

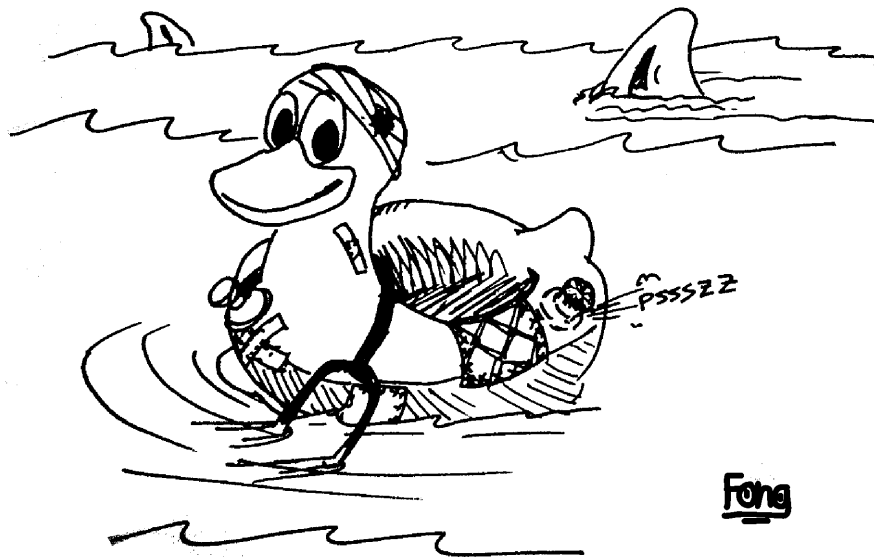
HOUSE OFFICER'S SURVIVAL GUIDE

VERSION 3.1

BY FONG SAU SHUNG

Edited NG KAR HUI, GERALD TAN, HOW CHOON HOW

Online version at: <http://www.geraldtan.com/school>



INTRODUCTION

Congratulations, you have passed your MBBS, and are about to embark on the very first year of your continuing odyssey of medical training, which is the year of the House Officer. This is actually the end of the beginning, although it may feel very much like the beginning of the end.

This book is a guide to survival in the ward. It does not aim to replace your textbooks, guidebooks and drug books. Even the accompanying 'common drugs list' should be used with caution and a little intelligence. What it strives to do, as with all previous versions of the book, is to prepare you for all the practicalities of a house officer's job.

This version is significantly different from the previous versions of the House Officer's Survival Guide, which was pioneered by Dr Gregory Leong Goh Han in 1998, with revisions and additions by Dr Ong Yew Jin and team in 1999, Dr Phua Dong Haur in 2000 and Dr Ng Yeuk Fan in 2001. This author, however, strives to retain the spirit and soul of the original, and hopes that you will find this revised format even more useful.

THE AVERAGE DAY IN THE LIFE OF A HOUSE OFFICER

The typical day begins at 0730 hours in preparation for the morning ward round. Work involves changing the intravenous cannulae (plugs), giving bolus intravenous drugs (IVs, not required in all hospitals. These are sometimes the duties of nurses), taking fasting bloods and laryngeal swabs and trough levels of antibiotics.

Ward round generally begins at 0800 hours with the arrival of your MOs / Registrars / Consultant. Your job here is to present patients unfamiliar to your senior doctors, update them on the patient's conditions, and note down their orders in the clerking notes, treatment and diet sheet and inpatient medical record (IMR). Do not worry if you cannot remember all of your patients in the very beginning. This will come with time, and with increasing competency. Your MOs will help.

Pay attention to your morning ward round. This is where all important decisions are made, and the orders to carry them out, given.

How long the morning ward round lasts depend on the team involved. Incredible variations exist, which, experience teaches, is only marginally related to the number of patients. Rounds can end within the hour, or can be interminable, requiring a team of two HOs to break off halfway to begin changes to avoid having 'urgent' radiological investigations being performed in the late afternoons. It is demoralizing to begin the ward round with patients enjoying breakfast, and continuing through their lunches. The stomach usually objects auditorily.

Changes begin thereafter. 'Changes' is this elusive term that encompasses all the work that HOs do. Clerking new cases are called 'active' changes. Everything else is called 'passive' changes. It boggles the mind why it isn't just called 'work' or 'job', or 'saving the world': It might as well be called 'apples'.

Nevertheless, it we will stick with the term 'changes' since we value tradition, and also because it is demeaning to call our daily routine apples.

Immediately after the ward round, Changes involve making the Consultant's/Registrar's orders happen. These should be complete by (the latest) early afternoon, leaving the HOs free to deal with new cases which will be streaming in about this time.

In the late afternoon may begin the 'evening round'. No, it is not a round of drinks after a hard days work no matter how you'd wish it was. It's a review of your sicker patients, new admissions, and the important

morning changes. Some departments and teams do not practice it. There may be changes to do after this evening round which need to be completed before the journey home.

THE MORNING WARD ROUND

You may have to prepare a list for your team, which has the name and location of all your patients, as well as a summary of their conditions. This is generally unnecessary in a ward based system, in which all your responsibilities are in the ward itself. How to make this list varies from hospital to hospital and department to department. In the Singapore General Hospital, for instance, there is the sunrise clinical manager which can track all the patients admitted under selected consultants. All that remains is to copy all this information into a word document, and print it out before the round starts. The MOs will generally prepare the list for the first day. Find out quickly how to do this, or the next ward round will be messy, and be extremely tedious.

You may have overflow patients, that is, patients that belong in your ward, but have beds in other wards. This occurs when the hospital has patients in excess of the patient's preferred class of bed. They then are stationed in a bed one class better than their chosen one, but pay the lesser rate. I know. It's complicated. And it's a bother because you have to keep track of all these patients. In a hospital horizontally arranged, such as SGH, this will involve a lot of exercise as your overflow patients may be in the opposite end of the hospital.

Also find out where the team begins the ward round. Wait at the nurse's counter if your department is ward based. If it is team based, either ask your seniors before the first day of work, or page one of the MOs on the day itself.

If you are the first to arrive, you may want to begin the ward round yourself when you are more confident. Having said that, keep in mind that the ward round recurs each time a more senior member of the team arrives, giving you a time consuming experience of the true meaning of déjà vu. On the other hand, if you do begin the round, you can try your hand at making decisions, with the benefit of being vetted by your reg/consultant if/when they do arrive.

Upon reaching a patient, it is polite to greet the patient first. Depending on the department and the various teams, you may be required to present the case to the most senior doctor. Remember this is a working round, not a 30 minute MBBS examination. If the patient has been seen before, a quick update on the diagnosis and a summary on what happened since their previous encounter is usually sufficient.

Your next task mostly involves documentation. They include

1) Case Sheets

This is where you document the proceedings of the ward round. A standard format includes, the date/time; most senior Doctor consulting the patient; then SOAP format, i.e. patient's subjective complaints; the objective findings; the assessment of the patient; the management plan. Then sign off at the end of every entry.

To wit,

29/4/01	Alert, back from CT abdomen	TW: 18.7
0840	c/o vomiting x2 last night. Watery. No blood	HB: 8.4
Prof Low		
	Spiked 38.7°C last night	

	BP: 105/70	HR: 110	
Roc 2	H/L: clear		
Flag 2	Abd: distended. Generalized tenderness		
	BS sluggish		
	Rebound –ve		
	Voluntary guarding		
	Δ : 1) Intestinal obstruction 2° adhesions		
	2) DM		
	3) IHD		
	P: 1) Drip and suck, check U/E/Cr		
	2) NBM		
	3) Continue antibiotics, trace urgent CT abd		
	4) Review in 4 hours, KIV op,		
			(insert signature)

It is good practice, if time permits, to jot down important investigation results, (in this case I have written it on the right margin), to document that the team has noted the findings and are acting on it. Roc2, Flag2 at the left margin indicates that the patient has had two days of Rocephine (ceftriaxone) and Flagyl (metronidazole) therapy.

If you have spoken to anyone with regard to the decisions or plans for any patient, remember to document it in the case sheets. This is especially important if prognosis is discussed, and if the patient's relatives are angry. Relatives or patients that sue will not have repercussions immediately – it will likely happen to you several years later. A bolt out of the blue like this will not be quite sufficient to jolt your memory, only your notes will stand the test of time, and will leave you wishing you had written something (legible) in the case sheets.

Case sheets represent continuity of care, and if you do not have proper documentation, the on call team, when called upon to review the case, may not know the full picture. You will understand when you are asked to see a sick patient who is non-communicative, and you are flipping the case sheet desperately to know if that is his status quo, but all that is written is that he is been afebrile for the past few days with a soft abdomen.

2) Treatment and Diet sheet

This is a blue piece of paper and is filed separately from the case sheet and investigations. Here all orders for the days is written and are carried out by the full weight of the health care system. For all the detail that is printed on the case sheet, **nothing will be carried out if it is not written in the treatment and diet sheet**. Nurses review this paper regularly and religiously, and their 'passing report' involves the instructions here a great deal.

To wit (and as a continuation of the management of our patient above),

29/4/01		
	NBM	
	Hrly parameters + BP	
	Insert NG tube, low intermittent suction	
	Trace CT abdomen	
	Anaesthetist to review	
	Medical to review	
	Cardiology to review	
	HO to do PR	

	(insert signature)
--	--------------------

It may be a good idea to run through the treatment and diet charts of all your patients at the end of the day just to make sure that everything is done and followed up.

3) Inpatient Medical Record

Here, all the medications of the patient are written. Write your prescriptions clearly. Always check for drug allergies before you prescribe (and administer) drugs. Medicines I find that are common allergens in my brief year in medicine is penicillin and NSAIDs. Patients who are allergic to chlorpheniramine and hydrocortisone are in trouble.

All prescriptions follow a set sequence:

- 1) Method of administration
- 2) Name of Drug
- 3) Dosage
- 4) Frequency of dosing
- 5) Remarks, and other special instructions

To wit,

S/C Actrapid 10u OM, 20u ON
PO colchicine 0.5mg q2H until pain resolves, diarrhea develops or total 12 tablets

Remember to sign for every mistake you make in the IMR, otherwise the nurses will have to hunt for you. Also, sign off whenever a drug and drip is discontinued. Nurses are very particular about this.

Once you get faster, you may wish to multi-task in slow moving ward rounds so that you decrease the workload after. Bring along a file full of forms, and fill them up along the way. Many changes can be done this way, but I suggest you don't start taking ABGs while your registrar is doing listening to the chest, or any bloods during the round.

Don't stand around listening intently to the musings of your consultant. Unlike ward rounds in medical school, things do not magically happen. Grab something, anything, and write down your senior's commands. If there's nothing left (the MOs have grabbed everything), examine the patient.

Bring your team to see every patient, make mental notes of which ones are the sickest and have the most urgent changes. It is a wise idea, at least in the very beginning, to write down all your changes. That way you lessen the chance of missing out anything urgent.

The ward round ends when all your patients have been seen.

MORNING CHANGES

You will spend the rest of your morning doing this. As mentioned, 'changes' is 'HO's work' in medical lingo.

Morning changes include, in the order of its usual urgency:

- 1) Urgent Imaging
- 2) Inpatient Consultation Referrals (commonly known as 'blue letter' referrals), Urgent or otherwise
- 3) Discharges

- 4) Other Paperwork
- 5) Speaking to Relatives
- 6) Bloods
- 7) Ward procedures
- 8) Tracing Results
- 9) Summarizing Old Notes

All these 'changes' are a collation of the instructions written in the treatment and diet form. The very best nurses in the best wards will place all case-files with changes to be done on the table in the Doctor's office, sometimes with a post-it detailing the 'change'. More often than not, however, it's up to you to hunt for everything, or to remember to do your changes.

1) Urgent Imaging

Remember how in your medical school days when you'd join the morning round, see a dyspneic patient post op, and the consultant wisely intones, 'get a spiral CT', and those films magically appear a few hours later. Well, congratulations, the Magic is you..

An important thing to remember when your senior Doctors order imaging, or when you clerk a case, and suspect certain imagings are required, is to keep patients for urgent CT abd and ultrasound abdomen nil by mouth. In some hospitals, any CT with contrast will need informed consent (in case of anaphylaxis and nephropathy with contrast) and an IV plug (at least a 21G green cannula). MRIs require confirmation that the patient does not have metallic implants or foreign bodies within him, and this may need his signature as well (varies between hospitals).

How to get urgent films depend on whether it is during working hours, or on call.

