reception nurse identifies the patient by asking for his/her name and his/her identity is verified by cross-checking with the wristband, the consent form, and the OT list.

  3.9.3.7.2 The reception nurse shall verify the patient is properly prepared. She then documents **the findings and co-signs the Pre-operative** Checklist.

3.9.3.8 When fetching the patient from the holding bay to the OR:-

  3.9.3.8.1 Based on OT list, the anaesthetic nurse confirms

with the anaesthetist and the surgeon the next case to be brought into the OR.

3.9.3.8.2   The anaesthetic nurse or/and the anaesthetist identifies the patient by asking for his/her name and his/her identity is verified by cross-checking with the wristband, the consent form, and the OT list.

3.9.3.9   On arrival at the OR:-

3.9.3.9.1   The anaesthetist, surgeon/assistant, scrub nurse and circulating nurse shall check whether consent has been taken and is valid and verify the identity of the patient, procedure to be performed, site & side of surgery.

3.9.3.10   Ensuring safety of patient and prevention of complications throughout the peri-operative period.

3.9.3.10.1   Transfer and transport of patient is carried out using safe and functioning equipment and correct techniques.

3.9.3.10.2   **Patient shall be continuously observed and monitored throughout peri-operative care.**

3.9.3.10.3   Measures shall be taken to avoid complications and injuries during positioning of patient.

3.9.3.10.4   The anaesthetist must be in attendance to monitor the patient throughout the entire duration of anaesthesia. In the event that the anaesthetist has to leave the patient for a short duration, the task shall be delegated to a trained and reliable assistant.

3.9.3.10.5   Essential equipment used during anaesthesia and surgery must be checked and confirmed to be in good working condition before commencement of the case.

3.9.3.10.6   Aseptic technique shall be strictly observed during the performance of the surgery, administration of regional anaesthesia and other invasive procedures.

3.9.3.10.7   Theatre staff shall be informed of all high risk cases scheduled for surgery so that special precautions can be instituted.

3.9.3.10.8   All policies and procedures regarding the transfusion of blood and blood products shall be strictly observed.

3.9.3.10.9   Swabs and instruments are counted at the start of surgery, before closure of body cavities and before skin closure. The counts are documented in the Swab and Instrument Count Form and duly signed by the scrub nurse and circulating nurse upon completion of surgery. The surgeon should be informed of the correctness of the count. If there is discrepancy in the count, the prescribed procedure for missing items shall be followed.

3.9.3.10   Policies related to Infection Control Guidelines shall be strictly adhered to when handling "sharps".

3.9.3.11   All untoward incidents that happen in the theatre shall be documented and be reported to the appropriate authorities (e.g. diathermy burns, nerve injury, needle-stick injuries) Such incidences shall be recorded in the "Incident Report Registry". All NIA reports related to untoward incidences shall be duly sent and be made available to the relevant authorities in the MOH.

3.9.3.12   Completeness and accuracy of documentation:-

3.9.3.12.1   There should be complete and accurate documentation of care rendered during the entire peri-operative period. When the documentation is done by junior staff, a senior officer should verify the completeness and accuracy of details and findings recorded.

3.9.3.13   Provision of adequate and proper communication, ensuring comfort and well-being.

3.9.3.13.1   Patients should be provided with education and counselling regarding procedures that they are scheduled for.

3.9.3.13.2   There should be appropriate communication between care provider and patient for all activities and at all locations. The care provider shall inform the patient's next-of-kin about any untoward incidents that occur.

3.9.3.13.3   The surgeon or his assistant shall inform the patient's next-of-kin the outcome of the surgery and status of the patient.

3.9.3.13.4   Care provider should be sensitive and responsive to the patient's need by:-
- Keeping patient warm and comfortable.
- Ensuring that patient is pain-free.
- Alleviating the patient's anxiety.
- Allowing parents or guardians to

accompany children (under 12 years of age) and mentally disabled adults in the holding bay, at time of induction and at the recovery bay.

3.9.3.14   Maintaining dignity, privacy and confidentiality:-

     3.9.3.14.1   Care provider shall ensure that the patient's decency and dignity are not compromised at all times, particularly when he/she is under anaesthesia.

     3.9.3.14.2   Care provider shall ensure that patient's details and information in relation to his condition/ surgery are not released to third party without his/ her expressed consent.

     3.9.3.14.3   Access to patient information in the system shall be limited to privileged personnel only.

3.9.3.15   Optimal utilization of space and time to avoid unnecessary delay, cancellation and postponement of surgery. Proactive interaction and communication between care-providers must be encouraged.

     3.9.3.15.1   Overbooking should be avoided.

     3.9.3.15.2   Surgeons and anaesthetists should be aware of average time taken to complete various procedures.

     3.9.3.15.3   Whenever there is a possibility of a case being cancelled for whatever reason, backup cases should be available.

     3.9.3.15.4   Whenever an OR is available/free during the elective time, it should be utilized for other listed cases or emergency cases.

     3.9.3.15.5   Turnover time should be kept to the minimum through proper scheduling, good anticipation and good communication.

3.10   DATA AND INFORMATION MANAGEMENT:-

3.10.1   Objectives:-

3.10.1.1   Storage, analysis, presentation of data for:-
- Maintaining registry of procedures performed.
- Maintaining registries of other relevant activities and events occurring in the theatre.
- Planning of human resource, material requirements, expansion and enhancement of services at hospital

and national level.
- Quality management.
- Audit.
- Research.

3.10.1.2   Collection of data in compliance with regulatory/statutory requirements:-
- Infectious diseases.
- Incident Reporting (e.g. needle-stick injuries, accidental falls, thermal burns, dislodged tooth during laryngoscopy/ intubations, etc).
- Adverse Drug Reaction (ADR) and Blood Transfusion Reaction.
- NIA indicators:-
  - o   Occurrence of adverse events during the recovery period (Respiratory Distress leading to intubations, Cardiac Arrest in the Recovery Room, A stay of more than 2 hours in the Recovery Room).
  - o   Unplanned admission to the Intensive Care Unit within 24 hours of surgery.
  - o   Peri-operative mortality and maternal mortality.

3.10.2 Workflows.

The Data and Information Management processes are embedded in the workflows of the various peri-operative activities.

3.10.3 Policies & Procedures:-

3.10.3.1   Maintaining an OT Registry.
The OT management is responsible for maintaining different registries for capturing of essential information pertaining to the peri-operative care of patients.
Among others, the registries are:-
- Registry of procedures performed.
- Registry of specimen sent for pathological examination.
- Registry of implants used.
- Registry of consignment items used.
- Registry of anaesthesia.
- Registry of disposal of body parts.
- Registry of cases by various diagnostic groups.
- Registry of cancelled cases.
- Registry of cases by fee class.
- Registry of deaths in theatre.
- Registry of organ and tissue procurement in theatre.

3.10.3.2   Care providers should be able to obtain report on cases that they have done/participated in (creation of log book).

3.10.3.3 Data for incident reporting shall be collected.

3.11 MATERIAL MANAGEMENT:-

3.11.1 Objectives.

Please refer to CSSU module.

3.11.2 Workflows.

Please refer to CSSU module.

3.11.3 Policies and Procedures:-

3.11.3.1 All sterile supplies from CSSU shall be brought to the OR via the clean corridor and kept in the sterile store.

3.11.3.2 Each department (e.g. Eye OT, Ortho OT, etc) shall have a dedicated area for consumables (sutures, tubing, catheters, etc) instruments, sterile drapes, surgical gowns and equipment storage.

3.11.3.3 Items for disposal, infected materials and soiled linen shall be removed from the theatre via dirty corridor and held in the disposal room to await collection. These items shall be kept in separate colour-coded bags in the disposal room.

3.11.3.4 Used instruments shall be rinsed thoroughly in the dirty utility room, checked and wrapped before being despatched to the CSSU via the dirty corridor.

3.11.3.5 Rigid scopes shall be washed and wrapped in the theatre before being sent to the CSSU for autoclaving.

3.11.3.6 Fibre-optic scopes, telescopes and light carrier cables shall be washed and air-dried before being disinfected/ sterilized by OT staff.

3.11.3.7 All sharp items such as hypodermic needles/syringes, trocars, scalpel blades and suturing needles shall be disposed off in the "sharps bin".

3.11.3.8 Bio-hazard containers and bags shall be disposed off via the dirty corridor for incineration in accordance with standard precautions.

3.11.3.9 **Pharmacy supplies shall be delivered from the pharmacy to the reception area. From there, they will be distributed to the designated area within the OR. Pharmacy "returns" (lotion bottles, expired drugs, etc) shall be sent to the designated area for collection.**

3.11.3.10 Topping-up of consumables and related theatre supplies shall be done once a week, preferably on the last working day.

3.12 HUMAN RESOURCE (ROSTERING):-

3.12.1 Objectives.

Please refer to Human Resource Management Module.

3.12.2 Workflows.

Please refer to Human Resource Management Module.

3.12.3 Policies and Procedures:-

3.12.3.1   Staff shall enter the theatre via the changing rooms where they shall change from their uniform or outdoor clothes into appropriate theatre attire, head cover and footwear.

3.12.3.2   Visitors entering operating theatre shall also change to appropriate OT attire, head cover and footwear.

3.12.3.3   Staff leaving the OT suite will have to change into their own attire. When re-entering, fresh OT clothes shall be worn.

3.12.3.4   Any staff entering ICU from OT must wear an overall and overshoes which must be removed upon returning to the theatre.

3.12.3.5   New team members assigned to the theatre shall undergo an induction program to be familiarized with the running of the operation theatre.

3.12.3.6   Theatre staff rostering:-

    3.12.3.6.1   The OT manager shall be responsible in preparing OT roster for OT personnel.

    3.12.3.6.2   The roster shall include particulars such as:-

- Role – doctors, sister, GA nurse, scrub nurse, circulating nurse, Medical Assistant, attendant.
- Assignment to dedicated areas – reception, holding bay, OR, recovery, etc.
- Date and time of duty – morning, afternoon, night, on-call.
- Off day, vacation leave, maternity/ paternity leave, medical leave, study leave,etc.

3.13 FACILITY & UTILITY MANAGEMENT:-

3.13.1 Objectives:-

3.13.1.1   Ensuring a safe, clean and conducive environment for both the patient and care providers.

3.13.1.2   Ensuring all equipments are in functional/ working condition prior to usage.

3.13.2 Workflows.
The Facility and Utility Management processes are embedded in the workflows of the various peri-operative activities.

3.13.3 Policies and Procedures:-

3.13.3.1   A dedicated OT nurse shall be assigned to ensure that:-
- The OR environment is conducive (e.g. temperature maintained between 18-22 degree Celsius, humidity level at 50-60%, air exchange at 15-20 cycles per hour, positive pressure ventilation).
- Housekeeping is done according to OR sanitation policy/procedure.
- Equipment (OT table, GA machine, diathermy machine, etc) must be checked prior to usage.

