

The University of Western Australia
Surgical Society



SLICING THROUGH SURGERY



Pocket Guidebook
for students and junior doctors
on surgical rotations
First Edition 2014

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The University of Western Australia Surgical Society

Slicing Through Surgery:

A Surgical Pocket Guidebook

For students and junior doctors on surgical rotations

For all aspiring surgeons.

Surgical Pocket Guidebook

The University of Western Australia Surgical Society

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Preface

The University of Western Australia Surgical Society (UWASS) was founded in 2011, by four medical students at The University of Western Australia, to foster student interest in the surgical profession and to prepare them for future application to and entry into Surgical Education and Training in Australia. Training to become a surgeon is administered by the Royal Australasian College of Surgeons (RACS) in conjunction with Surgical Specialty Boards. Entry into RACS Surgical Education and Training (SET) program is extremely competitive; furthermore applicants must select a pathway in general or surgical specialty before commencing surgical training.

UWASS is a student-run, not-for-profit organization that provides extra-curricular education for students in the form of lectures, clinical workshops, surgical skills workshops, career development seminars and social events. This includes a pre-clinical program, pre-intern program for final year students and Women in Surgery program.

This guidebook has been produced as an extension of the UWASS goal and philosophy to educate and support medical students during their surgical rotations, and beyond into internship and residency years.

This work is the product of a collaboration between members of the UWASS Publications Committee under guidance from surgical trainees and Consultant surgeons. We hope it proves helpful to medical students, interns and residents during their surgical rotations.

We value constructive criticism in the interest of continued improvement. Feedback can be forwarded to: president@uwass.org.au.

We wish you well in your chosen (surgical) career path!



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Part I: The Surgical Team

The Hierarchy

Wisdom and knowledge increase with each level of seniority, so too does the value of their time. - Anon.

Consultant

The Boss. Often sub-specialists with particular areas of interest.

Fellow

Position focusing on a particular area of specialty (fellowship) during a period of one to two years between completing final exams/training years and employment as a consultant.

Senior Registrar

The advanced training years in the specialty area. These are usually the trainees who never seem to leave the hospital! They spend most of their time in theatre perfecting their skills and most of their "off time" studying for the upcoming exams.

Junior Registrar

The first three years of training (previously called 'Basic Surgical Training'). Now incorporated into the SET program, these trainees are working on their essential surgical skills, doing courses/workshops (such as EMST, CLEAR, CCrISP etc.), and preparing for the first set of exams. They are a wealth of knowledge and often keen to teach.

Service Registrar

Not yet on the SET program, but spending a year working as a surgical registrar. This is a great way to improve surgical skills and get a lot of theatre time. But it comes with responsibility!

Resident

A resident can choose to do a surgical term. There may be one resident per team, or shared between two teams. Their main role includes the initial patient assessment and workup for surgery, assisting in theatre, and on the ward if required. They are great people from whom to learn the skills of a junior doctor.

Intern

Guardian of the ward. Interns can be busy with tasks including writing request forms, following up results, attending clinics and writing in patient notes. As a medical student, ask how you can help: put in cannulas, check fluid charts, write request forms that they can check and sign for you. It's a great way to learn and you can often be of great help!

Medical students

Just as much a part of the team, albeit down the bottom. You are the future surgeons and are in the unique position of having access to all that knowledge in those around you.

Don't be afraid to ask a registrar or fellow if you can shadow them for the day: ask questions and be interested.

What Your Team Expects of You

Students are part of the surgical team. You are there to learn about patients and their diseases, preoperative assessment and postoperative care, and of course surgical procedures. You may not choose to be a surgeon, but at some stage will need to work with them. So enjoy your time on the surgical team!

Show up. The most important part!

Be present. Ask questions, go to theatre, make yourself familiar to the team.

Talk to the patients. As soon as you graduate and become an intern you will no longer have hours of free time to talk to patients and ask all the nitty gritty questions in a history. Learn what questions are useful, as if you only had 15 minutes instead of an hour; learn what questions are less helpful. Consider what it is like to be a patient going through the health system – follow them to radiology, to theatre, to a clinic.

Improve your technical skills. There are a lot of skills that require practice; so get to it! (See Part II: Surgical Rotations in Medical School)

What You Should Expect of Your Team

You are there to learn about surgery. There are plenty of opportunities in a surgical rotation to do that AND see all relevant parts of the hospital – Radiology, the Emergency Department, Outpatient clinics, Team meetings, Pre-admission Clinics, Anaesthetics, Recovery, the Wards, Intensive Care Unit, High-dependency Area...and of course, the Operating Theatre.

If you're not getting the opportunities you seek – ask! Speak up and find out how you can improve your own experiences. Your senior registrar can help direct you or even take you along to shadow them for the day.

You should expect to learn, to receive teaching and be included. If you don't think this is happening, first ask your team – politely, of course. If that doesn't work try the Unit Coordinator for your rotation. There is usually a reason, which can be easily solved. Don't forget your colleagues on other teams. With hundreds of patients in the hospital you don't need to stick to the one ward – just make sure you don't step on anyone's toes; ask first.

Part II: Surgical Rotations in Medical School

How to Get the Most Out of Your Term



“The more you put in to your term, the more you’ll get out of it”.

This is a basic rule of clinical medical school. Every consultant will tell you the same thing.

Be proactive!

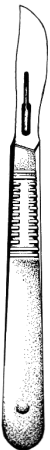
The more you show interest, the more people will involve you. Your residents and interns can help guide you to maximise your learning. Be prepared—read up on relevant surgical subjects often.

Know your patients!

You should know salient issues about the patients on your team.

- * **Why** they are in the hospital
- * Their relevant **past medical history**
- * At what stage of **management** they are. Pre- or postoperative.

It is best to follow the patients with whom you have been involved or are at least familiar (e.g. observed surgery; preoperative assessment.) You don’t need to wait for patients to be assigned to you; However, the team may have particular patients they consider suitable, if you ask.



Essential info you should know about your patient

- Relevant Past Medical History
- Pre-op vs post op (number of days)
- What was the operation, indication?
- Complications?
- Observations: vital signs; neurovascular obs
- Wound/incision(s) ± drain(s)
- Urine output

Know your team's specialty

Research your surgical consultants and their area of specialty before your term begins. This allows you to hit the ground running and will give you a good idea about what operations they will perform regularly and what you should read up on! You will remember more when you have a case in mind to think about.



"But I don't want to be a surgeon..."

Every doctor will interact with surgeons in some way. You will have to refer cases to the surgeons as well as be involved in the inpatient medical care for surgical patients.

For example, as an Emergency Physician you will be assessing patients, many of whom may require surgery. Knowing the essential work up and early management will facilitate a smooth transition to the surgical team. Remember, when you are "selling" a patient to a tired registrar, about a "?appendicitis case" ...speaking the surgical language can assist you in communicating to the busy surgical team.

Inside the Operating Theatre

Becoming a surgeon involves competency-based training. This journey begins as students. As medical students, you are often be called upon to participate and assist in procedures.

Suturing & knot tying

This skill is straightforward but 'practice makes perfect'. So grab a piece of string, or better yet some sutures and start throwing and knotting.

You may also be taught how to assist the primary surgeon when closing. This is all about keeping the existing sutures under adequate tension (but not too much!) while the surgeon reloads the needle and continues. This is a good skill to learn and very useful to the surgeon. So ask your registrar to show you how.

See Part V: Suturing & Knot Tying for more information.

Tissue handling & retraction

This is often the first task of the assisting medical student. Although it might sound easy, there are skills to be learned. Depending on the tool, size and type of tissue involved, your steady and unfaltering concentration is vital and will be appreciated.



Think about where and what the surgeon is trying to visualise – keep this field well-lit (get your head of the way!) and clear.



The surgeon may place the retractor for you so that it is in the perfect position already. **Just hold it still...** by moving the tissues in different directions you may be obstructing the field of view, or do harm.



Learn how to hold the surgical equipment comfortably . Posture helps. The key is to keep your shoulders relaxed. Excess movement can be distracting!



You may be there for long periods of time – If your hand isn't aching, you're not doing it right!



If you are unsure or think you need to resite the retractor, speak up! You won't get in trouble for communicating well.

Suction

Blood and fluids obscure the field of view. Don't be afraid to bring the suction into the field to clear the blood. But be mindful of the tissue architecture: don't push hard or put the sucker on the tissue surface. If you haven't done it before, fear not — the surgeon will instruct you.

Laparoscopic camera skills

This can be one of the more difficult skills to learn. There are no hard and fast rules, but requires 3-D conceptualisation and experience. Here are a few basic tips:

- * A steady hand correlates to a steady image
- * Always keep the camera head orientated: horizontal, otherwise the horizon distorts and you'll make the surgeon very dizzy!
- * Knowing the procedure may assist you to understand what the surgeons want to see & their planned actions.
- * Keep the surgical instruments in view at all times
- * Know what type of camera tip the surgeon has chosen to use. This relates to the angle of the camera and will affect the view seen on the screen. Angles include 0°, 30°, 45° and 60°.

Outside the Operating Theatre

Clinic

- * Clinics are busy places where the surgeons see pre- and post-op patients. This is a great place to see pre-op pathology and observe the informed consent process.
- * Take the initiative. Take a history and examination if a spare room is available, then present your findings to your Consultant or Registrar.
- * Spot quizzes are usually on anatomy, clinical signs and differential diagnoses.

On take / after-hours

Each team will be 'on take' or 'on call' for 24 hours, at least once per week. During this time the Consultant is taking all new admissions. This is an excellent opportunity for students to take a history and examine a patient early in their presentation and often in emergency situations.

