Methanol Poisoning
Community & Medical Education Programs
Model Pilot Program Information

Developed by The Methanol Institute (MI) &
The L.I.A.M Charitable Fund

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Contents

Background

The Methanol Institute (MI) is the global trade association which serves one of the world's most vibrant and innovative industries. Founded in 1989 to further the advancement of the methanol industry, MI now serves its members in every corner of the globe from our Singapore headquarters and regional offices in Washington DC, Brussels, and Beijing.

The global methanol industry impacts our daily lives in countless ways. Methanol is an essential chemical building block for numerous products that touch our daily lives, and in an era focused on alternative energy, it is an emerging energy resource. Each day, roughly 70,000 metric tonnes of methanol (23 million gallons or 87 million liters) is shipped from one continent to another, enough product to fill 777 rail cars. Today, our membership includes the world's leading methanol producers, technology companies, distributors, terminal operators and shippers.

The methanol industry's leading companies have joined to support MI as the most effective way to interact with governments, NGOs and potential new customers throughout the global marketplace. MI collaborates with each of our member companies to create solutions for the global industry, and to ensure that already vibrant markets for methanol and its numerous derivatives continue to thrive.

An important part of MI's work and that of our members is providing resources to the communities in which we work about safe handling and use of methanol. Since November 2013, MI and The L.I.A.M Charitable Fund have worked closely to develop community and medical education programs (CEP/MEP) in Indonesia aimed at protecting the public from risks of consuming adulterated alcoholic beverages.

The L.I.A.M Charitable Foundation (Lifesaving Initiatives About Methanol) is an Australian organisation that was established after the death of 19 year old Liam Davies in January 2013. Liam was poisoned with methanol that had been added to a drink served from a labelled bottle of vodka that he bought from a bar in Gili Trawangan, Indonesia. He was initially treated in Lombok, but his case was misdiagnosed and the correct treatment was not given. Liam was air-lifted back to Perth, was diagnosed with methanol poisoning within 10 minutes of being at the hospital, all necessary medical treatment was given but too much time had passed and Liam died 4 days later

Liam's life could have been saved with correct, timely medical treatment in Indonesia. Liam's parents did not want any other family to experience what had happened to them so they developed the LIAM Charitable Foundation. The primary objective of the Foundation was to prevent further accidental deaths from methanol poisoning. This has been done through a campaign of community education and development, as well as medical training for hospital and clinical staff. The aim is to implement systemic change, such that the positive effects of the program are sustainable and long lasting.

The LIAM Foundation first began work in 2013, and has rapidly built a reputation in Bali and Lombok for high quality and well-targeted educational programs. LIAM has MOUs with both RSUP Sanglah Hospital and the School of Public Health at Udayana University. LIAM works collaboratively with

selected staff from both Sanglah Hospital and Udayana University to provide education and training. There are two parts to the education program: the first a program for community education (for the general community and primary health centre staff) and the second an education program for clinical staff within hospital settings.

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Mission

The highest rate of deaths from methanol poisoning are in Indonesia are among males aged 18-30. In third and second world countries, such deaths, often of the primary income earners, bring both immediate and long term pain to families. The loss of income and support can have devastating effects. Mass poisonings in small villages have seen poverty increase as families' ability to support themselves is taken away. In many traditional communities of developing countries, widowhood is the beginning of 'social death' for women and their children. It is not enough that they have lost their husbands (the main income provider), but widowhood also robs them of their status and leaves them to a life of extreme discrimination and stigma. To save one life is to save many.

We will never rid the world of methanol poisoning, but we can train medical staff to save lives, and educate about the dangers of incorrect distillation. We can warn people to make the correct drinking choices.

Values

The LIAM Charity's strong, grounded values are unnegotiable. This has seen our program succeed in the past and will continue to aid growth and enable us to enact change in the world moving forward. The Liam Charity believes in doing what is right, not what is easy. We strive for:

- Empowerment – giving people power through knowledge
- Consistency – all programs presented with the same message
- Teamwork – pushing forward from all levels
- Flexibility – maintain the ability to evolve and change to fit the need
- Professionalism
- Commitment to Success
- Respect

1. New Country

So you are wanting to tackle the enormous issue of methanol poisoning in a certain country? BEFORE you step foot in that country you must do the most important work to make your training a success.

What do you know about?

- Local political environment and their views on alcohol and drinking
- Local religions and their views on alcohol and drinking
- Cultural beliefs and sensitivities
- Major do's and don'ts to keep yourself and all your staff safe
- Recent high risk issues for travelers
- Laws on foreign aid workers

Do you know someone that has worked in this country before? If so, talk to them extensively about issues they came up against, what excited them and what frustrated them when dealing with local governments, law enforcement officials, and other people in positions of power. Head to your own country's respective embassy or consulate and also ask the above questions.

How can you facilitate and fund ways for locals to educate locals?

Engage, plan, meet, discuss, brainstorm and network! Making long term and systemic change is never easy. Be clear with your vision, set your 12-month plan, focusing on realistic outcomes for that time but be prepared for idea changes. As your start moving forward, what seemed like a great idea may not fit your location. That is OK, but how do you adjust and tailor your ideas to fit your unique local situation, and what might be other options to help achieve your goals? Be flexible and open minded, in order to mould your training program to the environment in which you are working. If something works well, then expand on that, and see whether you can transfer that into your other training modules.