3.13.3.2   In the event of facility or utility disruption or failure (water/electricity disruption, air-condition malfunction, pneumatic tube malfunction, low gas pressure, auto-clave breakdown, blocked sink, etc) the appropriate authority shall be notified by the OT nurse.

3.13.3.3   Appropriate forms used for reporting the above shall be filled accordingly and dispatched to the Support Service Department.

Requirements under Sections 3.11, 3.12 and 3.13 are also integral to OT Management. As these requirements extend beyond the scope of OTMS, functionalities for the aforementioned sections shall be addressed under other modules, such as the CSSU and the Human Resource modules. However, system interface with the OTMS should be made available. Of particular importance, is the need for interface with the CSSU module for the supply of sterile sets and soft items to the Operation Theatres.

3.14   HIGH LEVEL WORKFLOWS:-

Please refer Section 3 of this document for the high level workflows:-
- HIS/OTMS/WF/1 – High level patient flow during the peri-operative period.
- HIS/OTMS/WF/2 – High level generic workflow for scheduling surgery.
- HIS/OTMS/WF/3 – High level workflow for scheduling of daycare surgery.
- HIS/OTMS/WF/4 – High level workflow for scheduling of elective inpatient surgery.
- HIS/OTMS/WF/5 – High level workflow for scheduling of emergency cases.
- HIS/OTMS/WF/6 – High level workflow for cancellation and rescheduling of surgery.
- HIS/OTMS/WF/7 – High level workflow for pre-operative phase of daycare surgery & transfer of patient from Daycare Ward to OT.
- HIS/OTMS/WF/8 – High level workflow for patient transfer from ward to operation theatre.
- HIS/OTMS/WF/9 – High level workflow for administration of anaesthesia.

- HIS/OTMS/WF/10 – High level workflow for performance of surgery.
- HIS/OTMS/WF/11 – High level workflow for reversal of anaesthesia.
- HIS/OTMS/WF/12 – High level workflow for patient in recovery bay.
- HIS/OTMS/WF/13 – High level workflow for post- operative documentation
- by surgeon.
- HIS/OTMS/WF/14 – High level workflow for patient transfered from OT to ICU.
- HIS/OTMS/WF/15 – High level workflow for patient transfered from OT to Ward.
- HIS/OTMS/WF/16 – High level workflow for intra-operative inter-departmental referral.
- HIS/OTMS/WF/17 – High level workflow for swab & instrument count.
- HIS/OTMS/WF/18 – High level workflow for handling pathology specimens in operating theatre.
- HIS/OTMS/WF/19 – High level workflow for management of death occurring in operation theatre.
- HIS/OTMS/WF/20 – High level workflow for multi-organ and tissue procurement of the brain dead donor in OT.

SECTION 2: SYSTEM FUNCTIONAL & INTERFACE

This section describes the system functionalities for the Operating Theatre Management System. The policies   and work processes are mapped to the system functionalities. It also addresses the issues of system demarcation and system interface.

4.1 System Functionalities.

4.2 System Interface.

4.1   SYSTEM FUNCTIONALITIES.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
1.0	CASE MANAGEMENT.		
	1.1 SCHEDULING FOR OPERATION:		
	1.1.1 General.	• The operating hours and operating rooms for elective/daycare cases of relevant department shall be decided by the hospital policy.	• Ability/flexibility to allow customised time slot (starting time/ending time).
	1.1.2 Scheduler.		• Ability to allow only defined users to view the scheduler. • Ability to filter and view entries by disciplines, operating rooms, surgeons and anaesthetists. • Ability to provide an audit trail on personnel accessing the scheduler and capturing the date and time of the transaction. • Ability to alert users on the number of cases that could be performed per working day, per operating room based on time allocated to the different disciplines.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		• All cases for surgery must be scheduled only by authorized personnel. • Cases should be scheduled according to time allocated. However, mutual exchange and reassigning of time slots between departments shall be allowed.	• Ability to provide access only to authorized users to schedule cases and make amendments. • Ability to indicate that the person who log-in is the person who scheduled/ made modification. • Ability to allocate time slot to specific department or user. • Ability to restrict users at departmental level from making entries on slots which do not belong to them on their allocated theatre days. • Ability to provide flexibility for assigning allocated slot of a department to a different department.
		• There should be coordination between departments to avoid overlap in appointments for various procedures.	• Ability to alert clinicians in the event of clashes in the patient's schedule.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		• OT list should be archived in perpetuity to allow audit and data collection.	• Ability to archive theatre list, as determined by hospital policy. • Ability to generate report (view) containing address, contact number, e-mail address of patients.
		• Waiting list shall be viewable system-wide (read-only) for clinician awareness.	• Ability to generate waiting list.
	1.1.3 Scheduling for Elective Surgery. 1.1.4 Generation of OT List.	• When scheduling, a complete set of information should be documented consisting of:- o Full name of patient. o MRN (Medical Record Number). o Age. o Gender. o Ward Number. o Patient Contact Number. o Diagnosis [Indication for Surgery]. o Name of Surgeon. o Discipline. o Name of Anaesthetist. o Planned Procedure. o Type of Anaesthesia.	• Ability to auto populate the following demographic data/essential clinical information from the PMS and CIS:- o Name. o MRN. o Age. o Gender. o Ward Number. o Patient Contact Number. o Parity Status (Female Patients). o Diagnosis [Indication for Surgery]. o Planned Procedure. o Known Allergy. o Bio-Hazard Status.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		o Special Instructions/ Requirements. o Estimated Time of Surgery. o No. of Times Rescheduled. o **Name of Person Who Scheduled The Operation.** o Known Allergy. o Bio-Hazard Status. o Status of List. o Remarks.	• (The abovementioned items shall be made mandatory fields).
		• An operation list must be prepared based on cases scheduled.	• Ability to produce an operation list based on the cases scheduled (provisional list). • Ability to generate the final OT list from the scheduler. • Ability to re-sequence the cases on the final list, as and when necessary.
		• A designated person shall be responsible to prepare the operation list.	• Ability to provide colour coding on status of the operation list (definite).
		• The operation list shall be verified by the surgeon responsible from the respective department.	• Ability to allow surgeon responsible to verify the operation list (verify list).

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
			• Ability to print the operation list at any stage.
		• The list is considered as finalized after the anaesthetist has reviewed the patients and has amended the verified list.	• Ability to provide colour coding on status of the operation list (provisional, definite, verified, final).
		• Amendment to the final list can only be made by an authorized personnel following consultation with the relevant parties.	• Ability to restrict this privilege to authorized personnel only (final list).
		• An order entry shall be created for the procedures to be performed in CIS upon confirmation of the final list by a designated person.	• Ability to auto-convert the final list upon confirmation into order entries for procedures to be performed in a respective patients' EMR.
	1.1.5 Scheduling for Daycare Surgery.	• Procedures gazetted as Daycare Cases shall be decided by the Head of Department of respective disciplines with the hospital administration.	• Ability to display gazetted list of Daycare Cases for just-in-time information.
	1.1.6 Generate daycare admission slip and information leaflets.	• Scheduler shall only be accessed by personnel from the relevant discipline (nurse in-charge and doctors of the relevant discipline).	• Ability to provide scheduler for daycare surgery. The schedule should be amendable until it is finalised and verified.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		• Daycare procedures shall be scheduled on a staggered time basis and composition of the list shall be verified by the surgeon in-charge.	• Ability to update scheduled status to be verified by surgeon.
	1.1.7 Generate daycare lists.		• Ability to generate and print daycare admission slip, patient instructions, educational pamphlets, and relevant information pertaining to deposit requirements.
			• Ability to generate and print daycare OT/endoscopy lists the day before the event for the clinician's perusal. • Ability to allow surgeon responsible to verify the operation list (verify list).
	1.1.8 Scheduling for Emergency Surgery.	• The patient should be informed in writing or via e-mail/telephone of the confirmed date of operation.	• Ability to send e-mail or SMS messages as a reminder to the patient via the system or generate and print a postcard to be sent to his/her home address.
	1.2.1 General.	• All emergency cases must be scheduled in a single emergency list. The cases should be	• Ability to schedule patient in a single virtual location (master list) and distribute the list to

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		distributed to all available emergency ORs. This will allow flexible use of available OR. • Emergency cases shall be prioritized by the anaesthetist in-charge according to agreed policy and following mutual consultation with the relevant parties.	actual appropriate OR. • Ability to schedule emergency cases according to assigned priority. • Ability to provide flexibility for prioritization of the final list.
		• Listing of patients in the emergency list shall only be performed by a doctor.	• Ability to filter and view emergency list according to:- o Date. o Discipline. o Operating Room. o Surgeon. o Anaesthetist. o Person Who Made the Entry. • Ability to auto-bring-forward the deferred cases to the next day (emergency list is based on a 24-hour time frame which is 8 a.m. to 8 a.m. on the following day). • Ability to generate and print the emergency list.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
1.2 PATIENT FLOW AND TRACKING (CHECK-IN/ CHECK-OUT/ TRANSFER)			
	1.2.2 Elective Surgery:-	• The whereabouts of all patients within the OT complex shall be made known to relevant care providers.	• Ability to provide colour coding for tracking the status of the procedure:- o Awaiting Call. o To Call. o Case Called. o Checked In. o Awaiting Procedure. o Procedure In Progress. o Procedure Completed. o In Recovery. o Checked Out. • Ability to provide information regarding location of the patient.
	Calling For Patient. Cancellation/ postponement of operation.	• The reception nurse shall instruct the porter to fetch patient from the respective ward. A 'calling slip' shall be given to the porter as 'proof' of call and patient shall be transported using a trolley. • The identity of patient must be verified by both the porter and ward nurse.	• Ability to generate and print a calling slip encompassing the following information:- o MRN. o Name of patient. o Age. o Gender. o Ward Number. o Diagnosis. o Procedure to be performed.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		• In the event of a cancellation or postponement of the operation, due explanation shall be given to the patient/relatives by the attending doctor (surgeon or anaesthetist). • All cancellations or postponement shall be adequately documented and the reasons shall be auditable for the purpose of improving the quality of service.	• Ability to denote status of the case, such as:- o No-show. o Cancelled. o **Postponed.** o Rescheduled. • Ability to provide colour coding to indicate cancellation within the list. • Ability to provide audit trail on personnel making the cancellation and capture the location, date and time of the transaction. • Ability to record reason for operation not performed. The various possibilities shall be made available in canned text in the form of drop-down list for reasons of cancellation. o Patient Unfit. o Patient Not Properly Prepared. o Patient Did Not Turn Up. o Over Booking Of Cases. o Blood Not Available. o ICU Bed Not Available. o Inadequate OT Time. o Equipment Failure.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
	Reschedule case.		o Utility Interruption (Electricity/ Water). o Air-Conditioning System Breakdown. o Surgeon Unavailable. o Anaesthetist Unavailable. o Unforeseen Circumstances (Natural Disaster). o Consent unavailable. o Other Reasons (freetext). • Ability to interface with CIS to auto-populate the reason for cancellation in patient's EMR. • Ability to indicate frequency of cancellation of a particular case. • Ability to auto populate the cancellation or postponement registry. • Ability to generate report for cancellation by fields and sessions (daycare surgery, elective surgery, emergency, etc).
		• Patient whose surgery has been postponed shall be given appropriate consideration in the subsequent scheduling.	• Function for rescheduling is the same as scheduling (refer to1.6).

