International Children's Heart Foundation

Where Hope Comes to Life

Volunteer Guide *(revised Feb 2015)*

Contents

ICHF Mission statement:

Since 1993, the mission of the International Children's Heart Foundation (ICHF) has been to bring the skills, technology and knowledge to diagnose and care for children with congenital heart disease to developing countries that request our help. ICHF does this regardless of country of origin, race, religion or gender. Our teams are assembled from world class cardiac care centers. Our goal is to make the need for ICHF obsolete. We work toward this goal through our medical mission trips where we operate and educate local health care professionals and provide needed equipment and medications. Since inception, over 7,400 operations have been performed in countries that span all continents.

ICHF Team Composition

A typical team consists of

- Surgeon
- Cardiologist
- Perfusionist
- 2 Intensivists
- Scrub Nurse
- Anesthesiologist
- 4-6 ICU nurses
- Respiratory Therapist
- Biomedical Engineer

As a program develops, we take smaller teams, reducing the number based on the specialty that has proven capable to work independently. The PICU nurses and intensivists provide 24 hour coverage. Sometimes this is not needed through the middle weekend, but this is dependent on patient status and local ability to manage them. We will not deliberately schedule complex surgeries on the Friday before the middle weekend, as we realize most of you are volunteering during your vacation time.

Putting a team together is multifactorial:

1. A mix of team members from those who have travelled with us before and those who are new to ICHF and an appropriate mix of experience and skills. This may be dictated by the particular needs of the center or the cases we are expecting to do on that trip.

2. Repeat visitors to a same center are sometimes prioritized as this helps continuity of education and builds on the work already done. The local staff will benefit from at least part of the team being able to provide some consistency, and you will be able to see the growth in the team that we all strive for.

3. As a general rule we like avoid putting together an entire the team from a single center. We feel this forces the necessary compromise and adaptation that needs to take place for effective training and realistic outcomes for centers with different resources than ours. We also feel this may improve the learning experience for you as well.

4. Language skills appropriate to the center visited. Any level of local language ability is always appreciated, improves our effectiveness, and is greeted with enthusiasm and gratitude by local centers. This does not mean you will be excluded if you do not speak the local language, but we will try to take some team members with such skills.

Information required from all volunteers:

- Resume or CV—Similar to what you would prepare for a job application, but needs to specifically include your skills, training and experience in the area of pediatric cardiac surgery and any prior experience of assistance work done in developing countries. **Please note if you speak any second languages, as this is extremely useful.**

- Departure City

- Copy of professional license (*You will not be invited on a team until we have seen these)*

Before actually traveling on a trip we will need:

- Passport copy *(scan or photo in color)*

- Emergency Contact information

What to Expect on an ICHF Trip

This will vary a lot from place to place. Do not expect to come in and open a field hospital or create an ICU out of an empty room—that is not what we will be doing. Some units will have equipment as new as in your home unit, and others will be a complete startup program. In all cases there is a form of conference on the first day and collaboration on surgical list planning.

Some units are more experienced than others. Occasionally, we are visiting a brand new unit that has never done cardiac surgery. On the other end of the spectrum, and it surprises many, are functioning cardiac centers that have asked ICHF to help improve their results and educate staff on a mixed caseload of patients.

For those functioning units, it is important to acknowledge that they already have their own systems and their own responsible clinicians who feel an ownership of the patient, and we are going to work in their ICU and operating rooms and catheterization labs alongside them. The local nurses and doctors will all have systems of writing orders, charting, and local protocols just like any other hospital and it will be in their own language. We will work within their systems and alongside them in a collaborative and supportive way. This is far more difficult than setting up our own room and "taking over the patient," but it is essential to get this right.

The success of what we do is not just the 20 or so children we operate on that mission but the next 20 the local team will operate on after we leave and between our trips based on what they have learned from each experience. The most important outcome is results, but the important results are clinical AND educational. Increased confidence and competence in the local team is the most enduring result of what you will be doing, and this requires patience, adaptability, communication skills and people skills.

Your role is to empower and teach the local team: **we do not just fly in and out and do surgeries**. We fly in and out and build teams—cooperating, collaborating and working on all aspects of the care of the pediatric cardiac surgical child using everything about the patient as an educational opportunity for the local teams.

We are guests in the host hospital, but we have been invited because they need and want help to improve on what they are doing now because they are not happy with their results. Working within the basic structures of their system is necessary, but we have not been invited to be spectators. We have been invited to educate and develop, and this can mean subtle or radical changes in the way they are used to doing things. It can also, sometimes, mean us accepting that they already have very good practices in some areas and do not need to change those things.

The way that changes are presented is important if we want that which we suggest to be accepted. If the local team is not convinced that what we do or show them is a good idea, it will not be accepted and therefore unlikely to be continued after we leave. This requires clinical excellence and good evidence base but also tact, relationship building, confidence, mutual respect, knowledge, expertise and communication skills. You will need to negotiate with your colleagues on the same volunteer team to ensure consistency and to ensure “our ideas” are not changed every 12 hours. Your own colleagues on the team may have different ideas or traditions (they are not all from the same country). Ultimately, at the end of a mission, the local team will decide for itself what they keep, what they discard, or simply forget about, and a lot of this will rest on whether you have convinced them or not—or simply, whether they respect you or not.

