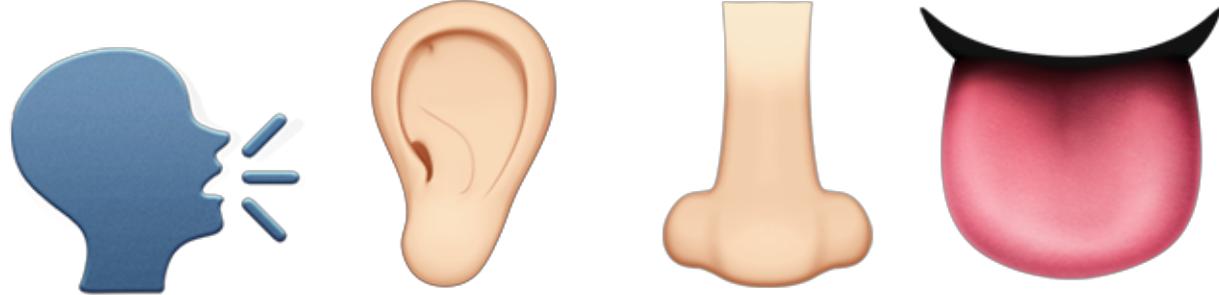


# OHNS-Final Year Medical Student Guide



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# Preface

Welcome to your final year of medical school, and congratulations on getting this far! If you are reading this document, it means you are likely pursuing an elective/career in the field of Otolaryngology- Head and Neck Surgery (OHNS; ENT; ORL; Oto-HNS). Great great choice!

This document is meant to be a helpful guide; a compilation of my personal experiences and resources I've been given or discovered. Please take what is useful, disregard that which is not. I have to especially acknowledge the extreme amount of support and data provided by Dr. Alex Dickie (Western University, OHNS, PGY1). He mentored me throughout this process, and much of this information is derived from him.

I was fortunate to have matched to my top choice program, and I hope some of this knowledge will help you do the same!

*Obligatory disclaimer statement*

The information contained in the OHNS- Student Guide is for general information purposes only. OHNS- Student Guide assumes no responsibility for errors or omissions in the contents. In no event shall OHNS- Student Guide be liable for any special, direct, indirect, consequential, or incidental damages or any damages whatsoever, whether in an action of contract, negligence or other tort, arising out of or in connection with the use of the Service or the contents of the Service. OHNS- Student Guide reserves the right to make additions, deletions, or modification to the contents on the Service at any time without prior notice.

# Recommended Resources

1. ENT Secrets 4<sup>th</sup> Edition
2. Otolaryngology-Head and Neck Surgery: Clinical Reference Guide, Fifth Edition by Pasha and Golub
3. LearnENT App by Kohlert, Best, Grose, Liao, Patel
4. Toronto Notes (OHNS Chapter)
5. Head and Neck Surgery: Otolaryngology - Volume II by Bailey
6. Otolaryngology - Head and Neck Surgery, 5th Edition by Cummings
7. Essential Otolaryngology, 11th Edition by KJ Lee
8. Netters Clinical Anatomy by Hansen
9. Podcasts: Surgery 101 (Specifically Episodes: 10, 12, 16, 17, 23, 32, 34, 35, 41, 50, 51, 55, 56, 57, 62, 64, 82, 83, 84, 85, 86, 87, 88, 89, 90, 92, 122, 123, 172, 173, 175, 176, 190, 191, 192, 193, 198, 200, 205, 210, 218, 226, 227, 228, 270)
10. Jon J. Krepelka MD (Practical Guide to Common ENT On-Call Problems in Edmonton, AB.) (Appendix A) (<https://sites.ualberta.ca/~jzzhu/Jon%20ENT.doc>)
11. Alex Dickie, MD (ENT Elective Pimping guide + other insights) (Appendix B)
12. Source unknown (OTO-HNS Postoperative Orders and Management) (Appendix C)

# Electives

## *General*

1. Important to get electives in schools that you are potentially keen on matching. It gives the program insight into you, while also giving you insight to whether it would be a good fit. It may be possible to match to a school where you did not complete an elective, but best to try and get one. This will allow you to also get a better sense of the program, city, and culture of that school.
2. If you have the abilities, I would not arrange electives for programs that you are hoping to rank high at the very start of your tour. The reason being, you will learn a lot on your first few weeks of electives; common emergencies, important anatomy, hands on skills, and frequently asked questions. You will get rid of the cobwebs and be performing at your best typically after ~4 weeks of OHNS electives.
3. Two weeks is sufficient time to get a feel for the program, training, staff, and city, while also getting your face out there enough to be remembered for CaRMS review. Longer electives do not put you in a more competitive position.
4. Some programs do not necessitate that you do an elective there in order to get an interview, but some programs do. It's hard to say which programs require it, sometimes this information is disclosed under the CaRMS program descriptions, but it may be

something that you will have to ask around about. I believe Calgary, and Western require on-site electives, but this could change yearly.

5. Ensure you have all vital information put into the AFMC portal before applying for an elective. Apply as soon as the portal page opens. I did not apply for more than one school each time and was fortunate to land all my OHNS electives. Although, I have heard of people not getting their preferred electives as well. User discretion on this one.
6. After an elective has been confirmed have a look over what is required from you before starting the elective. Any administrative stuff you can complete before the rotation, do so. There are going to be a lot of modules and other tasks, just get them done. Have an idea of what you need to complete on the first day of the placement as well. This is often a mixture of access to scrubs, getting a picture ID, and checking in with the admin staff.
7. If you are given a residents' contact information before starting the elective make sure you touch base with them a few days before (Saturday is fine before a Monday start). You do not need to overthink this message, a quick introduction and then inquire about where and when you should meet for Monday.
8. Be prepared to take call/stay late on any day of the elective. The first days aren't off limits! First days are often the tough ones, it's always better once you have a feel for the

environment, computers, culture and personnel. Don't sweat it, just show up, and show up early. The electives always get better after day 1.

9. If you know someone who has completed an elective in that program recently/know a resident in the program see if you can connect prior to the elective. There can be a lot of valuable insight acquired from a 10 minute conversation/text/email thread. I'd inquire about what the expectations of elective students are (rounding; note taking; covering call/consults; writing out post-op orders; heavy pimping; opportunities to help with procedures/operating room (OR); emergency room (ER) consults; clinics); where do students typically meet on the first day; do they show up in scrubs/clinic clothes; insights into the program specifically (the culture, triumphs, areas of weakness-asked in a diplomatic manner). It also helps to have an idea of who is on the selections committee, just to make extra sure you are on your "A" game that day ;)

10. Offer to take call. Ask if you can help with anything else at the end of the day, and do not huff and puff if you are given a task to complete.

11. You will often have to take the floor or ER consults. Please view Appendix A and C for a thorough guide to the exam, documentation, and common calls. For these, you may need to bring a scope down (although do not scope by yourself) which may be located in a specific area. It's helpful when the resident comes to review with you that you have one ready to go if needed.

12. Be kind and helpful to everyone. I think this goes without saying, but it makes life better for everyone around. There can be a weird feeling when another elective student is on service, but if they are new, please make an effort to offer any information that might be helpful. You will meet these people on the interview circuit and will probably be colleagues in the near future. Now is as good a time as ever to start that relationship, and who knows, they may be your co-resident!!

13. Program specific reference letters can be helpful. Some programs have an expectation that you will get a letter from their program when you are on elective. If you have spent some facetime with staff, feel free to ask if they would consider writing you a strong letter of support for CaRMS. Many times, these staff will be a part of the process as interviewers/committee members and can be an advocate for you. This is a situation that will require your own judgement.

14. Meeting at end of rotation with the program directors (PD) are neither here nor there. Some schools schedule them for you and others do not. At these meetings, feel free to ask any questions you have left, but you do not need to make this a long session. Brevity is key with these busy PD's. When I did not have a meeting scheduled, I would make an effort, within my last few days, to have a quick conversation with the PD. Many times, I was working a clinic or in the OR with them and I would mention that my elective was

coming to a close. I'd let them know I had a great experience, and thanked them/the team for the facilitating this.

### *Rounding*

Typically, you will be on Head & Neck Oncology for a part of your rotation, and many of your rotations start on Head & Neck. There are subtle differences in rounding throughout the country, but for the most part, the major points hold true. Try to build up some confidence here and it will go a long way.

Although your rotation may not “technically” start until after a variety of administrative items, I always rounded on Day 1. Rounding typically happens early (~0500-0630), and it should not interfere with any of your administrative tasks. Try to get an email address/text a resident on the Head & Neck service either the Saturday/Sunday before. Let them know you will be joining the team as an elective student, and you were wondering when/where rounds will be for Monday. You want to make the most out of your time and usually the more hands on the team the better for Head & Neck. Rounds differ at each hospital, sometimes the team rounds on each patient together, and sometimes they divide and conquer. Head to rounds on Day 1 and you will be setting the tone for the rotation that you are not afraid of early mornings, working hard, and helping out the team.

There are a few areas during your rotation that you can actually provide tangible help. It is difficult to do so in the OR for example, but rounding is definitely one of them! Get good at writing notes and assume that you will be writing most of them. In Toronto, I observed note taking for the first two patients, and then I was responsible for taking notes on the majority of the rest. This can be a daunting task at first, especially if you have little exposure to OHNS services. Do not fear! Below I have added a section on common things to include (with much of it initially provided to me by Alex Dickie). During my first few rotations I had this document saved as my phone background (Figure 1.), if I needed a quick refresher, I could just look down at my phone for a second and voila. Good rounding skills = more efficient rounds; everyone appreciates this, and you will be viewed as a valued member of the team!

1. Know where you are going on the first day. This may mean popping by the hospital the night before to find the floor etc. Some hospitals I went to were only accessible through the emergency door at 5 am. Make sure you know which entrance you are going to for that first day, and if the doors will be open without an ID at 5 am.
2. Unless told otherwise, show up in clinic clothes to the first day. Wear your home school name tag unless you have been provided another one (most rotations you will get this on the first day).

3. A wise friend (Alex Dickie) mentioned to introduce myself to the nurses and find out where the supplies are found on the floor. Common things to have handy: tongue depressors, cotton-tip applicators (CT's), syringes with 25g needle, a light, scissors, tape. Some schools utilize headlights when rounding, might not hurt to have one tucked away.
  
4. Make sure you are 15 mins early, this can be tough, but it's a key part of the electives tour. Show up early to each morning rounds on each elective. This makes the difference, and gives you some time alone to get yourself organized before the team shows up. Each hospital is different. Some want you to show up five minutes early and not pre-round, others expect that you will be there 30 minutes ahead of time and pre-pre round. On the first day it will be hard to know what is preferred but 15 minutes is usually adequate. Also, don't forget to print your list!
  
5. On your first day figure out which charts are OHNS patients; are their charts colour coded, do they only occupy certain rooms, etc. Have a read through the charts to know why each patient is admitted, and also how the charts are formatted at this site.
  
6. You will need to wait and see what the expectations are, but on some of my rotations the residents would want some chart prep done before they arrived. BE WEARY, some hospitals do not support pre-charting/chart prepping. On your first day do not chart prep and figure the landscape once residents arrive. Prepping could include starting the note such as:

"OHNS (or ENT/ORL—depends on service preference)- Clinical Clerk Note

POD #5 Right Hemiglossectomy, Right RFFF (radial forearm free flap) ..."

It may also include a more extensive prep including vitals and a skeleton of the note to be filled out quickly during rounds. See Appendix C for more note formats. Here was a skeleton provided to me from Alex Dickie:

S/Well overnight  
Ambulating  
Up to BR (Or Foley still in place)  
Pain controlled  
Currently on pureed diet and tolerating  
No CP no SOB  
(Anything else that's mentioned by team or patients)

O/ AVSS Afebrile  
Drains: JP (or hemovac) 1=50cc SS (serosanguinous)/serous/clear  
JP 2=35cc  
Trach/NG in situ (cuff up or down, corked or uncorked)  
Arm/Leg NVI (flap donor site)  
Flap Colour good, cap refill good, brb (bright red blood) with prick in <5 sec, no dehiscence  
Incisions CDI (clean, dry, intact), no collection  
For total thyroids- no perioral or extremity numbness/tingle, negative c-sign (Chvostek)

A/P/  
1. Cuff down/downsize trach/trial corking/decanulate  
2. Advance diet to \_\_\_\_\_ (or as per SLP suggestions)  
3. Encourage ambulation, D/C Foley when ambulating  
4. Chest x-ray/ecg if concerning vitals/cough/increased purulent secretions  
5. Anything else the team wants (antibiotics, investigations, home support, change pain meds)

7. Good things to look up and make note of before the team arrives are the patient's vitals, drain outputs, and any new lab work/test results. I found that after a couple of days it then became the expectation that I would highlight the abnormal findings to the team, and this became "my" thing during rounds. Small wins, but it all helps!
8. There is a definite hierarchy during rounds. Typically, the senior resident will be leading the rounds, and examining each of the patients. They will be verbalizing their findings and someone (you!) will be documenting these. Another resident may be providing other support as well such as removing the drains, changing the trach, doppler checks, etc.
9. On your list, you can have patients' vitals noted and the most up to date results as well. Additionally, mark down tasks (dressing changes, drain removal, etc.) that need completing for each patient during rounds. You may be tasked with ensuring these get done after rounds, which can be very helpful for a busy service.
10. If you do not know where you are going after rounds touch base with the senior resident. They will let you know if you should go to clinic/OR/teaching or somewhere else.
11. Get a phone number for residents on the team. It will be useful for both yourself and them to be able to reach out quickly if there is a consult, a task needing completion, or a change in rounding times.

12. Social rounds! Grab a coffee/tea/water with the team and take a few minutes of respite.

13. Rounding happens in the morning and in the afternoon. Try to get to the afternoon rounds, as often times these rounds are lower in numbers and your help is that much more valued. Often times people are stuck in the OR or ER for these.

14. Assume that you will be rounding on the weekend. You can ask your senior resident on Friday or ask someone on the team who the on-call resident is for the weekend “as you thought you could help with rounding.”. I know it can be tough after a long week to weekend round, but there is usually only one resident on for the weekend and your support is always greatly appreciated! Also, if this resident is not currently on service you can provide them with a lot of insights into the patients’ current management plan.

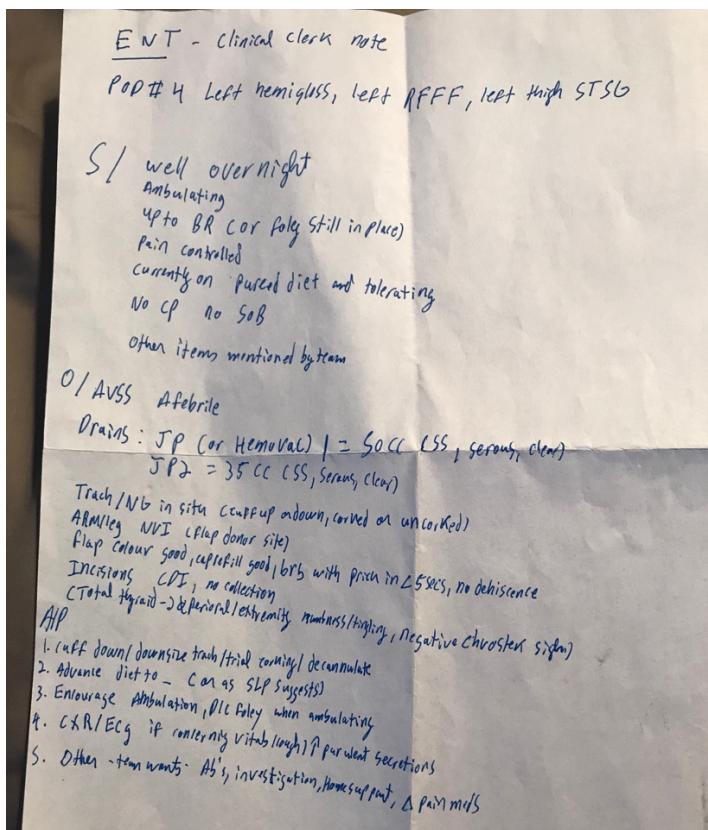


Figure 1. Note template saved as phone background

# CaRMS Application

This can be a stressful process, but being organized and prepared will make it smooth.

1. Make an update CV as early as possible. You will need this for many programs, but it will act as a direct source for many parts of the application.
2. Ask references early for letters of support. Home references will certainly help, especially if your home school does not have a residency program. These people often times have a much better insight into you as a candidate vs. staff you meet on electives.
  - a. Follow up with references closer to the deadline. Be clear, and kind. Let them know that the date is in x weeks and ask if there was anything you could do to help the process. I always sent my CV, and headshot. A friend of mine would additionally send a document that highlighted their relationship/meetings they attended together/publications they shared, etc. Sometimes things of this nature make writing a letter easier for the referee. Most of my references were submitted within a few days before the deadline. It can be stressful, but all you can do is respectfully follow-up. Ensure you have more than enough references, so you won't be stuck if one comes in late. Also, some schools require 5 letters, and some only require 3, make sure you clarify this.
  - b. If you feel that you can get a strong letter of support from your elective experience, then ask for one. You can use this letter for just that specific school, or if you believe that it will carry weight you can use it for multiple schools.

3. Read the program descriptions, then read them again. Schools have different requirements (birth certificate vs passport, CV, ophthalmological exam, etc.), be well aware of each of these.
4. Personal statements. Like applying to medical school, this can be a process. Just speak from the heart and be truthful here. Much of the essays will be the same (I fell in love with the anatomy, I want to be a surgeon, affinity to the populations treated/scope of care, etc.), and this is okay. I did not sweat it too much, I tried to personalize the essay as best I could but kept some parts standard (my love of technology and its role in Otolaryngology; the appeal of the intricate anatomy). For schools where I did an elective, I spoke towards my elective experience there; how I felt I worked as a part of the team, and who I fit into the culture there. I also usually mentioned a specific staff that I viewed as an ideal mentor for me in terms of research/other areas of interest.
5. Before submitting, read over every personal statement to ensure you are submitting to the correct school. You'd be surprised what you pick up!
6. Only submit what is requested.

# Interviews

Get excited!!! This is the fun part of the year. You get to meet up with the other applicants, explore this great country, and share your story.

1. Respond to schools regarding accepting interviews and attending the socials early. Also, book flights and accommodations early. Most of the interview invites went out throughout December.
2. Attend the socials, especially if it is a school you are keen on. This is a chance for you to relax a bit with the other applicants and speak casually with the residents. Have a good time, but do not forget, this still counts as a part of the interview, so best behaviour always.
3. If you have a difficult time forming your thoughts in a concise manner, you should start interview preparations early. Many of these questions are similar to medical school interviews, with a focus on Otolaryngology. Ensure you share the important parts of your story in every interview.
4. There are a variety of different interview approaches. Some schools have a more traditional style, while some have a combination of multiple mini interviews and traditional. You can expect some ethical questions, hands-ons stations (suturing, hand-

tying, etc.), knowledge-based questions, and some peculiar (google style) questions. Just know that how you react, and how you form your response, is key for all of these. Show them your process of coming up with an answer. Try not to ramble. Be passionate, and smile!

5. Prepare a few questions as you will inevitable have time at the end of the interview to ask. If there is something specific you want to know then now is your chance, with this being said, if you have asked enough questions do not feel obligated to ask anymore. At some programs my response would be, "After spending my time here on elective, and speaking with the residents at last night's social, I feel I have a good appreciation of what it would be like to be a resident in this program."
6. There is a fine line between honesty and brown nosing, just be yourself, that's all you can do.
7. After the interview is over note how you feel. After being back to this program (if you did an elective there) do you feel at home, are you anxious, are you sad when you are leaving the airport to go to your next interview.... All of these things will help guide your rank list.

# Rank List

What a whirlwind the last few weeks and months have been. Take a breather, you have conquered! Now there are a lot of things to consider. Know that the CaRMS algorithm is designed to place the applicant in the best possible outcome based on the applicant's choice.

1. Make the list in the order that you want. If you really want to match to a certain program put them first, and if it is possible at all CaRMS will match you to that program.
2. I created an excel document (Figure 2.) with a variety of important parameters included. I weighted these and input individual scores after the interviews. This was a more objective way to see where I was leaning. Not for everyone but I found it helpful.
3. Think about what is important to you. I think many people have a feel if they are a good fit for each school. Programs have their own unique culture, with differing values. You will see some schools highly value research, others focus on creating the best surgeons, while others want a positive resident group. Know what is important to you and seek it out.
4. Location is a consideration for sure. You will be spending five years in this spot. It may be telling if you could not stand being there for the two week elective.

5. Residents!! These individuals will be your teachers, support, and role models. Make sure it is a group you can get along with.
  
  
  
  
  
6. Make sure every school you rank is a school you would be willing to go to. If it is on your list, you may very well be matched to that program.