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
	Sending of Patient to OT.	• Repeat cancellations shall be avoided as far as possible. • Patient shall be rescheduled for the earliest available date, subject to patient fitness/condition.	• Ability to provide colour coding for rescheduled cases. • Ability to flag cases by the number of rescheduling. • Ability to alert clinician in the event of clashes in the patient schedule. • Ability to provide a 'drag & drop' tool to facilitate rescheduling.
	Discharge from recovery bay.	• The ward nurse in-charge shall verify that the patient is adequately prepared using the checklist before transferring the patient to the OT trolley. • Upon arrival at the OT air-lock, the patient shall be received by the OT reception staff. She/he, together with the accompanying ward staff, will verify the identity, preparation & consent of the patient using the checklist. The patient shall then be transferred to the OT trolley and be sent to the holding bay.	• \<CIS> Ability to provide for co-signing of checklist by ID verification via barcode reader or password. • Ability to acknowledge and document patient arrival in holding-bay (check-in), operating room, recovery bay and check-out from OT via barcode scanning.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
	Security/Safety Considerations.	• The Anaesthetist shall certify the patient fit according to a checklist before he/she is transferred out from the OT. • The recovery nurse together with the ward nurse shall verify the identity of the patient and pass over relevant information regarding his/her clinical status (level of consciousness, vital signs) and post-operative orders for the patient at the air-lock. Specific urgent post-operative orders shall be communicated verbally to the ward staff by the recovery nurse/anaesthetist. • The ward nurse shall acknowledge the receipt of patient.	• <CIS>. • Ability to retrieve GA checklist from CIS. • <CIS>. • Ability to provide for co-signing of post-operative checklist by ID verification via barcode reader or password. • Ability to acknowledge receipt of patient via barcode reader.
	1.2.4 Daycare Surgery.	• Theatre staff shall be informed of all high risk cases scheduled for surgery so that special precautions can be instituted.	• <Refer to CIS>. • Ability to provide an indicator to indicate high risk cases.
		• The patient presents himself/herself to the reception counter. The receptionist registers the patient.	• Ability to indicate the patient has registered via colour coding.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
	Patient Monitoring.	• The nurse will verify the patient's identity and perform a pre-procedure assessment and will complete a pre-operative checklist. • The nurse will notify the OT reception of the patient's arrival. • Patient will be notified in advance of their turn to allow them time to change into the patient's gown. • The patient will be transferred to the OT when OT receptionist calls for the case. • Information pertaining to the following:- o Status of progress of the procedure. o Location within the OT complex. o Postponement/ cancellation of procedure. should be collected and made available to OT manager.	• Ability to provide an indicator after the nurse has verified the patient. • Ability to provide real-time status in the form of an electronic chalkboard. • Ability to acknowledge patient's arrival in holding bay (check-in), operating room, recovery bay and check-out from OT via barcode scanning. • Ability to provide for co-signing of checklist by ID verification via barcode reader or password. • Ability to provide real-time status in the form of an electronic chalkboard.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
1.3 MONITORING			
		• Patients arriving at the holding bay will have their vital signs taken and recorded.	• <Critical Care Information System>. • Ability to interface monitoring equipment with the CCIS.
		• All patients undergoing anaesthesia (GA, RA) or sedation must be monitored.	• Ability to interface the CCIS with CIS to capture pertinent monitoring information for the patient's EMR. • Ability to use rules to capture pertinent monitoring data which include various parameters at specified intervals and in relation to various events and interventions.
		• Pertinent monitoring data captured through the CCIS shall be automatically sent to the patients' EMR.	• <CCIS-CIS interface>.
1.4 PROVISION OF ANAESTHESIA , PERFORMANCE OF SURGICAL PROCEDURE, DOCUMENTATION OF PROCEDURES.			**PERI- OPERATIVE NURSING &**
		• On arrival in OR, the anaesthetist shall verify the identity of the patient, pre-operative orders, procedure to be performed as well as the site & side of surgery.	• <CIS module>. • Ability to acknowledge patient arrival in OR (refer to Section 5.3).

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
			• Ability to provide access to CIS module for viewing of patient's clinical notes, laboratory and imaging results. • Each patient's clinical record should be initialised from the operation list through a hyperlink.
		• The anaesthetist is responsible for preparing, administering and recording of drugs used throughout the entire process of anaesthesia.	• <CCIS-CIS interface>. • Ability to order and record drugs via CIS module. • Ability to place orders (intra-operative and post-operative) via CIS module.
	1.4.2 Peri-operative nursing.	• The anaesthetic nurse shall ascertain the availability of blood/ blood products for transfusion, if these are requested.	• <CCIS-CIS interface>. • Ability to view order status for blood group cross match. (The availability should be reflected by an icon/colour code in the OTMS patient list).
		• On arrival in OR, the scrub nurse shall verify the identity of the patient, procedure to be performed, site & side of surgery.	• <CIS module>. • Ability to provide for co-signing of pre-

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		• The circulating nurse shall acknowledge the arrival of the patient after verifying the identity of the patient.	operative checklist by ID verification via barcode reader or password. • OTMS interface to CIS.
	1.4.3 Performance of Surgical Procedure.	• The scrub nurse shall prepare the appropriate instrument sets, drapes and supplementary items required for the surgery. • The circulating nurse shall supply the scrub nurse any additional requirements such as sutures, swabs, implants, etc. She is also responsible for the tracking of the number of items used, handling of the specimens, adjusting the settings of equipment and the operation lights.	• Ability to interface with CSSD module to facilitate the provision of appropriate sets for the performance of surgery. • Ability to provide decision support in the form of reference guide on various procedures detailing the type of equipment requirements, positioning of patient, personnel, etc. (Ability to provide user-definable templates).
		• The surgeon/ assistant shall verify the identity of the patient, procedure to be performed, site & side of surgery. • The surgeon shall review patient's clinical notes including laboratory and imaging results before the commencement of the	• <CIS module>. • Each patient's clinical record should be initialised from the operation list through a hyperlink.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		procedure and if necessary at any time during performance of surgery.	• Ability to provide access to CIS module for viewing of patient's clinical notes, laboratory and imaging results. • Ability to order and record drugs via CIS module. • Ability to place orders (intra-operative and post-operative) via CIS module.
1.5 HANDLING PATHOLOGICAL SPECIMENS			
		• The circulating nurse shall prepare the appropriate container and label it with a temporary label. The temporary label shall contain the following information:- o Patient's name. o MRN. o Nature of specimen. o Site of specimen. o Test to be performed. • The temporary label is necessary to avoid mix-up and mislabelling.	

