

7 FLOW OF HEALTHCARE

Amy Krause.
Architectural Medical Planner

ABOUT ME

“Hi everyone, I’m Amy Krause.



I’m a Professional Architectural Technologist with nearly 26 years of experience, and I’ve spent the last 20 years focused specifically on healthcare architecture. Over the years I’ve worked on projects across Africa in both the public and private sectors, and I currently serve on the Executive Committee of the South African Federation of Healthcare Engineering (SAFHE).

My work centers on creating efficient, compliant, and well-designed healthcare spaces—optimising layouts, improving flows, and supporting better clinical outcomes.

THE 7 FLOWS OF HEALTHCARE

Consider adopting the Bauhaus design principle of “**form to follow a function**” in a healthcare environment.

It means the shape of a building or object should primarily relate to its intended function or purpose.



THE 7 FLOWS OF HEALTHCARE

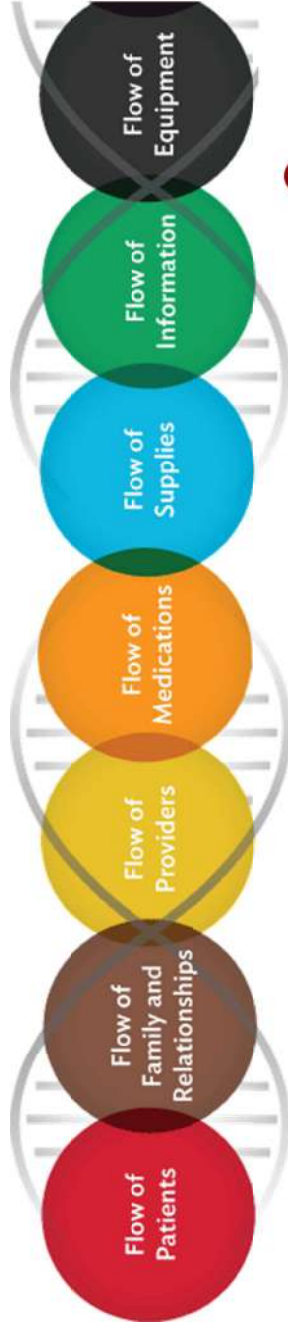
In this presentation, I delve into each of these flows, highlighting their complexities and the challenges in aligning them with stringent regulations (building and department of health) and with end-user expectations. I have selected to focus on one critical area of any healthcare facility — **THE THEATRE COMPLEX**.

Often, these elements of the 7 flows of healthcare face pushback from staff due to a lack of understanding of regulatory constraints or the 7 flows, this makes clear communication vital. One also has to remember as a designer, not everyone can read a plan. I emphasize the importance of presenting a comprehensive, visual outline early in the process to ensure all stakeholders share a common vision and understanding. This also gives time for critical input on a design from a user, but not to design for a specific user. This approach not only streamlines project execution but also optimizes the design to enhance safety, workflow efficiency, and overall functionality.

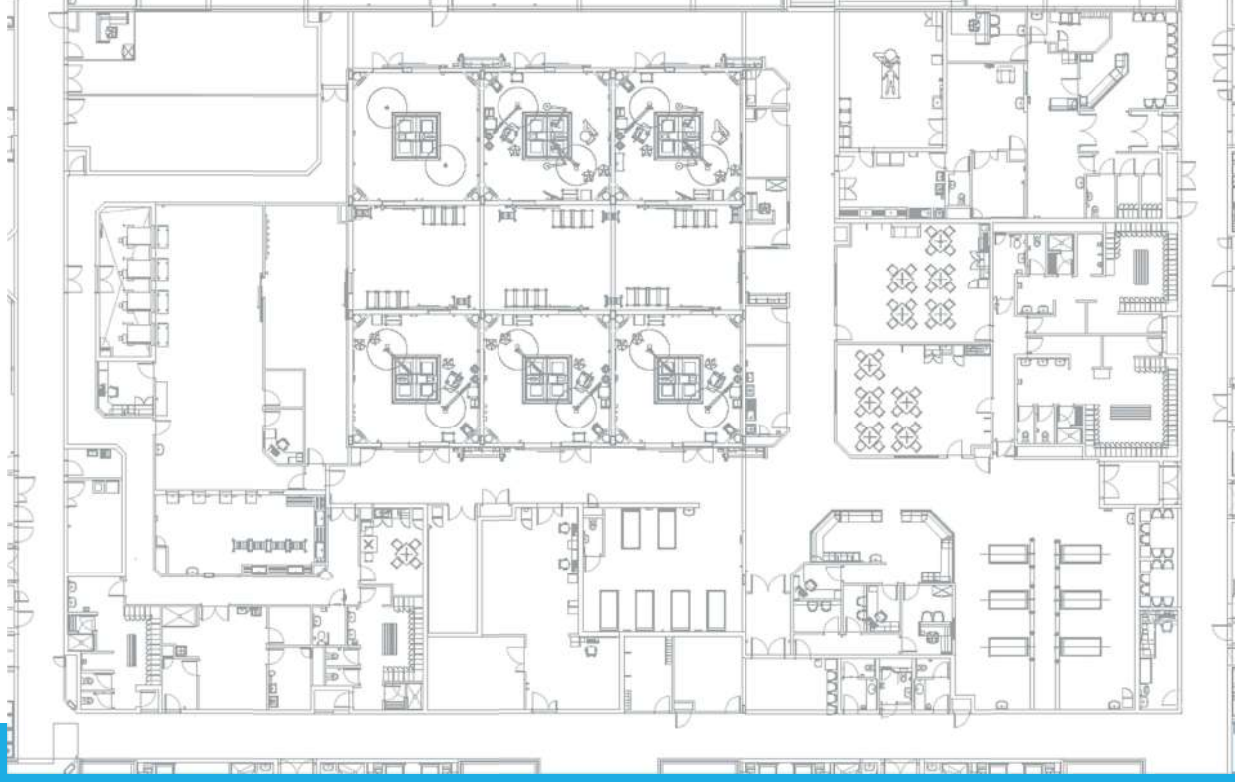
Over my years of experience, I've learned that the key to successful healthcare design is objectivity—approaching each project without personal opinions of doctors, staff or management, that may not reflect end-user needs or future realities but by adhering to these principles, I aim to create healthcare environments that are not only compliant and functional but truly supportive of health professionals and patients alike.