During working hours, you will have to personally speak to the duty radiologist responsible for that particular imaging. To do so, you will have to go down to the radiology department with all the relevant X Ray films, look for the radiology department call roster, find out who the radiologist in question is, and hunt him/her down. It is the rare radiologists who answers pages during the day.

After working hours, you only have to page for the radiologist (usually the registrar) on call: there is no need to look for him/her in person. You may be violently expelled from the radiologist's call room, if you barge in at 3am asking for an urgent CT scan. Obtain the pager number from the operator, and make your case heard over the phone.

You will have to know your case well. Make sure you understand, at least in your consultant's or registrar's opinion, why the imaging is required, as often, you'd be asked to defend your request. If you do not know, remember to ask your senior doctor at the time the decision is made. As with making referrals (see next section), you will at times be grilled by the radiologist, who can be nasty, especially when they have been harassed too much. Do not take such incidents to heart when it happens (and it will). It is never personal.

It does not matter if the scan is urgent, but in non-urgent contrast studies, patients will need to have their metformin taken off (several reported cases of fatal lactic acidosis). If patients have asthma, to start prednisolone. Find out the dosing of prophylactic prednisolone from the protocol in your hospital.

2) Inpatient Consultation Referrals

When you are told to make an inpatient consultation referral (e.g. 'HO, get a medical review'), always run through your mind why the referral is made. If you do not know, ask your senior doctor immediately during the ward round.

The next thing to do is to determine if the patient has been seen by that particular specialty before. This can happen via several ways:

- a) A 'blue letter' (see below) referral has been made during this admission before.

You have to specifically call that doctor who has replied to the initial blue letter. Just flip through the file to look for the ubiquitous blue letter. This can become hairy if the patient is a long stayer (my longest 'long-stayer' was in a B1 ward for 2 years) and the notes are thicker and more intelligible than Leo Tolstoy Napoleonic epics. If you are new to the team, don't kill yourself, get some help. Your MO will likely know the specialty consultant who has been seeing the patient, and why the review is required.

- b) A 'blue letter' referral has been made in a previous admission.
- c) The patient is being followed up by that specialty in the outpatient clinic.

For b) and c), there is no choice. You will have to look through *all* the patient's old notes and call the doctor (or his team registrar) who has been following up your patient. Certain departments will be very upset if you dispatch a blue letter to them, when the patient is already on follow up with their colleague in the same department. (*This varies in different hospitals. In AH or CGH, we can still send off a new blue letter in b) and c) without having to get back to the original doctor.*)

If you do not get a reply after two failed attempts to page for the Doctor, ask the operator if he is on leave. If you are truly desperate, you can also call the department secretary and find out the doctor's likely location (such as in a particular clinic) and attempt to contact him there.

Once you are satisfied that the patient has never been seen by that particular specialty in your hospital, or the consultant who is following the patient up asks you to make a new referral, write the inpatient consultation form. These are commonly known as 'writing blue letters' or making a 'blue letter' referral due to the color of the said form. These are referral letters to other specialty departments, seeking their advice on the management of your patient.

In all hospitals, urgent referrals have to be made by paging for the duty specialist in question. Make sure you know your case well before doing so for the same reasons as asking for an urgent radiological investigation. Multitask by doing something else while waiting for the phone to ring, such as filling up X-ray forms and prescriptions. Personally, I like to write the blue letter while waiting for the phone to ring. If he has not replied by the time I'm done with the letter, I know it's time to page the Doctor again.

Most referrals are non urgent, most departments in selected hospitals, such as Singapore General Hospital, allow you to write the blue letter and dispatch it to the Doctor on duty, without having to page and speak him directly: in these cases, just write the blue letters, and the nurses will do the rest. In other hospitals, such as Tan Tock Seng Hospital, and certain departments, you'll have to do it the old fashioned way.

Write the duty specialist's pager number down somewhere permanent after obtaining it from the operator, (such as on the blue letter or in the cash sheet), as you may have to page for the Doctor again in the future. Not all specialties are available in all hospitals. For instance, if you are asked to make a referral to a renal physician in Changi General Hospital, you will have to page for the renal physician on call in Singapore General Hospital. At the beginning, ask your seniors or the sister if you are not clear, because the operators and most nurses will be as clueless as you are.

Just some advice on writing blue letters. You will develop your own courtesy and your own style, but you can help future HOs, who need to flip through the notes you write, by printing the date you make the referral, and, if you know, the name and pager number of the duty specialist on the top right hand corner of the letter.

3) Discharges

Take note that patients who are not discharged by 1pm are charged for another day. Remember also that, almost without exception, all patients want to go home as soon as possible. Thus when informed of their newfound freedom, all patients, unrealistically, expect to start the journey very, very soon. This will sometimes result in nurses paging you incessantly to discharge patients when they start complaining about the delay and the wait. Avoid this by telling the patient, during ward round, that they should only expect to go home at 1 pm, thus giving you maximal time to get them home.

Keep in mind that discharges involve a sequence of events of which the HO is only a part of. On the other hand, the HO is usually the limiting factor with regard to the speed of the discharge. In bold are the events which the HO is responsible for.

- 1) Finding and filing together the case-sheet, IMR and treatment and diet forms. (staff nurse in charge)
- 2) **Writing the discharge summary**
- 3) **Writing the prescription**
- 4) **Writing memos/ outpatient forms for dressing or STO**
- 5) **Filling up XR/imaging forms**
- 6) **Writing the medical certificate**
- 7) Getting the appointment (ward clerk)
- 8) Explaining charges (very important) (ward clerk)
- 9) Obtaining the prescription medications (ward pharmacist)
- 10) Explaining medications instructions (ward pharmacist)
- 11) Explaining discharge instructions (staff nurse in charge)

It is thus polite to get your discharges done first, (after all your urgent and important changes of course) as you are not the only person involved. For some hospitals, patients are not given the discharge summary, if so; you can leave the summary to after 1pm, but within 24 hours of discharge for DRG coding reasons.

Technology has crept into the workings of the hospital for some time now. Almost all hospitals have implemented, or are implementing, electronic discharges. These vary from hospital to hospital, the descriptions of each and every one of which, are beyond the scope of this book. Be prepared for discharges taking up to 10 minutes in the beginning. Computer savvy HOs will be less disadvantaged in these cases, but almost universally, broken printers, unstable operating systems, inadequately powered microprocessors, interminable loading times will result in more than one enraged head butt into the monitor. Take heart, things will get better, eventually.

Discharge Summary

While writing the discharge summary, remember that it is a **summary**, not 'Les Miserables'. There are better things to do, like go home by 9 pm. On the other hand, writing so little as to make the reading of it incomprehensible or useless is just plain slipshod. While you will learn to appreciate good discharge summaries while you are summarizing old notes, understand that your summaries will be similarly useful, or useless, when other Doctors look through them.

With the new DRG thing, principal diagnosis must be precisely stated. State all secondary diagnoses and comorbidities and also all the op/ procedures (e.g. ERCP, ODG) the patient has gone for in this admission. All these determine how much the hospital is going to get from the government for this particular patient. It can also affect management later, no matter how remote it may be. "PUD dx 5 years ago" suddenly becomes important when the patient comes in later, not just for melena, but also for a stroke (can't start aspirin), DVT/PE (ditto for warfarin), and can save you (and of course the patient) the entire anemia workup the next time the Hb is 11.0.

Discharge Prescriptions

With regard to discharge prescriptions, (usually) include everything in the non-parenteral section of the IMR. Use a little bit of common sense in determining the duration of therapy: long term medications (such as frusemide, aspirin etc) should last until the next TCU (appointment with a doctor). Antibiotics should

usually be prescribed to a week from the start of the therapy (there are, of course exceptions to this. Chronic infections may need up to 6 weeks of therapy; TB patients may be under directly observed therapy, in which you only need to give a few days of medication). Do not forget the parenteral section of the IMR. Subcutaneous insulin is commonly forgotten, with predictably dire consequences: you do not wish to be responsible for a DKA. Also, you may want to oralize intravenous antibiotics if your senior doctors have forgotten, or are too busy to do so during the ward round.

When prescribing for controlled drugs, the patient's name, NRIC and address must be hand-written, dosages to be written in words and numbers. Pharmacists are very particular about this. For e.g.

Tab slow-release morphine ten (10) milligrams (mg) twice a day for one (1) week
(Do not leave a line in between)

Morphine tablets are controlled drugs but mist morphine is not.

Memos

Memos have to be written for a large number of reasons. They are as follows.

- 1) For an outpatient referral to another specialty within the same hospital
- 2) For an outpatient referral to another hospital
- 3) For an inpatient referral to another hospital (your patient is being transferred there)
- 4) To the outpatient services, including polyclinics, and the patient's GP
- 5) To the home nursing foundation
- 6) To a nursing home
- 7) To a community hospital
- 8) To the SAF MO

Tailor your memo to the situation: The polyclinic nurse doing an STO doesn't care about the op findings, how many gallstones there were, who did the op, or even what op was done for that matter – she just needs to know “STO R forearm AVG 1/6/02” (by the way, that's 'sutures off right foreare arterio-venous graft). Similarly, the dialysis center nurse couldn't care less whether the patient was admitted for fluid overload or AMI or infected R toe. She just wants to hear “HD 1,3,5 L IJ line, last HD 1/6/02, dry weight 62kg, status – ve Feb 02”. On the other hand, a memo to the specialist who is following up the patient/continuing management, should have everything about his condition and comorbidities, details about the current admission, and discharge medications. Print out the prescription of the patient if the memo is to a nursing home or community hospital, or they may call you in the ward itself.

Memos and outpatient referrals are most often forgotten by HOs, so do bear it in mind, or you will be paged to write them.

X-Ray forms

Your senior doctor may ask for outpatient investigations to be done and traced at the next follow up appointment. All you have to do is write and sign the form. Somebody else will arrange for the appointment.

Medical Certificate

A lot of unnecessary pain can result from erroneous writing of medical certificates. It is difficult in the beginning of your career to decide what is the 'correct' duration of MC to give. Until the cold hard hand of experience teaches you, the magic answer is: give enough hospitalization leave until the next TCU, whereupon a review by another Doctor will then determine how much more MC the patient needs.

Keep in mind that discharge instructions are approximate TCU dates (e.g. TCU ortho x 2/52 [2 weeks]), the ward clerk is the prime determinant of the exact date of TCU (e.g. the 27th of February 2002), and often times, at the point of writing the MC, the HO will only know the approximate date. In such circumstances, always give a few days more leave, because if you fall short, the patient will immediately realize you have certified him fit to carry steel bars a week after a Whipples, thus initiating a chain reaction that will result in

your pager beeping at an inopportune time. To reduce the chance of smashing your pager onto the far wall in frustration, a good guide is always give 10 days of leave to a week, up to a week in excess of the TCU. I.e., if the TCU is a week, give about ten days. If the TCU is 3 weeks, give 4.

On the other hand, you don't have to bother about the duration of MC if the patient is not working.

You might find all this a bother, and just give every patient 1 or more month's worth of leave. Not only will your consultant be unhappy when he realizes this (and he will realize this at the next follow up), you will also be stunting the thriving first world economy of a resource scarce wonder nation.

Do remember to cross the 'fit for exemption from court' part on the MC (my MO has got into trouble with this before), and unless the patient asks for it, don't include the diagnosis on the MC. I don't think the patient would appreciate his boss (e.g. his wife) knowing that he was admitted for an episode of gonorrhoea related arthritis.

If you make a mistake on the MC, do countersign, or else you will be paged to do so. Also, make sure that all amendments also appear on the duplicate copy kept by the hospital. I know an SAF chap who was charged when my colleague altered the MC duration on the original copy, but not the duplicate.

4) Speaking to Relatives

As a general rule, relatives (and by relatives I refer to that of your patient) are usually more interested than the patient himself in wanting to know 'what's going on'. In any case, these Doctor-family conferences can occur at any time.

The Doctor usually only wants to speak to the family when there is something to be gained from the discussion. It is the rare consultant who intones 'update the family on the patient's condition'. I divide the possibilities in sections below. As always, remember to document clearly all conversations with relatives, especially with regard to informing DIL, DNR or any discussion which includes prognosis.

a) Update on patient's condition

When asked to update the family, the HO has no choice but to do so. Helpful ward sisters may do this for you, but don't count on it. I used to work for this very caring consultant, who would tell me to inform the relatives after every significant event in the patient's stay in hospital. Needless to say, this can be time consuming when it comes to the sicker patients. I will never forget this instance, when I'm told to update the family, when the son shouts back 'why are you always calling me? Don't you have better things to do?'

b) Inform DIL

DIL is the dangerously ill list. When a patient's condition deteriorates to a point when collapse is an everyday concern, it's time to tell the family to prepare for the worst.

