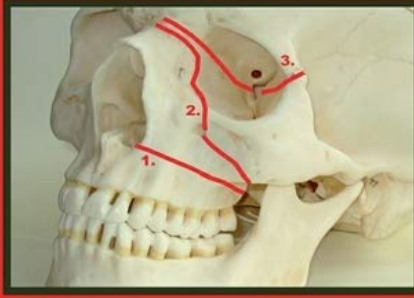


Dentist on the Ward

2020 (10th) Edition

*An Introduction to Oral and Maxillofacial Surgery and Medicine
For Core Trainees in Dentistry*



Andrew Sadler and Leo Cheng

Dentist on the Ward

2020 (10th) Edition

***An Introduction to Oral and Maxillofacial Surgery and
Medicine for Core Trainees in Dentistry***

Andrew Sadler and Leo Cheng

Dentist on the Ward

Copyright © Andrew Sadler 2020

www.dentist-on-the-ward.co.uk

Preface to 10th Edition

For this edition four chapters have been updated to reflect improvements and policy changes in hospital healthcare so that the dental surgeon new to Oral and Maxillofacial Surgery (OMFS) can be confident the text reflects the practice they are likely to see although there are some differences between NHS hospital trusts.

The book has been re-formatted into six sections.

1. An introduction to the hospital and essential information necessary for the new dentally qualified trainee.
2. Advice on surgery from the preparation of the patient to the operating theatre to post-operative care and complications.
3. Urgent care including being on call for the Emergency Department, the situations and clinical conditions the Dental Core Trainee (DCT) is likely to have to deal with including diagnosis of facial trauma and resuscitation.
4. Background and introduction to the practical skills that a Dental Core Trainee may need to acquire in their job.
5. Medical topics which are most relevant to Oral and Maxillofacial Surgery intended to help them understand rather than initiate or change medical management.
6. An introduction to the clinical work of Oral & Maxillofacial Surgeons designed to help understanding of the work. These chapters are intended to be succinct for easy reading in a short time but we believe they cover the essential elements required for examination candidates at undergraduate and general postgraduate examinations in dentistry.

Several of the chapters of the previous editions have been combined and simplified to easier access to the essential or relevant knowledge.

The first and part of the second chapter is based on the opinions expressed by Dental Core Trainees with their advice about what they were getting from their jobs and advice on how to approach the work for best effect.

The book is designed to help the dental trainee engage their work, provide the most relevant background information to get the most out of it and does not and should not be a substitute for on the job practical instruction and advice from senior colleagues and discussion of clinical work.

Andrew Sadler and Leo Cheng. January 2020

All Rights Reserved

No part of this book may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without prior permission of the copyright owner.

The Authors assert their moral right to be identified as the authors of this work.

First Edition Published 2010
2020 (10th) Edition 2020
Covid -19 Chapter added August 2020

ISBN: 978-1-9993612-1-1

Dentist on the Ward

www.dentist-on-the-ward.co.uk

©Andrew Sadler 2020

Contents

Part 1. Introduction

1.1 Why work in Oral and Maxillofacial Surgery?.....	1
1.2 Before starting.....	5
1.3 Hospital Cross Infection Control.....	8
1.4 Cross Infection - Update on Covid-19.....	11
1.5 Hospital wards, the day unit and intensive care.....	13

Part 2. Surgery

2.1 Preparation for Operation.....	19
2.2 The Operating Theatre.....	23
2.3 Post-Operative Patient Care.....	28
2.4 Surgical Instruments.....	35
2.4 Tracheostomy.....	36
2.6 Minor Oral Surgery.....	38
2.7 Sharps Injuries and the Blood Borne Viruses.....	40

Part 3. Urgent Care

3.1 Being on Call, Accidents and Emergencies.....	42
3.2 Examination of the Injured Face.....	50
3.3 Imaging for Facial Fractures.....	59
3.4 Wound Closure - Skin Suturing.....	64
3.5 Medical Emergencies.....	68
3.6 Resuscitation.....	72

Part 4. Practical Skills

4.1 Ordering and Interpretation of Blood Tests	77
4.2 Venepuncture.....	84
4.3 Prescribing Medication in the Hospital.....	90
4.4 Prescribing Fluid and Blood Replacement.....	94

4.5 Biopsy Techniques.....	98
----------------------------	----

Part 5. Most Relevant Medical Topics

5.1 Cardiovascular and Respiratory Assessment.....	101
5.2 Anaesthesia.....	106
5.3 Sedation.....	111
5.4 Radiotherapy and its Oral Complications.....	113
5.5 Chemotherapy and its Oral Complications.....	116
5.6 Anticoagulants and Surgery.....	117
5.7 Diabetes and Surgery.....	119

Part 6. Introduction to Conditions Managed in OMFS

6.1 Medication Induced Jaw Necrosis (phossy jaw).....	122
6.2 Introduction to Orthognathic Surgery.....	125
6.3 Mangement of Salivary Gland Swellings.....	130
6.4 Management of Benign Odontogenic Cysts & Tumours.....	133
6.5 Introduction to Facial Skin Cancer.....	137
6.6 Management of Temporomandibular Joint Pain and Dysfunction.....	141
6.7 Introduction to Chronic Facial Pain.....	145
6.8 Understanding Potentially Malignant Oral Disorders.....	148
6.9 Oral Candidiasis.....	151
6.10 Ulcers and Bullae.....	154
6.11 Introduction to the Management of Mouth Cancer.....	158
6.12 Management of Impacted teeth.....	165
Appendix: Eponymous Instruments in OMFS.....	169

Acknowledgements

Oral and Maxillofacial Surgery as well as all hospital medicine and nursing have become more complicated and specialised so in spite of the fact that this book is aimed at basic post graduate trainees it becomes more difficult for authors to keep up to date in every aspect of the subjects we have written about. We have therefore become more reliant on advice and help from our colleagues who are friends.

The following have helped us with their advice or by reading our initial texts and pointing out errors and omissions and suggested changes:

Richard Thornton, Consultant Anaesthetist - Anaesthesia & cardiovascular assessment; Nayeem Ali, Consultant OMFS Surgeon - Impacted teeth & orthognathic surgery; The late Martin Clark, Consultant OMFS Surgeon - Facial skin cancer; Tom Sheehan, Consultant Oncologist - Radiotherapy & chemotherapy; Rob Scott, Consultant Anaesthetist, - Fibre-optic intubation; Malcolm Read, Consultant Head & Neck Pathologist - Histopathology; Graham Griffiths, Consultant Chemical Pathologist - Blood tests; Elaine Purbrick, Registered General Nurse - Resuscitation, venepuncture, cross infection control; Amanda Syson, Registered General Nurses - Scrubbing and gowning; Andrew Sidebottom, Consultant OMFS Surgeon, - Temporomandibular Joint; Mital Patel, - Consultant Restorative Dentist - Dental Trauma.

And:

For interviews quoted in Chapters 1 and 2 - Ohsun Kwon, Sanford Grosman, Emily Illingworth, Preeya Samani, Julia Sidon, and Sara Chapman, Dental Core Trainees and Sanaa Al Raisi, Clinical Fellow in OMFS

1.1 Why work in Oral and Maxillofacial Surgery?

We asked a selection of core trainees and a Clinical Fellow in Oral and Maxillofacial Surgery (OMFS) about their experiences in their jobs. Why they did it, what their anticipations were, whether their aspirations had been met, the downsides of the jobs and what advice they would give to others contemplating a training post in OMFS.



Julia

After qualification Julia did a paediatric and orthodontic post for six months and then oral surgery for a further six so she was one year qualified before starting her OMFS job.

'I heard of a lot of people who had done a year in Max Fax and they really felt that they learned so much from it, that they felt a lot more confident afterwards particularly in being able to assess patients medically and manage patients with complex medical histories which beforehand they would have found daunting. I knew I wanted to specialise and doing a Max Fax post seemed really important. Afterwards I'd like to do orthodontics.

It was amazing how I was able to improve my dento-alveolar skills and I got to see a lot of orthognathic surgery. We have patients with facial deformity and I see the surgical aspect of that as well. I feel that knowing about surgery is so important if you are going into orthodontics. Having seen the surgery first hand, what it involves, the post-operative complications, is so important in explaining it to patients. We also see a lot of TMJ problems and get to see conservative management but also see the surgical elements of it.

For me I really would recommend a year of Max Fax; I think you not only develop surgically but you also really develop as a person. It has also taught me time management and I have learnt to prioritise patients and who I should see first as clinical priority.

Max Fax is such a huge topic and it encompasses so many aspects that it is difficult to say after a year that you could manage all Maxillofacial patients.

There wasn't anything unpleasant about the job but although I had done Oral Surgery before I hadn't done any on call out of hours. I wouldn't say it was unpleasant but I found the first two months quite daunting and at times it was difficult to get as much

support as you would like, especially out of office hours. But that goes hand in hand with the experience and you do have to do these things to learn and you do have to take the initiative to grow as a person.'



Sanaa

Sanaa is a Clinical Fellow in OMFS in London. She initially trained in Dentistry in Scotland, completed General Professional Training, and then 6 months of Max Fax. She then returned to the United Arab Emirates where she worked in community Dentistry then Oral surgery at Sharjah University.

'Throughout my experiences as a junior Dentist I was stimulated most by OMFS, and decided to return back to the UK from UAE to pursue this interest and ambition of mine. I completed Dental Core Training in the North East of England and then took up a Clinical Fellow post at Bart's. For dento-alveolar surgery I had worked at a tertiary centre in Middlesborough. But for the bigger cases like orthognathic and trauma cases, I have been gaining hands on experience at the Royal London. The great advantages of this job are seeing complex patients, working with a range of teams, and working with Consultants in clinic seeing complex referrals. We are a Major Trauma Centre which allows us to see a range of complex patients. To me this is extremely stimulating and means that I am always learning and moving forwards. I also get to work with a range of teams involved in looking after these patients and the wider multi-disciplinary team, e.g physiotherapists and dieticians. Further to this, you learn how to prioritise tasks and manage referrals from the Emergency Department. We also see patients in a range of clinics with the Consultants, this is very important because we get the opportunity to discuss the patients we see. We also see a lot of complicated cases unique to Bart's, a specialist centre, which is excellent for learning. This also helps as a General Dentist, because it allows you see how complex referrals are managed and gain insight into how to manage them.

