

1st day Orientation program in Operating Theatre

Orientation activities:

- Introduce the layout of the operating room and relevant area(s)

手術室位置指示圖 Operating Theatre Directory



- Introduce OT personnel: [Anesthetists, surgeons, nurse, PCA \(AA, TA, PCA in OT, SC and SSD\), Radiographer POP, lock-in cleaning team \(Wai Hong Comp.\)](#)
- Introduce Department objectives and learning opportunities: [Provide safe & efficient OT service , enhance perioperative care by PRCC](#)
- Introduce hospital related services: [Pain consultation, Pain clinic, OT sessions, emergency intubation](#)

Briefing session:

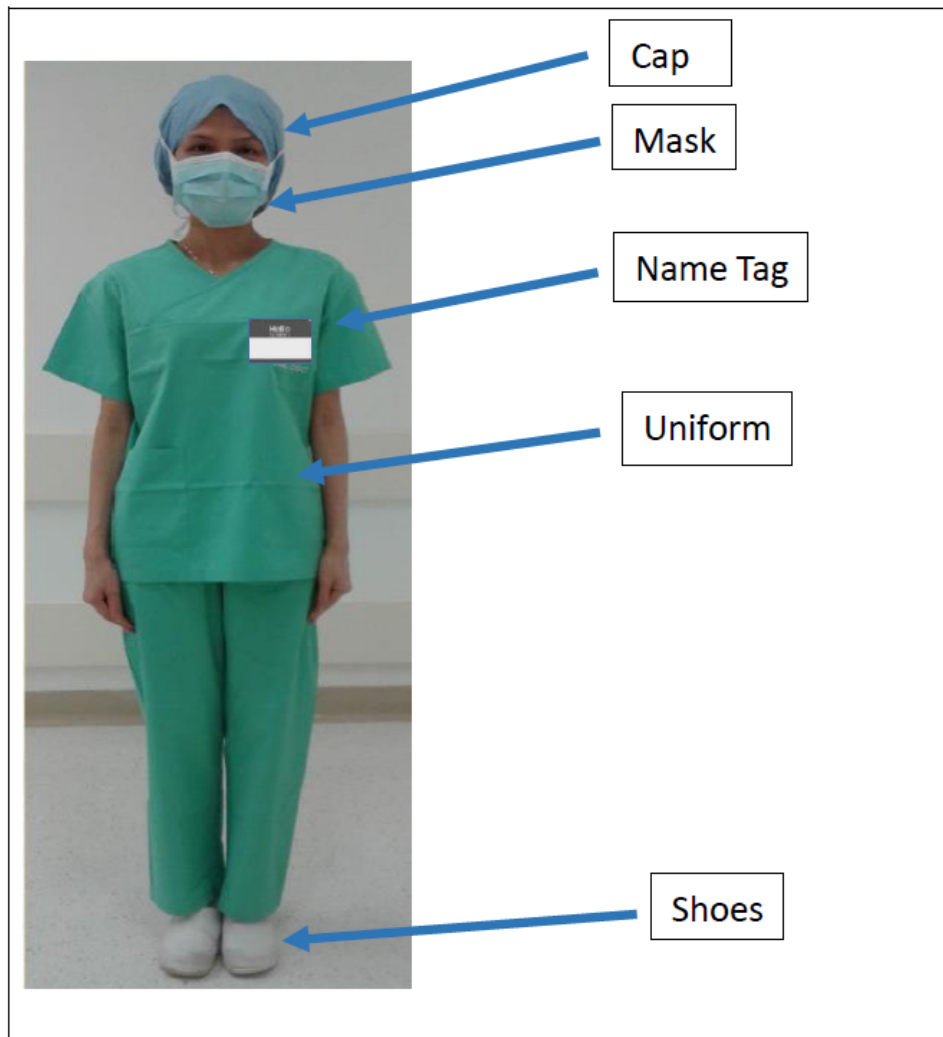
1. • Provide general information, e.g. duty roster, daily assignment, handover....: [Explanation of the duty roster, record the communication information to OT clerk \(Winsy\) – including name & contact phone number, report sick leave procedures or traffic issues – call at 26838081 and upload sick leave cert. through e-sick when report back](#)
- Discuss the job nature and development: [Specialty development – Anaesthesia & Recovery PRCC, Pain PRCC, Perioperative PRCC](#)