Rounding collaboratively with the local team in the ICU (and on the ward), and having them present the case for discussion is an excellent template for education. It will be much slower than just rounding yourself with your English speaking team members, but it is essential that this happens. Develop a culture of teaching rounds, in a structured way, and do this very early on in the trip. Introduce yourself to all the members of the local team, and let them know how you are planning to include them and that you want them to be fully in partnership with you.

Bear in mind, other teams from other organizations, may have visited before, in cardiac or other specialties, and there may be a historical perspective that you do not see. There may be an

impression that we do not want to work with the local team, as some teams work in a cornered off way in a section of the ICU, bring all their own monitors, charts etc., and replicate their base units in a satellite way. This is not the ICHF way and it does not build programs. It is a fact that the more you "charge in" and take over things, the more the local team will stand back. It's purely a matter of confidence, and it happens in all cultures. Before you interpret their standing back as a lack of interest, make sure you have given them room to participate.

Each location will be getting between 2 and 4 visits every year, and each ICHF team is populated by professionals such as yourself from various centers and countries. But we are trying to build a consistent approach to focus on the issues which are widely accepted, preferably evidence based, or emerging new consensus guidelines. These are not necessarily the same as rigid JAHCO (US) or NHS (UK) standards. If you have preferences, present them as just that. We value the fact that by bringing mixed teams, we expose the local teams to a variety of styles, preferences and medical cultures. Likewise, we do not want to cause confusion, but the local teams are professionals just like you and quite capable of hearing that there are often many different ways of doing things. They will be interested in the rationale either way.

If you are working with an established and experienced team - it may be better, at times, to stand back and watch the local team on the first case. Also, try to answer a question with another question ("What do you see? What do you think? Why are you worried about xx?"). This will make them go through the critical thinking process and give you the opportunity to see where their current level of understanding is.

Do not expect surgeries to always go as planned. Always expect the unexpected.

Do not expect equipment to function properly all the time. The electricity will go out and there will not be backup batteries on the ventilators; the air, oxygen, and suction in the wall can get low. Anything can happen, so it is better to be prepared.

S.I. "System international" units are used in much of the world in science and medicine. For example you may see blood glucose referred to in mmol/l *(divide mg/dl by 18),* mmol for electrolytes vs mEq. As a rule of thumb, always ask the local physicians what is "their" normal range. There are many resources available for reference on this issue, both online and in pocket pediatric drug formulae, or Harriet Lane type books.

Supplies
In some places we send a shipment of supplies**.** We do this in order to make the trip more affordable for the local hospital, but also because we are simply doing many more cases than they would normally budget for and at a higher complexity than is usually done. In such cases these will have arrived several days or weeks before the team and you (all the team) will need to unpack and sort this on the first day. Be aware that a PICU nurse, or an intern unpacking perfusion equipment will not always know what your specific needs are in perfusion, so if you want to know where something is, you need to take part in organizing the stock and know for yourself where things are. There will not be people who you can send to fetch all the time.

Schedule
Usually, all team members will get some time off during the trip – the OR team in the middle weekend, and depending on the condition of the patients operated Friday, the ICU team also will often get Sunday and maybe Saturday night off. Local hosts will usually organize some sightseeing on these days.

Communication tips

We do not routinely have translators, but many medical students and doctors will speak some English and we usually get by very well. Language however is not the only part of effective communication—be very careful with abbreviations, acronyms, and truncating words, and realize that very center you visit, every nation and culture, has its own versions of these but they are totally different from yours. Also, in your own team you may not understand each other easily if you are not careful. Team members are not all from the USA.

Avoid using the brand name of drugs - use the **generic name** (e.g. Midazolam is only branded Versed in the USA).

Remember even a few generic names are different between the USA and other parts of the world (Acetaminophen=Paracetamol, Albuterol=Salbutamol).

Avoid extraneous and superfluous words in conversation—minimize the number of words you use:
*"Maybe kind of start to think about trying to come down on the dopamine **…"***
OR
"Reduce Dopamine"

Avoid slang and acronyms *(a whole lot of, a ton of, a smidge, a dump of chest drainage)*.

Only ask one question at a time, and wait for the answer. Without realizing it - we often will frame a sentence with 3 or 4 questions in the same sentence, or we will ask a question and give all the possible answers ourselves—again, too many words confuses people.

Beware of the answer "yes" to a question. Saying yes when they have misunderstood your question means they are answering a different question, or they might be just be saying "Yes," meaning "I'm trying to understand you."

Key Requirements of an ICHF Medical Mission Trip Volunteer

Team player
Volunteers have to be able to get along with the staff around them while fully involving the local team in a partnership of decision making. A difficult but necessary aspect of our programs is the ability to stand back and target appropriate teaching and do a little less hands on. Ultimately, we want the local teams to be autonomous, but the workload of a mission is often many times busier than the unit is usually staffed for both in numbers and in acuity. So in practice we are much more side by side with the local team.

Communication
You must have the ability to understand and be understood, make the most of a teaching opportunity, and maintain patient safety. This takes a lot of patience and effort.

Innovative and Pragmatic
You have to adapt and be prepared to work with equipment and supplies you may not be used to. You will be reusing supplies but minimizing risk at the same time. Be prepared to improvise.