The role of the HO here is generally that of a thankless and sad one. In all cases, inform the diagnosis, important events related to the deterioration and the poor prognosis. State clearly that there is real possibility of collapse in the near future, with death as a consequence. Give the facts as gently as possible. You can say that there are still therapeutic options available, but that the family must have realistic expectations.

In appropriate circumstances, it is wise to gently inform the family that resuscitation can be carried out in the event of a collapse, and that various invasive procedures, including intubation and central venous lines, can be inserted in appropriate circumstances. However, make sure that they understand that these are life-sustaining procedures; they are delaying measures until either the primary therapy achieves its victory, or its defeat.

When a patient is (in the) DIL, a Doctor must accompany the patient anywhere outside the ward. More detail later.

c) Inform DNR

DNR is 'do not resuscitate', the information of which, in many hospitals, is generally the job of a senior Doctor, but is sometimes thrust into the responsibilities of the HO.

In a DNR patient, treatment is supportive. Therapy will continue, but will not be pursued aggressively. Invasive procedures are avoided, and in the event of a collapse, as my first registrar put it, 'not a single chest compression' will be performed. This must be explained to the family with humanity and gentleness.

The resultant anguish and sadness is unavoidable, but take a little comfort in the fact that the aim of DNR is not to prolong suffering, but to allow the patient to go peacefully, naturally. At times, after looking at their loved ones day after day in the ICU, the relative will ask for the patient himself.

d) Home care plans

This happens with unfortunate frequency: during the morning round, we Doctors will proudly tell the patient that she is *cured* and can *go home*, but she gently and softly murmurs that everyone's out working in the day. Many patients have home care problems or financial problems. As a result, fit for discharge elderly become 'social overstayers'. Avoid this by identifying such patients early and then making the appropriate referrals to medical social workers (MSW) and nursing homes or community hospital. Having said that, many of these problems can be solved by just talking to the family. Helpful ward sisters will do this for you, but not all the time, and not when you've been especially obnoxious to nurses.

e) Family wants a memo- for their work leave etc.

In Paediatric postings, parents are often the greatest headaches. Be prepared to answer to endless and sometimes unreasonable questioning by anxious parents. To prevent this, try to have a good relationship with the parents when you clerk the case. Build good rapport, and make sure you tell them the possible diagnosis and treatment after you clerk the case and be prompt in answering their doubts. When they get demanding and agitated, it's time to call for your seniors.

5) Accompanying Patients to Procedures

DIL patients (see above) require a Doctor to accompany them out the ward for any procedure or transfers to another ward or hospital. This commonly involves their urgent CTs and MRIs, but can also include 6 hour long angiogram KIV embolectomies. In the latter case, instead of sweating in the radiological room collecting pages (and a bladder), ask for help. This is where you find out how much of a friend your colleagues are, and how much of a friend you've been to them.

Always remember why you are accompanying the patient: that is to begin resuscitative measures in the event of a collapse. Resuscitation will be stillborn if:

a) You have no equipment

It cannot be overemphasized how important this is. Often, the oblivious staff nurse will happily wheel off the patient as is, with only a prayer between a sinus and an asystole. It is best that you have:

- a) Oxygen in a portable tank
- b) Continuous SpO2 monitoring
- c) Continuous cardiac monitoring
- d) BP monitoring
- e) Bag-Valve-Mask kit (nurses know this as the ambubag, so you might as well call it such) – make sure you know how to assemble it
- f) Adrenaline and atropine – if you know how to use it. Bring it in syringes already diluted so you can immediately use it.
- g) Plugs – preferably already in a vein.

The trick is, of course, to catch the patient in pre-collapse with all your monitoring thingamajigs, rather than stand around, oblivious, and only spring into action when the radiographer notices that, hey! there is no spontaneous breathing. By then, it's too late ... all too late.

b) You have no help whatsoever

You need a minimum of 2 people to initiate effective resuscitation. Don't let your Staff Nurse wander back to the ward and leave you with the Amah. Having said that, you are also wrong if you think all you need is your Staff nurse to snatch a patient on the hospital corridor from the jaws of death. Call for help.

c) You do not know how to resuscitate

This, I can't help. Read up! Read up! Read up!

In paediatric postings, you may be called to accompany and sedate a child who is going for a radiological procedure like an MRI or a CT. Follow the sedation protocol in your hospital. Oral chloral hydrate is often the first line. If the child does not sleep, you may have to give IV midazolam. This works very fast, so give it only when the patient is about to be wheeled down, or give it to the radiology department itself if you expect a long wait. In these cases, always bring along: pulse oximeter that is working, oxygen tank with correct mask size, bag valve mask, resuscitation drugs, antidotes for your sedatives (mainly flumazenil for benzodiazepines and naloxone for opiates). Always calculate before hand the doses of the antidotes to give and the amount to draw in case the child goes into respiratory distress (believe me, they can!). You'll be the only one there so make sure you know what to do!

6) Bloods and Procedures

The first thing you will realize in a team based system, and when you're on call, is how frustrating it is for the nurses to place everything in different places in every ward! Personally, I have decided that I have wasted enough of my youth hunting for that elusive rubber glove, and have resorted to carrying a small pouch containing all the necessary equipment for every common procedure.

It's helpful to organize your blood trolley prior to approaching the patient. Ensure that all the paperwork is correct: that the nurses have labelled all the bloods correctly (however some hospitals, in an effort to increase inefficiency but cut costs no doubt, require HOs to be MBBS sticker pasters) on the correct tubes. You should note who needs a new IV plug as you can draw blood from a plug, so set it at the same time if the patient needs both. Sort the bloods by the order you will take the blood, and go forth and suck!

Here are some tips and traps of blood taking and plug setting.

Venepuncture:

You can use either the syringe and needle or the vacutainer and the tube, but I prefer the vacutainer for easy veins as it is compact (all its components reside in my pouch), quick, and safer. I use the syringe and needle for more delicate veins, as the vacuum suction rapidly collapses these veins. The butterfly needle, so named

because of its shape, can be used for difficult veins as well. Simply attach a syringe to the white outlet end of the tube, and draw.

All veins are fair game in venepuncture, with the following exceptions

- 1) Arm with an arterio-venous graft or fistula
- 2) Ipsilateral arm of a mastectomy
- 3) Vein proximal to an ongoing drip (in these cases, stopping the drip for about 5 minutes will generally allow successful, accurate venepuncture).

Try to avoid,

- 4) Wrist veins (too many important structures)

Remember that the saphenous vein anterior to the medial malleolus of both ankle joints, is like old faithful: it's always where you expect to find it, but it's not always available: it's frequently thrombosed in immobile and elderly patients. This brings me to another point: always palpate potential venepuncture veins: beautifully bulging veins can be completely thrombosed in elderly patients!

You will be told at some point of time or another that you should avoid 20G (blue) needles when blood taking, as blood tends to lyse as it passes through too narrow a lumen, thus making the interpretation of serum concentrations of potassium inaccurate. This is probably good advice. But my own, albeit limited, experience, runs contrary to this widely held belief when blood is taken *gently*, and is not *squirting* with the same needle into blood tubes.

Moreover, only the U/E/Cr, and a few other bloods, depends upon an unlysed blood sample. You can take EDTA, GXM, PT/aPTT/INR, C/S bloods with the blue needle without worry. Moreover, it is also very much more painful to take arterial blood from a 18G (green) needle than with a 20G (blue) needle (although much easier). Thus, unless accurate knowledge of serum potassium is absolutely essential, one should not let the factor of lysed red cells limit the use of narrow lumen needles excessively.

You can take blood from a plug. If you've just set the plug, just attach your syringe and suck away! Avoid taking bloods from blue plugs as the chance of lysis is very, very much higher.

It is a common, but wrong, practice among many HOs to take blood culture using multiple alcohol swabs in place of iodine, so don't do it. Senior Doctors frown upon the so called 'traditional seven swab technique' whereupon seven alcohol swabs are applied one after another to the skin, and the blood is taken without putting fingers on the skin at all. The needle is changed before jabbing into the blood culture bottle. Some hospitals have helpful blood culture sets, in which all items for blood culture are available after opening the set. In these circumstances, tear and use. The incidence of proper blood culture taking technique is higher in these institutions.

Here is some advice on the well known techniques of getting veins to dilate:

- a) **Tourniquet** – the rubber glove is still the best. Would you rather endure the transient pain of a tight rubber glove around your arm, or stab wounds from multiple (failed) attempts at venepuncture? The problem is that the common velcro tourniquet was obviously not built for asian statures: the pressure effect is almost negligible, you sometimes have to wrap it twice around the arm, making it no less uncomfortable than the rubber glove. Use some compassion as well: high BMI patients with arms as thick as tree trunks deserve at least an L size glove, if not use the velcro one. For patients of gargantuan stature, you may have to use the blood pressure set as a tourniquet.

When tying the rubber globe, make a simple knot with one end only sticking out slightly, so that gently pulling the longer end unties the knot immediately.

- b) **Exercise** – Just do it.

- c) **Pain** – No need to slap actually, gently tapping over the course of the vein will do the trick. Pain stimulates the sympathetic response locally, which results in venodilatation. Very useful in young to middle aged patients, but the sympathetic response is stunted in the elderly.
- d) **Time** – You can leave the tourniquet on for a while, and come back about 10 minutes later. But do remember to come back!! If you have to take serial cardiac enzymes with ECGs at night, tie the tourniquet first, do the ECG, then take the blood. By this time, the veins would have popped up nicely.
- e) **Heat** – This is commonly used in colder countries, but not here. I heard of a registrar taking blood from an ‘impossible’ patient this way. Place a wet, warm towel on the target site, and then wait.
- f) **Squeeze blood from stone** – If worst comes to worst, your ABGs have failed as well, and you absolutely, positively have to get that blood in a tube, use the paediatric technique. That is to say, if you can identify a vein that you know will almost always collapse when you use a syringe, insert a needle, unscrew the syringe, and collect the blood that comes out drop by drop. Swirl PT/aPTT and EDTA tubes in these cases with every drop to mix the blood with the specific anti-coagulant.

For patients with oedematous hands, and no perceivable veins, elevate the arm in question, press horizontally across the potential venepuncture/plug setting site to squeeze out all the water (warn the patient as it is painful), then put the arm in a dependent position and release your hand. Watch the veins magically appear. Quickly stab it with a needle or insert a plug before it vanishes.

After obtaining blood, quickly put it into the appropriate tubes. If you are taking for blood culture, always fill it up first. After which fill up the PT/aPTT (blue) tube up to the mark (between the limits of the blue strip, which indicate the minimum and maximum amount of blood that must be put) as only the proper dilution will allow for accurate reading of the coagulation profile. Allowing the blood to flow until the vacuum finishes will work, but not always. Next fill the EDTA (purple) tube, as once platelets aggregate into clumps, will make your FBC inaccurate. Again, let the blood flow until the vacuum vanishes. You need a fair amount of blood for ESR. Remember to invert purple and blue tubes several times. Do not shake the purple EDTA tubes violently as it will cause the rbc's to lyse. You can take your time with every other tube, just remember that you cannot mix and match blood from and to purple and blue tubes – you will get strange, unexplainable results. In fact, don't mix and match blood at all! It's dangerous.

Arterial Blood Taking:

Taking blood from the artery (commonly called the ABG although, technically, ABG, standing for arterial blood gas, is really an investigation), is the last resort for problematic veins (no such cop-out for plug setting though). ABGs will fail if you cannot feel the pulse, and the first thing you should do, if that happens, is to look for spontaneous breathing. An obese habitus is, however, usually the cause for a ‘pulseless’ individual. Modify the pressure you apply

There are many arteries in the body, and despite being able to visualize that 20cm abdominal aorta bounding away, resist temptation and confine yourself to the three below, which, for reasons later explained, should be attempted in that order.

- 1) Radial artery
- 2) Femoral artery
- 3) Brachial artery

The danger with going straight for both the femoral and the brachial artery is that they are the only arteries supplying tissue distal to the insertion of the needle. Lacerating the radial artery gives the patient a pretty good chance of collateral perfusion from the ulnar artery (remember Allen's test?).

I was told a horror story in my first posting in medicine. There was a patient undergoing thrombolytic therapy for a recent MI who required an ABG. The HO allegedly took it from the femoral artery with a 21G

(blue) needle followed by a full 5 minute compression. The artery bled from that tiny wound nevertheless, and accumulated a haematoma of sufficient size and force to occlude the artery and compromise the entire limb, which had to be amputated ...