Think about how you would feel if someone who had never lived in your home country suddenly came into your country or workplace and started dictating that they knew best. A successful program requires knowledge sharing, training and funding to bring sustainable changes on many levels. This can only be achieved if we empower and work alongside local stakeholders to understand well their needs, to assess where we can help to achieve their needed outcomes, and to create a framework through which they can achieve sustainable, long-term results among local communities.

1.2 Who can assist you to build your starting networks?

Sadly, methanol poisoning is predominately an issue in second/third-world countries. Lack of access to legitimate alcoholic spirits, high taxes on legitimate alcohol, and/or cultural bans on the production and consumption of alcohol often lead to black market production of moonshine to satisfy demand by many consumers. Incorrect distillation practices or intentional blending of chemicals – including, but not limited to –methanol – is seen worldwide. Global hotspots where adulterated alcohol health problems and fatalities are occurring include: Indonesia, Vietnam, India, Kenya, Nigeria, and Pakistan, among others. Unfortunately, the need for methanol awareness and poisoning prevention training is only continuing to grow as incidences of methanol-laced products in high-risk markets like these continue to grow.

Depending on the needs of each market and the level of support required for community education versus medical education and training, your approach may be different in how you plan to establish a Community Education Program (CEP) versus a Medical Education Program (MEP). You may decide to start with one program in the first 12 months, and introduce the second program in the second year as your network and contacts expand.

It's most likely that medical and community education assistance are already being provided by international bodies in your affected region in regard to other issues. Ask your foreign affairs departments to put you in contact with a trustworthy source already well entrenched, including those who are already doing substantial work in the public healthcare sector.

Engaging with and using the services of a major training hospital is your aim for your MEP. Doing the same with a major university that specialises in Community Health is your aim for your CEP. Engage with federal and local government health departments, alcohol regulation agencies, educational ministries and local departments, police, etc. to ensure that they authorise, support, and promote the methanol poisoning awareness programs.

Be sure to take time to sell the program to people at all levels – it is of no help if the CEO or other senior leaders think the program is great but the workers who will deliver the program are not on board. The same can be said if the decision makers are not sold on the program.

You need to ensure before any training takes place that you have the permission of all necessary governing bodies as well as the necessary workplace agreements and insurance coverages.

(Please note: If you are able to work under a Memorandum of Understanding (MOU) with existing bodies, your staff may have all necessary protection and payment through their primary employer. Do not make assumptions – check all details thoroughly and get written acknowledgement.)

1.3 Build Allegiances

It takes time to get to know how an organisation works, who the key people are, (i.e. the informal power structure). Don't hurry to get a lot done straight away. Take your time looking at what's going on, talk to people and **listen to what they have to say.** Even if the standards and practices are very different and not as high as you are used to, make sure that you are respectful of the work environment and local cultures, and do not openly criticise what you see is happening around you until you understand things better. If you are invited out socially by the staff you are working with, go if you are able to do so. Changes in practice are built on good relationships, so take time to build your relationships before trying to make major changes.

1.4 Build on what has gone before

Many developing countries have had a lot of people trying to assist in the past. Do your best to find out what has been done, and what the local counterparts felt about how it went. Again, this may take time, as they may initially be afraid to tell you the truth if things have not gone so well. Try and explore what went well and why they felt this was the case, and assess what are the change priorities of the local counterparts. Try and find something where there is local buy-in and ownership – this will help you to be successful.

1.5 Know your audience

First of all, you will need to really think about who your audience is – i.e. who are you working with, reporting to, and who has a vested interest in the success or failure of your endeavours? You may need to use different strategies to uncover what each of the various stakeholders/interest groups really want and need.

- Try and find one or two people in your immediate work area who are happy to give you information about the culture and where the various players sit within the organization.
- Be prepared to ask many questions to uncover what outcomes people expect/want.
- Try and assess similarly expectations of the organization's senior leaders.
- Also try and find out what the priorities are of the people with whom you are working most closely. You may often find these are very different. Part of a development role may be bridging the gap between the two sets of expectations. Be prepared to be wrong and to listen and learn.

1.6 Work with people who want to change

As with anywhere, there will be staff who are keen to change and staff who are happy with the status quo. As far as possible, identify people who are keen and willing to change, and work with them. They are insiders and know the culture and the challenges – together you can be a good team. In many cases, the local staff will need you (as an outsider) to give credibility to their ideas. While this is sometimes uncomfortable for someone from a Western culture, it may be the only way that staff who are relatively junior can initiate changes in their practices. As you are working, you will find it relatively easy to identify the keen staff, so get to know them and find out what they would like to do to improve organizational practices.

1.7 Listen to their advice and be willing to move slowly

While identifying the keen staff is relatively easy, actually getting change to happen is a lot harder. As a Westerner you will probably feel that once the decision to change has been made, the plan of action will soon follow. However, once you start to try and drive the change forward, you are likely to find that there are many unforeseen obstacles thrown up in the way.