Teaching
This can only come from a solid depth of knowledge. Please do not volunteer if you do not have confidence in your own knowledge base or skill set in the specialty of pediatric cardiac care.

Accepting
Recognize that there are local comorbidities and common illnesses and realize that almost always the local team will have a higher level of expertise than you in this area (e.g Rheumatic fever, Dengue fever). Local teams may also be very familiar with seeing very late presentation of Congenital Heart Disease, and have very different norms for growth and birth weight.

Flexibility
We mix teams for many different centers. We rarely can get all our volunteers from one place. But this is also beneficial as it is not our aim to teach a "center specific" way to do something. You are in a position of negotiation and not immediate control.

Fundraising

The only money ICHF has comes from fundraising and sponsorships from other NGOs and governments. The number of children we are able to save is directly related to the amount of funds we are able to generate. A huge part of the fundraising effort depends on the feedback we give to sponsors and how well we share our story. A large part of how we do this is through our website and social media sites. As a volunteer, you are central to this effort. You can help us in a number of ways.

- Become an ICHF Fundraiser by texting “Heartbeat” to 71777—here you can set up your own fundraising page that will allow your friends and family to donate to ICHF in your name.
- Donate via the website www.babyheart.org
- Post photos and personal reflections to your social media pages *(see photos and Facebook policy)*
- Gather stories from local team members, patients, and families and send to ICHF during or after your trip that can be used for sponsor trip reports to say thank you to our sponsors. These stories are also great tools for us to recruit volunteers, increase awareness, and gain additional sponsors.
- Tell your coworkers about your experience and encourage them to get involved.

Preparing for a trip: What we will tell you and When

When you are initially allocated on a trip, you must send us your passport copy, if you have not already. You may then hear very little from us for a while, depending on how many months away the trip is. Please let us know if your plans change, the sooner the better, and we will tell you if anything changes about the trip you are allocated to.

If a Visa is required for a trip, you are responsible for the cost of a visa. If an invitation letter is necessary, we are happy to arrange that for you.

Flights will be arranged 4-6 weeks in advance of the trip, and you will always be asked to approve your itinerary before it is purchased. If you have to cancel for any reason, after your ticket has been purchased, you will be responsible for reimbursing the cost of the ticket to ICHF. With a few rare exceptions, trips are always scheduled to have the team arrive on Saturday in order to start operating Monday. Expect to depart on the Friday or Saturday depending on your departure city.

Around 3-4 weeks prior to a trip, you will be given specific information related to the country including hotel information, transportation from the airport, and specific hospital information. You will also receive a team list with your colleagues e-mail addresses and flight arrangements. This will allow you to connect with fellow team members in route if you are on the same flights.

Advance Patient List - Patients to be operated will be reviewed and decided when the team arrives. Any schedule of patients sent in advance of the trip is always just a first draft. We always find new patients after we arrive, and many plans and diagnoses are revised in the early stage of the trip. For that reason, there is usually no patient list sent out to the team before the trip.

Being a wise and prepared traveller

Please consider we are a foundation organizing many medical mission trips a year with only 1 office staff member dedicated to this task. We will always help where we can, but the fact that this may be your first experience of international travel does not mean that we are the people to ask every question that may come into your mind.

Common sense safety and traveller issues:
Firstly, you are a volunteer and an adult. You are not being taken on a school trip, so it is reasonable for us to expect you to do your own research on the general issues any traveler might face. These issues include weather, what vaccinations should you have, money and currency issues, personal safety, and political stability.

We will tell you everything you need to know about the hospital. The city, the country, and a basic awareness of culture, safety and local customs is part of your own responsibility and very easily researched.

Some common tips for travellers, depending on your level of comfort / adventure / experience:

- Check the weather before you go and pack accordingly.
- Get the telephone number of the airline
- Give your family your flight information.
- Make a copy of your passport - keep it online and on paper
- Carry some currency in separate places.
- Do not keep all your credit cards in the same place
- Pick up a card with the address and telephone number of the hotel when you get there.

Trip expenses are covered in regards to flights and hotel. Any contributions you are able to make towards these expenses are not a condition of your participation. Room charges (mini bar, room service, laundry, etc.) are the volunteer's responsibility. Food is provided during shifts at work, and breakfasts are usually part of the hotel price. Evening meals vary from country to country, but generally team members eat out at night.

Scrubs: Occasionally the locals will ask us to only use the local scrubs, which they can guarantee are well laundered, but usually you can wear your own. We will know this before we arrive. Also the practice of wearing scrubs outside the hospital is not accepted in many countries. We are provided with a place to change everywhere we go. Outdoor shoes are commonly banned inside ICU's and OR areas. You may be asked to wear shoe covers if you do not have a designated pair of hospital shoes. You can usually bring a new looking pair of crocs or similar and show them that they are exclusively indoor.

Money: Do not bring travelers checks- you will still be walking around with them looking for a bank at the end of the mission. Most hotels will change money, but you may be at work all the hours a bank is open. ATM cards are often the best, and will usually will work, provided you tell your bank where you are going ahead of time.

Using your phone overseas: SIM cards are easy to buy and cheap in most countries if you want to have a local number while you are there. Apps for your smartphone that are free and work great for texting and calling via Wi-Fi are a great way to communicate for free. We recommend WhatsApp, Viber, Skype, and FaceTime.