Having said that, I have no proof of the above story, so, assuming you believe me, or you think I make any sense at all, go for the radial artery first.

In taking ABGs, always try to splint the artery in question by hyperextending the joint it crosses: the elbow joint in the case of the brachial, and the wrist joint in the case of the radial. This minimizes movement of the artery and increases success rate of blood taking. Palpate the artery as you would normally do so for the radial pulse, but instead of inserting the needle vertically in (as in the case of the femoral artery, see below), insert the needle at an angle of about 30° in a direction perpendicular to the distal palpating finger, along the perceived course of the artery (i.e. it's as if you're setting a plug into the artery).

The femoral artery enters the thigh at a point midway between the anterior superior iliac spine and the symphysis pubis (the mid-inguinal point). Try to avoid the femoral nerve which is lateral to it. If you are taking blood for blood gases, avoid the femoral vein, which is medial to it.

Flex the hip at about 10 – 20 degrees and externally rotate the hip slightly to best palpate the artery. Then catch the pulse between the index and middle fingers so that both fingers are pushed *horizontally away* from each other, then insert the needle in between vertically.

Experience teaches, mainly through observing the facial contortions of patients, that taking an ABG is an extremely painful process. This is most apparent when the first pass fails miserably, and the entire process degenerates into an attempt at 'FNAC' with diminishing returns each pass (un-atherosclerosed arteries vasoconstrict vigorously to achieve haemostasis when traumatized, making future attempts at blood taking from the same artery even more difficult). In no other location is it more painful than in the brachial artery, where the needle must pass through tendon and muscle to reach the artery. You may also hit the median nerve and the patient will jump in pain and complain of paraesthesia over the median nerve distribution. So avoid the brachial if you cannot feel it well.

The new ABGs tubes are very convenient if you only need to take blood for an ABG. Screw a blue needle onto the tube itself, then slide the plunger so that it reads about 0.5-0.75 mls, then stick it into an artery and the tube fill up by itself (I think the sponge at the end of the tube absorbs air, while the little free piece is the heparin). There is no need to pull back the plunger.

ABGs have to be quickly sent to the lab before it coagulates. To reduce the risk of coagulation (and repeating the ABG later), always roll the ABG several times to properly mix the heparin and then dispatch ASAP (grab the nearest nurse if need be! Or operate the dispatch mechanism yourself). Putting the ABG in ice does not reduce the risk of coagulation – a widely held, but wrong, belief. Ice reduces the rate of metabolism, and preserves the pH, which would plummet if left to its own devices. In fact, an MO in my first posting told me, ice actually increases the rate of coagulation. She mysteriously intones, 'Think about it, you'll get it. It's simple physiology.' I thought about it, I didn't get it, which does *not* make it simple physiology in my dictionary. If you figure it out, let me know.

Inserting a Venous Cannula (Setting a Plug)

Setting a plug is lot like love. You can't teach it in a survival guide, you just have to go out and try it for yourself.

Nevertheless, here are a few tips.

- 1) Obviously, the tricks used to achieve venodilatation can be applied here as well.
- 2) A plug is a *venous* cannula, not an arterial one. Injecting drugs into the artery is extremely painful and dangerous as the drug displaces normal blood supply and goes straight into the capillaries in very high concentrations rather than into the heart (which would dilute the drug by distributing

around the body). The pain is from the ischaemia. Plugs in arteries are called arterial lines, and are for monitoring blood pressure and for painlessly obtaining blood.

- 3) When choosing the size of a plug, try the bigger one, but don't try too hard. If you're not confident, or it's late at night, just use the blue one: all hospitals now insist on changing plugs every three days, so there's no advantage to setting green (or grey) plugs at all, except ...
- 4) Haemodynamically unstable patients need two large bore cannulae in bilateral cubital veins.
- 5) Blood transfusion needs at least a green plug, and can't be run through a PICC line. rbc's apparently lyse while squeezing through the blue lumen, decreasing the amount of blood the patient is getting, and the patient tends to get a transfusion fever.
- 6) By right, you should flush all plugs after insertion with heparinized saline to reduce the chance of a thrombus rendering the plug ineffectual. But if you can't find the hep saline (the nurses secretly put it in the fridge which is in different places in different wards), don't bother, just flush with normal saline, or don't flush at all. The main reason why plugs stop working are:
 - a. They fall out → commonly in hairy individuals where the tacaderm don't stick, or in clumsier patients. Just one piece of advice: micropore, micropore, micropore!!!
 - b. Patients pull them out → always set blue plugs in these patients. No amount of restraints or micropore will prevent a second successful attempt. Even demented patients will find creative ways to thwart your long term plug setting ambitions.
 - c. The plug site develops thrombophlebitis, commonly occurring in plugs running drugs like gentamicin or penicillin. Green plugs help.
 - d. The plug site swells, generally secondary to poorly set plugs, but is a consequence of long standing plugs in immobile patients as well.
 - e. Thrombosis

Of all these causes, only e. is theoretically preventable by flushing with hep saline, and even then, flushing an already thrombosed plug can generally clear the obstruction, and allow for another day or two of use. And remember, plugs only need to last three days before the nurses, helpfully, pull them out.

When faced with difficult veins, look for the saphenous vein again (the needle points cranially in this case). If that fails, there are still two locations left, but should only be attempted if strictly necessary. Ask your MO to bring you through your first one.

- 1) The external jugular vein plug – tilt the bed head dependent, remove the pillow. You need somebody to help gently apply pressure at the base of the neck with a finger (the conventional rubber glove tourniquet technique is clearly inappropriate). Stand opposite the desired vein and turn the head towards you. Insert the plug as per normal, but do not go deep as you may hit the structures of the neck. The needle points caudally.
- 2) The femoral vein plug – palpate for the femoral artery as you would for an ABG, but insert the plug medial to the artery. Ensure that your plug is in the vein and not the artery: blood will just spurt out of your plug if you've got the artery, in which case ... semula. Femoral vein plugs are difficult to set.

If courage (or recklessness) fails, you can always oralize the antibiotic. Certain antibiotics have excellent oral bioavailability. Augmentin comes to mind, so does clindamycin and ciprofloxacin. If oralizing medications are clearly unwise, get help from your fellow HOs in setting a plug, or call your MO for help (many will say 'keep trying until you succeed!').

In any case, the universal solution is to get a central line (either a PICC or a CVP), but the appropriateness of this solution is not a HO's decision.

Paediatric Blood taking and Plugs

Venepuncture in a paediatric patient is an entirely different ballgame. Order minimal blood investigations and IV plugs as they usually involve a lot of emotional trauma, which will involve yourself as well.

Always ask the parents to wait outside the room whilst you are performing any procedure, as they may join in the crying and prohibit you from performing any more procedures, or worse, complain to the admin! One

trick you can use is to tell the parents that it is better for them to be absent when Doctors are performing 'nasty' things so the child does not associate the parent with helping us to hurt him.

You can use EMLA cream anaesthetic cream to reduce the pain and the volume of crying. Apply over a prominent vein 30 minutes before you prick the child. The disadvantage is that it is a vasoconstrictor and you may end up missing the vein entirely. On the other hand, if you do succeed, you will be amazed at how painless the entire procedure is!

Nurses play a very important role in blood taking and plug setting in kids. Inexperienced nurses will allow the child's hand to jerk, and all your efforts will be in vain! The good ones, on the other hand, will often be better than yourself in looking for the best veins. Do not use a syringe to collect blood: insert a needle and allow the blood to drip out. For special out of the norm blood tests, always ensure that you have the appropriate number and type of tubes (call up the lab if you have to) to avoid poking the child repeatedly. After taking the blood, ensure that the EDTA and PT/aPTT tubes are inverted a few times immediately otherwise the blood will clot, and you do not want to explain to the parents why you need to repeat the bloods.

Always warn the parents that blood will need to be taken again if it is for genta/vanco levels.

Blood from a finger prick is sufficient if only an FBC is required. There is no need for a tourniquet but always warm the finger before collection. Hold the finger in a dependent position and squeeze in a proximal to distal direction, then *let go* and squeeze again. When a full drop of blood is formed, scrape the EDTA bottle against the skin to collect the blood. A good drop of blood will not form if the finger has smudged blood, so wipe the finger clean with a tissue paper or gauze. Repeat the cycle and collect about 0.5mls of blood for FBC, and for heaven's sake don't drop the bottle ... quickly cap it the bottle and invert a few times.

You will eventually be competent enough to set a plug, do a blood C/S and take blood all in one prick.

Capillary tubes can be used to collect blood via pin prick for blood gases or electrolytes. The technique is the same. Do not allow air to be trapped in the tube. Ask your MOs to show you how.

For heel prick for bilirubin in neonates, it is the same principle at the heel. Ask the nurses to teach you how to hold the heel effectively, and prick it at the sides to avoid the calcaneum (and osteomyelitis). Collect in special capillary tubes, seal in plasticine and dispatch immediately.

Plugs are notoriously difficult to set in paediatric patients, so do not lose heart when you miss them in the first few weeks of your posting. As a rule, you should call your seniors if you miss plugs for 2-3 times.

Paediatric Lumbar Punctures and Urinary Catheterizations

There are common procedures, and are easily learnt. LPs in children are easier than in adults.

7) Group and Cross-Match and Checking Blood Products

A potential career ending procedure.

Your patients will eventually require blood products. Blood is ordered like this:

IV 1 \ominus PCT over 4 hours

IV frusemide 20mg, to be given before transfusion

Always run PCT over at least 4 hours, and always give IV frusemide if the patient is of advanced age, or has risk of fluid overload e.g. heart/renal disease. Such a quick infusion of fluids can otherwise rapidly tip the patient over into acute pulmonary edema!!!

Non-emergency bloods are matched as closely as possible with the patient's blood. The entire process is called group and match (GXM), and involves filling up the GXM (red color) form and obtaining a sample of blood. Take blood as per normal, but thereafter,

- a) sign the GXM form
- b) Indicate the preferred blood product (it doesn't really matter exactly what you indicate, as long as you write something. The blood bank will still release packed cells to a bleeding patient even if you ticked FFP (fresh frozen plasma) on the form)
- c) Sign 4 (FOUR) patient identification stickers, and paste three stickers each on the GXM form and its two duplicates behind. Paste the last one on your GXM tube.

If you have too much free time or you have OCD traits, you can fill up the remaining blank spaces.

Ensure that you have taken blood from the correct patient, and the identity of that patient and the four stickers all match.

PCT require a "valid" GXM, meaning one taken for less than 3 days before the PCT request. FFP has no such "expiry date" – you only need to have sent a GXM some time in the distant past. Non-blood products (eg albumin) doesn't even need a GXM. However an MBBS graduate still needs to "check" it (see below), although what on it you check is an unexplainable mystery of the universe.

It takes about an hour to get the blood matched, after which, the nurse will request the hospital's blood bank for the ordered blood. If the bank stocks the blood, and your patient fulfills certain rigid unalterable guidelines, they will send up the blood without fuss, and all that remains is for you to check the blood.

If not, you will have to speak to the blood transfusion services (BTS) MO to ask for approval for the blood. Call 2238793 during working hours, or 97342721 after, or during lunch-time. You must state your case and need for the blood, and the BTS MO will then decide if the current stocks and the situation deserve a cut from his stock of blood. The following products ALWAYS require BTS MO approval – Platelets, FFP and cryoprecipitate. PCT that are: Rh –ve, Washed, or Irradiated.

Experience teaches that patients with the following problems has the highest chance of getting blood, 1) elderly, 2) actively bleeding, 3) symptomatic anemia, 4) low Hb (generally below 8), 5) pre-op and the anesthetist won't proceed without the blood, 6) post major op with significant drop in Hb, 7) has IHD with poor ejection fraction.

Once approved, inform the staff nurse, who will arrange for the blood. When it arrives, you will be paged to 'check blood', whereupon, you must 'check'

- 1) Name
- 2) IC number
- 3) Blood group & Rhesus status
- 4) Blood product identification number

Make sure that all these match between your patient, the blood product, the tag attached to the blood product and the duplicate copy of the GXM form. Once you are satisfied, sign twice on the tag, once on the 'checked by ____', then on the other side on the 'given by ____'.