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		• Upon completion of surgery, the surgeon or his assistant shall place orders for the tests. At this point, proper specimen labels shall be generated for each of the specimen collected.	• < CIS Module>. • Ability to place order for specimen collected. • Ability to provide information to the pathologist regarding specimen in order details.
	1.5.2 Specimen Dispatched.		• Ability to print specimen labels. The labels shall contain the following information:- o Name of patient. o MRN. o Unique Accession Number. o Nature and site of specimen (Short Label/A,B,C,D,E etc). o Test to be performed.
		• All specimens must be logged in by the circulating nurse. • A designated nurse shall be responsible for the dispatch of all specimens to the laboratory. She should ensure that the number of specimens dispatched tally with the number of specimens logged in.	• <OTMS-CIS interface>. • Ability to log in specimen in the OR. • Ability to view all specimens logged in for the day before being dispatched. • Ability to generate specimen dispatch registry. Demographic details should auto populate.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
			• Ability to provide print-outs of the daily logs.
1.6 MANAGEMENT OF DEATH IN OT			
		• Death occurring in OT shall be declared as such and properly documented.	• \<Interface with PMS/CIS\>. • Ability to access the CIS for documentation of death. • Ability to auto-populate the registry of "deaths in theatre" [OTMS].
1.7 DOCUMENTATION			
		• Continuum of care must be maintained regardless of the location of the patient. While in the OT, documentation of care, including the progress of patient, monitoring parameters (vital signs, fluid intake/output) and relevant events of significance must be recorded in the EMR. • Nursing care rendered during the peri-operative period shall be documented in the EMR as per nursing care provided in the ward.	• \<CCIS-CIS interface\>. • \<CIS module\>.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		• Essential data elements should be made mandatory to ensure completeness.	• <CIS module>.
		• All procedures performed must be documented in accordance with pre-defined format containing data elements as specified by MOH:- o Surgical Report - PER-SUR-202. o Obstetric Report - PER-OBST-305. o Anaesthetic Record - PER-ANES-301.	• Each patient's clinical record should be initialised from operation list through a hyperlink.
		• and other pertinent data, as required by various specialities. Data captured will become part of the EMR.	
		• The documentation of care is a joint responsibility between nursing personnel, the surgical team and the anaesthetic team.	• Ability to provide separate data entry forms (nursing, surgery and anaesthesia).
			• Ability to support templates for discipline specific forms for documentation of surgical procedure.
			• Ability to collate all data from the above forms to the surgical operation encounter.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
			• Ability to view all the data entered using the various forms in a merged single view (screen interface). Blank fields should not be displayed in the view.
			• Ability to support templates for drawings of anatomical parts/structures for purpose of description and recording of operative procedures.
			• Ability to provide drawing tools.
			• <CIS module>.
			• Ability to provide templates for documentation of surgical, anaesthesia and nursing notes. Details are as follows:-
			Patient Details:- o Patient name. o MRN. o I/C. o Age. o Gender. o Race. o Ward.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
			o Department. o **Place (OT).** o Case (Elective/ Emergency). o Date. **Surgical Notes:-** o Time surgery start. o Time surgery end. o Surgeon. o Supervisor. o Assistants. o Name of procedure performed (Operation). o **Pre-op diagnosis.** o **Post-op diagnosis.** o **Peri-operative procedures (peri-operative antibiotics).** o Operative findings. o Complication of surgery. o Operative procedures performed. o Closure of incision. o **Pathological examination.** o **Post-operative instructions.** o Report written by. o Report certified by.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
			Anaesthesia Notes:- o Patient ASA Classification. o Time anaesthesia start. o Time anaesthesia end. o Type of anaesthesia. o Technique of anaesthesia. o Complication due to anaesthesia. o Estimated blood loss. o Anaesthetist/ Assistant/ Supervisor. o Report written by. o Report certified by. **Nursing Notes:-** o Nurses (Scrub/ Circulating/ GA). o Disposal of body parts. o Implants used. o Swab & instrument count (correct/ incorrect). o Report written by. o Report certified by.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
2.0	**MULTI-ORGAN PROCUREMENT FROM BRAIN DEAD DONOR IN OT**		
		• Tissues/Organs Procurement shall be scheduled in the emergency scheduler. However, colour coding shall be adopted to differentiate such cases from other emergency cases. • Printed results of serology tests (HIV, Hep B, Hep C, VDRL, CMV and Toxoplasmosis) performed earlier in the workup of the donor shall accompany each organ and tissue procured to the respective recipient centre. • All the organs procured by the various teams shall be appropriately documented.	• Ability to allow Transplant Coordinator to access emergency scheduler to book theatre and OT time for the procurement process. • <CIS Module>. • Ability to access CIS to retrieve results of serology tests. • <OTMS-CIS interface>. • Ability to facilitate entry of the relevant data elements pertaining to organ and tissue procurement into the "Organ & Tissue Procurement in OT Registry". • Ability to generate reports on data captured in the Organ & Tissue Procurement in OT Registry.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
3.0	**QUALITY CONTROL** *Quality control measures have been entrenched within the various work processes to prevent medical errors from occurring*		
	3.1 Incident Reporting (Surgeon/Anaesthetist/ Nurse).	• All untoward incidences shall be documented in the OTMS for audit purposes (e.g. diathermy burns, needle-stick injuries).	• \<OTMS-CIS interface\> • Ability to provide pre-determined template for incident reporting and to meet National QA requirements:- o WEHU A1 Reporting of occupational accidents. o Form 1 - OT Incident Reporting). o POMR. • Ability to print these forms for submission to the relevant authority.
		• The procedure performed must be correct and consistent with the diagnosis, done on the correct site and side of the correct patient. • The type of procedure, site and side where the operation is to be performed must be appropriate to the diagnosis and accurately entered in the schedule. • The OT list should be prepared by the person-in charge	• Ability to alert doctor if the procedure listed is not appropriate with the diagnosis.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		and verified by the surgeon responsible from the respective department.	
	3.2 When calling for the patient.	• The nurse in-charge shall verify that the patient is properly prepared and document it in the Pre-operative checklist before transferring the patient to OT trolley.	• Ability to block other checklist if the pre operative checklist is not completed.
	3.3 At the OT reception.	• The reception nurse identifies the patient by asking for his/her name and his/her identity is verified by cross checking with the wristband, the consent form, and the OT list. • The reception nurse shall verify the patient is properly prepared. She then documents the findings and co-signs the Pre-operative checklist. • Swabs and instruments are counted at the start of surgery, before closure of body cavities and before skin closure. The counts are documented in the Swab and Instrument Count Form and duly signed by the scrub nurse and circulating nurse upon completion of surgery. The surgeon should be informed of the correctness of the count. If there is	• Ability to block other checklist if the pre operative checklist is not completed. • Ability to alert nurses or doctor if the discrepancy in the count is not verified.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		any discrepancy in the count, the prescribed procedure for missing items shall be followed. • Completeness and accuracy of documentation:- o There should be complete and accurate documentation of care rendered during the entire peri-operative period. When the documentation is done by junior staff, a senior officer should verify the completeness and accuracy of details and findings recorded. • Maintaining dignity, privacy and confidentiality:- o Care provider shall ensure that patient's details and information in relation to his condition/surgery are not released to third party without his/her expressed consent. o Access to patient information in the system shall be limited to privileged personnel only.	• Ability to allow senior officer to verify the accuracy of findings recorded. • Ability to deny sign off if the mandatory field is not completed. • Ability to generate list of procedures where the operative findings is not documented. • Ability to allow only privileged personnel to view the patient's information.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
		• Surgeons and anaesthetists should be aware of average time taken to complete various procedures.	• Ability to record and generate average time taken for a particular procedure (regardless of the surgeon) who was involved.
		• Whenever there is a possibility of a case being cancelled for whatever reason, backup cases should be available.	• Ability to provide slot for backup cases.
		• Whenever an OR is available/free during the elective time, it should be utilized for other listed cases or emergency cases.	• Ability to alert OT manger if the OT is free for use.
		• Turnover time should be kept to the minimum through proper scheduling, good anticipation and good communication.	• Ability to record turnover time for all the procedures performed.
		• Essential data elements should be made mandatory to ensure completeness.	• Ability to restrict sign-off, if mandatory fields are incomplete.
			• Ability to support user-definable entry templates (forms) for NIAs, incident reporting and all relevant information on theatre activities as defined for the aforementioned logs.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
	3.4 Ensuring the right procedure is performed on the right site and side of the right patient.	• The type of procedure, site and side of the operation to be performed must be appropriate to the diagnosis and accurately entered in the schedule.	• Ability to validate the identity of the patient by scanning the barcode on the patient's wristband. • Ability to generate a Call Slip from the OT List. • Ability to facilitate documentation of parameters from a Checklist. Ability for another person to view and make entries in the same Checklist and co-sign it.
	3.5 Ensuring safety of patient and prevention of complications throughout the peri-operative care.	• Swab and instruments are counted at the start of surgery, before closure of body cavities and before skin closure. The counts are documented in the Swab and Instrument Count Form and duly signed by the scrub nurse and circulating nurse upon completion of surgery. The surgeon should be informed of the correctness of the count. If there is any discrepancy in the count, the prescribed procedure for missing items shall be followed.	• Ability to document and auto calculate the number of items used in an operation in a Swab and Instrument Count Form. Ability for another person to co-sign the form. • Ability for a relief person to view and continue documentation in the same form and co-sign it. • Ability to alert nurses or doctor if the discrepancy in the count is not verified.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
	3.6 Completeness and accuracy of documentation	• There should be complete and accurate documentation of care rendered during the entire peri-operative period. When the documentation is done by junior staff, a senior officer should verify the completeness and accuracy of details and findings recorded.	• <CIS>. • Ability for the principal surgeon to retrieve, verify data entered by a junior officer, add any necessary comments (addendum) and endorse the documentation. • Ability to deny sign off if the mandatory field is not completed. • Ability to generate list of procedures where the operative findings is not documented.
	3.7 Provision of adequate and proper communication, ensuring comfort and well-being.	• Patients should be provided with education and counselling regarding procedures that they will undergo. • The surgeon or his assistant shall inform the patient's next-of-kin the outcome of the surgery and status of the patient.	• <CIS> • Ability to generate and print educational materials for patient. • Ability to keep next-of-kin and relatives informed regarding the progress of the procedure (surgery pending, surgery in progress, surgery completed, return to ward) through an electronic screen.
	3.8 Maintaining dignity, privacy and	• Care provider shall ensure that patient's details and information in relation to his	• <CIS>.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
	confidentiality.	condition/surgery are not released to a third party without his/her consent. • Access to patient information in the system shall be limited to privileged personnel only.	• Ability to limit access to privileged personnel only. • Ability to generate and print "patient satisfaction" questionnaire for purposes of survey, quality studies & improvement, research, planning and trend analysis.
	3.9 Optimal utilization of space and time to avoid unnecessary delay, cancellation and postponement of surgery.	• Overbooking should be avoided. • Surgeons and anaesthetists should be aware of time taken to complete various procedures. • Whenever there is a possibility of a case being cancelled for whatever reasons, backup cases should be available. • Whenever an OR is available/free during the elective time, it should be utilized for other listed cases or emergency cases. • Turnover time should be kept to the minimum through proper scheduling, good anticipation and good communication.	• <OTMS>. • Ability to determine duration of each procedure based on historical data. • Ability to keep track of time taken for each phase of care and to calculate the total time taken and the turnover interval. • Ability to provide reports on number of cases postponed or cancelled. • Ability to provide information on status of utilisation of all ORs through an electronic whiteboard.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
4.0	**DATA & INFORMATION MANAGEMENT**		

	4.1 Maintaining an OT Register.	• The OT management is responsible for maintaining different registries for capturing essential information pertaining to the peri-operative care of patients.
		
		• Among others, the registries are:-
		  o Registry of procedures performed.
		  o Registry of specimens sent for pathological examination.
		  o Registry of implants used.
		  o Registry of consignment items used.
		  o Registry of anaesthesia used.
		  o Registry of disposal of body parts.
		  o Registry cases by various diagnostic groups.
		  o Registry of cancelled cases.
		  o Registry of cases by fee class.
		  o Registry of Death in OT.
		  o Registry of Organ and Tissue Procurement.
		
		• Care providers should be able to obtain report on cases that they have done/participated in (creation of log book).
		
		• Data for incident reporting shall be collected.
			• <OTMS>.
			
			• Ability to facilitate automatic entry of the relevant data elements pertaining to the case into the registries.
			
			• Ability to generate reports on data captured in the various registries.

NO	WORK PROCESS	POLICY & PROCEDURE	SYSTEM FUNCTIONALITY
5.0	**FACILITY/ UTILITY MANAGEMENT**		
	• Functional requirements for facility and utility management are not within the scope of the OTMS. However, as the monitoring of the OT environment is of crucial importance in relation to infection control, patient and staff comfort as well as the optimal maintenance of sophisticated equipment; a provision shall be made to support a template to record the "temperature, humidity and air exchanges" within the theatre complex in the OTMS.		
6.0	**MATERIAL MANAGEMENT**		
	• Functional requirements for material management are not within the scope of OTMS. However, an interface is required between the OTMS and the CSSU module to facilitate the provision and replenishment of instruments, sets and soft items.		
7.0	**HUMAN RESOURCES MANAGEMENT**		

		• Theatre staff rostering:
		  o The OT manager shall be responsible in preparing OT roster for OT personnel.
		  o The roster shall include particulars such as:
		    • Role – doctors, sister, GA nurse, scrub nurse, circulating nurse, MA, attendant.
		    • Assignment to dedicated areas – reception, holding bay, OR, recovery, etc.
		    • Date and time of duty – morning, afternoon, night, on-call.
		    • Off day, vacation leave, maternity/paternity leave, medical leave, study leave, etc.
			• Human resource management is not within the scope of OTMS. Functional requirements relating to this area shall be addressed in the Human resource management module.

4.2   SYSTEM INTERFACE:-

4.2.1   System interface is required with PMS for the patient's demographic information.

4.2.2   System interface is required with CIS in order to retrieve and document patient's clinical information, including medication orders, laboratory/ imaging results, post-operative documentation and care plan.

4.2.3   System interface is required with the CSSU for replenishment of instrument sets and other theatre supplies (soft goods).

4.2.4   System interface is required with PhIS/Material Management System for replenishment of anaesthetic drugs, antiseptic lotions and surgical supplies.