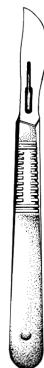
- * Find out when your team is on-take; which registrar is on-call.
- * Follow the registrar when they assess new cases in ED.
- * Volunteer to clerk patients and then present your findings.
- * Help the intern with IV cannulas, in-dwelling catheters, etc.
- * You may get the chance to follow the patient to theatre.
- * Follow-up on the patients the next day so that you can present on the ward round; this is your opportunity to dazzle!
- * This usually involves staying after-hours. It's a good opportunity to see how hospitals are managed with fewer staff and resources compared with daylight hours.

Ward rounds

- * Be punctual; they will leave without you
- * Know the patients

How to be useful to the team:

- * gather notes/medical records/drug charts/recent blood results
- * open/close curtains
- * carry progress notes/request forms
- * print a patient list for each team member
- * know diets, antibiotics, cultures, and IV fluid status for all patients



Handy blank forms

- Pathology request
- Imaging request
- Spare progress notes
- Fluid order forms
- Medication charts
- Anticoagulation charts

Progress notes:

Find out what clinical system your hospital uses (e.g. SOAP see below; ISOBAR for handovers/consult referrals—see page 15). A good way to start is to look at how your intern or registrar writes their surgical notes.

SOAP...don't forget it

Subjective: How does the *patient* feel? What are their words?

Objective: How does the patient *look*? (Observations, clinical exam findings)

Assessment: What is *your/the teams* impression ?

Plan: What are you going to do? Who will you call? What should the team do in the morning? When will you review the patient or when should the nurses call you?

Weed, Lawrence L. (June 1964). "Medical records, patient care, and medical education". *Irish Journal of Medical Science* 39 (6): 271–282

Technical Skills

All surgical patients need a functioning IV cannula, up to date bloods relevant for surgery and may have an indwelling urinary catheter. Surgical rotations are a great opportunity to practice these skills and more. Skills to focus on include:



- Venepuncture
- IV cannulation
- ECG setup
- Inserting an indwelling urinary catheter
- Arterial blood gas
- Sterile dressing changes
- Removing lines (central lines, chest drains) and wound drains

Presentation Skills

Preparing¹

- * **Know your Patient** – Have a thorough history, examination, investigation and treatment summary, even if it is not all in the actual presentation you should be able to answer further questions if clarification is needed.
- * **Practice** – Especially if the patient is complex or things are confusing.
- * **Know your Audience** – Tailor your presentation according to whether presenting to the consultant, a busy registrar, the intern/RMO, or other students. Only use appropriate acronyms if they are likely to be familiar with them, otherwise use full terminology.
- * **Know the Situation** – There's a big difference between presenting a patient on the ward round, and referring to a registrar over the phone.

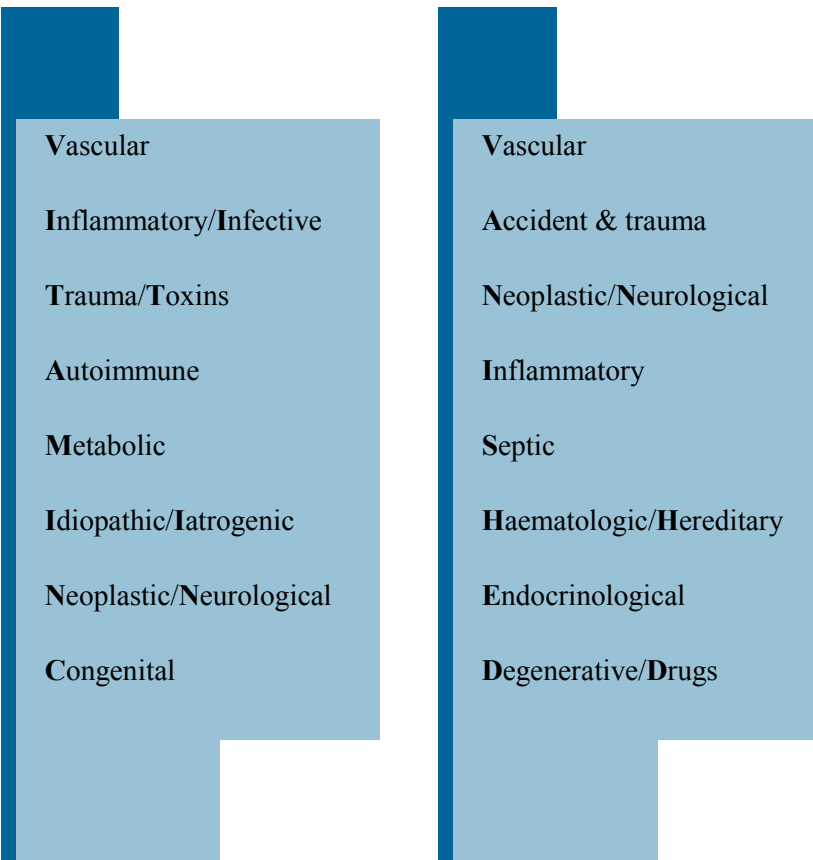
Presenting¹

- * **Keep it organised** – You want the whole story to flow and make sense to whomever is listening.
- * **Start with a summarising sentence** – Try and tell the whole story in one sentence.
- * **Present the patient, not the disease** – Mr G isn't just another colorectal cancer, he's a father of two, who was reluctant to have his symptoms investigated and now feels incredibly guilty.
- * **Include pertinent positives and negatives** – Prioritise! Only discuss information that is relevant to the case. Have a thorough history, but you don't have to present every last detail just have it available in case questions are asked.
- * **Include some differential diagnoses** – Even if the diagnosis may seem obvious, having a differential always helps. There are a number of *surgical sieves* (e.g. VITAMIN C, VANISHED—see page 9) to use to help you formulate differentials. Find and use one that works for you.
- * **Investigations** – Be prepared to answer questions about why you choose each investigation.
- * **Include a basic management plan** – Don't be afraid to be corrected, that's one of the ways you will learn and remember.

General tips & tricks

- * Be aware of your body language. It does not look professional to twirl your hair, or pick at your leggings.
- * Use your notes as prompts and remember to have eye contact with your audience.
- * NEVER make anything up to fill in the gaps – be honest and say you omitted it. It is a disservice to all involved, and undermines trust, when the information is not truthful.
- * Ask for feedback.

The Surgical Sieve — Examples



Reference

1. Eve Hartley, George Trafford, Sonia Bhangu, Aneel Bhangu. 2009. How to answer questions. Student BMJ; 17: b2173

Part III: Internship & Residency

Role of the Surgical Intern

The intern is guardian of the ward. You may be the only intern/junior doctor for a whole team. When your team is in clinic or the OT, it is up to you to keep everything on track.

Prioritise

Write down your tasks during the ward round and prioritise them appropriately:

- * Don't leave imaging requests or consultation requests until 4pm.
- * Ensure *required* blood test results are recent.
- * Group and antibody screen required for: major surgery; anaemia; anticoagulant medication; liver disease; clotting diathesis; or history of transfusion. (It remains valid for 30 days, or 72 hours for a cross-matched specimen or if transfused in the last 3 months).
- * Surgical patients are fasting, and have different fluid requirements to medical patients. Review every patients volume status each day.
- * Don't put off referrals to other teams because you're scared of the registrar – the more hours of the day you give them to see your patient, the less likely you will be to have to pester them the following day.

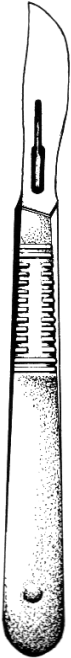
Be a doctor

You're not just a 'paper pusher'. You might have a lot of administrative work to do, but without it the team won't function. Having a coordinated ward makes everyone's day easier and the patients stay in hospital more comfortable.

- * If you order an investigation, follow it up! Don't expect anyone else to do it. You are responsible for it.
- * If something seems wrong, find out why. Hierarchy exists in the hospital for a reason. Knowledge flows down and responsibility flows up. But if you think something doesn't add up...speak up!
- * Remember you are taking care of patients, not a job list. Drop in and say hello every day. It will take a few minutes out of your day, but can make a world of difference to the patients. "It's not my patient" or "I haven't seen them, I don't know" is not a good answer to a question.
- * When you make a mistake...because you will...be honest. Never lie. If your seniors don't know about the issues, they can not help you solve them.

Teach the students

You were there only a few months ago! It doesn't take long to ask a question, let the student practice their physical examination, or take bloods for you. Students can be very helpful if given the time.



General tips & tricks

- * Learn how to charm the Radiologists.
- * Have a plan on how to manage patients requesting opiates – just because someone is an active IVDU does not mean they do not have genuine pain.
- * A good history and clinical examination will usually give you the answer.
- * Learn about blood products – the Australian Red Cross Blood Service has an online transfusion learning tool for health professionals.
iTransfuse (www.transfusion.com.au)
- * Know how to consent your patients – every hospital has guidelines. The HDWA has downloadable model of consent. Additional resource is Queensland Health Government website.
http://www.health.qld.gov.au/consent/html/for_clinicians.asp
- * Document the patient plan. If the patient deteriorates overnight, your colleague on night shift will thank you if there is an easy to find, well documented plan to follow.

Surgical Ward Cover

This can be an intimidating responsibility, especially in your first few months as a doctor. Don't be afraid to refer to a quick, reliable text. A really good example is: **Marshall and Ruedy's On Call: Principles & Protocols**, By Mike Cadogan, Anthony F T Brown & Antonio Celenza.