By right, the HO should put up the blood product, run it until it enters the bloodstream, and only leave if there is no immediate anaphylactic reaction. Most nurses will however set it up for you, leaving you to do your work. If forced to poke in the drip set, however, be careful: ask the staff nurse to take you through it the first time as it is relatively common to poke through the blood product bag with the drip set, at which point of time, the blood spilled bag must be returned to the blood bank with a (your) hand written memo detailing the embarrassing incident, and asking for a new pint of blood.

8) Off Drains

The only marginally difficult drain to take off is the chest tube. The trick is the purse-string stitch, which closes the wound when you pull hard on both ends of the stitch. If you haven't done it before, or you're not sure, make sure you do it under supervision. The common complication is, of course, a pneumothorax.

Thus, under sterile technique, cut the anchoring stitch without cutting the purse string stitch. If you do, or if the chest tube inserter did not include a purse string stitch, you will have to put one in yourself. After which, pull the tube out whilst pulling the wound shut via the purse string stitch, then immediately tie a surgeon's knot. Ensure that the patient is not breathless, and do a check CXR.

Removing the Jackson-Pratt drain is easier, but keep in mind that the design of the drain leaves a weakness between the white holey part of the drain and the transparent tube connected to the suction mechanism. If the drain is caught behind a stitch, excessive force will tear the drain at the connection between the two parts, thus divorcing Jackson and Pratt.

Call your MO in such a case, and your senior Doctors will try to retrieve it in the ward. If they fail, a mini-laparotomy will probably be necessary.

In all other drains, or PICC lines or CVP lines, just cut the anchoring stitch, and apply pressure with a gauze to the wound after pulling out the line. Don't leave it open: secure the gauze with a large tacaderm. Pull out the CVP in a dependent position.

9) Giving Intravenous Injections

It is the job of HOs in certain hospitals, including NUH and CGH, to give all bolus intravenous injections. In most hospitals, you only need to give the first dose of other intravenous medications. In giving the first dose antibiotic, especially if patient never has it before, do give it more cautiously. Patient can immediately feel unwell and have an anaphylactic reaction. Stop the drug immediately. Give IV hydrocortisone and Promethazine. Check for wheeze and stridor and also BP and HR.

IV anhydrous drugs need to be mixed with sterile water before they can be administered intravenously. Inject enough (usually 5mls) of normal saline or water for injection, into the powdered drug. Release the plunger to allow the compressed air to flow into your syringe, then shake vigorously with the syringe still attached via the needle into the drug bottle. Inject the air in the syringe back into the bottle and draw out the drug. Leave the needle in the appropriate bottle until you are at the bedside and ready to give the drug so that you always know what is in the syringe.

Note that a hydrocortisone bottle only needs about 3 mls of water. Giving any more cause it to explode in your face. Not allowing the compressed air to escape, and suddenly drawing out the needle, will also result in a makeshift 'molotov cocktail' exploding in your hands.

Note that some ampules, notably in IV omeprazole (Losec), has a dot indicating the line of weakness. Pull off the head of the ampule with the dot either facing towards or away from you. Attempting to pull off the ampule head in any other direction will cause great pain when the glass crushes between your fingers, or you lacerate your finger pulp against the jagged glass edge.

You can sometimes create antibiotic 'cocktails' by mixing dissolved anhydrous drugs into another bottle of anhydrous drugs. A safe combination is mixing crystalline penicillin with cloxacillin, and giving the bolus dose all together. Don't form cocktails with gentamicin: it will precipitate in your syringe, which will surely mess up your day.

Special cases as follows:

- a) CP (crystalline penicillin) – comes in 5 MU (mega units) per vial. Inject 5 mls of water and withdraw 2 mls for the usual 2MU prescriptions

- b) Augmentin 1.2g – oxidises in air after mixing and should be used immediately upon mixing. Do not use when turned red brown
- c) Omeprazole 40mg – use the solvent in the ampule provided to dissolve the sponge like thing (presumably the drug) in the bottle. Use *all* 10mls of solvent. Do not use water to dissolve, because it won't. Omeprazole oxidises in air after mixing as well and should be given before it turns brown.
- d) IV heparin – the usual prescription is IV 1000 units. A common mistake is to give the entire ampule of 5000 units. Draw off only 1 ml.

Infusion details

Ampicillin 1g, 2g – bolus
 Augmentin 1.2g – bolus or slow infusion
 Cephazolin 1g – bolus
 Ciprofloxacin – slow infusion, use as supplied
 Cloxacillin 500mg – bolus; 1g – slow infusion
 CP 2MU –slow infusion
 Metronidazole (flagyl) 500mg – slow infusion, use as supplied
 Ceftazidime (fortum) – slow infusion
 Gentamicin- bolus if 80mg or less, slow infusion otherwise
 Ceftriaxone (Rocephine / trexophine) – bolus if 1g, infusion if 2g

Needless to say, drug dosages are different in children! The hospital will usually provide a booklet detailing all drug dosages for paediatric patients. Use it always, and always spend the extra time to check. IV fluids must also be carefully calculated using formulae. You will find the pocket calculator indispensable.

10) Tracing Results

All results of urgent investigations done that day must be traced to allow for action to be taken as soon as possible. This can be done by accessing the hospital intranet if the laboratory is thus connected, but otherwise entails the HO phoning the lab to ask verbally for results. For imaging studies, call up the radiology dispatch room to find out if they have the films or a preliminary report (beg them to read it out to you over the phone). If they do not, you will have to look for the radiologist who is reporting on the film, and get a verbal report from him.

For histology, call up the histo lab, and if they haven't got the report (prelim or otherwise), get the biopsy number and the number of the pathologist in charge, and contact the Pathologist directly.

11) Listing Patients

All patients who are going for elective operations are included in a list, detailing the surgeon involved, the operation required, time start, time end etc. You may be required to add patients to this elective list, or to modify the sequence of the list. Where the list varies from hospital to hospital. In some, it is electronically altered. In others, to alter the list, you'll have to manually write in the patient's particulars in the respective days list. You'll have to find out how the OT system works in the individual hospital. If you are unsure, always ask.

THE NEW CASE

AKA 'active' changes (more meaningless descriptions of a HO's job. The typical day of 'passive' changes have as much passivity as a piranha in a barrel of ducks). There are two kinds of new cases, admissions from the A&E ('hot' cases) or elective admissions (from either the clinic, or for elective surgery. 'cold' cases).

Admissions from the Accident and Emergency Department

Before a patient is sent up to the ward, the nurses are usually informed, and they will indicate this on the white board. If you miss this, you will be paged to clerk the case. You must glean as much information from the nurse over the phone as possible. The more experienced staff nurses will be able to differentiate sick patients from well ones, and tell you, with a great degree of accuracy, whether you need to see the patient quickly or not. But until they have earned your trust in this respect, never depend on their subjective clinical appraisal of the situation. They are not the patient's Doctor, they do not have 5 years of MBBS under their belt. You do, and are accorded all the responsibility.

For the majority of nurses, it is pointless to ask, is he in shock? It is better to ask for objective evidence: How old is the patient? What is the A&E MO's diagnosis? What is the blood pressure and heart rate? Did the patient come up with oxygen? This gives you a rough idea of the severity of the condition. If the patient is above 40 years of age, and it is still within working hours, ask the nurse to fax the ECG request form so that there is chance that the ECG technician can perform the ECG for you. If it is a clinic or elective admission, also ask the nurse if there are any specific instructions in the admission notes. You are looking out for urgent changes (e.g. CT abdomen to be done today, or cardio review today), which would make you want to see the patient sooner.

If you are utterly swamped with cases, and do not expect to see a particular case within the hour, take a minute to eyeball the patient, to make sure they are stable, and are not deteriorating, before continuing with your work. Prioritization is the HO's most potent weapon as it allows for most efficient work, but never confuse efficiency with urgency: always attend to urgent cases first.

By the time you see the patient, good nurses would have arranged all the necessary documents in the empty case file. Use the A&E diagnosis as a guide to your own diagnosis and management, but do not trust it completely.

Gather all your equipment before going to the patient to prevent subsequent scurrying to and fro the nurse's station to gather needles and syringes. Useful questions to ask yourself:

- 1) Age >40: needs ECG and CXR. Bring along the ECG machine to clerk the patient and remember to write the CXR form.
- 2) Diagnosis an infection or patient is febrile
 - a. Blood culture set
 - b. Appropriate antibiotics (HOs have to give at least the first doses of all IV medications)
Mix your antibiotics before going to the patient. It is rude to do it in front of them.
 - c. Plugs
- 3) A neurological examination is required: bring along a tendon tapper and a fundoscope
- 4) Admitting diagnosis is hypertension: fundoscope
- 5) Admitting diagnosis is asthma: PEFR device
- 6) Needs surgery: consent form and OT chit
- 7) Bleeding, or anemia: GXM form and tube
- 8) Breathless or respiratory problem: ABG
- 9) Abd pain/any surgical diagnosis: gloves and PR gel
- 10) Paediatric cases: otoscope and measuring tape (for head circumference)
- 11) Take the BP set if you need to recheck the BP.

Bring along spare needles, syringes and plugs: you do not want to run up and down looking for needles and such if you fail. Having said that, many of you will eventually only need one needle and one syringe per patient.

Take the history as you would in medical school. A comprehensive history may not be possible, but *always* exclude the dangerous conditions. *Always* write the date and time you are clerking the patient for medico-legal reasons, and *always* ask for drug allergies. For paediatric patients, *always* chart the height, weight

and occipitofrontal circumference and write the percentiles. A past medical history is important, and a drug history. In surgical cases, ask for time of last meal. Perform a directed but detailed physical examination, and a quick systemic one. Don't skimp on important examinations, such as fundoscopy for malignant hypertension or a per-rectal examination for your surgical patients. Multi- task: either write down the history as you are taking it, or take the history as you are examining the patient or taking his blood. If you think the patient needs surgery, get consent at this point of time, then do the ECG. Give the antibiotics then do the PR last, as I find that patients are not as comfortable after.

If you forget any of the steps above, come back to do it at the earliest and most efficient opportunity. Changes which are undone will always come back to haunt you.

Always draw enough blood to fill sufficient tubes to satisfy the maximal conceivable investigations needed for the patient: this is especially true in your internal medicine posting when MOs may add multiple investigations *after* you have already taken the blood. To be on the safe side, fill 1-2 EDTA tubes (some hospitals only require 1 EDTA tube for all investigations, some require 2), 1 PT/aPTT tube and 2 plain tubes, plus minus a GXM tube (if there is a chance the patient may have a coagulopathy, or anaemic) or an ABG (if the patient is breathless, acidotic (DKA) or has a respiratory condition as his admitting diagnosis). You do not have to dispatch every single tube (the exception being of course the ABG tube): order whatever investigations you think are necessary, and ask the staff nurse to dispatch the rest if the MO makes further orders.

In an average (medical) night of 15-25 admissions your patient will not appreciate it, if you have to go back and take blood again for half of them.

For safety reasons always label all your blood tubes yourself: do not leave unlabelled blood tubes on the nurses counter. Note that you do not have to fill each tube to the brink: only the PT/aPTT tube needs a (nearly) full tube. 1.5-2 mls of blood is all that is required for the other tubes.

Note that if your diagnosis is an abscess, and you are absolutely certain that the abscess will need to be drained, you do not have to do a blood culture: the surgery itself will produce its own wound culture, far superior to whatever you can grow from the blood.

Don't be afraid to give intravenous medications if you think it is necessary. (the exception being a septic arthritis). Do not give antibiotics for a septic arthritis until the inevitable surgery has already obtained tissue for culture). There is a chapter on proper prescription of antibiotics in the acute medicine handbook, and you can generally give ceftriaxone, gentamicin, cloxacillin and crystalline penicillin, as a HO, without worry. Give frusemide if your diagnosis is pulmonary edema. In all cases check if the A&E has not already given some, and also check for drug allergies.

There is still work to be done, but I prefer to take my leave of the patient now, and finish my work seated in relative comfort, and next to a phone. At this point of time, page for your MO while you are completing the paperwork. In particularly busy postings or busy nights, you may wish to actually page your MO with regard to admissions the moment you are informed of them. In any case, you will always have to inform your MO of every single one of your A&E admissions, the reason being that he has to review every case, and he won't know where they are, or how sick they are, until you tell him. Page for your ward or team MO during working hours, page for the MO on call after.

While waiting for the reply, finish documenting your history and physical examination (whatever you have left out). You will have to give initial orders via the treatment and diet form. All patients (with one or two exceptions) will need FBC and U/E/Cr. All patients above 40 will need an ECG and CXR. Always give the frequency you wish the nurses to monitor parameters (it will default to every eight hours for temperature and heart rate. Some nurses will not take blood pressure if you do not indicate it), so write something like 8H parameters + BP for stable patients, or Hrly parameters + BP, for sicker ones. In the beginning, always keep surgical patients nil by mouth (NBM) until reviewed by your MO. You can then add in whatever investigations you think are appropriate after this.