5 SECTION 3: APPENDICES

This section of the document contains appendices. The appendices are as follows:-

5.1 High level workflow.

5.2 Abbreviations & Glossary of terms.

5.3 Data Entry Formats and Elements.

5.1   HIGH LEVEL WORKFLOW

High Level Patient Flow During The Peri-operative Period
HIS/OTMS/WF/1

```
                        ┌──────────┐
                        │  Start   │
                        └──────────┘
                             │
                             ▼
                 ┌──────────────────────────┐
                 │ 1.1                        │
                 │ Schedule patient for surgery│
                 │ (Surgeon)                  │
                 └──────────────────────────┘
                             │
                             ▼
                 ┌──────────────────────────┐
                 │ 1.2                        │
                 │ Prepare and verify final list│
                 │ (Surgeon)                  │
                 └──────────────────────────┘
                             │
                             ▼
                 ┌──────────────────────────┐      ┌───────────────────────────┐
                 │ 1.3                        │      │ Assumption: Patient has    │
                 │ Prepare patient for surgery│──────│ already been admitted to the│
                 │ (Doctor/Nurse)             │      │ ward / Daycare Unit        │
                 └──────────────────────────┘      └───────────────────────────┘
                             │
                             ▼
                 ┌──────────────────────────┐
                 │ 1.4                        │
                 │ Transfer patient to OT     │
                 │ (Ward Nurse/Porter)        │
                 └──────────────────────────┘
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In the ward

- -

In the OT

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                 ┌──────────────────────────┐
                 │ 1.5                        │
                 │ Receive and verify patient │
                 │ (OT Nurse)                 │
                 └──────────────────────────┘
                             │
                             ▼
                 ┌──────────────────────────┐      ┌───────────────────────────┐
                 │ 1.6                        │      │ 1.7                        │
                 │ Administer anaesthesia     │─────▶│ Continuous documentation of│
                 │ (Anaesthetist)             │      │ anaesthesia process/monitoring│
                 └──────────────────────────┘      │ (Anaesthetist)             │
                             │                       └───────────────────────────┘
                             ▼
                 ┌──────────────────────────┐
                 │ 1.8                        │
                 │ Perform procedure/operation│
                 │ (Surgeon/OR Nurse)         │
                 └──────────────────────────┘
                             │
                             ▼
     ┌───────────────────┐  ┌──────────────────────────┐
     │ 1.10              │◀─│ 1.9                        │
     │ Document finding  │  │ Completion of procedure    │
     │ (Surgeon/OR Nurse)│  │ (Surgeon/OR Nurse)         │
     └───────────────────┘  └──────────────────────────┘
              │                          │
              │                          ▼
              │            ┌──────────────────────────┐
              │            │ 1.11                       │
              │            │ Transfer patient from OR to│
              │            │ Recovery Bay/ICU/HDW       │
              │            │ (Anaesthetist/Anaesthetic Nurse)│
              │            └──────────────────────────┘
              │                          │
              │                          ▼
              │            ┌──────────────────────────┐
              │            │ 1.12                       │
              │            │ Transfer patient from Recovery Bay to│
              │            │ Ward                       │
              │            │ (Ward Nurse/Porter)        │
              │            └──────────────────────────┘
              │                          │
              │                          ▼
              │                   ┌──────────┐
              └──────────────────▶│   End    │
                                  └──────────┘
```

HIGH LEVEL GENERIC WORKFLOW FOR SCHEDULING SURGERY
HIS/OTMS/WF/2

(This is a high level generic workflow for scheduling surgery. It is applicable for the various type of scheduling, such as elective, daycare and emergency cases).

```
                          ┌──────────┐
                          │  Start   │
                          └────┬─────┘
                               │
                          ┌────▼─────┐
                          │   2.1    │
                          │  Inform  │
                          │ patient  │
                          │ (Doctor) │
                          └────┬─────┘
                               │
                          ┌────▼─────┐
                          │   2.2    │
                          │  Obtain  │
                          │ Consent  │
                          │ (Doctor) │
                          └────┬─────┘
                               │
                          ◇ Is consent ◇ ──No──►  ┌──────────┐
                          ◇  given?   ◇           │   2.3    │
                               │                  │Counseling│
                              Yes                 │ (Doctor) │
                               │                  └────┬─────┘
Consent form to be                                    │
signed by doctor(s)                              ◇ Does patient ◇ ──Yes──► 2.4
and patient/guardian                             ◇   agree?   ◇
                               │                      │
┌─────────┐   ┌────▼─────┐    No
│ Consent │──►│   2.4    │     │          - Refusal form to be signed
│  Form   │   │ Document │  ┌──▼───────┐    by doctor(s) and patient/guardian
└─────────┘   │ consent  │  │   2.6    │   ┌──────────┐  - Refusal report
              │ (Doctor) │  │ Document │──►│ Refusal  │
              └────┬─────┘  │ refusal  │   │  form    │
                   │        │ (Doctor) │   └──────────┘
                   │        └──────────┘
              ◇ Is scheduling ◇ ──No──►  ○ CIS/IP/WF/8/   ──  ┌──────────┐
              ◇  required?    ◇            10.9             │Procedure │
                   │                       Perform         │   log    │
                  Yes                      Procedure        └──────────┘
                   │                       Workflow
              ┌────▼─────┐
              │   2.5    │
              │  Open    │
              │scheduler │
              │ (Doctor) │
              └────┬─────┘
                   │
              ◇ Emergency ◇ ──Yes──►  ○ Emergency
              ◇ surgery?  ◇            surgery
                   │                   Scheduling
                  No                   HIS/OTMS/WF/5
                   │
              ◇ Suitable for ◇ ──Yes──►  ○ Daycare
              ◇  Daycare    ◇            Surgery
                   │                     scheduling
                  No                     HIS/OTMS/WF/3
                   │
              ○ Elective
                Inpatient
                Surgery
                Scheduling
                HIS/OTMS/WF/4
```

HIGH LEVEL WORKFLOW FOR SCHEDULING OF DAYCARE SURGERY
HIS/OTMS/WF/3

Scheduling Surgery HIS/OTMS/WF/2

Can operation be done as daycare?

Procedure must be from the gazetted list as defined by the respective speciality according to MOH/ local policy

No

Yes

3.1
Fill check-list for daycare surgery (Doctor)

Is patient suitable for daycare?

Exclusion criteria e.g. COAD, allergies, obesity, other co-morbid conditions.

No

3.2
Schedule for elective inpatient surgery (Doctor)

Elective Inpatient Surgery Scheduling HIS/OTMS/WF/4

Yes

Is anaesthetic review for GA/RA needed?

Yes

No

3.3
Refer for anaesthetic review (Doctor)

Fit for daycare anaesthesia?

No

3.4
Alert surgeon (Anaesthetist)

No

Problems easily resolved?

Yes

3.5
Inform surgeon (Anaesthetist)

Yes

3.6
Schedule for daycare surgery (Doctor/Nurse)

No

3.7
Confirm date for daycare surgery & place advance order (Surgeon)

Daycare admission slip

Patient instruction

3.9
Reschedule daycare surgery (Doctor)

3.8
Finalize and confirm list (Doctor)

Final Day Care OT List

Patient Transfer From Ward To OT HIS/OTMS/WF/8

Requirement
- Patient will attend combined surgical and anaesthetic clinics

HIGH LEVEL WORKFLOW FOR SCHEDULING OF ELECTIVE INPATIENT SURGERY
HIS/OTMS/WF/4

Scheduling Surgery HIS/OTMS/WF/2

Discipline specific requirement checklist → **4.1** Fill check-list for inpatient surgery (Doctor)

Is anaesthetic review for GA/RA needed?
- No →
- Yes ↓

4.2 Refer to pre-op anaesthetic clinic (Doctor)

Is optimization needed?
- Yes → **4.3** Alert surgeon (Anaesthetist)
- No ↓

4.5 Inform surgeon (Anaesthetist)

4.4 Optimize patient (Surgeon)

Is patient optimized or cleared?
- Yes →
- No ↓

1. Elective Surgery Admission slip

2. Patient instruction and education pamphlets

4.6 Confirm schedule of inpatient surgery & place advance order (Surgeon)

Cancellation & Rescheduling HIS/OTMS/WF/6

4.7 Admit to ward (Nurse)

Consent Form → **4.8** Obtain Consent (Doctor)

Finalised OT List → **4.9** Finalize and confirm list (Doctor)

Patient Transfer From Ward To OT HIS/OTMS/WF/8

HIGH LEVEL WORKFLOW FOR SCHEDULING OF EMERGENCY CASES
HIS/OTMS/WF/5
(This high level workflow incorporates certain clinical activities done concurrent with scheduling).

```
                    ( Scheduling
                      Surgery HIS/
                      OTMS/WF/2 )
                          │
                          ▼
                    ┌──────────────┐
                    │ 5.1          │
                    │ Inform Anaesthetist
                    │ (Surgeon)    │
                    └──────────────┘
                          │
                          ▼
                    ┌──────────────────────────┐
                    │ 5.2                       │
                    │ Enter Patient's Particulars into Emergency
                    │ OT list & place procedure order
                    │ (Surgeon/Nurse)           │
                    └──────────────────────────┘
                          │
                          ▼
                    ◇ Life threatening ◇ ──── Yes
                    ◇ condition?       ◇
                          │ No
                          ▼
                    ┌──────────────────────────┐
                    │ 5.3                       │
                    │ Prioritize Emergency List │
                    │ (Anaesthetist)            │
                    └──────────────────────────┘
                          │
                          ▼
                    ┌──────────────────────────┐
                    │ 5.4                       │
                    │ Review Documentation at point of care
                    │ (Doctor)                  │
                    └──────────────────────────┘
                          │
                          ▼
                    ┌──────────────────────────┐
                    │ 5.5                       │
                    │ Perform investigation & GXM,
                    │ Obtain Consent            │
                    │ (Doctor)                  │
                    └──────────────────────────┘
                          │
                          ▼
                    ┌──────────────────────────┐
                    │ 5.6                       │
                    │ Inform Anaesthetist of Status/ and Results
                    │ (Doctor)                  │
                    └──────────────────────────┘
```

5.1 Inform Anaesthetist (Surgeon)

5.2 Enter Patient's Particulars into Emergency OT list & place procedure order (Surgeon/Nurse)

Life threatening condition? — Yes / No

5.3 Prioritize Emergency List (Anaesthetist)

5.4 Review Documentation at point of care (Doctor)

5.5 Perform investigation & GXM, Obtain Consent (Doctor)

5.6 Inform Anaesthetist of Status/ and Results (Doctor)

Is optimization needed? — Yes → 5.8 Alert surgeon (Anaesthetist) → 5.9 Optimize patient (Surgeon)

No

5.7 Await Call for Surgery

Is patient optimized? — Yes → 5.7 Await Call for Surgery

No → Cancellation & Rescheduling HIS/OTMS/WF/6

Highlevel WF for Patient Transfer From Ward to OT HIS/OTMS/WF/8

HIGH LEVEL WORKFLOW FOR CANCELLATION AND RESCHEDULING OF SURGERY
HIS/OTMS/WF/6

HIS/OTMS/WF/3
HIS/OTMS/WF/4
HIS/OTMS/WF/5
HIS/OTMS/WF/9(9.4)

6.1
Document reason for cancellation
(Doctor)

- Reasons documented for audit/ NIA
- Cancellation log

Surgery still needed? — No → **6.2** Cancel surgery (Doctor) → PMS Discharge workflow

Yes

Optimisation required?