One of the downsides to being a Clinical Fellow is that there is a lot of administrative work, from patient notes to clinic letters and rotas. This has varied dependent on which unit I have worked in, but it can sometimes make getting to Theatre for operations challenging. At a larger specialist hospital, we have

fewer local anaesthetic lists for the 'bread and butter'. There are also sometimes lots of enthusiastic Clinical Fellows at the big cases, which can make getting involved challenging. However, as you better get to know your Consultants and wider team, it becomes a lot easier to integrate into these procedures and grasp learning opportunities. When I returned from Dubai, UAE, to start Max Fax again I found this initially challenging, having not done this for 10 years. I was also working as a senior Dentist, so going back a step to DCT level was difficult to adjust to initially. However, I used this as a learning opportunity and to completely understand the system at a Junior level prior to moving up.'



Sanford

After graduating, Sanford did one year of Dental Foundation Training in general practice and is now a DCT 1 in Oral and Maxillofacial Surgery.

'When I left university, I was not confident in oral surgery, and by the end of my foundation year, I felt I still lacked experience in this area. One reason I wanted to do Dental Core Training in Max Fax was to develop my surgical skills. I had also heard from my colleagues that Max Fax is a good way to develop patient and medical management skills that you can apply to practice in the future.

This year I've developed an interest in surgical extractions and following this post I will be doing a Dental Core Training 2 job in Oral Surgery to explore this aspect of dentistry further.

I would say that this job has met my expectations and I've experienced Max Fax in the broad sense by taking part in clinics, theatre and on-call rotas. By working in A&E, I've learned how to suture lacerations, incise and drain abscesses and manage acutely unwell patients, which were all skills I wanted to learn from the outset. As well as this, I've gone from having quite a minimal oral surgery experience to feeling comfortable with more difficult extractions, however you don't always get a lot of exposure to this with Max Fax posts so it's important to check before applying if a particular area interests you.

The first few weeks on-call are a steep learning curve and this is something you can't really prepare for just by reading or talking to colleagues — you have to

experience it first-hand and learn a lot of aspects on the job. I think it's a situation most DCTs feel uncomfortable with at the beginning but you soon adapt and begin to enjoy it.'

Preeya



Preeya did Foundation Training in a dental practice for one year before becoming a Dental Core Trainee year 1. The first six months was OMFS followed by six months of general duties.

'I am unsure of my intended career pathway but considering mono-speciality training. For the first four months of my job I was on the Oncology rotation which was more the soft tissue side of things so I assisted for a lot of surgeries such as removal of parotid tumours and I also contributed to a couple of projects particularly in the laser division of oral sub-mucous fibrosis in paediatric patients and also some other projects in relation to bilateral parotid swelling.

The reason I went for DCT training was that I felt that learning more from seniors in a hospital environment would be really beneficial particularly for the kind of dental career pathway that I would take. So I was really excited when I found out that I had got the job here because it gave me a combination of various dental specialities as well as Maxillofacial under fantastic consultants in different fields and I just wanted to learn more really. I didn't feel I was ready to go into general practice, I wanted more knowledge; I wanted more experience.

I wanted to learn about facial fractures and about infections that may have a dental origin or just involving the maxillo-facial region. That is going to be very useful in general practice, to understand the initial treatment options, how to stabilize certain conditions. I just wanted to be a more rounded clinician rather than someone just providing dental treatment. I wanted to understand the medical side of it and to be prepared for whatever I pursue in my career. I thought OMFS would prepare me in a way no other speciality could because you're dealing with things when you're on call on a day to day basis which you don't really experience in undergraduate dentistry, medically compromised patients and very ill patients. This increases your resilience and ability to deal with any kind of problems that might come along.

I have found the job really useful because I have become much more proficient in oral surgery procedures and improved my knowledge base for

whatever speciality pathway I might choose to take. There has been the opportunity to take part in projects and get posters accepted at the BAOMS (I was first author for the poster on managing oral sub mucous fibrosis in paediatric cases), and the ICOMS (a poster on the bilateral parotid gland swelling), then I was also involved in three posters to do with Maxillofacial injuries in women considering if there was an increase in interpersonal violence during major sporting events such as the FIFA World Cup.

I really enjoyed being on call. I think I would have liked to do some night on call but that's not included in DCT 1. I'm pretty happy at the exposure I got but I didn't get as much exposure to orthognathic surgery as I would have liked and I would have liked to do more surgical extractions. I am starting to do it now independently or with just someone watching but I would have preferred to do more in clinics.

When you are on call you can be faced with multiple scenarios such as if you're in A & E when you can deal with patients who may be under the influence of alcohol or some form of drugs. They may be quite aggressive initially; they may be in pain or may have an infection. I have dealt with patients who are initially difficult to handle but you want to try and help them the best that you can.

I think I have been very lucky I have had very supportive staff members particularly the registrars who are very easy to approach.



Sara

After qualification Sara worked in general practice for one year, before starting a DCT 1 position in paediatric dentistry and oral surgery. She is currently completing a DCT 2 job in OMFS.

'In my first OMFS position we completed a lot of dento-alveolar cases. There was an A&E, where we assessed a lot of trauma cases. It was a great learning experience for me.

In the new job I hoped to continue to develop my dento-alveolar skills and soft tissue skills in relation to skin cancers. My new position resides at a district general hospital and will provide a different insight into Max Fax, with more soft tissue surgery. At first, it was like starting all over, but I really enjoyed working within a multi-disciplinary team and developing my

skills further. Afterwards I hope to specialize in paediatric dentistry.

For me it has gone above and beyond my expectations from the year. I think I have really developed my skills and medical knowledge as well and what co-morbidities might affect dentistry generally so even if you are going to go back into practice it is information and knowledge that you are never going to forget. I think it is important to know how secondary care works.

For paediatrics the dento-alveolar has been very important and how patients need to be examined early on for such matters as orthognathic and putting all the jig-saw pieces coming together for me and knowing when to involve other colleagues. Yes, it's been fantastic experience for me.

There has been nothing particularly unpleasant for me; it has been a very enjoyable year. It's just been accepting and planning your time so that you can still do things outside work and it's important to do that in any job and have some free time yourself. but it's just about building your resilience in a busy unit.'



Ohsun

After qualification Ohsun spent two years in general practice and now a third year in Oral and Maxillofacial Surgery and also spent a year in paediatric dentistry.

'When I was doing dental foundation training I was told that working in hospital would bring benefits of understanding about secondary care and so because my core aspiration was to become a dental specialist it was seen as an essential first stepping stone. When I finish here I've got an offer for specialist registrar in orthodontics training.

Now, having worked in three different units, I have a good understanding of what Max Fax surgery offers for the trainees and the exposure that it gives and I've always said to the trainees here that if possible it is good to work in different areas because it will give you broader exposure of the speciality. My present job has a diversity of opportunities which includes out patient clinics, surgical clinics where everyone has their own list of patients to carry out minor oral surgery, and a balance of theatres. It has met my aspirations, in particular in respect of my career. It

has given me exposure to patients who need a joint orthodontic/surgical input. It also provided the opportunity to undertake projects where the registrars and consultants are very approachable so in that sense I've felt I've managed to extract as much out of it.'



Emily

Emily did a foundation year after graduating and this is her second year as a DCT in Oral and Maxillofacial.

'My undergraduate training was good in oral surgery. I felt confident in taking out teeth and then in my foundation year I was working in a high needs practice where often teeth were removed rather than saved so my extraction experience compared to my peers was perhaps maybe slightly higher for someone only a year qualified. I enjoyed doing that side of dentistry and then I just applied here, a good opportunity came up, one that I felt I couldn't turn down.

I also felt it was important that as a young dentist to be in an environment where there were more like-minded clinicians of a similar age and stage of career as well as more established professionals I didn't want to get boxed in into a small practice, isolated early on in my career. I wanted to be out in hospital with specialists and carry on learning; I didn't want to plateau. I wanted to learn about systemic health of the patient as a whole rather than just the teeth.

Afterwards, I'm going back into primary care in practice as a dental associate. I think it will be good for me to do a bit more all-round dentistry I would like to specialize but at this point I would like to do a bit more general dentistry.

I've thoroughly enjoyed my year here and I think that any dentist would benefit from this job, if they have the interest or not, because you learn so much. There has been a good range of exposure to different clinical situations whether it's theatre, out patients or local anaesthetic lists. The Max Fax DCTs don't have a lot of sedation experience whereas some of the restorative trainees do which would have been a benefit for us as well. The oncology moved from here; we don't see any of the big flaps and dissections but we do see them on outpatient clinics.

For me the biggest thing I have learned is perspective on stressful situations; so before this job I

would get stressed or uncomfortable about things that now I would regard as incredibly minor and I have learned the bigger picture of how to manage it and how to get help.

In A & E when it's busy and you're having to prioritise jobs and working with another team member and get through the day without things being in a regimented appointment book I think it is a really good skill to take on as a young clinician.

