SERVICE OVERVIEW

You will spend the majority of your first year on-service. This time is divided between the 4 services:

1. Inpatient service + ALL non-dolosa CF, including ICU CF patients, indeterminate or positive sweat tests and CF-related outside calls + NIPPV rounds
2. Consults + CF infected with B. Dolosa
3. Bronchoscopies, PFTs, CPETs.
4. Transplant service + outside calls (non-CF related) + NICU consults from BWH and BI + urgent clinic visits + cover bronchs while bronch fellow is in clinics

The *consult* service is usually the busiest of the four, given the high volume of consults, including ED consults/calls and our Dolosa patients. Occasionally, the consult fellow could also be asked to see a dolosa patient in clinic.

The *inpatient* fellow will follow the patients on the pulmonary service, any CF related phone calls, CF sick visits (can discuss with transplant fellow if too busy) as well as any indeterminate or positive sweat tests (from clinic).

The *bronchoscopy/PFT* fellow will read PFTs that were done starting the Thursday prior to their week of service. When the bronch fellow is in clinic, the Transplant fellow will cover bronchs. When 2 bronchs occur simultaneously during that period (very rare), the Inpatient fellow helps out.

The *Transplant* fellow will see ALL transplant patients, take ALL outside calls and do BI and BWH NICU consults. The transplant fellow also sees urgent clinic visits (if no open/ambulatory slots) and helps when two bronchs happen at the same time or the bronch fellow has clinic.

Please see the individual service guides for further details.

PULMONARY INPATIENT SERVICE

INPATIENT BASICS

As the inpatient fellow, you are responsible for managing the day-to-day inpatient care of all patients admitted to the Pulmonary Service. The Pulmonary inpatient service admits patients with CF (non B. Dolosa infected), asthma, complicated pneumonia, aspiration, infants with BPD, pneumothorax, concern for tuberculosis, as well as many other patients with pulmonary diseases. The inpatient pulmonary team consists of an attending, one fellow, a nurse practitioner, four interns and a third year Boston University medical student. There may occasionally be another rotating medical student as well.

Generally at least two interns round with the team each day, and the interns rotate q4 days for 24-hour calls..

During the day, the inpatient fellow will be the direct supervisor for the pediatric interns on the pulmonary service. You will supervise them with admissions, discharges and all other aspects of patient care. When you go to your continuity clinic, the *6-subs* resident (5-4616) will serve as supervisor of the interns. This is a pediatric resident assigned to subspecialty clinics and he/she is available to assist the interns if they have questions. You, as the inpatient fellow, should sign out to this resident before leaving for clinic (acute/unstable patients, pending transfers, etc.). The inpatient attending will also be available to discuss patient-related issues with the interns while you are in clinics.

SCHEDULED ADMISSIONS

There are usually scheduled admissions each week. These are commonly CF patients being admitted for IV antibiotics, patients getting admitted post-bronchoscopy for observation, and so on. These will be included in the daily emails with admissions and bronchs.

It is a good idea to **print the admissions list each week and put it up on the 9S workroom for the residents.** When possible, it is helpful to review the patients at least a day prior to their admission. Going over this ahead of time with the interns will also be helpful and maximize their learning, as they can then help to determine antibiotic plans for the CF patients. Let the interns analyze the case and come up with a treatment plan rather than just telling them the treatment plan.

Review the cultures and history for patients (see quick reference card and pulmonary pearls for tips). Discuss with the interns and come up with a plan. You will need to then discuss your plan with the service attending. Sometimes, the primary pulmonologist will indicate a specific plan for IV antibiotics or a workup, and it may be prudent to either review the last pulmonary clinic note or discuss the plan directly with the primary pulmonologist prior to the actual admission. Our nurse practitioner, Keri Sullivan, is an excellent resource – she knows many of the CF patients really well and can often recall important aspects of the CF patients' histories.

If a CF patient (non-Dolosa), is admitted to an ICU, the inpatient attending and fellow round on the patient daily and the fellows writes the daily progress note (unless the patient has undergone a lung transplant, then this patient is under the care of the transplant team).

PATIENT LOCATIONS

The inpatient pulmonary residents, fellow, and attending care for all pulmonary patients admitted to the floor, including pulmonary patients that overflow to floors other than 9. The one exception is CF patients with B Dolosa.

NOTE: **Our patients with CF colonized with *B. dolosa* are admitted to 7W. These patients are taken care of by the 7W subspecialty residents and the Consult Fellow. If a CF patient with *B Dolosa* is admitted to the ICP/ICU, the consult fellow/attending continue to follow them there.

ROUNDS

From 8:00-8:15am Fellow and Attending should try to discuss the plan for the day, discuss complex patients or plans for the sickest patients, this is a way to try to keep rounds more efficient.

Rounds on the inpatient service start at 8:15am on weekdays (and 8am on weekends), with the exception of **Wednesdays, when during the academic year, Sept.-June, rounds will start at 9:00am** due to the New England Pediatric Pulmonary Conference at MGH. (ideally, rounds should start when the fellow comes back from MGH. If the service is busy, at times, exceptions to this rule can be made. Always discuss with your team the day prior). Usually, this is in the form of walk rounds, but it is up to the inpatient fellow and attending to decide.

Ideally, when you become more comfortable with the service, the expectation is that the fellow should lead inpatient rounds. **Don't be afraid to lead rounds,** suggest a plan, and teach the residents on rounds. The more self-motivated you are to take charge of the service, the better learning experience it will be! The inpatient service is a fantastic opportunity for you to become more and more comfortable with your skills in pediatric pulmonology and as a team leader.

The goal should be to finish general rounds by 10 or 10:30am.

The intern taking care of the floor transplant patients on 10S (or all the interns and med student if they want to) will then round with the transplant team (different attending and fellow) who round daily at 10:30am.

The interns should send their notes on these patients to the transplant attending.

CF WEEKLY MEETING

There are weekly CF Team meetings on Thursday afternoons (Enders 8 conference room) where among other topics, the admitted CF patients are discussed in multidisciplinary fashion. Social work, PT and nutrition attend these meetings and the pulmonary fellow is expected to attend from 12:45-1pm and lead the discussion on admitted CF patients.

SIGNOUT

Overnight and after the fellow leaves on weekends, the **CCS (Complex Care Service) junior resident will be the direct supervisor for the interns on the pulmonary service**. Before leaving each night and on weekends, the inpatient pulmonary fellow **must sign out to the CCS junior. Ideally, the CCS resident should be present for weeknight PM signout, specially for the beginning of the year.** Sometimes, CCS is too busy and they can't be present in person. **If this happens, the fellow should make sure to call them**

and signout by phone at a time that is convenient for both. The residency program has a requirement that the **interns should be supervised during their signout periods**. The pulmonary fellow supervises weekday PM signout, and the CCS resident supervises the AM signout. The CCS resident spectralink is 5-0015.

Signout system for the Residents (Fellow only required for weekday PM signout, the rest is for your information).

Weekday:
6:00am: Daytime interns arrive & receive I-PASS sign-out from overnight intern, supervised by overnight CCS resident
7:00am: YAU NPs arrive and receive sign out from overnight intern (usually brief)
7:30am: Overnight intern must leave by 10:00am latest (residents are expected to stay post-call to round on new admissions and 'active'/acute patients from the night. They should not stay to present routine/non-active patients. If the resident, fellow, and attending agree that an admission is 'routine' or for other group concensus, the post-call intern may be dismissed early without presenting the above patients. UNDER NO circumstances should a post-call resident be asked to stay past 10am in order to comply with duty hours.)
7:30-8:15am: Daily pulmonary lecture
8:00- 8:15am: Attending and fellow meet to discuss our sickest patients, brief huddle before rounds.
8:15- 10:00am: Rounds
12:00-1:00pm: Resident noon Conference
5:30pm: On-call intern receives sign-out from day interns, supervised by pulmonary fellow (CCS resident will come if able to, but if not, fellow will give brief verbal signout to CCS resident)
6:15pm: On-call intern receives sign out from YAU NP, supervised by CCS resident

DIVISION OF LABOR
The residents will write the admission notes, daily progress notes, and discharge summaries on the inpatients. The NP often can help with discharge summaries. For CF admissions, an inpatient CF Admission Orderset in Powerchart has been developed. Please review this with the NP or the attending when you are first on service. When a third-year BU medical student is following a patient, their notes will need to be co-signed by the intern prior to the attending signing them. The intern must document a brief update on the patient, the physical exam and the medical decision-making. If the intern is very busy, the fellow can offer to help cosign the med student's notes. Similarly, if it is really busy, the fellow should offer to help out with the intern notes.