The hotel will always have Wi-Fi, and most often the hospital will as well. However, we cannot always determine its range or reliability.

Electricity: an adaptor is not the same as a converter, most cell phone chargers, computer chargers etc will work universally on 110-220 volts. High wattage items like hair dryers and straighteners made for 110 volts will fail and probably explode when plugged into 220v or 240v. If you have appliances designed for 240 volts they simply will not work in 110v. You will need a converter. A converter converts voltage (and is usually heavy), an adapter simply adapts the pins.

Power cuts/outages are very common, even inside hospitals—a pocket flashlight can be very useful. The presence and reliability of power backups varies a lot from country to country.

Airport and travel tips:
Keep all baggage tags until you are out of the airport, even after collecting your bags, some countries require you to prove the bags are your own when exiting customs.

Immigration forms - if these are stamped and placed in your passport they are expected to be shown on leaving the country. If you lose these, you may be fined or at minimum delayed. Keep the country specific information we send you handy (print it or save it to your devices) because you will need to fill out the immigration forms on the plane.

Your flight - is your flight. If you miss your connection, go online or to the airline desk, and talk to the airline. Don't waste time trying to call ICHF, as we may be in flight at the same time as you. Get it sorted out then let us and the local host know your new itinerary if you are going to be late. Flights are chosen on a balance between cost and itinerary. The most direct route is often more expensive. We try to avoid long layovers when we can, but this is not always possible. You are welcome to help us find a suitable itinerary and suggest that to us, provided the price is right.

Language: Do not expect people to speak your language. Research this, and get a phrase book or learn the basics. Knowing how to say "hello, my name is...", "please" and "thank you" is very useful, and these efforts go a long way in getting the ICHF goals achieved.

Vaccinations / health: This is your own responsibility - **ICHF does not keep a database of what you need to have**, nor do we require you to have any specific immunization set. Research it on your own and talk to your doctor or travel clinic, and make your own judgment as a traveler and a health professional. Hepatitis B vaccination is standard practice in most ICU areas, and that we do advise, but mostly likely, you have already received it. You should bear in mind that you will have a higher risk of blood exposure, as gloves will not always be readily available; therefore, you should take extra care. Not knowing the availability of gloves in many areas, it is always useful if you bring some of your own.

Latex Allergy in our experience, is uncommon or unheard of in most of the countries that we visit. We very rarely see a patient or health professional with a latex allergy in the countries we visit. You will be exposed to latex (in hospital and at the airport). This is not within our control, but we will do our best to accommodate you if you notify us in advance. You are welcome to bring your own gloves for use, and your team members around you will do their best to help you avoid contact if you tell them.

You are travelling as volunteers, and ICHF will ensure that there is provision for transport to and from the airport and hospital, food for those working at the hospital, and that the hotel accommodation is safe and clean, but thereafter, we are not responsible for your personal possessions, travel health advice, or costs incurred by your missing a flight or flight connection.

ESSENTIAL DISCLAIMERS

VISA - ICHF routinely covers all your flight and hotel expenses, but we do ask that you cover your own visa fee, if required. The need for a visa and its fee will depend on your own nationality and current domicile. ICHF gets volunteers from multiple countries; therefore, it is up to you to check the visa requirements and passport expiry validity when you are offered a trip. Your first port of call should be the website of the respective embassy (of the country you want to visit) in the country where you live.

All trips and teams are subject to funding, the vast majority of which is charitable and trips are not necessarily funded at the time of your invitation. Variation in airfares, available budget and other factors mean that no trip is certain until tickets are purchased. Team sizes sometimes have to be reduced based on flight prices and other factors.

PERSONAL POSSESSIONS - You are responsible for your personal possessions at all times. You should use hotel safes if available. The International Children's Heart Foundation is not financially responsible for lost articles such as passports, airline tickets, wallets/purses, cell phones, i-pods, laptops, etc. Additionally, if a team member does not arrive at the airport in time for their flight, International Children's Heart Foundation is not responsible for fees incurred as a result of this, such as additional airline charges or hotel overnights.

LAST MINUTE CANCELLATIONS - If a volunteer cancels after airfares have been purchased, he or she will be required to reimburse International Children's Heart Foundation for the price of the lost airfare.

INSURANCE – As a volunteer traveler, you are covered for travel related health issues by the ICHF policy which is designed specifically to cover employees and volunteers of NGOs working overseas. Almost all medical issues you may encounter on a trip are easily dealt with locally, and best dealt with locally. We, as the policy holders, will reserve the right to make the final call on emergency medical evacuation and limit its use to genuine emergencies that can not be dealt with locally. But you may choose to take out independent travel insurance if you have a high level of personal concern or do not feel confident in the local medical systems. We do not take out professional or personal liability or indemnity insurance for our team members.

Posting Photos after and during trips (Facebook, Instagram, Personal Blog)

ICHF understands and values the publicity benefit in volunteers sharing photos though social networking and photo sharing sites, and we encourage all team members to continue to share their experiences in words and in pictures of what it means to be on an ICHF medical mission trip. Recruiting new volunteers and soliciting donations is all helped by the appropriate use of photos and stories. We do, however, feel the need to set some guidelines and rules on the appropriate use of pictures and news.

1. Do not show any picture of a child obviously in pain or discomfort.
2. Do not show any picture of a child where genitalia are exposed.
3. Do not share sensitive news on *open postings**
4. Do not use a child's full name in conjunction with your photos.