Yes

Interdepartmental referral(s) needed? — No → **6.3** Optimize within department (Doctor)

Yes

6.4
Refer to Specific Department
(Doctor)

Inter-departmental and inter-hospital Referral Templates

6.5
Evaluate, treat patient and document findings
(Doctor)

6.6
Review result and patient status
(Doctor)

Patient optimised?

Yes

6.7
Reschedule
(Doctor)

Scheduling Surgery
HIS/OTMS/WF/2
Ref 2.5

No

HIGH LEVEL WORKFLOW FOR PRE-OPERATIVE PHASE OF DAYCARE SURGERY & TRANSFER OF PATIENT FROM DAYCARE WARD TO OT
HIS/OTMS/WF/7

Start

7.1
Patient arrives at Daycare Centre with admission slip

7.2
Access scheduler to validate appointment
(Nurse)

7.3
Register
Daycare admission & collect fee
(Clerk/Nurse) — **Interface to Billing Module**

7.4
Inform OT reception of patient's arrival
(Clerk/Nurse)

7.5
Perform pre-operative assessment
(Nurse)
- Verify consent
- record vital signs
- check contra-indication for surgery

7.6
Direct patient to waiting area to await turn
(Clerk/Nurse)

7.7
Receive instruction from Daycare OT to send patient in
(Daycare OR Nurse)

7.8
Prepare patient for surgery
(Nurse)
- Change into patient gown
- Remove cosmetics/ ornaments
- Perform specific pre-operative activities (e.g. dilate pupils, apply nasal spray)

7.9
Transfer patient to OT
(Nurse)

Daycare waiting bay
- -
Inside Theatre

7.10
Verify checklist / Review consent
(Nurse/ Doctor)

Performance of Surgery in OR HIS/OTMS/WF/9

HIGH LEVEL WORKFLOW FOR PATIENT TRANSFER FROM WARD TO OPERATION THEATRE
HIS/OTMS/WF/8

HIS/OTMS/WF/3
HIS/OTMS/WF/4
Scheduling For Daycare, Elective Inpatient Surgery

8.1
Review OT List and Confirm with Anesthetist to call for Case
(Reception Nurse)

8.2
Inform Ward Nurse to prepare the patient
(Reception Nurse)

Colour flag to indicate status

8.3
Generate Call Slip and Inform Porter
(Reception Nurse)

8.4
Direct Porter to fetch patient from ward
(Reception Nurse)

Colour flag to indicate status

8.5
Receive and Acknowledge patient arrival in theatre
(Reception Nurse)

8.6
Verify pre-operative nursing checklist
(OT Nurse)

8.7
Transfer patient to holding bay
(OT Nurse)

8.8
Inform anaesthetist of patient arrival
(OT Nurse)

8.9
Perform final check on patient
(Anaesthetist)

Patient in operating room
HIS/OTMS/WF/9

Requirement:

- Time of patient transfer to and from as well as within theatre to be recorded via barcode scanner with color flag to indicate patient location.
- Handheld Device/Tablet-PC Provided.
- Co-Signing Electronically Allowed on Checklist.

HIGH LEVEL WORKFLOW FOR ADMINISTRATION OF ANAESTHESIA
HIS/OTMS/WF/9

Daycare Surgery
HIS/OTMS/WF/7
Pt Transfer fr Ward
to OT HIS/OTMS/
WF/8

9.1
Final check on patient's notes and perform quick physical examination
(Anaesthetist)

- Patient is in operating room or induction room
- Check consent
- Check blood availability
- Confirm surgery/ site of surgery
- Confirm time of last meal

9.2
Establish IV access , connect patient to monitors
(Anaesthetist)

Minimum standard as per anaesthetic guideline*: OT ECG/ NIBP/ SPO2/±EtCO2)

9.3
Document monitoring activities
(Anaesthetist)

Is patient fit for GA? — No → Is regional anaesthesia suitable for patient & surgery? — No → **9.4** Postpone, optimize & reschedule

↓ Yes

Is regional anaesthesia suitable for patient & surgery? — Yes

Cancellation & Reschedule HIS/OTMSWF/6

Does patient need combined GA/RA?
- No
- Yes

Does the regional anaesthesia needs to be done under GA? — No → **9.5** Proceed with regional anaesthesia (Anaesthetist)

↓ Yes

9.6
Proceed with induction of general anaesthesia
(Anaesthetist)

Does patient need intubation & mechanical ventilation? — No → **9.7** Proceed with spontaneous ventilation (with the use of LMA, Proseal mask or facemask)

↓ Yes

- Confirm tracheal intubation with the use of Capnograph
- Check patient's lung & airways to ascertain endotracheal intubation

9.8
Proceed with intubation & ventilation
(Anaesthetist)

9.9
Proceed with maintenance of anaesthesia
(Anaesthetist)

9.10
Position patient & perform regional anaestehesia — Yes ← Does regional anaesthesia need to be done now or is still required?

↓ No

9.11
Proceed with surgery

End

* Refer to National Anaesthesia guideline from MSA

HIGH LEVEL WORKFLOW FOR PERFORMANCE OF SURGERY
HIS/OTMS/WF/10
(This high level workflow applies to the management of anaesthesia and performance of surgery for elective inpatient, daycare and emergency cases).

HIS/OTMS/WF/9
Administration of Anaesthesia

10.1
Prepare patient & perform surgery
(Surgeon)

Intra-op imaging required? —Yes→ 10.2 Make intra-operative order (Doctor) → Interface to RIS

No

Unexpected pathology involving the domain of another speciality

Unexpected pathology encountered? —Yes→ Intra-operative Inter-departmental referral HIS/OTMS/WF16

No

Is Pathological Specimen Required? —Yes→ Handling Pathological Specimen HIS/OTMS/WF/18

No

Is documentation for swab/ instrument count required?

Yes

Swab and Instrument Counts Document

10.3
Document Swab and Instrument Counts
(Nurses)

Is the count correct? —No→ Swab & Instrument Count HIS/OTMS/WF/17

Yes

No

- Apply Dressing
- Secure tubing and drain
- Clean patient
- Check Diathermy Pad Sites

10.4
Proceed with Closure
(Surgeon/ Nurse)

10.5
End of Surgery

Post-op Documentation HIS/OTMS/WF13
Reversal of Anaesthesia HIS/OTMS/WF11

HIGH LEVEL WORKFLOW FOR REVERSAL OF ANAESTHESIA
HIS/OTMS/WF11

HIS/OTMS/WF/10 *Performance of Surgery*

11.1 Complete Surgery (Surgeon)

Is Reversal Necessary? —No→ **Is Transfer to ICU indicated?**

Yes ↓

11.2 Proceed with Reversal of Anaesthesia and Document Finding (Anaesthetist)

Is Transfer to ICU indicated? —Yes→ **11.3** Inform & Transfer HDW ICU (Anaesthetist)

Is Reversal of Anaesthesia Progressing Well? —No→ **11.3** Inform & Transfer HDW ICU (Anaesthetist)

Yes ↓

11.4 Proceed with extubation, monitor vital signs and document findings (Anaesthetist)

Is Patient Stable? —No→ **11.5** Stabilize patient in OR and Monitor Vital Signs (Anaesthetist)

Yes ↓

Is Patient Stable? (from 11.5) —No→

QA Indicators:
- Delay in recovery more than 2 hours
- Unplanned admission to ICU

11.6 Transfer Patient to Recovery Bay (Anaesthetist) ←Yes— **Is Patient Stable?**

11.7 Acknowledge Patient Arrival at Recovery Bay (Recovery Nurse)

Patient in Recovery Bay HIS/OTMS/WF/12

HIGH LEVEL WORKFLOW FOR PATIENT IN RECOVERY BAY
HIS/OTMS/WF 12

```
                    ┌─────────────────┐
                    │  HIS/OTMS/WF/11 │
                    │   Reversal of   │
                    │   Anaesthesia   │
                    └────────┬────────┘
                             │
                             ▼
   ┌──────────────┐   ┌─────────────────────┐
   │ Barcode Scan │───│         12.1        │
   └──────────────┘   │ Acknowledge Patient │
                      │ Arrival in          │
                      │ Recovery Bay        │
                      │ (Nurse)             │
                      └──────────┬──────────┘
                                 │
                                 ▼
                      ┌─────────────────────┐
                      │         12.2        │
                      │ Hand over care of   │
                      │ patient             │
                      │ (Nurse/ Anaesthetist)│
                      └──────────┬──────────┘
                                 │
                                 ▼
   ┌──────────────┐   ┌─────────────────────┐
   │ Interface to │ - │        12.3         │
   │    CCIS      │   │ Monitor Patient     │
   └──────────────┘   │ Vital Signs (Nurse) │
                      └──────────┬──────────┘
                                 │
                                 ▼
                           ◇ Is Patient ◇ ──No──► ┌─────────────────────┐
                           ◇  Stable?   ◇         │        12.4         │
                                 │                │ Stabilize Patient & │
                                Yes               │ Continue Care       │
                                 │                │ (Anaesthetist)      │
                                 ▼                └──────────┬──────────┘
   ┌──────────────┐                                         │
   │ Anaesthesia  │   ┌─────────────────────┐               ▼
   │ Documentation│───│        12.5         │◄──Yes── ◇ Is Patient ◇
   └──────────────┘   │ Perform Discharge/  │         ◇ Stabilized? ◇
   ┌──────────────┐   │ Nursing Checklists  │               │
   │   Nursing    │───│ (Anaesthetist/Nurse)│               No
   │ Documentation│   └──────────┬──────────┘               │
   └──────────────┘              │                          ▼
                                 ▼              ┌─────────────────────┐
                      ┌─────────────────┐       │        12.6         │
                      │ Transfer Patient│       │ Inform and transfer │
                      │ From OT to Ward │       │ to HDWICU           │
                      │ HIS/OTMS/WF/    │       │ (Nurse/Anaesthetist)│
                      │ 15              │       └─────────────────────┘
                      └─────────────────┘
```

HIGH LEVEL WORKFLOW FOR POST- OPERATIVE DOCUMENTATION BY SURGEON
HIS/OTMS/WF13

HIS/OTMS/ WF/10 *Performance of Surgery*

13.1 Access patient's EMR (Surgeon)

13.2 Determine if procedure performed is identical to procedure ordered (Surgeon)

Identical?
- No → **13.3** Cancel previous order and make new order (Surgeon)
- Yes ↓

Op. Notes

Line Drawing

Digital Images (photo, USG, x-ray)

Post-op Care plan

Adverse Event Documentation

Material/ Implant Documentation

13.4 Document Procedure Performed (Surgeon)

OT Log

13.5 Verify Procedure as Performed (Surgeon) ----- **Interface to Billing**

Is HPE required?
- Yes → **13.6** Make HPE Specimen Order (Surgeon) ----- **Interface to LIS**
- No ↓

End

HIGHLEVEL WORKFLOW FOR PATIENT TRANSFER FROM OT TO ICU
HIS/OTMS/WF/14

HIS/OTMS/WF/11 *Reverse of Anaesthesia*

↓

14.1 End of Surgery

↓

ICU planned? — No → **14.2** Arrange for ICU bed (Nurse) → **ICU bed available?** — No → **14.3** Arrange HDW

ICU bed available? — Yes → **14.4** Confirm bed in ICU (OT Nurse/ ICU Nurse)

ICU planned? — Yes ↓

14.4 Confirm bed in ICU (OT Nurse/ ICU Nurse)

↓

Is patient ventilated? — No → **14.10** Send patient to recovery (Anaesthetist/ GA Nurse)

Is patient ventilated? — Yes ↓

14.5 Call for ICU bed & staff to fetch patient (OT Nurse)

- ICU staff to wait at airlock
- Bed sent directly into OR
- Bed equipped with portable monitors, portable ventilator & oxygen

↓

14.6 Receive ICU bed at airlock & send direct to OR (OT Nurse)

Attach ventilator, monitor, ECG, BP, SPO2 & continuous infusion
* Note : Inotropic Infusion must never be stopped even temporary.