The residents and NP are responsible for writing all inpatient orders, and generally will be calling any consultant teams or scheduling studies. **Fellows generally should not write orders directly on patients, but certainly should help out the residents and NP in getting through the day's work. If you as the fellow are going to write orders, always communicate it to the NP and the residents (they need to update their multiple signouts and need to know which labs/images, etc. could be pending).**

There are certain standard diagnostic studies for CF patients:

- Admission labs per admission orderset: CBC with diff, CRP, PT/PTT/INR, lytes, lfts, IgG, IgE, HgbA1c, vitamin levels if not done in last 6-12 months (A,E,25 OH-D – aim to draw vitamin levels at the end of an admission as Vit D is a negative acute phase reactant)
- Sputum cx on admission

- CXR on admission (or after PICC placement)
- PFT's (usually weekly), ordered in powerchart and then Keri Sullivan typically calls PFT lab at 5-7510 to schedule a time
- Routine labs: twice weekly BUN/Cr for patients on any nephrotoxic meds (e.g. tobra, vanc), drug levels (vanc trough prior to 4rd dose; tobra levels, then qM/Th vanc and tobra troughs once at goal dose),weekly Coombs (if on zosyn),weekly CBC and CRP
- OGTT yearly close to discharge for patients $\geq$ 12yo
- See pulmonary pearls for further details

The interns will also be responsible for keeping the signout updated in powerchart. The inpatient fellow should help review signout as well as contingency planning. The inpatient fellow should also review important orders and discharge summaries.

The fellow is responsible for maintaining a daily list on all the inpatients that they are following. This inpatient list exists in Powerchart (called "pulmonary fellow inpatient care team").

TEACHING

The pulmonary interns have scheduled lectures at 7:30am on Monday, Tuesday, Thursday and Friday (usually given by pulmonary fellows and attendings). A schedule has been created and should be posted monthly in the 9S Pulmonary Conference room. If a lecturer does not show up, please let Debra know. As part of this schedule, the nurse practioner (Keri) or inpatient fellow is responsible for doing an orientation lecture (located in the pulm share drive). The orientation lecture (monthly change over on Wednesday) will be given either on the first Wednesday or Thursday morning depending on the timing of the year (during the academic year the fellows will be in MGH on Wednesday mornings and if the NP is unable to do the lecture on the Wednesday the inpatient fellow should administer the lecture on the Thursday). You can use the prepared slideshow (located in shared drive).

The interns on pulmonary will generally have noon conferences during the weekdays. Encourage them to go.

A collection of pertinent articles and pulmonary pearls useful for the residents on the pulmonary rotation has been created. Drs. Boyer or Rabinowitz sends these electronically to the residents at the start of their rotation.

Other patients you are responsible for

1. CF patients in the ICU or ICP who are NOT transplant patients and who do NOT have dolosa: e.g. Patients in ICP for antibiotic desensitization, CF patients on the surgical service. You follow with inpatient attending and write the daily note (typically after our own rounds).
2. Indeterminate sweat tests or positive sweat tests. The PFT techs will periodically page you and ask you to come see patient in clinic with an indeterminate sweat test. These are usually ambulatory patients who are in clinic for only a scheduled sweat test without a pulmonary clinic visit.
    a. Go see the patient (ideally, need to see the patient not more than 15-20 minutes after they page). Take a quick history to see if there are any concerns.
    b. The inpatient attending is expected to precept these patients with you in clinic. If there happens to be an attending already in clinic who is willing to precept the patient with you, that is an acceptable alternative. The attending should see the patient with you.
    c. You can then write a note documenting your discussion/visit.

d. Please submit a bill to the attending that you precepted with.
e. There is a nice flowchart explaining what to do for indeterminate sweat tests (also included in your binder e.g. rpt, if still indet, send genetics)
f. *If this happens right during rounds, ask your attending if you can leave rounds to see the patient. If you're too busy, you can ask the transplant fellow for assistance.

3. Sick visits for CF patients in clinic (can coordinate with the schedulers to see the patient in the afternoon. Can ask the transplant fellow to help if you are busy on the inpatient service).
4. Patients on the inpatient service on NIPPV outside of the ICUs. Please see below on the next page for more details.

OUTSIDE/ED/ADMISSION CALLS

The inpatient fellow will be responsible for all calls (inside and outside of hospital) regarding CF patients. The ED may also call you for admissions. All non-CF calls from outside BCH (patients/parents, PCP's, OSH EDs & NICUs) go to the transplant fellow. ED consults go to the consult fellow, and ED requests for Pulmonary service admission go to the inpatient fellow. Patients in the ED do not require the consult team to see them if they warrant admission to the Pulmonary service.

BRONCHOSCOPIES

Occasionally, you will be scheduling a bronchoscopy for a patient on the service. Please see "scheduling a bronch" below in the bronchoscopy section for instructions.

If the bronch fellow and the transplant fellow are busy, the inpatient fellow is the back up for bronchoscopies (rarely happens).

On your clinic days:

1. If you are the inpatient fellow and you head to clinic, the 6-Subs supervising resident should help to supervise the interns. Please reach out to the 6-Subs resident and let them know of things that you know they will need to help the interns with. Ie .admissions, a sick patient, etc. 6-sub resident number: 5-4616.
2. The residency policy is that generally interns should take signout from the ED/ICU, etc. alongside with their supervisor. So, either you as the inpatient fellow should be there to take signout, or the CCS (overnight supervisor) or 6Subs residents should be there.

NON-ICU NIPPV PATIENTS

1. You should round on these patients with the inpatient attending and write a small note. The intention is to make sure their NIV is being used appropriately, that there are no mask issues, make sure they have a pulm follow up, that they have all the proper equipment they will need to go home, etc. It is NOT intended to be a full pulmonary consult.
2. The inpatient fellow and inpatient attending round on all patients on NIV ventilation who are not in an ICU/ICP and are not on the inpatient pulmonary service. The exception is **CAPE patients.**
    a. **Check quickly if there is a CAPE note.** If there is, please page the CAPE provider on call. Once you speak with them, document a one-line communication or daily progress note documenting that CAPE will be responsible for NIV needs that arise during the hospitalization.
3. All attendings/fellows get a list everyday of all patients on NIV. The fellow should review this list daily to see if new NIPPV patients have been added.
4. Seeing these patients entails:

a. Patients should be seen initially within 24 hours of arrival to the inpatient unit, and at least weekly thereafter.
b. After that, you need to see them at least weekly, but can come back sooner if you have concerns.
c. You should make a minimum of weekly contact with the RT (8-4920 or beeper 7377= RESP) covering the inpatient floors to discuss the patients use of NIV. You can round with them as needed.
d. If specific management questions arise that warrant a consult, ask the primary service to consult the pulmonary consult team after discussing with your attending.

5. Documentation:
    a. You are NOT being asked to do a full pulmonary consult. You should address the NIV, is it adequate, any mask issues, skin breakdown, need for equipment and follow up. The RTs will be incredibly helpful in thinking through any issues that patients are having and will have received signout from their peers on the night before, so it is important that you speak with them or round with them about these patients.
    b. A brief note should address the pertinent NIV issues – this is *not* a full consult note.
6. New as of 6/2018: New NIPPV policy regarding CPAP/BiPAP outside of ICUs.
    a. The ICP/ICU will now be able to transfer patients to the floor who are "weaning" off PAP but not quite at baseline. It is estimated that these patients may be on PAP for a few days to a week.
    b. Eligible patients and parameters:
        i. Patients using PAP on the floor must be able to tolerate periods being off PAP for at least 2 hours.
        ii. You can now adjust the settings upward for "minor or self-limited conditions."
        iii. Sleep studies using PAP may be done on the inpatient floor (single room required).
    c. Though patients on PAP "can" be admitted to the floor they don't "have to" be. That is, for PAP to be used on the floor there must be agreement from the physicians, nursing and RT that this is appropriate. The receiving Attending MD, Nursing, and RT leadership may veto the transfer if uncomfortable with the plan. It could be an acuity issue or a patient factor.
    d. Process for receiving signout and following patients:
        i. If ICU is considering transferring a patient to the floor with plan to continue to wean PAP, they not only sign out to the primary team but should ALSO contact the inpatient pulmonary fellow to provide signout, focusing on the pertinent PAP weaning plan.
        ii. You, along with the primary team receiving the patient, will determine the frequency of the pulmonary team's involvement regarding managing PAP. If frequent reviews/input required then consider involving the pulmonary consult service instead.
        iii. Again, if specific management questions arise that are broader than managing the PAP and warrant a pulmonary consult, ask the primary service to consult the pulmonary consult team.

CONSULT SERVICE

PULMONARY CONSULT TEAM & STRUCTURE

The consult team is made up of one fellow and one attending. Occasionally, a 4th year medical student or resident on elective will join you. As the consult fellow, you should be in touch with your attending each morning to discuss a plan for the day. The time you touch base with your attending varies between attendings, and on how busy the service is. Usually you will touch base with your attending with a plan, typically between 8-9am.

Generally, you should pre-round on the consult patients (usually just chart review and/or talking to primary team) and then round with your attending. However, as each attending has a different style, try to touch base with them at the beginning of the rotation to determine expectations. You should plan on rounding on all active and new consults together with your attending at some point each day. Prior to talking to the attending, have a plan in your mind about the order in which you would like to round on the patients, attend team meetings, etc. – this may change as you get paged throughout the day.

Make sure you know where the patients are located. Good communication with the teams and your attending is key. You should make sure you discuss all recommendations with the team (either by phone or in person) in addition to putting them in your note.

POWERCHART CONSULT LIST

The consult fellow should also update daily the list in Powerchart called "Pulmonary consult service care team".