**Sensitive news includes news of a child's death or deterioration. Open postings* means, on Facebook for example means, your status, on a wall, or as a photo comment on Facebook—all of these can be read by all your friends—and sometimes many others you are not directly connected with. One to one messages can be sent and are more appropriate for some pieces of news. We cannot give hard guidance to all circumstances - be professional - but also - spread the word - we need the publicity and the children need the donations of time and money that follow from an awareness of what an ICHF medical mission trip does.

**Keep in mind that many of the local staff and patient families will follow ICHF and you on Facebook. Therefore, do not post anything that you would not want to say directly to them regarding their country, the people, or the hospital. Also do not post something regarding a patient that you would not want to tell the parent in person.*

Appendix 1.

Specific Volunteer advice by speciality

To ease your experience, we can usually put you in direct contact with your immediate predecessor on the last ICHF trip to the location you are going to help you prepare.

Cardiologists:

Cardiologists will often need to work within some constraints. The ECHO machine may be shared with an adult service, may not always be available, or be an older model in another language, and there will be a lot of waiting around. The cath lab is likely to be monoplane only, and you may be reusing catheters and wires. The most challenging aspect of your role maybe to work with the surgeon and local cardiologist to choose the most appropriate cases when you know we can only operate on 20, and you may see 80. This requires some thinking as to the specific goals of each trip. You cannot pick the 20 sickest children, even if you know they will die without surgery. There is fine balance that must be maintained to ensure adequate resources and flow through the ICU. You should also talk at length with the ICHF surgeon about the kind of cases they feel comfortable doing in foreign situations. A successful mission will have a zero or close to zero mortality, and should have an appropriate balance of complex and simple cases depending on the experience of the team. Think about the survival benefit, in a young program, of leaving a 2 week trip with the local surgeon, anesthesiologist, and perfusionist being able to confidently close a VSD independently, or the local ICU team feeling confident with TET management. This may far outweigh anything that can be achieved by selecting the most complicated cases from those that are presented to you. There is no shortage of patients, and whether you see the patient or not, the majority of children in the country you visit with CHD will die and will not get treatment. That is the overall dynamic in which our efforts are hoping to reverse in time with methodical systems development. Even if we visit 4 times year, the child with the simple VSD may never get to the top of a priority. There are no easy answers to this. You have to use the experience of the people around you, including the ICHF surgeon, the local surgeon, the local cardiologist, and the needs of a particular program at a given moment in time when making decisions. Scheduling cases should be done with a plan to leave no patient in the ICU intubated at the end of the trip.

Perfusionists:

You may be using roller pumps, usually older models. You may not have any in line pressure measurement. You will almost never have continuous blood gas monitoring, but you will have ISTAT or another way of checking blood gases. Cardioplegia administration is as likely to be done by pressure bag at the anesthesia end as it is on a system on the pump. All these issues vary place to place. Tubing packs will almost always be different to what you are used to. Bring some clamps, essential connectors, and a manometer you can use for pressure. Pressure bags also if you can get them.

Anesthetists:

You will not have all that you are used to. You will not always have an anesthesia assistant (nurse or tech), but you should, 90% of the time, have a local anesthesiologist working with you. You may not have enough multi lumen central lines for all cases, so look at your stock and the surgical list at the beginning and half way through the trip, and plan accordingly. Be pragmatic. Single lumen lines in the neck and the femoral can give you sufficient access and may be appropriate for some cases. Specific arterial line sets are rarely donated to us, and more rarely available in local stock. So using a regular catheter is the norm. If you can bring a few short guidewires or your favorite catheters, this is very useful. In some places you will be able to suggest such items to the local team for purchase, if they are available in that country or donate some yourself, but if not, you should also try to teach them based on what they have. Or have them teach you how they get around such issues. Usually we do not ask that you bring any drugs, however, many people bring a small selection of reversal agents and short acting paralysis. Please NEVER bring opiates, ketamine, propofol, or controlled IV sedatives such as midazolam with you.

Fast track anesthesia is the norm, but you may not always have short acting agents or neostigmine. Transport monitoring of any kind may not be their practice, and you should set a standard for this. Invasive monitoring is not always possible in transfer but SpO2 and EKG should be. A clear and structured signout to the ICU from Anesthesia and Surgeon is expected and a core part of the ICHF teaching approach (See appendix 2).

Drug errors occur easily, so bear in mind that if you bring drugs or if we send drugs, they may be of a different concentration than the local stock.

LMA's can be occasionally useful, as well as, headstraps and your favorite masks . Capnography is not always available, but it is good to bring.

Conserve your resources, and keep vials clean and use from case to case. Know how much Milrinone you have, and mix accordingly, even if you have a standard calculation you are used to. If the Milrinone is in short supply, it might be more appropriate to prepare half the usual strength or half the usual volume. Usually the ICU will stop the drug after 12-24 hours, so don't make more than you need.

Surgeons:

Your prime objective is to develop your surgical colleague in the local team. How many surgeries you decide to take as first surgeon, or first assist, will depend on you own working relationship you develop with the local surgeon(s). They are the person who will be responsible for consent, operation note and follow up care, but bear in mind, the best legacy you can leave after 20-25 alive children, is a surgeon and OR team capable of independently repairing basic (initially) and complex defects (eventually). All surgeon volunteers are usually accompanied on the first trip by an experienced ICHF volunteer or staff member. We will want to have a direct conversation with you before the trip by phone at least.