		Toronto	DO NOT FILL	Ottawa	DO NOT FILL	London
	Weight (1-10)					
<b>Parameters</b>						
Strength of program (surgically)	0	0	0	0	0	
Residents	0	0	0	0	0	
Staff	0	0	0	0	0	
Location	0	0	0	0	0	
Innovation support	0	0	0	0	0	
Partner's Choice	0	0	0	0	0	
Program Fit	0	0	0	0	0	
Happy Residents	0	0	0	0	0	
Benefits	0	0	0	0	0	
Prestige/reputation	0	0	0	0	0	
Size of program	0	0	0	0	0	
			0			0

Figure 2. Rank list parameters

# Odds & Ends

## *For electives*

Try to get to the elective city the day/night before. Settle in, figure out where you will be going on your first day. Try to get accommodations nearby, depending on which rotation you are on, you may only get a few hours' sleep each night, and you do not want to waste it commuting.

The first day may be a long one and could also be a call day for you. Bring snacks (I lived on Clif Bars®), have some cash on hand for buying food. Figure out where the cafeteria is, what time they open/close, and can you use your phone/watch to pay. In my bag, I had some extra socks/undershirt/underwear handy, along with toothbrush/toothpaste/gum just in case.

Before heading for electives, a wise Otolaryngology staff member mentioned that there will be times throughout my electives that something will go wrong, and it is probably not my fault. He said I will be put in awkward situations, and unfair circumstances at times. It is important to keep your dignity, and this often means surviving these moments when you are blamed/shamed. You will also feel at times that you may not have adequate knowledge or skills. Try to ensure these are learning moments, and not times for self-doubt and criticism.

Try to explore the city as best you can with any time off you have. Could you see yourself living there for five years? This is an important and a difficult thing to do in a short elective period but try your best.

### *Backing up*

The question of backing up comes up frequently from staff, residents, and other students. This is a completely personal call, and I will not try to sway you one way or the other. As you know OHNS is a competitive speciality. It is important that you consider all angles but be true to yourself. It is sometimes frowned upon when students split electives with many different areas of medicine, but contrary, some programs support a breadth of differing experiences. I would recommend at least two electives in OHNS if you are highly committed to it. I am of the opinion, that in the current climate, most of the competitive (and eventual matched) applicants in my year completed several OHNS electives in their final year.

### *Other thoughts*

Practice using the flexible nasopharyngoscope. This is a vital tool used for clinical examinations. Everyone has their own way of doing this (some use lidocaine spray, anti-fogging, hold the scope right side up or upside down), find what works best for you.

Otolaryngology is a small community of both residents and staff. People talk, which can go both ways!

## Final thoughts

If you feel this guide was helpful, please feel free to share it. Much of the information is specific for OHNS, but there may be other bits of useful information for students applying for subspecialty or general programs.

I wish you the best this year. It is a time where you get to picture yourself as an Otolaryngology resident. You will learn a lot about the field, profession, and yourself. It will move along quicker than you think, so keep that in the back of your head during those long days. This process is meant for you to strut your stuff, while also trying to see where you may fit in the best. OHNS is a wonderful field in medicine, and you will see why throughout the year.

Please believe in yourself, even if your home school does not have a program, you have limited Otolaryngology research, or a myriad of other perceived limitations. As noted to me many times, the most important aspect of matching is the programs perception of the applicant. Would they be an asset to their program, is it someone who they can work with and spend a majority of their time with for five years?? Work hard, show up (early!), take initiative, and be yourself! I hope to see many of you in Ottawa ☺

# Appendix A: Jon J. Krepelka, MD: Practical Guide to Common ENT On-Call Problem

1

**Practical Guide to Common ENT On-Call Problems in  
Edmonton, AB.**

Jon J. Krepelka MD

## **Foreword/Disclaimer:**

- This is a brief compilation of useful approaches and advice for common ENT calls here in Edmonton. It is based on 3+ years of ENT call and 6 years of surgical, medical, ICU and plastics call experience. Pretty much every sentence is based on actual cases. Obviously I recommend reading the appropriate chapters in **Bailey's or Cummings' textbooks** to fully understand each problem. *The new Lange Clinical review, ENT Secrets 3<sup>rd</sup> edition and KJ Lee are also excellent sources. The Toronto Notes are not bad.*
  - On the internet, if you go to Google and type in '**UTMB**', it will take you to the 'University of Texas Medical Branch'. Under the Otolaryngology Department, the **Dr. Quinn's lecture series** is an incredible collection of power point presentations and essays available to everyone. They are up to date overviews of common problems in this specialty. It has a million excellent images and tables, often right out of the above texts, so make sure you check it out
  - Over past 3 years, we have also compiled a large collection of **our own morning lectures** on power point. These are available to you in the ENT room computers
- There are a lot of things we get called about that won't be in this 1<sup>st</sup> edition and will certainly be added in the future, but this is the "**I wish I knew then what I know now**" stuff that no one ever tells you about
- Just remember whatever new problem you're called about, just see the patient ( if you're unfamiliar with the problem ), get a history, examine them ( and please document it on the consult sheet ) and if necessary never hesitate to give us a call or talk to us in the OR
- Any **stat calls** ( ie. If there is a "!" behind it, call your backup guy right away and just go and see if you can help the patient ( never forget that you have way more training than the nurses, RTs etc and you may be the patient's best hope )
- Most of the text is in regular print. **The bold print is meant to emphasize a few key points.**  
*Whenever you see the Italics print, that usually means I'm speaking from personal experience. Think of it as inside info and practical hints*

## **General Pearls & Hints of ENT Call:**

- Get a list of all the staff guys phone/fax numbers (included here and available in the resident's room)
- Have a list of the resident's pager #'s (provided – don't abuse them!)
- Write down common numbers at UofA and the RAH. Outside calls are usually '76799' or '73550'
- The number for the OR door after hours is 1133#. The phone number to book a case is '76955'
- Know who is on call for Staff Guys and for resident back-up
- Get familiar with the common places in the hospital you'll need to be, ie.
  - ENT ward is 3D4. The ENT clinics are on the main floor 1E4.
  - ORs are on the 3<sup>rd</sup> (Adult) and 1<sup>st</sup> (Peds) in the 'B' region
  - PAC (Pre-admission clinic) and Day Ward are on 5E4
  - ICU/Burn unit on 3<sup>rd</sup> floor in 'A' region.
- Keep a little black book of call (with your name and pager # on it). When you get a call, always get the physician's name and contact #. It also helps to write down the patient's name, number, age, location and chief complaint. Also carry a small light source of some sort. The small maglites are awesome. For just about every ENT problem you will need to shine a light into some head hole
- **Scopes:** Currently the residents don't have an available ward scope. (They are coming) There is a bunch of scopes usually available in the Otolaryngology clinics and the ER has two. Just remember 3 things:
  1. Never scope through the mouth
  2. At almost \$10 thousand a pop, try not to break the fibreoptics in the thin flexible part of the scope, which can happen if you bend them too much
  3. Don't drop the scope under any circumstance
- Get to know the 2 ENT rooms in the UofA Emerg. One is in C-Pod and one is by Fast Track. There are a lot of useful goodies for doing procedures in those rooms. At the Alex (RAH), unit 22 (ENT/Ophtho ward) has the best stacked ENT Exam room in the city. It has 2 scopes of its own and tons of cool meds and tools! Their numbers are 735-4522 or 735-4514
- It is better to treat a potential emergency and then discontinue therapy if you're wrong, than not treat it if you're right!
- Trust your gut. If, "we should secure this airway" pops into your mind, you're probably right. This also holds true for "I should probably see this patient" and "I need some help here"
- A lot of excellent therapeutic protocols include a fluid bolus. In otherwise healthy patients, it goes a long way. It also goes a long way in sick ones. *Just don't bolus patients in acute heart failure!*
- Tell your patients what you think is going on and what you are going to do. (*Honesty is key here. If you're not yet sure what is going on, it is acceptable to tell them that you want do a bit of a work up to get to the bottom of things.*) They are way more compliant and calm if you keep them in the know
- If at any point in any of your patient assessments your patient becomes unstable, go immediately to the ABCs and routine ATLS or ACLS protocols. And get help:
  - Your back up or near by residents, RNs etc.

- The staff person
- ICU team
- Even the code team. If the patient is in decompensating quickly, call a code. There is no better way to get a room full of pumped doctors and RNs ready to save a life. *I've done this 3 times in the last 6 years and it paid off each time. That being said, don't abuse these resources, just know that they are always available.*
- Don't forget these medical **maxims**:
  - ABCs – C also stands for Control the bleeder. (see Trauma section)
  - First do no harm.
  - Don't forget that the ear, nose and throat are attached to the rest of the body
  - If they feel better, they heal better
  - There is a reason they call them "vital" signs
  - Chance favors the prepared mind
- There are **4 principle questions of ENT history** you must always ask about. *I call these the Golden 4 – they are also the 4 ominous/danger signs for airway compromise:*
  1. **Shortness of Breath**
  2. **Hoarseness (Or voice change)**
  3. **Difficulty Swallowing (Dysphagia. Odynophagia = painful swallowing)**
  4. **Stridor (Noisy Breathing)**
- For outside calls (usually “73550” or “76799” at the U, “735-4111” at the Alec):
  - For all outside calls, get the doctor's and patient names and a number the doctor can be easily reached at. *Many times, you'll have to call them back. To this day, I'm still looking up small town hospital phone numbers just to find the “ER doc that called ENT” because I forgot to do this one little step*
  - If you have no idea what to do at all, don't panic, just get a quick history from the doctor and ask if the patient is **stable\*** and **what is the question for ENT**, then call your back up resident/staff for advice. (This is good advice for any unfamiliar call you get.)
  - **\*Never accept an unstable patient.** Remember you are responsible for the patient once he leaves the point of origin. *If the patient is really sick or has been in a trauma and they want you to stop his nosebleed, he should be sent to ER via a C/O or Critical Care/Trauma line. (This also holds true for stab or gun shot wounds.) You are a consultant on a surgical specialty, not the ICU attending. You should advise the sending doc on how to stop/slow down the bleed himself and then you can manage the patient's ENT issue once he's in the ER or ICU*
  - During the summer time, don't accept patients until you've talked to one of the chiefs/staff.
- All Incoming Patients should have:
  1. **A Stable Airway or:**
  2. **If stability of the airway is at all in question, patient must come by ATLS personal who are trained in intubations.**
  3. Appropriate ABX and pain, nausea meds on board. (they should be comfortable)
  4. **ETA ( Estimated Time of Arrival ) & How are they getting to ER** – tell them to go directly to the ER. (Many patients have stopped off for some shopping and

- visiting while the resident is waiting for their arrival after hours.) Or worse, we've had patients with clearly unstable airways drive themselves to the hospital over several hundred kilometers. **This should never happen!**
5. A consult letter from the referring doc
  6. Their name at the triage desk ('73746') when they arrive, with instruction to call "the ENT resident on-call".
  7. **NPO** (nothing by mouth – non per os)
  8. IV with NS or RL Bolus running – (most patients will be NPO.)
- All discharged patients should have:
    1. Arranged **follow up** (if needed)
    2. Prescription (if needed )
    3. An "**in case of emergency**" plan
      - Tell them where to go (**U of A usually best**) if things get worse and what to watch out for. To name a few (obviously these are problem specific ):
        - **Fever**
        - **Increasing Shortness of Breath**
        - **Enlarging Mass/Swelling**
        - **Progressive Bleeding**
        - **Aphagia** (Cannot swallow.)
        - **Acute Stridor**
    4. Specific Instructions (see each appropriate section)
    5. A diagnosis
    6. A **discharge summary**. If their stay is < 72hrs, all you need do is fill in the blank of the discharge summary form. For > 72hrs, we have to dictate their summary of why they were admitted, what was done, what meds they are leaving with and what follow up has been arranged
  - A couple of things about resident call in general:
    - Make sure you have a high yield resource (apart from this one) for general ward problems. Some excellent ones are:
      - This Guidebook
      - Most hand holds
      - The "On Call" series
      - The **Massachusetts Pocket Medicine** handbook – *outstanding evidence based protocols and approaches to common ward/medicine problems*
      - The pocket pharmacopeia
      - NETCARE (incredible source of labs, radiographics, histories and procedures on your patients)
    - Try to be a professional on the phone and with nurses. *This is one of the biggest challenges during busy times, but it goes a long way*
      - Please keep in mind that, **Respect begets respect**

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  - These 2 pages are a 6 year experience compilation of the most commonly used surgical drugs, bugs and drug dosages for adults and kids, Bailey's textbook antibiotic to diagnosis recommendations and how to bolus various electrolytes. There is also a pain meds conversion table
- G. ENT/HOSPITAL Phone Numbers
  - Resident, Staff and Common in house numbers. (**Please don't call staff at home unless they specifically tell you to do so.** Either page them or call your back up guy.)

## A. Top 10 Outside/Emergency C/O Calls:

1. Epistaxis
2. Peritonsillar Abscess
3. Sialolithiasis ( Salivary Gland Stones )
4. Hoarseness
5. Otitis Externa
6. Stridor
7. Head/Neck Abscess
8. Post-Op Complications
9. Foreign Body in Airway
10. Epiglottitis

### 1. Epistaxis ( Nose Bleeds )

Pearls: (Most are within the body of the text. These are just a few extras)

- 95% of the time 'posterior bleed' = poorly packed anterior bleed or at the very worst and mid nasal cavity bleed, both of which are accessible with anterior packing
- The nose is not some mysterious cavern filled with explosive trigger points. There is a septum in the middle (usually, don't forget that a lot of people have a bent or deviated septum) and turbinates that come off the sides. (see the picture in "what to do")
- What makes the nose special is its vast blood supply, which also allows the nose to heal very quickly.
- You only have to exceed the blood pressure of whatever vessel is causing trouble. Even the most hypertensive artery can be stopped with a pressure that equals that of pushing an elevator button

- **Never use versed or fentanyl in a patient who is not intubated**, unless you are about to intubate them yourself!
- Most consults are for patients who have already been packed or are “too complicated” to be packed by less experienced staff

On the Phone:

- How much, how often and how long. Are they **bleeding right** now? Is the **Airway** OK
- What has been **done so far**. What's up the patient's nose. (They need to do **something** to control the bleeding.) What is the **BP**. *Hypertension is a poor correlate with degree of bleeding since the vast majority of nose bleeds are Venous*
- Hemoglobin, INR, Coumadin, Plavix or other. **Always ask if the patient is stable**. Tell them to start an IV and give a bolus (if safe for patient – i.e., they're not in CHF)

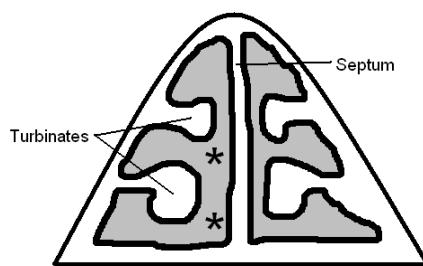
In the Room:

- **Get your supplies ready before you start.** All these are in the Emergency and Resident room ENT carts. You'll need:
  - Suction with **Fraser tip** and tonsillar suckers
  - Kidney basin/bowl
  - Head-Light (these are in the ENT ER rooms)
  - Epistaxis tray (in rooms and 3D4)
  - Garbage bin
  - **4% Xylo with Otrivin (50/50) mix** you make yourself
  - Several 4 by 4s, polysporin and tape
  - 2 large **Merocel sponges** and/or 2 Vaseline gauze packs unraveled
  - It's also good to know where your **silver nitrate sticks** [long plastic matches in a blacked out tube] are located. *Most often, by the time the patient is seeing ENT, a simple cautery will not do. It is a great method if there is a small excoriated area that only bleeds occasionally and very briefly. A Few words on cauteralization:*
    - *Never cauteralize both sides of the septum as you can cause a perforation that way. Instead do one side and then about a month later the other*
    - *I always like to put a little bit of polysporin on there to ward off infection and to help moisturize the area. I also ask the patient to put some in their nose at bed time for about 2 weeks*

What to do:

- Take out the existing pack. ( Most docs won't call you if their own pack is working ) Always have a **Merocel**, Vaseline gauze, and your suction handy in case you have to stop a streaker. *Also make sure you have access to at least 2 foleys if the bleed is really bad (extremely rare). (See posterior pack section)*
- With the headlight on, **examine the nasal cavity with the speculum and the oral cavity with the tongue depressor**
- There might be a lot of clots/crusts around so try to suction out as much as you can. Some authors advocate **having the patient blow their nose**
- **Try to find the source of the bleeding.** It's often directly on the anterior septum. Also look for septal perforations, mucosal lacerations, polyps, masses (tumors) and **foreign bodies**. Remember: the top three causes of nose bleeds are:
  - Mucosal Dryness
  - Digital excavation (nose pickers)
  - Anticoagulation agents
- Posterior bleeds are **exceedingly rare** (despite the conviction of referring MDs). Usually it's just a poor anterior pack. Also don't forget that **90%** of Epistaxis is **VENOUS** in origin so unless you see a pumper the **BP** has little to do with how much they bleed

- Once you've visualized the mucosa, gently insert into each nostril a 50/50 soaked 4x4 gauze cut into 1 x 8 inch strips (see asterixes in the below diagram)
  - As long as you soak something in the anaesthetic/vasoconstrictor, you can use a wide variety of things here including:
    - Stretched out cotton balls
    - Eye patches (tear in  $\frac{1}{2}$ )
    - Neuropatties (full length)
  - These are ideal and we use them in the OR, but good luck finding them in the ER



\* Place Packs Here

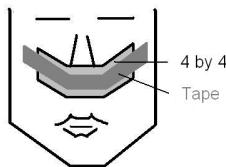
- Leave the local in for at least 5-10 minutes
  - If the patient is bleeding very heavily, go ahead and put something in there, to get some degree of control
  - While you're waiting, you can tell the patient what you'll be doing, or you can get the rest of their story. (Usually, you're answering another page.)
- Remove the local and re-examine the mucosa. Often, the oozing will be decreased and the mucosa will be more pale due to the *Otrivin* effect
- A recent study done here at the U of A indicated that using Merocel packs was a good first line treatment for Epistaxis, and unless the patient has a severe septal deviation or a big fungating mass, Merocel is an excellent option



- The Merocel Method:

- Size up the holes. ( nose holes! ) A large Merocel will easily fit into a 70y old retired basketball player, but not into a 5 ft tall young Asian female
- Also most people's nasopharynx is approximately 7-8cm long. That's why they made the Merocel that long. But you can always trim these things to custom fit the patient. (The trick is to not cut off too much.)