I've had a good year; I've had a good experience with the clinical side of things. I find the administrative and managerial tasks a bit more challenging. It's difficult to pin point a specific occasion but it might be that a decision has been made and for reasons which might be sensible the patient needs X, Y & Z because of this but getting things organised or getting things done can take an SHO or a Dental Core Trainee a long time, especially in a hospital you're not used to or you don't know who to speak to or even just sending an email and it can take time to do those things and then sometimes plans change so it's not necessarily the surgical, the clinical side of things, it's all the stuff around the edges to facilitate stuff that's often left to the SHO or the DCT. Sometimes you can put in extra hours to get something sorted and I don't think that senior colleagues always appreciate all the effort it takes even just getting a CT scan sorted out, which once upon a time could be got much quicker. We don't mind doing it but it's just knowing how and what to do and when I started I found that to be the most difficult thing. Just getting used to the environment to get things ticked off and sorted out when you are new.'

1.2 Before starting

Education and appraisal

You should be in an appraisal process where you can discuss your progress. This will probably be three times in a year long appointment and will normally be conducted with your 'educational supervisor' who is most likely to be one of your Consultants. They should act as a mentor giving guidance and feedback about your performance and, if necessary, pastoral support. The first appraisal should occur within a few weeks of your starting and the last just before you finish. Appraisals are a two way process and you should be able to feedback if your clinical work experience is inadequate to meet your reasonable learning objectives.

At the first appraisal you should discuss your Personal Development Plan. This should be a short list of the goals you wish to achieve. The most popular and possibly the most useful goal is practical experience in minor surgery. Keep a log of the number of cases you have performed and assisted at. This is useful in assessing whether you are getting sufficient practical experience, and for the educational supervisor to feed back to colleagues to ensure you get adequate experience.

You should keep a 'portfolio'. This will normally be in electronic form (e-portfolio). It should contain a record of work-based assessments, any projects or audits in progress, multi-source feedback, a log of your activity, and progress in examinations. You should keep records of all training events you have attended within your place of work and elsewhere and your reflections of any benefit gained. The portfolio can be used as evidence when applying for future jobs and for revalidation when it is introduced in the future by the General Dental Council.

We would recommend that you use the clinical

Example of Topics to Discuss at first Appraisal

1. Previous experience in last job
2. Accommodation arrangements
3. Problems encountered so far
4. Thoughts on future career
5. Aspirations for the job
6. Audit project
7. Postgraduate examinations

Example of Personal Development Plan

1. Gain more confidence in diagnosis and management of white patches in the mouth
2. Remove more impacted third molars. Target : 20 cases by April
3. Finish audit project by May
4. Pass Part 2 MJDF June

The goals should follow the principle of SMART: Specific, Measurable, Achievable, Realistic and Timed.

material to prepare yourself for the examinations of one of the Colleges of Surgeons. You can choose either the Membership of the Faculty of Dentistry of the English College, the Scottish Colleges or the Membership of the Joint Dental Faculties of the College of Surgeons of England.

In addition to improving your clinical skills you should also consider other skills which may be useful in your subsequent career, such as presenting cases, writing, improving your skills in the use of software and, if the opportunity arises, by teaching experience with dental/nursing students.

Your employing NHS Trust will insist that you receive some statutory (required by law) and mandatory (required by employer) training in various core topics. Mandatory training may take many forms particularly on-line learning programmes on the Trust intranet and attendance at specific training sessions during working hours. Remember to keep records of all meetings, training and certificates in your portfolio.

Statutory and Mandatory Training topics

1. Conflict Resolution
2. Equality and Diversity
3. Fire Safety
4. Health and Safety
5. Incidents, Complaints and Claims
6. Infection Prevention and Control
7. Information Governance
8. PREVENT - Safeguarding vulnerable adults
9. Safeguarding Children

Confidentiality

There are many ways in which confidentiality can be breached in hospital which are unlikely to occur in Dental Practice. You will be working as a team which involves discussing patients with colleagues, accessing computer based patients' records, photographing and discussing cases at clinical meetings and contact with relatives.

This topic will probably form one module of the mandatory training. Below we have listed some dos and don'ts which from our experience can lead to problems.

Protecting confidentiality

Do

Discard anything written about patients only in secure rubbish bins for shredding

Log out of the hospital computer system when you have finished looking at patients' records

Make sure you are following hospital policy when taking clinical photographs

Use a hospital encrypted memory stick for any patient related information

Email on the secure NHS system anything relating to patients (e.g. nhs.net)

Only discuss patients with their relatives if you are sure they have consented

Keep your password to the hospital computer system secure

Do Not

Discuss patients where you can be overheard

Leave notes or patient records where they can be seen by someone not involved with their care

Discuss patients out of the work environment

Gossip about patients you know personally or who are famous

Take photographs on personal cameras or mobile phones

Show clinical photographs out of the clinical environment

Access clinical records of any person whose care you are not involved with

Occupational Health

Before starting clinical work in a hospital you will have to undergo a 'Work Health Assessment' which will start with a communicable disease questionnaire. This is normally carried out by a nurse or on-line. You will need a history of your immunisation and blood tests for hepatitis B titre level, hepatitis B antigen, hepatitis C antibody, HIV antibody, measles antibody, rubella antibody and chickenpox antibody. An appointment will be arranged to see an occupational health nurse. You will be examined to check if you have a scar from BCG immunisation and if not a T-Spot test will be carried out. Additional blood tests will be carried out if required for the above diseases, and if a problem is identified an appointment made to see an occupational health physician. This will normally take place as soon as you start work; you will not be allowed to see patients until you have been 'cleared'.

Health care workers who are HIV positive may now carry out exposure prone procedures, provided they are taking effective anti-retroviral drug therapy, they have an undetectable viral load and are monitored by an occupational health physician. Self-testing kits are now available for HIV.

Each autumn all staff in contact with patients will be offered immunisation against the current strains of influenza. This is usually carried out in the workplace by nurses who prowls the hospital looking for recipients.

Advice.

We asked our previous DCTs for their advice to anyone starting a new job

Sara



'Never be worried about asking for help. If you are ever unsure it is always better to ask. Work hard and be prepared to study alongside to ensure you get a lot out of it.'

Julia



'You've got to be proactive and say I'm really interested in this case; can I do this? I really want to learn. I have noticed that if, for example, if there's an ectopic canine and we've

got an expose and bond I'm interested in that and I say please can I raise the flap, please can I do that they are so supportive and they want you to learn and they are impressed that you say 'I want to do this'.

Have objectives of what you want to get, write them down and make a personal development plan with targets for them such as by January done? cases of X. Speak to people and use that opportunity to speak to other disciplines such as paediatrics, orthodontics and medical consultants. Get advice for if you're not sure what you want to do you can get advice on all sorts of different things and you can get to see what you enjoy and what you don't enjoy.'

Preeya



'I think there is a lot of anxiety around starting an OMFS job particularly because it is quite different to anything we have experienced. I think a lot of people are just getting over the anxiety of it and putting a lot of pressure on

themselves but I think the main thing that the whole of the Max Fax team in the hospital they are aware that you've never done an OMFS job before. They're there to support you so if you have any issues the main thing is to try not to stress and to do things on your own. The most important thing is to ask for help because you will be in scenarios where you are a vital team member and it is a scenario where a patient can be very unwell which is very different from a patient getting dental pain. The best thing is to approach a senior member and make sure you get a clear history from the patient, try and formulate the best history, medical history, social history so that you can transfer that information on and then get the help you need.'

Ohsun



'Never be afraid to ask questions no matter how simple or stupid they sound because at the end of the day we're there to look after the patient and as long as you've done all your own homework and taken all your steps to do as much as possible on your

side you should be prepared to ask questions but I would say you should be prepared to answer any questions you'll get back. I would say, second thing, when you are on call for Max Fax you have sometimes lots of jobs scattered all around the hospital. I try to do them in blocks and try to ensure that I do the easier

ones first; but it's always complicated by the fact that you are always having to prioritise emergencies that are coming along. So there are a lot of things to learn and you have to reflect each day to see where you can make improvements.'

Sanford



'I would agree, ask lots of questions, especially early on when ever you're in theatre or clinics and you see something you don't understand. You're surrounded by highly skilled clinicians and should take advantage of the opportunity to learn as much as

possible. Also make the most of the year by getting involved with projects. Take opportunities you may not necessarily have in practice or other environments.'

Sanaa



'I agree it's all really about being focused and organised.

But I think you do have to get out of it what you want. You can't start a job assuming it's all going to be given to you and as a Max Fax trainee I think you have to be proactive. You could easily sit in theatre and not be involved because the consultant surgeons are focused on the patient and not you but if you show some interest and give things a go then ultimately you get back what you put in.'

1.3 Hospital Cross Infection Control

MRSA

Staphylococcus aureus is common in air, clothing, bedding and dust, where it can survive for several weeks. It is also carried by approximately 40% of healthy adults in their noses and, to a lesser extent, in their throats and faeces. It can develop resistance to antibiotics by adaptation and can flourish at the expense of antibiotic sensitive organisms.

The most commonly used antibiotic for treating *Staph. aureus* infection is Flucloxacillin; when the organism is resistant to Flucloxacillin it is known as MRSA (Methicillin Resistant *Staphylococcus Aureus*). This is because the older drug Methicillin is used to test sensitivity because in vitro it accurately mimics the in vivo behaviour of Flucloxacillin. In fact Oxycycline is commonly used for testing nowadays but it is still known as MRSA. MRSA has been known, and been increasing in prevalence, since the 1960s.

MRSA and other drug resistant bacteria exist because of over-use of antibiotics. Patients and others can be 'colonised' by MRSA without any pathogenic response. They are said to have become 'infected' when the patient develops inflammatory signs or symptoms. The greatest risk of MRSA is in those patients who have surgical wounds, are immunocompromised or have serious debilitating illness. It is of low risk to those in outpatient clinics, paediatric or general medical wards, but the risk will be greater in the intensive care, oncology and renal wards.

The mainstay of prevention of colonisation and infection of patients with MRSA is a high standard of routine cross infection control, such as hand washing, using protective clothing, good cleaning and isolation of colonised or infected patients.