General tips & tricks:

- * Don't guess, look it up
- * Call for help early, there is always an 'on call' registrar
- * Recognise the deteriorating patient— if significant, must alert consultant immediately. Observation charts are useful tools in identifying trends or abrupt changes in vital signs and status.
- * Anticipate problems specific to the surgical patient

Pre- & Post-operative Complications

There are many ways to think about complications. The most important thing, is that you do think about them when you are seeing a patient. Here is one way think about it:

From *Mr Frank Prendergast, Vascular Surgeon, WA.*

Local complications - The B's

Bleeding – haemorrhage: primary, secondary, reactionary

Blocking – acute occlusion

Busting – wound dehiscence, anastomotic leak, drain leak

Becoming Infected – wound/other infection

General complications – CRAUNBELS

C – CVS: arrhythmia, HF, MI, DVT

R – Respiratory: collapse, consolidation, infection, PE

A – Alimentary: anorexia, N&V, haematemesis, diarrhoea

U – Urinary: UTI, blocked catheter

N – Neurological: delirium, hallucinations, stroke, palsy (especially secondary to intraoperative positioning on table e.g. wrist drop [radial palsy], foot drop [sciatic palsy])

B – Blood: bacteraemia, septicaemia, DIC, anaemia

E – Endocrine: hypo/hyperglycaemia, Addisonian crisis

L – Locomotor – acute back pain, gout, prolonged motor block (e.g. epidural)

S – Skin – sensitivity, allergy, pressure sores

Many common acronyms exist to assist students and junior doctors to learn/recall differentials in an examination or urgent clinical situation. Whichever acronym you use, just stick to it. And always remember, if you can't remember — look it up! And ask for help...

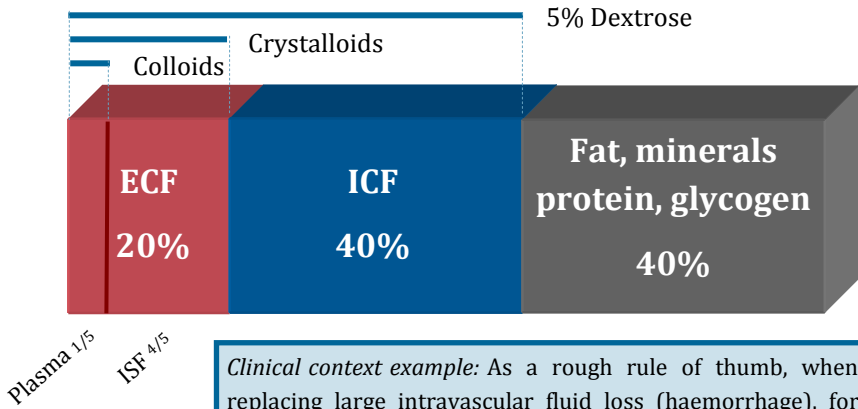
The Surgical Intern

should be able to recognise and begin to manage:

- * Acute pulmonary oedema
- * Atrial fibrillation
- * Low urine output
- * Low Haemoglobin — when to transfuse
- * Raised INR — using FFP, Vit K, Prothrombinex, and when to use all three

Fluids & Electrolytes: The Basics in a Surgical Patient

Body Compartments and distribution of common IV fluids¹



Clinical context example: As a rough rule of thumb, when replacing large intravascular fluid loss (haemorrhage), for every unit of blood lost, replace with 3 units of crystalloid.

Table: Composition of commonly used IV fluids¹

Fluid	Na ⁺	K ⁺	Ca ²⁺	Cl ⁻	Other	pH
<i>Crystalloids—Rapidly distribute to ECF with 20-25% remaining in ICF</i>						
0.9% NS	154	-	-	154	-	5.0
Hartmann's	131	5	2	111	Lactate 29	6.5
Dextrose 5%	30	-	-	30	-	4.3
<i>Colloids—Remain in ICF until metabolised or excreted</i>						
Haemaccel	145	5	6.25	145	Gelatin 35	7.4
Gelofusine	154	0.4	0.4	125	Gelatin 40	7.4
Albumin 4%	<16 0	<2	-	136	Albumin 40-50	7.4

Fluid Losses

- * **High NaCl Loss Fluids:** Bile, Gastric juices, Small bowel, ileostomy
- * **High K⁺ Loss Fluids:** Pancreatic juices, Diarrhoea, Colostomy
- * **High Volume Loss Fluids:** Ileostomy, Colostomy, Gastric, Pancreatic

N.B. Insensible losses increase in surgery (e.g. ~1ml/kg/h in abdominal laparotomy); additional fluid loss (blood loss; vascular leakage/sequestration) affects the intravascular compartment volume³

Maintenance Fluid requirements

4:2:1 rule = 4ml/kg/h for first 10kg + 2ml/kg/h for 2nd 10kg + 1ml/kg/h for each additional kg.

Shortcut = weight (kg) + 40 = ml/h (x24 for daily requirement)

Assessing fluid status²

Clinical: oedema, JVP, tissue turgor, mucous membranes

- * Simple, quick, done at the bedside
- * Lacks specificity

Fluid balance chart

- * Simple, reasonably accurate
- * Requires accurate charting, doesn't account for insensible losses

Body-weight, serial measurements

- * Useful in uncomplicated critically ill
- * Time consuming, labour-intensive, correlates poorly to fluid balance charts

Invasive monitoring: central venous pressure (CVP), pulmonary capillary wedge pressure (PCWP), extravascular lung water (EVLW), arterial pressure curve

- * More accurate
- * Invasive, not available on the ward

Daily Requirements¹

- * Water: 30-40ml/kg/d [F = 1.5-2L/d; M = 2—3L/d]
- * Na +: 1.5-2mmol/kg/d [F = 70-90mmol/d; M = 120—140mmol/d]
- * K + : 1mmol/kg [F = 40-60mmol/d; M = 70mmol/d]

Issues in surgical patients^{1,3}

- * Fasting patients require maintenance fluids + extra losses
- * Fluid balance chart (check regularly; remember to include stomas, drains, NGT, etc)
- * Increased ADH activity (50-100-fold; 3-5 days to normalise): anaesthetic-induced renal vasoconstriction; fluid loss/sequestration; surgical stress (cortisol/aldosterone levels)
- * Potassium (K+): aim ≥ 4.0
- * Magnesium (Mg+): aim ≥ 1.0
- * Know the risks of too much fluid (e.g. N.Saline can cause hyperchloraemia; Dextrose can cause hyponatraemia)
- * Anaesthetic chart documents fluids given (quantity/type); and estimated blood loss perioperatively.

References

1. British Consensus Guidelines on Intravenous Fluid Therapy for Adult Surgical Patients. GIFTASUP 2009.

“Buffing and Turfing”*

Consultation

The phone call to a senior registrar or consultant can be a frightening experience.

- ◆ Make sure you *know the patient*: age, admission reason, relevant comorbidities, current issue and recent investigations.
- ◆ Have *recent imaging, blood results and observations* at your fingertips.
- ◆ Clearly state *why you need their input*: “my registrar/consultant told me to” won’t cut it
- ◆ Asking a senior for advice is always a more suitable choice than informing them of their duties
- ◆ *Pre-empt questions*: renal want to know the creatinine, pH and potassium, neurosurgeons want the GCS and imaging, oncologists want the most recent staging investigations
- ◆ *Summarizing the case*: every doctor is busy and senior registrars/consultants are caring for a lot of complicated patients, so keep the story concise and relevant. Put your question right up the front of the conversation.

ISOBAR

- ◆ **Identify** yourself and what you want: “*My name is Dr X, an Intern from team Y; I am calling in regards your patient Mr. P who I have reviewed on the ward and is deteriorating clinically*”
- ◆ **Situation & Observations**: What is the current issue: “*Mr P has a respiratory rate of 24 and oxygen saturation of 90% despite high-flow oxygen, I am worried about him*”
- ◆ **Background**: “*He is 4 days post-op for...*”
- ◆ **Assessment**: “*He has been stable until this afternoon when he became tachypnoeic and normotensive, with a low grade fever of 37.5°, he does not look well*”

Use the ABCDE approach to vital signs

- ◆ **Recommendation**: What do you need? When? “*I am worried he might have a PE, would you please come and review him with me?*”

Before you hang up, make sure you have a plan in place and document your plan and who you spoke with.

*Shem, Samuel. *The House of God*. Penguin Books Ltd, London, 1978

An Interns Pager..Beeppp!!!!

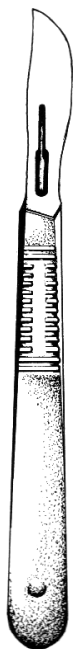
The time has come for you the get that little black box of plastic that will beep at you at every inopportune time of the day/night.

This is what we found on one interns pager over a single morning...

07:01	PLS CHART PATIENT MORNING & LUNCH INSULIN <i>Note: no contact number or patient details</i>
07:15	Can you please ring re patient plan x43210
07:18	Can you please call me about patient x42310
08:13	Hi patient bloods back are you happy for discharge? x41230
08:24	"Tone Only"
08:44	Please call lab for results
09:03	Hi, ward here, patient X c/o chest pain since 06:30. ECG done, unremarkable, no pain relief charted, can you please review analgesia?
10:00	Mr X in Trauma that you charted for urgent bloods at 07:00 needs bloods taken pathology unable to bleed him
10:12	Please call APS re patient X – allergic to opiates
10:28	Hi, can you please talk to patient X's daughter
10:29	Can you please write a med cert for patient X discharge
10:43	Hi, please review Mrs X, HR 120
10:58	ICU Reg handover, please call x44321
11:04	Bloods haemolysed, please send another sample for Mr X
11:25	Please review Mr X, T37.6, tachy + hypotensive
11:27	Mrs X, Re-site IVC, urgent for T1DM with increasing BSL

How do you prioritize these sometimes vague requests? Have a think about how you would manage your day considering you have 30 patients on the ward, 2 in ICU, 4 on the theatre list and a pre-admission clinic to attend.