- Apply a generous amount of *Polysporin* to the leading edge of the Merocel. This will make it a lot easier on the patient. The pt should be sitting up straight with their head against the head rest (so they don't move back)
- Gently but firmly glide the Merocel in at a perpendicular angle to the forehead. Remember the hard palate is on a slight decline anteroposteriorly, it is NOT 45 degrees up! Also, try to stay slightly closer to the septum which is less sensitive than the turbinates
- The rule with all packs, whether you use Merocel, Vaseline gauze (see below) or Posteriols, **you must pack both sides**. Once both packs are in, you can inject the non-bleeding side with Normal Saline (to expand it) if it hasn't expanded with blood
- Always tie the merocels together, leaving about a centimeter of slack between the nose and the knot. If they're loose the patient will invariably pull them out "by accident"
- The final step is applying a "**moustache dressing**". You fold a 4 by 4 into thirds and tape it over their nostrils. ( see below )



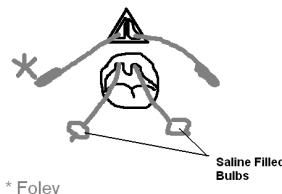
- **The Vaseline Gauze Method:**

- This one is more useful in patients which have unusual anatomy (major septal deviation), a bleeding mass or are post op nose procedure bleeds. The reason is that **you can custom fit the pack to the necessary defect**, something the Merocel will not allow you to do
- After you've examined and anaesthetized the mucosa with the topicals you'll be inserting a 6ft long  $\frac{1}{2}$  inch strip of really slippery gauze into the nostrils with **your forceps**. You'll need at least 2 of these (one per side). I say at least 2 because it is not uncommon to stick up to 30-40 feet of gauze into the really big nasal cavities
- Don't forget that **1 strip**, when packed properly is only about **1.5 cubic inches** in dimension so it's **not as big as most people think**
- There are 2 important things about Vaseline gauze you need to keep in mind:
  - First, It really helps to **see where you are layering the stuff**. If you keep **banging into the turbinates or septum** it will bleed and hurt more
  - Second, when you layer it, place the strips onto the floor of the nose and gently press each layer into the next so that the whole pack becomes one solid thing. This will ensure that it's tight enough to stop the bleeding and more importantly that it's **not too loose at the back and starts to hang down the patient's nasopharynx**. If that happens, you have to cut it in their mouth or worse, take it out and re-do the pack since they could swallow or aspirate the thing!
- Once both sides are nicely packed apply a **moustache dressing**

- **Posterior Packs:**

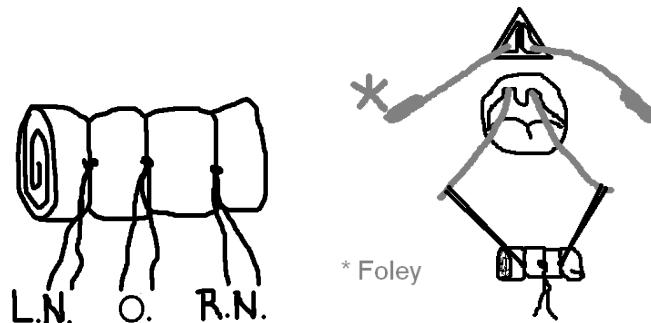
- There are several types of posterior packs *and if we're being technical, a good Merocel on each side is actually a type of posterior pack*

- I am describing the “formal” method below in detail, **but a very quick & potentially lifesaving way to pack the nasopharynx is to just use two foleys and keep them secured in place with plastic clamps as follows:**
  - Prepare: two foleys (*if you have time to test the balloons do so, otherwise you will be called at 3AM for a leaking foley*), prefilled saline syringes, plastic clamps and some 2 by 2s
  - Place one in each nostril
  - Inflate the balloons (*Try not to inflate the balloon to max capacity since they can hold a lot of saline. Instead, size up the patient's nasopharynx and fill the foleys accordingly*) and pull them out until there is moderate resistance. *You cannot be timid here, but don't pull so hard that they slingshot out of the patient's nose and across the room either!*

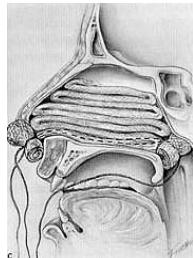


- At this point you can do an anterior pack with Vaseline gauze (*Merocel is not adequate because you have to custom fit that nasal cavity*). You have the option to secure the foleys with clamps first, cut the non-clamped portion off and pack the nose OR, pack the nose first while someone gently pulls on the foleys and then clamp them. You have a bit more room with the latter method, but you will need that extra pair of hands.
  - Make sure you pad the skin contact points
  - Incredibly enough, you are done
  - Keep in mind that this one is controversial. *In fact we do not routinely do this because it has traditionally been thought to cause mucosal necrosis from the bulb pressure*. Despite this, a lot of ENTs use the foleys as posterior packs
- 
- Call your back-up resident for the formal posterior “pack”. This one you need to see. But here are the basics:
    - Tighten your sphincter. True posterior bleeds are rare and are usually the results of invasive trauma or some type of tumour back there. **This is the definitive pack.** The 3 options left if a proper posterior pack is not working are Embolization, Surgery or Death
    - Spray the nose and oropharynx with xylocaine spray. Use at least 5 sprays in each hole, varying the direction of spray, but don't go more than the toxic dose! Again insert the cotton/gauze with local and Otrivin
    - Your tray should be prepared ahead of time and should include 2 additional things:
      - The Posterior pack itself – this is just a single ‘4 by 4’ sponge folded into thirds. You can also roll up a couple of ‘2 by 2’s, depending on the patient's head size. See pictures below. ( LN = Left Nostril, O. = Oral/Mouth and RN = Right Nostril )

- 2 small foleys
- Once the nose is reasonably anaesthetized, insert a foley into the left nostril and grab the end of it inside the mouth. A bayonet forcep works well for this. Pull it out just enough so you can tie the 'LN' suture to its end. Do the same thing on the right side
- When both the sutures are tied on, moisten the pack with polysporin so it's saturated. ( This makes it easier to insert and prevents stinky infection that often happens withing 24-48hrs. )
- Then with your dominant hand holding both foleys out of the nose and the other hand holding the pack at your index and middle finger tips, pull the foleys out while simultaneously pushing the pack behind the uvula/soft palate. ( Picture Below )
- It should be snug and you shouldn't see any of the pack in the back of the mouth
- Now you need to tie the 2 silk sutures to the columella (middle of the nostrils). **Make sure you put a rolled '2 by 2' under the knot to prevent necrosis of the suture into the skin**
- Remember that the 3<sup>rd</sup> or middle silk suture has to come out of the patient's mouth and you need to tape it securely onto their cheek. This is the one you'll use to pull the pack out usually in 72hrs
- Once tied, you now just pack the nose with Vaseline gauze as above. Don't use meroceles. The gauze is much better once the posterior nose is buttressed. Also you can take pieces of the gauze out each day and once the patient is day with only the posterior pack, it can be d/c'd.
- **Patients with posterior packs must be admitted for observation.**
  - Make sure you **order an AM hemoglobin**



The final product as seen from side view is below.



**Perscribe/Follow Up:**

- *Keflex* 250-500mg PO QID while the pack is in or
- *Cloxacillin* 500mg PO QID while pack is in
- *Tylenol #3 i-ii PO q4h prn x 20pills* (Watch out for constipation from codeine, which can lead to straining. Order Colace especially in the elderly)
- *Rhinaris Nasal Spray* ii sprays each nostril QID x 1 month once the packs are out
- *Polysporin* to each nostril at bedtime( **this is incredibly important** ). Tell the patient to sniff up a small glob of the stuff, just enough to cover one fingernail. They should **moisturize the nose** almost to the point of obstruction
- **F/U in 48hrs to pull the packs out.** Once pulled, they should *Polysporin* in their nostrils regularly

**Instructions to Pt:**

- Take it easy!!! **No straining, heavy lifting** or exercise. It also helps if they **don't get stressed for at least 1 week**. (Arguing, yelling etc.) They should try to **keep their head at 30 – 45 degree angle** when supine. **Ice packs** can constrict some of the vessels
- Reassure the patient that this will stop and get better. Let them know it's the most common problem we see in the ER and everyone gets nosebleeds at some point in time. I often remind patients that in the OR we incise, tear and debride tons of mucosa right off the bone and the bleeding often stops within 4 hours despite all that "trauma". They need to know that there is light at the end of the tunnel!
- Many times the **pack doesn't immediately stop 100% of the bleeding**. A **tiny amount is ok**, especially in the first few hours. But it should stop eventually. A common rule of thumb is **as long as the moustache dressing is not getting soaked more than every three hours**. Also there shouldn't be blood pouring in the back of the throat

## **2. Peritonsillar Abscess**

**Pearls:**

- It is **uncommon** to have **puss form under 4-5 days from the onset of swelling**. The vast majority of the **swelling** you'll see **is cellulitis**, a reaction to the infective focus

- Antibiotics can treat up to half a cubic centimeter of pus, but beyond that you usually have to drain the thing somehow, (unless nature pops it on its own) since the blood vessels cannot get to the source of the problem
- A lot of patients will have been going for IV outpatient antibiotics for a day or 2 before you are called. The point is so long as it's safe, patients should have a therapeutic trial before you implement invasive intervention
- Just from the history you can usually deduce if it is indeed an infection (ie acute onset over several days, slightly elevated WBC, maybe a fever... etc.), but just make sure you aren't trying to aspirate a cancer. If they've had a "peritonsillar abscess" for weeks or months, it's something else
- There will often be a dark red line between the soft palate and the tonsillar tissue. This happens to be the correct plane of aspiration or incision

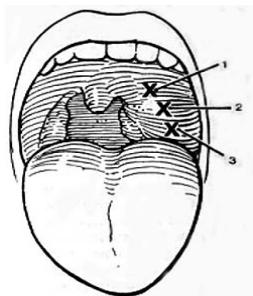
#### On the Phone:

- How long has the throat been sore? Swollen? Priors?
- NB: Most Abscesses require at least 5 days to be drainable
- Is the patient swallowing? Food, liquid, saliva?
- Is the airway stable? If at risk, may be a deeper infection
- Give the patient and IV bolus 1 L RL/1hr and Clindamycin 600mg IV (q8h). Get some pain control – say Morphine 2.5 – 5mg IV or 5 – 10mg SC/IM q3h prn. (don't give Morphine IM... imagine a flu shot every 3 hours!) And always check for Allergies

#### In the Room:

- Prepare your instruments:
  - Headlight, Suction with tonsillar/Yonker sucker
  - #25 and #18 needles on a 5cc syringe. Use the 1 ½ inch length, not the 5/8 inch which won't reach the back of the throat.
  - Xylo spray, Lidocaine 1% with EPI (red cap)
  - Small curved mosquito
  - #11 (pointy-not curved) blade
- What to do:
  - Sit the patient up, ensuring their head is resting against the seat head rest. This way they won't be able to jerk their head back when you poke them. It's very unlikely they'll move their head forward
  - Examine their oral cavity, oropharynx and neck. You should see the typical unilateral swelling, uvular deviation, limited jaw opening and hear the hot potato voice. (See picture below.)
  - Once you're confident that this is not another type of deep neck abscess, spray their oropharynx with Xylo. Warn them that it tastes bitter, but that it will become numb in a couple of minutes
  - While depressing the tongue with a blade, inject the #25 needle on the 'x at #1' as shown in the figure below. Only puncture the mucosa at first... just enough to place a bleb of local. Now you can inject up to 1cm deep
  - Remember, this will hurt so tell the patient the 'pressure' is very temporary and it will help the procedure's chance of success
  - You can now try to aspirate with the #18 on the same syringe. The advantage is that you still have a little bit of local that you can inject once the new needle is in

- As soon as you enter the mucosa, aspirate so as to **enter the deeper tissue under constant negative pressure**. Often, the mere puncture produces puss. A few critical things to keep in mind:
  - The carotid is only **2cm lateral and 2cm posterior to the lateral tonsillar pillars**, so **Stay Medial to the Pillars**
  - This way, all you're really doing is poking parts of the soft palate and staying out of the danger zone. Despite this, you'll still get a fair amount of oozing at times. Fortunately, it often stops as quickly as it starts
  - **Never go deeper than 1.5cm**
  - In the picture below, position **1** will yield puss for you about **80%** of the time (if there is pus there in the first place), position **2** will yield another **15%**. **Stay away from position 3 and anything lateral to that. That is the danger zone**



- If you get puss on the aspirate, you have 2 choices:
  - Continue to aspirate until no more comes out. (Common method)
  - Perform an **I&D**. (More definitive). Use a small curved mosquito and **#11 blade**, with the **sharp edge facing the curve of the mosquito**. This will protect the rest of the oral cavity and give you depth control
  - Next, you simply **lance the previous puncture mark** (where puss is often oozing), just enough to get the tip of your mosquito in
  - Take off the blade, enter the incision and gently spread posteriorly, **medially and inferiourly**, aiming to the middle of the oropharynx **at a depth of ½cm to 1cm**. Have the **suction ready**, because tons-o-puss will come out
- **If no puss comes out, try one more site only.** (Position #2 in the above diagram.) Just follow the steps above. If still no puss comes out, don't go digging around. Your options now depend on the patient's status. If they're **really sick** consider **a neck CT with contrast** and admit them for observation and **IV antibiotics**
- If puss comes out, suction out as much as possible as you **gently press onto the tonsil** (**you can even put the sucker into the hole you made...** but that can be **very painful**). Don't forget to send some of the stuff off for **Culture and Sensitivity**

#### Perscribe/Follow Up:

- Often patients **cannot swallow the Clindamycin capsules** and the **liquid form tastes like vomit**. So many patients will need **outpatient IV antibiotics**

- The forms are in the ER computers. If you ask politely, the RNs are great at getting it for you. You just fill in the blanks and they fax it to the nearest IV clinic
- I always include an **IV bolus of fluid after each Abx treatment**. 500cc-1L of RL or NS is good. (remember , these patients are not drinking too much)
- **Pain control** is a huge bonus for you and your patient. If they feel better they heal better
- They should be on a **soft diet** while the throat heals
- - **Clindamycin 600mg IV q8h** is recommended for the first 24-48hr post drainage. (The majority of these infections start out as **Strep or Staph**, but eventually become **Anaerobic**)
  - **Clavulin** is a good choice if they have **allergies to clinda** or some **underlying GI problems**

**Instructions to Pt:**

- **Sips, sips, sips.** As always if they become hoarse, stridulent (stridorous is not a word ) or unable to swallow, tell them to come back to the UofA emergency

### **3. Sialolithiasis/Sialoadenitis ( Salivary Gland Stones/Infection )**

**Pearls:**

- **Everyone** gets a **tiny stone** occasionally. Most never cause a problem since they're swallowed with our food. Stones become problematic when they get stuck somewhere in the duct, causing the plumbing to back up. Then you have **stasis of the saliva** and **bacteria** start multiplying.
- Whenever possible we do not operate in infected glands, especially parotid glands, since they house the facial nerve of expression.
- The **most successful therapy** for these patients is "**M.A.S.H.**"
  - **Massage the gland** ( every 30minutes while awake )
  - **Antibiotics** ( usually Cloxacillin, Clindamycin )
  - **Sialogogues** (sour candies that make you salivate)
  - **Hydration and Heat** (lots of sips of fluid and warm compresses)
- The parotid duct ( *aka Stenson's* ) is located in the cheek right by the second maxillary (upper) molar. The submandibular duct ( *aka Whartin's* ) is under the tongue, beside the base of the phrenulum. You can see clear **saliva** coming out of your own ducts if you massage them from **back to front** gently. **In these patients, you almost always see pus instead**
- Patients with **recurrent chronic sialadenitis** are candidates for removal of the gland (usually **submandibular**) at a later date, **when the glandular tissue is no longer acutely inflamed**

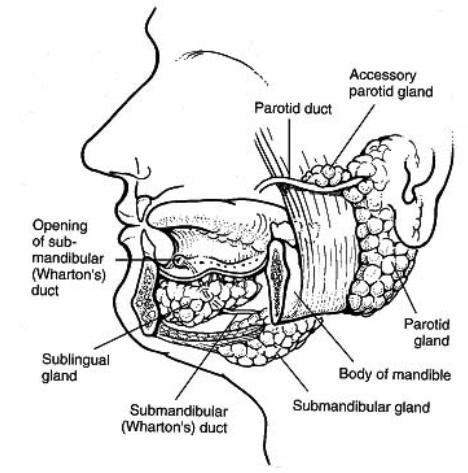
**On the Phone:**

- Which gland? Often the MD will just tell you that there is a swelling in the cheek or under the mandible/neck (parotid and submandibular glands respectively )
- As with many infections this should be an **acute story**. Always **be suspicious of tumors** if the "infection" has been there for several **weeks to months**
- Can they **express pus** by massaging the gland

- Is there a **palpable stone** at the floor of the mouth ( Surprisingly common )
- What **antibiotics** have they received? What kind of **pain control** are they on?
  - These people are **often in a lot of pain** and control of pain (as always) goes a very long way here

**In the Room/What to do:**

- As always have a headlight and suction with a plastic tonsil sucker ready
- First and foremost, **have a good look**. Often you'll see a **bulge in the duct orifice or an actual piece of the stone sticking out**, ie. "You can see the head"
- An important component in diagnosis of stones is **palpation**. So with your gloved hands **make sure you feel** under the tongue, inside each cheek, along the length of the **duct** (see below ) and gently **massage** the suspicious gland from back to front. If they're too sore, tell the patient to massage the gland
- **9/10 times** you'll see saliva or more often puss ooze out of the **duct**. This is a **good thing**, because it means the infection is not trapped and has a lot lower chance of spreading to deeper neck spaces. *It's incredibly rare for a stone to cause 100% obstruction of a duct. The ducts are compliant enough to dilate and let fluid trickle by even with ginormous stones.*
- If you cannot see or feel a stone, go directly to MASH and **follow the patient up if they're not improving or are getting worse in 48 hrs**
- If you can **see the tip of the stone**, or, "it's right there", try the following:
  - Before injecting or spraying local, see if you can **pry the stone out** with just a pick-up (tweezers) or a small Kelly (mosquito). You can also try to gently squeeze behind the stone and pop it out like a zit
  - If those don't work, then draw up 1-2cc or lidocaine without epi. **Inject only in the superficial mucosa** (ie. Only the **first few millimeters**) just to get a **little bleb over the stone**
  - Once it's frozen, you can use either a #11 blade or #18 gauge needle tip (both very sharp) to **lance open the ostium**. Don't cut more than 2-3mm. this is a **mini-episiotomy** of sorts, and usually only a **small nick** is all it takes to get the stone out
  - Once the stone is out, you **may or may not get a lot of puss out**. Sometimes a **smaller stone is higher up** and will eventually **work its way down with constant MASH protocol**

**Perscribe/Follow Up:**

- On a prescription pad, write out
  1. A 7-**10** days worth of antibiotics ( Clinda if no allergies ). *I go a little longer for more severely infected glands.*
  2. Something for **pain**. A combination of Tylenol 3s and the occasional Advil (anti-inflammatory) works wonders for this acute pain
- **On a separate piece of paper write out MASH for the patient.** Explain to them that **strict adherence** to this regimen is needed for therapeutic success. *The next step is Admission*
- They should follow up with ENT if they are getting worse or have had no improvement
- 

**Instructions to Pt:**

- I like to advise patients that their chance of **recurrence** is slightly higher, since the duct is often **scarred** after infection and intervention. For that reason if they feel the slightest hint that another infection is coming on, they should start the **MASH protocol** until the symptoms subside

**4. Hoarseness****Pearls:**

- **Never scope through the mouth.** Scope through the “more open” nostril.
- Remember that **anything that prevents the cords from touching each other will give you a hoarse voice.** Common things are reflux, voice abuse, nodules, papillomas and **ulcers**. Less common are small **hematomas**, **trauma** and **tumors**. Bottom line is eventually **one of us has to look at the larynx through the nose and document it**
- Try to quickly categorize problems into **chronic and acute**. Chronic hoarseness is usually not an emergency (unless it has changed acutely ) and all they want you to do is to scope the person. A

lot of calls we get are for “query paralyzed vocal cord”. This is especially suspect if they’ve had thoracic or neck surgery and **then** became hoarse

- **Post-op hoarseness** is common and is usually from the irritated vocal cords being mildly swollen. Similar to what you see with **reflux** or **viral laryngitis**. Despite this, a lot of consults will ask you about a “dislocated or subluxed vocal cord”, and although possible this is really rare (I’ve seen one) and is usually the result of “in the field” traumatic intubation or a very difficult one where the cords were not visualized
- **Prolonged intubation** can cause **small ulcers** on the vocal cord from the tube
- Fortunately, what you see through the scope can be generally categorized into one of 4 things
  1. Everything is normal (very common)
  2. One of the cords is either paralyzed or **hypokinetic**
  3. There is **something there** (involving the vocal cord or the laryngeal anatomy as a whole)
  4. “Book the OR as E1”

#### On the Phone:

- How long (since when)? **Progression** of the hoarseness. Was there a **specific event** (**trauma, URTI, Surgery**). If a patient was **punched in the throat** and is becoming progressively hoarse in the past several hours, that is an **impending airway emergency**. That person needs to be either **intubated now** or sent by critical care line straight to A pod in ER for a scope. Fortunately the vast majority of hoarseness consults are chronic in nature
- As always, **the golden 4 – make sure their airway is secure**
- Is there a history of **voice abuse, smoking, reflux, prolonged intubation**, ?
- Are they **aspirating** with oral intake? Recent or current **pneumonia**?
- Ask them if they’ve **scoped** the patient themselves. A lot of C/Os and some Family Docs have scoping capabilities. They often tell me that they’re not sure what they’re looking at. The main point is the patient has an airway and that “**something doesn’t look right down there**”
- t

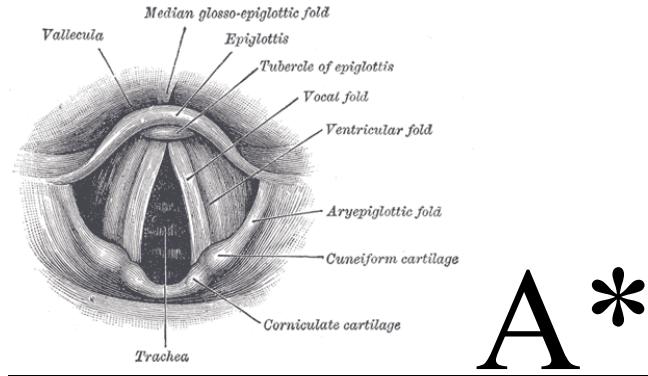
#### In the Room:

- **Scoping pointers:**
  - Prepare your equipment **ahead of time**. There is nothing worse than fiddling with your equipment looking confused when you’re about to enter an already anxious patient’s nose. This includes:
    - The **scope**
    - Anaesthetic nasal spray (**Xylocaine** canister, or vapourizer in the clinics)
    - **Muco/KY** jelly
    - **Defogger**
    - Box of tissues
  - Look through the scope and make sure the image is clear and in focus. Putting the tip into your gloved hand gives you a good idea of the quality of picture you can expect. When you move the thumb piece up and down, the image should go up and down as well
  - If possible, the patient should be **sitting up**, with their head against a chair headrest or pillow. The **chin** should be **slightly flexed downward**. You should be at a comfortable height with respect to the patient. Don’t bend over the patient to scope them
  - Once again, tell the patient what you will be doing and what you are looking for. Reassure them that this will not hurt, but that they will feel the scope and it will be uncomfortable for a few seconds. Most scopes only take about 30 – 60 seconds. It helps