Those who are admitted to a surgical ward are normally screened by taking swabs for culture from their hairline, nostrils, axillae, groin and any wounds. A patient found to be infected or colonised is 'barrier nursed' in a single room. The room should be maintained clean and tidy and contain no unnecessary furniture. Staff entering should wear gloves and aprons which should be disposed of on leaving the room. Staff should enter only when necessary; wounds should be covered and strict hand hygiene should be observed.



Staphylococcus aureus on agar plate. Sensitivity is indicated by the inhibition of growth by antibiotics discs.

MRSA. Growth is uninhibited by the Oxycycline discs.

Patients colonised by MRSA may be decolonised by using Mupirocin 2% ointment to the nostrils three times a day; antiseptic detergent should be used for a total body bath or shower which should include the hair; colonised wounds should be treated with Povidone-iodine. If staff are found to be colonised then an attempt should be made to reverse this with Mupirocin. If working in high risk areas such as intensive care or the renal unit then they may have to cease work temporarily until decontaminated and have had three consecutive negative swabs from hairline, nostrils, axillae and groin.

Clostridium Difficile

Clostridium difficile, commonly referred to as *C. diff.*, is an anaerobic bacterium which lives harmlessly in the gut of approximately 3% of the normal population. It is usually kept in check by other commensal gut organisms but if these are reduced by broad spectrum antibiotics then *C. diff.* can propagate in large amounts, releasing Toxin A and Toxin B which can damage the gut wall leading to ulceration, bleeding and diarrhoea. The diarrhoea can vary from being brief and self-limiting to a severe pseudo-membranous colitis with possible gut perforation and death. Those who are most at risk of the severest disease are the elderly with serious co-existing disease.

Although 3% of adults carry it in their guts most cases of *C. diff.* diarrhoea arise from cross infection from others who have excreted spores in their faeces which have been ingested. The spores are resistant to alcohol.

The main action we can take to reduce this disease

Wash Hands with soap and water

1. Before starting work
2. After using toilet
3. Before eating
4. When visibly contaminated
5. After finishing work

Use alcohol hand rub

1. On entering ward or clinical area
2. Between patients
3. Before and after aseptic procedures

Use the same hand movements as for washing
Only use if hands are visibly clean

is to be judicious in the use of broad spectrum antibiotics. Antibiotics should be used only when absolutely necessary. In our hospital there is a policy governing their use for certain conditions and they are automatically stopped after five days. Certain broad spectrum antibiotics can only be prescribed with the permission of a Consultant microbiologist. Secondly patients who have C. diff. should be isolated and barrier nursed and thirdly we should be meticulous about hand hygiene on the wards and if there is a patient around who has diarrhoea then hands should be washed with soap and water rather than using alcoholic hand rub, as the spores are alcohol resistant.

When carrying out procedures on patients you should wear apron, mask, goggles and gloves, collectively known as Personal Protective Equipment (PPE). Such procedures include changing dressings or IV lines on the ward or cannulating patients. There is no evidence to show that anything more is necessary when carrying out minor surgery, such as dental extraction or biopsy, in the outpatient facility. However the house rules or custom may be to wear a full theatre gown for these procedures, in which case you should abide by them.

Hand Hygiene

Good hand hygiene is probably the single most important method of combatting cross infection. You will find there are many hand wash basins with soap and taps that can be controlled with elbows available in all clinical areas of the hospital. Hands should be washed before and after starting work, after using the toilet, before eating, and when the hands are obviously contaminated. In addition to this the hands must be

cleaned with an alcohol rub on entering or leaving a ward or clinical area, in between seeing patients and before carrying out an aseptic procedure. Containers with alcohol rub will be available at all hand basins and at the entrance to and within all clinical areas as well as at the end of beds on the wards. The alcohol rub should only be used on visibly clean hands; otherwise they should be washed with soap and water beforehand. Hand cream will also be available in ward areas and should be used after high frequency of hand washing, before breaks and at the end of work.

Putting on Personal Protective Equipment (PPE) (apron, mask, goggles and gloves)

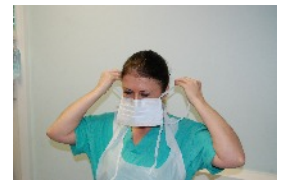
PPE should be worn to reduce the chance of you spreading infection from one patient to another and for your own protection. It should be used when carrying out procedures on patients which involve contact with saliva, blood or when attending to any open wound. It should also be worn when entering a room where a patient is being nursed in isolation because they have an infection.

You should pay attention to putting on your PPE and taking it off in the correct order.

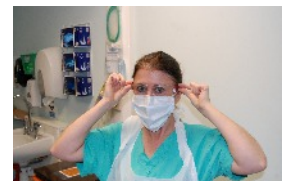
1. After washing hands put on apron- place over head and tie at back



2. Put on mask ensuring a good seal between mask and face.



3. Put on goggles



4. Put on gloves



Hand cleaning: use the same hand movements when washing or using alcohol solution Should only take 15 to 30 seconds



1. Take off rings and watches and ensure bare below elbows.



2. Turn on taps and wet hands thoroughly.



3. Generous soap application, enough to cover hands completely.



4. Rub palms together to generate a good lather.



5. Rub palm onto back of hand with fingers interlocked.



6. Cup hands together to clean back of fingers and nails.



7. Scrub thumbs with a twisting motion, making sure you get into pits.



8. Rub the tip of fingers against palm of hands in a circular motion (to clean nails).



9. Wash the wrists.



10. Rinse hands thoroughly.



11. Turn off taps with elbows.



12. Dry hands with a single use towel.

1.4 Cross Infection - Update on Covid-19

During this unprecedented coronavirus pandemic, all routine patient contact in clinics and operating theatres has stopped due to the risk of catching the invisible enemy in order to focus NHS capacity and resources in dealing with COVID-19. Many non-medical health care workers including dental core trainees and dental nurses were upskilled, mobilised and redeployed in critical care areas of their hospitals or in temporary hospitals like the Nightingale Hospitals. As a nation, with social distancing and other precautionary measures, we have managed to avert a tsunami of COVID-19 on our NHS. Although the coronavirus has caused extraordinary disruption in all levels of our society, it has sped up the inevitable changes in embracing technology and the internet especially in healthcare.

Due to asymptomatic healthy carriers of COVID-19, all patients are treated as positive in all clinical settings. For hospital clinic appointments, virtual and telephone clinics have become the 'new norm' in replacing traditional face-to-face consultations. Teleconferencing is common in connecting with our clinical and management teams, and multidisciplinary cancer team meetings. Many meeting rooms cannot accommodate large groups of clinicians and health care personnel due to social distancing regulations. Below is the recommended by Public Health England:

After guidance from Public Health England, most Hospital Trusts have simplified the recommendations and advocated 2 levels of safe PPE, namely those for general contact with confirmed or suspected COVID-19 case and those requiring AGP (see table).



FFP 2 mask for level 2 PPE



FFP 3 mask with goggles and visor for level 3 (full) PPE

Level of PPE	Recommended PPE	Types of clinical activities
Level I (Standard Infection Control Precautions, SICPs)	Disposable aprons & gloves with eye protection, surgical mask	Taking history from patients without COVID19 symptoms
Level II (Contact and Droplets)	Disposable aprons & gloves, eye & face protection, FFP2 mask	Oral examination with or without instruments in patients without COVID19 symptoms
Level III (Enhanced Airborne Respiratory Precautions) for all Aerosal-Generating Procedures (AGP)	Long-sleeved surgical gown with disposable plastic apron and surgical hat or hood, FFP3 mask with eye and face protection or a powered hood, 2 sets of gloves and closed shoes with covers or Wellington boots.	Minor and major surgery to mouth, head and neck with aerosol generating procedures e.g. drills, diathermy, nasendoscopy

Additional procedures and considerations for Level III enhanced precautions during the COVID19 era

- Donning (putting on PPE) and doffing (removal of PPE) require specific training and your local Hospital Trust will organise this.
- Wearing FFP3 (N99) surgical face mask needs to undertake fit testing by trained specialist in order to ensure no contaminated air enters into the mask and breathe in by the operator
- Fit checking of FFP3 surgical face mask is a good practice by a trained colleague to make sure that the mask is positioned correctly
- Adequate hydration whilst minimising toilet breaks (tricky at times!)
- Clear articulation to avoid miscommunication as your voice will be muffled under the FFP3 mask and visor
- Meticulous team briefing and formulating both intubation and surgical plans ensuring all possible equipment is available within the operating theatre
- Clear roles for both the cold (clean) team outside the operating theatre and hot (dirty) team inside with no mixing between the two teams
- Meticulous time-out as part of the World Health Organisation (WHO) check list
- Alteration of surgical procedure to reduce unnecessary generation of aerosol
- Extra procedure and checks to reduce the risk of 'return to operating theatre'
- Write one's name with big letters on the surgical gown or disposable apron
- Minimal number of surgical and anaesthetic personnel are allowed in operating theatres especially during aerosol generating procedure (AGP)
- Thorough team debriefing
- Strict adherence to proper donning and doffing procedures with extended hand and personal hygiene against the invisible enemy

In addition to the usual procedure in planned surgery, there are additional procedures and considerations for Level III enhanced precautions during the COVID-19 era:

As UK has passed the peak of the coronavirus pandemic, the NHS is now working hard to reinstate other urgent surgical and medical services before routine surgery. In order to reduce mortality and morbidity due to COVID-19 among patients requiring urgent elective surgery, patients' preoperative and postoperative self-isolation, and testing of both patients and staff in green (COVID-19 free) parts of hospitals are essential precautionary measures to maximise patient safety until a cure or vaccine is found. Hence the essential requirement of social distancing in hospital buildings and waiting rooms, and air cleaning time between patients receiving AGP has serious impact on the amount of patient care our clinical teams can provide. The significant reduction in the number of patients seen face-to-face in clinics and those patients requiring minor oral surgery in some hospitals is more than 70%. As scientists learn more about COVID-19, the existing procedures from the NHS will be modified or changed by more evidence-based guidelines. It is therefore essential to keep up-to-date with your hospitals' briefings and communications as well as those from your professional organisations.