Westerners may tend to believe that things happening more or less in a linear fashion – i.e., once we decide to make a change and the idea has been agreed by whatever authority is necessary, then we can just go ahead and do it! This is unlikely to be so in a developing country. In many cases, people are not used to moving ideas from discussion to practice. They may lack the authority to agree to any of the changes that are mooted and they may be very nervous about doing anything that is different in case it is 'wrong.' The culture of blame can be very strong. Listen to what your counterparts say about the obstacles and work with them to develop strategies to overcome them. **This will take time.**

1.8 Provide concrete tools to assist

Combined with the lack of training in project/change implementation, you may find that your counterparts have not had experience in developing tools that will assist in implementation, evaluation, and accountability. Be prepared to develop drafts of these types of documents on your own and then to work with local staff to see how they can be used to assist the change process.

1.9 Know when to push and when to hold back, revisit, revise

Remember that ideas and practices that may be familiar to you may be completely foreign to your counterparts. Sometimes you will feel you've got agreement about change only to find that your ideas have been put on hold or overtaken by something else that is seen by everyone else as more important. While you may feel really frustrated and at times undervalued, try to remember that you are assisting others to move towards a goal and that they will do it in their own way and at their own pace. Generally it is better to sit quietly to one side and wait until the time seems right to start again. Occasionally gently raise the idea and see whether or not anyone is interested in progressing it. If there is no interest, then wait. You may need to explain and re-explain what you mean, as local staff may say that they understand when actually they do not. They may not wish to offend you, or perhaps "lose face" by admitting that they do not understand something. If something you suggest keeps getting blocked, then leave it and move on – you can come back to it later if it still seems necessary.

1.10 Do not ignore the "What's in it for me?" factor

It is human nature to resist change – although one way to make it effective is to think about how it will improve the life of those involved, or how it will contribute to them being recognised as innovators and leaders. Sell this to the staff likely to be affected, and persuade them about the value of the identified change. This is slightly different in a developing country, where local staff may not want to 'put their heads up' and be recognised or stand out. In a country where there are no consequences for poor practice and where doing the same things each day causes no difficulties in terms of performing satisfactorily at work, addressing this factor can be challenging.

The proposed change needs to benefit all participants in some way – e.g., by making their work life easier, by giving them better knowledge and professional recognition, or by creating a culture of accountability. It is important that you try and identify the benefits for all stakeholders before attempting any changes to practice, as these can be powerful persuaders.

1.11 Be prepared for setbacks and unexpected outcomes

Even if you are culturally sensitive, build good relationships, work hard and so forth, you still may find that nothing happens. What can you do? Firstly, recognise that this is not an unusual occurrence. Secondly, try and find out what else is going on in the work place, what new government directives have happened or what new priorities have been identified. Other activities will often get in the way of your work. Try to remember that the staff you are working with have full-time positions and they are subject to all sorts of pressures that we may find difficult to understand. Their day-to-day work is often more important than making changes to their practice. You have a full-time job designed to change practice – they are often involved in change, in addition to everything else they are expected to do.

Therefore, it is not surprising that our ideas might often be put to one side in favour of other things. The trick is to be ready to assist when (for example) an outside accreditation body mandates a

change which is similar to something you've been trying to achieve for the past six months. Provide whatever tools and advice you have and the change may well happen in a completely different way to that which you originally anticipated.

Remember that – without you there sowing the seeds – there would be nowhere for your counterparts to start the change process. Don't despair if it feels as if your ideas have been taken and used without recognition or credit being given. The point of development work is for your counterparts to develop the knowledge and skills to make effective changes to practice. If you see improvements, applaud them (and then look for ways to make the changes even better).

1.12 Acknowledge that the process/change may happen in unexpected ways

Finally, change can occur in a number of ways. You may find that you have made a proposal for change a number of months previously which, despite getting endorsement did not happen, so you have not pursued it further. Suddenly, one day you see that staff seem to be doing what you suggested all those months ago, and you wonder, "What happened?" It could be that a local staff member has been away on a course and has come back with this 'new' idea that has now been adopted with great enthusiasm. So you think to yourself, "Why am I here?" Don't be downhearted – it could be that the change which is occurring now has only happened because you planted the initial idea months ago. People may have since had time to get used to it, and when they see it has been endorsed by others elsewhere, then they are willing to go along with the revised practice.

Community Education Program (CEP)
Specific Points and Aids

2. Community Education Aims:

- Improving people's knowledge and awareness about the dangers of drinking incorrectly distilled alcohol or mixing chemicals with alcohol
- Improving producers awareness about the importance of safe distillation practices
- Improving health worker's knowledge of methanol poisoning symptoms and how to handle victims of methanol poisoning to avoid deadly outcomes.

2.1 Where to start?

You need to undertake an MOU (Memorandum of Understanding) with a community-focused educator. This could be a foreign or local agency who works specifically with community issues and is based in your region. LIAM undertook in Indonesia– to work with a university faculty member who specialises in community health. He/she will guide you on your starting points of who you need to meet, and what approvals you require before you start. Some ideas are:

- Government Department of Health
- Government Department of Food and Beverage
- Government Department of Education
- Government Department of Tourism
- Government Department of Law Enforcement

You may need to have meetings at both the local and regional levels to let people in power know who you are, why you are educating about methanol poisoning and how you need their support and assistance. Find out which official ratifications you will require. It is also important to consider engaging with federal government ministries simultaneously. There may be a need to effectuate national policies for things like the use of ethanol in methanol poisoning treatment, or to enable medical schools around the country to have medical poisoning included in their curricula, etc.