Remember when you're sending a page how it will come across on the other end. The more *relevant* information you can provide, the better.



Rules to live by:
Eat when you can...

Sleep when you
can...

And, don't mess with
the **pancreas!**

Part IV: The Operating Theatre

The Who's Who of the Operating Theatre

The Patient: The most important person in the room. Often the patient's anxiety can be over-looked in the hustle and bustle of the OT. Observe how nurses help alleviate the patients' anxieties. This is a skill that is appreciated by patients. It is okay to chat to the patient!

Consultant Surgeon: They may be leading the operation, instructing a trainee or observing.

Assistant Surgeon: This may be the consultant, registrar, RMO, intern or medical student. The aim is to assist the primary surgeon.

Scrub Nurse: This is the gloved and gowned theatre nurse. They assist the surgeons, layout and supply surgical equipment as needed.

Circulating Theatre Nurses: They are on standby throughout the procedure to get equipment for the case as needed from outside the sterile area. Ask them questions when possible as they know the procedures well.

Anaesthetist: Induce and maintain of anaesthesia during the procedure. They are also responsible for the medical management of the patient throughout the perioperative period, including haemodynamics, fluids, temperature and medications etc.

Anaesthetic Nurse/Technician: Assisting the anaesthetist by preparing anaesthetic instruments and monitoring equipment.

Orderly/Orthopaedic Technician: Aid with positioning of the patient, patient transfers and cleaning of the theatre between cases.

Company Representative: Very common in theatre, they function to assist the surgeon and nursing staff in the use of their products (such as stents, screws, staplers and other tools).

Theatre Coordinator: The manager of theatres. This person makes sure things are running smoothly and on time.

Ten Theatre Tips



1. **Sign in.** Reception will guide you through sign-in protocol and the layout of the theatre department including change rooms.
2. **Wear scrubs.** Appropriate attire is necessary in all OT areas.
 - * Cover ALL hair
 - * Take off any jewellery
 - * Wear suitable shoes (e.g. sneakers). If your shoes have been outside the hospital wear shoe covers. Ballet flats, high heels and men's dress shoes are not a good idea. You don't want blood on them anyway!
3. **Introduce yourself** whenever entering an OT for the first time that day. It helps to build rapport with the staff and it's a good way to find out each persons role.
4. **Check the theatre list** the day before on the Theatre Management System or ask at reception. Read up about the anatomy and surgical procedures that you will see, so you are not flying blind.
5. **Ask the primary surgeon politely if you can scrub in.** Just because a surgeon hasn't offered, doesn't mean they won't let you. By taking a keen interest in the operation, the surgeon will take more interest in you.
6. **Position yourself for a good view.** If you are not scrubbed, find a good view of the operating field. There is a square marked on the floor to demarcate the sterile area – stand outside this square at all times. As a tip, don't stand between the scrub nurse and the suture/tools wall.
7. **Wear a mask.** It is good etiquette to put your mask on as soon as the surgical trays have been opened. Even if other staff don't it shows respect for both the patient and the surgeon.
8. **Don't be afraid to ask questions.** Take it case by case, and surgeon by surgeon but often they will be happy to discuss what they are doing. If the surgeon is focussed, talk to the nurses and company reps—they are a wealth of knowledge!

- 9. Focus on the operation.** If you can't see well or you're getting tired excuse yourself and leave the theatre for a short break. Gossiping in the background can be very distracting to the surgeons and nurses. And looking at your Facebook doesn't leave a good impression. This is a great time to ask questions.
- 10. Be proactive.** In between cases rather than sitting in the corner of the theatre or in the tea room go and see the next few patients in the pre-op area, ask the anaesthetist if you can cannulate the next patient or ask the surgical registrar if you can insert the catheter.

Surgical Scrub

The aim of the surgical scrub is to reduce the load of commensal bacteria from the skin and keep bacteria from recolonising over the course of the operation. This is so that in the case of obvious or micro-puncture of the sterile gloves the sterile field will not be compromised and reduces the risk of surgical site infection.¹

Protocol

Each hospital will have individual protocol on the length and technique of the first and subsequent scrubs. They are usually posted above the scrub sinks, or ask the staff development clinical nurse. If you're a bit slow, don't worry. Rushing or cutting corners is not worth the risk. The nurses are usually very happy to make sure you get it right!

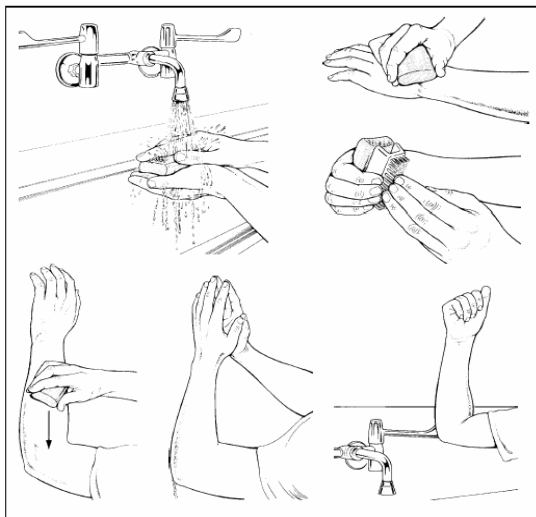
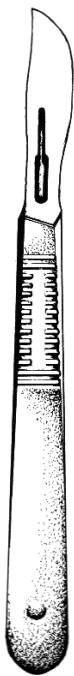


Image reference: Hand Scrubbing from WHO Best Practice Protocols²



General tips & tricks

- * Ensure fingernails are kept short
- * Remove all hand and wrist jewellery
- * Check that skin of the hands is intact – *if you have an abrasion ask the nurse for a sterile bandage. You can put this on after the scrub and before your gloves.*
- * Make sure gloves and gowns are prepared
- * Put on a mask with eye protection before you scrub³
- * Use the same antimicrobial agent throughout the day – if you start with a chlorhexidine wash, all scrubs that day should be with chlorhexidine
- * Once your hands are sterile, if you touch anything that is not sterile at any point during this process or when gloving/gowning you need to repeat the *Subsequent Scrub* protocol
- * Remember to use moisturiser as scrubbing can dry your hands out and lead to cracking of the skin

The Evidence

- * Chlorhexidine-based and Iodine-based antimicrobials show similar reductions in bacterial counts after application but chlorhexidine keeps these levels lower for longer.⁴
- * Evidence suggests that decreasing the bacterial count does not rely on how hard one rubs but more how long the skin is exposed to the antimicrobial.³
- * Evidence suggests that scrubbing for longer than four minutes does not incur any advantage in decreasing bacterial load.⁴
- * Scrubbing with a brush on the arms does not incur any advantage to scrubbing with ones hands³
- * Find out if your hospital uses open-glove or closed-glove technique⁵. And practice it. Ask if you can take a pair of gloves home and practice.
- * Don't worry if your fingers don't get into the right place straight away. Get both gloves on your hands so you're sterile, then manipulate the fingers so they are comfortable.

Gowning and Gloving

Most modern theatres use disposable gowns. Sizing is similar to that of clothes (S-XXL).

Sterile gloves come in sizes ranging from 5-10, and come in half sizes. Most women size range 6-7½ and most men size range 7-8.

General tips & tricks

- * Most hospitals won't let you scrub until you've done a gowning & gloving orientation – find out when and where this happens
- * Know your glove size
- * Find out if your hospital uses open or closed gloving technique
- * **DOUBLE GLOVE** – its good practice, and reduces risk in the event of a needlestick injury
- * When putting on your gown be cautious not to touch the towel against any non-sterile surfaces, including your clothes. Hold your arms away from your body.
- * Stand in an open area so you don't contaminate your gown as you open it.

How to Be a Good Surgical Assistant

Learning how to be a good assistant takes experience. If you're not scrubbed in, or if you are but not the assistant watch what the assistant does to pick up some tips.

- * Be present for the preoperative preparation. Learn how to drape the patient and positioning for different procedures.
- * Safety checklist: RACS-adapted WHO checklist [http://www.surgeons.org/media/12661/LST_2009_Surgical_Safety_Check_List_\(Australia_and_New_Zealand\).pdf](http://www.surgeons.org/media/12661/LST_2009_Surgical_Safety_Check_List_(Australia_and_New_Zealand).pdf), prophylaxis (DVT, antibiotics), expected blood loss, allergies, etc;
- * Watch how the scrub nurse manipulates and passes sharps and tools in a safe manner;
- * Learn how to assist the surgeon while closing the wound; if you show interest you will likely be offered the chance to suture. This is your time to shine, and where all the waiting around is worth it!