↓

14.7 Move patient from OR table to ICU bed (Anaesthetist/ OT Nurse)

Ensure patient stable prior sending ICU

↓

14.8 Hand-over care & transfer to ICU (Anaesthetist/ ICU staff)

↓

14.9 Confirm/ document patient discharge time from OT (OT Nurse)

↓

End

14.10 Send patient to recovery (Anaesthetist/ GA Nurse)

↓

14.11 Monitor & stabilize patient (Anaesthetist/ Recovery Nurse))

↓

Is patient stable to transfer? — No → **14.12** Intubate & start organ support if necessary (Anaesthetist)

Is patient stable to transfer? — Yes ↓

14.13 Call for ICU bed (OT Nurse)

↓

14.14 Send ICU bed to recovery (ICU staff)

↓

14.15 Transfer patient from recovery bed to ICU bed (ICU staff)

→ **14.8** Hand-over care & transfer to ICU

HIGH LEVEL WORKFLOW FOR PATIENT TRANSFER FROM OT TO WARD
HIS/OTMS/WF/15

HIS/OTMS/
WF/12
*Patient in
Recovery Bay*

15.1
Inform ward staff
(Recovery Nurse)

15.2
Send patient to airlock when ward staff arrive
(Recovery Nurse)

15.3
Move patient from recovery bed to ward trolley
(Nurse)

Checklist

15.4
Hand-over care and perform post-op
checklist / capture discharge time
(Ward Nurse/ Recovery Nurse)

End

HIGH LEVEL WORKFLOW FOR INTRA-OPERATIVE INTER-DEPARTMENTAL REFERRAL HIS/OTMS/WF/16

```
          ┌─────────────────┐
          │  HIS/OTMS/WF/   │
          │       10        │
          │ Performance of  │
          │    Surgery      │
          └────────┬────────┘
                   │
                   ▼
   ┌───────────────────────────────────┐
   │              16.1                 │
   │ Encounter unexpected findings or  │
   │ complication requiring other      │
   │ discipline referral               │
   │            (Doctor)               │
   └────────────────┬──────────────────┘
                    │
                    ▼
   ┌───────────────────────────────────┐
   │              16.2                 │
   │ Contact respective doctor on-call │
   │ via telephone or pager            │
   │        (Referring Doctor)         │
   └────────────────┬──────────────────┘
                    │
                    ▼
   ┌───────────────────────────────────┐
   │              16.3                 │
   │ Access CA and refer to specific   │
   │ discipline                        │
   │        (Referring Doctor)         │
   └────────────────┬──────────────────┘
                    │
                    ▼
   ┌───────────────────────────────────┐
   │              16.4                 │
   │ Acknowledge referral              │
   │        (Doctor referred)          │
   └────────────────┬──────────────────┘
                    │
                    ▼
   ┌───────────────────────────────────┐
   │              16.5                 │
   │ Continue with procedures/         │
   │ operation                         │
   │            (Doctor)               │
   └────────────────┬──────────────────┘
                    │
                    ▼
          ┌─────────────────┐
          │  HIS/OTMS/      │
          │     WF/13       │
          │   Post-op       │
          │ Documentation   │
          └─────────────────┘
```

Retrospective referral note entry is permissible due to urgency of the situation

SWAB & INSTRUMENT COUNT
HIS/OTMS/WF/17

HIS/OTMS/WF/9
HIS/OTMS/WF/11/11.9

17.1
Access Swab & Instrument Count Form and perform initial count
(Scrub/ circulating nurse)

Is the count correct? — No → Continue use same sets? — No → Take new set? — Yes → **17.12** Stock out new set from sterile store (Circulating Nurse)

↓ Yes

Continue use same sets? ↓ Yes → **17.10** Obtain authorization and witness (Sister/Doctor)

Take new set? ↓ No → **17.11** Wrapped set and put aside (Scrub/ circulating nurse) — Inform CSSU during office hours

17.2
Maintain count throughout surgery
(Scrub/ circulating nurse)

B

17.3
Perform second count before commencing closure of hollow viscus/ body cavity
(Scrub/ circulating nurse)

Is the count correct? — Yes → **17.4** Inform Surgeon (Scrub Nurse)

↓ No

17.5
Perform recount
(Scrub/ circulating Nurse)

Is any item unaccounted for?

↓ Yes

17.6
Inform surgeon & theatre manager
(Circulating nurse)

17.7
Search operative field
(Surgeon/Scrub Nurse)

Missing item found? — Yes →

↓ No

CIS/IP/WF/7/7.1

17.8
Inform Radiology dept. & place imaging order
(Circulating Nurse/ Doctor)

17.9
Perform X-Ray
(Radiographer)

A

SWAB & INSTRUMENT COUNT
HIS/OTMS/WF/17A

A

Missing item found?

Y →

17.3
Perform recount & document findings
(scrub & circulating nurse)

17.14
Inform Surgeon
(Scrub Nurse)

17.15
Reconfirm no item has been left in operating field & inform HOD
(Surgeon)

17.16
Document the missing item
(Surgeon & theatre nurse)

- Incident reporting
- NIA returns

17.17
Proceed with closure
(Surgeon)

17.8
Acknowledge Return Used set after Surgery
(Theatre Nurse)

B

Received Used Sets-CSSU/ WF/4

HIGH LEVEL WORKFLOW FOR HANDLING PATHOLOGY SPECIMENS IN OPERATING THEATRE
HIS/OTMS/WF/18

```
                              ┌──────────┐
                              │  Start   │
                              └────┬─────┘
                                   │
                    ┌──────────────────────────────┐
                    │ 18.1                          │
                    │ Collect, State Specimen Type  │
                    │ & Test Required               │
                    │ (Doctor)                      │
                    └──────────────┬────────────────┘
```

Start

18.1 Collect, State Specimen Type & Test Required (Doctor)

Interface to LIS - - - **18.2** Order Test (Doctor)

Label

18.3 Hand-over Specimen to Scrub Nurse (Doctor)

18.4 Prepare Temporary label (Circulating Nurse)

18.5 Hand-over Specimen to Circulating Nurse (Scrub Nurse)

18.6 Stick Label on Appropriate Container

18.7 Place Specimen in Temporary Labeled Container

Is Preservative Required? — No

Yes

18.8 Fill Container with Appropriate Preservative (Circulating Nurse)

18.9 Stick Barcode Label on Container (Circulating Nurse)

18.10 Send Specimen to Nursing Station and record in Despatch Book (Circulating Nurse)

Incident Reporting:
- Damaged/ loss of specimens

Specimen Log - - - **18.11** Log-in Specimen (Recovery Nurse) - - - **Interface to LIS**

18.12 Despatch (Attendant)

End

HIGH LEVEL WORKFLOW FOR MANAGEMENT OF DEATH OCCURRING IN OPERATION THEATRE
HIS/OTMS/WF/19

```
                          ┌───────────┐
                          │   Start   │
                          └─────┬─────┘
                                │
                          ┌─────▼─────┐
                          │   19.1    │
                          │Certify Death│
                          │ (Doctor)  │
                          └─────┬─────┘
                                │
                          ┌─────▼─────┐
                          │   19.2    │
                          │Inform consultant i/c│
                          │ (Doctor)  │
                          └─────┬─────┘
                                │
                          ┌─────▼─────┐
                          │   19.3    │
                          │Inform relatives│
                          │ (Doctor)  │
                          └─────┬─────┘
                                │
                          ┌─────▼─────┐
                          │   19.4    │──────────────┐
                          │Document Death Report│    │
                          │(Doctor/ Nurse)│         │
                          └─────┬─────┘              │
                                │         ┌──────────▼──────┐   ┌──────────────┐
                          ┌─────▼─────┐   │     19.6        │   │    Death     │
                          │   19.5    │◄──│ Inform mortuary │◄──│ notification │
                          │Temporary hold on next case│ (OT Nurse)│   │    form      │
                          │ (OT Nurse)│   └─────────────────┘   └──────────────┘
                          └─────┬─────┘
```

19.7 — Place body at designated place for relatives to see (OT Nurse)

19.8 — Perform last office and place identification tag on body (OT Nurse)

19.9 — Inform police (OT Nurse)

Is it an infectious case? — Yes → 19.10 — Notify ward staff to inform public health officer (OT Nurse)

No

Is post mortem required? — Yes → 19.11 — Take Consent (Doctor)

No

19.12 — Obtain burial permit from Mortuary (OT porter)

Is consent given? — No → 19.15 — Lodge police report to ascertain if case is medico-legal (Doctor)

Yes

19.16 — Qualified as police case (form P54)

Inform mortuary forensics for post mortem (Doctor)

19.13 — Complete & sign burial permit (Surgeon)

19.14 — Transfer body from OT to mortuary (Mortuary Attendant/ MA)