OR Nurses:

You will be on your own on the ICHF team in your specialty and have to immediately create a rapport with the other OR nurses from the local team. You are not necessarily expected to be first scrub in every case, but this should be negotiated with the surgeon, Some units will have gas sterilization, so saving sutures, connectors and similar items can be particularly useful. You will need to ensure your local colleagues know where any supplies you have brought are kept, and may need to go through your and their terminology to ensure things you need are available when you need them. You will have the opportunity to set up a certain amount of your own supplies, either directly in the OR or in a room outside, but on many trips, we take no supplies and use only the local supplies. Always remember, the ICHF surgeon is almost always being assisted by a local surgeon who has a current working relationship with a local scrub nurse. So even though you may feel there are difficulties communicating what you need, the local scrub nurse usually has enough experience to be anticipating needs.

Intensivists:

You will need solid pediatric cardiothoracic experience. The ability to fast track extubate is essential. Also be prepared that what you might see is not what you might be used to. Generally the children are older than what you may see in your own institutions, and this means that although some may be complex surgically and medically, most are a better template for fast track management than the typical neonatal and infant majority you may be used to. There are some centers where you will see a fair proportion of infant work, but clearly, critical neonatal patients are not something they can save up for our missions which may be 4-6 months apart. Early extubation for late repairs, even with pulmonary hypertension, has been well reported in the developing world literature and is our standard practice, even in many infants. Depending on the individual anesthetist and their preferred practice and comfort level in the environment, you may see a mission where the majority of the children are extubated in the OR. We stress early extubation because increasing capacity saves more lives and is supported by an increasingly large body of literature. We find that rapid recovery is a huge boost in building a confidence base in the local ICU team. Think of it as reintroducing symptom based care to ICU. We are not reckless, but *"..let's wake him up and see.."* is our standard mantra. The typical time intervals

between progress decisions are shorter, because you have no other responsibilities than these patents in front of you.

Non opiate analgesia strategies predominate in our practice and are surprisingly effective. The exact nature of this varies with local availability but always involves Acetaminophen/Paracetamol (80mg/kg/24h often with an initial larger loading dose rectally if available), and usually addition of NSAID's unless contraindicated. We audit all our results and closely follow reintubation rates, reasons, and morbidity data, as well as, the fate of children left in the ICU when the team laves.

Usually what we see (and have published) is that we can double or triple local capacity for surgery within the first 2-3 years.

There are some drugs available that the local team have good experience with that you may not be familiar with. You may want to let the local clinician go along with something he has more experience than you with than you, rather than force him to use something he cannot safely manage.

Typical teaching issues vary. Topics to be ready for bedside or formal teaching :

> *Helping local teams understand the usual range of cardiac issues - (Glenn physiology, shunt physiology, use of O2, Qp:Qs, Diastolic dysfunction etc ..)*
>
> *Overuse of prophylactic antibiotics (too long duration), overuse of broad spectrums*
>
> *The use of hypotonic maintenance fluids is still prevalent. Bring your own opinions and research understanding to this. We do not have any "protocol" as such apart from never going less than 0.45% Na (on the basis that there are many other sources of sodium in the overall fluid the patient receives and that there are frequent analyses). How we suggest/teach/implement a local practice has to be a pragmatic balance between availability, sound clinical practice and above all—do they believe us? They may have never seen hyponatremia. D/NS is often available, as is Ringers.*
>
> *The perception of elevated CVP or any kind of positive balance, even on the first day, as a clinical issue that always requires diuresis. There is a widespread reluctance to fluid loading in the learning curve of many teams, and a concomitant over use of sympathomimetic inotropic drugs and diuretics.*
>
> *Insulin/hyperglycemia - There may be differences of practice and experience between you and your intensivist colleagues locally and within the ICHF team. Be pragmatic, and realize that fine titration of insulin infusions requires skilled and autonomous pediatric nurses and intensivists, which you have on the ICHF team. BUT you do not always have on the local team. So in short, Insulin IV bolus/S.C bolus/titrating dextrose/not treating hyperglycemia in our experience, are all safe approaches. An insulin infusion in the wrong hands is dangerous. Remember you are often working with uncalibrated glucose meters, unmaintained syringe drivers and sometimes you are using out of date medications.*

ICU Nurses:

You need solid knowledge and experience of complex pediatric cardiac postoperative care, including pacing and some experience with complex anatomy. It is difficult to state a specific experience level, and it depends on what you have learned in that time and how much exposure and direct responsibility you have had for pediatric postoperative care. Those with less than 2 years pediatric cardiac ICU might find it difficult. This does vary with the locations, as some places we do more simple cases, and we are prepared to be flexible depending on the overall balance of the team.

Broadly you must know and understand the defects and operations. Teaching is a central aspect to your role and if you do not understand the common defects and repairs, including complex repairs such as single ventricles, DORV, Ross, Glenn, etc., you may struggle in this aspect.