References

1. Michael R, Della P, Zhou H. Effective surgical hand preparation: an integrative research review. *ACORN*. 2012; 25(2): 40-46.
2. WHO Best Practice Protocols: Clinical Procedures Safety. <http://www.who.int/surgery/publications/BestPracticeProtocolsCPSafety07.pdf>
3. Association of Surgical Technologists. AST recommended standards of practice for the surgical scrub. Colorado; 2008. http://www.ast.org/pdf/Standards_of_Practice/RSOP_Surgical_Scrub.pdf
4. Widmer A. Surgical hand hygiene: scrub or rub? *J Hosp Inf*. 2013; 83(51): 535-539.
5. King Edward Memorial Hospital. Surgical scrubbing, gowning and gloving. Perth, WA; 2012. http://www.kemh.health.wa.gov.au/development/manuals/O&G_guidelines/section/f_gloving.pdf

Gowning technique



1. DRY HANDS.



2. PICK UP GOWN.



3. LET GOWN UNFOLD.



4. OPEN TO LOCATE SLEEVE / ARMHOLES.



5. SLIP ARMS INTO SLEEVES.



6. HOLD ARMS OUT AND SLIGHTLY UP.



7. CIRCULATOR PULLS GOWN ON.

Image reference: WHO Best Practice Protocols²

Gloving technique

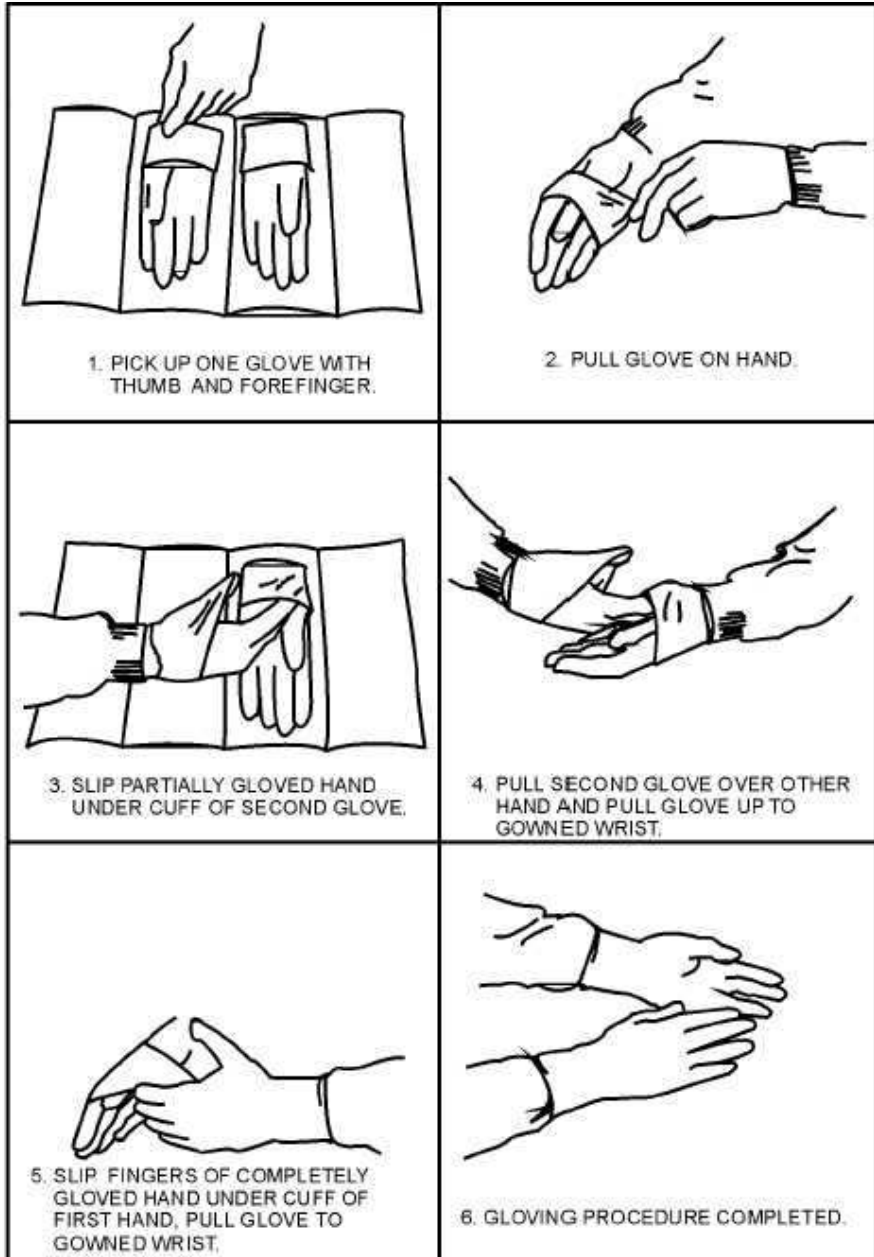


Image reference: WHO Best Practice Protocols²

Part V: Suturing & Knot tying

Suturing and knot-tying are important skills for surgeons and two things that “aspiring surgeons” can master and enjoy even before a rotation.

Suturing skills – What Should I Know?

Whether you are a budding surgeon, emergency physician or GP, basic suturing and knot tying skills are essential. Practice improves not only technique and confidence, but wound cosmesis. So as a student where should you start and what do you need to know?

- * Attend your scheduled suturing workshop during your surgical rotation.
- * When in theatre ask the surgeon /registrar if you can assist closing the wound.
- * Various techniques exist with unique advantages and indications - be aware of them and practice the basics:
 - Simple Interrupted, Vertical & Horizontal Mattress, Buried
 - Continuous, Sub-cuticular, Locked
 - Figure of eight, B-Lynch, etc.
- * If you want to learn or refresh new techniques there are a myriad of online videos and websites with good instruction. So take some time to have a look

Knot-tying

It is important to be familiar with instruments to become more proficient with suturing and tissue handling. This will improve your skills and safety (i.e. don't ever handle the suture needle with your fingers - correct handling to prevent needle-stick injuries).

Familiarize yourself with the basic suturing instruments:

- * needle holder (driver)
- * fine suture (iris) scissors
- * forceps – toothed & non-toothed
- * suture material

A word on suture placement

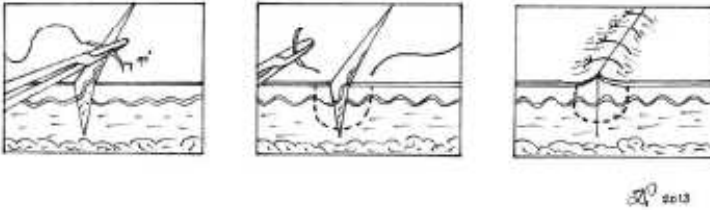
Rule of thumb - *the distance from the edge of the wound should correspond to the thickness of the tissue* - thicker tissue, bigger bite!

- * Face: 2-3 mm from skin edge; 3-5 mm apart
- * Elsewhere: 3-4 mm from skin edge; 5-10 mm apart

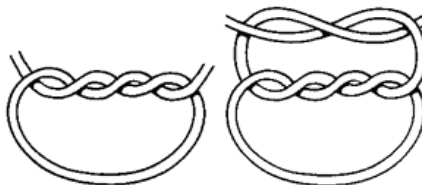
The Simple Interrupted Suture

1. Stabilising the wound edge with your forceps, the needle should enter the skin perpendicular to the skin going through the epidermis into the subcutaneous tissue from one side, to then enter the subcutaneous tissue on the opposite side and exit through the epidermis. This can be achieved by pronating/supinating your forearm after the needle has penetrated the top layer of skin.

If the needle enters the skin at 90° the resulting suture should evert the wound edges.



2. To begin a simple instrument tie hold the needle-holder in your right hand perpendicular to and above the suture end, then hold the short end of the suture with your left hand.
3. Form the first suture loop around the needle-holder by passing it over and then under the left strand. A double throw is usually performed to ensure resistance against slippage.
4. Pick up the free short end of the suture and pull it through the loop. Then lay the knot flat crossing your left hand over the right, and pulling it gently.
5. Two or three further single throws are then added in a similar fashion to secure the knot. It's important to pull each throw in opposite directions across the wound edge to prevent forming slip knots.



Surgeon's knot

Sutures: Which Ones, When?

There are a vast number of different surgical sutures available so understandably selecting the right one can seem daunting. This is a guide to selecting your suture and begins with understanding two concepts:

- Suture material*
- Suture thickness*

Suture Material

When selecting suture material ask yourself if the suture should be absorbable or non-absorbable, then you may consider whether a monofilament or braided suture would be more appropriate.

<u>Absorbable materials</u>	<u>Non-absorbable materials</u>
- Catgut (plain or chromic), PDS, Vicryl and Monocryl -	- Silk, Nylon, Prolene -
<ul style="list-style-type: none"> * Absorbed over 10 days to 8 weeks depending on type used * Do not require removal * Typically used for mucosal or deep tissue closure * Skin closure when removal is undesirable (eg children) 	<ul style="list-style-type: none"> * not absorbed by the body * usually require removal 7-10 days after insertion * the exception: when used internally, such as the heart, where absorbable sutures are less desirable

Monofilament vs. braided sutures

Monofilament sutures are like fishing line, comprised of a single thread.

Braided sutures like silk are comprised of several threads woven together.

Each of these suture types has distinct properties, for example monofilament sutures are 'inert and hypoallergenic' meaning that they are much less likely to cause a tissue reaction. In contrast braided sutures tend to be stronger and knots more secure, but their braided structure may result in an increased risk of infection.

Suture Thickness

The sizing or thickness of the suture is similar to the sizing of needles for injections – the bigger the number the smaller the actual size of the suture.

Sutures range in size from 1 (very thick) to 10/0 (miniscule). Where you read 3/0 is the same as saying triple zero. Therefore triple zero (3/0) is smaller than double zero (2/0). But, 3/0 is read aloud as “three-oh”.

Smaller caliber filaments result in less scarring but tend to be more difficult to suture and are generally are not as strong as a thicker suture.