An awareness workshop followed by lunch could be a great way to engage and educate about:

- What is methanol poisoning?
- How are locals being poisoned?
- Who is your organization, and why you are seeking to develop these projects?
- How the program works (train the trainer, locals helping locals)
- How methanol poisoning awareness and education will save lives
- Question and Answer time (i.e., what information do they have already and where do they see the greatest need for your involvement?)

This is the start of you building up your own network, so take the time to talk with as many people as possible. Ask who they think you should be contacting and what poisonings have they heard about. Ask, who are the key stakeholders who have been involved in helping to treat those affected by adulterated alcohol and methanol poisonings? Ask if you can meet with them individually to follow up from the workshop. **Build that relationship.**

2.2 Train your trainers

Your educators need to have a thorough understanding of all information required for them to be effective within the communities. Dispelling myths around methanol poisoning deaths can be tricky, especially in countries where alcohol consumption is considered culturally or religiously unacceptable (some religions believe deaths from methanol poisoning are a punishment for a wrong doing). Explain the medical facts and then slowly, softly reinforce that the medical facts are accepted all around the world, citing specific examples of countries in which these treatment practices are taking place.

Your educators will need a thorough knowledge of:

- Who are your funding donors/sponsors, and what are their business and CSR activities and goals?
- What is methanol and what should it be used for?
- The basics about methanol, what it is, how it is used for industrial applications, and why it is improperly added into alcoholic drinks, as well as its effects on the human body (i.e., toxicology). It is important also to understand the distillation process for making alcohol, and why methanol can inadvertently be produced from making alcohol incorrectly. How does the human body process methanol, and what are the symptoms of methanol poisoning?
- Frontline intervention techniques for health centers and community members
- Ethanol as a blocker for methanol poisoning
- Dialysis treatment, why it is required, and how it works, as well as other treatment options (e.g., Fomepizole)
- The long-term effects of methanol poisoning on the body
- The impact of methanol poisoning on communities
- Speaking tools and styles, and how to engage an audience with different learning styles
- **Do what is right, not what is easy**

2.3 Needs Analysis

Media reports, information from local health departments, hospitals involved in methanol poisoning treatment, and members of the public have steered your attention to a specific region within that country. Do not discredit the information that can be sourced from a taxi driver, waitress, expatriate, business owner, or hotel staff member, as well as your own new staff on the ground

within your selected country. Be open-minded and receptive to all information from these and other sources, then assess and filter what will be most appropriate for your particular situation. Putting this together with facts and statistics will be needed to build a clear picture of where to start, making sure there is a definite need for the program as well as a willingness to support and take part. Some communities can become 'over-assisted' with many international aid agencies pushing into the same high-risk regions. While the needs analysis is being carried out, focus on:

- Hospital departments required to treat methanol poisoning, i.e. ambulance, triage, Accident and Emergency, dialysis unit
- How easy was it to initiate and maintain contact with department managers and staff?
- How forthcoming are management and staff with assistance and information? Sell the program so they see the need as well as the benefits the hospital will receive.
- Is there a person in each department who could be your focal contact point moving forward?
- Be clear on your goals, objectives and scope of the program – engage people so they understand the need, objectives and positive outcomes. Alleviate all suspicion of what the program could be.
- Choose the right tools to engage the audience depending on education, learning methods – keeping in mind time, manpower, and budget constraints.
- Flexibility
- Professionalism

We have found it advantageous to run a mini training program on our first visit to a region. This gives factual information to officials and community leaders about methanol poisoning, what the program will offer, and how taking part in our program will make their region a better and safer place to be part of. You may need to spend a few days in these communities to build up trust. Hopefully this will make it easier to get the necessary information from which you can develop an appropriate Needs Analysis.

2.4 Starting in the chosen region

Make sure you have built trust, communication lines, and realistic expectations before launching any programs in your selected regions. This may take multiple calls and visits to the region. Start slowly with a realistic training timeline.

Have you considered?

- Ensuring all appropriate local authorities have given you authorization to run the programs
- Your educators are confident in the message they are delivering.
- The village/region has confirmed dates and locations for the trainings.
- Specific learning methods will have the greatest impact on regions, and these might be vastly different than those undertaken in the West (i.e., a mix of interactive question and answer sessions, educational videos, traditional dancers or cultural performers, written materials, social and online media, web sites, etc.).
- The safety of staff and attendees

2.5 Community Education Plan

The Community Education Program (CEP) is made up of three training modules:

Module 1 - Health Worker Training (HWT) – educating local health workers about methanol, its uses, methanol poisoning symptoms, diagnosis tools and treatment focusing on front-line intervention, and ethanol for the treatment of methanol poisoning. (The depth of medical information to be provided will vary according to participants' needs). Allow for and encourage extensive Q&A time.

Module 2a – Community & Village Education (CVE)
Module 2b – Community Student Education (CSE)

Improve socialization using education videos, traditional dancers, interactive discussions, and written material, all providing information about methanol poisoning, symptoms, and how to help a friend.