You MUST know your resuscitation doses and current resuscitation guidelines

You must know how to **use and prepare commonly used drugs for bolus and infusion.** There are no pre-prepared infusions, and different units have different practices about drip concentrations. You need to be familiar with the various ways that drip calculations and concentrations can be done, and realize that in general these will be done as per LOCAL policy or as per the preference of the Anesthesiologist on the team.

Symptoms and signs: ICU traditionally focuses on the latter, but we concentrate on the former. Wake your children early, extubate them, and then we can ask them if they have pain. Rather than scoring, we can give them a toy and some bubbles. If they are interested, we know that they probably do not have significant cardiac or respiratory issues. Of course we do have blood gasses, but hardly ever have lactate or chloride, and sometimes are in places where ABG turnaround is up to 20 minutes. So a more clinical assessment focus is necessary.

You will almost never see a midazolam or opiate infusion, unless there is a plan to keep the child intubated overnight. The majority of patients will not require any midazolam, even as a bolus. If it is used we never give more than 50mcg/kg for the first dose in the early postop phase. We commonly prepare morphine or fentanyl for as a bolus for breakthrough pain, but if the non-opiate regime is started early enough, many children receive little or no opiate at all. Do not think of this as cruel. We absolutely insist that all nurses assess the child's pain by making sure they are able to move around the bed, sit up unsupported, not splinting once extubated, and by hemodynamic signs and direct questioning. But bear in mind, central to a fast track approach and a pain management approach, is the removal of the source of pain may be the most appropriate response. This might be the ET tube or being in a supine position when wanting to sit up or be prone.

The simpler cases (ASD, VSD, Coarct, simple Tetralogy) are expected to be walking in the ICU on day 1. This is an expectation that requires the ICU nursing team to plan for: ask the mother to bring clothes and shoes, make sure the local team allow the mother in, and make sure you have enough analgesia on board. This is the other reason we start enteral analgesia early postop: it can take up to 10-15 hours to reach steady state with oral paracetamol/acetaminophen), so always think of what is needed tomorrow when you decide what to do today. Mostly, the ICU relies on “two patients in, in two patients out" each day, and many of these will leave on day 1 postop.

Be aware that local staff may be working double shifts, and for the ICHF ICU nurse, the correct balance to be helpful—hands on, performing interventions and assessments with the local nurse, giving drugs (ALWAYS show them what you are giving and ask them for checking. They may not tell you if they have already given exactly the same thing), but allowing the local nurse to retain "ownership" of the patent within the local system of care. Remember they are the ones who remain legally responsible for the patent and writing the reports and progress notes. Work side by side with them, be helpful, make friends, and do not expect them to automatically see you as a teacher. Be a valuable colleague first.

We may ask you to assist in the OR, help the anesthetist, or help prepare drugs for the next case to improve turnover time. You are welcome to watch any surgery at any time dependent on the demands of the ICU at the time, however, this should always be discussed with the ICHF surgeon before entering.

Topics you may want to prepare for bedside or formal teaching (variable from lace to place, so always try to establish what is currently known first)

> *You will always need to be able to draw or show drawings, and describe the defect—give a bit about the preop anatomy and physiology and the basics of the repair. Address why did this child need this operation? This is often best done in pictures because although many of the doctors speak English, very few nurses will.*

Physical Assessment and Case Presentation. In all centers we want to improve on the physical assessment skills of the nurses, but do not expect them to be at or want to be at the level you may expect. They may not even have access to a stethoscope initially. ALL nurses will benefit from detailed side by side work on the details of breathing and circulatory and fluid balance and basic neuro assessments. Patient assessment skills, formal or not, are expected of all nurses in the local team regardless of the local customs for its documentation or frequency.

Drug calculations/drug errors may be a problem especially in units where adult practice is mixed with pediatric practice. All numbers are international so this can be done and taught in writing with a little thought.

Infection control - you may look around in amazement and wonder how you can teach this or improve on this. Be pragmatic—first look at what they do and what they have. They may not have a sink inside the ICU, or they may have a sink but a shared towel. Then look at what you can do to lessen the risk in the environment you have. Reusing syringes (with recapping) is common and justified as is reusing suction catheters and using non sterile gloves. But going directly from nappy/diaper care to an IV line without washing or in the same gloves is not. A very visible approach to hand washing is often necessary.

Chest tube patency—this is something we find needs attention. Often there is a discipline of only charting hourly without the appreciation in the bleeding patient of looking at the drain every few minutes and quantifying every 15 for the first few hours in the bleeding patient.

Analgesia and pain assessment-formal pain scores may or may not be in place, but most children can be sat up self-supporting, moved or asked to move and breathe deeply, and cough. We regard pain assessment as important and show the direct correlation with the important steps in recovery.

Respiratory Therapists

Although we are now increasingly seeing the RT role develop in the countries we visit, there are still many countries where there is no RT. You are here to teach, so who do you teach? Try to find out who does the various roles locally

who extubates?
who does chest physiotherapy?
who is responsible for ventilator setup?
what are their mechanisms for reserialization of respiratory equipment?
do the nurses ever listen to the chest or look at X-ray?
Identify who is responsible for blood gasses, drawing, running
Who interprets the blood gases and makes changes?
Make yourself available at all stages to teach and optimize safe practice

Identify the issues where you can make a difference-mostly this will be in assessment.