Has anyone looked at the Bauhaus design principle of “FORM FOLLOW FUNCTION” in a healthcare environment! (Pause)

We have to understand the function through the 7 flows of healthcare to optimise the Function. A theatre complex should be focused on the staff and providers and how do the flows optimise their function in the facility as the patient is an element in the units function. Let see how we can possible improve this Form to follow it function.



THEATRE COMPLEX



Visualizing
movement – Staff,
Equipment & Patient

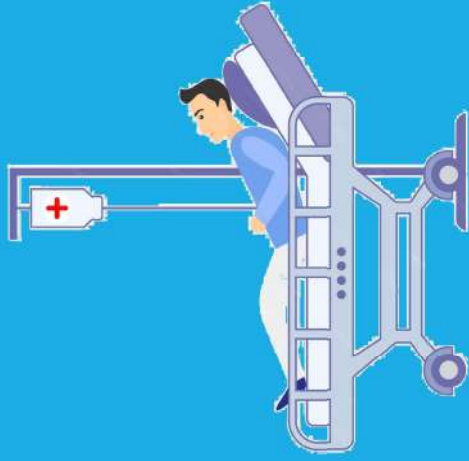
Infection Control

Spatial Efficiency –
Restricted, Semi-
Restricted & Public
Zones

THEATRE COMPLEX

Ensuring theatre design excellence: in mastering the 7 flows of healthcare in a theatre complex for optimal patient and staff outcomes in architecture one should visualise staff, equipment & patient flow, infection control and spatial efficiency. I find sometimes we are more focused on the patient as obviously their well-being and outcome are crucial but what about the focus being on the staff and providers as they work here for many hours in a day. If a unit does not work this will affect the patient's outcome.

Have any designers here stood in a theatre complex and really understood the roll of each person. From administrative, to circulating nurses, to scrub nurses, to matrons to cleans. And then you have doctors and anaesthetists and many more. As one can see the patient is a small portion of this tapestry.



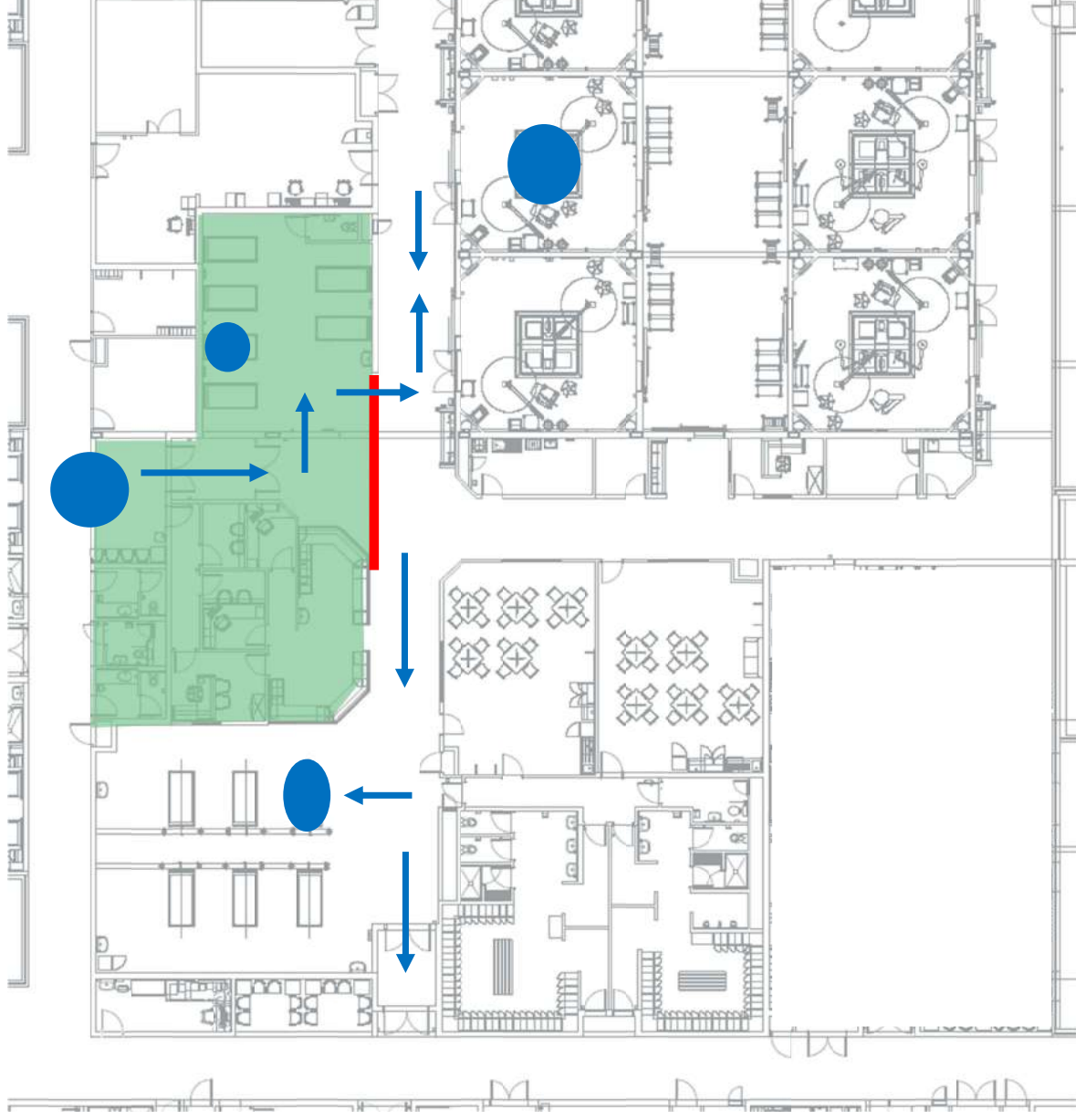
FLOW ONE: PATIENT FLOW



The most focused on flow is the movement of patients through the healthcare facility, from initial arrival to discharge.

Effective design ensures smooth and efficient patient pathways, minimizing wait times and maximizing patient experience.