Surgeon and assistant with PPE before tracheostomy

1.5 Hospital wards, the day unit and intensive care

The in-patient ward

Only a small proportion of Oral and Maxillofacial patients will need hospital admission and overnight stay in a ward. These will mostly be receiving major surgery for cancer, facial trauma or orthognathics.

Each ward has a sister or charge nurse in overall control with any number of registered nurses, often known as 'staff nurses'. Assisting the nurses will be a number of health care assistants who help with a variety of tasks such as assisting patients wash, bed making and distribution of meals. There will also be domestic 'housekeeping' staff who will be involved with cleaning, laundry and taking charge of the ward kitchen and ordering of meals from the main hospital kitchen.

Each patient admitted should have a named nurse who will be in charge of their nursing care on any particular shift. A patient's named nurse should know about the patient's condition in some detail and be able to give a personalized nursing service. Obviously one nurse cannot be on duty for 24 hours so that when there is a change in shift there is 'a changeover' where the nurse hands over the care of the patient to the new nurse, usually referring to their written nursing records.

In practice the patient turn over on acute surgical wards is often high and together with staffing problems it is common for the named nurse to change frequently so it is essential that the patients are visited often by the medical staff and the nurse be involved in any discussion about patient care and informed of the plans for their management.

Somewhere by each bed should be written the name of the Consultant or specialty who is in overall charge of that patient. There will be a note trolley on the ward containing the patient's medical notes which are the responsibility of the medical staff; an entry should be made each time a patient is visited by the medical staff or management changed. There will also be a folder containing the nursing notes and, usually in a separate trolley, the drugs chart of each patient.

The nurse should be cognizant of all the patient's problems, treatment and concerns and expectations. She or he will also take particular note of the social background and details of home support after the patient has been discharged from the ward. There will be a nursing 'care plan' which will be written in the nursing notes. We find that when it comes to writing reports and statements sometime after the event it is

Indications for Ward admission in OMFS

1. Major surgery requiring specialized post op surgical care
2. Multiple injuries
3. Mandibular fractures awaiting urgent theatre
4. Mid face fractures for post-operative care or observation
5. Head injuries for observation where there has been loss of consciousness or nausea
6. Routine Surgery under GA with a co-existing medical problem such as poorly controlled diabetes, cardiac disease or bleeding diathesis
7. Routine surgery which cannot be done as day stay because patient:-
 - a. lives a long distance away
 - b. will not be accompanied home
 - c. will be alone for the first 24 hours post surgery
 - d. has body mass index + 35

often the nursing notes which are the most complete, legible and useful.

On admission each patient will have an identity band placed around their right wrist. This will have their name, date of birth and NHS/hospital number printed on it. There will also be a bar code. The identity band should be checked each time medication is given, blood or other samples taken or any procedure undertaken. The patient is also asked to confirm their name and date of birth verbally and the bar code is scanned when observations are taken. This is all to protect against identity errors.

The nurses will also be responsible for recording the patient's 'observations' (known as 'obs'). These consist of their 'vital signs': blood pressure, pulse rate, temperature, respiratory rate, level of consciousness, pain score (from 0 to 3), and oxygen saturation. These used to be recorded onto a chart at the end of each patient's bed but are now more likely to be recorded onto a mobile phone and transmitted to a computer which will work out the patient's MEWS (modified early warning score). See Post-Operative Care chapter for the significance of MEWS score.

In addition there may be other specific observations, which may be requested in certain circumstances. In particular a fluid balance chart will

record the oral and parenteral intake of fluid and urine output; neurological observations will be made for patients who have received head injuries, or eye observations for patients who have received surgery for peri-orbital fractures.

Nursing shifts usually change at about 8.00am, 2pm and 10 pm and you should ensure that you visit the ward at least once during every nursing shift. It is not uncommon for nurses to work 12 hour shifts; this appears to be popular as it gives them 3 clear days off each week. It is not uncommon for nurses to work excessive hours. Often they will make themselves available for the 'nursing bank' where they will work extra shifts above their contracted hours to fill in for shortages.

The medical staff should have a formal ward round of the patients in the morning with the Consultants or the Specialist Registrar and a visit to the patients at the end of the working day (after 5.00 p.m.). When on call you should make a short visit after the night shift have come on at about 10 pm. In the case of the occasional patient who is in hospital for a prolonged stay and in whom there is little change in their condition, the last two visits will be very short. For post-operative cases, particularly major ones, it will be more prolonged and the senior staff will probably visit the patient twice or more per day with you. In either case you should ensure that you are there to receive and understand their instructions for management.

It is important that sufficient information is passed onto colleagues for the patients to be looked after adequately when you are off duty. 'Handover' is best carried out at the patient's bedside but this may not always be practical. Information given verbally can be supplemented by a written note. It is particularly useful to pass on a written management plan at weekends.

Prior to operation the patient may be admitted on the morning of surgery to a 'surgical admission lounge' from where they will go to the operating theatre. Consent for operation should have been done beforehand but the surgeon should see the patient before theatre again as should the anaesthetist. A nurse will check that the patient has given consent, that they are appropriately starved and they will accompany them to the operating theatre.

When the patient is fit to be discharged from the hospital, the named nurse will arrange for the outpatient appointment to be made and will communicate with the District Nurse should any nursing be required at home, for example change of dressings. They will also communicate with relatives to arrange collection of the

patient from the ward.

In addition to the trained nurses and healthcare support workers there are many other professionals, based on, or visiting the wards, who participate in the patient's care. The ward clerk will make sure that the records are present for the admission if the hospital does not yet use electronic records. Once a day the ward pharmacist will visit; she will check the drug chart and make sure that the prescribed drugs are available. In addition she is a valuable additional safe guard against prescribing errors; if there are any doubts or queries she will write them on the charts. Doubts by the pharmacist or nurse about drugs or their dosage should always be considered very seriously.

Each morning a phlebotomist will visit the ward to take blood for routine tests etc. In order for them to help you it will therefore be necessary to make sure requests have been made through the clinical records system the night before. In some areas such as Accident and Emergency, Acute Surgical Assessment Unit, High Dependency and Intensive Care the nurses will have been trained to place intravenous lines and take blood samples. A physiotherapist will visit each ward; they usually visit patients on the request of the named nurse. It is unlikely in OMFS that patients will have locomotor problems and need help with mobilization, but post-operative patients, particularly those who have had pre-existing chest disease or are smokers, will be given chest physiotherapy on request.

The dietician will visit the ward to give advice and prescribe nutritional supplements to patients who are having difficulties with eating. In our specialty there may be the occasional patient who has inter-maxillary fixation or, more likely, patients having enteral tube feeding if they are 'nil by mouth' following oral reconstruction consequent on ablative cancer surgery.

For most patients on a surgical ward the day will start early. This may be as early as 6.00 am with the arrival of a nurse on the night shift who will be doing the early morning drug round or a different nurse administering intra-venous medication. They will want these time consuming tasks finished before the day staff arrive at 7.00 am and they will need to spend half an hour handing over the patients to them before they go off at 7.30 and before the doctors start to arrive to see their patients. In addition the nurses will need to do their first round of observations and all intra-venous cannulae will need to be flushed with saline to ensure they are still patent with no surrounding erythema; intra-venous fluid bags may need changing and for patients with urinary catheters these will need

checking; urine bags will need changing and output measured and recorded.

For most surgical patients the early activity will not cause a disturbance in their sleep. Most will be elderly and not used to sleeping right through the night as young people do. They will have spent most of the previous day lying in or on their beds or sitting in a chair adjacent to them and will have been intermittently dozing all day. Furthermore the surgical ward can be noisy at night. Many patients who need help during the night will have pressed their help buttons to summon a nurse so that buzzers will have been sounding intermittently. IV drips that have become obstructed will sound alarms and some patients may be confused and making a noise. If the ward has been taking emergency admissions there will be noise from new arrivals. Cot sides on patient trolleys make a noise like a gun going off when raised and doctors may arrive to talk to patients.

Soon after 7.00 am the domestic staff become apparent. They will start by taking away all the patient's bedside water jugs and beakers and replacing them with fresh. They will go round delivering the daily menu cards and filling them in for those who need help. They will then serve breakfast from the ward kitchen which is likely to be limited to cereal, fruit and toast with coffee or tea. The main meal of the day will be at lunch time and this and the evening meal will come from the central hospital kitchen and will be served by the domestic staff, assisted by the health care assistants and sometimes by the nurses.

After breakfast the domestics will start cleaning and the health care assistants will change all the bed clothes of anybody who gets out of the bed. When any patient leaves, the whole area around their bed will be mopped and all surfaces cleaned with alcohol wipes, and bed and mattress covers cleaned. Mid-morning and afternoon the domestics will do a coffee and tea round.

Visiting will normally be in the afternoon from 2.00 to 9.00 p.m. but no-one visiting outside this time will be turned away and on Saturday and Sunday afternoon visitors will arrive from far and wide and there will be loud and lively conversation.

Most of those admitted for Oral or Maxillofacial Surgery will be patients receiving ablative cancer operations, who need specialized post-operative care, trauma patients, those receiving Orthognathic Surgery or those who have severe oro-facial sepsis. Some patients may be admitted because they have co-existing medical problems and are having a general anaesthetic, for example poorly controlled diabetics, or patients

with cardiac disease or bleeding diathesis. Sometimes there may be social reasons, such as having no one to take them home after surgery or they live a long way from the hospital. Some patients may be admitted because they are too obese for a general anaesthetic as a day stay (body mass index +35).