Module 3 - Producer Training – Teaching alcohol producers safe distillation practices, how to monitor the temperature during distillation to reduce the production of methanol, as well as general safe practices and the risks to communities from drinking adulterated alcohol. In many countries, locally produced alcohol (i.e., moonshine, arak, ogogoro, etc.) is used for cultural and religious ceremonies and is often legal and also often the only means of income for local communities. Programs seeking to address methanol poisonings from improperly distilled alcohol should not seek to eradicate this from communities, but rather to help local producers develop safe alcohol based on sound scientific principles and measured preparations that will mitigate the risk of improperly developed spirits entering the community

Medical Education Program (MEP): Specific Points and Aids

3. Medical Education Aims:

- Improving people's knowledge and awareness of the dangers of methanol poisoning
- Develop skills for the recognition and treatment of methanol poisoning in the emergency departments of hospitals.
- Improve the skills of key clinical staff in treating those who have been poisoned and who need hemodialysis and intensive care.
- Build a long-term strategy to address prevention and early intervention of unnecessary deaths of local and international people from methanol poisoning.

3.1 Where to start?

You should undertake an MOU (Memorandum of Understanding) with a major training hospital. This could be a private or public one. Public hospital staff may be better connected to the community health department of universities, which will aid getting into regional hospitals. Does the hospital have a nursing director who could be the face of your program? Motivated, connected medical staff need to be engaged and chosen to host and run your medical programs. You are going

to need doctors and nurses from differing specialties to provide your program with a diverse range of medical information. They could be:

- Paramedic
- Triage Nurse
- Accident and Emergency (A&E) Doctor
- Nephrologist
- Toxicologist
- Nursing Director
- Medical Educator

They will guide you on your starting points of who you need to meet and what approvals you require before you start. Some ideas are:

- Government Department of Health
- Government Department of Food and Beverage
- Government Department of Education
- Government Department of Tourism
- Government Department of Law Enforcement

You are becoming another training tool for the hospital – you will be sharing their staff, so be mindful of the commitment the program will require away from their normal job. Engage their bosses so that everyone is fully aware of the medical benefits –not only the hospital (great for accreditation ratings) – but for the individual team member gaining further medical training.

Your first needs analysis will be on your hosting hospital. Be aware that you may need to provide some basic triage systems, patient assessment on arrival models, etc. Be clear on what you are bringing to the hospital. Meet with the hospital bosses and let them know who you are, find out official ratifications you will require, tell them why you are educating about methanol poisoning and how you need their support and assistance. This should also include understanding their facilities and if they are lacking in certain equipment or items which are critical toward the treatment of methanol poisoning victims. An awareness workshop followed by lunch could be a great way to engage and educate about:

- What is methanol poisoning?
- How are locals being poisoned?
- Who you are
- How the program works (train the trainer, locals helping locals)
- How educating about methanol poisoning will save lives
- Q&A time (what information do they have?)

This is the start of you building up your own network, so take the time to talk with as many people as possible. Ask who they think you should be contacting, and what poisonings they have heard of. Ask if you can meet with them individually to follow up from the workshop. **Build that relationship.**

3.2 Train your trainers

Your educators need to have a thorough understanding of all information required for them to be effective within the hospitals. Dispelling myths around methanol poisoning deaths can be tricky. Explain the medical facts and then – slowly and softly, reinforce that the medical facts are accepted all around the world and share some best practices happening in other countries facing methanol poisoning challenges. (Some religions believe deaths from methanol poisoning are a punishment for a wrong-doing).

Your educators will need thorough knowledge of:

- Who are your funding donors/sponsors, and what are their business and CSR activities and goals?
- What is methanol and what should it be used for?
- The basics about methanol, what it is, how it is used for industrial applications, and why it is improperly added into alcoholic drinks, as well as its effects on the human body (i.e., toxicology). It is important also to understand the distillation process for making alcohol, and why methanol can inadvertently be produced from making alcohol incorrectly. How does the human body process methanol, and what are the symptoms of methanol poisoning?
- Frontline intervention techniques for health centers and community members
- Diagnostic tools
- Ethanol as a blocker for methanol poisoning
- Dialysis treatment and other options (e.g., Fomepizole)
- The long-term effects of methanol poisoning on the body
- Speaking tools and styles, and how to engage an audience with different learning styles
- **Do what is right, not what is easy**

3.3 Needs Analysis

Hospitals in developing countries differ widely in terms of resources available and the training and experience of doctors, nurses, and other medical professionals. You will need to look at a wide range of issues, beyond simply asking about methanol poisoning cases being treated. Ask yourself whether you have received politically correct responses or valuable, honest answers. Remember not to criticise or react to processes being different to what you are expecting. You are assessing the baseline from where to begin your work, and again this baseline can vary widely from hospital to hospital and among various local community clinics.

Media reports, information from local health departments, hospitals involved in methanol poisoning treatment, and members of the public have steered your attention to a specific region within that country. Do not discredit the information that can be sourced from a taxi driver, waitress, expatriate, business owner, or hotel staff member, as well as your own new staff on the ground

within your selected country. Be open-minded and receptive to all information from these and other sources, then assess and filter what will be most appropriate for your particular situation.