NEW CONSULTS

I. Inpatient/ICU/ED General Pulmonary Consults

a. When you are called with a new consult, always let your attending know about the patient. In general, unless the attending suggests otherwise you should go see the new consult and examine the patient yourself, review the data, and then page/text your attending to go see the new consult together.
b. All new consults should be seen within 24 hours of receiving the consult call. If the consult is urgent, the patient should be seen within several hours.
c. Non Dolosa CF patients admitted to services other than the inpatient service (surgery, ICU, etc.) are followed by the inpatient team

II. ED Consults

a. During business hours ED consults are seen by the consult fellow and attending unless they are planning to be admitted to the pulmonary service. If you and your attending determine the patient will be admitted (this can almost always be done without seeing the patient unless a specific clinical question/concern arises), alert the inpatient fellow and attending. These patients do not need a consult note, unless in the rare circumstance you need to see them in the ED.
b. Overnight, you may provide phone advice to the ED and can discuss with your attending. In house consults overnight are generally only done for urgent bronchoscopies.

III. Bronchoscopy Consults

a. For all bronchoscopies on inpatients, even urgent ones (foreign body, hemorrhage, etc.) the consult team must be called first in order to make an assessment of the need for bronchoscopy, the safety of the procedure and how urgent it is. After that, let the bronchoscopy team know so that they can organize timing, etc. with the primary team. If you get a call about an urgent bronchoscopy, try to alert the bronchoscopy fellow as soon as possible and discuss with your attending (i.e. 'Hey, we got consulted for an urgent bronch. From the story, we are pretty sure we will agree with proceeding with bronchoscopy. We are on our way to see the patient and formally consulting but I'm calling you to FYI you so that you can organize your time').
b. For non-urgent bronchoscopies (to be done in 2-3 days) on a patient you are consulting on see "scheduling a bronch" in the bronchoscopy section for instructions.

IV. Preop Clearance

a. Sometimes inpatients require pulmonary clearance prior to a procedure. If they are admitted to the hospital this is a regular consult.

V. Adult consults

a. If a pulmonary consult is called on an adult patient, followed by one of our adult providers (Uluer, Cernadas, Kennedy, Ratner, Cagnina) as an outpatient, please direct the page/call to the inpatient young adult attending/NP and they will do the consult. If the consult is on an adult patient who is NOT followed by one of our young adult providers, for now, the consult attending/fellow do the consult. This may change in the future.

Consult Follow Up and Signing Off

Before signing off on a patient (and removing them from the powerchart consult list) make sure the following has been done:

1. *A primary pulmonologist has been identified to follow the patient if necessary*
   a. This is usually the first fellow to consult on the patient – if a different fellow makes more sense be sure to discuss with your co-fellows. This is how you build your clinic panel. If the patient is complicated, consider asking an attending to follow the patient with you longitudinally. If the fellow that should follow the patient has no open slots in a reasonable time, discuss with your co-fellows, who is the next fellow in line that should follow the patient (usually someone that has seen and followed the patient during the consult rotation even if that person did not do the initial consult).
   b. If the patient is already followed by pulmonary, be sure to email the primary pulmonologist with your impression and recommendations.
2. *A follow up appointment has been made*
   a. Either you should do the following or instruct the primary team to do so: Call 51950 or email PulmonaryScheduling-dl@childrens.harvard.edu with instructions for the appointment: requested provider, required time period and any other details
   b. If you are not going to be the one seeing a patient in follow-up, please email the provider who will be doing so with a summary of the patient and recommendations.
3. *Final recommendations have been communicated to the team both in your note and verbally. You should write a sign-off note, even if only brief.*

A Note on Infection Control

Occasionally a CF patient will grow Burkholderia cepacia from throat or sputum culture. It usually takes 2 or more weeks for the specific species to be identified based on genomovar classification (please refer to

article in packet.) These patients should be evaluated *prior to* seeing the patients known to be colonized with B.dolosa (genomovar VI). This is most relevant for weekend coverage.

Jacky Steiding, R.N. (5-4355) and Virginia Dimakis, R.N. are excellent resources for any TB/+PPD related question.

DOLOSA SERVICE

The consult fellow is also responsible for CF patients colonized with B.dolosa. There are currently less than 11 patients with B. Dolosa who are still being followed by our service. These patients are admitted to the 7W subspecialty service separate from 9S due to infectious control concerns, as B. Dolosa is a particularly virulent organism. These patients are primarily cared for by pediatric interns with a supervising senior resident. There is also a 7W NP following the dolosa patients.

If there is a B. Dolosa CF patient hospitalized, the consult fellow, consult attending, and 7W subspecialty team (intern, resident, NP) round on the dolosa patients at **10:30am daily (if needed, can coordinate a different rounding time with the team)**. The residents know to contact the fellow early in the day to make sure this time works and particularly on Tuesdays as we have teaching. You usually meet either in the 7W work room or outside the patient's room so it is best to check in with the team about this. Senior resident phone 5-2603 (may carry 5-0013 at night), intern 5-2643. **Remember that you shouldn't see any other CF patients after you see a dolosa patient, unless it is an emergency. If you have followed proper infection control procedures with all CF patients, this is OK.** Once you are aware of a CF-dolosa admission (either planned or spontaneous) you should make the interns and residents aware of the admission and discuss the plan with the team.

BRONCHOSCOPIES & PFTs

The bronchoscopy fellow is responsible for all daytime bronchoscopies and PFT interpretation.

I. COVERAGE

- A bronchoscopy fellow is assigned to perform all bronchs in a given week. On afternoons where the bronchoscopy fellow has clinic, the transplant fellow will perform all bronchs. If the transplant fellow is also not available, the inpatient fellow will have to cover or ask non service fellows for help.
- The first year fellows decide whether to have the bronchs change over to the night-call fellow at 5pm or 6pm. *6pm is sometimes better as it gives time for on call fellow to get sign out.
- The Consult attending covers bronchoscopies between 7:30am and 1pm.
- The Inpatient attending covers bronchoscopies between 1pm and 5pm.
- The time between 12pm-1pm is often a transition time (i.e. if a morning bronch is running late) and so contact the service attendings to determine who will be covering the bronchoscopy if it is during this time.
- After 5pm hours, the consult attending will cover bronchoscopies.
- During weekends, the on-call attending will cover bronchoscopies.
- Either Dr. Boyer, Dr. Visner or Dr. Midyat depending on who is on service at the time, will perform all bronchoscopies on transplant patients.
- Dr. Visner and Dr. Krone performs dynamic airway bronchs as part of the airway disorders team.

II. SCHEDULING

- A bronchoscopy schedule is created each week and emailed out to the division. It is updated daily and emailed out with any changes. *changes in OR room and timing occur frequently so be VERY AWARE of the daily updated list. Brett sends this list out every morning, usually before 8am.
- **Non-urgent OR bronchs**
    - These may be for outpatients or inpatients (pulmonary service or consult service patients)
    - These are scheduled through Pulmonary Admission/Bronchoscopy Scheduling-dl or via the Bronchoscopy SPS in Powerchat
    - They can be scheduled for the next business day as long as the email request is submitted before 10am.
    - If requests are submitted after 10am, it will be considered an **"add-on"** case and must be discussed with anesthesia. See "urgent bronchs" below.
    - A *bronchoscopy scheduling intake form* must be completed by the requesting provider for all procedures (usually the outpatient provider or the inpatient/consult fellow). This form can be found on the Pulm share drive (My Computer > Pulm share drive > ADMIT BRONCHS folder > Blank Flexible Bronch intake form).
    - Email a completed form to Pulmonary Admission/Bronchoscopy Scheduling-dl. If it is for the following day, it can be helpful to cc the bronch fellow and attending so they are aware.
- **Urgent OR bronchs**
    - Urgent bronchs in the OR are newly-requested procedures which need to happen the same day, the next business day (if you are calling after 10am), or any OR case during the weekend.
    - To schedule an urgent bronch, the attending needs to speak directly with the anesthesia attending running the OR board. The attending should call #59111 to do so.

- Anesthesia will want to know the general details of the case and the rationale for an urgent bronchoscopy.
- You should fill out a bronch intake form, as described above, so that urgent cases can be announced in the daily email. This is especially so for cases taking place the next business day or during the weekend.
- Email Pulmonary Admission/Bronchoscopy Scheduling-dl or call Brett to have the procedure added to Provation system.

- **ICU/Cath lab/IR bronchs:**
  - The consult or inpatient fellow should either still complete the intake form, or email a blurb about the patient with their name, DOB, MRN, location of procedure, attending, clinical history, studies requested, and so on, to the Pulmonary Admission/Bronchoscopy Scheduling-dl so that it can be added to ProVation, and the bronch fellow and attending, so that they are aware of the case.
  - For these bronchs, bronch fellow will work with the unit to determine the time (if ICU, bronch fellow can organize a time with ICU nursing and staff, if cath lab speak with cards and cardiac anesthesia, etc.)