*to remind them how crucial and valuable the examination is and offer them the option of the local spray or a rest at any time. The patients very rarely will take either.*

- The decision to spray the nose with local is very individual. **Most of the time, it's not needed.** Remember the **spray** is very **bitter** and can **make people more anxious**. My first year I sprayed just about everyone, the second year almost no one. I now reserve spray **for those who request it**, those who have a **wicked gag reflex** and those with **abnormal anatomy** (eg. Post trauma/surgery)
- The **local** spray is also a good **lubricant** and **defogger**
- It's a good idea to put a small amount of **lube** at the **leading 5cm** of the scope. **Just make sure you don't get any on the tip itself, otherwise you won't be able to see anything!**
- Gently insert the tip into the more open nostril. **To find out which it is, you can ask the patient to plug up one side at a time and sniff in.** Or just have a look with the scope quickly in the anterior portion of each nostril
- Once in the nose, try to stay along the floor and medial, near the **septum**. The **turbines** are much more **sensitive** if you touch them. Try to keep the **3 principle structures** **equidistant** from the center of your visual field. This way, there is a much lower chance of hitting them
- The 3 structures are:
  1. **Septum**
  2. **Turbinate**
  3. **Nasal Floor**
- Try not to jam the thing in there. This is not a race, go slowly and gently always remaining between the structures, until you come upon the nasopharynx. This is a wall of soft tissue that may or may not have adenoid tissue. Here if you carefully turn the scope, you'll see the Eustachian tubes
- At this time, you want the **nasopharynx** to remain open. There are **2 trick** to keep it open:
  1. **Ask the patient to hum with their mouth closed, or**
  2. **Ask them to breath through their nose**
- Now you can advance the scope (it will automatically go down as you gently push it in). The same principle applies here, as you advance the scope, **stay in the middle, away from the posterior pharyngeal wall and anteriorly the uvula**. On the sides you'll see the tonsillar fossae
- Below this point you should see a larynx. (see picture below) Orientation is often tricky once you're in the oropharynx, but a good rule of thumb is:
  - Imagine the open vocal cords as the capital letter '**A\***'. The tip of the **A\*** is always the **Anterior** (see below)
- At this point I ask the patient to say "**EEEEEEEEE**". This does a couple of things;
  - Takes their mind off of what you're doing
  - **Brings the vocal cords together** and lets you **see if the arytenoids complex is moving**
- Position yourself at just above the middle of the epiglottis. This will give you a nice view of the vocal cords and the **vallecula** ( the space between the tongue and epiglottis )
- As with most things in the body, look for **symmetry**. As you can see below, structurally and functionally the normal larynx is a mirror image of itself
- Document any unusual masses, hematomas, injuries, edema, scarring or asymmetries
- **The usual routine is to ask the patient to:**
  - Say "**EEEEEE**", then "**HE-HE-HE-HE**" (**closes cords**)

- Ask them to take a deep breath through their mouth (opens cords)
- Ask them to cough (first closes and then opens – good for functional dysphonics and patients with paradoxical vocal cord movement)
- Have them swallow whenever your lens is blurry, it clears the view beautifully



#### Perscribe/Follow Up:

- Voice rest, hydration, PPIs (pantoloc) if evidence of chronic irritation
- Another golden opportunity to advise your patient to stop smoking
- Any pathology has to be seen by a staff person. If at all possible have the case seen by any available staff that day (if you happen to be in the 1E4 clinic). Also if you are in the clinic, it's easy to get a photograph of the larynx on most of the towers down there. If that fails, then at least try to draw a rough picture of what you see, using the above image as a template.
- Any emergent finding (big tumor, blood/hematoma, supraglottitis/epiglottitis, puss/abscess or foreign body) must be discussed with the staff or the senior resident immediately, so long as the patient is temporarily stable.
- t

#### Instructions to Pt:

- Ask them to remain calm and assume the most comfortable position for them at this time. This can tell you a lot about the severity of the patient's airway problem. For example if they are in a tripod position and indrawing a lot, their airway is a major concern. If they lay straight down and are breathing comfortably, you know that at least for the moment, they can maintain their airway.
- t

## 5. Otitis Externa (Swimmer's Ear)

#### Pearls:

- The etiology here is the ear is **wet** and **itchy**, so the patient will **scratch the canal skin** somehow and **bacteria** infect the skin layers. This then gets more itchy and sore, so patients will scratch it some more and the **vicious cycle** begins.
- The objective is to **get antibiotic drops to the source of the infection**. That means that it should be accessible at all points. There are basically 3 common presentations:
  1. **Mild inflammation** in the canal, majority of tympanic membrane (TM) is **visible**
  2. **Lots** of inflammation and debris and **only a small part** of TM visible
  3. Canal is **swollen shut, no TM visible**
- The principle of therapy is to **debride** as much of the sloughed off canal skin and cerumen as **you can** and then **introduce Ciprodex** (most common) drops with or without a popewick.
- The #1 bug here is **Pseudomonas**. This can cause **very bad infections** in the diabetics, the **elderly** and the immuno-compromised.

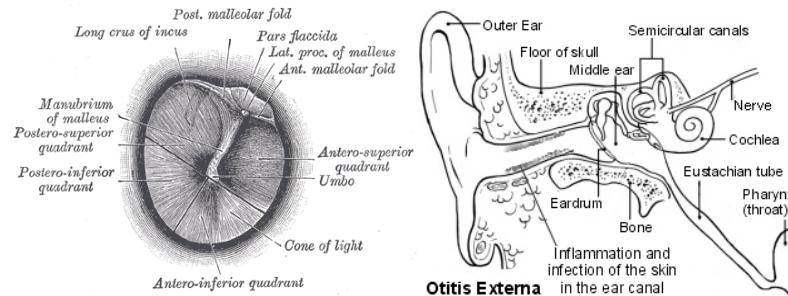
#### On the Phone:

- As always, the vitals. (*The patient will not die from Otitis Externa, but the high risk ones can get pretty sick if they get the worst version of OE called Malignant OE – this is really rare but aggressive so those people have to get admitted- I've only seen 1 so far. So 99% of your calls will be bread and butter OE.*)
- What exactly do they see in the ear canal. **Is it draining?** ( often indicates **Otitis media** with the **middle ear contents in the canal**. This is not the same as otitis externa.)
- Is there **pain** over the mastoid. This is especially **risky** in the elderly diabetics and/or immuno-compromised. Is there pain when they pull on the auricle (usually the case)
- What's been done so far? (drops, po antibiotics... )

#### In the Room:

- Even if you don't have a microscope, have a look inside and try to identify some landmarks of the TM. (see below) *The 1E4 clinic, the RAH unit 22 and even our resident room have a microscope*
- The money is usually in the canal wall. It will often be **swollen** and have **white flakes coming off of it** (the **sloughed off canal skin**). It can look like a minor burn inside the canal
- Don't forget that ear wax (**Cerumen**) can **come in all types of colors, shapes and textures**. It's often mixed in with the 'debris' of infection
- Use a speculum (looks like a construction pylon or cone) to look around. **Small suction tips** are available in the 'EAR ROOM' in the 1E4 clinic. You can put a **couple of drops of CiproDex, Peroxide, Garamycin or sterile Saline** into the canal to **loosen things up**. **Don't use pure water**
- Gently suction the debris out as best you can. Remember this is often **very painful** (you're **peeling away dying, infected skin**) so apply the same principle as in scoping, **staying in the middle and away from the canal wall**
- Your primary goal is to **debride as much as you can out of that canal** (without damaging the TM!). Sometimes, the canal is so swollen that it may not be possible to do so. The **objective** then becomes to **allow the maximum surface area to be exposed to the (Ciprodex) drops**. Sometimes that requires the use of a **popewick**

- The **popewick** is a micro version of a merocel except that when this one expands, it looks like a **foam tube**. Most ER departments have these, as do our clinics. This **shape** allows the maximum amount of antibiotic and steroid to reach the canal wall and the TM. It should be **changed every 2-3 days**.
- The patient should be **follow** every 2-3 days until the infection is eradicated. *If that's not possible have them continue the drops for 10 days and come back if they don't get better.*
- Once the debris has been cleared, the patient is **continued** on the drops for 5-7 days and advised to strict dryness and manipulation precautions. That ear must be **free** of water and **no objects** should be inserted to relieve the itchiness (see instruction section)
- 



#### Perscribe/Follow Up:

- CiproDex, CiproHC are the most common drops. The recommended dose is **4 drops BID**
- See the patient under the **microscope** **every 48-72hrs**. *In reality you should only see them a maximum of 2 times. After that a staff person has to get involved for litigation's sake*
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#### Instructions to Pt:

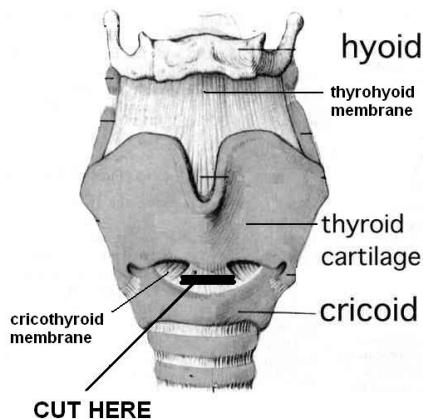
- Keep the ear **dry**. Tell them to use a **cotton ball blended with Vaseline or Polysporin before exposure to water**. This makes an **air-tight seal** and can **easily be removed** by the patient
- The duration of the infection is usually **7-10days** once treatment is initiated. Tell them to be **patient** and to be **vigilant with the drops and water precautions**
- t

## 6. Stridor

#### Pearls:

- More often than not, **this one is an emergency**. There are 2 common exceptions
  - Chronic stridor **that has not changed**
  - Paradoxical vocal cord movement
- So your focus must be on **rapid laryngoscopy and diagnosis**. **Stridor is never a normal symptom.** That being said, it can be a stable one if chronic

- Call the triage desk and let them know you have an airway emergency coming in and that you'll need a spot in 'A pod'. Also let them know that you'll need a scope
- Categorizing the stridor can be useful
  - Inspiratory
  - Expiratory
  - Biphasic
- **Bottom line is something is obstructing this person's airway and you have to look down there and try to diagnose what it is.** So yes, you do have to come in to scope them
- Be prepared to intubate or if need be, do an emergency cricothyroidotomy. ( According to Bailey's Text ) a "slash trach" is almost never needed these days
  - You must have an RT, tracheotomy tray and a couple of different sized ET tubes ( a 6 and a 7 for example ) in the room.
  - Remember it is incredibly rare to do a cricothyrotomy, but if intubation is not possible and the RT or anaesthesiologist cannot bag ventilate the patient, the person is expiring AND you've called all your backups and no one else is around, do the following:
    - Palpate between the thyroid cartilage and cricoid ( cricothyroid membrane )
    - It's crucial to keep in mind that this is the thinnest part of the anterior neck to the airway, all you have is skin, a little fascia, tiny vessels and the membrane. Unfortunately what varies is the **amount of fat!** In the extremely obese (who seem to get sicker more often), you may not be able to feel the thyroid notch (adam's apple) or cricoid, so the best thing to do is feel for the thyrohyoid membrane and the palpate down the midline. You can feel that indentation in any neck
    - Once you're satisfied that you are in the right spot, with your non-dominant hand make absolutely sure you're in the middle of that membrane and poke through with a #15 blade only until you've broken through the front part of the trachea. Often, You'll get a rush of air
    - Now flip the knife over so that you can insert the handle ( blunt end ) into the trachea. Once it's in there, turn it a quarter turn to widen the entrance. This should be enough to allow the patient to ventilate. *It may be possible for you to insert an ET tube in there (usually a 5 or 5 1/2 is good enough until we can get that patient to the OR*



- Fortunately, the vast majority of stridulous (not "stridorous") patients can be managed in the OR in a controlled setting, with anaesthesia and ENT staff present, but it pays to be prepared

#### On the Phone:

- An acute stridor will need to be sent by ATLS. This means that qualified paramedics with airway intubation/surgical airway emergencies will accompany the patient to the hospital
- Get the person's vitals, history in the last 24hrs and if possible blood gas values. *If they've already done them... don't delay the patient's transport if these are not done*
- If the stridor is inflammatory (anaphylactic, acute supra/epiglottitis) consider a one time dose of Decadron 10mg IV **prior to or during transport.** (*This is one of the miracle drugs when used appropriately. Anaesthesia uses it intraop for acute laryngeal edemas of various etiologies. It's also an excellent anti-nauseant in intra-partum women... so in short courses it's a safe and very effective steroid. I've been embarrassed several times in the Acute side of Emergency having accepted patients with stridor or "epiglottitis only to have them arrive asymptomatic. Be very careful though because all the Decadron will do is buy the patient a little time*)
- For any airway emergency, especially when the patient is 100s of kilometers away, suggest to the doc on the other line to secure the airway first. *Sometimes it's just a matter of suggesting that the ABCs are the priority and if the airway is getting less stable, they should act sooner rather than later and intubate that person*

#### In the Room:

- A flexible laryngoscope, Oxygen monitor, an RT and an RN should be ready. *You also need to have a trach tray and some different sized Endotracheal (ET) tubes. These are rarely needed since you should have time to get the patient to the OR if need be*
- As soon as it's possible, have a quick look through the nose at the airway. **The most important question in any urgent scope is "Can you see the cords?"**

- If you cannot because they are too swollen, slammed shut, obstructed or there is a mass effect from above (epiglottitis, Ludwig's angina, tongue base or deep space abscess etc. ) you'll need to act quickly
- This includes things like calling the staff or back up resident and booking the OR as an E1
- Try to identify at least one normal landmark which will help you get oriented. Don't forget about common variations such as the "Omega Epiglottis". *Here, the patient's epiglottis is actually shaped like a horseshoe or a capital 'U' and may be thicker than the one in the picture in the hoarseness*
- Once you have had a look and taken into consideration the relevant history, it's time to formulate a plan of action. What will make it easier for you is to triage the problem.
- Many of these patients go on to the OR to have their airway secured in some way (fiberoptic, transnasal intubation by the anaesthesiologists, a trach by us etc...) At the very least they need to be observed to see how they progress over the next 6 – 8 hours.
- In chronically stridulous patients it may be acceptable to discharge them, providing they are stable and proper staff follow up has been confirmed.
- 

#### **Instructions to Pt:**

- If breathing becomes a problem, they need to be re-scoped at either the UofA (preferred) or the Alec (*If you will be there, available to see them on unit 22* ).

## **7. Neck Abscess**

#### **Pearls:**

- There are a lot of deep neck spaces which can potentially become infected, but the more common infections you're likely to encounter are:
  1. **Ludwig's Angina**
    - Bilateral infection of the **submandibular**, **submental** and **sublingual** spaces
    - These patients have **really hard anterior neck swelling** and a **hard and edematous collection under the tongue**
    - The concern is that the **base of the tongue will push closed the epiglottis** due to mass effect
    - All must be scoped and **all these patient require airway stabilization almost always by Trach tube**
    - These patients often end up in **ICU** for several days, until they develop a "**leak**" *They can get air around the ET tube*
    -
  2. **Dental Abscesses**
    - This one is quite common. It becomes our problem when the airway comes into question but you will get called for a lot of focal collections anyway. If the patient has had dental surgery in the past 2 weeks (very common) make sure they have **contacted the dentist who performed the procedure**. *Many times the definitive treatment for a true dental*

*abscess is to simply pull the tooth. That is a dental procedure, not an ENT one.*

- The **Alec** has a **dental surgeon on call**

### 3. Parapharyngeal Space abscess

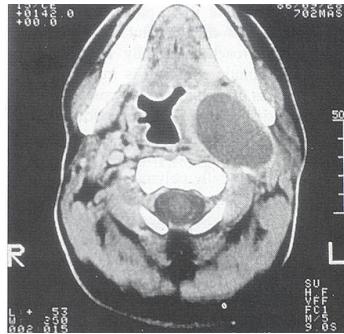
- The natural **progression** of an abscess is usually:
  1. Pain
  2. Cellulitis ( soft tissue swelling )
  3. Phlegmon ( 'Liquification' of the cellular matrix. Does **not ring enhance** )
  4. True Abscess ( Well demarcated, ring enhancing collection )
- Most abscesses are preceded by an URTI (viral or Gram+) 1-2 weeks prior to presentation. They ultimately **become predominantly Anaerobic or Mixed**.

#### On the Phone:

- Is the airway stable? *This is the question they will actually be asking you. And as with stridor or hoarseness, you must scope these people.*
- Ask what the patient has been giving so far and ensure they begin therapy if the story is highly suggestive of a true infection
- **Vitals and WBC** are more important here, since infections have the potential to go systemic and result in sepsis. An elevating WBC or Temp should raise your index of suspicion. Begin treatment immediately with **IV fluids and Abx** (**Clindamycin 600mg IV now and q8h**)
- **You must also order a Creatinine**, since the patient usually requires a **CT Neck with Contrast**

#### In the Room:

- A simple approach to both the examination and radiographics is to **look for asymmetry**. Even if you are not a star radiologist, you can often pick up differences in the 2 sides. *Below and on the title page, you don't need to know a single structure in the image to realize there is a large grey mass/collection on one side*
- Keep in mind the **4 golden (danger) signs** (Stridor, Aphagia, Hoarseness and SOB)
- **Do not try to Aspirate/ I & D any abscess in the ER until you've talked to your back up/staff.** The deep neck space collections will invariably end up in the OR.
- Once you are satisfied the patient is stable
  - Ensure the **IV** is hung, the **ABX** are coming/in and they have **pain** meds. The patient should also be **NPO**
  - Now go talk to your radiologist. *As a courtesy and professionalism, I always get a blank piece of paper with the patient's sticker on it and a very brief point form of the history. I also include the Creatinine. It makes their job that much easier and slightly more difficult to say no*
- Many times the CT will look similar to the one below
  - If it does, this person needs to have the thing **drained**. **Antibiotics** simply **cannot** get rid of a collection **bigger than 1cm in diameter** (usually). *This doesn't mean that you have to book the case as an E1. If they are stable it can usually wait a few hours. Just don't wait 24 hrs.*
  - There are however one of 3 things you may also see:
    1. Normal anatomy
    2. Cellulitis only
    3. Phlegmon (advanced cellulitis - between cellulitis and abscess, but **not a true collection**)

**Prescribe:**

- IV antibiotics, fluids, Oxygen monitoring and pain meds
- Strongly consider a single dose of Steroids ( IV Decadron 10mg X 1 ) It is now a routine part of what the ICU literature calls the **Early Goal Directed Therapy approach**
  - Exponential improvements in mortality and morbidity have been documented with expedient IV Antibiotics, Steroid, Fluids and Blood Pressure stabilization in Early Sepsis
- Serial exams is a key principle in any potentially unstable patient and you should never order "routine vitals" on these patients. They should be monitored at least q4h and preferably under continuous Oxygen sats for the first 24 hours.