To wit,

Adam, a 42 year old gentleman has ischemic heart disease, asthma, is admitted for wheezy breathlessness and a dry cough. He is likely to have an acute exacerbation of asthma, thus ...

FBC

U/E/Cr

ABG_{on ra} (always write blood was taken while on how much oxygen eg in this case, room air, or, in another case, 2L/min O₂)

Theophylline levels

Family to bring medications

Trace all old notes + films

4H parameters + BP + SpO₂

2L min O₂ via IN prongs

DOC (diet of choice)

Ah Hock, 20 year old gentleman with RIF pain, likely to have appendicitis ...

FBC

U/E/Cr

Ask parents to come to sign consent for op

Hrly parameters + BP

NBM

After which you must fill up the IMR. Copy down all the patients' old long term medications. Ask the patient's relatives to bring the medications the next time they come along, or copy it from the most recent prescription in the old notes. Discontinue warfarin and anti-platelet agents (e.g. Aspirin, ticlopidine,) if you are anticipating surgery. Discontinue metformin if you think the patient needs contrast imaging. Don't worry, as long as you are monitoring blood glucose, you can always give S/C SI accordingly.

To wit,

Adam: Salbutamol MDI 111/111 prn (MDI = metered dose inhaler)

Beclotide MDI 11/11 bd

Neb salbutamol 1ml: N/S 3mls q6H/prn

Theophylline SR 250mg ON

ISDN 10mg tds

Atenolol 50mg OM

Aspirin 100mg OM

Ink up a drip if you think the patient needs hydration. 1 pint (⊖) is 500mls. Thus for Ah Hock, you may wish to give:

IV N/S 2⊖

IV D5% 3⊖ all over 24 hours

(Generally 2 pints of saline is enough to provide the normal maintenance sodium requirement in a normal adult, so do not order more than this unless patient is hypotensive or is hyponatraemic. Top up the rest of fluid requirement with dextrose 5%)

Remember to order hypocount monitoring for diabetic patients. In fact, check their hypocount (and do a HbA1C) stat. E.g. H/C stat; H/C tds + 10pm

If you think the patient is going for surgery, fill up the OT chit as well (this informs the OT that your patient exists, allows them to prepare the equipment for his specific surgery, and puts him on the waiting list for the emergency OT). Then fill up all X-ray and GXM forms. If you have left out nothing, your job is complete, and you will not be paged to see the patient again.

Clinic Cases

All clinic admissions have been seen by a senior Doctor, and does not need an MO review. Consequently, you do not need to inform your MO of a clinic admission. They also come with an admission form, within

which the admitting Doctor will have written specific instructions. As mentioned earlier, always ask the nurse, when answering a page, if there are any urgent instructions, so that you can see them sooner. Otherwise, clerk these patients as you would an A&E admission.

Admissions for Elective Surgery

These patients are admitted the day before surgery so that they are reviewed by the anesthetist during their evening round the evening before. SDA (same day admission) patients are admitted on the day of their surgery, and are usually fit and healthy, and does not need an anesthetist review.

Again, patients admitted for elective surgery may have specific instructions which can be urgent, so make sure you look for them. Investigations are usually done outpatient via the PAT (pre-admission testing), so trace all the pre-op bloods, and ensure normality. Repeat bloods if necessary, and if still abnormal, correct them. If PAT is not done, or if GXM is needed, you will still have to take blood.

In the treatment and diet, give the patient an appropriate diet (e.g. DM diet 1800kcal if diabetic, DOC etc) and put them nil by mouth at 12 midnight. To wit:

DOC
NBM 12MN

For operations done under LA, the patient need not be kept NBM.

Not all patients NBM for surgery require a drip: how many times do you wake up at 3am for a cup of water? Having said that, a number of patients do need drips, they include:

- 1) diabetic patients: give a dextrose saline (D/S) drip of an appropriate frequency (q8H is fine, unless they have IHD, need fluid restriction, have renal failure etc)
- 2) Elderly patients, just give a maintenance drip.

Some hospitals require you to write the OT chit, and some patients may not be listed, so you will have to go about doing those things, but that's about it.

In many surgical disciplines, the amount of elective work can only be described as overwhelming. Elective cases are admitted generally after 3pm, and if there are many, and the evening ward round becomes interminable, can result in delayed clerking and long, long working hours. In these cases, it is a common practice among houseman to 'pre-clerk' patients in their free time so as to facilitate quick clerking when the patient is admitted.

What 'pre-clerking' entails is the tracing of the patient's old notes, and writing in unmarked history sheets, the past medical history, the results of scans and biopsies, details of previous relevant operations, and the events that has led to the elective surgery. OT chits and consent forms are filled up as completely as possible. All that remains when you see the patient, is to confirm drug allergies, all the details of the past medical history, do a quick directed and systemic examination, take consent and whatever bloods and investigations left out of the PAT (see above). This speeds up clerking tremendously, so find out how to do it specifically in the hospital of your posting.

THE NIGHT CALL

This is the reason why housemanship has its fearsome reputation even in our infant days in Junior College.

The night call begins at 5 pm on the first day, and ends at 8 am the next, after which a normal working day begins, and ends at 5 pm. Some departments are organized in such a manner that it allows for another HO to cover your duties on the second day, allowing the said HO to go 'post-call', but don't count on it. In this case, the HO leaves for home at 1 pm, rather than at 5.

Disregarding post-call, this entire business is, contractually, 33 hours of non-stop work in 2 days. It is actually always 1-3 hours more because HOs have to be in the hospital earlier than any other Doctor, and, at least in the beginning, leaves at a later hour. That's bad enough, but if you extrapolate the fact that work continues as per normal the very next day (i.e. at 8 am), and the call then recurs every 2-4 days for *months* and *months*, you'll get an idea of the tremendous mental and physical strain the medical profession places on its Doctors.

Nevertheless, bad calls will eventually be traded across a coffee table with fellow experienced HOs like battle scars and war stories.

PREPARATION FOR A CALL

It is thus important to prepare yourself well the day before. Sleep early, drink plenty of water, and on the day itself, bring along:

- 1) A change of clothes
Many hospitals have official call clothes. If not, there's always the unofficial OT baju. You can, of course, bring along whatever you want to wear. Non-collared shirts are a no-no.
- 2) Comfortable shoes
If you never remove your shoes for at least a change of socks, eventually, the general public will never allow you to do so ever again. Sandals are generally accepted, your registrars and senior MOs wear it themselves, but flip-flops are frowned upon.
- 3) Toiletries
Whatever you need.
- 4) Food
Something portable, such as snickers bars. You will probably be involuntarily fasting during your first few busy calls. It's also wise to have some coins with you. There's nothing to perk you up better than a cold coke at 3 am, with 4 more cases to go.

There are a few things you should find out before the call starts at 5 pm: like who is your immediate MO, that is, who you should be informing of new cases, and who you should look to for help.

Find out, also, what the limits of your responsibilities are. The nurses should not be paging HOs willy nilly, but when they do, you owe it to your reticular activating system to tell them that they should be calling the GS HO for a GS case, and not the O&G HO (you). You are always only responsible for patients in your department, and in some cases, only in restricted wards. For instance, the 'active' HO on call in SGH GS is responsible only for clerking all GS admissions in any part of the hospital. The CGH medical HO 2 (there are 3) is responsible for all admissions and changes for medical patients in wards 15, 25, 35, 45, 26, and 46.

Of course you are encouraged to help your friends who may be in trouble, but your own work should be finished at the end of the day (oops, I mean by day break).

Before your call starts, it's a good idea to ask your fellow colleagues who the sicker patients in their wards are, and what important changes they have for you, so you can deal with them with appropriate urgency in the middle of the night. It's always good to know the potential collapses in a ward, as getting a quick summary of the patient from your friend sure beats flipping through his illegible case sheets.

In hospitals which require you to give all IV bolus medications, you are expected to go to every ward and give the evening doses. You may also have to make a 6 am round in the HD and ICU beds in your department to take bloods so that the morning rounds can have the latest blood results.

MINIMUM GOALS OF A CALL (HO STYLE)

When the call starts, it's useful to put into perspective the minimum goals of a night call. No matter how busy that call is, please:

- 1) With the help of your MO and fellow HOs - taking into account the distribution of manpower and workload, the limits of time, personal endurance and sheer willpower - keep your patients alive and in as good a condition as they could possibly be, until the magical time of 8 am, whereupon Doctors who have slept have arrived.
- 2) Eat
- 3) Plus minus Bathe (some male HOs are adept at making do without this)

Do not laugh at the last two 'priorities'. Some of you may still have the bubbly idealism that brought you from primary school through JC and 5 years of med school, where the best, noblest, most self sacrificing Doctors are those who forego personal comfort consistently for the good of their patients. Logically, these Doctors generally also smell (bad), and kinda look cachexic.

No matter how furiously you launch yourself at your work, it will always pile up, it will always be unending, and while you are giving every patient their appropriate level of urgency in your list of priorities, never forget that your personal well being is one of them! Of course if your patients are in risk of losing life or limb, attend to them to the exclusion of everything else on your list! But certainly you don't take more than 15 minutes to finish a quick meal, and certainly, that young patient with a three day history of angina isn't going to collapse if his clerking is delayed 15 minutes? The lesson that we draw early in our life with regard to efficient living: that we shall finish our work first, then go for the break we deserve after that, is wrong, wrong, WRONG in a night call (and for the early days of your morning changes), because in a medical call, and all your first few calls, work can NEVER be finished before the last auntie leaves the food court. Never. Eating is basic sustenance for the marathon you are running.

TIPS AND TRAPS OF HANDLING THE INS AND OUTS OF A NIGHT CALL

The Power of Prioritization

It can never over emphasized that your most potent weapon, as a HO (next to the Foley's and laxatives), is your ability to prioritize your changes to your benefit. Always see urgent cases first, but then arrange all other changes in the most efficient order. For instance, after clerking a new case in ward 25, finish up all your passive changes there and then before moving to another ward. To assist, note down all your changes in a piece of paper. Either arrange them according to the ward, or arrange them in the order you are given the changes. The benefit of arranging them according to ward is that you know exactly what to do before you move on. Arranging in order of receiving the page alerts you to the fact that you haven't been seeing that short of breath patient for a long, long time.

Losing your temper

Stress makes a different person out of you, no matter your original personality. You may find that your quiet, bookworm colleague is actually a pepper pot of boiling action that speeds from new case to stuck plug faster than a speeding bullet. More often than not, however, rather than rising to the occasion, HOs lose their temper and start raising their voice. It will happen at least once to you, and often, many, many times.

The nurses, I find, are used to it, which makes the frequency of these outbursts far too often. Remember before you lose your temper, that it is your choice whether you are a nasty HO or not, and that it is not the patient's fault that he is sick. He is looking to you as a source of relief and comfort. Nor is it the Nurse's fault that the plug has stopped working. It is their job to page you, and it is yours to get that cannula in that vein. Take the new changes, prioritize and place it in your list. As long as you are doing your job, and you appropriately ask for help when you are swamped, and you have the interests of your patient at heart, you will never be at fault. Time, and manpower, is never on your side. Some things will just have to wait. And

if you tell yourself that you never expected to get any rest or sleep during your call anyway, you will feel much better in the end, no matter for how short a duration your head touches the pillow. Having said that, all this is easier said than done.

Answering pages

Remember that you never have to answer a page immediately, unless it is urgent (they will have ways and means of informing you. see below, under collapse). It is just a waste of time walking to and fro from clerking your new case or setting your plug to answer your continuous stream of pages. Collect the pages that come whilst you are performing your procedure, and answer them all at once, but do remember to answer them!

Phone orders

Don't do it.

At some point of time, you will be tempted, by the stories of your seniors, or at the behest of the nurse on the other line, to give a phone order. Essentially, this circumvents you writing and signing on the IMR, the specific drug you ordered, to answer the complaint of the patient. What transpires usually is that the staff nurse will inform you of some abnormal biochemistry or hypocount readings through the phone, and for selected non-life threatening treatment, give your orders over the phone.

When you are around the wards long enough, you will notice that when your seniors give phone orders, they will ...