III. LOCATIONS / TIMES

- Bronchoscopies can take place in the OR (Farley/Main 3), GPU (Farley 5), Interventional Radiology suite (2nd floor), Cardiac Cath lab (6S), or in any ICU.
- Refer to the daily email as a guide for scheduled bronchoscopies. Here is an example of a bronch announcement in the daily email and the information it contains.

xxxxxxxx **MRN:** xxxxxxxx **DOB:** xxxxxxx
Epic CSN xxxxxxxxx
Dx: atypical CF, chronic sinusitis, undergoing T & A
Flex Bronch/BAL/scope size: 5.0
Brief clinical synopsis: Evaluate airway for inflammation and obtain BAL
Requested Studies*: B*acteriology: Gram Stain, Culture
Pathology: Cytology**,** Lipid stain
Coordinated with: ORL
Special Needs: CF
Dr. Gaffin For Dr. Khatwa
Room 5 @ 1:00 pm (Pulm scheduled to step in @ 2:00 pm)
Follow-Up Post-Procedure: In CADD

- The time listed is the scheduled time, but the actual time may end up being earlier or later
- **Options on how to get a room/time update on OR bronchoscopies:**
  - Call the OR main desk #57731 for general questions about time and room number
  - Log on to Surginet (in Citrix applications) → "Perioperative Tracking" tab →"MOR Global View".
    - In this view, one can see all OR cases scheduled for that day to confirm your room and time. You can also see how earlier cases are proceeding to get a sense of whether your case will be on time.
  - Look at the OR board located in front of the OR main desk (near the Main building entrance to the OR suite).

- Call the assigned OR room and speak to the circulating nurse who may provide the most up to date information. Each OR room is assigned a telephone number #505_ _ (last two digits are the room number). For example, call #50505 to reach OR5 and #50511 to reach OR11.

IV. EQUIPMENT STORAGE

- **Bronch carts**: there are 3 (one in the Farley 4 closet and two in the OR – one at the Farley OR entrance and one in the GI/scope supply room)
  - **Farley 4:** kept in the locked closet outside the Pulm clinic, facing the Farley 4 elevators. You will be provided with a key to this closet.
    - **Stocked by pulm:** PFT tech, makes supply bags and put them in Farley 4 clinic supply room (last 2 sliding racks on the far right in supply room), then you put them in the cart. Let them know when they are running low, and ask Phuong Tang (PFT Director) if any questions arise.
    - On Fridays, make sure there are supply bags in the Farley 4 cart, for use over the weekend for any urgent bronchs.
    - Used for all non-OR bronchs EXCEPT GPU bronchs (GPU has GI carts that are compatible with our scopes).
      - For GPU bronchs, you still need to get supply bags from Farley 4 clinic.
    - Can bring Farley cart to OR if you have 3 bronchs scheduled close together or simultaneously.
    - Make sure the cart is adequately stocked with supplies.
  - **OR carts:** They are kept in one of the store rooms between OR6 and the double-door entrance to the OR suite and one at the Farley OR entrance at the window.
    - **Stocked by OR**
      - OR is responsible for getting the cart and bringing it to the OR, and they are supposed to also set up supplies.
      - When supply bags running low, let OR nurse or charge know (59110).
- **Bronchoscopes**: kept in white cupboards near the Farley 3 entrance to the OR suite (see photos below).

Coming off Farley elevators, turn right and follow the corridor in a U-turn. The coat rack and hair/shoe covers will be on your right. Turn left towards OR 11-25 to access the bronchoscope storage cupboards.

The bronchoscopes are kept in the white cupboards. There is a list with each scope's size and serial no. on the inside of the cupboard door. The carrying boxes, lids and protective tubes are in the black wire cart in front.

- Please let the CPD personnel if the blue tubing is running low
- Please let Ken Haver/Phuong Tang know if the area in front of the scopes is obstructed (US machines, other stuff)
- If you cannot find the scope you need, try the back of the CPD room (near Farley 3 elevators). If that doesn't work, talk to Phuong Tang or Heather Macwhinnie (her office is across from the scope cabinet).

- **Forceps, brush biopsies:**
  - Often some in bronch cart, otherwise ask OR (if OR case) or ask Phuong (or PFT techs) if non-OR case).
  - For ciliary brush biopsies not taking place in OR, will need to get Karnovsky's solution from OR (fridge in alley by main OR desk in front of pre-op holding).

V. PREPARING FOR A BRONCH

- **REVIEW CASES**
  - Review cases ahead of time.
  - If outpatient bronch, read recent clinic note, and note any studies requested in the note (to check with emailed list of study requests).
  - If inpatient/consult patient, discuss with inpatient/consult fellow.
  - Review imaging. This can help determine location for lavage.

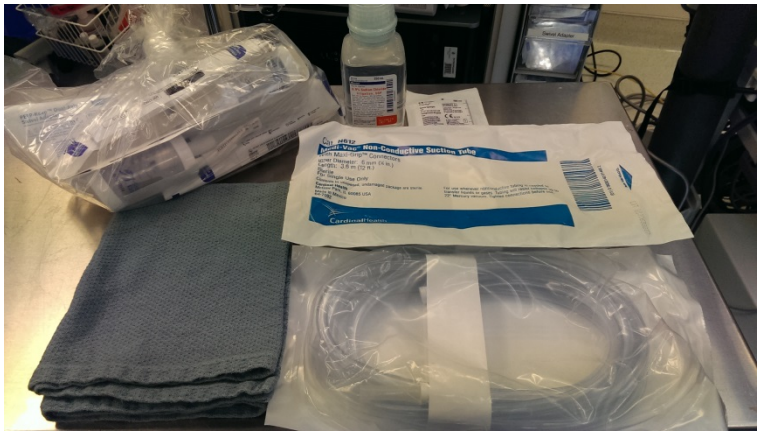
- Review pertinent labs (e.g. platelet count and coag studies to know your patient's bleeding risk).
- If you have any questions about the indications for the procedure, please communicate with the pulmonologist who requested the procedure. You should also discuss the plan for each procedure with your bronchoscopy attending.
- Be aware of what samples and labs you need to send off. For scheduled bronchs, this information is provided in the daily email. Besides BAL fluid, you may need to collect cytology/ microbiology brush, or transbronchial biopsy samples – which would require you to have the appropriate tools ready, and the appropriate consent.

- **FILL OUT FORMS**: bacteriology, pathology, and if requested, virology. *Note, our program is currently working on making these orders through Powerchart instead of having to fill out manual lab forms.
- **CONSENT**
  - As the bronchoscopy fellow, you are responsible for obtaining consent for all bronchs.
    - Sometimes the inpatient or consult fellow will help with consents on their patients if they have time, but it is not an expectation.
  - There is a pre-filled consent template, found on the Pulm_Share drive and in your binder/flash drive. You will need to write in extra procedures (e.g. transbronchial biopsy, ciliary brush biopsy, fungal brush biopsy). If you are uncertain if pulm is doing the ciliary biopsy or if ORL is doing a nasal ciliary biopsy, best to consent for the bronchial ciliary biopsy so that you have the option.
  - Consent is usually obtained in person.
    - Reasons to use a phone consent: parent or guardian not available, DCF custody, and occasionally numerous simultaneous bronchs so you want to consent the day before over the phone.
    - If you obtain a phone consent, you need a witness signature (*even after obtaining consent by phone, talk to the caretaker that same day in person to make sure there are no further questions).
    - Phone consents can be obtained as early as 30 days before the bronch unless the patient gets a different surgical procedure during that period.
  - If the parent is non-English speaking, you should use an interpreter. The interpreter must sign the consent too.
  - Consent timing:
    - For inpatients, consent ahead of time (i.e. the day before if possible), and leave the consent in the chart.
    - For outpatients, you can refer to Surginet or the Pre-op area board to figure out whether your patient has arrived in the Pre-Op area
    - You will generally be called by the pre-op holding area if the patient has arrived and there are awaiting your consent.
    - There is pre-operative paperwork that needs to be filled out before any patient is brought back to the OR.
  - Grab extra patient stickers when getting consent to label specimens/forms.
  - Risks to discuss include cough, respiratory distress, fever, bleeding, pneumothorax and death. The biopsies (brush or transbronchial) have an increased risk of bleeding and pneumothorax so make sure to discuss them if the patient is getting biopsies.