**Instructions to Pt:**

- Educate the patient on the potential seriousness of the infection and the risk of spreading to more dangerous spaces of the body, including the mediastinum in some cases. They must be made aware of the potential for an ET tube or trach if things get worse

**8. Post-Op Complications****Pearls:**

- Overall not very common (*often the patients call the office first, but if the staff is not in, the patient or the staff's secretary will often call you directly through the switchboard*) but the ones you will see include:
  1. **Post tonsillectomy bleed**
    - Is the patient pale? Vomiting BRB or dark (old) blood
    - What is the hemoglobin?
    - Are they bleeding now. Is there a visible clot?
  2. **Nose bleed (Epistaxis) after Nasal Surgery**
    - Did they have a rhinoplasty, septoplasty or endoscopic sinus surgery?
    - Your approach to these should be similar to your Epistaxis approach, but note that these people usually have a much easier nose bleed to control. For one thing the septum is almost always straight (or straight enough for merocels)

- The trick is not harming whatever sutures or reconstruction may have been done. Direct visualization and careful placement of packing (if it's even needed) will keep you out of trouble
- A lot of these patients simply did not comply with the "take it easy and don't lift anything over 10lbs" rule, so please remind them

**3. Infections**

- A commonly mistaken "infection" is **after tonsillectomy**. Many physicians unfamiliar with what the tonsil bed will look like think that the whitish-yellow tonsillar bed is infected, when in fact that is a normal appearance following intense cautery. In other words, this is a burn they are looking at.
- With respect to **wound infections**, these people usually just require a 10 day course of antibiotic, a quick follow up in the office and reassurance
- 
- If you ( or surprisingly the patient ) have no clue what the procedure was, first do no harm. Give the staff man/back up resident a call and **describe what you see. You should at the very least always look and be able to describe what's happening and where.**
- Most of the procedures are on the NETCARE system and you can easily check in there

**On the Phone:**

- When was the surgery? Do they know what was done?
- Who was the surgeon? They should always call the surgeon first (during business hours) if possible. This is especially true if this patient was not operated on by an Otolaryngologist. A lot of our procedures are done by General Surgeons

**In the Room:**

- Obviously this is procedure dependent but prepare the adequate equipment. Headlight and suction for a nose problem, otoscope or microscope for an ear problem, etc.
- It's very important that you **reassure the patient** and let them know that this is a common problem (*Usually true*) They need to know they'll be OK. Also let them know you'll attempt to reach their surgeon if possible
- Conduct a thorough and gentle exam of the problem area and call your back up if you haven't seen this complication before

**Prescribe/Follow Up:**

- Antibiotics and More pain meds if necessary
- 

**Instructions to Pt:**

- Make sure they call the office the next available business day. Reassure them that you will either directly talk to (or fax) the staff about what has happened
- Let them know they can come back at any time if they get worse or the problem is not going away

## **9. Foreign Body in the Airway**

### **Pearls:**

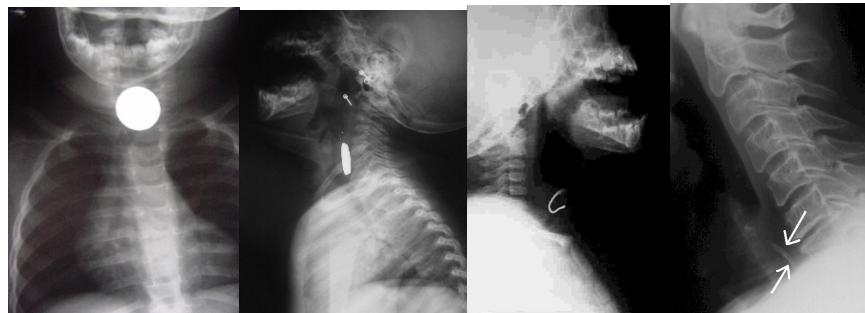
- Airway doesn't just mean trachea. It's everything from the tip of the nose and lips down to alveoli
- FBs are way more common in kids. *And in kids, they are very common.* You pretty much have to look at all the kids. They seem to like to stick things in their noses... *and ears!*
- In adults a common call is that the patient feels as though "there is something stuck down there" ever since they had that fish or chicken. If it's within 48hrs, have a high index of suspicion that it's the real thing. ( Especially if you scope them and see a bone! )If it happened a week ago, it's either an infection, or the damaged/scraped area is healing and is inflamed
- Once even a little bit of swelling begins, many foreign bodies (if they are there at all) will be enveloped by the edematous tissues and become invisible. *The patient's symptoms are much more important than what is or is not stuck down there.*
- Keep in mind 2 important facts when getting the story:
  1. Many small bones will ultimately be digested even if they are stuck in a non-emergent location
  2. Small injuries (little scratches or tears in the mucosal lining of the aerodigestive tract) feel exactly like a small foreign body.

### **On the Phone:**

- How long ago? Does the person recall what they ate?
- Are they drooling, have stridor, SOB – ominous signs
- Can they swallow. Do they suspect tracheal or esophageal FB. Don't forget about our good friends in GI.
- What does the lateral neck x-ray show? (*This is often the reason they are calling*)
  - It's important to get a lateral because you cannot tell on an AP view whether the FB is in the trachea or esophagus – they are superimposed. On a lateral, the trachea is anterior to the esophagus.

### **In the Room:**

- Again, these people need to be scoped, so make sure you've made arrangements ahead of time to have a scope ready in the room. If they have stridor, go directly to the stridor section. ( above )
- Try to find the FB. If you cannot see anything obvious, describe anything out of the ordinary.
- Make sure their vitals are monitored and are stable.



- from left to right, the x-rays above show a coin in the PA and Lateral of a child, metal wire and finally a chicken bone in the hypopharynx.

#### Perscribe/Follow Up:

- If you are not admitting them for observation, I always tell any patient to see us in 48hrs if they are not getting better, or sooner if one of the dangerous 4 symptoms occurs.

#### Instructions to Pt:

- If being discharged, tell them to return if they develop any of the Golden 4 signs.

## 10. Epiglottitis

#### Pearls:

- This one is more common in adults, but less fatal. Fortunately it's rare in kids due to H. flu immunization.
- **Bottom line is, if the physician on the phone says he thinks he has an Epiglottitis, you need to scope that person. Period.**
- A positive "thumbprinting sign" on lateral X-ray of the neck is unreliable (see below). You can only rule it out by **direct visualization**.
- *Epiglottitis is universal term for a few diagnoses. The vast majority of "epiglottitis" is actually a supraglottitis or an epiglottic abscess. When you look through the scope, often you'll see not only the epiglottis swollen, but the arytenoid complex as well. With an abscess, there will often be a slightly asymmetric swelling of the epiglottis. Again the key is that it's abnormal so either you have to diagnose it or have one of us do it.*

#### On the Phone:

- Vitals? Ominous signs? ( Stridor, Desaturation, Cannot lie down, Tripod position etc.)
- What are they basing the diagnosis on? (Radiology, scoped themselves, "much more experience with these sorts of things than you". *Sometimes they just want to reassure themselves or the patient*)
- IV antibiotics ( Clindamycin or Ceftriaxone) should be given. *I also suggest a one time dose of Decadron 10mg IV. It really helps with the swelling, patient discomfort and nausea.*

- Instruct the Physician that the patient must come by Ambulance with paramedics trained securing airways. (ATLS or Critical Care Line)
- Once you hang up you need to call 3 people:
  1. The staff person and/or a chief
  2. Anaesthesiologist for a “heads up”
  3. Triage

**In the Room/What to do:**

- By now, your A-pod or Trauma pod ( Alex ) should be equipped with a scope, a lightsource and a trach tray. Humidified cold oxygen, racemic epinephrine and a monitor should be ready
- **Do not put a tongue depressor into the oral cavity... especially in children.** *You may end up mechanically occluding their little airway! The trick with borderline unstable kids is don't exacerbate an airway emergency by irritating/upsetting them. You will make them cry or anxious and this will increase their respiratory rate and work of breathing*
- For adults, scope them first and if the supraglottic structures look normal, then do the rest of your exam.
- If you see edema of the structures they will at the very least need to be admitted for Observation and put on IV Abx and Fluids. The decision of whether to take them to the OR for definitive airway management takes a while to acquire, but if they have no stridor, you can see the cords and they are stable, close observation and aggressive therapy may be all you need.
- Kids often need to be examined in an OR setting. They must all go to the OR with Peds ENT and Anaesthesiology already on stand-by



**Instructions to Pt:**

- All true Supraglottitis/Epiglottitis must be admitted for at least 24hr and be serially examined by flexible laryngoscopy. I tell the patient the potential seriousness of this problem and always let them know about the possibility of an ET tube or Tracheostomy.

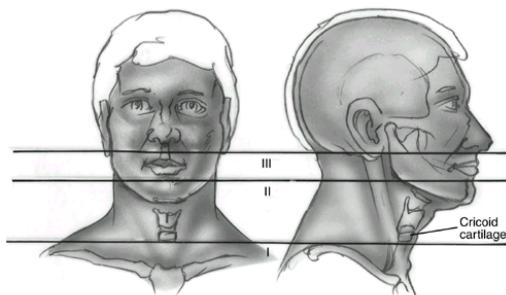
## B. Less Common Calls

- **Trauma**

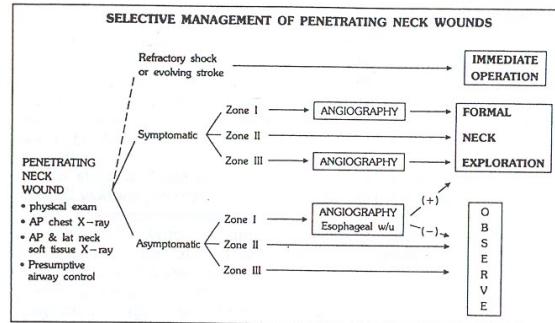
- The nice thing about trauma is that there is a separate trauma line and trauma team in the Hospital, so you will primarily be a consultant on one of several injuries to the patient
- Often, it's Epistaxis control. The airway is almost always already controlled by the time the patient rolls in through the door
- Remember, you should **not accept any trauma**. These patients **must come via ATLS routes**
- There are a few types of injuries you should be aware of:

1. **Penetrating Injuries to the neck**

- Keep in mind the major structures of the neck ("**M. E. T. S.**")
  1. Major vessels (Carotids, Internal and External Jugs)
  2. Trachea and larynx
  3. Esophagus
  4. c-Spine
- Examine the patient's wounds and:
  1. Categorize the **mechanism** – knife, blunt, GSW
  2. Despite the **current approach algorithms** based on zones of injury (Diagrams below), pretty much any patient with a compromised platysma will need to be explored in the OR
  3. Make sure that if there is a large bleeding vessel, someone is applying **direct pressure to it**, or if it is easily accessible, it has been sutured or clamped. *If you are ever left with having to suture a vessel in ER and you know the patient is going to the OR, cut the suture very long so the vessel is easily found later*
  4. **A dressing is not enough.** Too many times (*only 4 times, but that's too many*) I have seen patients with life threatening bleeding with 3 pounds of soaked dressing on top of a wound, with the bleeding uncontrolled. **The bleeder has to be controlled.**



**Zones of Injury.** Zone I is below cricoid. Zone II is cricoid to angle of mandible. Zone III is angle of mandible to skull base.



## 2. Laryngeal Injuries

- Most commonly blunt trauma ( hockey puck, a kick/punch, hanging and MVAs)
- **Ominous signs** include: (*Ominous = they'll probably have to go to the OR*)
  1. **large hematoma** (bruising)
  2. **step deformity** (*during palpation, you actually feel the step/fracture line*),
  3. **subcutaneous emphysema** (*air under the skin, which is often a sign of injury to the mucosal layer of the airway so air escapes into the more superficial neck layers*)
  4. **pain that is way out of proportion** from your physical exam
- You need to scope these people. **They will have to go to OR if they have any of the following “6 Cs”**
  1. **Commissure – Anterior Commissure injury**
  2. **Cartilage Exposed**
  3. **Cricoid # or Comminuted #**
  4. **Cord paralysis**
  5. **Compromised Airway**
  6. **Concordant Injury to Neck requiring surgical exploration**
- If **stable**, order a **Fine Cuts Larynx CT** (Ask the Staff if they'd like one)
- Most others can be observed or discharged if completely asymptomatic.

## 3. Basal Skull Fractures

- The consultant will usually base the diagnosis on one of 2 things:
  - A CT scan
  - Pathognomonic physical findings of
    - Battle's Sign (bruising over mastoid)
    - Racoon Eyes (black eyes or 'shiners')
    - Blood in the middle ear space.
- To be certain you will need a **CT Fine Cuts of the Temporal Bone**
- Check all the cranial nerves, but especially VII and VIII
- The crucial things to rule out are:
  - Damage to VII or VIII
  - CSF Leak
  - Large vessel damage
  -
-

#### 4. Nose Fractures

- The 2 most common questions are should the fracture be reduced and when
- The vast majority of #s are stable and only mildly deforming
- **Absolute indication** for rapid reduction remains severe **obstruction or deformity** and uncontrollable epistaxis (very rare)
- 
- 

#### • **SSNHL (Sudden SensoryNeuronal Hearing Loss)**

- This is an emergency because in some cases **early therapy can vastly improve the outcome. That being said over half of these patients get better without any therapy**
- 
- Get a good history as to exactly **when and how the hearing was lost**. Ask about:
  - Recent **Abx** ( eg. Aminoglycosides), **trauma**, **autoimmune disease** (**Cogan's, Wegener's**) and **recent infections (viral, URTI)**
- Ask about **poor prognostic** factors which include :
  - **Prolonged time to treatment, extremes of age, associated vertigo and severity of loss**
- The mainstay of treatment is **early steroids, audiogram evaluation** and in some cases **MRI**. Call your back up and we'll arrange a rapid visit to the staff person

### **C. Peds Calls Hints**

- For the time being, you are on primary peds call only when Dr. Eksteen is on. Although you will see kids when Dr. El-Hakim is on, you won't get called anywhere near as often.
- *The good news is that you'll learn how to handle kid emergencies and get to do cool stuff in the OR, the bad news is that peds call get sometimes double the amount of calls you get, so be prepared. (The main reason is that the C/Os consult for pretty much everything they don't "feel comfortable" with)*
- Most calls come from the kids ER ("73737" or "73738" usually) which is good because there are a lot of good Peds Docs down there. This means that the kids are usually stable when you're called. *They wont call you for an acute airway emergency (you don't have the fellowship training) instead, they'll call the staff man directly but you're still expected to help in the OR etc. should the need arise.*
- The other name for Peds Call is "Foreign Bodies"
- Unlike adult call where many times the person on the other line just want a little advice or to speed up an outpatient appointment (*not exactly an ENT on call emergency*) with kid consult, **you have to see the vast majority of them and you are expected to see them sooner rather than later.** (*You'd be amazed how many times we've had to come in during the evening/night for a stable kid with a possible foreign body up their nose... only to find nothing on the OR scope. That being said, some of the ER docs do understand that we are on 24/7 at times, and will hold a stable kid till' the morning. Some.*)
- Don't diagnose the kid or curse the consulting doc, until **after** you've seen the patient.
- For NICU/PICU consults, you won't be expected secure emergent airways (they will first call staff for those). *Your main job here is data acquisition and ensuring temporary stability of the patient. (Again, remember the environment these kids are in. They are surrounded by RNs and Docs who are way more knowledgeable than you with respect to overall care for these kids. The bottom line is that they ultimately want ENT to look in there and scope the child.*

- In house Airway problems are usually handled by **anaesthesia** [*they are in house, we are not*] so don't let the peds ER talk you into standing by for difficult airways for conscious sedation procedures

## **D. ENT Ward Stuff - Including Current Head and Neck Flap Routines**

### **Daily Progress Note:**

- Make sure you date, time and sign your notes. **The first thing you should have is the post of day eg: POD #3 and each page must have the procedure that was done**
- Most of us the **S.O.A.P.** method, or at least some variant of it
  - **S** – Subjective
    - These include the **patient's complaints**, concerns and pressing issues. This section can also include The RNs problem list issues
  - **O** – Objective
    - This section includes all **the numbers**. The vitals ( AVSS = Afebrile Vital Signs Stable ), JP (Jackson-Prat) drains, Doppler, flap exam
    - How does the incision look? Swelling? Etc.
  - **A** – Assessment
    - What is going on?
    - Current Issues
  - **P** – Plan
    - What are you going to do about it?
    - Consults? Orders?
    - Discharge plans

### **Admission Orders (Universal):**

- We follow the **D.A.V.I.D.** mnemonic. This stands for Doctor, Diagnosis, Diet, Activity, Vitals, Investigations, IV, Drugs, Drains and Dressings. Here is a sample Order Sheet with some examples of each :
  - 1. Admit to **Dr. Smith**
  - 2. **Dx:** Deep Space Neck Abscess
  - 3. **Diet:** **DAT** ( Diet As Tolerated – most common ), NPO (nothing by mouth), Tube Feeds as per dietician, Clear Fluids, Diabetic Diet... etc.
  - 4. **Activity:** **AAT** ( Activity As Tolerated – most common ), HOB ( Head Of Bed ) @ 30 degrees, Up to chair, Bathroom Assist... etc

- 5. Vitals: **VSR** ( Vital Signs Routine – most common. ), Vitals q4h or q1h, or Close Observation overnight... etc
- 6. IV: If the patient is NPO, usually run them at 125cc of NS ( Normal Saline )
- 7. Investigations: CBC, Diff, Lyses, Creatinine, PT-INR, PTT, iCa++, Mg++...etc. ( As Needed )
  - Here, you also include any necessary imaging such as **CT Neck (almost always with contrast)**, CXR... etc
  - If there are any **consults**, here is a good place to request them. Make sure you fill out a **consult req.** whenever you write the order. I usually write out the consult first (consult sheet – a must ) and then call
- 8. Drugs :
  - Before you write a single med order, **check for allergies**. The best source is the patient themselves
  - **Everyone gets something for pain prn** (as needed ) or atc ( around the clock ), an **antinauseant** and usually an **antibiotic** of some kind. Usually you give: Morphine, T3s Gravol, and Maxeran. Clindamycin is the most common antibiotic we use
  - If they are taking other meds already order them so they are getting them from our pharmacy and not taking their own. This way we can easily monitor what they're getting
- 9. **Dressings** : How often they should be changed, when they should be taken off... etc.
- 10. **Drains** : The routine for JPs is **check level q8h** ( The RNs do this automatically ) **JPs are discontinued once 8 hour drainage is less than 10cc**

#### Protocols:

- **Flap Patients**

- Current Antibiotics of choice are **Clindamycin and Cefuroxime**
- All patients get **Chlohexidine oral rinse ( 5-10ml PO swish/spit QID)**
- We **do not give Cancer patients packed RBCs** ( it increases their chance of recurrence!) It has to be OK'd by the staff
- Laryngectomy patients must not be plugged! *But most can be decannulated in the first 48 hours.*
- Dressings down POD 7. D/C staples and order a splint, and **daily adaptic ( a Vaseline impregnated mesh )** and dry gauze
- Trach change POD 5. Change to a **#4 uncuffed, fenestrated Shiley**.
- Decannulate trachs once the patient has been plugged for a **straight 24hr period**
- Doppler out POD 9
- Never use ties on our patient's trachs
- **Do not use Lidocaine with Epi.** Only Lidocaine without epi is safe for the new vessels in the neck flap
- JPs in the leg don't come out until the cast comes off
- Check for a foley each day and ask yourself if you can take it out
- **IV + PO total = 125cc/hr** (this means that the tube feed and IV equal 125cc/hr)
- Usual Tube Feed is **Jevity Plus starting at 20cc/hr to an ultimate target of 70cc/hr**

• **Boluses**

- Refer to the meds pages for doses
- Try not to blindly bolus lab numbers. Always ask yourself what the serum level means at the time it was taken. *Don't forget that lab values are like snapshots in time and are merely a representation of something in flux. The potassium may have been 3.3 (L) but you need to know what it has been doing and where it's headed*
- I always ask about the previous 2 figures to see a trend. If the K+ is 3.3 (L), but it was 2.8 (C) prior to this, it may be fine to observe it until the next value
- For any out of range lab value, make sure you follow it up with a repeat until it is either "normal" or at least stable
- If you're ever lost as to what to order, a good trick is to check out the orders that have been written in the past 5 days. *There is no better way to see what has actually been done for the patient while in the hospital. This is especially the case for boluses, feeds, pain meds and investigations* You'll often find the doses and routes of even the uncommon boluses.