- Reflection on career interest and attributes of being a surgical team member: [Maintenance of sterility during surgery and collaboration between surgical team member on OT arrangement](#)

Concepts of perioperative nursing/ organization of the OR team

1. Surgical attire

- Identify the components of Operating Room attire



- List specific components of protective attire E.g. High filtration mask/ Protective eyewear
- Describe the sterile parameters of the surgical gown: [Level 4](#)

2. OT personnel and their roles

- Identify the goal of the OR team, Sterile team members: [provide safe & smooth OT service](#)
- Categorize scrubbed and non-scrubbed team members:

[Scrubbed team members - scrubbed nurse/ surgeon/ TA](#)

Non-scrubbed team members - circulating nurse, Anaesthetists, anesthetic nurse or anesthetic assistance (AA), POP

- **Role of circulating nurse** (accountable for all nursing care perioperatively), anesthetic nurse or anesthetic assistance (accountable for all anesthetic care perioperatively) and **scrub nurse** (accountable for all sterile procedures perioperatively)
- State surgical team members role: provide high standard OT service

Theatre design & traffic control

- Discuss how physical layout of a surgical suite contribute to aseptic technique

Introduction to the operating theatre layout, design & basic setting

Creating an optimum environment in an operating theater (OT) is crucial for ensuring patient safety, promoting effective surgical procedures, and minimizing the risk of infections. Here are key factors to consider:

- **Layout** - The operating theater (OT) should have a clear layout that allows for efficient movement of surgical staff and equipment. It should include designated areas for sterile and non-sterile activities. **ICU, A&E emergency lift, SSD instrument lift & Day Surgery Center** should be located nearby OT. **Scrub area & Anesthetic room** should be built together with OT room as necessary supporting facilities.
- Design –
Space - **Sufficient space** to accommodate surgical teams, equipment, and necessary technology without crowding.

- Describe methods of environmental controls that contribute to an aseptic technique

- Exchange areas -

- Lamina flow design/ ventilation

- **High air exchange rate** - The operating theater should have a high air exchange rate (typically **15-25 air changes per hour**) to ensure the removal of airborne contaminants (in NDH OT, it **only takes 28 mins** to get all air exchange in a theater)
- **HEPA Filters** - Built High-Efficiency Particulate Air (HEPA) filters in the ceiling of each OT room to trap airborne particles and pathogens from outside.
- **Positive Pressure** - Maintain positive pressure relative to adjacent areas & use pressure stabilizers to prevent outside contaminants from entering.

- Scrub areas - **Sub-sterile room**

- Operating room: – floors/ walls and ceiling/ built in systems/ lighting/ furniture/ equipment /

communication systems:

- **Surface Materials** - Use non-porous, easy-to-clean materials for walls, floors, and ceilings to minimize contamination.
- Humidity

Optimal Levels - Maintain relative humidity levels between 30-60%. This range helps reduce static electricity and supports the effectiveness of disinfectants.

Monitoring - Use humidity sensors to ensure levels remain within the optimal range, adjusting ventilation as necessary.

- Temperature

Comfortable Range - The temperature should be maintained between 20°C to 24°C (68°F to 75°F). This range ensures comfort for the surgical team while minimizing the risk of infection.

Thermal Control - Use heating blankets for patients, as they may cool down during surgery.

- Lighting

Surgical Lights - Use bright, adjustable surgical lights that minimize shadows and provide excellent illumination of the surgical field. Incorporate additional focused lighting for delicate procedures.

- Pendant

Pendant with pipelines outlets of anesthetic gases, oxygen, exhausted vent for anesthetic machine, medical air, surgical air and compressed air, as well as electrical sockets

- Control Panel

Panel displays the current situations of various facilities with indicators and provides the switch buttons, regulators of various facilities, as well as intercom to communicate and timer for specific procedure.

- Noise Control

Soundproofing - Minimize external noise sources and use sound-absorbing materials to create a quieter environment, which can help concentration and communication among the surgical team.

- Equipment Accessibility

Ergonomics - Design the operating room layout to ensure easy access to all necessary equipment, reducing the need for staff to move around excessively. Ensure that emergency equipment (e.g., defibrillators) is easily accessible and that staff are trained in emergency protocols.