Patient flow is linear, protected, and prioritized to avoid contamination

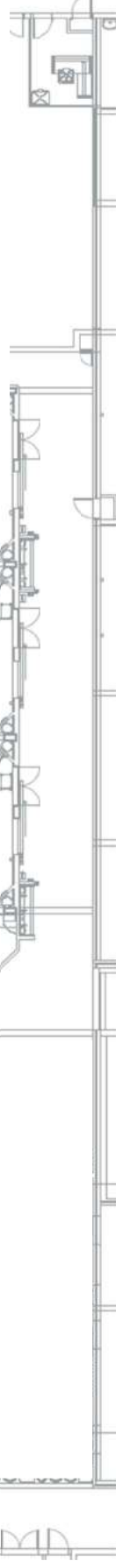


This is the most focused flow in any department in a healthcare facility is the movement of patients through a facility from entrance to exit and the journey in the facility.

The patient will move from a nursing unit to the initial arrival at preop, into the operating room and onto recovery and finally discharge back to the Unit. Patient flow maximises the patient experience which is a positive. We want to create a calm and peaceful environment for all.

I consider patient flow starting from the time a patient enters the theatre complex, daunting I know right. Bright lights, lots of staff, anxiety is through the roof. Staff here are critical, as their awareness of the patient's situation is crucial. A clear view from the nurse station to the patients in pre op is critical.

Effective design and staff planning ensures smooth and efficient patient pathways, minimizing wait times and maximizing the patient experience. If a patient can see a member of the staff, they feel calmer. I know I would! Patient flows from Pre-op to an operating room out to recovery. Once the patient has regained consciousness they move out the unit for full recovery. The patient experience in a theatre facility can be highly stressful; we find calming colours and images help. Patient flow is linear, protected, and prioritised to avoid contamination





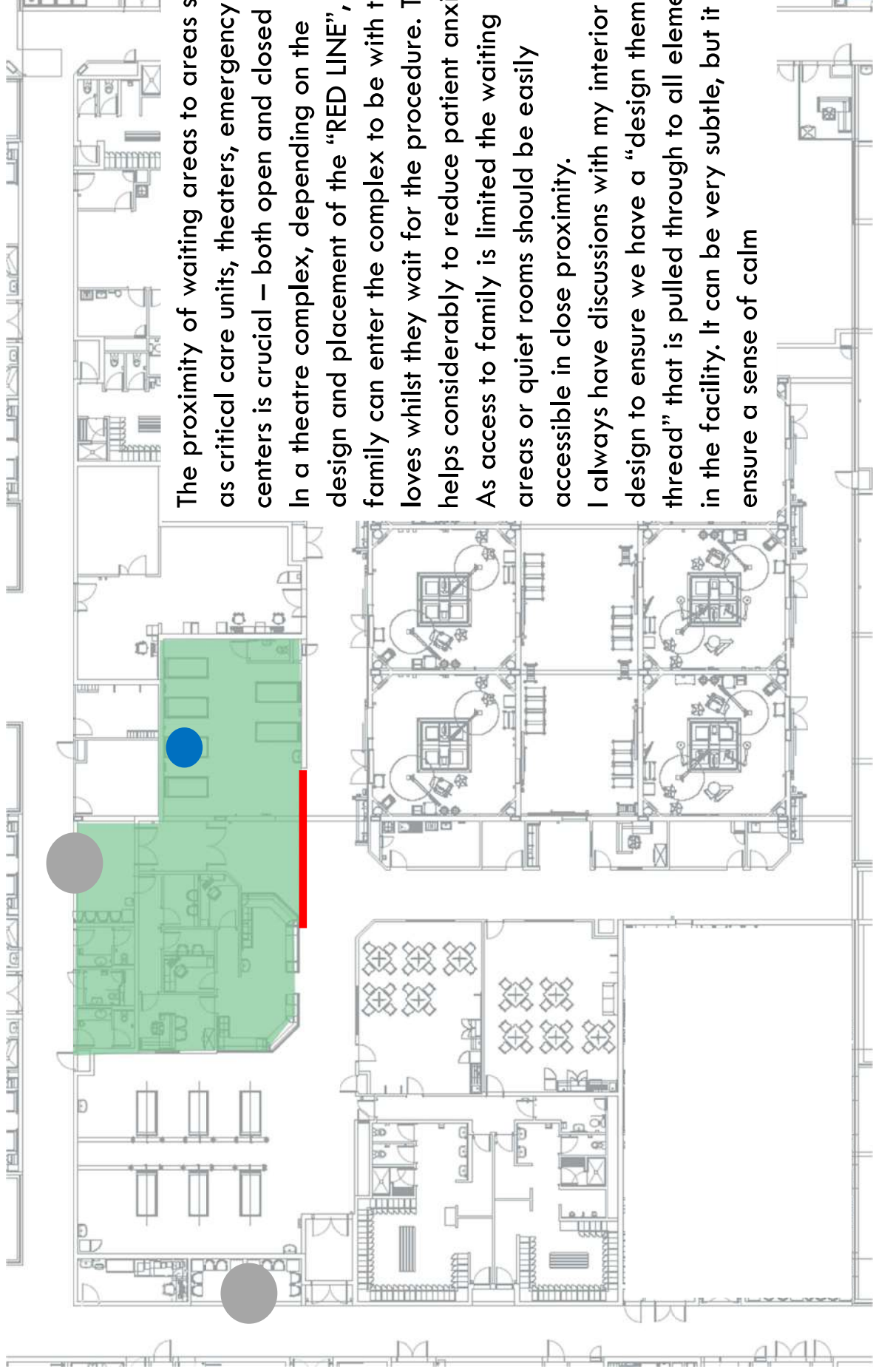


FLOW TWO: FAMILY & RELATIONSHIPS



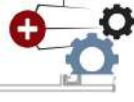
The proximity of waiting areas to areas such as critical care units, theaters, emergency centers is crucial – both open and closed

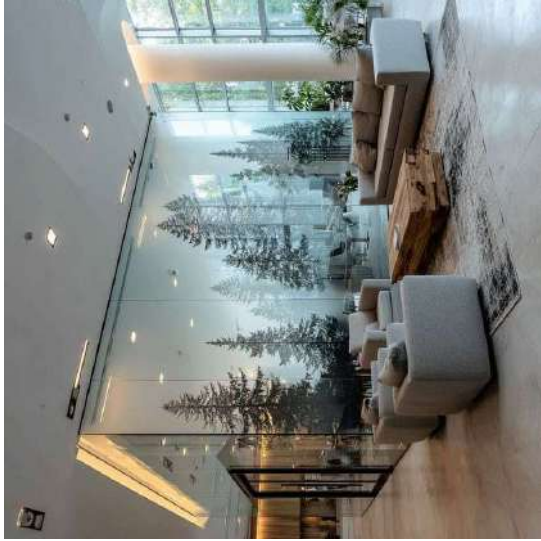
I always have discussions with my interior design to ensure we have a “design theme thread” that is pulled through to all elements in the facility. It can be very subtle, but it is to ensure a sense of calm.