- a) Always know to whom they are talking to, and make phone orders only through staff nurses they trust. This does not equate to the staff nurse they are most friendly to.
- b) Keep phone orders for only simple, non-life threatening, non-emergency issues
- c) Keep orders short, precise and speak clearly. Have the staff nurse repeat the order to them
- d) Always ask for drug allergies. Always.
- e) For insulin orders, follow the basic guidelines similar to that detailed below.
- f) Always find out a little bit of the patient's history, and apply pharmacology it to the specific patient. When in doubt, they will check the patient personally.
- g) Do not just give symptomatic treatment over the phone.

This is still dangerous as there is always the risk of wrongful administration of drugs, for instance, if the nurse cannot hear you properly or read the wrong result for a wrong patient. Some medications are simply inappropriate for patients, such as prescribing paracetamol for liver failure patients. There are also stories of HOs who make phone orders that caused morbidity or mortality, but subsequently denied making them.

Remember that delaying paracetamol for a headache or diazepam for insomnia will cause discomfort, and multiple frustrating pages, but it never amounts to anything dangerous. Acceding to these requests potentially can.

It is therefore simply incorrect to advocate this common practice in paper, so here's the official stand of this survival guide: don't do it.

Splitting the call

This common phenomenon is another practice disallowed and frowned upon by consultants and HODs.

The theory behind it is that in certain departments in certain hospitals, after certain late hours, workload decreases to the extent that should one house officer decide to do all the work, he can probably manage to, at no increased risk to patient care. Of course, if the voluntary HO is being swamped and patients are getting compromised, the other HO should help out.

If you are interested, ask your seniors for more detailed information in these splits of calls.

Sleep

Ah yes, that little luxury of life: if it's always on your mind, you're not getting enough of it.

My advice is simply: don't expect to get any in your first few calls, and after that, never consider it a given, but rather, if you get it, a godsend.

Having said that, sleep during a HO's call is never restful. No matter how much sleep you get, it's almost always interrupted by pages for changes and new cases (hence the beauty of protected sleep time). You may wish to collect a few non-urgent changes before running out to do them all at once. Make sure your pager is not on vibrator mode when you sleep, otherwise you may not be awakened by it.

Try to have some sort of alarm to wake you up for your morning ward round the next day, and set your pager to an alert mode that has the capability of waking you up. If you know that you cannot be brought back from La-La land easily, give the nurse in your home ward your call room phone number, or the location of your call room, so that in desperate times, they can hammer your door until you wake up.

If you have insomnia during your rare sleep time, that's just too bad.

DUTIES IN THE NIGHT CALL

The night call generally is a flurry of answering and acting on pages, with or without losing your temper.

The duties range in sequence of general priority as follows:

- 1) The Collapse
- 2) Urgent passive changes / patient complaints
- 3) Clerking of a new case
- 4) Checking laboratory results and acting on them
- 5) Correcting abnormal hypocounts
- 6) Procedures
- 7) Serial bloods
- 8) Giving IVs
- 9) Mopping up undone day work
- 10) Speaking to relatives

1) The Collapse

This is, without a doubt, the most urgent 'change' you can get in the middle of the night. Suspect something is wrong if you are paged almost immediately after one unanswered page, or the number you are paged ends with a dash 99 (for instance 4690-99).

Some seniors will advise you to ask the Nurse on the other line - is the patient DNR? DNR as you remember, is do not resuscitate. As such, your job as a HO is to make the patient as comfortable as possible. There is no need to jump on the patient, no need to intubate etc, etc, etc. The whole idea is death with dignity, with peace and quiet. But I would suggest that you should still go to see these patients quickly if you are unfamiliar with them. Nurses are human beings as well, and make mistakes, and it would be disastrous if there was a mistake in this area. Besides, in all these cases, you can give some oxygen and run some fluids to try to bring the vital signs up. No patient deserves to die of tortured with hypoxia/asphyxia.

Drop all changes and hurry to the rescue of your collapsed patient. This is as close to ER as you're going to get. If you trust the nurse's clinical judgement, or you know the patient, or it's your first few calls, ask her to page for your MO over the phone.

When you're at the bedside, immediately confirm cardiopulmonary collapse by going through your ABCs quickly. If it isn't, determine whether you need help in managing the patient. If you do, or if it truly is a cardiopulmonary collapse (or an impending collapse), tell the nurse to call for the MO *immediately*. You

must always at least inform the MO that a patient is collapsed, and it is always best to do it as early as possible. Don't leave the patient to page for your MO (or worse, actually wait for his reply). You're the boss of the situation now, and unless you're in a ward of post graduate, specialty trained nurses (such as in the ICU or HD), the great majority of nurses will be unable to operate even at minimum efficiency in a high stress situation, despite their greater experience.

Do not break down, and always remain calm. If you have to, *act*. If you have to shout at your fellow health care worker because he or she did something insane, life threatening, and generally moronic, save it for later. If you don't know what to do, always go back to the basics. Remember your ABCs? Assess them all (check breathing, check pulse, ask for the patient's BP or take it yourself). To further manage your patient, you require proper monitoring devices. You can tell the nurse to do much of this over the phone, or while you're walking to the bed. You get the idea. Time matters. Don't expect stellar performance from your supporting cast: most of the time, you'll arrive to see a few flustered nurses around the bed, expecting you to resuscitate like Hippocrates: without a tube (or plug, or ECG monitor, or ETT, or E trolley) in sight.

In general, tell the nurses to:

- 1) Wheel in the E (emergency) trolley
- 2) Attach the continuous SpO2 monitoring device
- 3) Attach the continuous ECG monitoring device (and modify it to read lead 2)
- 4) Put in an oral airway
- 5) Put together the bag-valve-mask, and start ventilating the patient
- 6) No plug? Prepare equipment for you to set a plug
- 7) Get 2 purple, 3 plain, 1 blue, 1 red, an ABG tube, a 20ml syringe and needles to boot
- 8) Prepare adrenaline in appropriate dilutions
- 9) A qualitative troponin T device is available in some hospitals. Might as well use it if you suspect an MI
- 10) Give fluids

Proper bag valve mask of a patient with an oral airway at 100% O2 will usually prevent desaturation even without a cuffed tube in trachea. You almost never have to intubate before the arrival of your MO. If saturation does not improve, try aggressive suctioning of upper airway mucus and fluids, it will help.

Your MO will generally arrive by the time you have set the plug on a pulseless, volume depleted, collapsed patient (remember 2 large green plugs in the brachials). I will not touch on actual management of a collapsed patient. I recommend an acute medicine handbook, and suggest you familiarize yourself with the management of cardiopulmonary collapse, including the doses of adrenaline, atropine, their dilutions, and their use, before your first day of work.

2) Urgent Patient Complaints / Passive Changes

Some patient complaints are more urgent than others. High risk patients who complain of bleeding, malaena, haematochezia, haematemesis, shortness of breath, chest pain, etc, all have to be seen quickly.

3) Clerking of a New Case

New cases are fairly high in the priority list. As mentioned, always get a feel for how sick the patient is when he's sent up from the A&E through the phone, especially when you are swamped and cannot spare the time to come anytime soon. Use all these information to prioritize your patients, and see your sick patients first.

For ease of communication, and to prevent frustration, I see elderly patients with relatives around quicker, so that I have an easy source of history or a translator. Another benefit of asking nurses regarding the patient's admissions status, and your ability to prioritize.

If I haven't had my dinner yet, this is the point when I put aside some less urgent new cases, and grab a quick bite.

4) Noting Investigations and Acting on Them

Some investigations may not be back by the time your colleagues leave for home, and some of these blood results or imaging films may be very important (the HO in charge of that ward should inform you of the urgency of these bloods / films, and the planned management depending on the findings).

Nurses will generally page you for the most urgent changes and will leave the rest as a stack of not noted results in a clip board on the nurses' counter. You do not have to act on every abnormal result, only the most urgent ones: you can leave most of it to the managing team the next morning. If you are going to act on a result the nurse paged you for, it is helpful to tell the nurse to put the result on the counter, and prepare whatever you need to correct the result. E.g. If it is to note a low hypocount, tell the nurse to prepare 2 bottles of D50%, a 20ml syringe and put it on the counter.

When in doubt, always check previous readings of the abnormal result (most useful for ECGs), and if the team has noted the findings already. Always find out if the patient is going for op the next day, as a deranged potassium or markedly abnormal sodium you would normally treat conservatively, might have to be aggressively, but carefully, corrected that very night.

You should always try to determine what the cause of a low haemoglobin level is, so as to exclude dangerous conditions, like fresh malaena. Once you've done that, a blood transfusion may be necessary. A good cut off point for comfortable, otherwise well patients, would be 8.0 g/dL, above which, you can leave the patient until the next morning. If you are transfusing blood, and the anemia needs to be investigated, send blood off for PBF (peripheral blood film), Fe, ferritin, TIBC, folate, B12, and reticulocyte count first, as the transfusion will mess up your iron readings.

5) Correcting Abnormal Hypocount Results

This is by far the commonest 'change' at night. If the hypocount is low, (less than 3.0) after seeing the patient, all you may need is to give a glucose drink. Otherwise, give a bolus injection of 40mls of dextrose 50%: take one 20ml syringe and two red 20ml bottles of dextrose 50% to the patient, and give a compassionately slow bolus (high concentrations of glucose burn the veins, and causes a severe inflammatory reaction if it accumulates in the subcutaneous or fascial plane). Set up a dextrose 10% drip after that (perhaps one pint to be run over 6-8 hours) so that the episode of hypoglycaemia does not occur again. Check the hypocount an hour later. Treat the less common complications of hypoglycaemia appropriately (e.g. Fits)

High hypocounts are more common, however, and I was taught these guiding life and time saving principles:

- a) don't need to treat a hypocount less than 15 (or 10, depending on your institution of practice)
- b) ask when the patient had his last meal/snack- exclude a secret, recent meal
- c) ask for concurrent medications that can affect blood sugar level
- d) ask if the patient is being fasted- generally give lower doses of insulin to prevent hypoglycemia
- e) ask if patient is on a dextrose drip- stop or change the drip.
- f) Exclude the presence of undelivered regular dosing of OHGAs or insulin. You can give their normal dose in place of the suggested insulin dosage below
- g) If greater than 15, after taking into account OHGAs or insulin already given before (some of these have a long duration of actions) you can generally give S/C SI (for subcutaneous insulin) at a number of units from 1/2 to 2/3s of the glucose value. E.g. if the hypocount value is 18, can order as follows: S/C SI 9 units stat.

- h) If slightly greater than 20, treatment varies from MO to MO, and HO to HO. The gold standard is to take a venous sample of blood, as high hypocount values are not reflected accurately on the glucometer. Look for clinical evidence for DKA or HHNK, especially in a newly admitted patient who has type 1 DM, but who has not been taking insulin. Take blood for an ABG and U/E/Cr for calculation of osmolality to exclude unfortunate eventualities, and make a decision as to whether the patient requires intravenous insulin or if you can get away with a shot of subcutaneous insulin.
- i) If greater than 25, be very wary of the above diagnoses. Start IV insulin, at, for e.g. 5units per hour, and reduce the dosage appropriately, using your hypocount reading as a guide. Stop it when the hypocount is controlled. Be very wary of iatrogenic hypoglycaemia in such circumstances!!! Never give more than 15 units of SI subcutaneously.
- j) Try not to give insulin at 10pm. Usually OHGAs or insulin had been given at 5-8pm and they have a long duration of action. By adding more insulin at 10pm, the patient can go hypoglycemic in early mornings (since they generally do not eat after 10pm). If you really have to give insulin, give a small dose.
- k) Above all, don't take my management for granted, read up, read up, read up!

6) Procedures

Not all plug requests are created equal. Plug requests for a morning dose of rocephine can be left to your more conscious colleagues in the morning team. Plugs for IV antibiotics can be delayed for a few hours without ill effect, especially when you have many more important tasks undone. Plugs for patients on IV amiodarone or dopamine are of course of the utmost urgency!!

In any case, it is a well known fact that procedural skills deteriorate rapidly after long hours without sleep. When I started out, I'd bring a few more plugs after 12 midnight.

7) Serial Bloods

These are commonly cardiac enzymes and ECGs for patients with angina and query MI. The practice is usually 8 hourly CK, CKMB, Trop-T (all in one plain tube) and ECG. These may be plentiful in a medical call, so time your serial bloods intelligently. Giving or taking 1 or 2 hours makes no difference, so do your serial bloods as efficiently as possible. Always review your ECGs when you take them carefully, and compare it with the patient's previous ECGs. It is a good idea to jot down the presence of chest pain on the ECG, but avoid writing your interpretation of the ECG: you may be completely wrong.