- **SAME DAY SURGICAL ASSESSMENT**
  - Found under orders in Powerchart.
  - Make any changes as needed, select "yes" that the physical exam and data are the same

VI. PROCEDURE SET UP

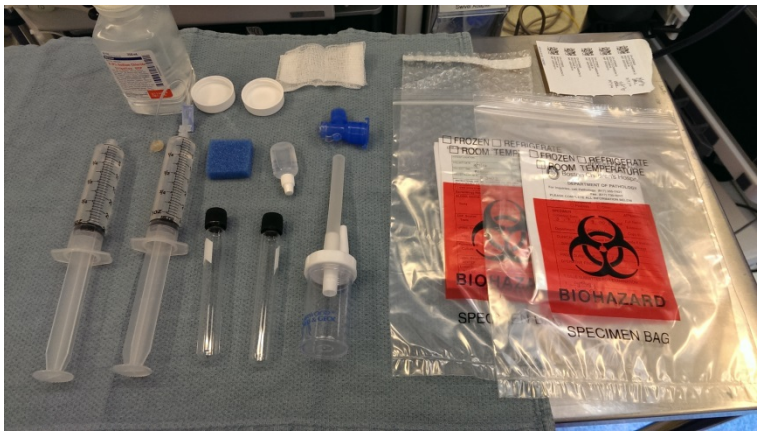
- The OR nurses should have brought the bronch cart into the room, plugged it in, and opened up one of the supply bags on a table for you. They often do not do this so please nicely remind them as if we keep doing it ourselves, they will never do it. Also tell the OR nurse when the supply bags in the cart are getting low (or call the OR charge nurse)
- Get the appropriate scope from the bronchoscope storage cupboard.
    - Scope sizes are 2.2, 2.8/3.1, 3.6, 4.0, 5.0.
        - 4.0 and 5.0 scopes have a 2.0 mm width biopsy channel
        - 2.8/3.1 and 3.6 scopes have a 1.2 mm width biopsy channel
        - 2.2 scope has no suction or biopsy channel
    - **Determine ETT size** (approximate formula is age/4 + 4, HOWEVER, some of our patients are shorter than expected, it is helpful to check the chart for prior intubations). Max bronchoscope size is ETT size minus 1.
        - The smallest ETT the 2.8 scope can fit in is a 3.5
    - Confirm with anesthesia what ETT size they intend to use.
- Connect the bronch cart
    - Black cord – power
    - Yellow cord – for internet connection. Needed for access to Provation and for taking pictures. Plug into a *live* port – these are marked in the OR but not in ICU rooms (have to trial and error to find one – often red or orange port or says "EEG" on it).
    - White cord – for connection to OR screens
    - Open your case on Provation. Click on "Capture" to switch from Provation to scope view.
- Gather what you need



Clockwise from top left: bag of bronch supplies, bottle of *normal saline*, suction extension tubing, towel or chuck for covering table

When doing bronchs in the ICU, you should request the patient's nurse to gather all the above while you bring the cart, scope and bag of bronch supplies.

For out-of-OR bronchs the supply bag is assembled from items in the Farley 4 clinic supply room.



The bronch supply bags include:

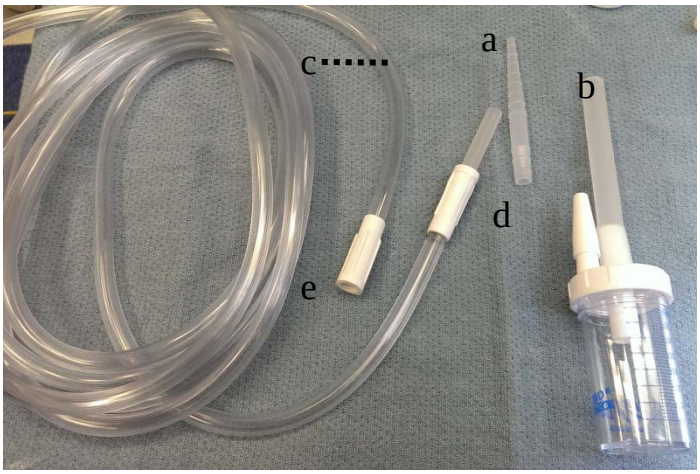
1. Two 30 ml syringes (fill with 1ml/kg of **normal saline**, 30 ml max)
2. One green ended T-connector (attach to a syringe)
3. Two suction traps (with white caps)
4. 2-3 specimen vials (with black caps)
5. Blue ETT adaptor
6. Endolube with sponge
7. Christmas tree connector (see below)
8. Suction port connector (see below)
9. Infusion port connector (see below)

Bronch supplies not in the supply bag:

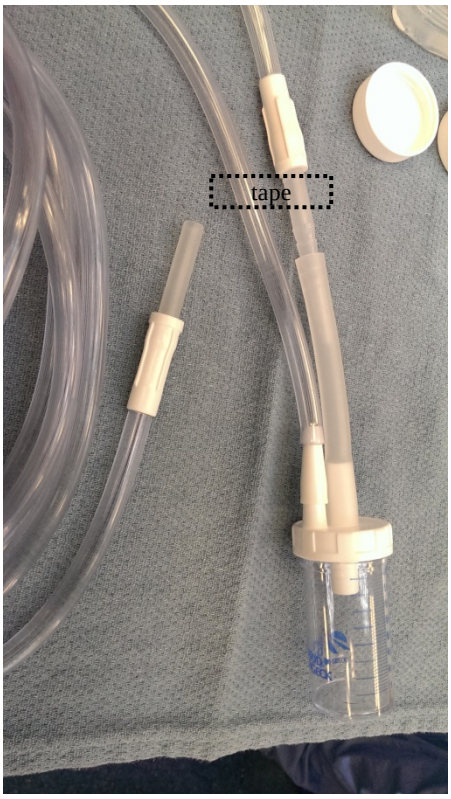
1. Normal saline in a bottle
2. Sterile suction tubing
3. Specimen bags
4. Scissors
5. Tape
6. Alcohol wipes
7. 2x2's
8. Patient labels
9. Brush (case dependent)
10. Forceps (case dependent)
11. Karnovsky fixative (case dependent)
12. Ice for viral studies (case dependent)
13. Endozyme

For out-of-OR bronchs you need to make sure to bring the bronch supply bag AND get a hold of all the items on the "not in the supply bag" list - ask the ICU nurse for assistance.

- Set up suction



1. Attach the Christmas tree connector to tubing on the suction trap (a to b)
2. Cut the suction tubing and attach the end to the white port on the suction trap (c to d)
3. Take the cut piece of suction tubing and connect the white plastic end to the Christmas tree connector (e to a). The other clear plastic end will connect to a suction port on your bronchoscope.
4. Put a tape around both tubes for ease of use



- Connect your scope

Attach the suction port and infusion port to your scope

Attach the suction tubing and trap to your scope.

Lubricate your scope.

Clean the camera lens with an alcohol wipe.

Connect the bronchoscope to the cart and turn on the light source.

Adjust your white balance and brightness prior to each use.

- Fill up requisition forms for specimens if you haven't already (bacteriology, virology and pathology). Put a patient label on each form.
- Have individual biohazard bags ready for bacteriology, virology and pathology samples.
- Virology samples need to be sent on ice. Approach the OR or ICU nurse to obtain a partially-filled biohazard bag with ice.
- **For transbronchial biopsy samples** – have ready a container with formalin (white and green capped bottles available in the bronch cart, in the Farley 4 supply room or ask the OR nurse for it)
- **For ciliary brush / forceps biopsy samples** – have ready a container with Karnovsky fixative (ask the nurse to get it, usually is refrigerated)

VII. DOCUMENTATION

- All charting for the bronchoscopies occurs using the *Provation* system.
- Sign onto computer using normal user ID & password
- If unable, confirm yellow ethernet cord connected to LIVE port (labeled in ORs, not labeled in ICUs)
- Click on Provation MD (green icon on desktop)
- Enter user ID & password
- Procedure Documentation → select pt to be bronched
- If no patient listed, need to schedule bronch in Provation which will create the new note
  - Click Close in Upper Left Corner
  - Click Scheduling then click +New
  - Enter MRN or Name, click locate
  - If nothing comes up, click +ADD
  - Enter Last & First Name, MRN, DOB, gender
  - Click Save; highlight patient and click select
  - Enter Bronchoscopy under procedure along with correct attending
  - Highlight the procedure, click account
  - Enter account number (the encounter number found at the top of any current document)
  - Select this, save; a new note should be generated
  - Close out and select Procedure Documentation
- Complete all highlighted fields:
  - Confirm Correct attending & trainee
  - Select correct scope # (on tag on scope & on serial bar on scope; RN needs this too)
- For findings, can choose via drop downs or Free Text. Sample: The visualized portion of the trachea is of normal caliber. The carina is blunted. The bronchoscope was advanced to the 1st subsegmental level. There were no endobronchial lesions. There was diffuse, mild bronchial mucosal inflammation throughout. There were moderate mucoid secretions most pronounced in the RML. BAL was performed in the RML with a total 30 ml of sterile NS and return of 15 ml of cloudy, blood-tinged lavage fluid, with mucous plugs present. Samples sent for bacterial, viral and cytology studies. Using fluoroscopy, transbronchial biopsies were obtained from the RLL. A total of 7 specimens were obtained and sent to pathology. Fluoroscopy confirmed the absence of a pneumothorax. There was minimal bleeding after the biopsies that self-resolved.
- Click "images" to assign images to correct location
- If saving to complete document later, click "close"-> "close" -> "exit" -> "exit"
- If document complete, Select "print" and "e-sign"
- **Make sure to close out of provation before you unplug yellow cord or shut down computer**
- If having issues, call/page (57510)

VIII. CLOSING A CASE

- Prepare your specimens. Make sure each specimen has a patient sticker as does each form. When specimens are ready, hand them to the circulating nurse (in OR or GPU) and instruct her on where they should go: Path specimens go to Pathology; Micro specimens (bacteriology, virology) go to Lab Control.
    - Virology samples need to be on ice
    - If ICU bronch, ICU should take your specimens
- Clean the bronchoscope with Endozyme.
- Save your bronch note on Provation, exit provation, and shut down the computer.
    - **Do not unplug the yellow cord until you have exited provation or provation will lock**
- Return the bronchoscope to the cardboard box and make sure the lid indicates that it is "soiled". Make sure the cap and protective tubing are on. You can leave the scope in the OR and the nurse will take it. If in the ICU, GPU, or any other unit, bring the used scope to the "dirty" CPD room (near Farley 3 elevators). If it is a weekend and no one is there, you can bring it to the OR front desk and give it to someone.
- **Enter post-procedure orders if you are the only or last service doing a procedure, or if the patient will be admitted to Pulmonary afterwards.** There is an orderset you can utilize on Powerchart for *post-bronchoscopy orders*. If there are multiple services on a case, discuss who will be writing the post-op orders.
- The attending usually updates the family but feel free to ask if you can do it with them. It is a good idea to clarify this with them at the end of the case
- After a procedure, one of the surgical team is required to remain in the room until the patient has been moved to either the PACU or the ICU. If we are the primary service performing the procedure, discuss with anesthesia (can say "would you like me to stay until the case is over?" or "I have to run to another case, is it ok if you page me or call OR ___ if something comes up?"
- Sign out your findings to the consult fellow and/or floor team. If it is an outpatient bronch, email the prior pulmonologist with the findings.