Most patients will be fit to go home when they are able to eat, drink, pass urine, their pain has been controlled and they are able to get home and look after themselves or have someone else to help. If they do not and they are infirm the social workers may need to be involved and an occupational therapy assessment may be needed to ascertain what level of support they need. This should ideally be predicted in advance in order to avoid unnecessary delay and the bed being 'blocked' by a patient who does not need acute surgical care anymore.

Before a patient is discharged home you should ensure that the patient has an outpatient review appointment (but only if necessary), that appropriate medication has been prescribed (particularly analgesics if they have had surgery), and post-operative instructions given. The patient's GP should be informed of the discharge by completing the electronic discharge document on a hospital computer.

The Day Surgery Unit

The majority of Oral and Maxillofacial Surgery, particularly dento-alveolar, can be carried out under local anaesthetic usually in an outpatient department, sometimes with sedation. On those occasions where a general anaesthetic is desirable it will usually be done in the day unit.

The unit will usually have facilities for patients to be seated prior to surgery and they will normally be recovered afterwards on a trolley on which they will lie during the operation. The patients will normally walk in to the anaesthetic room. The whole flow of patients is organized to maximize efficiency and turnover.

The most important consideration is choosing which patients and cases are suitable. All patients having surgery under anaesthetic will be seen by a nurse on a pre-operative assessment clinic. They will following a pro-forma which will include all aspects of their medical and social history and will decide whether they are suitable for a day admission or they need to be admitted overnight to an in-patient ward. The American Society of Anaesthetists in 1962 devised the Physical Status Classification System range from

Criteria for suitability for day surgery

1. Usually more minor surgery with operating time less than an hour
2. Healthy patient ASA grade 1 or 2
3. Lives with one hour travelling time
4. Responsible adult to take them home
5. Will have an adult at home for at least 24 hours who could bring them back if necessary
6. No significant blood loss or complications expected
7. Body mass index less than 35

a Grade 1 (fit and healthy) to Grade 6 (dead). For day surgery the patient must be ASA grade 1 or 2, although most of our day patients will be ASA grade 1.

Patients who are grossly obese may have an airway problem after a general anaesthetic and so must be carefully monitored post-operatively. It is therefore usually considered unsafe to do day surgery under anaesthetic for patients whose body mass index is above 35. However some hospitals have removed this requirement.

The success of day surgery depends on good post-operative analgesia. In practical terms this involves infiltration of long acting local anaesthetic, Bupivacaine 0.5% with 1:200,000 Adrenaline adjacent to the operation site; this will give 6 to 8 hours of analgesia. Diclofenac may be given before, during or after surgery; the slow release formulation should give 12 hours of comfort. This is usually followed up by Ibuprofen 400 mgs t.d.s. orally with the advice to the patient that this is taken regularly for the first three days as pain is better anticipated with analgesia rather than reacted to.

The Intensive Care Unit

The Intensive Care Unit (ICU) provides a higher level of monitoring and support for seriously ill or deteriorating patients than is available on the general wards. This will include mechanical ventilation and complex support for patients with multiple organ failure. In practice, most patients on ICU have cardiovascular or respiratory problems, electrolyte and renal malfunction, or depressed consciousness. In many cases this may have been triggered or exacerbated by sepsis of one sort or another.

ICU may also provide an outreach service to advise

Body Mass Index or BMI

For adults over 20 years old:

Below 18.5 = Underweight

18.5 – 24.9 = Normal

25.0 – 29.9 = Overweight

30.0 and over = Obese

BMI = weight in kilograms

(height in metres) X (height in metres)

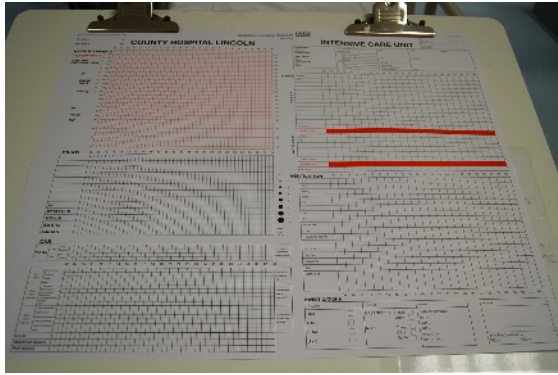
(but usually estimated from a chart)



Most patients wait in chairs and transfer to a trolley before surgery; they stay on the same trolley for surgery and recovery

ASA grading

1. Normal healthy patient
2. Patient with mild systemic disease
3. Patient with severe systemic disease
4. Patient with severe systemic disease that is a constant threat to life
5. Moribund patient who is not expected to survive without the operation
6. Declared brain-dead patient whose organs are being removed for donor purposes



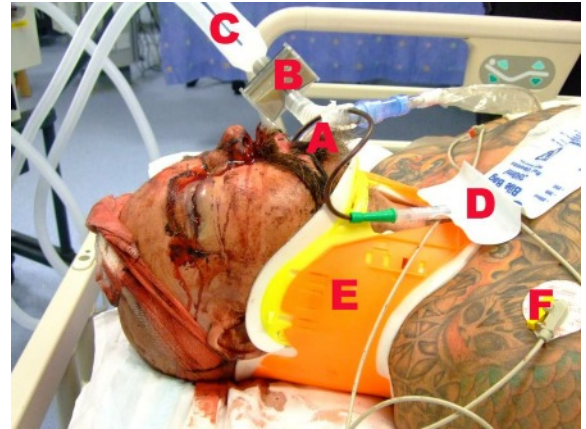
Patient monitoring chart

about patients on the wards who have a physiological abnormality which is at risk of deteriorating. The intention is to help reverse this and avoid an Intensive Care admission. Patients may be referred directly to the ICU outreach service by ward nurses. This will be triggered by a scoring system based on a chart called the Modified Early Warning System, which has been shown to be an accurate predictor of clinical deterioration (see Post-Operative Care chapter). Patients receive intensive care only if they are likely to benefit from it, not just because they are seriously ill; they will not benefit from it if death from their presenting condition is inevitable, for example uncontrolled cancer or end stage cardiac failure.

Admission to ICU may be from the Accident and Emergency Department, from the general wards, or from the operating theatre. Some patients may be booked into ICU in advance if they are having major surgery and they have serious co-morbidity such as cardiac or respiratory disease.

On 'the unit', patients are looked after by the specialist 'intensivists' who are usually specialist anaesthetists. They are assisted by a large team of other professionals, most numerous of whom are the specialist ICU nurses. Each patient will have a nurse solely assigned to them. Where surgeons are involved with the patients there will be shared care; the surgical team should visit each day to contribute advice from the surgical perspective. All treatment orders and prescriptions requested by the surgeons should be formally written by the intensivists; this avoids any confusion.

Patients who require Oral and Maxillofacial Surgery care shared with Intensive Care usually fall mostly within two categories. Firstly, patients who are receiving major resections of cancers of the head and neck, often with soft tissue flap repair, and secondly, patients with multiple injuries which include face and



A patient admitted to ICU 3 hours after a motorcycle accident. His only injuries were a fractured arm and maxilla. He has been heavily sedated with Propofol and is being artificially ventilated through an oral endotracheal tube because of massive facial swelling which would otherwise obstruct his airway. A. endotracheal tube B. air filter C. breathing circuit to ventilator D. bag attached to gastric tube to aspirate stomach contents to prevent regurgitation E. rigid neck collar to stabilize cervical spine (all patients with severe facial injuries are assumed to have cervical spine injuries until they have been X rayed or CT scanned and cleared by an orthopaedic surgeon) F. ECG electrode. I operated on him a week later & he was discharged home 2 days after that.

jaw injury. Occasionally we may have a patient in the ICU who has major oro-facial sepsis, usually caused by a dental abscess.

Most patients having major head and neck cancer resection will be transferred from the recovery unit in theatres directly to the ward for post-operative care. However they may go to ICU if they have co-existing severe cardiac or respiratory disease, especially where post-operative ventilation is desirable. Similarly, most patients with facial injuries will not need intensive care as facial injuries are not life threatening unless there is severe bleeding or airways obstruction. However, patients with multiple injuries, particularly of the head or chest, may need intensive care. The facial injuries are usually dealt with when the life threatening injuries have been stabilised; the Maxillofacial team will have to liaise with the intensivists over the best time to operate.



Empty bed on ICU awaiting patient

- | | |
|--|--|
| <p>A. Video monitor for ECG., blood pressure, P_O₂, CO₂, temperature, venous pressure, airways gases and pressure</p> <p>B. Drip stand for infusions</p> <p>C. Lamp</p> <p>D. Curtain for visual privacy</p> <p>E. Equipment and materials trolley</p> <p>F. Clinical waste bag</p> <p>G. Sharps disposal bin</p> <p>H. Personal protective disposable aprons</p> <p>I. Alcohol hand rub</p> <p>J. Disposable examination gloves</p> | <p>K. Mattress pump controller (prevent pressure sores)</p> <p>L. Stool for nurse</p> <p>M. Calculator and observation charts</p> <p>N. Flowtron controller (controls calf compression to decrease deep vein thrombosis risk)</p> <p>O. Computer to access patient records (blood and imaging results and reports)</p> <p>P. Ventilator</p> <p>Q. Dialysis machine</p> <p>R. Bed</p> |
|--|--|

2.1 Preparation for Operation

Procedures before planned surgery

Preparation for planned surgery will start in the outpatient clinic with the discussion between surgeon and patient about the indications, contraindications and alternatives to surgery. Consent will be obtained.

Once the patient has a date for surgery if they are to be admitted to a ward or day unit for surgery with a general anaesthetic, they will be seen by a registered nurse who will carry out the process often called 'pre-clerking' or 'care planning', which is designed to ensure that the patient is fully prepared, that the appropriate investigations are carried out and that they know what to expect and where to come and when. If day surgery is planned the nurse will check that their physical health and social circumstances concord with the accepted criteria for day surgery.