Putting this together with facts and statistics will be needed to build a clear picture of where to start, what level of treated cases the hospital has seen, and what level the hospital is at across all necessary departments. While the needs analysis is being carried out, focus on:

- How easy was it to initiate and maintain contact with village elders, regional government representatives, etc.?
- How forthcoming were locals with assistance and information? Sell the program so that they see the need for the methanol education program.
- Logistics – is it relatively easy to get in and out of the region? Consider time/cost factors for travel, visas, etc.
- Is there a village person or community elder who could be your focal contact point moving forward?
- It is important to involve local religious leaders (e.g., imams) who wield considerable influence in local decision-making circles.
- Be clear on your goals, objectives and scope of the program – engage people so they understand the need, objectives and positive outcomes. Alleviate all suspicion of what the program could be.
- Choose the right tools to engage the audience depending on education and learning methods – keeping in mind time, manpower, and budget constraints.
- Flexibility
- Professionalism

We found it advantageous to run two toxicology workshops first. This enabled us to discuss methanol poisoning within the realms of other poisonings, while enabling us to engage with the doctors and nurses using a broader range of topics. If you do not already have a hospital insider, this process will be slow. Being patient and methodical will ensure that you lay the correct foundation for your program.

3.4 Starting in the chosen hospital

Make sure you have built trust, communication lines, and realistic expectations. This may take multiple calls and visits to the hospital. Start slowly with a realistic training timeline.

Have you considered?

- Have all the necessary authorities given you authorization to run the programs?
- Are your educators confident on the message they are delivering?
- Has the hospital confirmed dates and assisted with attendees?
- Have learning methods been catered for with a mix of interactive Q&A sessions, educational videos, written materials, online & social media tools, and information resources that hospital staff can access anytime as they undertake their work?
- Safety of staff and attendees?

3.5 Medical Education Plan

The Medical Education Program (MEP) is made up of three training modules:

Module 1 – Regional Hospital/Clinic Methanol Training (HCT) – What methanol is, what it is used for, methanol poisoning symptoms, diagnosis tools and treatment focusing on front line intervention, ethanol for the treatment of methanol poisoning, dialysis treatment and why it is necessary to compliment ethanol treatment. (Depth of medical information will vary according to participants' needs). This is based on regional hospitals transferring patients to major hospital for dialysis.

Module 2 – Major Hospital training (MHT) – What methanol is, what it is used for, methanol poisoning symptoms, diagnosis tools and treatment focusing on Ambulance, A&E, and Dialysis. Ethanol for the treatment of methanol poisoning, dialysis treatment, and why both dialysis treatment and ethanol or Fomepizole treatment must be used together. (Depth of medical information will vary according to participants' needs).

Module 3 – Doctors working outside of hospitals – Front-line intervention training for General Practitioners, doctors in-residence at hotels, and Community Doctors.

Your training may have differing focuses along the way (e.g., workshops for paramedics, A&E training, and dialysis training). Start within your host hospital and expand to neighboring hospitals as time permits.

Don't forget social media as a way to 'advertise' the program. Get articles in the paper and on TV, and build close relationships with appropriate media to showcase not only the methanol poisoning issue, but also the training you are providing and how you are working with local teams in a long-term commitment to save lives. Get people talking about methanol poisoning, and identify ways to bring the topic out into the open, especially in markets where it might be culturally or religiously sensitive or prohibited.

4. Training Equipment

Below you will find various information and examples to assist you in putting together and running your training workshops. Some is specific to either CEP or MEP, some is generic. Knowing your audience prior to your presentation will dictate what you require. Remember, make your training workshops dynamic and engaging.

4.1 Media Coverage of Global Methanol Poisoning Cases

Indonesia: Bali (July 2015)

1. http://indosurflife.com/2015/07/two-tourists-dead-from-methanol-poisoning-in-bali/
2. http://bali.coconuts.co/2015/07/28/oscars-bar-owner-feels-cornered-after-methanol-poisoning-allegations

India (June 2015)

1. https://en.wikipedia.org/wiki/2015_Mumbai_alcohol_poisoning_incident
2. http://www.bbc.com/news/world-asia-india-33224514
3. http://indianexpress.com/article/cities/mumbai/doctors-use-ethanol-to-counter-methyl-alcohol-poisoning/

Nigeria (2015)

Kenya (2015)

Pakistan (2014)

1. http://www.abc.net.au/news/2014-10-09/crackdown-after-homemade-liquor-kills-18-in-pakistan/5800252

Indonesia (2014)

1. http://www.mamamia.com.au/news/methanol-poisonings-in-bali/
2. http://www.dailymail.co.uk/news/article-2659165/Backpacker-died-poisoned-toxic-gin-mixed-methanol-bought-shop-Indonesian-holiday.html

Indonesia (2013)

1. http://www.baliadvertiser.biz/articles/paradise/2013/poison.html

2. http://www.theaustralian.com.au/news/perth-teenager-liam-davies-dies-after-lombok-methanol-poisoning/story-e6frg6n6-1226548400655