IX. OFF LINE MODE

When someone unplugs the yellow cable before you have logged out from Provation, you will likely have to use it as "offline" the next time (will say on upper left corner). Below is a set of instructions of what to do when that happens:

Call Phuong if questions arise.

Provation Back Online:

Once a user logs onto Provation when it is online, Provation saves their password in the "vault" and it should allow the user to log in when it is offline as long as they have not changed their password from the last time they logged on.

- Make sure the yellow "live" cable is plugged in. Check that cart is "offline"
- There is a file on the C drive that can be manipulated to bring the cart back online.
- The file can be found here:
  C:\Program Data\ProVation Medical\ProVation MD\(a numbered folder)\data\Offline.cache

- Open the Offline.cache file in note pad. You should see the word “TRUE”, erase the word and type the word “FALSE”.
- Save the document.
- Double click on Provation, and you should now be able to log onto Provation and it should be online.”

IX. SPECIAL SITUATIONS

- Foreign bodies: best handled by ORL (rigid bronch), so if you get paged about this, ask the person to page ORL
    - ORL will sometimes request our presence during evaluation in OR to investigate more distal findings, but ED/OSH should talk to ORL, and then ORL can contact us
- Simultaneous bronchs
    - Very rarely do bronchs end up occurring at the exact same time, but it can happen
    - When there are several close together or simultaneous, it is a good idea to get the Farley 4 bronch cart so you can quickly move between rooms
    - Usually you can then just move from one room to the next, ideally having set up ahead of time
    - If you need back-up, call the transplant fellow or the inpatient fellow if the transplant fellow is busy.
- Add-on procedures
    - Urgent bronchoscopy requests may not be assigned an OR room or time; instead they will be listed as “add-on” procedures.
    - This means they can happen at any time (between 7:30am or after 5pm) once an opening appears in the OR schedule.
    - You (sometimes) will be given short notice. You may check in regularly with the OR main desk or refer to Surginet for updates on whether a room/time has been assigned to your case. Regardless, it is the responsibility of the bronchoscopy or on-call fellow to be available for when cases do proceed.
- Transplant bronchoscopies
    - Usually performed with Dr. Boyer, Dr. Visner and Dr. Midyat and involves fluoroscopy-guided transbronchial biopsies.
    - Add “transbronchial biopsy” to the procedures done on your consent form
    - Make sure the OR nurse is aware that you need fluoroscopy, as the bed will need to be in proper position.
    - Have ready a pre-made container with formalin (white or green capped) to collect your biopsy samples.
    - Patients MAY need a CXR afterwards in post-op to check for pneumothorax.
- Ciliary biopsies
    - May be requested to assess for ciliary dysfunction.
    - Biopsy samples can be collected by cytology brush or by forceps – discuss your planned approach with your attending beforehand.
    - Ask the nurses to give you a pre-made container with Karnovsky fixative. It is usually kept refrigerated in the OR, GPU and Pathology.
- Immunocompromised
    - We receive many consult requests for bronchoscopies on immunocompromised patients, who have undergone chemotherapy or bone marrow transplant, and develop new respiratory symptoms.

    - There is usually an expanded battery of studies requested by the Oncology and Immunocompromised Infectious Disease teams. Touch base with the consult fellow who should ask for the full list requested studies when performing the consult.
- Center for Aerodigestive Disease (CADD) sessions
    - There will be a slew of triple scope cases scheduled in the GPU on Farley 5. These sessions usually take place on one Monday morning, every other month (may change)
    - You may perform up to 6-8 flex bronchs in quick succession. Unlike OR bronchoscopies, these cases tend to proceed punctually at the times indicated.
    - CADD mornings require quite a bit of organization and preparation beforehand. Review all patient information before bronchs, there may not be much time between cases. Come early to set up your supplies and bronchoscopes, prepare all your lab requisition forms and obtain consent.
    - You do not need to bring the Farley 4 cart, but you do need to bring supply bags. The GPU will have chucks, saline, and suction extension tubing.
    - You may run out of bronchoscopes of a particular size given the number of cases scheduled. In these circumstances, you have to bring used scopes down to the CPD "dirty" room on Farley 3 between cases. Make them aware that scopes need to be cleaned immediately for reuse.
    - Coordinate with your attending, who can help you with some tasks.
    - Sometimes CADD and OR bronchoscopies are scheduled at the same time. When this happens, The CADD attending is usually willing to perform bronchoscopies on her own as long as you help set up scopes and supplies. However, the back-up fellow may have to be called, which is the transplant fellow.

X. HELPFUL NUMBERS

- OR main desk #57731
- Charge anesthesia #59111
- OR charge nurse: 59110
- Individual OR room #505_ _ (room #)
- PACU (Pre-Op) #57730
- Post-Op Recovery #57140
- PFT lab #57510
- Good bronch resource/guide: http://www.thoracic-anesthesia.com/?page_id=2

PFT INTERPRETATION

- The bronchoscopy fellow will be responsible for interpreting PFTs during that time as well. During those weeks, you are responsible for interpreting all PFTs and exercise tests that are performed in our lab (except for CF PFTs).
    - **You are responsible for PFT's starting the Friday prior to your week of service, through the Thursday of your PFT week**
- There are guidelines for PFT interpretation in your binder. All interpretations are entered into a system called ComPas. All questions about entering PFTs should be addressed to Phuong Tang. Contact Phoung before your first PFT week. He can instruct you in how to us Compas.

- There is an assigned attending for each of the PFT weeks. The attending will review all of your interpretations. You are required to read your PFTs within three days of their appearing in your queue. A failure to do so will result in the attending reading them by themselves without your input.
- **You should arrange a time to sit down and review your interpretations with your assigned attending for teaching purposes.** If your attending does not contact you, please feel free to initiate contact with them to set up a meeting. Please indicate in the comments section of the PFTs if you have particular questions you would like to address. Please discuss a plan with your attending at the beginning of each two week block. Please let Debra know if you are not getting feedback on your PFT interpretations.

TRANSPLANT ROTATION

The transplant fellow is in charge of:

1) Hospitalized transplant patients
2) BWH and BI NICU consults
3) Outside calls (non-CF related ones)
4) Urgent clinic visits
5) Bronch coverage when bronch fellow is in clinic

I. TRANSPLANT SERVICE

I. Transplant Team

a. The team consists of the transplant fellow, one transplant coordinator (Dawn Freiberger) and one attending (either Debra Boyer, Dr. Gary Visner or Dr. Levent Midyat). For patients hospitalized on 10 south, rounds are daily at 10:30am. You should be in touch with your attending and the coordinator each morning to discuss a plan for the day. If there is a newly transplanted patient on 8S (Cardiac ICU), rounds usually start at 8:30-9:00am. Rounds on any pre or post-transplant ICU patient on 7S or 11S generally start at 9:00am. However, you should contact the primary teams in the ICU in the morning as well as the transplant attending on service to determine the planned rounding times (as described below).

II. Planning Transplant Rounds

a. It is the transplant fellow's responsibility to discuss and plan rounding times with the various ICU's where the transplant patients are located. Once this is determined you should communicate with the transplant team to let them know the rounding plan. Usually this means emailing the attending and coordinator and emailing the transplant social worker (Lynne Helfand), pharmacist (Alanna Wong), and nutritionist (Jessica Leonard) ideally before 8am to let them know the rounding plan for the day.

b. When not in the ICU, lung transplant patients will be admitted to the pulmonary transplant service located on 10S, and taken care of by 9S pulmonary residents and the transplant fellow. Rounds with the inpatient intern will happen at 10:30am in the 10S conference room.

III. Transplant Notes

a. Pulmonary post-transplant patients in the ICU require daily notes, written by the transplant fellow. Patients listed for transplant but not on 10S (e.g. ICU or other service such as Cardiology), also require notes when seen, which can vary from daily to weekly depending on their clinical activity and our involvement. Please put "lung transplant note" in the subject line. These notes need to be sent to the Transplant Attending for signature.

b. Transplant patients on 10S, taken care by the pulmonary residents, will have a note written by the pulmonary residents. The fellow will not have to write a note, but please make sure it is accurate.