• **Bowel Routine**

- Colace 100mg PO BID, Senekot i-ii qhs
- May add DDF or Lactulose liquid (15ml PO BID) as needed
- if the patient develops diarrhea, stop the bowel routine and think about sending the stool off for C. diff (clindamycin side fx )

**How to's:**

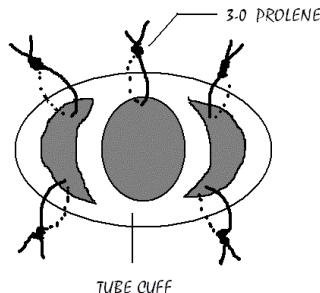
• **How to Take out a JP (Jackson-Pratt):**

- Ensure the drainage for the last 8hr period is < 10cc (removal criteria)
- Cut the suture (a blade, or pick ups and fine scissors – the latter are good for really tight (*improperly placed*) knots)
- Open the bulb (this will relieve the negative pressure)
- With a tissue or 4 by 4 gauze, apply gentle traction pressure to the insertion point of the drain as you gently but firmly pull it out
- *Often you'll have a tubular clot that follows the drain and it's fine to pull that out with the tissue or gauze*

• **How to Change a Trach:**

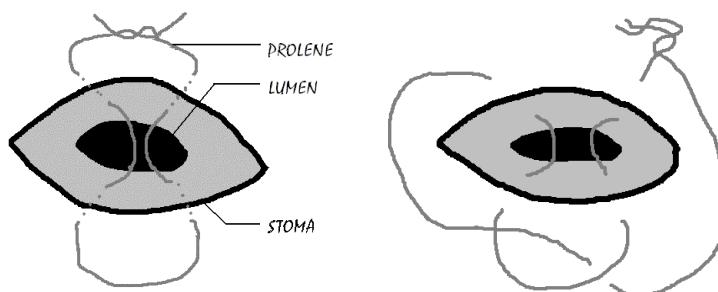
- Prepare your equipment
  - Headlight, Suction, oxygen source, Muco
  - The new trach should be opened and ready for insertion
  - Green Towel, 3-0 Prolene suture, a few 4 by 4s, local (without epi)
  - It's nice to have an extra pair of hands in the room... usually the RT is the best choice
- **Tell the patient what you'll be doing and why.** *Reassure them that it won't hurt, but you will make them cough for a couple of minutes*
- The ideal position for the patient is supine, with no pillow behind their head (as long as it's reasonably comfortable). This will allow you the most exposure to the neck. *Unlike in the OR, don't bother with a shoulder roll, you need not hyperextend the neck for access plus you might hurt the patient. Supine is more than enough*
- Drape under the neck with a couple of green towels. Then lay out your tools, the trach and the gauze so it's comfortably accessible to you

- Prep the area using some alcohol swabs or betadine. Then infiltrate in the areas where the NEW suture will go. (Remember we don't tie these trachs.)
- Cut the existing sutures and remove them. From this point on you have to keep the trach secure so they don't cough it out
- Take down the cuff. (Suck out the air from the air port) *This often makes the patient cough a little, so be ready at all times to duck, catch or ingest mucus flying at 120km/hr. The best thing to do is just cover the trach about 5cm or so away and shield everyone. It's also a good idea to ask the RT to suction the patient around this point, since the patient is already used to the sensation, and I will make it a lot cleaner for you*
- Let the RT know that you're about to take the trach out and gently do so, following the natural curve of the tube. Again prepare for some coughing.
- The vast majority of the time, the hole will stay open all on its own and the patient will be breathing through it. **If it collapses in do the following:**
  - Open the trach tray and have the RT hand you the 2 Small (Sends) retractors. These fit into the hole and will allow you to gently spread it open.
  - You also have the "holy crap stitch" – the silk suture around the 3<sup>rd</sup> tracheal ring, which when gently pulled inferiorly, will also open up the trachea.
  - Look into the trachea. You should see the muscular fibres which abut the esophagus or tracheal rings or both.
  - Once you're satisfied that it's the trachea, gently insert the new (smaller) trach first coming in laterally and once the tip is in the tracheal lumen, turning the tube 90 degrees inferiorly to slide the tube to its cuff.
  - You can confirm placement usually by hearing air coming out, seeing mucus being coughed out (common) or if you're lucky enough to have a scope handy, by looking into the trach.
  - Secure the trach. ( see below )
- If it doesn't collapse ( 99% of the time ), take a moistened gauze and clean around the stoma site. *This is one of the few times you'll have an opportunity to do so*
- Once clean, look inside the trachea and suction any extra mucous.
- With your dominant hand, grab the new trach which has a "lubed tip" and gently glide it into the hole, first from a lateral approach, twisting inferiorly 90 degrees once the tip is in. Gently insert it all the way inferiorly to the cuff
- Secure the trach with 4 or 5 sutures. (Diagram)
- Sit the patient up to their most comfortable angle



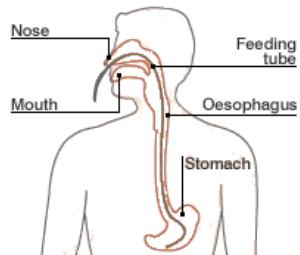
- How to Decannulate:

- Decannulate = take out the trach and suture the hole closed
- Same equipment and prep as above, but because **these patients have had their Shileys plugged for 24+ hours**, they no longer need to have a trach so it's safe to take out and you don't really need the RT
- Again infiltrate without epi after you've prepped (cleaned) the surrounding skin.
- Cut the sutures and take out the trach. Tell the patient that this may make them cough a little. (*watch out for projectiles!*) Now, clean the area with a moist gauze and then a sterile swab or betadine
- You will close the stoma hole with (usually) 3 figure of 8 sutures, starting with the middle
- Make sure you take good deep bites that are at least halfway between the skin and tracheal lumen, **but do not go into the lumen**. (Left Diagram)
- Once the 3 sutures are in, ask the patient to speak and then cough. If their neck balloons out full of air, your sutures are too superficial and you'll need to redo it
- Dr. Mechor showed me a nice variation on the horizontal stitch which has the same strength but makes it a lot easier to remove later on. Just before you tie the knot, slide the needle through the loop on the opposite side of the knot side as seen on the right diagram.



- How to Insert a Kao-Feed tube:

- Prepare:
  - The KF tube, a 10cc syringe filled with NS, Xylocaine Spray, KF tube fastener (a modified type of band-aid with a plastic clamp to grab the tube) and Muco (lube)
- Open the tube and ensure that you can close all the green end components together
- Remember that the tube has a long wire inside it to aid your placement. It will have to come out before you start feeding the patient, but **you must confirm placement with a CXR** ( See the picture below for ideal placement)
- You also need to prime the tube by injecting about 5cc of NS into the middle port. This will loosen the radio-opaque tip and allow the wire to come out easily. Here is what to do:
  - With the patient sitting up and in slight head flexion, spray the more open nostril or the nostril furthest away from the surgical flap
  - *You can use the measuring trick if you want to (the length to be inserted is tip of nose to angle of mandible to stomach), but I always go in a little further than is necessary. Apart from kinking, you really cannot put the tube in "too far", but it can easily be not far enough. This also give you a little leeway in case the patient accidentally tugs on the thing and pulls it out a little*
  - Lube the tip and first 10cm of the KF tube really well (*this make a big difference since a lot of the discomfort comes from the nose pain*)
  - Begin sliding the tube in staying inferior and medial. Once you get to the back of the nasopharynx (mild resistance) ask the patient to swallow. ( If they are not NPO, a small cup of water with a straw really helps )
  - A really effective trick is to gently twist as you advance the tube (*This holds true for any tube insertion be it a trach or ET tube*)
  - **Never force the tube in if gentle pressure and twisting are not working. You don't want to perforate something or hurt the flap**
  - Once you have gone slightly past the measured distance (if possible), secure the tube using the clamp and have the nurse safety pin the tube to the patient's gown
  - Order a "CXR for Tube Feed placement"
  - Two tricks to check for placement :
    1. Auscultate over the stomach. You should hear air bubbles
    2. If the patient starts coughing like crazy while you are putting the tube in, assume it's going into the trachea and pull out and try **one more time**
      - If the patient has pulled out the KF tube only a little bit, it is reasonable to try to advance it without placing a new one. You can then confirm placement by auscultation and commence feeding/meds. If there is any doubt as to where the tube may be, be safe and get the CXR

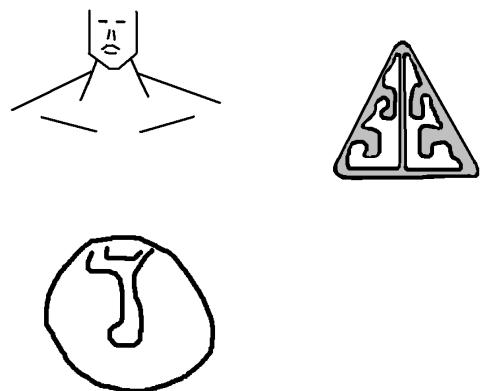


## E. Common Medical Abbreviations

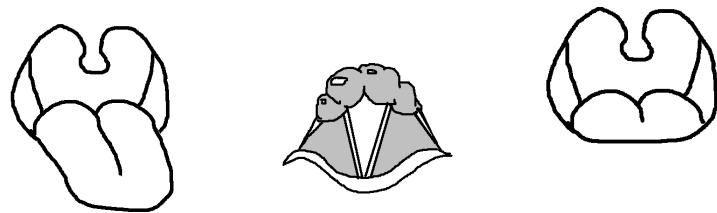
- AAT ..... Activity As Tolerated
- ABCs ..... Airway, Breathing and Circulation
- ABGs ..... Arterial Blood Gases
- AC/TLS ..... Advanced Cardiac/Trauma Life Support
- Alex/Alec ..... The Royal Alexandra Hospital
- ATC ..... Around The Clock
- AVSS ..... Afebrile, Vital Signs Stable
- BID ..... Twice a Day
- BRB ..... Bright Red Blood
- BSF or BS# ..... Basal Skull Fracture
- CBCD ..... Complete Blood Count with Differential
- C/S ..... Chem/Strips ( measure blood glucose levels )
- CXR ..... Chest X-Ray
- DAT ..... Diet As Tolerated
- D/C ..... "Discharge" or "Discontinue"
- D/C WDW ..... Discontinue When Drinking Well
- DDF ..... Dulcolax, Dulcolax, Fleet (bowel routine )
- DNR ..... Do Not Resuscitate
- E1 ..... Emergency OR Booking to be Done within 1 hour
- E6 ..... Emergency OR Booking to be Done within 6 hours
- E24 ..... Same thing as above but within 24 hours
- ETA ..... Estimated Time of Arrival
- ET Tube ..... Endo Tracheal Tube
- FB ..... Foreign Body
- GCS ..... Glasgow Coma Scale ( a scale of the LOC )
- GSW ..... Gun Shot Wound
- HOB ..... Head Of Bed
- I & D ..... Incision and Drainage
- INR ..... International Normalized Ratio ( usually target 2.5 to 3 )
- JP tube ..... Jackson-Pratt tube
- LOC ..... Level Of Consciousness
- NS ..... Normal Saline ( 154 mEq Na+ )
- O/E ..... On Exam
- O/N ..... Over/Night

- PEG ..... Percutaneous Endoscopic Gastrostomy (tube)
- PAD # 2 ..... Post Admission Day 2
- POD # 4 ..... Post Operative Day 4
- RL ..... Ringer's Lactate ( 130 mEq Na+ )
- MVA ..... Motor Vehicle Accident
- NPO ..... Non Per Oris = nothing by mouth
- prn ..... "As needed"
- qhs ..... at bedtime
- SOB ..... Shortness Of Breath
- TF ..... Tube Feeds
- URTIs..... Upper Respiratory Tract Infections
- VSR ..... Vital Signs Routine

- **Helpful Templates for Documentation:**



Left Tympanic Membrane



# Appendix B: Alex Dickie, MD: ENT Elective Pimping Guide

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## ENT Elective Pimping Guide

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Five ways to locate the facial nerve

- 1. Locate the TRAGAL POINTER (junction between the cartilaginous and bony segments of the external auditory canal); this “points” to the facial nerve 1cm anterior, 1cm, inferior, and 1cm deep to it.
- 2. Locate any of the branches distally and trace them retrograde to the PEZ ANSERINUS (“Goose Foot”) where the facial nerve initially splits into upper and lower segments.
  - Example: Can identify the posterior facial vein at the anterograde notch of the mandible inferior to the parotid; the marginal mandibular branch crosses over this vessel
- 3. Identify the posterior belly of the digastric and find the nerve on the plane between this and the tympanic plate
- 4. Trace the temporomastoid suture line to find the stylomastoid foramen when the facial nerve exits the skull
- 5. If necessary, could drill into the temporal bone or open the middle fossa to access the nerve intracranially

---

Differential Diagnosis for Parotid Mass (With facts about each)

NOTE: Most parotid tumours benign, SMG and SLG ~50/50, minor salivary gland tumours mostly malignant.

- 1. BENIGN (practically NEVER cause nerve palsy):
  - Pleomorphic adenoma = Most common, benign enlarging, must excise because risk of malignant transformation to CARCINOMA EX PLEOMORPHIC ADENOMA which is a highly aggressive cancer. Typically unilateral. “Pleomorphic” because derived from both epithelial and myoepithelial cells, so looks variable under microscope
  - Warthin’s tumor = 2nd most common, typically in smokers and may be multiple, no risk of malignancy.

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- Others = Myoepithelioma, Oncocytoma (oncocyes="Pink cells" because of mitochondria), ductal papilloma, Hemangioma, other cell adenomas (basal, lymphatic), LIPOMA (only in parotid, not other salivary glands)
- Non-neoplastic processes (Sialocele, sialadenitis, sarcoidosis, TB)
- 2. MALIGNANT:
  - Mucoepidermoid = MOST COMMON Primary salivary cancer) Named because derived from both cell types
    - Graded based on composition (prognosis correlates with grade)
      - Low-grade=Mostly mucoid cells
      - High-grade=Mostly epidermoid origin (Med grade=50/50)
    - Polymorphous low grade adenocarcinoma = Second most common
    - ADENOID CYSTIC = 3rd overall, but MOST COMMON in SMG
      - Most questions asked about this
      - Classically prone to PERINEURAL INVASIVE and spread along nerves; think about this if there is facial nerve dysfunction
        - In submandibular gland, often invades the mandibular branch of trigeminal, so radiation should be used post op covering an area all the way up to the trigeminal (gasserian) ganglion just above the Foramen Ovale
      - 3 histologic subtypes:
        - A) Cribriform=Most common, best prognosis
        - B) Tubular
        - C) Solid=Worst prognosis
      - Patients need to be followed up long term because high risk of mets to the lung
    - Others = Acinic cell Ca (Low grade by definition), clear cell ca, sebaceous ca, cystadenoCa, Ductal Ca, Oncocytic Ca, CARCINOMA EX PLEO, CarcinoSARCOMA, Sialoblastoma
    - METS= Very common to have SCCa mets to the parotid; think about especially if patient has ++ sun exposure (Farmer, fisherman etc..)

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### Name of Salivary Ducts

- 1. Parotid = Stenson's Duct
  - 2. SMG=Wharton's duct
  - 3. SLG=Bartholin's duct
- 

### Nerves at risk of damage during Level 1 dissection/SMG excision

- 1. Marginal Mandibular Nerve=Damage causes drooping of lip corner
  - 2. Hypoglossal nerve
  - 3. Lingual nerve=Branch of trigeminal (V3) supply sensation to oral tongue; also carries fibres of CHORDA TYMPANI from facial nerve for taste
    - Bonus=Nerve to the mylohyoid is a branch of the lingual nerve
- 

### Structures on the floor of the neck to be cognisant of during neck dissection; complications of damage

- 1. Phrenic nerve (Unilateral diaphragm paralysis; would cause a decrease in lung function by about 30%, not 50, because of accessory muscle function)
  - 2. Brachial plexus
  - 3. Thoracic duct if on the left = Damage causes CHYLE leak (Because of chylomicron containing fat); Tx is drain placement, put on TPN and restrict medium chain fatty acids, may need to ligate duct
- 

### Number of LNs in the neck

- About 300, about 700 total in the body
- 

### Surgical and radiologic divisions of things

- 1. Parotid=Facial nerve divides deep and superficial; radiologically they use the RETROMANDIBULAR VEIN to divide the lobes
- 2. Level 2a and 2b=Divided by the spinal accessory nerve

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- 3. Level 1a and 1b=Divided by the anterior belly of digastric
- 4. Level 2 and 3=Divided by the hyoid plane radiologically, and the carotid bulb surgically
- 5. Level 3 and 4=Lower margin of cricoid radiologically, tendon of omohyoid surgically
  - A “lateral supra-omohyoid dissection”= Level 2, 3, 4
- 6. Anterior triangle (level 2, 3, 4) and posterior triangle (level 5)=Posterior border of SCM

---

#### Types of thyroid cancer and risk factors

- 1. Papillary Ca= Most common, good prognosis, from thyroid parenchymal cells, metastatic lymph nodes look purple
  - Several variants, some of which are more aggressive
- 2. Follicular=Second most common; known for hematogenous spread (and therefore distant mets)
- 3. Medullary=From C-Cells therefore does NOT respond to radioactive iodine (because C-Cells don't produce thyroid hormone/don't uptake iodine)
- 4. Anaplastic=Almost universally fatal

---

#### Bethesda criteria for thyroid FNA

- 1. Benign
- 2. Insufficient sample
- 3. Atypia of undetermined significance or follicular cells of undetermined significance (~15% Ca Risk)
- 4. Follicular neoplasm (20-30% Ca risk)
- 5. Suspicious for malignancy (~80% cancerous; varies by institution)
- 6. Malignant (> 97% Ca)

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#### Subsites of the Oropharynx and cancer facts

- 1. Palatine Tonsil

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- 2. Base of Tongue
  - HPV associated SCCa occurs almost exclusively at tonsil or base of tongue
  - Base of tongue has **BILATERAL LYMPHATIC DRAINAGE**
- 3. Soft palate
- 4. Posterior pharyngeal wall
  - Oropharyngeal mucosa derived from endoderm; cancers generally poorer differentiation and more aggressive

---

#### Subsites of the Oral Cavity and cancer facts

- 1. Labial mucosa (wet lip)
- 2. Buccal mucosa
- 3. Floor of mouth
- 4. Oral Tongue
- 5. Mandibular and Maxillary gingivae
- 6. Hard palate
- 7. Retromolar trigone
  - All oral cancers drain to ipsilateral level 1 and 2 nodes, EXCEPT for LIP (which drains bilaterally), and LATERAL TONGUE (which may skip levels 1 and 2 and go straight to level 3 and 4).
  - Oral mucosa from ectoderm; cancers more well differentiated and less aggressive

---

#### Blood supply/drainage of the thyroid and parathyroids

- 1. Thyroid=
  - A)Superior Thyroid Arteries=Branches of external carotid
  - B)Inferior Thyroid Arteries= Branches of Thyrocervical Trunk
  - Drainage by Superior, middle, and inferior thyroid veins
- 2. Parathyroids= All four are primarily supplied by the **INFERIOR THYROID ARTERY**

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Four ways to locate the RLN during thyroidectomy

- 1. Found ascending in the tracheoesophageal groove
  - 2. May be either anterior OR posterior (but intimately related) to branches of the inferior thyroid artery
  - 3. Closely related to Berry's ligament, which attaches the thyroid to cricoid
  - 4. Medial and deep to the TUBERCLE of ZUCKERKANDL (thickening at posterolateral thyroid margin)
- 

Indications for thyroidectomy

- 1. Diagnostic=Biopsies non-conclusive
  - 2. Therapeutic=Known diagnosis of cancer or Grave's or whatever
  - 3. Symptomatic=Large goitre causing tracheal compression or swallowing issues
  - 4. Cosmetic=Goitre is unsightly
- 

Borders of the neck levels

- Just have look them up, but eventually will be asked this
- 

Origin of the parathyroids

- Superior arise from 4th pharyngeal pouch and inferiors come from 3rd; seems contradictory but this occurs because of the path they take when ascending from the chest during embryology
- 

Why do surgeons ligate the facial vein and reflect it up on the mandible

- Because the marginal mandibular nerve runs superficial to the facial vein, so if you ligate and clamp the vein and reflect it up onto the mandible, then you know the nerve will be in the tissue above this so it is safe to dissect below it.

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Vessels used for anastomosis in various common flaps/free flaps

- Neck vessels used: Facial artery and common facial vein most common, Transverse cervical artery and vein if need, other vessels possible depending on the location of the flap and pedicle.
- Radial Forearm Free Flap: Radial artery and cephalic vein. Do Allen's test +/- doppler pre-op to ensure ulnar circulation is adequate.
  - Benefits of RFFF: Versatile, has a long pedicle (artery and vein) which is important if the donor vessels are far from the flap site, can take palmaris longus tendon/ portion of radial bone if need be (uncommon)
- Anterolateral Thigh Free Flap: Lateral circumflex artery and venae comitantes. Basically a larger RFFF. Used often for external defects and for oropharynx. Can include vastus lateralis if needed.
  - Vascular anatomy is more variable
- Scapular Free Flap: Subscapular artery and vein, and branches (circumflex scapular and THORACODORSAL), possible to use angular artery, can incorporate latissimus dorsi/serratus if needed. Short pedicle.
- Fibular Free Flap: Peroneal artery (courses along the medial aspect of fibula), used primarily for mandibular reconstruction and often in corporate skin paddles
  - Dopplers/anatomy studies are necessary preop because the peroneal can be the dominant lower leg blood supply in some people (instead of the Post tibial and Ant Tibial A.A.). MUST preserves the peroneal nerve during flap harvest. Must preserve the lower portion of the fibula for ankle stability
- Pectoralis flap (myocutaneous; contains skin, OR Myofascial; no skin):
  - \*\*Thoracoacromial artery supplies pec (Identified by drawing a line from xiphoid to acromion and bisecting this line with a perpendicular line from the mid clavicle. Often need to sacrifice the lateral thoracic artery to gain length)
    - Useful in covering and protecting structures of the neck (eg. carotid artery, flap anastomoses etc..)
- Latissimus dorsi flap: Thoracodorsal artery and vein (terminal branch of subscapular artery), Can be pedicled or free tissue.

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- Careful if doing this in patient with spinal accessory nerve damage, will grossly exacerbate shoulder dysfunction. Not many issues if other muscles of the shoulder are intact.