3. http://www.heraldsun.com.au/news/national/perth-teenagter-liam-davies-in-a-critical-condition-after-bali-drink-spiking/story-fndo486p-1226547547526

4. http://www.themalaymailonline.com/world/article/indonesia-denies-german-brothers-deaths-suspicious

Czech Republic (2012)

https://en.wikipedia.org/wiki/2012_Czech_Republic_methanol_poisonings

Indonesia (July 2011)

1. http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10770049

Canada (2000)

1. http://www.cbc.ca/news/canada/second-teen-dies-from-methanol-poisoning-1.252260

Vietnam

1. http://www.thanhniennews.com/health/vietnam-man-dies-of-methanol-poisoning-24020.html

2. http://english.vietnamnet.vn/fms/society/66607/doctors-warn-of-alcohol-poisoning-during-tet.html

3. http://saigoneer.com/saigon-health/4002-medical-musings-beware-of-fake-alcohol-in-vietnam

4. http://tuoitrenews.vn/society/15843/liquor-products-that-caused-5-deaths-under-recall

These are just a few samples of news articles available that have covered the methanol poisoning issue globally.

4.2 Medical Reference Materials

4.2.1: First Aid for Suspected Methanol Poisoning

Prevention is the most effective measure to counter this significant public health issue. Non-commercially distilled ethanol (without regulated quality and safety controls) poses a potentially lethal risk for anyone who ingests it. The only definitive treatment for methanol poisoning is haemodialysis. Haemodialysis helps to maintain the body's chemical balance – including substances like potassium, sodium and chloride – and helps to keep a patient's blood pressure under control. For poisoned patients without immediate access to haemodialysis, or for those awaiting haemodialysis, the following is a stepwise guide to management.

1. **When to suspect methanol poisoning?**
   Headache, blurred vision, rapid or deep breathing, drowsiness and/or confusion after drinking illicit alcohol are all warning signs of poisoning. These symptoms can occur 12-24 hours after exposure, and all of these patients require tertiary hospital care.

2. **Arrange transfer to a major hospital with dialysis facilities**

3. **Give the patient ethanol to drink –**
   This blocks toxicity from methanol and can reduce further poisoning.
   For adults, give 1.8ml of spirits per 1 kg of body weight (for a 70kg adult administer three 40mL shots) of spirit such as Vodka, Gin, or Whisky, with a maintenance dose of 0.40ml/kg (for a 70kg adult one 40ml shot) per hour. This will stop the poisoning from getting worse while transferring for haemodialysis.

   In U.S. customary units, this would equate to giving an adult patient an initial 0.06 ounces of spirits for each 2.2 lbs of body weight (i.e., for an adult who weighs 154 lbs, administer three shots of spirits at 1.35 oz. per shot) with a maintenance dose per hour of 0.1 oz./lb (i.e., for a 154 lb adult, administer one 1.35 oz. shot per hour).

   If the patient is drowsy or unconscious, airway protection with intubation should be performed where possible. If not possible, the patient should be administered oral ethanol in the safest way possible, which would include sitting the patient upright and administering ethanol via a nasogastric tube.

This is a time-critical situation for a life threatening emergency, and this management guide should be commenced as soon as possible with any person who has suspected methanol poisoning.

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4.2.2: Management of Suspected Methanol Poisoning

Methanol Poisoning Treatment Guidelines

Summarized from the literature

Methanol poisonings occur frequently globally, and in recent years outbreaks have occurred in Cambodia, Czech Republic, Ecuador, Estonia, India, Indonesia, Iran, Kenya, Libya, Nicaragua, Norway, Pakistan, Turkey and Uganda. The size of these outbreaks has ranged from 20 to over 800 victims, with case fatality rates of over 30%.[1]

Since 1949, the treatment of choice for methanol poisoning has been ethanol,[2] which acts to block the metabolism of methanol into formaldehyde and formic acid. Because of concerns about the safety of administering ethanol, a new drug, Fomepizole*, was developed.[1] However, due to the high cost of use (estimated to be in the order of $4000USD per person),[3] ethanol remains the drug of choice in many countries.[4,5]

Key facts[1]

- Methanol is a widely available chemical with a range of uses including as a solvent, in chemical synthesis and as a fuel.
- Methanol is not poisonous when not ingested, however, once ingested, it is metabolised to highly toxic compounds, which can cause blindness, coma and metabolic disturbances that can be life-threatening.[6]
- Victims often only seek medical care after a significant delay, mainly because there is a latent period between ingestion and toxic effects. Late medical care contributes to the high level of morbidity and mortality seen in many methanol poisoning outbreaks.[7]
- Outbreaks of methanol poisoning occur when methanol is added to illicitly- or informally-produced alcoholic drinks.
- Because patients with methanol poisoning often need intensive medical care, outbreaks of methanol poisoning can rapidly overwhelm medical facilities.[8]
- Outbreaks have occurred in all regions in recent years.

Methanol (also known as methyl alcohol, wood alcohol, wood spirits and carbinol), is a widely available chemical. Methanol has many industrial applications and is also found in a number of household products including varnishes, antifreeze, windscreen wash, and fuel for model aircraft. Globally, approximately 225 million litres of methanol is used each day.[9] Outbreaks of methanol poisoning arise from the consumption of adulterated, counterfeit or unregulated production of spirit drinks.