This will involve going through, with the patient, a fairly complicated care plan document, which includes a detailed assessment of their current and previous medical and social history, a systems review of symptoms they may have which might indicate any underlying cardiac or respiratory disease, and a social history which might have a bearing on their discharge from hospital and post-operative care after they no longer need nursing care on the ward. The assessment will usually include routine observations such as blood pressure, pulse, height, weight and body mass index. Current medication will be listed. The patient will be given instructions about not eating and drinking prior to surgery; the length of time they should be starved will depend upon the surgery and local policy.

Investigations will be ordered by the nurse under a protocol which will almost certainly follow the guidelines of the National Institute for Health & Care Excellence (NICE). This should ensure that no one should present on the day of surgery without the essential investigations having been done and checked, and resources should not have been wasted on requesting unnecessary tests. There is no point in carrying out a special test at some inconvenience and expense if it is unlikely to change the management of the patient.

On the day of surgery there will be further checks made by the admitting nurse. It will need to be confirmed when they last ate or drank; they will need to be fitted with an identity band, and the consent form will be returned and signed. The patient will be dressed

Investigation	Indication
ECG	Pre-existing cardiac or respiratory disease Smoker over 40 Anyone over 60
Chest X Ray	Is almost never needed but may be requested if there is existing cardiac or respiratory disease
Full blood count	Over 60 Anyone for major surgery with significant blood loss More minor surgery with some blood loss with history of cardiac disease
Urea & electrolytes	Renal disease Diabetics Taking diuretics
Serum glucose	Diabetics On steroids Severe sepsis
Coagulation screen	Anti coagulants (INR) Liver disease Family or past history of problem bleeding
Sickle/ Hb. electrophoresis	Ethnic groups at risk if not previously tested or no history of previous anaesthetic if counselled and consented. North African, West African, South/sub Saharan African, Afro Caribbean, Eastern Mediterranean, Middle Eastern, Asian.

Pre-operative investigations in OMFS

United Lincolnshire Hospitals **NHS** NHS Trust
 Patient NHS No
 Patient Name

Integrated Care Pathway for Day Care or Short Stay Patients
 This pathway is for patients aged 16 years and over identified as requiring a day surgical procedure with a length of stay of less than 23 hours

Speciality: TCI
 Consultant:
 Proposed Procedure:
 Actual Procedure:

General Anaesthesia Regional Anaesthesia LA/ IV +/- Sedation

Signature Record
 All members of staff who are using this Integrated Care Pathway should use black ink and complete this section. You can then use initials when recording care.

Print Name	Job Title	Bleep No or Ext	Signature	Initials

Allergies / Sensitivities Yes No
 Specify and list reaction

Does the patient have an allergy / sensitivity associated with latex? If yes, inform the following
 Theatres Surgeon Ward Anaesthetist

This Integrated Care Pathway is intended as a guide to care only and does not replace clinical judgement.
 Copyright © 2007 United Lincolnshire Hospitals NHS Trust
 Created by ULHT Day Care and Surgical Team
 Day Care or Short Stay ICP V11 Jun 07 / Document number: ULHT-022007/022 Review date: Apr 09 Page 1 of 12



Nurses in theatre check the consent form to ensure the patient is getting the right operation.

The 12 page care plan booklet which is completed by a nurse in the presence of the patient as part of the pre admission for surgery process. Bureaucracy rules!

in a theatre gown, decorative finger rings will be taped, and dentures or spectacles removed and kept in a safe place, usually the bed side locker. Patients will be seen by the anaesthetist for a pre-operative assessment and by someone from the surgical team who will need to find out if there are any further questions or explanations which should be attended to and this will be confirmed on the consent form. If the operation is outside the mouth the operation site should be marked with a skin marking pen and the admission document signed to confirm that this has been done. You should ensure that you visit the ward or day unit with the surgeon in charge and familiarise yourself with their case history and examine them if you have not already had the opportunity to do so.

Consent for hospital treatment

It is sometimes not well understood that consent for treatment is much more than the placement of the signature on a form. It should involve the patient being

informed what treatment can be provided, what the alternatives are, what the risks are and the side-effects as well as the benefits. There should include a discussion about the consequences of no treatment. The patient must be capable of absorbing the information and making choices offered to them. The consent form is a useful adjunct to this process but is not the be all and end all as some might consider it to be. Comprehensive notes, written at the time, provide evidence that a robust consenting process has been used.

The standards which are used in an acute NHS trust for obtaining consent are important to the National Health Service Litigation Authority (NHSLA) which provides indemnity to NHS trusts under their Clinical Negligence Scheme for Trusts (CNST) scheme. The gold standard is that the patient's consent is obtained by the clinician who is going to perform the procedure. However, failing this, consent can be obtained from somebody who has been trained to do it and is able to discuss the benefits, risks and side-effects of the procedure and its alternatives.

The surgeon should be aware if that particular patient will be likely to attached significance to any particular risk. We believe, therefore, that obtaining consent for surgery is not a suitable job to be delegated to a new trainee.

The forms used are fairly standard in acute NHS trusts; they are very far from perfect. It is also unfair to ask a patient to sign straight away in the clinic as there is too much on the form for them to read and it gives them insufficient time to digest the discussion that has taken place. Most patients, in our experience, do not bother to read the forms (often they don't have their spectacles with them). We prefer to fill in our part of a form and ask the patient to take it away to sign

later and bring it back with them. However, about a third of patients forget to bring it back with them and we have often to fill out another.

Initially you will be too inexperienced to consent patients for operation other than for very minor procedures such as a biopsy. The consent form itself should be written in terms that the patient can understand, so abbreviations and dental chartings should not be used. The forms themselves have a top copy of the information recorded by the clinician which tears off for the patient to keep a record of their own.

The consent form 4 is used for adult patients who are unable to consent for treatment. This is slightly more complicated and those who treat such patients should be aware of the law and in particular the Mental Incapacity Act. Usually the Consultant will be dealing with all such cases in OMFS and these are very few in number. In our practice they are most frequently severe trauma cases where the patient is sedated and intubated when we arrive. Usually our job is first aid in the shape of a tracheostomy, arrest of haemorrhage, suturing of lacerations, the removal of loose teeth and stabilisation

Some Principles of Consent

The decision must be the patient's.

Patient must have the capacity to make a decision; it must be assumed that a patient does have the capacity unless it is established that he does not.

The patient should be warned of any material risks of proposed treatment and of alternatives.

The doctor should be aware which particular risks the patient would regard as material.

Children under 16 may have the capacity to consent to treatment.

A parent can consent to treatment for a child.

A person aged 16 can be presumed to have capacity to consent.

No one can give consent on behalf of another adult.

Patient should be told of the diagnosis, proposed treatment, its risks & complications, alternative treatments, their risks and complications and the consequence of no treatment.

Patient must give consent voluntarily.

of facial fractures. In these circumstances only the urgent treatment should be carried out and it must be in the patient's best interest. In some hospitals the OMF surgeons provide a tracheostomy service for patients who are already intubated and ventilated and therefore unable to give consent; consent form 4 will be used in all these cases.

The Consent Forms

Form 1: Patient agreement to investigation or treatment

Form 2: For parental agreement investigation or treatment for a child or young person

Form 3: Patient/ parental agreement for investigation or treatment which does not require a general anaesthetic. (procedures where consciousness is not impaired)

Form 4: Form for adults who are unable to consent to investigation or treatment

Sources of Guidance on Consent

These four organisations have all published informative guidance on consent issues and the law. You will almost certainly have read one or more of them. If not you should do so now. They can be downloaded from their web sites as PDF files.

General Medical Council: Consent: patients and doctors making decisions together

Medical Protection Society: An MPS Essential Guide to Consent

General Dental Council: Principles of Patient Consent

Dental Protection: Consent to Dental Treatment, The principles and their application

In addition we commend the following papers:

Informed consent: the dawning of a new era. N. Khalique. Editorial British Journal of Oral and Maxillofacial Surgery. 53 (2015) 479-484.

Consent - a new era begins. L D'Cruz & H Kaney. British Dental Journal 2015: 219: 57-59

Wound about post op swelling + numbness observable
 sutures. Possible numbness of lower lip due to potential
 nerve damage. Patient may need to postpone surgery if
 swelling is down at the time + not visible.

Warnings of complications should be recorded in the patient's notes.

Thank you for asking me to see Mr _____ concerning the swelling in his lower lip.

Clinically this looks like a mucous extravasation cyst due to trauma from his teeth. I have advised him that this will continue to recur if it is not removed so we are making arrangements to carry this out under local anaesthetic. I have advised Mr _____ that his lip will be swollen, sore and uncomfortable for about a week afterwards and there is a small risk of some numbness of the vermilion of the lower lip due to the proximity of the small nerves which supply sensation to it.

Yours sincerely

It is helpful to mention them in the letter to the GP and send a copy to the patient.

Right: Specimen Consent Form 1- Fractured Mandible, general anaesthetic

Patient details (or pre-printed label to be attached to both copies)

Patient's surname/family name _____
 Patient's first name _____
 Date of birth _____
 NHS number (or other identifier) _____
 Male Female
 Responsible health professional and job title Specialist Consultant
 Special requirements (e.g. other arrangements/communication needs)

Name of proposed procedure or course of treatment include brief explanation if needed (see next page)
Open reduction and fixation of fracture of mandible (lower jaw), removal of unerupted third molar (wisdom) tooth from fracture.

Statement of health professional (to be filled in by health professional with approval for knowledge of proposed procedure, as appropriate in current policy)

I have explained the procedure to the patient. In particular, I have explained:
 the nature of the Correct alignment of fracture necks normal bite and jaw function.

serious or frequently occurring risks

Any extra premedication will become necessary during the procedure
 Good (please specify) _____
 Other procedures (please specify) _____

How do you feel about what the procedure is likely to involve. This statement and those of any available alternatives have been set (including no treatment) and any particular concerns of the patient.