An example of suture sizing by site:

<u>Location</u>	<u>Non-absorbable</u>	<u>Deep Absorbable</u>
Scalp, Chest, Back, Abdomen, Extremities	3/0 - 5/0	3/0 or 4/0
Face	6/0 - 7/0	5/0
Ear or Eyelids	6/0	-
Hands	4/0 or 5/0	5/0
Feet	3/0 or 4/0	4/0

But at the end of the day, use what you are comfortable with. You'll find in the Emergency Department you'll stick to a 3/0 – 5/0 for most simple lacerations.

A few principles

- *Sutures should last at least until a wound reaches maximal strength (tensile strength follows non-linear decay)
- *Slow-healing tissues (e.g. fascia, tendons) should be closed with non-absorbable sutures or absorbable sutures with extended (up to 6 months) wound support.
- *Rapid-healing tissue (e.g. stomach, colon, bladder) may be closed with absorbable sutures
- *Foreign bodies are a potential nidus of infection (risk proportional to surface area)

Needle Types

When you choose your suture, you will notice that there is often a choice of needle to which the suture is attached. The two main types of needles are:

Curved – includes cutting or tapered needles

Straight

Curved vs. straight

Curved needles require the use of forceps and a needle holder to achieve safe and precise wound closure

Straight needles are uncommon. As these are used without a needle-holder they are associated with an increased risk of needlestick injury.

Cutting vs. tapered (curved only)

Cutting needles are primarily used for suturing the skin. The tip is very sharp and able to pass through the layers of skin with ease.

Tapered needles are much less traumatic as their tip is smoother. These needles are used for deeper softer tissues and intestinal anastomoses.

Wound Healing

Most of your patients will be discharged prior to the removal of their sutures or staples, but being aware of the principles of wound healing is important for any junior doctor and surgeon.

Things to think about:

- * how the wound will close;
- * when do the sutures need to be removed (if non-absorbable); and
- * what are the signs of infection my patient should be aware of?

A quick revision of healing by primary versus secondary intention:

Healing by primary intention

This is healing of a clean, uninfected surgical incision following removal of the sutures. Effective wound closure with good opposition of epithelial layers ensures minimum granulation tissue, a thin scar and minimal wound contraction.

Healing by secondary intention

Characterised by the presence of granulation tissue, this is a wound that is left open and allowed to close by epithelialization and contraction. More common with infected or contaminated wounds.

Removal of sutures

Removing sutures is a simple, quick and painless procedure. The time of suture removal is influenced by the wound site, the potential for possible scarring and the degree of tension the wound was closed under.

Common suture removal times:

<u>Location</u>	<u>Removal time (days)</u>
Face	4 – 5 days
Neck	5 – 7 days
Upper limbs, hands and feet	7 – 10 days
Trunk	10 – 14 days
Lower limbs	14 days



General tips & tricks for discharge

All surgical patients should be discharged with advice relating to the recognition of an infected wound. Early recognition of an infection is important as infected wounds take longer to heal, are associated with poor cosmesis and may result in severe sepsis necessitating admission.

Common signs of wound infection:

- * Fever
- * Increased swelling around the wound site
- * Increased redness around the sutures or incision
- * Increased pain
- * Odour
- * Presence of pus

Part Six: Surgical Education & Training

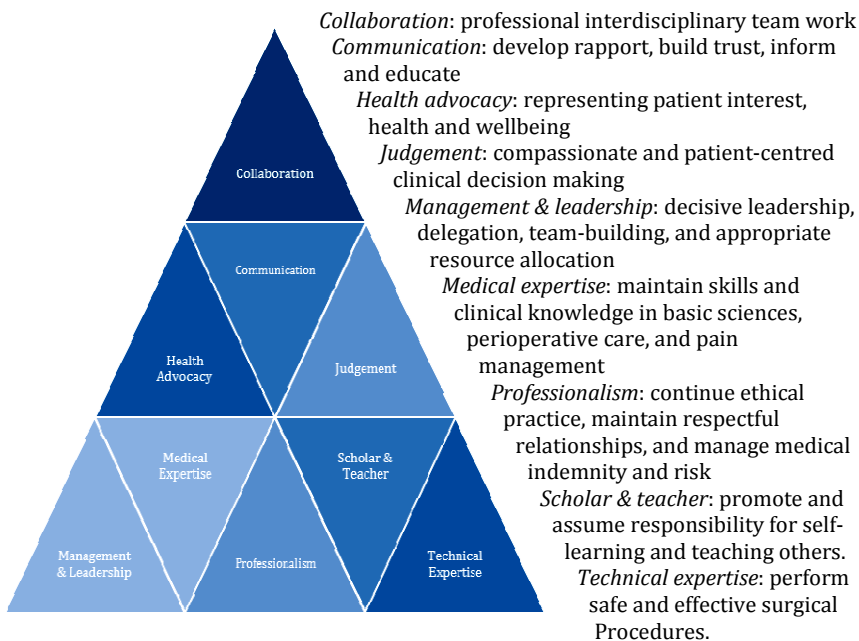
Surgical Education and Training (SET) in Australia is regulated and administered by the Royal Australasian College of Surgeons (RACS). All training requirements and information are updated regularly on their website: www.surgeons.org

SET Program: Overview

The Surgical Education and Training (SET) program, introduced in 2008, facilitates selection into training for one of the nine surgical specialties. The training duration varies between specialties (generally five to six years) and advancement depends on satisfactory progress.

RACS competencies

RACS has established nine competencies underpinning SET which are considered essential for surgeon safety and comprehensive care (see RACS website¹ for more detail):



Pre-SET Preparation

Getting the terms you want as a Resident:

Each state in Australia has criteria for applying for RMO terms. These can be found on the government health jobs websites.

- * NSW www.health.nsw.gov.au/jmo
- * NZ www.healthworkforce.govt.nz/health-careers/career-planning/medicine/resident-medical-officers
- * NT www.health.nt.gov.au/careers/medical_officers
- * QLD www.health.qld.gov.au/rmo
- * SA www.sahealthcareers.com.au
- * TAS www.dhhs.tas.gov.au/career/home/medical/junior_docs/current_campaign
- * VIC www.health.vic.gov.au/jobs
- * WA www.jobs.health.wa.gov.au

Tips on applying for terms as an RMO:

- * Perfect your CV. There are plenty of resources available on the internet to help you. The Surgical CV has a particular outline to be aware of.
- * When answering selection criteria, think about your audience.
- * References. Think about senior colleagues that know you well. Work hard during your terms and they shouldn't be hard to find when the time comes.
- * Get involved in research when the opportunity arises.
- * Information is available on the Post-Graduate Medical Council website for each state.

Prevocational Training Years

Prior to applying for surgical training there are several basic skills that can be learned and practiced as a medical student and junior doctor. RACS publishes a document: '**Essential Surgical Skills**' that is worth being familiar with³.

Generic skills include:

- * Standard perioperative precautions and infection control
- * Instrument handling; and use of diathermy
- * Using sutures, surgical knots, and needles
- * Surgical wound care and drain management
- * Local anaesthetic - uses and types

Applying for SET Program

Application Process

Applying to undertake surgical training in Australia & New Zealand is a long process that involves considerable preparation.

It takes 12 months to complete the process and involves four main stages:

- * *Registration*: Indicates intention to apply.
- * *Application*: The formal application process.
- * *Interviews*: Often located at interstate institutions
- * *Selection*: Multiple rounds of offers.

Eligibility and specialty-specific prerequisites for entry into SET program are outlined on the Royal Australasian College of Surgeons (RACS) website www.surgeons.org.

Surgical Training Streams

Applicants apply to one (or more) of the nine surgical specialties (approximate number of 2013 national training places):

- * Cardiothoracic Surgery (12)
- * General Surgery (140)
- * Neurosurgery (9)
- * Paediatric Surgery (9)
- * Plastic and Reconstructive Surgery (16)
- * Orthopaedic Surgery (42)
- * Otorhinolaryngology/Head and Neck Surgery (15)
- * Urology (20)
- * Vascular Surgery (13)

Score-based Selection

Selection is based on three main areas of the application. The proportion of each toward the final score varies between surgical specialties and include:

- * *Curriculum vitae*
- * *Referees' reports*
- * *Interview*

The Surgical Curriculum Vitae

The Surgical CV is an important document for applying for SET and consists of seven major areas of focus:

Surgical & Medical Expertise, Qualifications, Presentations & Publications, Courses, Prizes & Awards for Excellence, Leadership, and Scholar & Teacher

SET Process, Assessments & Research

Trainees are allocated to accredited hospital posts by the specialty training boards, who monitor their progress through trainee's logbooks, supervisor assessments, and examinations.

Basic Assessment

This consists of a combination of in-training evaluation, logbooks, observed procedural skills and clinical examinations.

Skills Courses

A mandatory component of training includes short, intensive courses which may be general or specialty-specific with the aim to reinforce and improve a trainee's skillset. If completed prior to SET entry, some of these courses can be credited.

Common examples include:

ASSET – Australian and New Zealand Surgical Skills Education and Training: two-part course comprising e-Learning modules followed by a two-day workshop of general surgical skills

CCrISP – Care of the Critically Ill Surgical Patient: program of lectures, practical skill stations, case scenarios and discussion on applying clinical knowledge and procedural skills in the setting of critically ill patients.

EMST – Early Management of Severe Trauma: two and half day course in early (1-2 hours) management of trauma patients, adapted from ATLS.