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- Peripheral support areas e.g. offices/ lab/ X ray/ pharmacy/CSSD/Instrument room/ work and storage areas:

Offices next to the pantry, Lab locates in the same floor (just opposite to OT), X-ray C-arm kept in OT, drugs from pharmacy through pneumatic tube, 2 lifts between CSSD & OT for instrument transfer, Instrument room located in central of OT (SC), Stores inside OT with store map

- Discuss the specific traffic pattern in Operating Room - E.g. Unrestricted/ semi-restricted / restricted

areas assigned and traffic is monitored.

- OT Personnel movement: Changing room -> Report in Reception -> OT / Sterile Core/ Recovery Room -> Pantry (tea break)-> OT / Sterile Core/ Recovery Room -> Changing room (meal break)-> Report in Reception -> OT / Sterile Core/ Recovery Room -> Changing room (duty off)
- Restricted area, semi-restricted area and unrestricted area
Restricted area - Theatre Complex, **Semi-restricted** area – Recovery Room, Reception area & office
Unrestricted area – pantry, changing rooms, top-up room,

By pay attention to the above key factors, the design the OT layout should be able to **promote effective surgical procedures, minimize the risk of infections, optimize for safety**, and achieve the best possible outcomes for patients.

Surgical patient flow / instrument flow in OT:

- Patient movement flow: Reception -> OT -> Recovery Room -> Back to Ward

Instrument Flow in operating theatre (from sterile core → in use in theater -> send to SSD after use -> reprocessing in SSD -> sterilized and return to sterile core)

- Indications for surgery: Book elective case or emergency case in OTMS
- Needs of surgical patients: Specific needs in the remarks of OT list required to pay attention
- Routine Peri-operative care such as

-Receiving Patients

- Patient identification/ transfer/ transport

Patient Checking Process Summary in NDH OT Holding

https://docs.google.com/presentation/d/1L7DQ79I_wJoYFZ6D9aBugHXANzv7JGNp/edit?slide=id.p1#slide=id.p1

- Consent for surgery: E-consent / paper consent, Minor consent, 2MO consent

- Anaesthesia induction (introduction of different types of anaesthesia e.g. GA/ LA, stages of anaesthesia, delivery of drugs and recovery etc.): different types of anaesthesia - GA/SA/EA/LA, Nerve block, Stages of General anaesthesia - GA (Induction, maintenance, reversal), Pain protocol in recovery

- Positioning for surgery- dorsal/ prone/ Trendelenburg/lateral

- Skin preparation: Betadine, alcoholic hibitane, aq.hibitane,

- Other preparation e.g. Catheterization, shaving

- Intraoperative care and Vital signs monitor: IV line insertion, SaO₂, BP/P, ECG

- Care of specimen*:

Correct handling and labeling of specimen (For Frozen section, histology (for section or send fresh), culture, AFB, cytology...)

- Postopcare*:

Post-operative nursing care in recovery (check conscious level, self-maintained airway, muscle tone recovery & pain management e.g. PCA or morphine protocol)

- Emergency procedure – cardiac arrest/ shock/ seizure/ hypothermia/ aspiration/ laryngospasm/ haemolytic transfusion reaction: implement Emergency procedure according to protocol

Basic theatre setting

An operating room in a theater setting typically includes the following elements:

Facilities - HEPA-filtered air vents from the ceiling of theater, controlled Temp. (20-24C) & Humidity (30-60%), 15-25 air changes per hour, maintain positive pressure relative to adjacent areas, Use non-porous, easy-to-clean materials for walls, floors, and ceilings

- **Surgical OT Table:** Centered in the room, where the patient lies during the operation. It can be adjusted for height and angle.
- **Lighting:** Bright, adjustable overhead lights that provide clear visibility of the surgical site.
- **Surgical Instruments:** A sterile table nearby containing various surgical tools like scalpels, scissors, clamps, and sutures.
- **Physio-Monitors:** Display screens that show vital signs and other important data about the patient.
- **Anesthesia Machine:** A device used to administer anesthesia to the patient, often located near the head of the surgical table.
- **Scrub Area:** A space for surgeons and staff to wash and sanitize their hands before entering the operating area.
- **Sterile Drapes:** Used to cover the patient and the surgical area to maintain a sterile environment.
- **Nurses' Station (Documentation trolley):** A place for nurses to monitor the operation and communicate with other medical staff

This setting is designed to ensure a sterile, efficient, and safe environment for surgical procedures.