---

### Blood supply of skin grafts

- 1st: \*\*\*Plasmotic Imbibition supplies nourishment to the graft from wound exudate in the 2 to 3 days between graft placement and revascularization
- 2nd: INOSCULATION=direct anastomosis between graft and recipient vessels
- 3rd: Neovascularization=Growth of new blood vessels

---

### Classic signs and symptoms of a PTA

- 1. Trismus, muffled voice, uvular deviation, soft palate edema
- 2. If neck ROM is compromised, think of extension into deep neck spaces/danger zone
- 3. If PTA in older person, consider possible malignancy as the cause

---

### Segments of the facial nerve

- 1. Intracranial segment
- 2. Meatal segment (Internal auditory meatus)
- 3. Labyrinthine segment
  - Houses the shortest segment; houses the genu ("bend")
- 4. Tympanic segment
- 5. Mastoid segment
- 6. Extratemporal segment

---

### Branches of the facial nerve and their function

- 1. INTRACRANIAL=
  - Greater petrosal nerve: Parasympathetic to nasal/lacrimal glands and sinuses, as well as taste to the palate

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- Nerve to Stapedius (Motor)
- CHORDA TYMPANI
  - Dose taste to ant. tongue (Travelling along lingual nerve)
  - Does parasympathetic innervation to the SMG and SLG
    - NOTE: Although facial nerve runs through the parotid, it does not innervate it. Parasympathetic innervation of the parotid is done by the glossopharyngeal nerve
  - Chorda tympani may occasionally be visualized crossing the tympanic membrane horizontally at the midpoint; must be carefully when putting T-Tubes in place
- 2. EXTRACranial=
  - Major branches:
    - Temporal=Frontalis muscle;
    - Zygomatic=ORBICULARIS OCULI; \*\*This nerve is the one primarily responsible for closing the eye tight, not the temporal
    - Buccal=Buccinator (keeps cheeks flat while chewing), Nasalis (Flares nose), ORBICULARIS ORIS (purses lips), and many other midface muscles
    - Marginal mandibular=Mentalis, DEPRESSOR ANGULI ORIS
    - Cervical=Platysma
      - NOTE: Each of these branches often give off small branches to structures primarily innervated by other branches, so damage to one doesn't mean that those muscles will necessarily lose ALL function
  - OTHER BRANCHES (come off the nerve before the Pez)
    - Posterior auricular nerve=movement of scalp muscles around ear
    - Branch to the POSTERIOR BELLY DIGASTRIC (and Stylohyoid)
      - Note: Trigeminal V3 innervates the anterior belly

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Complications of parotidectomy and mechanism

- 1. Frey's syndrome

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- During surgery, the parasympathetic fibres to the parotid travelling along the AURICULOTEMPORAL NERVE are severed. After surgery, some of these get fibres reattach to sympathetics of the sweat glands, such that when you get parasympathetic stimulation (while eating or thinking about food) you begin to sweat. Common when objectively tested, but only 5% of people get it bad enough to notice/complain.
- 2. First bite syndrome
  - Common if removing the deep lobe of the parotid as well. The first bite of a meal causes extreme pain, but the rest of the time it is okay.
- 3. Numbness to lateral face/ear
  - Because the GREAT AURICULAR NERVE is practically always severed during parotid surgery as it gets in the way
- 4. Damage to one or more branches of the facial nerve
  - Palsies dependent on the nerve; most imp branch to preserve is zygomatic

---

Salivary gland facts (Mucinous vs serous, why stones more common in SMG)

- 1. Parotid=SEROUS saliva; 20% of total production
- 2. SMG=Mixed serous and mucinous; 70% of saliva even though smaller than parotid
- 3. SLG=MUCINOUS saliva; 5%
- 4. Minor glands=Mucinous; 5%; >800 in oral cavity lining mucosa
- 5. Von Ebner's glands=Serous; found in the trough around the CIRCUMVALLATE PAPILLAE (which act to divide the Oral and Base of tongue), begin lipid digestion
- STONES are most common in SMG/Wharton's duct because there is more mucinous saliva, the duct is more tortuous, and the duct travels horizontally so gravity doesn't assist in drainage

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Audiogram findings of various conditions

- 1. Presbycusis=Persistent downsloping SNHL

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- 2. Meniere's=Hearing decreased at all frequencies, but worse at low and high frequencies
- 3. Noise induced=SNHL notch at 3000hz
- 4. Otosclerosis=CHL CARHART NOTCH at 2000hz
  - FLAT Tympanogram=
    - A. ME effusion; will have normal EAC volumes
    - B. TM perforation; will have larger EAC volume measurement

---

How many intrinsic laryngeal muscles are there, and why does damage to the RLN cause hoarseness/airway obstruction

- There are 7 intrinsic laryngeal muscles.
  - The CRICOTHYROID muscle is innervated by the SUPERIOR LARYNGEAL NERVE (branch of vagus) and acts to tighten the vocal cords during high pitches (like during falsetto)
  - The other 6 are innervated by the RLN
    - \*\*\*The RLN innervates the POSTERIOR CRICOARYTENOID MUSCLE which is the ONLY abductor of the vocal cords, so if this nerve is paralyzed then the vocal cord gets stuck at midline. If this happens on one side, you get hoarseness, but if it happens on both then the cords may obstruct the airway at midline

---

How does post-thyroid/neck dissection hematoma cause upper airway obstruction, how do you try to prevent it, and how do you treat it?

- When you close the strap muscles after central neck surgery, you create a sealed compartment. If there is still bleeding, pressure can accumulate from the hematoma which causes COMPRESSION OF THE INTERNAL JUGULAR, which in turn results in VENOUS CONGESTION —>LARYNGEAL EDEMA causing upper airway obstruction. Ie. It is not caused by tracheal compression.
- Try to prevent this: Leave a gap open at the bottom of the strap muscles to allow more room for the blood to accumulate. Depending on the surgery, a drain may be placed. Be meticulous with hemostasis.

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- If upper airway obstruction does occur you must open the neck: Open SKIN, PLATYSMA, AND STRAPS however you can in order to relieve the pressure. Must be done urgently if there is any concern

---

Why do you close the strap muscles after central neck surgery

- Strap muscles are closed to prevent the skin from scarring down onto the trachea causing discomfort/difficulty swallowing, and for cosmetic reasons

---

What are the 4 strap muscles, their innervation, and their function

- Strap muscles function as LARYNGEAL DEPRESSORS during swallowing and speech
- Sternohyoid (Most superficial strap), sternothyroid, and Omohyoid (Omo=spine; originates from the spine of the scapula) are innervated by the ANSA CERVICALIS from C1-C3.
- The thyrohyoid is innervated by C1 via the HYPOGLOSSAL NERVE

---

Borders of the supraglottis, glottis, and subglottis

- Supraglottis: From hyoid to the laryngeal ventricles; includes false cords, arytenoids, epiglottis, and aryepiglottic folds
- Glottis: From ventricles to 1cm below true cords; includes true cords, and both ant and post commissures
- Subglottis: From 1cm below cords to inferior border of the cricoid

---

Common conditions of the larynx

- 1. Laryngomalacia=Immature laryngeal cartilage causes collapse during inspiration, resulting in partial obstruction and inspiratory stridor; classic “OMEGA Ω SHAPED epiglottis” when scoping
- 2. Presbylarynx= Presby-Age related; atrophy of soft tissue causing cord bowing/loss of tone
- 3. Vocal cord nodules/polyps= Nodules in strenuous vocal use, polyps in smokers

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- 4. Laryngeal Papillomatosis=HPV 6 and 11; frequent recurrence and risk of airway obstruction
- 

During a parotidectomy/upper lateral neck surgery, when a surgeon buzzes through a nerve and asks what it was, the answer is the GREAT AURICULAR NERVE (supplies sensation to the lower auricle and skin overlying the parotid).

---

What are the three ways a patient can talk after laryngectomy?

- Speech is articulated by the pharynx, so patients can talk without a larynx, the problem is getting the air supply to the pharynx. They are not able to modulate pitch (laryngeal function).
  - 1. Electrolarynx
  - 2. Esophageal speech (Swallowing air and burping to create speech, like when you were a kid)
  - 3. TRACHEOESOPHAGEAL PROSTHESIS= A one way mechanical valve placed in a surgically created fistula between the trachea and esophagus. When the patient covers over their laryngectomy hole, it forces expired air from the trachea, through the prosthesis, into the esophagus where it enters the pharynx and can be used for speech. \*\*Note: These TEPs often end up falling out at one point or another; you MUST ensure that either the TEP or a red rubber catheter is place in the hole within 3 hours or else the fistula will close over and the patient will require another operation to have it opened again.
- 

Why are patients trached before free flap surgery?

- Many of the larger oral cavity surgeries cause significant swelling that can end up obstructing the airway post-op, even if they are able to breath fine immediately after surgery. Trach is placed as a precaution; removed after the patient is able to tolerate capping of the trach tube for 24 hours (ie. able to breath through their mouth without desatting)

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What is the SMAS and what are the uses?

- Superficial musculature aponeurosis system; a layer within the superficial facial tissue that is used in facial plastic surgery (ie. SubSMAS vs SupraSMAS; different results and indications for each)
- 

What is Horner's syndrome, and why does it cause ptosis when the levator palpebrae are innervated parasympathetically by the oculomotor nerve?

- Sympathetic nerve plexus palsy causes by a lesion (eg. Apical lung Pancoast tumour etc..) resulting in miosis, anhydrosis, and PTOSIS
    - Muscles that keep the eye open include:
      - 1. Levator Palpebrae which is PARAsympathetically innervated so unaffected
      - 2. Mueller's Muscle which is SYMpathetically innervated, so palsy causes ptosis
- 

What is the name of the minor salivary gland in the peritonsillar space?

- Weber's Gland
- 

What is the most superior retropharyngeal lymph node, accessible through the posterior pharyngeal wall?

- Node of Rouviere
- 

What structures arise from what pharyngeal arch, and which arch most commonly has an anomaly

- Cartilage in the arches calcify during development to give rise to bones
- If you can remember these, learning anatomy and innervation will become exponentially easier
- First Arch (AKA Mandibular Arch; MECKEL's Cartilage): Cranial Nerve V and associated muscles (mastication, mylohyoid, ant gigastric, tensor veli/tensor tympani), maxillary artery, incus/malleus, palate, maxilla, mandible

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- Second Arch (AKA Hyoid Arch; REICHERT's Cartilage): Cranial Nerve VII and associated muscles (Stapedius, facial expression muscles, platysma, post digastric), stapedial artery, STAPES, Stylohyoid lig/muscle, STYLOID PROCESS
  - This is the most common to have a Branchial Cleft Abnormality; failure of 2nd and 3rd cleft fusion.
- Third Arch: Cranial Nerve IX; STYLOPHARYNGEUS muscle (the only muscle innervated by the glossopharyngeal nerve)
- Fourth and Sixth Arches: SLN and RLN branches of Cranial Nerve X; ALL the laryngeal muscles, all the palate muscles (except Tensor Veli Palatini; done by the trigeminal), all the pharyngeal muscles (except stylopharyngeus; done by the glossopharyngeal)
- NOTE: No structures result from the fifth arch in humans

# Appendix C: Source unknown: OTO-HNS POST OPERATIVE ORDERS AND MANAGEMENT

## OTO-HNS POST OPERATIVE ORDERS AND MANAGEMENT

July 4/12

### Things to sort out at the beginning of a rotation:

- orders that are computerized vs paper vs separate requisition
- OR paperwork (orders, face sheet, discharge summary sheet, prescription)
- vitals – at the bedside or in the EPR
- multidisciplinary rounds
- discharge summaries – computerized vs dictated, and after how many nights' stay
- home care forms – computerized vs paper – start thinking about discharge planning as soon as the patient is admitted
- access to ENT clinic & equipment (microscope, flexible scope) after hours

### I. ORDERS

- Diet
- Activity
- Vitals
- IV fluids
- Investigations
- Ins & Outs
- Drugs
  - analgesics
  - antiemetics
  - anticoagulants
  - antibiotics
  - antecedent medications
  - anxiolytics\*
- Drains
- Dressings
- (DVT)

### II. COMMON MEDS

#### ANALGESICS:

- Acetaminophen (Tylenol) 325 – 650 mg po/pr q4h prn
- Ibuprofen 400 – 800 mg po q4h prn
- Ketorolac (Toradol) 15-30 mg iv/im q6h prn
- Ketorolac 100 mg po q6h (max 5 d)
- Celecoxib 200 mg po bid \* 4 doses
- Gabapentin 200 mg po tid
- Tylenol #3 1-2 tabs po q4h prn (NB- 30 mg of codeine/300mg tylenol per tab)
- Percocet (oxycodone/acetaminophen) 1-2 tabs po q4h prn
- Oxycontin (Oxycodone) 5-10 mg po tid
- Morphine 2.5 – 5.0 mg iv/sc q4h prn
- Hydromorphone (Dilaudid) 1 – 2 mg sc q4h prn
- Demerol 25 – 75 mg sc q4h prn
- Fentanyl patch 25 mcg/hr. Change q72h
- Fentanyl 25-75 ug iv q30min prn

**Table 23-1.** Standard Pain Medications and Their Relative Strengths

	Equianalgesic Doses (mg)	Typical Dosing Range	Equianalgesic Dose
<b>Drug</b>	<b>Parenteral</b>	<b>Oral</b>	
<b>Morphine</b>	<b>10</b>	<b>30</b>	
<b>Buprenorphine</b>	<b>0.3</b>	<b>0.4 (sl)</b>	
<b>Codeine</b>	<b>100</b>	<b>200</b>	
<b>Fentanyl</b>	<b>0.1</b>	<b>NA</b>	
<b>Hydrocodone</b>	<b>NA</b>	<b>30</b>	
<b>Hydromorphone</b>	<b>1.5</b>	<b>7.5</b>	
<b>Meperidine</b>	<b>100</b>	<b>300</b>	
<b>Oxycodone</b>	<b>10*</b>	<b>20</b>	
<b>Oxymorphone</b>	<b>1</b>	<b>10</b>	
<b>Tramadol</b>	<b>100*</b>	<b>120</b>	
IV medications (brand name)			
Morphine		3-6 mg IV q4h prn pain PCA: 1-2 mg with an 8 min lockout interval	7 mg
Hydromorphone (Dilaudid)		0.5-1 mg IV q4h prn pain PCA: 0.1-0.2 mg with an 8 min lockout interval	1 mg
Ketorolac (Toradol)		15 or 30 mg IV q6h standing	N/A (not an opioid)
Fentanyl		10-50 µg IV q15min (use in the PACU b/c of its short half-life, should never be ordered on the surgical floor)	70 µg
PO medications (doses in each tablet)			
Percocet (5 mg oxycodone and 325 mg acetaminophen)		1 or 2 tablets PO q4h prn pain	3 tablets (or 15 mg oxycodone)
Vicodin (5 mg hydrocodone and 500 mg acetaminophen)		1 or 2 tablets PO q4h prn pain	3 tablets (or 15 mg hydrocodone)
Tylenol #3 (30 mg codeine and 300 mg acetaminophen)		1 or 2 tablets PO q4h prn pain	5 tablets (or 150 mg codeine)
Ibuprofen		400 mg tablet PO q6h standing	N/A (not an opioid)
Morphine ( <i>oral formulation</i> )		Not typically used postoperatively	20 mg
Dilaudid ( <i>oral formulation</i> )		Not typically used postoperatively	5 mg

\*Not available in the US

McPherson ML. *Demystifying Opioid Conversion Calculations: A Guide For Effective Dosing*. Amer Soc of Health Systems Pharm. Bethesda, MD, 2010. Copyright ASHP 2010. Used with permission.

NOTE: Learner is STRONGLY encouraged to access original work to review all caveats and explanations pertaining to this chart.

#### ANTI-EMETICS:

- Dimenhydrinate (Gravol) 25-50mg po/sc/iv q4h prn
- Ondansetron (Zofran) 4-8 mg po/im/iv q8h prn \*elderly
- Metaclopromide (Maxeran) 10mg po/im/iv q6h prn
- Dexamethasone

#### PPI:

- Pantoloc 40 mg iv/po daily
- Lansoprazole (Prevacid) 30 mg iv/kf daily

#### ANTI-HISTAMINE:

- Diphenhydramine (Benadryl) 25-50mg po/iv q4-6 h prn
- Dimenhydrinate (Gravol) 25-50 mg po/iv/im q4-6hr prn

#### BOWEL:

- Colace 100mg po BID
- Senokot 1-2 tabs kf qhs prn
- Bisacodyl (Dulcolax) supp 10mg pr qhs
- Glycerin supp pr daily prn
- Lactulose 15-30 cc po BID prn
- Fleet enema prn
- Mg Citrate, one bottle po

#### ANTIBIOTICS

Antibiotic	IV	PO
Ancef	1-2 g q8h	Keflex 500mg BID-QID
Ampicillin	1g q6h	Amoxicillin 500mg TID
Ceftriaxone	1-2g q24h	
Azithromycin	500 mg q24h	500 mg od (1d) + 250 mg od (4d)
Cipro	400 mg q12h	500 mg BID

Flagyl	500 mg q12h	500 mg BID
Clindamycin	600 mg q8h	300-450 mg TID
Levofloxacin	500 mg IV x 7-14 d	“
Moxifloxacin	400 mg IV x 7-14 d	“
Gentamicin	7mg/kg daily	

## DVT PROPHYLAXIS:

- Enoxaparin 40mg SC q24h (start POD1) \*CKD
- Heparin 5000u SC BID (start POD1) \*CKD

## SEDATION:

- Midazolam (Versed) 2.5-5 mg iv q30min prn (on vent)
- Lorazepam (Ativan) 1mg sl/kf q6h prn (off vent)
- Immovane 3.75-7.5 mg po qhs prn

**Table 24-2.** Dosing Strategies for Agitation

	Haloperidol (IV) (mg)	Olanzapine (mg)	Quetiapine (mg)
Mild	0.5-2	2.5-5	25-50
Moderate	2-5	10	50-100
Severe	5-20	20	100-200

Daily dose of olanzapine should not exceed 20 mg/day for elderly patients or 40 mg/day in nonelderly patients secondary to anticholinergic activity at higher doses. Daily dose of quetiapine should not exceed 500 mg in elderly patients or 800 mg in nonelderly patients secondary to increased anticholinergic activity.

## MISCILLAENOUS:

- Banana Bag:
  - NS, 10 cc multivitamins, Thiamine 100mg, Folate 1-5mg
  - Thiamine 100mg iv/im daily x 3 days
  - DTs: Haldol 5 mg im q4h prn
- Alcohol Withdrawal
  - Diazepam (Valium)
    - 5-10 mg IV q5-10 min
    - 5-10 mg PO q6h
  - Lorazepam (Ativan)
    - 2-4 mg IV q15-20 min
  - Thiamine 100 mg + multivitamins
  - Phenobarbital 130-260 mg IV q15-20 min + Profenofol 1 mg/kg IV push + intubate
- Magic Mouthwash:
  - 2% Viscous lidocaine, Nystatin, Saline, Hydrocortisone (60mg/200ml)
  - 5mL swish and spit or swallow qid
- Chlorhexidine Mouthwash
  - 0.12% mouthwash, 15cc swish and spit qid
- Adrenal Crisis
  - Dexamethasone 4mg IV
  - Then, Hydrocortisone 50-75mg q6h until VSS
- Seizure:
  - Ativan 1-2 mg iv/po/sl q3h prn
  - Haldol 5 mg im q4h prn
- Opioid overdose:
  - 0.4mg naloxone q3 min (4mg in 10mL NS, give 1mL at a time)
  - repeat up to 0.01 mg/kg
- TPA (plugged pigtails/CT):

- Alteplase 2mg in 2ml vial sterile water. Inject 2cc into catheter and clamp for 30min. Then try flushing again.