The other less common serial blood is a six hourly PT/aPTT for a patient on anticoagulants titration.

8) Giving IVs

The bane of all HOs everywhere, not because it is a bother by itself, but because it is simply unreasonable to expect a medical on call HO, to deal with 20+ cases a night, settle all patient complaints, manage sick patients, save collapsed patients, and still give the bolus night doses of intravenous drugs on time.

In any case, some IVs are more important than others. Avoid missing out the intravenous doses of diuretics in patients with congestive cardiac failure (for one), especially when their oral lasix has been discontinued in favor of the intravenous version. You may precipitate acute pulmonary edema by inaction. Look out for very ill patients with bolus IV antibiotics. If you have truly no time, and must choose, choose intelligently.

9) Mopping Up Undone Day Work

Nobody likes doing day work on a night call; it's already bad enough handling the on call changes. Consequently, don't leave your undone changes to the one on call unless you absolutely have to, in which case, always inform the on call HO of the most urgent ones.

10) Speaking to Relatives

You will rapidly find this a pain in the neck, because you would have decided that whether you speak to the relatives or not will not affect the management of your patient (at least for the night). Moreover, you will know nothing of the patient in question, and will have to spend precious call time flipping through pages and pages of illegible handwriting. Whilst much of these requests from the relatives can be delayed until the next day (e.g., they wish to ask the Doctor regarding the charges for upgrading to B2), do note that some relatives are very concerned about the sick patient and simply cannot come to hospital during working hours. For these, you may mention that you are the doctor on call, not the one directly in charge of the patient, hence the information you give can be limited. Most relatives will take that and not ask you difficult questions. Some relatives may be important for signing consent forms for under aged or demented patients, and you must catch them before they give up on you.

For all other reasons, good nurses will attempt to answer the relative's queries, or ask them to come during working hours. If it eventually comes to your attention, you can immediately sieve out rubbish requests (eg. [this really happened] is there air conditioning if I upgrade my mother to b1 class?) by informing the relatives, via the nurse, that you will only be available in an hour or two, no matter how free or busy you are. By-the-way requests will immediately be excluded, as the relatives will have decided that it's not worth the hour's wait, and will leave automatically. Truly concerned relatives will stay for at least an hour, so speak to them gently and politely at your leisure, such as when you happen to be in the ward for some other changes. Don't feel guilty making them wait for a little while, after all, they made no prior arrangement to speak to a Doctor. You are a professional, and not at their beck and call.

POST CALL

On paper, this means that you can go home at 1 pm after a call.

In reality, this is not the case. Certain departments are organized such that post call is simply impossible. Surgical teams, for instance, have the entire team go on call. If they were all to go home at 1 pm the next day, it would be disastrous for their patients. Team based systems where there is only one HO also disallows post call, as does excessively busy team/wards.

Even if the situation allows you to go post call, it is highly dependent on the tradition of the department. Some just frown upon this practice, and you risk the ire of all your senior colleagues, even if you can arrange suitable coverage.

It is an unspoken rule that if you are to go post call, you must try to finish all your morning changes, and if you must exceed 1pm, so be it. You still go home before 5.

It is frequently pounded onto me during my later months as a medical student, and the early weeks as a HO, that (being able to go) post call is not a right, it is a privilege, but never satisfactorily explained to me. The only reason given, not in the usual obscure language, was that our predecessors never had post call, and thus, if we have them, it is a privilege. I disagree with the reason.

The truth is that post-call has become a contractual right. After HOship, if the Doctor is required to stay after 1pm by the requirements of the department, he is paid overtime pay up to 4 hours (and a monthly maximum of \$4000). Contractually, we are also allotted 5 and a half working days, and a day and a half of protected rest time. Both are made impossible by limitations of manpower, and our duties as a Doctor to our patients.

The sad fact is that no official arrangement is made whatsoever for the coverage of our duties when we do go post-call, and we are dependent on the goodwill of our friends, who must work twice as hard during those four hours, for you. It is for this reason that post call should be viewed as a privilege.

Remember when you go post-call (or on leave for that matter), it is only courteous and responsible to arrange for cover and inform at least the nurses, your direct MO of the unfortunate HO you have arrowed to cover for you.

DEALING WITH HOUSEMANSHIP

You are not alone.

Housemanship is hard work, and a description of the day to day happenings, with or without the night call, is never an accurate depiction of the life of a Doctor. The culmination of day after day of treating sick patients -at times hopelessly so -, long hours, brutal night calls, the sudden absence of Sundays or rest days, and a complete abandonment of a lifestyle that is both familiar and comforting to you, together with the realization that this is a life you will have to lead for years and years, will take its toll, if not on the first day, within the first two weeks.

You may feel completely overwhelmed at times, that your ideals that brought you into medicine, and through medical school, are based, on hindsight, on assumptions of the life of a Doctor, or what you perceive to be the life of a Doctor, which you now realize, are not completely true. And whilst before, you were determined to go above and beyond the call of duty, overwhelming expectations of patients, relatives and your consultants suddenly make the call of duty appear above and beyond. You will feel overworked and underappreciated. Your senior's well intentioned tales of how much worse they had it when they were housemen does not make you feel better: on the contrary, you feel that it trivializes your efforts and your achievements, and only makes you feel worse. Every morning, whilst coming to work, a snapshot of all your sickest patients flash across your mind, and then you dread stepping once more into the ward.

Some of your patients will fall very sick, and some will die, despite all your efforts, despite everything that you do. Resuscitation will seem like an exercise in futility, and occasionally, righteous anger wells up within you, and you wish to write 'unfilial piety' as the primary diagnosis: then you realise how little you can do for the patient, that you are an unimportant cog in a spare wheel.

Nobody outside the medical circle will understand your predicament. Neither your mother, nor your father nor your closest non-medical friends will fully understand. Worse, they will rationalize your torture. "I worked 120 hours a week (I have!)" ; "... oh, but you get paid so much more!" ; "No, I don't. I got paid \$3.80 an hour that week" ; "... oh, but you get so much respect!" ; "No I don't. I just got scolded by a relative yesterday" ; "oh, but eventually you'll earn a lot of money!" ; "Eventually so does every other profession." ; "... oh, but ... you've got to be exaggerating ..."

I was not. I was looking for some understanding.

All I can say, despite all you may feel, is that you are not alone, and that if you break down, quietly at home perhaps, or in the ward itself, you will not be the first or only house officer to do so. You will have realized that the members who make up your colleagues in medical school come from all walks of life, and have as varied a personality as you can find in any other circle of professionals. There is no special spark that makes a Doctor automatically noble, or heroic or able to handle the stresses of housemanship and beyond just by obtaining our MBBS: we are human beings with all the attendant emotional and physical limits of endurance.

Look for your own way to deal with stress. Look for friends of like mind. Go out when you're not on call, even though you're tired, just to get back into some measure of normality in your life.

It always helps if you enter any posting prepared to work hard. If you're always aiming for home at 5pm, for good calls with few admissions, for post call every time, you will be sorely disappointed, and life will become unbearable. And although housemanship will never be easy, it does get easier, you can count on that.

The fact is that no major decision in life is ever made, without having to make that same decision over and over again, even though the only reason why that same decision is made - to carry on - may be because of a \$300,000 cheque. The great majority of my colleagues have admitted, at some point of time in the first two weeks, to have seriously considered quitting the profession. This is delayed in less hectic postings, such as orthopaedics, and sooner in busier postings, such as general surgery or internal medicine. It was the second day for me. Specifically the 3rd of May, 2001, in and about 7 pm.

My first posting was in a department of internal medicine. On hindsight, it is never good having internal medicine as the very first posting; the feeling is that I was thrown off the deep end of the pool, especially considering how little our education prepares us for housemanship. To make things worse, I was on call the very first day.

That call would be all in a day's work if I were to go through it today, but back then, it was unimaginably bad. When it finally ended, I realized I had not slept a wink, had anuria, skipped lunch and dinner, and apart from a cup of coffee given to me by a psychiatry ward staff nurse, had drunk nothing the entire day and night. All I had was 2 pieces of roti prata at 11 am in 5 minutes, and then it was back to work without lunch or any other break.

I was in a dazed state when I finally left the hospital at 6 pm, and sped home on the PIE. My eyes were occasionally shutting, and my head was nodding, and in this state, I made the illogical conclusion that the faster I drove, the faster I'd get home. All I wanted to do was to collapse on my bed, you see. So my car sped along at 100 kph at the right most lane. I slowly slipped away.

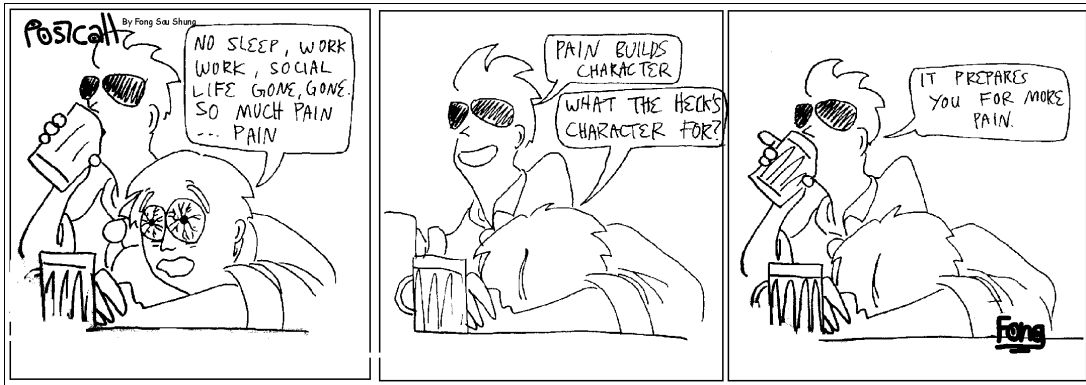
I was woken up by a loud, strange slapping noise: I was in the shoulder of a filter left turning filter lane in an exit out of the PIE and my car was scraping against the bushes on the side of the road. I stopped the car and stepped out. The entire left side of my car was scratched, and a trail of broken leaves and branches were strewn behind all the way back for about a hundred meters. Two cars pulled over, but nobody came out. I think they were deciding if I needed help. I don't remember appreciating my close brush with death back then. I don't remember thinking of anything. My mind was just a blank, and it was only after a minute or two, that I dragged myself back into my car, and drove, slowly and carefully, back home.

My mom was the first person I saw when I came into the living room, rocking in her favorite chair, and reading the papers, and I told her, 'Mom, I crashed the car.' I didn't wait for a reply, just staggered into my room, and collapsed on my bed. There, I stared at the bottom of the double decker bed above me, and I told myself, 'I'm going to quit tomorrow. I can't imagine going through this every day of my life. I don't care. I can't live like this. I'm going to quit tomorrow.' It was a dreamless sleep.

I woke up the next morning at 5 am, and went to work, and this became another of many war stories I'd tell my friends over coffee. I've had worse days, but this is one unforgettable one. One day, you'll have your own stories, and you'd look back on your HOship, and tell your own juniors, how bad it was back in the 'good' old days too.

So hold on to your dreams: to be a consultant cardiologist, to be an interventional radiologist, to be the fastest knife in the far east, to set up a small practice and spend your free time in the arts scene, to quit when you've made enough and race ferraris in the Utah plains. Everybody and everything has their time and place, and unless you are some sick masochist, this is never housemanship. Housemanship is just a stepping stone over the rainbow that you will leave behind eventually.

So until then, all the very best from all your seniors.



Survival guide prepared for HO Seminar 2002 by Fong SS.
Placed on the web at <http://www.geraldtan.com/>

Common Short Forms Pertaining to Prescriptions

PO	Per oral (taken by mouth)
Supp	Suppository
IM	Intramuscular
IV	Intravenous
IN	Intranasal (usually aerosolized sprays. Otherwise very painful)
IP	Intra-peritoneal (usually for CAPD patients with peritonitis or DM)
S/C	Subcutaneous
Tab	Tablets (as PO)
Oc	Ocular
Gutt	Guttate (Eye)
Neb	Nebulised/aerosolised medications
OM	Once morning
PM	In the afternoon
ON	Once at night
BD	Twice a day
TDS	Thrice a day
QDS	Four times a day
qXH	A dose given once every X hours (e.g. q4H is a dose given every 4 hours)
PRN	As need arises (usually when patient presses the red button)
STAT	To administer immediately
1/1	1 tablet each time
11/11	2 tablets each time
111/111	etc.