End

HIGH LEVEL WORKFLOW FOR MULTI-ORGAN & TISSUE PROCUREMENT OF THE BRAIN DEAD DONOR IN OT
HIS/OTMS/WF/20

```
                                    ┌──────────┐
                                    │  Start   │
                                    └────┬─────┘
                                         ▼
                          ┌──────────────────────────────┐
                          │ 20.1                          │
                          │ Schedule brain dead donor in  │
                          │ ICU for multi-organ           │
                          │ extraction in OT              │
                          │ (Transplant Coordinator)      │
                          └──────────────┬────────────────┘
                                         ▼
                          ┌──────────────────────────────┐
                          │ 20.2                          │
                          │ Procurement teams waiting in  │
                          │ OT                            │
                          └──────────────┬────────────────┘
                                         ▼
                          ┌──────────────────────────────┐
                          │ 20.3                          │
                          │ Inform ICU/ HDW to send donor │
                          │ to OT                         │
                          │ (OT nurse)                    │
                          └──────────────┬────────────────┘
                                         ▼
   Donor fully supported with           ┌──────────────────────────────┐
   ventilation and inotropes and        │ 20.4                          │
   monitored continuously during        │ Receive donor at air-lock,    │
   transfer accompanied by Transplant   │ Check brain death / death     │
   Coordinator and/or Anaesthetist      │ certificate & consent for     │
                                        │ donation                      │
                                        │ (Anaesthetist/ Surgeon/ Nurse)│
                                        └──────────────┬────────────────┘
                                                       ▼
                          ┌──────────────────────────────┐
                          │ 20.5                          │
                          │ Transfer donor directly to OT │
                          │ table & continue full invasive│
                          │ monitoring & donor maintenance│
                          │ & stabilization               │
                          │ (Anaesthetist)                │
                          └──────────────┬────────────────┘
```

Planned heart donor? — Yes → 20.6 Insert PA catheter & do CO study (Cardiac Anaesthetist); No →

20.6 Insert PA catheter & do CO study (Cardiac Anaesthetist)

Planned lung donor? — Yes → 20.7; No →

20.7 Perform bronchoscopy (Cardiothoracic/ IPR Team)

20.8 Initiate procurement process Perform sternotomy (Cardiac Procurement Team)

20.9 Perform Laparotomy (Abdominal Procurement Team)

20.10 Assess suitability of organs macroscopically (Procurement Team)

20.11 If organs found suitable macroscopically, to inform the respective recipient teams in the various transplant centres to get recipients ready in OT (Transplant co-ordinator)

20.12 Perform vascular cannulation Cross clamp, proceed rapid cooling & perfusion of organs (Cardiac/ Abdominal Procurement Team)

C

C

20.13
Confirm & document start of cold ischaemic time
(Transplant co-ordinator)

20.14
Terminate ventilator & other support
(Anaesthetist)

20.15
Remove organs & tissues
(Various Procurement Teams)

IJN	Packed in ice & preservative	Heart if taken (Cardiothoracic Team)
IJN	Packed in ice & preservative	Lung if taken (Cardiothoracic Team)
Selayang	Packed in ice & preservative	Liver if taken (Liver Team)
HKL & Selayang	Packed in ice & preservative	Kidneys if taken (Urology Team)
Local Hospital	Packed in ice & preservative	Eyes if taken (Eye Team)

20.16
Close incision wound
(Abdominal procurement team)

Planned bone donor?

— No

Yes

20.17
Proceed Bone donation
(Bone procurement team)

Only long bones of the limbs are taken & replaced with plastic bones

Planned skin donor?

— No

Yes

20.18
Place donor in prone position & proceed with skin donation from the back
(Bone procurement team)

Only skin from the back taken

20.19
Place donor in supine position
& perform last offices
(Transplant coordinator & OT Nurse)

20.20
Document procedures & all organs taken
(All teams)

20.21
Inform mortuary
(Transplant co-ordinator/ OT nurse)

20.22
Viewing by family members if requested

20.23
Send to mortuary
(Mortuary attendant & Transplant coordinator)

End

5.2   ABBREVIATIONS & GLOSSARY OF TERMS

Abbreviations		
5.2.1	ADR	Adverse Drug Reactions
5.2.2	CCIS	Critical Care Information System
5.2.3	CIS	Clinical Information System
5.2.4	CSF	Cerebrospinal Fluid
5.2.5	CSS	Clinical Support Services
5.2.6	CSSU	Central Sterile Supply Unit
5.2.7	ECG	Electrocardiogram
5.2.8	EMR	Electronic Medical Record
5.2.9	GA	General Anaesthesia
5.2.10	GXM	Group and Cross-match
5.2.11	HDW	High Dependency Ward
5.2.12	HIS	Hospital Information System
5.2.13	ICU	Intensive Care Unit
5.2.14	MOH	Ministry of Health
5.2.15	NIA	National Indicator Approach
5.2.16	NICU	Neonatal Intensive Care Unit
5.2.17	OR	Operating Room
5.2.18	OT	Operation Theatre
5.2.19	OTMS	Operation Theatre Management System
5.2.20	RA	Regional Anaesthesia
5.2.21	THIS	Total Hospital Information System

Glossary of Terms		
5.2.22	Air Lock	The area at the entrance of the OT complex, where the patient is transferred from the ward trolley to the OR trolley.
5.2.23	Bio-hazards	Body fluids, such as blood, urine, etc that have the potential to be a source of cross-infection or contamination.
5.2.24	Brain Dead Donor	A cadaveric donor on ventilator who has been declared dead following the total irreversible loss of brain function, as a result of severe brain injury or pathology.
5.2.25	Caesarean Section	A surgical operation performed to deliver a baby.
5.2.26	Circulating Nurse	The nurse who replenishes supplies and other requirements, such as sutures, gauze and instruments to the scrub nurse during aseptic procedures/surgery.

Glossary of Terms		
5.2.27	Clean Corridor	An area within the operating department, where only sterile items are allowed to be brought in.
5.2.28	Consumables	Refers to perishables, such as catheters, sutures, etc and soft items, such as gauze, dressings, abdominal packs, etc. used during surgery.
5.2.29	Dirty Corridor	An area within the operating department where soiled instruments and linen are sent out of the operating room.
5.2.30	Electronic White Board	An electronic device which will display real-time OT activities, such as status of the patients, as well as staffs whereabouts within the OT complex.
5.2.31	GA Nurse	The nurse who is assigned to assist the anaesthetist during the administration of anaesthesia.
5.2.32	Holding Bay	The area where a patient waits for his/her turn to be transferred to the operating room, prior to surgery.
5.2.33	Induction Room	The room where the induction of general anaesthesia and other anaesthetic procedures, such as regional anaesthesia is performed.
5.2.34	Operation Room	Refers to the room where surgical operations are performed.
5.2.35	Operation Theatre/ Theatre Complex	Refers to the physical layout of the entire theatre comprising of designated areas, such as the changing rooms, the staff rest room, the air lock, the reception area, the holding bay, the preparation rooms, the clean and dirty utility rooms, the operation rooms, etc..
5.2.36	Peri-operative Care	Refers to care rendered to the surgical patient during the pre, intra and post-operative phases of surgery.
5.2.37	Pre-operative Checklist	A listing of tasks/activities that must be carried out, prior to sending the patient to the OT.
5.2.38	Procurement of Organs	Refers to the harvesting of organs from brain dead donors.
5.2.39	Pneumatic Tube	A system comprising of tubes using vacuum as the mechanism for transporting items from one place to another place.
5.2.40	Scrub Nurse	The nurse who manages the instrument trolley and assists the surgeon during surgery.

Glossary of Terms		
5.2.41	Swab and Instrument Count	A count performed by the scrub and circulating nurses on all swabs, instruments and items used during the performance of surgery. The count is performed prior to commencement of surgery, intra-operatively and upon completion of surgery, as well as whenever necessary.
5.2.42	Waiting List	A list of scheduled patients waiting for surgery to be performed earlier than scheduled date.

5.3 DATA ENTRY FORMAT/ELEMENTS

SCHEDULING

OT Schedule : Monday, 17 May 2004

OT 1	OT 2	OT 3	OT 4	OT 5
O&G	Surgery 1	ENT	Surgery 2	Ortho

OT Schedule : Tuesday, 18 May 2004

OT 1	OT 2	OT 3	OT 4	OT 5
Opthal	Hand	Cardiac	Plastic	Neuro

OT LIST-TRACKING

OPERATION LIST

SN	Name	MRN	Age	Gender	Ward	Diagnosis (Indication for surgery)	Name of surgeon	Planned procedure	Type of anaesthesia	Estimated procedure time	Special requirements e.g. C-arm	Special instructions	Remarks	Name of anaesthetist	
1															
2															
3															
4															
5															
6															
7															
8															
9															

Name
Age
MRN
Gender
Ward
Diagnosis
Procedure
Porter's movement
(departure from OT, arrival at ward,
departure from ward)

PATIENT STATUS AND LOCATION TRACKING

SN	Name	MRN	Location	Patient Status	Cancellation status	Reason for op. not done
1						
2						
3						
4						
5						
6						
7						

VIEW OF CALL/ CHECK IN/ TRANSFER/CHECK-OUT TIME

SN	Name	MRN	Porter departure from OT	Porter arrive in ward	Time patient left ward	Reception	Holding bay	OR	Recovery bay	Transferred out
1						1/2/00 0:00	1/2/00 0:30			
2										
3										
4										
5										
6										
7										

REPORT OF DURATION OF PATIENT STAY IN VARIOUS LOCATIONS

SN	Name	MRN	Reception	Holding bay	OR	Recovery bay	Transferred out
1			30				
2							
3							
4							
5							
6							
7							

PROCEDURE DOCUMENT

SYSTEM AUTO-POPULATED DATA

1	Patient name
2	MRN
3	Ward
4	Department
5	Age
6	Gender
7	Paying status
8	Ward class
9	Location
10	Date of surgery
11	Pre-op diagnosis
12	Planned procedure

DATA ENTERED BY SURGEON (SURGERY FORM)

1a	Doctor's role in surgery	1b	Name of personnel	1c	Status	1d	Start time of participation	1e	End time of participation
2	Post-op diagnosis								
3a	Number of Procedure	3b	Procedure name						
4	Peri-operative procedures								
5	Details of procedure								
6	Operative findings								
7	Complications of surgery								

DATA ENTERED BY ANAESTHETIST (ANAESTHESIA FORM)

1a	Doctor's role in anaesthesia	1b	Name of personnel	1c	Status	1d	Start time of participation	1e	End time of participation
2	Patient's ASA Classification								
3	Type of anaesthesia								
4	Anaesthetic technique								
5	Time anaesthesia start								
6	Time anaesthesia end								
7	Estimated blood loss								
8	Total blood and blood product transfused								
9	Total amount of fluid transfused								
10	Intra-operative events								
11	Complication of anaesthesia								
12	Recovery phase								
13	Progress notes								

DATA ENTERED BY OR NURSE (OR NURSING FORM)

1a	Nurse's role in surgery	1b	Name of personnel	1c	Status	1d	Start time of participation	1e	End time of participation
2	Time surgery start								
3	Time surgery end								
4	Skin prep								
5	Drapes								
6	Instrument set								
7	Supplementary set								
8	Diathermy use								
9	Site of diathermy pad								
10	Tourniquet use								
11	Site of Tourniquet								
12	Tourniquet time start								
13	Tourniquet time end								
14	Dressing and bandage applied								

OT REGISTER

Encounter No.	Patient name	MRN	Ward	Department	Age	Gender	Paying status	Ward class	Location	Date of surgery	Pre-op diagnosis	Principal Surgeon

ACKNOWLEDGEMENTS

7 CONTRIBUTORS

7.1 Expert Group:-

THIS OTMS Core Team:-

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