CLEAR – Critical Literature Evaluation and Research: two day course of lecture and small group teaching providing tools to critically appraise surgical literature

TIPS – Training in Professional Skills: non-mandatory course teaching patient-centred communication and team-oriented non-technical skills targeted at Surgical Trainees.

Further details can be found on the RACS website:

<http://www.surgeons.org/for-health-professionals/register-courses-events/skills-training-courses/>

Examinations

There are three types of examination in the SET program:

- * The early years of training:
 - * *Surgical Science Examinations (SSE)*: General and Specialty-specific exam.
 - * *Clinical Examination*: observed clinical scenarios
- * The end of training:
 - * *Fellowship Examination*: Written and clinical components

Research

This is mandatory, with some specialties setting heavier requirements (e.g. Cardiothoracics, Vascular, and Urology). Examples of accredited research include:

- *Journal publication
- *Abstract submission for review and selection
- *Dissertation
- *Period of full-time research

Deferral, Interruption & Part-time Training

Applications for deferral, interruption or part-time training are considered by each specialty separately and on an individual basis.

Pregnancy and surgical training:

Kellee Slater (FRACS, general surgeon and mother of four) has recently published an article on the considerations and factors surrounding pregnancy and motherhood as a surgical trainee.

<http://www.generalsurgeons.com.au/education-and-training/pregnancy-and-surgical-training>

References

1. Royal Australian College of Surgery: Surgical Education & Training. <http://www.surgeons.org/becoming-a-surgeon/surgical-education-training/>
2. General Surgeons Australia: Education and training. <http://www.generalsurgeons.com.au/education-and-training>
3. Royal Australian College of Surgery: Essential Surgical Skills. http://www.surgeons.org/media/473135/gdl_2011-10-10_essential_surgical_skills_document.pdf

Part VII: A Surgeons Life

By Professor Luc Delrivière, Transplant Surgeon, Perth WA

"To be a surgeon is to stand, without flinching, in the sea of human suffering and use one's entire resource of knowledge, skill and intelligence to battle it."

- Mohamed Khadra 'Making The Cut'¹

The life of a surgeon has to be full of forward vision towards achieving the ultimate goal of the fellowship and independent practice. It is important - for this attitude toward the development of a career - to start during the student years. The key aspect of the life of a surgeon is the decision towards which specialization one wants to pursue. From there will follow a lot of choices including research and publication, higher degrees (MD, PhD) and where to train. With those choices early in mind, one can apply to the College armed with a promising application.

The Training Years

Once in the training program, whilst continuing with those already well-established long term goals, it is crucial as a surgeon to acquire the broadest possible surgical culture by working in the many specialisations and studying all aspects of human surgery. It is crucial to make out of every opportunity a learning experience and for self-education to be the major part of the training. All the teaching provided by the college and the institutions will serve as a meet-the-expert type of education rather than what should be the core of it. The core of education is to make every patient the focus of learning and to review for each case a state of the literature.

The practical part of training divides into the ward experience and the theatre experience. The ward experience is crucial and a surgeon has to remain an excellent physician on the ward. The management of emergencies has to be the focus and a clear study of the physiology of the disease is essential. In theatre, it is important to gain access to practical handling of tissue and progressive performance of dissections and then reconstruction by performing anastomosis of all different possible tissues. To receive access to experience is not a granted service by your supervisor, it is something you earn and deserve by showing hard work on the other aspect previously discussed. If the team where you work wins from your thorough involvement in the care of the patient, it will give you opportunity for training. It is a win/win situation and the permanent care at achieving this type of environment around you is what will give you the opportunities that you need for progression.

– *An excerpt from ‘This Won’t Hurt A Bit (and other white lies): My Education in Medicine and Motherhood’ 2011 by Michelle A, Physician²*

These are not fun, carefree years—certainly not the way most people spend their twenties, at least if the producers of MTV or beer advertisers are to be believed. You spend these fetal-doctor years indoors under fluorescent lighting, nose pressed into books filled with inscrutable diagrams and endless acronyms, while everyone in the world, including some of your patients, appears to be having more fun than you. These are years spent doing a whole lot of work for little or no money, ignominious tasks relegated to those contractually obligated to never complain. These are years of thousands of lost hours spent at the hospital instead of with your friends and family, who always seem to be wondering where you are and why you’re still there and when, if ever, you’ll be coming home. These are years spent defying all common sense about circadian rhythms and the regenerative powers of rest, largely awake and caffeinated to an almost toxic degree. And—this last part is the real kicker—these are years after which you will end up in hundreds and thousands of dollars of debt, all for the experience of what amounts to hard time in a well-intentioned Soviet gulag. I repeat: not fun.

The following excerpts are from the Royal Australasian College of Surgeons website videos on training (found at www.surgeons.org)

– *Dr. Wendy Brown, General Surgeon³*

“No surgeon has a perfectly balanced life, and in my training I am sure that my personal life suffered with the demands of study and constant moving. However, the same was true of all my friends who undertook specialist post-graduate training. No matter what specialty you choose, the training time is intense. Now that I am finished, I feel my life is as well balanced as it can be (for a professional woman!)”

– *Mr Suren Krishnan - Otolaryngology, Head and Neck Surgeon³*

“The training is necessarily demanding. Surgery is a demanding specialty and you need to have both mental and physical toughness. You need to be able to work in an environment where you can provide endurance and make critical decisions while doing a procedure that demands durability”.

– *Dr Ifereimi Waqainabete, General Surgeon³*

“Surgery is a satisfying career and can be overwhelming at times. With the right environment, anyone can succeed. Training provides discipline and drive”.



Passing Exams

If your training has been a permanent learning experience, passing the exam is only the prolongation of that long effort. The more self-discipline you will have shown in your personal training over the years will bring you to the exams in a very good position to succeed. If the exams become the only time to learn, things might be much more complicated. Your level of knowledge will only represent surely a reflection on your character. Character is really what defines a surgeon in terms of his knowledge and behaviour as much as elegance is what defines a surgeon in theatre.



Fellowship

Upon successfully completing vocational medical training and other requirements of the relevant specialist professional colleges, a doctor is awarded a fellowship of the college. Additional sub-specialty training may then be undertaken, for example, anaesthetists may undertake additional training in intensive care. As a recognised general practitioner or specialist you are entitled to an unrestricted Medicare provider number, which enables you to practice medicine independently in your chosen field anywhere in Australia⁴



Being a Consultant

Being a consultant is actually easier than to be in training as you recover time to focus on your long term projects whilst a lot of urgent and unimportant things that you were doing during your training becomes the duties of the next generation.

Professor Russell Gruen, General Surgeon³

“The other aspects of being a consultant include leadership and being an influential person in society. There is a responsibility to improve the health of the community by raising awareness about certain health issues as well as the technical challenge of doing operations and making people better. This dual role of leadership and professional excellence comes through in surgery more than it does in any other profession”.



Public or Private?

Upon completing your specialist training, the options open to you broaden to include private medical practice, a combination of private medical practice with a visiting medical officer engagement at one or more public hospitals, or employment as a staff specialist in a public hospital or health facility.

Finance, salary offer and job opportunities will guide you towards choices in terms of private or public practice. Most surgeons in Australia prefer a mixture of both. Some for philosophical, practical, or because of the purely public aspect of their specialisation such as transplantation, prefer to be completely on the private or public side of things. Whatever your choice, the maintenance of your ethical discipline and hardworking ethic will keep you thriving.

References

1. Khadra M. Making The Cut: Random House Australia; 2007.
2. Au M. This Won't Hurt A Bit (and other white lies): My Education in Medicine and Motherhood: Grand Central Publishing; 2011.
3. RACS. Interviews with Surgeons. RACS; 2013; www.surgeons.org/becoming-a-surgeon/surgery-as-a-career/videos/.
4. AMA. Available from: <https://ama.com.au/becoming-doctor-and-bonded-medical-school-places-guide-prospective-medical-students>.

Part VIII: Getting Support

Mentors¹⁻³

A mentor can be anyone that positively influences your professional & personal development.

You will most likely find a mentor invaluable regardless of the specialty path you choose. Mentoring is the development of a relationship between an experienced, trusted person (the mentor) who can give advice, counsel and support to a younger, less experienced mentee in developing their clinical, personal and professional development.

Throughout your career/training you may experience several mentor relationships, however in the early years finding suitably matched mentors can be difficult. For a prospective surgical trainee its important to have a surgical mentor. This more specifically includes having the support to develop technical, interpersonal, administrative, and research skills. All medical students should aim to have at least one mentor.

Benefits of having a mentor:

- * Support & encouragement in professional and personal areas
- * Access to advice and counsel
- * Having a role model
- * Short and long term career guidance – including applications for specialty training programs
- * Exposure to future specialty
- * Opportunities for academic and clinical networking

Choosing a mentor:

The Australian Medical Students' Association (AMSA) has produced a great document that can guide you called "**Finding a Mentor**" (<http://www.amsa.org.au/projects/wellbeing/finding-a-mentor>)¹. Regardless of the training program you are aspiring to, AMSA has highlighted some important qualities of a mentor that will help you get the most out of the mentorship. These include:

Experience	Approachable, accessible and available
Proactive	Supportive, but able to provide constructive criticism
Encouraging	Honest
Willing	Reliable

Remember a mentorship is a two-way relationship, so ensure that you are punctual, appreciative, can accept critique and be proactive.

Time management

Medicine is a career that requires us to be skilled in time management to be efficient in our jobs and find that elusive balance between work and life. It is not something we are taught, we develop methods of coping throughout our study often on our own. However, it is such an important skill to start thinking about if you haven't already, or make some changes to your strategies if you need.