### **III. Total Thyroidectomy Patients**

Sips-> DAT  
 AAT, HOB @ 30°  
 VSR, C+T signs with vitals  
 IV NS @ 100cc/hr, SL WDW  
 Hemovac/JP drain – record output q shift  
 Calcium profile (total, ionized, albumin) BID  
 PTH (postop and AM) --- STAT PTH in recovery room (MSH, WCH, SB)  
 Call MD if patient experiences numbness/tingling or corrected calcium <2.0  
 Synthroid 0.075 or 0.1mg PO OD **OR** Cytomel 25 mcg PO BID  
 Gravol 25-50 mg IV/PO q4h PRN  
 Tylenol ES/#3 i-ii tabs PO q4h PRN  
 Morphine 2-5 mg IV/SC/IM q4h PRN  
 Imovane 3.75-7.5 mg PO qhs PRN

Staff preference:

Polysporin vs Steristrips  
 Antibiotics

**Parathyroidectomy** - similar orders +/- STAT PTH and calcium profile in recovery room

**Post op Complications**

1. Hematoma

- ABCs. Vitals. HOB at 90°, give 100% O2...
- +/- Scope: laryngeal edema
- If SOB/Stridor/dysphagia open at bedside, remove skin sutures, release through subcutaneous tissues, and split strap muscles if necessary. (on way to hospital, ask for a minor tray at the bedside)
- To OR for exploration.
- If small and asymptomatic may observe

2. Hypocalcemia (normal *total calcium* = 2.2-2.6 mmol/L)

*Note: Check magnesium*

Normal	Abnormal	Treatment
Ca(corr) 2.2 – 2.6	<1.95 – 2.0 or sx – start orals <1.8 – urgent	<b>Non-urgent:</b> -Calcium Sandoz 1-1.5g TID <b>or</b> -Calcium carbonate 2500 mg TID -Rocaltrol 0.25-0.75 mcg BID  <b>Urgent:</b> -1g Ca gluconate in 100cc NS over 1 hr <b>or</b> -10mL of 10% calcium gluconate in 100mL NS over 1hr (1g total) - <b>or</b> 10g in 1L and run @ 100cc/hr - taper off @ 10 cc/hr q2h when normalizing -Start orals (24 h overlap)
PTH	>1.6 likely normocalcemic 1.1 – 1.6 grey area <1.0 likely hypocalcemic	None Consider trends Start orals
ICal 1.1 – 1.35	<1.0 abnormal <0.8 Mild <0.7 Severe	

Mg 0.7 – 1.2	<0.8	<b>IV:</b> 1-4g MgSO <sub>4</sub> in 100-250cc NS over 0.5-2hr <b>PO:</b> Mg Glucoheptanoate (Rougier) 15-30cc po tid (100mg/cc) Repeat /3
K 3.5 – 5.0	<3.4 Mild <3.0 severe	<b>IV:</b> 20-40 meq in 400cc NS over 4-6 hr <b>PO:</b> K-Dur 20-40 meq BID <i>Note: each 10 meq increases K by 0.1</i>
PO4 0.8 – 1.45	<0.64 oral <0.32 IV (switch to oral at 0.48)	<b>IV:</b> 15mM Na PO <sub>4</sub> <u>or</u> K PO <sub>4</sub> in 100 ml NS over 4 hours <b>PO:</b> Phosphate Novartis 2 tabs (1g in 240 ml of water po/ng q 8 hours * 3 doses)

**IV. Head and Neck Free Flap Patients**

Admit to stepdown unit at TGH (D4ICU at SHSC)

NPO

AAT, HOB @ 30 degrees

VS q1hour

Flap checks q1h x 24 hours, then q4h (colour, capillary refill, temperature, Doppler)

Trach tray and obturator at bedsite

Routine trach care (humidified O<sub>2</sub>, frequent suctioning)

No circumferential neck ties

IV NS @ 100cc/hr

Ins/Outs qshift

Drain ins/outs qshift

NG -&gt; SD

CXR in recovery room to verify NG placement (no feeds until AM)

Foley -&gt; SD, call MD if u/o &lt;30cc x 2 hours

Polysporin to neck incision and drain sites BID

Analgesia per APS

Acetaminophen 1g po q6h prn

Ondansetron (Zofran) 4-8 mg po/im/iv q8h prn

Gravol 25-50 mg po/sc/iv q4h prn

Ancef 1g q8h &amp; Flagyl 500mg q12h x3 doses

Heparin 5000 units SC BID OR Enoxaparin 40 mg SC daily OR TED stockings

(OC/OP) Chlorhexidine mouth rinse 0.12% 15-30 cc swish and spit, or on swab stick, qid and prn

CBC, lytes, ca/mg/po4, bun/cr x3 days

Staff preference:

ASA

No nicotine patches

If inserting penrose drains then order "jelly roll neck drains q1 hour"

**Post op complications**1. Flap problems:

- a. ALWAYS see the patient ASAP with any flap concerns
- b. Assess for colour, capillary refill, temperature, firm vs. soft, Doppler, scratch test, hematoma under the flap?

- c. Assess patient's medical status (ensure normal u/o and volume status, avoid hypotension, avoid vasopressors – if hypertension use a vasodilator (nitro), don't give vasoconstrictors, ensure adequate Hgb)
  - d. Arterial insufficiency
    - i. Pale -> dusky
    - ii. Scratch test – no blood
    - iii. No Doppler
    - iv. Treatment: To OR for exploration
  - e. Venous congestion
    - i. Blue flap, swollen
    - ii. Fast bleed with scratch test – dark blood
    - iii. Treatment: Re-explore vs. leech.
  - f. If unsure always call senior/fellow/staff
2. Seroma
- a. may need sterile serial aspiration +/- pressure dressing
3. Hematoma
- a. size, location, rate of expansion?
    - i. always a big problem if near/under a free flap – will need OR
    - ii. usually local environment of a hematoma promotes ongoing bleeding (vs stopping with compression as it expands)
4. Salivary fistula
- a. open wound. Send for amylase. Pack with ribbon gauze. NPO. Antibiotics. May need repeat OR if no resolution. May need gastrograffin swallow study to assess for leaks at anastomosis site. Be aware for this complication in laryngectomy patients who have had previous XRT – carefully inspect the stoma suture lines daily.
5. Chyle leak
- a. Milky fluid in drains, high volume  
Send for chylomicrons/TG
  - b. Conservative management:  
NPO except for water  
Medium Chain Fatty Acids via NG (Vivonex)  
Nutrition to see (to ensure adequate caloric intake)  
Pressure dressing to neck (staff preference)  
Keep drains in  
If no resolution in 1-2 weeks or if high volume (>600cc/24 hours) then OR (neck exploration or Thoracics to see – may need thoracotomy to access thoracic duct)
6. Can't pass the suction tubing through the trach, or trach is partially out
- a. Ask about vitals (O2 sat, resp rate, HR)
  - b. Wear your headlight, have help available (nurse, other resident)
  - c. Have a trach tray at the bedside available
  - d. Scope if trach tube seems to be in reasonable position – could be blocked by crusts/secretions/granulation tissue
  - e. Re-insert the trach (scope them if unsure of position - ?false passage)
  - f. If less than 3 days post op may wish to have assistance
  - d. May require a longer trach tube if occurs repeatedly or with position changes
7. TEP (Tracheo-esophageal puncture) catheter fell out
- a. Re-insert it ASAP. Don't wait until the AM, it will close

- b. Re-insert a foley, inflate the balloon with **sterile water**, suture or tape the distal end to the neck/chest skin
- 8. Neck drains won't hold suction
  - a. Assess drain site. Ensure the drainage holes are not on the outside of the skin edge
  - b. Assess for air leak around the drain site
  - c. Assess length of incision for adequate closure
  - d. Is drain blocked? Try to unblock with 60cc syringe
  - e. Reinforce drain site (jelonet, tegaderm)
  - f. Consider hooking to wall suction -20mmH2O
  - g. Re - suture drain to close off dead space
- 9. Post op tracheotomy bleeding
  - a. ABC's
  - b. Inflate trach cuff until diagnosis is made to protect from gross aspiration
  - c. NB – Tracheoinominate fistula (sentinel bleeds)
    - i. call staff, intubate from above and blow up cuff, remove trach, finger over fistula, pray, etc.
  - d. Determine if skin edge (blood around wound) or within trachea (bloody suctioning)
    - i. flexible scope through trach
    - ii. can try to pack around edge if skin edge, or use silver nitrate cautery (scar) – no small pieces of packing unless you want to pull them out of the right mainstem bronchus later
- 10. Pulmonary Embolism, Myocardial Infarction, Stroke...
  - a. Don't forget about these things, especially in head and neck patients (often drink/smoke/poor health)
  - b. Postop tachycardia despite good analgesia? Consider chest CT to R/O PE, even on POD1

#### **Standard Post-Operative Management of H+N Inpatients**

- POD#1
  - Deflate trach cuff
  - D/C foley
  - Check NG placement and start feeds
  - PT to see/up to chair
- POD #2
  - Drains
    - penrose – advance daily and re-suture (in two places) then out
    - d/c when less than 30cc/24 hour if appearance of output is not concerning
    - Change from pleuravac to hemovac when <100cc/24 hours
- POD #3
  - Trach change
    - Suture if there is a free flap (no neck ties)
    - Downsize
      - i.e. non-cuffed, fenestrated #4 Shiley
      - have headlight, trach tray, assistant, proper positioning, +/- flexible scope available
    - Cork trach as tolerated, once corked x 24 hours decannulate
      - TGH – nurses decannulate
      - SB – you decannulate and close with a single stitch
    - If laryngectomy – D/C trach and insert an LGT
      - don't cork (!)

- may wear LGT at night only after ~POD #3 – unless free flap – then may need to be re-sutured in place
- POD # 5
  - D/C alternate facial sutures (if no XRT)
  - D/C fibula back slab (only the back slab, not the whole dressing)
- POD # 7
  - D/C alternate neck staples (if no XRT)
  - D/C RFFF arm dressing, and arm and STSG stutre/staples
  - Assess STSG (then jelonet/adaptic, gauze, cling dressing)
  - Start on sips H2O if oral cavity flap and no prior XRT
  - SLP to see re: starting feeds
- POD #10
  - D/C fibula dressing
  - D/C leg sutures
- POD# 10-14: D/C stoma sutures
  - If XRT patient keep sutures in longer (~ 4 days longer – staff preference)
  - Laryngectomy patients
    - Often have their thyroid removed in surgery– start on synthroid post op
    - Check calciums post-op BID b/c often devascularize parathyroids

Trach care D/C instructions:

Equipment needed: suctioning machine with 14 French suction, portable humidifier, Change ties prn, suctioning deep oral daily prn, tube care (corked as tolerated, cleanse with hydrogen peroxide and NS. Clear inner canula with pipe cleaner and rinse with sterile water BID), Stoma care (cleanse around stoma site with NS (remove crusts daily)

**V. Ear Patients**

DAT

AAT

VSR

IV NS

Mastoid dressing to remain overnight

Acetaminophen, Hydromorphone, Oxycodone PO

Gravol, Zofran

1. Facial nerve paralysis
2. Bleeding
3. CSF leak

**VI. Endoscopic Sinus Surgery Patients**

1. Post op visual changes/eye swelling (R/O Retrobulbar hematoma)
  - i. See the patient ASAP
  - ii. Call staff
  - iii. Consult optho
  - iv. Remove the nasal packing
  - v. Osmotic agents (mannitol)

- vi. Book OR (or canthotomy at bedside)
- 2. Epistaxis
- 3. CSF leak

## VII. Esophagoscopy Patients

- 1. Mediastinitis
  - i. postoperative tachycardia and chest pain
  - ii. subcutaneous emphysema
  - iii. CXR
  - iv. NPO
  - v. gastrograffin swallow study to assess for leak
  - vi. antibiotics

## VIII. Tonsillectomy Patients

- 1. Bleeding
  - i. ABCs, cross and type, 2 large bore IV's, IV fluid bolus
  - ii. if small, may use silver nitrate cauterity (age dependent)
  - iii. may need OR
  - iv. start antibiotics post-bleed

## IX. Other

- Insulin Sliding Scale

C/S	Mild DM	Mod DM	Severe DM	qhs NPH
<4	50cc D50W, call MD			
4-7	1u	2u	3u	1u
7-10	2u	4u	6u	2u
10-13	3u	6u	9u	3u
13-16	4u	8u	12u	4u
16-19	5u	10u	15u	5u
<20	Call MD			

TDD = 0.5 – 1.0 u/kg

Twice Daily/Premixed:

2/3 AM + 1/3 PM

2/3 Lantus + 1/3 Humalog

E.g. 72 kg, TDD=36u, give 24u in AM (16u Lantus / 8u Humalog) + 12u in PM (8u Lantus / 4u Humalog)

Multiple Drug Injection:

1/2 long-acting qhs

1/2 short-acting divided AC **or**

meal dose (1u/10g CHO)+ correction dose (measured glc – target glc / 1u per 2Mm glc)

Basal Insulin	Onset	Peak	Duration
NPH or N	1 to 3 hours	5 to 8 hours	12 to 18 hours
Lantus	90 minutes	Peakless	24 hours
Levemir	90 minutes	Peakless	16 to 24 hours

Bolus Insulin	Onset	Peak	Duration
Novorapid	10 to 15 minutes	1 to 2 hours	3 to 5 hours
Humalog			
Apidra			
Novolin (R)	30 minutes	2 to 3 hours	6.5 hours
Humulin (R)			

- Death Palliation
  - Morphine gtt 0-20mg/hr Start @ 5-10. Hold if RR less than 10. Can start with 2.5 iv bolus.
  - Ativan 1mg sl q30min prn
  - Scopolamine 0.3 mg sc tid for secretions (for death rattle)
  - Glycopyrrrolate
  - (Do if on full O2, sats dropping, and air hunger. Obviously total compassionate care pts only!)
- Seizures
  - CBC, abg, lytes, ca, mg, po4, trop, ck, glucose, protein, pt, ptt, liver panel
  - Ativan 1-2 mg sl/iv q3min prn upto 0.1mg/kg
  - Diazepam 10mg pr
  - Phenytoin 300 mg iv over 10 min
  - Status epilepticus: Phenytoin 10-20 mg/kg at max rate of 50mg/min
  - Amp of D50 (and thiamine iv if EtOH Hx)
- LP Tubes

- #1-CBCD (if suspect SDH)
- #2-Gram stain, C&S, Viral PCR
- #3-Protein, glucose, LD
- #4-CBCD, cytology
- Order blood glucose as well

## CONSULTS

1. General questions
  - Stable – stridor, SOB, drooling
  - Focused ENT question
  - Admission
  - Patient ID
  - Name and contact of referring MD
2. Airway (stridor)
  - Call Senior, CCRT
  - Dexamethasone 10 mg IV
  - Prepare: intubation, trach
  - Clinical history:
    - Onset
    - Recent infection
    - Neck mass or cancer risk factors
  - Ddx:
    - Infection – epiglottitis,
    - Congenital – SGS, laryngomalacia
    - Foreign body
    - Cancer
3. Epistaxis
  - pressure
  - vasoconstrictors: Lidocaine/otrivin
  - suction/silver nitrate
  - anterior pack:
    - absorbable
      - gelfoam/surgical
      - \*surgiflo/floseal – active, diffuse bleeding on anticoagulants; NOT brisk
        - Need blood consent
    - non-absorbable
      - rapid rhino – soak in sterile water for 30s, fill balloon with air
      - meroceal – lubricate with Vaseline, expands from blood/saline
  - pack both sides
  - posterior pack:
    - epistat – fill with sterile water (NOT SALINE) > air
    - foley +/- anterior pack
  - rigid scope and suction cautery
  - SPA ligation

- embolization
4. Peritonsillar abscess
- Stable
  - Clinical history
    - Young patient, 3+ days, no improvement with Abx
    - \*\*Oropharyngeal cancer – old patient with cancer risk factors
  - Symptoms
  - Orders:
    - Analgesia (toradol/morphine)
    - Dexamethasone (6-10 mg)
    - IVF
    - +/- one dose Clinda 600 IV
    - Bedside: minor tray and viscous lidocaine/spray
  - Preparation: lidocaine spray/injection, suction, culture swab, minor tray
  - Procedure:
    - Lidocaine spray and viscous lidocaine (do not swallow)
    - Lidocaine 1% with epi, 27G (1.5 inch length)
    - Wait 10 min
    - Suction
    - Hold tongue
    - Incision with #11/15 blade
  - Follow up:
    - Clindamycin 300 TID
    - Amox-Clav
5. Foreign body
- Stable?
  - Lateral neck xray +/- CT with contrast
  - Direct retrieval vs. laryngoscope
    - Lidocaine spray
    - Conscious sedation
  - GI – below cricopharyngeus
5. Facial nerve injury
- Bell's Palsy
    - Acute onset within 3 days
    - Sx: facial droop, dry eye, hyperacusis
    - House Brackmann

Grade	Description	Characteristics
I	Normal	Normal facial function in all areas
II	Mild dysfunction	Slight weakness noticeable on close inspection; may have very slight synkinesis
III	Moderate dysfunction	Obvious, but not disfiguring, difference between 2 sides; noticeable, but not severe, synkinesis, contracture, or hemifacial spasm; complete eye closure with effort
IV	Moderately severe dysfunction	Obvious weakness or disfiguring asymmetry; normal symmetry and tone at rest; incomplete eye closure
V	Severe dysfunction	Only barely perceptible motion; asymmetry at rest
VI	Total paralysis	No movement

- - 95% recover completely within 3 months
    - Incomplete – ~100% recover
    - Complete – 10-15% don't recover completely
  - Tx:
    - 6-8 days prednisone with taper
    - +/- antivirals
    - F/U in 6 months if no recovery
  - Ramsay Hunt Syndrome
    - Herpes zoster – vesicles and pain, CN8 palsy
    - Steroids + antivirals
    - Px: 60% residual weakness/CN palsy
  - Facial nerve schwannoma – recurrent Bell's palsy
- Temporal bone trauma
  - Longitudinal vs. transverse
  - Otic sparing vs. involving
    - Sparing – minor trauma; mild facial paralysis
    - Involving – major trauma; complete facial paralysis
  - Workup
    - CT temporal bone – type of #, bone spicule, severity
    - +/- MRI temporal bone
    - Volitional EMG
      - Volitional potentials – nerve intact
      - Fibrillations – nerve dissection
      - Silent – not helpful
  - Tx:
    - Urgent surgery – evidence of facial nerve destruction
- Infectious causes of facial nerve paralysis
  - AOM in the setting of facial canal dehiscence
    - Tx: M+T, abx, steroids
  - Skull base osteomyelitis/MOE/NOE
    - Elderly, diabetes, immunosuppressed
    - ++Mastoid pain, otorrhea, granulation tissue at BC junction
    - Tx:
      - Abx
      - No evidence for surgery
      - Surgery – if dx uncertain or need bx (i.e sarcoma)

- Parotitis

6. SSNHL

- Hum test – conductive vs. SNHL
  - Hear in plugged ear – CHL
  - Hear in non-plugged ear - SNHL
- Prognostic factors:
  - Bad – severity of hearing loss, extremes of age, vertigo or other CN palsy, unhealthy
  - Good – low frequency hearing loss
- Tx:
  - High dose prednisone 1 mg/kg x 6 days with taper
  - MRI (later) – 10% of AN present with SNHL, 10% of those don't recover
  - Intratympanic steroids x 5 days
    - If improvement: offer steroids in multiples of 3: 3-6-9
  - Prognosis:
    - No tx – 30%
    - Prednisone – 50%
    - Intratympanic – 70%
- \*Stroke
  - Focal neuro deficits – ataxia, hemiplegia, CN palsy

7. Dizziness

- R/O cardiac and stroke (posterior fossa)
- Peripheral vs. Central
  - Peripheral – horizontal nystagmus, irritative (towards lesion in first few hours); switches directions after a few hours
  - Head thrust/Halmagi – positive test towards lesion (i.e. abnormal left head thrust \*patient perspective = left sided lesion)
- Tx:
  - High dose prednisone – reduces long-term caloric dysfunction
  - Ambulate!

8. Laryngeal trauma

- Sx:
  - Airway – stridor/SOB
  - Tenderness
  - Swelling, ecchymosis
- Workup
  - Scope - swelling
- Shaefer score

Groups	Severity of Injury in Ascending Order
Group 1	Minor endolaryngeal hematomas or lacerations without detectable fractures.
Group 2	More severe edema, hematoma, minor mucosal disruption without exposed cartilage, or nondisplaced fractures.
Group 3	Massive edema, large mucosal lacerations, exposed cartilage, displaced fractures, or vocal cord immobility.
Group 4	Same as group 3, but more severe, with disruption of anterior larynx, unstable fractures, two or more fracture lines, or severe mucosal injuries.
Group 5	Complete laryngotracheal separation.

- - **Group 1**
    - Flexible laryngoscopy
    - No surgical intervention
    - Meds: steroids, Abx, Anti-reflux, humidification, voice rest
  - **Group 2**
    - Direct laryngoscopy and esophagoscopy
    - Serial examination
    - Generally no surgical intervention but may need trach if worsens
    - Meds: steroids, Abx, Anti-reflux, humidification, voice rest
  - **Group 3**
    - Direct laryngoscopy or esophagoscopy in OR
    - Trach often required
    - Exploration and surgical repair general required
      - Disruption of anterior commissure; major endolaryngeal lacerations; tear involving vocal cord; immobile vocal cord; cartilage exposure; displaced cartilage fractures; arytenoid subluxation or dislocation
  - **Group 4**
    - Direct laryngoscopy and esophagoscopy in OR
    - Trach always required
    - Surgical repair + stent placement required to maintain integrity of larynx
  - **Group 5**
    - Urgent airway evaluation and management
    - Trach always required but can be very difficult
    - Surgical repair + stent placement required to maintain integrity of larynx

#### 9. Temporal Bone Trauma

- Evaluation
  - ATLS
  - H&N exam
  - Hearing deficits
  - Otoscopy; Tuning fork – 512Hz
  - Facial nerve function
  - Frequent site of compression injury: labyrinthine portion
  - Late onset paralysis better prognosis
  - Bedside vestibular function
  - Spontaneous or gaze-evoked nystagmus, gait abnormalities, positive fistula test, Dix-Hallpike test to evaluate for benign paroxysmal positional vertigo (BPPV), head thrust looking for refixation saccade, and assessment for post-head-shaking nystagmus.

- Examination of soft tissue for postauricular ecchymosis, laceration, auricular hematoma; Look for CSF rhinotorrhea
- Ix:
  - Imaging – CT fine-cut
  - Hearing deficit – Audiogram
  - Suspected CSF rhinotorrhea
    - CSF – higher glucose content and lower protein and K content than mucosal secretion
    - Beta-2 transferrin
    - Intrathecal fluorescein
- Treatment
  - No facial paralysis or CSF leak:
    - Audiogram next (couple of) day(s); repeat 1(or 2-3) month(s)
    - Abx controversial
    - Ciprodex?