It is always useful to bring a selection of respiratory related items: resuscitation facemasks, T-piece circuits, new and used SpO2 probes, random respiratory connectors, a few vent circuits (neonatal is usually most needed), HME's and bacterial filters, and neo and pediatric nasal cannulas, self-inflating bags (0.5 Liter are most useful) as are good air seal or silicone masks, and a few flow driven bags and high concentration masks with reservoir.

We recruit RT's for what they can bring to the overall respiratory management of a post cardiac patient. In many trips the median ventilation time may be an hour or less, and in some trips 70% of the children will be extubated in the OR. The real value of an RT is in the respiratory management they can bring to the intubated and **extubated** child. Chest physiotherapy is possibly the biggest part of your role, creative use of blowing toys, real or made up spirometers (tubing in a bottle of water), standing, walking and coughing. We have heard some RT's express that chest physiotherapy is not part of their role—if that is your view—please do not apply. The fact is, regardless of the training and boundaries in the USA or Canada, "respiratory therapy"

includes chest physiotherapy, and many units we go to will have respiratory specialists or respiratory physiotherapists who may be your closest partner in terms of an opposite number to educate. So you will be working on ventilation issues with the doctors and maybe the nurses and "RTs" also, but the therapy most children need is therapy to keep them off the ventilator. Remember also that on your own ICHF team there may be nurses who routinely titrate ventilation and extubate and may not routinely do PT.

Given the amount of downtime between cases we will sometimes ask the RT to assist the anesthetist or perfusionist in the OR at the beginning or end of some cases or to generally help the PICU nurses in the ICU. It may also be useful to participate in the preop assessment and rounding on the floor because many children arrive with preexisting respiratory issues, wheezes or baseline stridor, or they may be prone sleepers, and this is all useful to know in the postop phase.

Be prepared that you will be working with maybe 5 different types of ventilators, which you may have never seen before. Instructions or controls may be in a foreign language, there is no inservice training, and most likely, no manual. How do you do that? You ask the local people to show you, because they do know it. You will have to improvise connections, cut and connect things that are not meant to go together. Flow sensors may be absent or uncalibrated. Like all members of the team, you have to be comfortable with clinical assessment. Teach from that perspective as the prime important skill, rely on your eyes and ears, and sometimes ignore the numbers.

Important to note is reuse of ventilator circuits is commonplace and reserialization of single use items is universal.

The ICU Team:

We prefer that the ICHF ICU team- doctors, nurses and RT-sign out at shift end together. We find the visible demonstration of teamwork that this provides is the biggest and best cultural shift that local teams need to embrace to empower nurses and create a team approach, which may be non-existent. Also, it is a practical issue—very few of you know each other and each other's ways of working; therefore, the probability of error and miscommunication is high. So signing off together is the best way to ensure the ICU team is on the same page.

Appendix 2: ICHF Protocol

Receiving the patient from the Operation Room

(must be modified to local needs and specific issues)

**A structured signout form the ICU that must include the local team. A good signout from the OR you will find will be a very good basis for developing ways of working and real learning.

Before arrival: Check the bed and allocate roles (who will document, who will connect suction, who will attach monitoring?) And remember crowd control.

Immediately - When the patient arrives:

Nurse 1 and intensivist / RT:

Perform primary cardiorespiratory assessment-observe color, perfusion and quickly palpate upper and lower limb pulses, central and distal.
Connect the ventilator, if intubated, and observe chest-look and auscultate. Continue this direct observation of breathing and keep finger on pulse until monitoring of ECG, SaO2 and pressures is transferred and operational.

Nurse 2 Assistants: (at the same time)

Check the Monitor: Level and calibrate transducers. Attach Oxygen Saturation, ECG.
Connect suction to chest tube, mark amount in drain, and look for active bleeding.
Connect all electrical power to infusion pumps

This should all be done quietly. Ddo not hand over the patient until the key staff are ready to listen. All staff nurses, intensivists, & RTs should hear the same information.

Within 5 minutes-Before the surgical team leaves-Information Report

Responsible nurse, intensivist, RT – **gather together and receive information from Operation Room team, others staff be quiet and can help with the patient.**

Essential Information from Anaesthetist

Endotracheal tube size and length, any difficulty in intubation?

Ventilation parameters and when was patient last suctioned

Drug infusions, current dose and dilution

Anesthetic drugs used – time of last muscle relaxant and total fentanyl or morphine dose

Other drugs given-antibiotics, electrolytes, paracteamol?

Report on circulation after bypass-hemodynamic problems coming off bypass? Any arrhythmias?

Any Unexpected events

Blood products given, and still available

Show last blood gas, electrolytes, haematocrit, ACT and glucose from operation room

Essential Information needed from Surgeon (this could be given prior to patient return)

Diagnosis and type of operation – in detail, including any complications or surgical difficulty

Location of and number of Chest drains, is the pleura open?

Location and number of pacing wires

Bypass time and cross clamp time

Any unexpected events (e.g. bleeding, arrhythmia)

Filtration or Modified Ultra filtration amount

Drawing of the operation?

Do not forget this process!! If the patient is very critical, and all the team is busy, it is even more important to do this thoroughly. Operation room team should stay longer until there is time. On an ICHF mission this process must fully include the local team, and preferably, should be done in the local language and translated. Make sure the local nurse is included. Every patient signout should be disciplined and thorough, and the local team should hear ALL the same information the ICHF team hears.