IV. Supervising Transplant Resident Signout

a. You should make sure to go over the patients' plan with the overnight intern. The transplant fellow should make CCS resident aware of transplant patients on 10S (unstable patients/pending issues, things to monitor overnight, anticipatory guidance, etc.). More often than not, the CCS resident is present for signout. Sometimes, he/she gets urgently

called for unstable CCS patients. In that case, either wait for the resident to come back to continue sign out, or call him/she later to give the rest of the signout.

V. New Transplants

a. We are also called to assist in preparing our patients once they are notified that lungs are available for transplant. Pre-op orders are located in Powerchart. Dawn Freiberger, the lung transplant coordinator usually orders these, but the transplant fellow should shadow her to LEARN about this process.

VI. New transplant evaluations

a. New consults for lung transplant evaluation or rounds on non-ICU listed patients will be determined on a day to day basis that works for the fellow and the lung transplant team.

VII. Transplant clinic:

a. If the service is not too busy, it is also recommended for you to join the Transplant Clinic on Wednesday and Thursday mornings, not mandatory.

VIII. Transplant Team Rounds

a. Every Thursday at 2PM in the CT surgery conference room, the whole transplant team (attendings, surgeons, coordinators, psych team, nutrition, etc.) meets to discuss transplant patient issues/progress. The transplant fellow should attend these if possible. They are a great learning experience.

II. BWH and BI NICU CONSULTS

These consults are staffed only with a subgroup of attendings that are credentialed at BWH (Cathy Sheils, Alicia Casey, Jon Gaffin, Gary Visner, Umakanth Katwa, Jon Levin and Lystra Hayden). The attending call schedule for BWH NICU consults is on the share drive under call schedules. The notes for these consults should be placed in EPIC. If you haven't requested your EPIC access, the note can be written in power chart (*BCH provider at a non-BCH facility*), printed and faxed over to the NICU.

III. URGENT CLINIC VISITS

You may receive phone calls from the pulmonary clinic regarding urgent sick visits if there are no openings available in existing clinics or ambulatory/sick visit clinics for the upcoming days or weeks. Occasionally, you will have to see these patients in clinic with the consult or inpatient attending as the preceptor. If you decide they require admission, you will need to call the Coordinator of Patient Care or COPP at 5-0000 to let them know a patient needs to be urgently admitted, and to see if there are beds available. Patients with any suggestion of respiratory distress should definitely go through the ED. The inpatient fellow should take care of seeing any CF sick visits (other than dolosa), but the transplant fellow can help out if needed.

***If you feel the patient needs to go to the ED, you need to call the expect line at 5-2170.

Urgent Outpatient Pre-op Clearance Visits:

Occasionally patients not currently admitted will need urgent pre-op pulmonary clearance. Ideally, this is planned ahead of time and scheduled into a regular clinic slot with their primary pulmonary provider. However, that may not always be possible. If you get a call that a patient needs pre-op clearance that day or in a few days, first contact the clinic schedulers to see if there is an opening with any provider in pulmonary clinic or ambulatory clinic. Should the patient already be followed by a BCH pulmonary provider, you should also attempt to contact that person for their thoughts, as they may be able to talk directly to the person or team requesting the pre-op clearance. If there are no available clinic slots and the patient does warrant an urgent clinic visit, then the transplant fellow will need to see the patient. If you get many calls to see pre-op patients, please discuss with Tregony Simoneau.

IV. OUTSIDE CALLS

All calls from patients, families, and outside providers (PCP's, OSH EDs) will be directed to the transplant fellow, except for CF calls. If a patient needs to be transferred from another hospital, you will need to sort out where the patient will go (ICU, ED). It is best to discuss these cases with the consult attending to develop the best plan. Transfer to the pulmonary service should go through the inpatient fellow and attending. The transport team (ICU x5-7851) is available to help coordinate transfers between hospitals. If the patient needs to be seen in clinic, call Farley 4 to help with scheduling an appointment (5-1950). The pulmonary clinic nurses will handle calls that come in directly from patients during the day. The nurses, however, may page you or email you re: a sick patient. They will also send you prescriptions to sign (if primary pulmonologist is not available) and secure messages in Powerchart, so try to check this frequently.

Calls from our ED should go to the consult fellow. Calls for admission requests from our ED should go to the inpatient fellow. It can be confusing in the paging directory, and the page operators don't always direct pages appropriately, so just be patient and redirect the caller if you are not the correct fellow to be paging.

V. BRONCHOSCOPY AND INPATIENT SERVICE COVERAGE

The transplant fellow will cover bronchoscopies when the bronchoscopy fellow has clinic. If the transplant fellow is also in clinic, then coverage will revert to the inpatient fellow. It is a good idea to remind them that they will be covering bronchs either the day before or the morning of your clinic day, especially if there are bronchs scheduled.

WEITZMAN FAMILY BRIDGES ADULT TRANSITION PROGRAM

Mission: Establish a comprehensive program to support the medical/surgical needs of young adults with congenital or acquired pediatric diseases, improve quality of life by empowering and educating all stakeholders, with an emphasis on their individual needs to ensure a seamless transition from pediatric to adult care.

- Medical and surgical inpatient units focused on age appropriate care for young adults
- Consult service with expertise provided by internal medicine trained clinicians
- Ambulatory care partnerships with local clinics & transitional care support for all departments across Boston Children's Hospital

A: Young Adult Medical Unit: The current version of the medical inpatient unit includes pulmonary (both CF and non-CF) and vascular patients only, with plans to expand to other populations. For the time being, the unit is interspersed throughout 9S and 9E. Any patient older than age 18 who is followed by one of the adult care providers in our division (Manuela Cernadas, , Ahmet Uluer, John Kennedy, Leah Ratner, Elaine Cagnina) is eligible for admission to the 'Young Adult Unit'. Any CF patient older than age 25 is also eligible no matter who the primary pulmonary attending is but this should be clarified by their primary pediatric pulmonologist and by calling Ahmet Uluer. See below for coverage of YAU inpatient patients.

Weekdays:

- Adult Pulmonary Attending and Nurse Practitioner round daily
- Adult NP's work 7am-7pm Mon-Fri
- NP signs out to pulmonary resident at 6:30pm and will get signout in the morning at 7am
- Weeknight (Mon-Thu): Adult Attending gets first call from overnight resident ***(pediatric pulmonary fellows not responsible for patients admitted to 'Young Adult Unit' during the weekday)***
    - Pediatric Pulmonary Fellows ***still responsible for outpatient calls***
        - Call adult attending on service to review patients requiring triage, ED, admission, etc.
    - Call adult attending on service with any questions regarding whether if a YAU patient should be admitted to BWH or BCH
    - In general, any CF patient (or non-CF in many cases) up to age 35 cared for by adult attending will come to BCH and those older go to BWH. Some special circumstances exist (some younger CF patients and those without CF may go to BWH) and a list of those patients will be provided (always best to clarify with attending on call if any concern)

Weekend/Holiday:

- Unlike during the week and when Adult Attending not rounding, ***the weekend fellow and attending are responsible for the YAU patients,*** with back-up home coverage by adult attending

(similar to transplant coverage and available to answer any question, provide support and come in if needed). On some weekends, there is an adult attending that comes in to round with the NP.

- Pulm fellow gets the first call from overnight resident regarding YAU patients admitted. Fellow can discuss with weekend attending (At times, the weekend attending might want the fellow to call the on-call YAU attending to discuss certain aspects, but fellow should call the weekend pulm attending first).
    - YAU NP 8am-2pm Sat-Sun
    - YAU NP signs out to resident at approximately 1:15pm (sometimes later)
- Pediatric Pulmonary weekend team (fellow involvement to be determined by on-call attending) rounds with NP. In some weekends, there is an adult attending that comes in to round with the NP.
    - Sign out can be obtained from PowerChart and when possible, adult attending will sign out verbally to fellow, in addition to attending level sign out
    - Please call 5-9856 to connect with NP (or pager 1322)
    - Rounds are after regular inpatient service rounds
    - NP writes notes

- The weekend pulmonary fellow will also receive adult **home IV cleanout to do list** together with pediatric IV cleanout to do list (following up on labs, etc.). While the YAU nurse practitioner manages the inpatient YAU patients on the weekend until 2pm, he/she does not manage the patients on home IV antibiotics on the weekend. The NP may be familiar with the home IV patients, so should questions arise you may certainly ask him/her. You may also ask your Attending for advice. And should emergent issues arise, you should also notify the YAU attending on call.
- **Note: If a pulmonary consult is called on an adult patient, followed by one of our adult providers as an outpatient, please direct the page/call to the young adult attending and they will do the consult. If the consult is on an adult patient who is NOT followed by one of our young adult providers, for now, the consult attending/fellow typically do the consult. You should discuss with consult attending and YAU attending who will do the consult.**

B: Bridges Young Adult Consult Service:

Consult services are available Monday through Friday between 8am and 5pm, excluding hospital holidays, by paging 2382 (Searchable keywords - Adult Medicine or BRIDGES) and available by phone after hours. There are a number of reasons to call for a Bridges consult such as preoperative clearance, medical co-management, and assistance with transitions of care. Ahmet Uluer should be the contact person for this.