The following consultation has been provided

This procedure will involve

General anaesthesia Local anaesthetic Sedation
 Allergies: A Soadine Date: 12/12/08
 Name (PRINT): SMITH Job title: Consultant Oral Maxillofacial Surgeon

Contact details (if patient wishes to discuss before/after):

Statement of interpreter (where appropriate):

I have explained the information above to the patient to the best of my ability and in a way in which I believe s/he has understood it.

Signature: _____ Date: _____
 Name (PRINT): _____

TOP COPY ACCEPTED BY PATIENT: YEBNID (PLEASE PRINT) Page 2 of 4

Procedure	Intended benefit	Serious or frequently occurring risk	Our comment
Surgical removal of impacted third molar tooth	To prevent further pain or infection	Numbness or tingling of lip or tongue, <u>probably</u> temporary	Risk of permanent numbness about 2% tongue 0.25% lip
Incisional biopsy of swelling in mouth	For diagnosis of swelling		No need to mention swelling, discomfort or bleeding on the form. The patient should be verbally warned of these but they are not risks; rather they are side effects to be expected and are not serious
Excisional biopsy of swelling	To remove the lump and for diagnosis		
Suture of laceration of face	To close wound to achieve best appearance	None (leave blank)	
Open reduction & fixation of fracture of zygoma (malar)	Restore contour of face, improve jaw movement, improve chance of recovery of face numbness, improve double vision	Bleed into eye socket	Very rare but should be mentioned as this can threaten vision

Below: Consent issues for some common operations

2.2 The Operating Theatre

Operating theatre procedure and ritual

You will probably be involved in one or two operating 'lists' in theatre each week. You should expect to be able to 'scrub up' for most of the cases and at least assist. Hopefully you will be allowed to carry some simple dento-alveolar surgery under supervision, although the days when significant numbers of wisdom teeth were removed under general anaesthetic have now gone.

The operating theatre is the most expensive facility in the hospital. It is therefore important that things run smoothly and efficiently and you may be able to contribute to this. However, the main consideration in the theatre is patient safety and this does not equate easily with speed, so things often run frustratingly slowly.

You will find that the operating theatre suite will have many individual theatres. Usually, these will be dedicated to specific disciplines or groups. Orthopaedics usually has its own dedicated theatres with laminar air ventilation in which bacteria free filtered air is circulated under pressure into the operating site so that contaminated air is removed away from the patient. This may reduce the incidence of airborne infection which can be disastrous in joint replacement surgery.

Each theatre will have its own anaesthetic room where the patient is prepared and anaesthetised; a preparation ('prep') room where the instruments and other equipment are prepared and laid out on trolleys; a 'scrub' room where surgeons, assistants and nurses



Theatre. The surgeon, assistant and scrub nurse wear sterile gowns; there is an unsterile 'runner' who fetches additional equipment.

wash their hands and put on gowns and gloves; there will be a 'dirty' area where instruments and drapes are taken after the operation and where pathology specimens from cancer surgery are taken to be orientated and pinned to a cork board for the pathologist. Somewhere in the suite there will also be store rooms, staff rest rooms, a kitchen, offices, a reception area and recovery rooms where the patients are taken immediately after surgery. All the theatres will be air conditioned with about 20 changes of air per hour so that airborne bacteria shed from the patients' or staff's skin or even from a dirty wound will be swiftly carried out.

A few days before each operating session a list of patients will have been prepared, usually by the Consultant's secretary or booked admissions team. The patients will be listed in order of booking time with their ages, hospital number and procedure recorded; there may be additional special theatre requirements added.

Each theatre in the suite will have a nurse in charge who may be a staff nurse or sister. When the anaesthetist and nurses are ready and the surgeon is known to have arrived, the nurse in charge will inform the theatre receptionist to send for the patient who will be escorted from the ward by a porter and a ward nurse. On arrival, the patient will be booked in at the theatre reception, their identity will be checked, both verbally and by looking at their wrist band, and the consent form will be checked. They will then be taken to the anaesthetic room. It is here that all the first part of the World Health Organization (WHO) checklist, which has three stages, will be carried out. The first, known as 'sign in', takes place before the anaesthetic is induced. Once 'sign in' has occurred the anaesthetic can commence.

The anaesthetic room contains all the equipment necessary to put the patient to sleep. The anaesthetist will be assisted by an Operating Department Practitioner (ODP) or an anaesthetic nurse. While the patient is being anaesthetised the surgical instruments are prepared in the 'prep' room by a nurse who has 'scrubbed'. This 'scrub nurse' will prepare the sterile instruments while an unsterile nurse, the 'runner', will hand things to her, touching only the unsterile part of the wrappings. The instruments used in any operation by a particular surgeon will be kept on a list in a card index in the theatre or computer so the nurse will know which instruments to prepare.



Anaesthetic room



The scrub room. It is equipped with elbow operated taps. There are dispensers on the wall containing disposable nail brushes and sponges impregnated with chlorhexidine, PCMX or iodine and separate dispensers. Sterile gloves are on the wall.

The ODP or anaesthetic nurse will draw up the drugs, unwrap and pass equipment and set up the monitoring equipment. When anaesthetised the patient can be transferred to the operating theatre and the operation commences. In the theatre itself the second stage of the WHO checklist, known as ‘time out’, takes place.

The surgeon and assistant should scrub while the patient is in the anaesthetic room so that they are ready to start as soon as the patient is on the table. During the operation the ODP or anaesthetic nurse will assist the anaesthetist while the scrub nurse passes instruments to the surgeon. The runner should remain in theatre and fetch equipment and instruments as required. You should scrub and participate in the surgery in whatever manner instructed by the surgeon.

After the operation the final stage of the WHO checklist, known as ‘sign out’, is made. The senior surgeon will probably wish to write up the operating notes himself. For day cases a TTA (to take away)

WHO Surgical Safety Checklist - Part 1 Sign in

Patient has confirmed:-

Identity, site, procedure, consent

Site marked/not applicable

Anaesthesia safety check completed

Pulse oximeter on patient and functioning

Does patient have:-

Known allergy: yes or no

Difficult airway/aspiration risk

No

Yes and equipment/assistance available

Risk of >500ml blood loss

No

Yes and adequate IV access and fluids

WHO Surgical Safety Checklist - Part 2 Time out

All team members introduce themselves by name and role

Surgeon, anaesthetist & nurse verbally confirm:-

Patient, Site, Procedure

Anticipated critical events:-

Surgeon reviews: Critical or unexpected steps, operative duration, anticipated blood loss

Anaesthesia review: any specific patient concerns

Nursing reviews: sterility confirmed, any equipment issues or other concerns

Has antibiotic prophylaxis been given in last 60 minutes? Yes/not applicable

Is essential imaging displayed? Yes/not applicable

WHO Surgical Safety Checklist - Part 3 Sign out

Name of procedure recorded

Instrument, sponge & needle counts correct or not applicable

How the specimen is labeled

Whether there are any equipment problems to be addressed

Surgeon, anaesthetist & nurse review key concerns for recovery & management



The sterile scrub nurse is preparing the instruments in the 'prep' room. The unsterile 'runner' is passing equipment by holding the unsterile outer wrapping.

prescription should be made, usually on the computer, with an electronic discharge for the GP, usually completed by the trainee.

There are several operating theatre rituals and conventions you will need to know about and adhere to; these are principally designed to reduce cross infection. The evidence for their efficacy is variable so you will find that there will be some slight variation between hospitals. You may find that some hospitals still require patients to remove all items of their own clothing, cover their hair and take off any jewellery. There is very little evidence to support these measures as an aid to cross infection so you will find most hospitals have them. It is usual practice to tape rings to prevent their being dislodged and lost.

You will enter the theatre suite through a door directly into a changing room where you should change into an operating cotton suit; this will be freshly laundered but socially clean rather than sterile. You will find the appropriate sized suit on a shelf but some hospitals dispense them from a machine for which you will need your identity card. Outdoor shoes should be replaced with theatre footwear with impervious soles and these should be regularly cleaned. There is little evidence to show that leaving theatres in a surgical suit and returning without changing it increases infection rates, but it is usual to wear a coat or cover gown over the suit while outside the theatre. It is forbidden to wear a theatre suit outside the hospital building to avoid external contamination. You should find that it is normal practice in most theatres for all staff to wear protective caps. Again there is little evidence to support the need for this but adherence to this ritual is universal.

Scrubbing and gowning

Staff who wear jewellery should remove it in theatre but a single wedding ring is usually not removed. It is thought that a ring worn beneath a glove does not contribute to cross infection although it may lead to an increase in glove perforation. False finger nails, however, do harbour pathogenic bacteria and should not be worn.

The process of pre-operative hand washing and donning surgical gloves and sterile gown is known as 'scrubbing up'. Finger nails should be kept short, and the first wash of the day should include a thorough clean of the finger nails using a stick or brush. Thereafter the hands should be washed using chlorhexidine gluconate 4%, 7.5% Povidone iodine scrub solution or PCMX (Parachlorometaxlenol), using the technique described in a previous chapter for two minutes. The supplied nail brushes should not be used on the skin as they can cause abrasions. Theatre gowns and drapes are now mostly disposable, as these are less permeable to epithelial cells and bacteria shed from staff or patients than the formerly used linen. Once you have scrubbed you should not touch any non-sterile surface or object. If you accidentally do touch something with your hand it is easier to put on a second glove than to change.

Below is demonstrated the sequence of preparing yourself for surgery. This is called scrubbing up. It involves placing a sterile gown and gloves, opened, on the trolley, washing hands, putting on the gown followed by the gloves and getting someone to tie up the gown behind. Once scrubbed you must not touch anything unsterile with your hands or body.