The proximity of waiting areas to areas such as critical care units, theaters, emergency centers is crucial – both open and closed. In a theatre complex, depending on the design and placement of the “RED LINE”, family can enter the complex to be with their loves whilst they wait for the procedure. This helps considerably to reduce patient anxiety. As access to family is limited the waiting areas or quiet rooms should be easily accessible in close proximity.

I always have discussions with my interior design to ensure we have a “design theme thread” that is pulled through to all elements in the facility. It can be very subtle, but it is to ensure a sense of calm





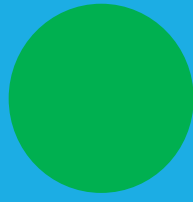
Cool, Calm colours
with comfy seating
and relaxing
environment.



Family Waiting Areas



FLOW THREE: PROVIDERS/ STAFF/ NURSE AND DOCTORS



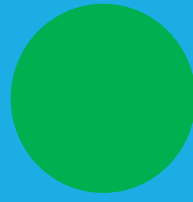
This flow is vital to the efficiency of a theatre complex.

If the movement of medical staff, doctors, nurses, and other healthcare professionals are hindered, it can cause significant challenges

It an extremely complex department, with many moving parts and people



FLOW THREE: PROVIDERS/ STAFF/ NURSE AND DOCTORS



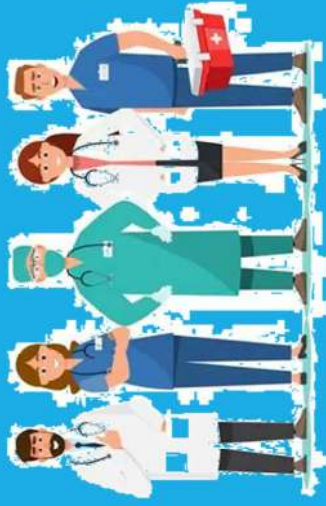
This flow is the most crucial and vital to the efficiency of a theatre complex. If the movement of medical staff, doctors, nurses, and other healthcare professionals are hindered, it can cause significant challenges and shortcuts. It an extremely complex department, with many moving parts and people.

Statutory regulations for theatre complexes which can be somewhat blurry ie...Private Healthcare - R158 is quite vague whereas the PN187 (Western Cape) is a lot more definitive. The IUSS which oversees the public healthcare is however very clear, in their own words but show me a facility that follows any of these building regulations.

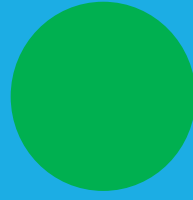
To understand this flow in this department, I have spent many a day in a theatre complex observing, asking questions, and taking in as much information as I can. From the access points of the complex in the change rooms to inside an operating room one also has to be aware of the detail of the flows of staff, patient and equipment.

[illegible]

Patient Flow in and out



FLOW THREE: PROVIDERS/ STAFF/ NURSE AND DOCTORS



The Surgeon – might be one or numerous surgeons in an operating room. Flow from change rooms to placement of scrubs, access to operating rooms is critical. In my experience a dedicated single double swing door for doctors and staff to use with close proximity of the scrub on the outside and gowning facilities inside are crucial to keeping control on hand hygiene process in place. A separate automatic door for movement of bed & large equipment is ideal to ensure the correct sterile environment is retained in the operating room.

The Anaesthesiologists are involved in all three stages of surgery (pre-operative, operative and post-operative). They are not as easy to control.

Nursing staff, which include:

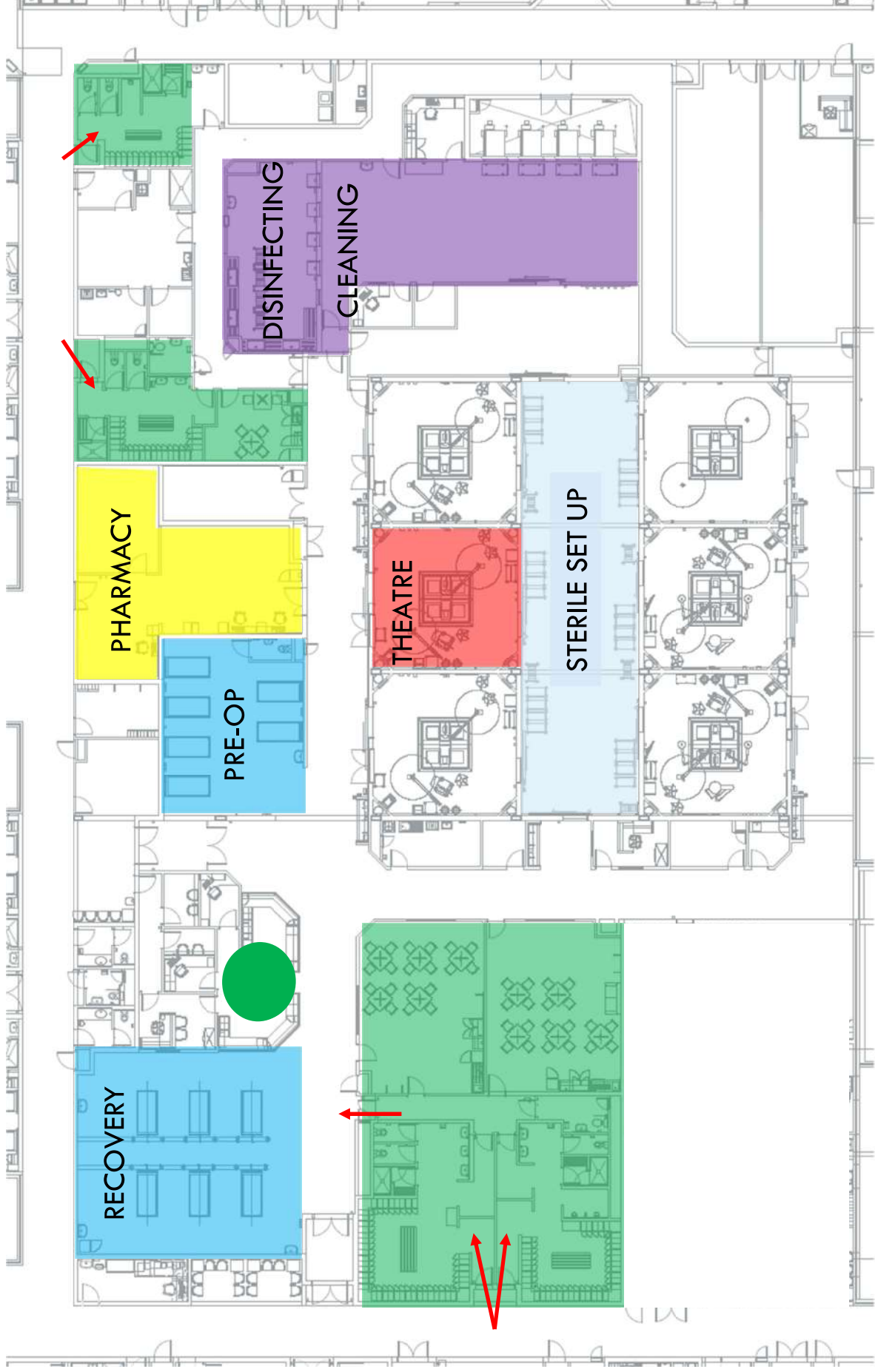
- nursing staff involved in the care of the patient throughout the perioperative period;
- the scrub person, who prepares the setup of the operating room and assists the surgeon during surgery;
- the circulating nurses, who supports the team and collects supplies from pharmacy store or sterile store