COVERAGE ON NIGHTS & WEEKENDS

NIGHT-TIME COVERAGE

1. One fellow is assigned to night-time at-home call. **Call starts at 5pm each night and lasts until 8 AM the following morning.** Call for weekdays (Monday through Thursday) is split between the fellows on the inpatient and transplant service. The call schedule for each month needs to be determined in advance and sent to Brett to be entered into the hospital paging system. In the past, fellows have usually split weeks of call (Mon-Wed and Tue-Thurs) but it is up to the first year fellows to decide how to do this. All call schedules need to be determined at least 2 weeks prior to the start of each month. Brett will ask you for the schedule in advance. One first year fellow needs to take the responsibility of putting the call schedule together and getting it to Brett. – usually the transplant or bronch fellow as usually not too busy.

2. The inpatient, consult, transplant and young adult attendings are all on-call during the weeknights for any questions. The inpatient attending should be contacted for any questions regarding management of the inpatient service, admissions to the inpatient service, and any questions related to outpatient CF calls. The consult attending is responsible for questions regarding consult patients or coverage in case a bronchoscopy occurs after-hours. Questions regarding transplant patients should be discussed with the transplant attending on call. Young adult attending covers YAU. In the case that you cannot reach the particular assigned attending, please page the other on service attending. If you have trouble reaching anyone, you can contact Debra Boyer.

3. The inpatient attending MUST be notified for any significant change in patient status, including, but not limited to: transfers to the ICP or ICU, new supplemental oxygen requirements, massive hemoptysis, Red CHEWS (Children's Hospital Early Warning System).

4. Here is a non-comprehensive list of reasons the residents should contact you overnight:
    i. abnormal laboratory/images results
    ii. unstable vital signs, unstable patients
    iii. hemoptysis
    iv. bolus for abnormal hemodynamics (not planned for antibiotics)
    v. want to change antibiotics
    vi. red CHEWS
    vii. medical errors
    viii. any time the resident feels they need back up, discuss something, etc.

5. ALL admissions from the ED or via transfer MUST be accepted by the inpatient attending. In addition to telling your attending, also call the CCS resident and pulmonary intern so that they are aware of the new admission as well. The ED should also be signing out to the CCS resident (ideally). Ideally, the CCS resident should be present with the intern when the intern calls back the ED for signout on the admission. If CCS resident is too busy, they usually get a brief ED signout before the resident and then they can discuss the admission afterwards.

6. For any patients that you are sending to the ED for evaluation and/or admission you must call in an ED expect (617)355-2170

7. **In the event that a previously scheduled bronchoscopy is delayed and occurring between 5-6pm, the bronchoscopy fellow show stay to perform the procedure.** If it is delayed after 6pm, or should a new urgent bronchoscopy arise after 5pm, then the overnight on-call fellow is responsible for performing the procedure. **For delayed bronchs, please discuss the plan between the attending, daytime bronch fellow, and overnight on-call fellow.** Usually the consult attending is responsible for any bronchs after 5pm.

8. The CCS junior resident is the supervising resident for our interns at night and on weekends. They should have received a brief signout from the inpatient fellow (+/- transplant fellow), or have attended intern signout. For new admissions overnight, please go through the CCS resident. Additionally there is a **Senior in Charge (SIC), who will be in the hospital for part of the night and one of their main jobs is to have a grasp on hospital census and which services are more acute. They can provide some increased support to the pulm intern particularly when the CCS resident is busy/taking care of acute cases.**

9. Especially early in the year, it can be a good idea to check-in with the nighttime intern prior to going to bed, to run the list and answer any questions.

10. If you have to stay overnight (i.e. pending lung transplant), there are three call-rooms available on a first-come, first-serve basis for fellows who normally do not have in-house overnight responsibilities. They are on Farley 5- Rooms 521.2 (inside the 521 Suite), 524, and 526. The entrance is near Bader 5 and the GPU. Your ID will allow you access to these rooms.

WEEKENDS

1. Each weekend is covered by one fellow and one attending. Weekend call begins at 5pm on Friday night and lasts until 8am on Monday morning. Long weekends are covered until 8am Tuesday if Monday is the holiday, and they begin on Thursday at 5 pm if the holiday is a Friday. Signout needs to be obtained from the weekday inpatient, consult and transplant teams on Friday afternoon. There should be both a written and verbal signout. Be especially cognizant of any planned discharges for the weekend and make sure that all discharge planning has occurred (especially with regards to home IV therapy, follow-up appointments) prior to the weekend.

2. The weekend team is responsible for rounding on the inpatient pulmonary service, the inpatient *B. dolosa* patients, transplant ICU patients, any consult patients that have active issues, and the young adult patients (with YAU NP). The CF dolosa patients are physically seen last in the day.

3. The weekend team is also responsible for any new consults requested during the weekend. There occasionally are requests for bronchoscopy over the weekend. All bronchoscopies are considered "add-on" cases for the weekend and must be approved by the OR Anesthesia Attending on call if they are to take place in the OR (attending must call anesthesia).

4. Rounds start at 8am with the inpatient team, usually followed by YAU rounds with the NP, followed by transplant, consult, and lastly Dolosa patients.

5. The fellow is required to stay until 3pm. Ideally, you will have done in-person signout with the CCS resident by then (usually around 2:30pm, or prior to whenever you leave), but if not, make sure you call the CCS resident to discuss the patients.

6. The pulmonary residents are responsible for writing all notes on the weekends on pulmonary inpatients (this includes dolosa patients) but the fellow should help out if things are really busy. The YAU NP is responsible for writing all notes on YAU patients. The pulmonary fellow and attending write notes on any consult patients, CF patients in the ICU or CF patients not on the Pulmonary service, and transplant ICU patients that are seen.

TWO hotel-style on call rooms are available on a first come, first serve basis on Farley.
Farley 521.3
Farley 521.4

Continuity CLINIC

1. All fellows are assigned to continuity clinic one afternoon a week. Fellows' clinic takes place on Wednesday and Friday afternoons. Fellows will split their time between Wednesday and Friday clinics during the year. The inpatient and transplant fellow will have clinic on Wednesday and the bronch and consult fellow will have clinic on Friday. Fellows not on service will be split between Wednesdays and Fridays.

2. Fellows clinic patients are scheduled from 1-5pm. A new patient will be scheduled for an 80 minutes' slot while a return patient will be scheduled for a 40 minutes' slot. You have a shortened clinic schedule when on consults. It is very important to review your clinic schedule in advance and put in orders (especially PFTs) for your patient in advance. Otherwise patient flow gets backed up. Please ask someone to show you how to do this.

3. There are two attendings assigned to precept each fellow's clinic. Each patient must be presented to the attending, and the attending is required to meet and examine each patient. When all fellows are present, things can get backed up waiting for the attending, so try to anticipate the best time to present (e.g. before or after testing completed).

4. At the end of each clinic, fill out the form provided by the front desk staff, to nominate the preceptor for each patient and the follow up plan. This allows for accurate billing.

5. The PFT lab is available during all clinic days to perform pertinent tests on patients. Occasionally, tests such as an exercise challenge test or a sweat test will need to be scheduled for a separate day as they require more time from the PFT techs. Full exercise studies are only done on specific days and need to be scheduled in advance.

6. If you see a patient on the inpatient side that you want to follow in clinic, please contact the schedulers directly to let them know to put the patient in with you specifically (or if you don't have space, someone else who already knows the patient from the inpatient side). Another option is to ask the family to schedule with you specifically and give them the clinic number (617-355-1900). Otherwise these patients can end up being randomly scheduled with any available provider.

    a. If it is a complicated patient, you can often ask your inpatient or consult attending, with whom you saw the patient, to follow with you as an outpatient. If this is the case, be sure to let the schedulers know so they can enter that attending rather than the assigned preceptor when they book the appointment.

    b. If the patient was seen as an inpatient, even though it is their first clinic visit, it should be booked as a return. If the clinic provider met the patient on the inpatient side, it is a 40min visit. If the patient is new to that particular provider, it is up to the inpatient/consult team to determine if the follow up should be a 40 minute vs. 1h 20min slot depending on complexity of the patient.

7. For any overbooks, you must email Jennifer Furlonge with the subject heading "OVERBOOK" and cc the schedulers. Give the patient name, MRN, date and requested time of the visit, and the reason for the overbook.

8. Clinic cancellations: Any clinic cancellation/change within less than 60 days has to be approved by Dr. Boyer first. Obviously for medical and family emergencies, it will be immediately approved and the front desk will contact patients and explain. For other cancellations within 30 days (e.g. change in vacation schedule, meeting, etc.) the physician needs to call the patient (leaving a voice mail is fine). Explain that unfortunately the appointment has to be moved, you recognize it is an inconvenience, and that schedulers will reach out to them, or they can reach out to scheduler, to confirm date/time. Once Debra has approved the change, you can email the Schedulers to book a different appointment and the vacation_dl if that is the case.

9. Any clinic scheduling issues or questions can be emailed to PulmonaryScheduling-dl@childrens.harvard.edu

10. Good resources for clinic questions: Jacky Steiding RN, Clinic Nurse Coordinator; Phuong Tang, PFT Lab Director; Tregony Simoneau, Clinic Director. If you have any concerns about how things are working, please let them know. If they don't know, they can't help!