Common surgical equipment used in OR

ESU, suction machine, OT table, OT light, patient positioning devices, tourniquet

- **OT tables** and their accessories (for different positioning: supine, lithotomy, lateral & prone)
- **Suction unit** (using electrical or vacuum outlet from pendant)
- **ElectroSurgical Unit** (Covidien, Megadye, FT10, Valleylab)
- **OT Light** (Minimize shadow, autofocus, manipulated by Sterile light handles)
- **Pendant & control panel** (facilities built in theater and control by control panel)
- **Drugs** (DDA & anaesthetic drugs, antibiotics)
- **patient positioning devices** (e.g. arm board for supine position, use accessories and paddings to avoid pressure injury, nerve or ligament damage)
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- **tourniquet** (for limb surgery to reduce blood loss during OT)

Information system & Documentation in OT

- CMS
- OTMS (elective & emergency case booking)
- Intra-operative nursing documentation:

Surgical Safety 123 (as a guideline to safeguard patient safety with surgeon & anaesthetist) , intraoperative record,

PNIS (**Sharp, Instrument and Swab count to avoid retained items after operation**, 3 counts documented – initial, 1st & final, after dressing-> last count without documentation, if no discrepancy -> inform case anaesthetist to reverse patient),

SITS (Surgical Instrument Tracking System) to trace reprocessing status of specific instrument, especially for the unique items),

ACIS – Ez-record & Ez-recovery

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- Checklist for transport of critically ill patient
- Perioperative nursing standards
- Guidelines and protocols used in NDH OT

Advanced Nursing Standards for Patient Care (SAG Guidelines)

<http://hacgl.home/content.aspx?page=/haho/NUR>

OSH & Infection Control issues, Protecting patient data privacy & security (e-learning)

OSH orientation

- PPE
- Radiation safety (x-ray aprons & lead collars, and lead shield),
- LASER safety (google with corresponding wave length)

Infection control in OT

- Universal precaution (blood -borne transmitted and apply to all OT cases)
- Contact precaution (CPE...required full PPE)
- Droplet precaution (Covid or FLU required face mask)
- Air borne precaution (TB required N95 mask & ventilate OT room & instrument for 30 mins after OT)

Concepts of Peri-operative Nursing:

1. Concept of Disinfection and Sterilization

- Both are no any micro-organisms or bacteria, but disinfection with spores while sterilization without spores

2. Aseptic Techniques

- Follow guidelines from WHO & AORN

3. Sterile Draping

- Guidelines in surgical draping (SAG Advanced Nursing Standard 2022)
- Barrier - provide a barrier that minimizes the passage of microorganisms from non- sterile to sterile area. Screens are set up to separate the clean & sterile zone (e.g. between anesthetic machine & OT sterile field)
- Creation of a sterile field - presentation of sterile drape with aseptic application technique.
- Use sterile drapes to cover on the patient, furniture and equipment included in the sterile field
- Fall below the top surface of the surgical drape to be unsterile
- Ensure the skin preparation solutions (especially alcoholic solutions) have dried before apply surgical drape
- Create the sterile field from own side first, from surgical sites to periphery and from above downwards
- Handle the sterile field as gentle as possible, only when required ensure no shifting once positioned
- Once created, a sterile field should not be left unattended (AORN 2015)
- Corrective actions are taken immediately when breaks in aseptic technique occurred.

4. Maintenance of sterile field

- After skin disinfection, set up sterile field by draping. Then every item or instrument are giving to the sterile field **with aseptic techniques**.
- All items or instrument need to **check package integrity, expiry date** before giving to sterile field.

5. Anesthesia mode and phase

- **GA** – General Anaesthesia, **SA** – Spinal Anaesthesia, **EA** - Epidural Anaesthesia,
- **3 Phases**: Induction (involuntary move), Maintenance (no move because muscle relaxant), Reversal (involuntary move)

6. Pre-study OT diagnosis & Procedures according to OT list before going to assigned theater (search by google to enhance learning)