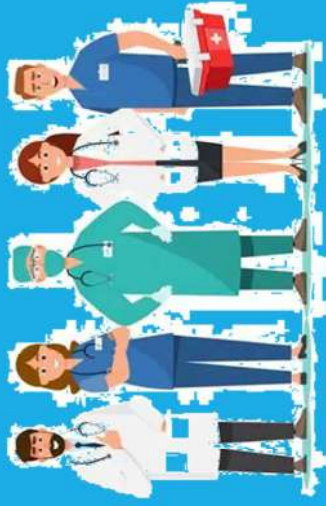
MEPD (Medical Equipment Processing Department) and CSSD (Central sterile supply department) staff.

the staff in this department can make or break a facility. How well do we understand the cleaning process of every piece of equipment and how do we control it?

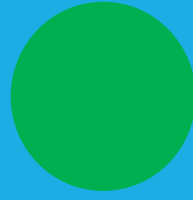
The flow in these areas is critical to ensure every stage in the cleaning process is completed, with out challenges

STAFF ZONES





FLOW THREE: PROVIDERS/ STAFF/ NURSE AND DOCTORS



Then we have the Support staff: each of these individuals have to consider their FLOWS

Staff nurse — in all roles. Each roles travel between the public/ semi restricted and restricted areas of a complex.

Clerks—administrative rolls. Pharmacy, bed bookings, unit administrative assistant — more public and semi restricted areas

Cleaners — have a critical flow in more ways than we realise.

from cleaning operating rooms, to cleaning staff rest areas to removal of medical waste.

The cleaning process- what route and controls are in place.

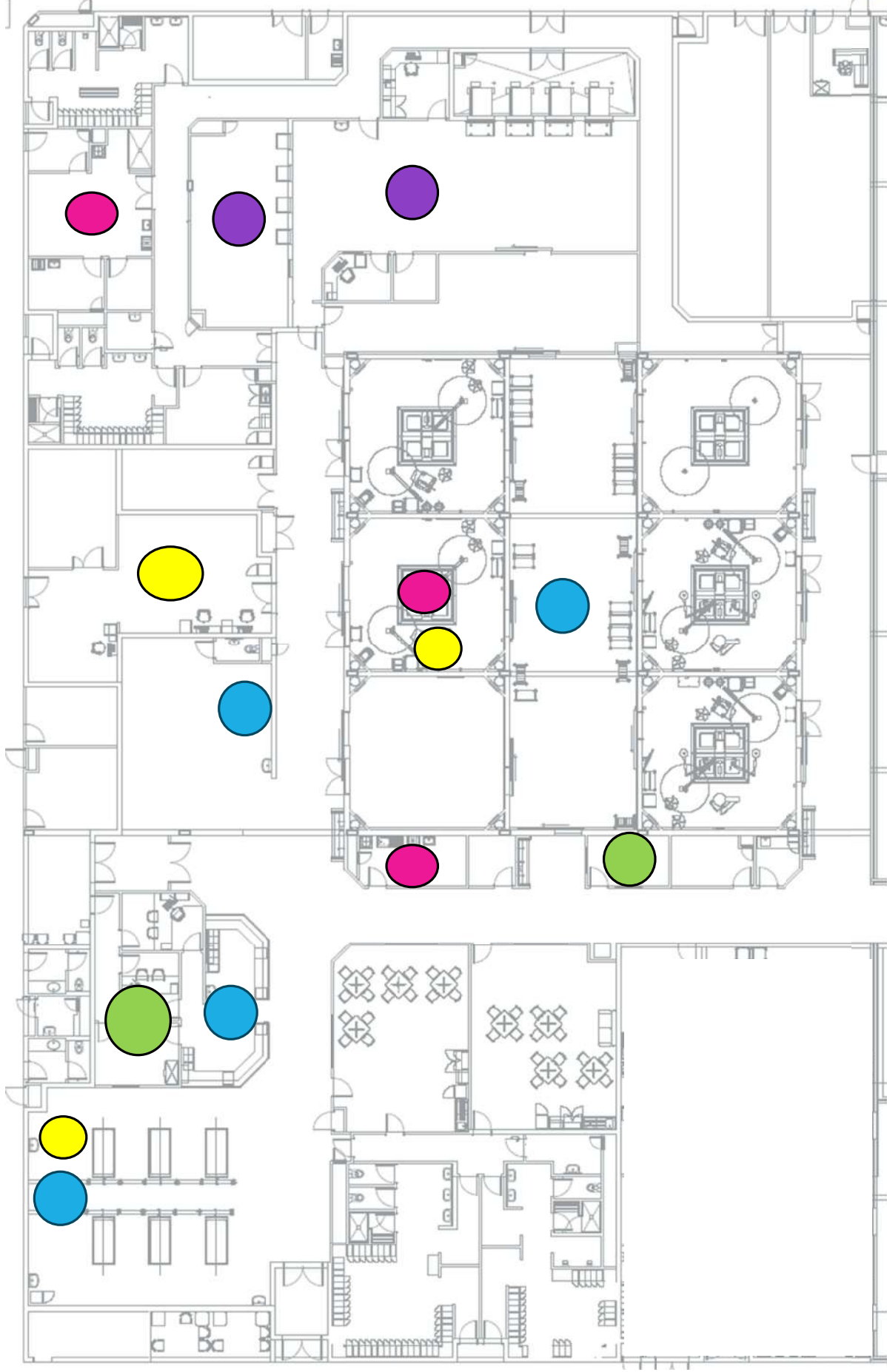
Cleaners room/ Sluice is in a central location to recovery area. This is primarily for the cleaning equipment used for the areas outside the operating rooms, typically known as the “dirty” zone.