Chapter 15 of Chen and Kao's 'Success in Academic Surgery – Part 1' has some good suggestions regarding time management strategies⁴. These include:

- * Planning and prioritizing → to do lists, saying “No”, action plans, activity logs
- * Goal setting → completing large tasks, 1, 5, 10 year goals, the ‘big’ picture
- * Scheduling → Eliminating distractions, writing/reading days, buffer time, email
- * Maximizing efficiency → getting organized, multitasking, positive thinking

Some of these are applicable for the wards, some for study and research, and some home life.

Your job as a junior doctor...

The PMCWA outlines the role of a junior doctor in Western Australia in their document “**JMO Survival Guide 2014**”⁵. Essentially, we are still on a steep learning curve and our role in the various teams is to write in the notes, complete ward jobs and, depending on your term, to clerk patients. Completing ward jobs calls for you to really use your time management skills to prioritise and organise your day.

The primary jobs you will need to complete efficiently include cannula insertion, bloods (outside of phlebotomy rounds), medication charts, investigation request forms, consult forms to other specialties and discharge summaries. Surgical terms also can have the added task of Pre-Admission Assessment Service (PAAS) where interns ensure consent, bloods, medical status and admission is correct.

Tips to manage your time efficiently at work...



Determine prior to starting your term the logistics of your new team and what is expected of you, (e.g. PAAS, clerking patients, consultant preferences), this will help your day run smoother.



Write down ALL jobs to be done DURING the ward round – especially surgical rounds!



Prioritise your jobs early. For example:

- * Consults – before midday preferably to avoid annoying the consulting team!
- * Radiology
- * TPN bloods and forms – need to be signed by a certain time daily



Keep spare forms with you and do then on rounds the rounds to save time. E.g. radiology, medications, inpatient notes, etc...



Pre-empt discharges – start discharge summaries, discharge meds, etc...



Know and prepare your daily tasks – blood orders, daily medications (e.g. warfarin, drug levels), check results (bloods, imaging).



Double check before you go home – medications (especially med charts before weekends), results, cannulas, fluids.

Personal Wellbeing⁶

Maintaining health and well-being is one of the behaviours assessed by RACS in relation to competency in professionalism. RACS comments that this effects yourself as well as considering the health and safety needs of those around you – colleagues, staff, and patients. Some examples of poor behaviours the College highlights include alcohol use when on call or prior to performing elective surgery, abuse of prescription or illicit drugs, moodiness or ‘battles on’ even when unwell or overtired without recognizing the impact on surgical performance. These behaviours are not specific to surgical trainees and as medical students and junior doctors maintaining your health and well-being needs to be recognized as an important aspect of your medical practice.

Common problems faced by junior doctors:

- Anxiety
- Depression
- Drugs and Alcohol
- Obsessive Compulsive Disorder
- Eating Disorders
- Fatigue & ‘burnout’

Tips for personal well-being⁷

There are numerous documents for medical students and junior doctors and the following are a summary of recommendations to both maintain and improve your personal physical and mental well-being – even whilst on a surgical term, it may just get you through!

- * Have your own GP – self-diagnosis and treatment can be dangerous, as can relying on colleagues for personal issues. It is not a sign of weakness to have your own problems!
- * Daily exercise
- * Eating appropriately – even when at work, take even 15 minutes to refuel with a healthy choice in food
- * Minimize alcohol consumption
- * Hobbies & interests outside of medicine
- * Talk & debrief – colleagues, mentors
- * Stay connected – Family & friends

Contacts & Services

- * The Clinical Training Directors in each hospital.
- * Beyondblue
- * Australian Medical Association (AMA) chapter in your state
- * Health & Wellbeing of Junior Doctors:
<http://www.jmohealth.org.au>
- * Doctors Health Advisory Service

<http://www.dhas.org.au> **WA Number: 08 9321 3098**

For Doctors in crisis, or not sure where to go for help with personal or health problems.

This totally confidential 24-hr service is available to all Doctors and Medical Students. It can be contacted by the person themselves, or by a concerned family member, friend, colleague or staff member. Callers do not need to identify themselves. It consists of a group of experienced male and female GPs, and is independent, reporting back to no other medical organisation.

Problems dealt with include stress, depression, suicidal thought, substance abuse, grief or concerns about illness. Sometimes the contact can be about impaired performance in a colleague. The Doctors do not usually provide active medical treatment, their main function being to go through the options with callers when they are faced with a dilemma, or to advise the caller on the most appropriate referral services.

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1. Australian Medical Students' Association. Finding a Mentor. ACT: AMSA [cited 2013]. Available from: <http://www.amsa.org.au/projects/wellbeing/finding-a-mentor/>
2. Memon B, Memon M. Mentoring and surgical training: a time for reflection! *Advances in health sciences education*. 2010;15(5):749-754.
3. Singletary SE. Mentoring Surgeons for the 21st Century. *Annals of Surgical Oncology*. 2005;12(11):848-860.
4. Pugh CM. Time Management. In: Chen H, Kao LS, editors. *Success in Academic Surgery Part 6*. London: Springer-Verlag London Ltd; 2012.
5. Postgraduate Medical Council of Western Australia. *JMO Survival Guide 2014: Written by Junior Doctors for Junior Doctors*. Perth; 2014. Available from: www.pmcwa.health.wa.gov.au
6. Australian Medical Students' Association, New Zealand Medical Students' Association. *Keeping your grass greener: the wellbeing guide for medical students*. ACT: AMSA & NZMSA; 2011 [cited 2013]. Available from: http://media.amsa.org.au/publications/keeping_your_grass_greener_2011.pdf
7. Health & Wellbeing of Junior Doctors: <http://www.jmohealth.org.au>

Part IX: A Surgical Bibliography

Recommended Textbooks

- Lasts Anatomy: Regional and Applied (9th Ed.)**. R.M.H. McMinn, Churchill Livingstone, 2005
- Textbook of surgery (3rd Ed.)**. J. Tjandra, G. Clunie, A. Kaye, J. Smith. Blackwell Publishing, 2006
- Crash course: Surgery (3rd Ed.)**. A. Kontoyannis, H. Sweetland. Elsevier Ltd, 2004
- Lecture notes in General Surgery (11th Ed.)**. H. Ellis, Sir R. Calne, C. Watson. Blackwell Publishing, 2006
- Oxford Handbook of Clinical Surgery (3rd Ed.)**. G. McLatchie, N. Borley, J. Chikwe. Oxford University Press, 2010

Good Reads About or By Surgeons

- The House of God**. Samuel Shem. Penguin Publishing Ltd, 1978
- Direct Red: A Surgeon's Story**. Gabriel Weston. Random House Australia, 2009
- Never Say Die**. Chris O'Brien. Harper Collins Publishers Australia, 2008
- Books by Atul Gawande, MD. :
- Complications: A Surgeon's Notes on an Imperfect Science**. Metropolitan Books, 2002
- Better: A Surgeon's Notes on Performance**. Metropolitan Books, 2007
- The Checklist Manifesto: How to Get Things Right**. Profile Books Ltd, 2010
- Books by Dr. Mohamed Khadra :
- Making the cut: A Surgeon's stories of life on the edge**. Random House Australia, 2007
- The Patient: One Man's Journey Through the Australian Health-Care System**. Random House Australia, 2010
- Terminal decline: A Surgeon's Diagnosis of the Australian Health-Care System**. Random House Australia, 2010

Useful Websites & Online Resources

- * **Royal Australasian College of Surgeons (RACS):** www.surgeons.org
- * **Life in the Fast Lane:** www.lifeinthefastlane.com
- * **Free Open Access Medical Education:** www.lifeinthefastlane.com/foam
- * **UpToDate:** <http://www.uptodate.com>
- * **Surgery 101: University of Alberta** <http://surgery101.org>
- * **PODMEDICS -** <http://www.podmedics.com>
- * **Dr S Quiz -** <http://drsquiz.com.au/about/>
- * **MEDLINE videos** <http://www.nlm.nih.gov/medlineplus/surgeryvideos.html>

Surgical Specialties

Cardiothoracic surgery

www.surgeons.org/surgical-specialties/cardiothoracic/

General Surgery

www.surgeons.org/surgical-specialties/general/

www.generalsurgeons.com.au

Neurosurgery

www.surgeons.org/surgical-specialties/neurosurgery/

Orthopaedic surgery

www.surgeons.org/surgical-specialties/orthopaedic/

www.aoa.org.au

Otolaryngology, Head & Neck surgery

www.surgeons.org/surgical-specialties/otolaryngology-head-and-neck/

Paediatric surgery

www.surgeons.org/surgical-specialties/paediatric/

[www.paediatricsurgeons.org/paediatric/home](http://www.paediatric surgeons.org/paediatric/home)

Plastic & Reconstructive surgery

www.surgeons.org/surgical-specialties/plastic-and-reconstructive/

Urology

www.surgeons.org/surgical-specialties/urology/

www.usanz.org.au

Vascular surgery

www.surgeons.org/surgical-specialties/vascular-surgery/

Surgical Societies in Australia & New Zealand

- * The University of Western Australia Surgical Society (UWASS)
- * The Student Surgical Society of the Austin (SSSA), University of Melbourne
- * Monash University Surgical Interest Group (Mumus Inc.)
- * Sydney University Student Surgical Society (SUSS)
- * Medical Students Association of Notre Dame Fremantle (MSAND) Surgical Interest Group
- * University of Newcastle Surgical Society
- * Griffith University Surgical Interest Association



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Surgical Society