Sluice — this is for the discarding of all waste from the operating room.. This is placed in the sorting area before the MEPD. This room is directly linked to the medical waste room.

Cleaners Store — this room we have kept separate to allow the prepping of cleaning trollies for the operating rooms.

I find that when I am designing or upgrading facilities, implementing changes in existing facilities, especially where providers have worked the same way for 30 or more years, can be more challenging than meeting regulations. However, this is what inspires me as a designer: making change understandable and easy to adapt to.

STAFF ZONES



SAFHE
South African Federation of Healthcare Engineering



FLOW FOUR: MEDICINE

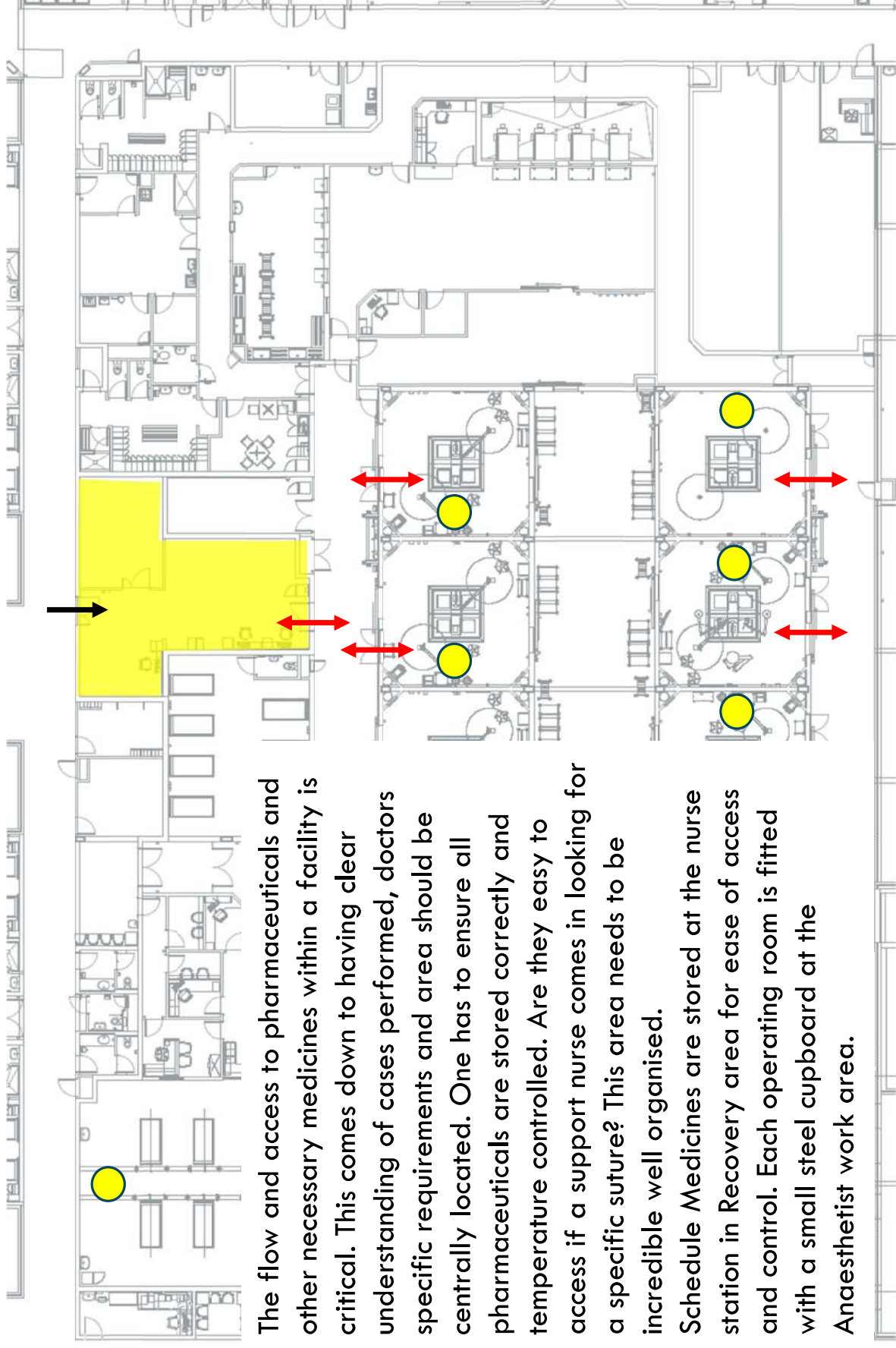


The flow and access to pharmaceuticals and other necessary medicines within a facility is critical

This comes down to having clear understanding of cases performed, doctors specific requirements and area should be centrally located

Placement of central specialised stock store

MEDICATION



The flow and access to pharmaceuticals and other necessary medicines within a facility is critical. This comes down to having clear understanding of cases performed, doctors specific requirements and area should be centrally located. One has to ensure all pharmaceuticals are stored correctly and temperature controlled. Are they easy to access if a support nurse comes in looking for a specific suture? This area needs to be incredible well organised.

Schedule Medicines are stored at the nurse station in Recovery area for ease of access and control. Each operating room is fitted with a small steel cupboard at the Anaesthetist work area.

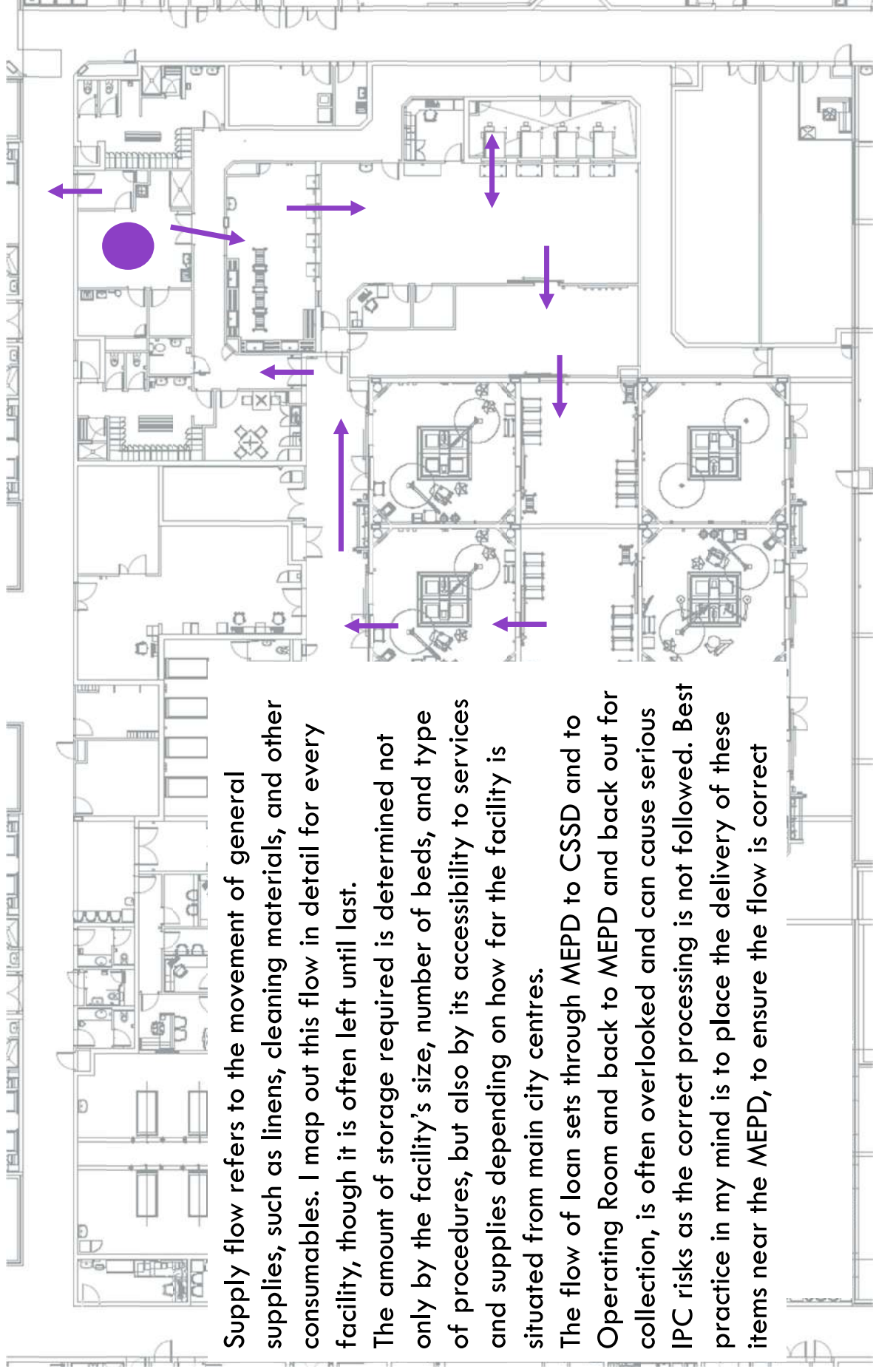


FLOW FIVE: SUPPLIES



This refers to the movement of general supplies, such as linens, cleaning materials, and other consumables –like Loan Sets.

Location of supply facilities in a complex are important to ensure no shortcuts to areas across restricted zones.



Supply flow refers to the movement of general supplies, such as linens, cleaning materials, and other consumables. I map out this flow in detail for every facility, though it is often left until last.

The amount of storage required is determined not only by the facility's size, number of beds, and type of procedures, but also by its accessibility to services and supplies depending on how far the facility is situated from main city centres.

The flow of loan sets through MEPD to CSSD and to Operating Room and back to MEPD and back out for collection, is often overlooked and can cause serious IPC risks as the correct processing is not followed. Best practice in my mind is to place the delivery of these items near the MEPD, to ensure the flow is correct

SUPPLIES



FLOW SIX: INFORMATION



A vital flow in the movement of patient data, medical records, and other patient important information

This flow in architectural design can be overlooked as it is not a “physical” element but information follows a patient and if the flow is hindered then information can be missed.

Placement of patient information is to be discussed in detail with end users of the facility.



FLOW SIX: INFORMATION



Information flow refers to the movement of patient data, medical records, and other important information. This area is often overlooked as it is not a physical element but from the moment a patient is booked for a procedure or assessed at the emergency centre, the information flow begins. This flow is critical as accurate information improves clinical outcome.

Currently, this flow is largely manual, whether by hand or computer, and can be time-consuming. As more facilities across Africa become electronic, I am always amazed at the background work required for this transition-not just training and change management, but also the unseen groundwork by users. While I believe this is the way forward, most facilities I have worked in still use a combination of manual and electronic record-keeping.



FLOW SEVEN: EQUIPMENT

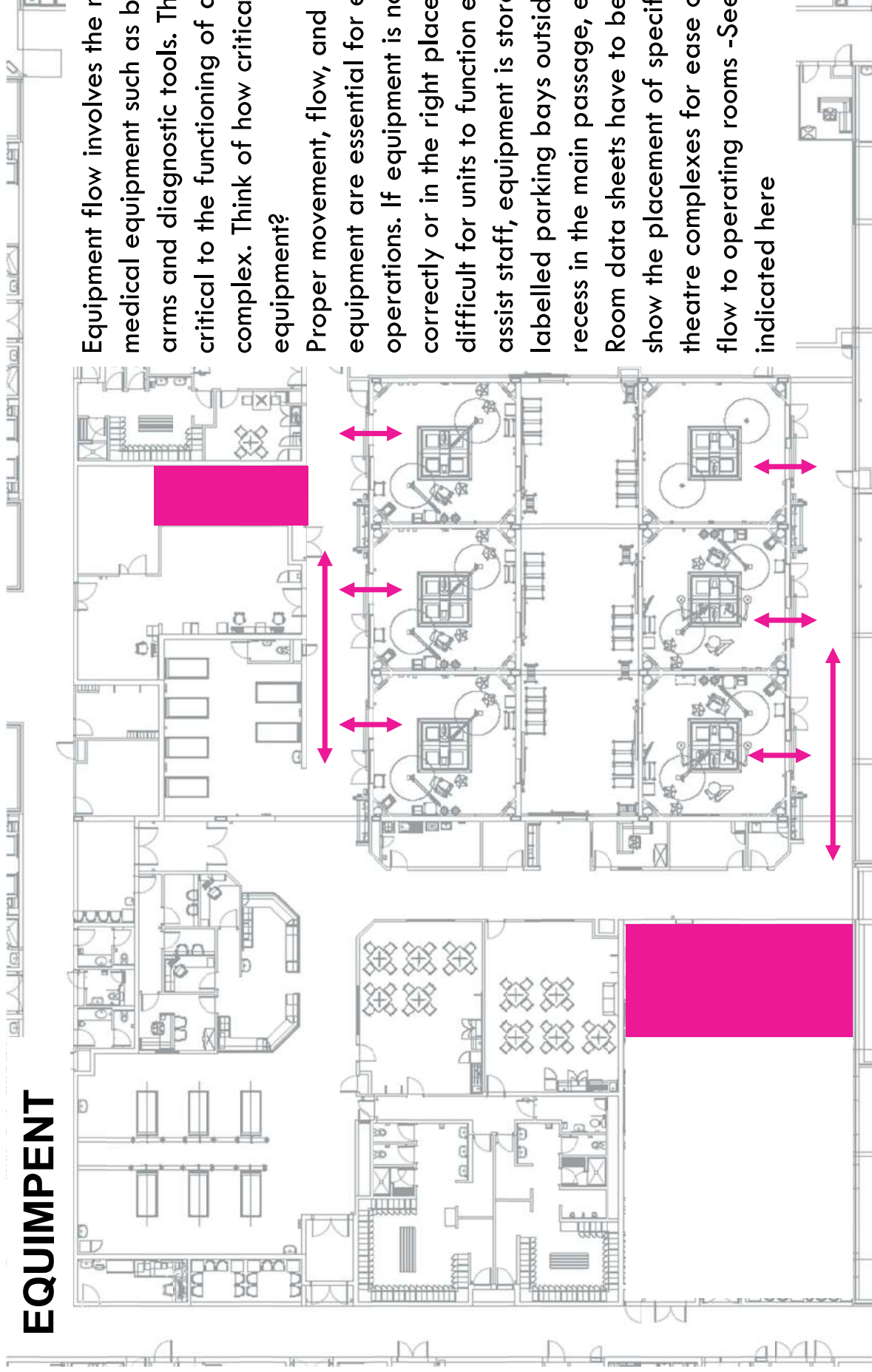


Equipment flow involves the movement of medical equipment such as beds, monitors, and diagnostic tools

Think of how critical it is to access equipment?

Placement of patient information is to be discussed in detail with end users of the facility.

EQUIPMENT

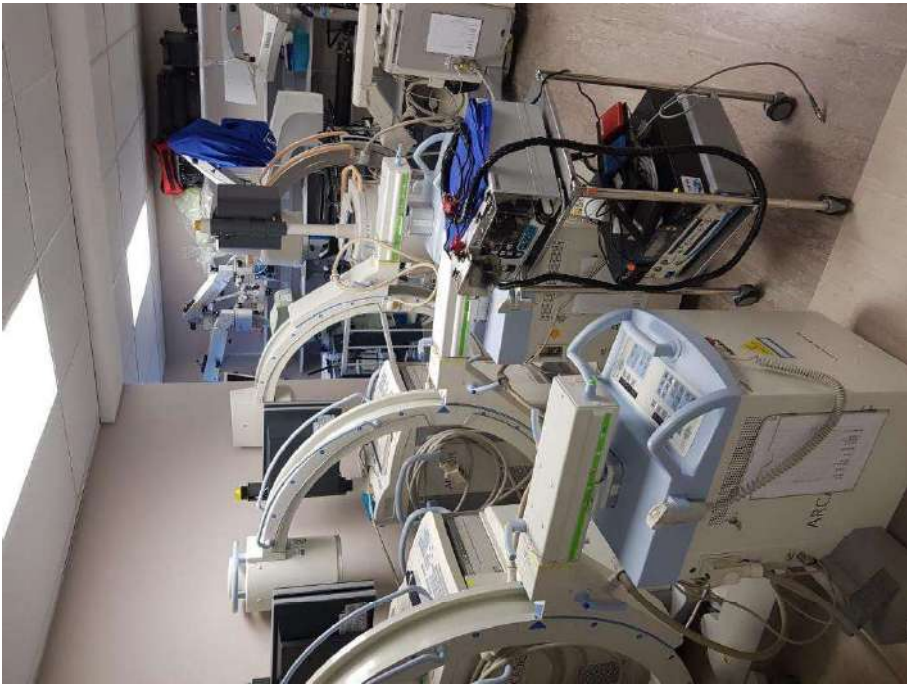


Equipment flow involves the movement of medical equipment such as beds, monitors, c arms and diagnostic tools. This aspect is critical to the functioning of any Theatre complex. Think of how critical it is to access equipment?

Proper movement, flow, and storage of equipment are essential for effective operations. If equipment is not stored correctly or in the right place, it becomes difficult for units to function efficiently. To assist staff, equipment is stored in clearly labelled parking bays outside theatre, like recess in the main passage, ease of access. Room data sheets have to be developed to show the placement of specific equipment in theatre complexes for ease of access and flow to operating rooms -See the flow indicated here



EQUIPMENT



CONSLUSION: FORM FOLLOWS FUNCTION

As healthcare architects and designers, our responsibility is to listen, innovate, and collaborate-ensuring that every detail contributes to safer, more compassionate, and more effective care.

The intricate flows within an Operating theatre -whether of patients, families, providers, medicines, information, supplies, or equipment-are all interconnected threads that define the quality and efficiency of care. Thoughtful architectural design is not just about creating functional spaces; it is about shaping environments that support healing, streamline operations, and enhance the experiences of everyone who enters the facility.

By continually assessing and optimizing these flows, we can overcome even the most complex challenges, from outdated infrastructure to evolving technological needs. As healthcare architects and designers, our responsibility is to listen, innovate, and collaborate-ensuring that every detail contributes to safer, more compassionate, and more effective care.

Ultimately, excellence in healthcare design is achieved not through isolated solutions, but through a holistic approach that places people at the heart of every decision. When we design with empathy and precision, we create spaces that truly make a difference in the lives of patients, families, and healthcare professionals alike.