Signs and Symptoms
The major toxic effects do not manifest until methanol has been metabolized to formic acid and this has accumulated to toxic levels. There is, therefore, a latent period between the consumption

of methanol and the onset of symptoms and signs. Co-ingestion of ethanol will delay metabolism and further delay the onset of toxicity for many hours.[1]

In the first few hours the patient may become drowsy, unsteady and disinhibited; however, since poisoning often occurs in the context of drinking alcohol this may not be noticed. After a variable period of time, victims start to develop headache, vomiting, abdominal pain and vertigo. They may start to hyperventilate and feel breathless. Vision is often affected, with blindness in severe cases. Coma, convulsions, and death from respiratory arrest may ensue.[5,7] Patients who survive may suffer permanent visual impairment.[10, 11,12]

Diagnosis

Methanol as an alcohol is rapidly absorbed through gastro-intestinal tract, so the average absorption half-life is 5 minutes and reaches maximum serum concentration within 30 – 60 minutes and will dissolve well in body water.[5] Methanol is not toxic by itself, but its metabolites are toxic.[9] Methanol is metabolised in different phases mainly in the liver. The initial enzyme that it is metabolised to is alcohol dehydrogenase (ADH).

Clinical Manifestations

- Clinical manifestations of poisoning with methanol start within 0.5 – 4 hours of ingestion and include nausea, vomiting, abdominal pain, confusion, drowsiness and central nervous system suppression. Patients usually do not seek help at this stage.[5]
- After a latent period of 6 – 24 hours (depending on the dose absorbed), decompensated metabolic acidosis occur which induces blurred vision, photophobia, changes in visual field, accommodation disorder, diplopia, blindness and less commonly nystagmus.[5,13,14]
- Blurred vision with unaltered consciousness is a strongly suspicious of methanol poisoning.[5,14]
- Co-ingestion of ethanol, can delay symptoms of methanol poisoning for more than 24 hours and sometimes up to 72 hours.
- Severe metabolic acidosis with anion gap and increased osmolality strongly suggest methanol and or ethylene glycol poisoning. Severity of clinical manifestations and mortality are strongly associated with the severity of central nervous system depression and metabolic acidosis, but not with serum methanol concentration.[5]
- As poisoning progresses the serum concentration of methanol decreases while that of its metabolites, including formate, increases. Metabolic acidosis with a high anion gap (a measure of the difference between positively charged ions and negatively charged ions in plasma) is typical of methanol poisoning. The measurement of formate is a simpler analysis than that of methanol,[13,14] however, this test may not be readily available in developing countries, where diagnosis will need to be made on the patient's history, presenting symptoms and the presence of severe metabolic acidosis with anion gap.

Treatment

The main principles of treatment are to prevent further metabolism of methanol, correct metabolic abnormalities and provide other supportive care. Metabolism of methanol can be blocked by the administration of ethanol or fomepizole.[1,4, 5,6, 14]

FIRST AID[15] Give the patient ethanol to drink[14,15]

This blocks toxicity from methanol and can prevent further poisoning.
To adults give 1.8mL/kg (or a 70kg adult three 40mL shots) of spirit such as Vodka, Gin, Whisky, with a maintenance dose of 0.40ml/kg (for a 70kg adult one 40mL shot) per hour. This will stop the poisoning from getting worse while transferring for haemodialysis.

If the patient is drowsy or unconscious, airway protection with intubation and hyperventilation should be performed where possible. If not possible, the patient should be administered oral ethanol in the safest way possible, which would include sitting the patient upright and administering ethanol via a nasogastric tube.,[514,15]

Arrange transfer to a major hospital with dialysis facilities

All of these patients require tertiary hospital care. Poisoning can be confirmed with a simple formate assay OR through assessment of clinical history and assessment of the patient's arterial blood gases to assess the level of metabolic acidosis,[5,15] see details below.[14]

A. **Asymptomatic patients, normal blood gas**: Observe.
B. **pH>7.2, HCO_3>20:** Give bicarbonate. Observe minimum 24 hours
C. **pH 7.0-7.2, HCO_3 10-20:** Give bicarbonate, ethanol (or Fomepizole), consider Haemodialysis
D. **pH<7.2, HCO_3<10:** Give bicarbonate, Fomepizole (or ethanol), Haemodialysis, folinic acid

Folinic acid

If available this should be administered orally at a dose of 2mg/kg.[14]

In Conclusion

Currently there are two antidotes used to block ADH metabolism: ethanol, a competitive ADH substrate, and Fomepizole, an ADH inhibitor. Supportive measures may include the correction of acidosis with sodium bicarbonate, intubation and mechanical ventilation and the use of extracorporeal elimination such as haemodialysis.[4,5,14,15]

Despite concerns about the safety and use of oral ethanol, very few adverse effects have been reported in the literature[4,5,16]. When compared to Fomepizole, the number of adverse events is the same for both treatments.[4,16] Historically, ethanol has been used as an antidote and is still standard therapy in some centres, due to its low cost and physician familiarity.[4] However, for ethanol to be an effective antidote, most experts feel the serum level must be carefully titrated and maintained between 22 and 33 umol/L.[4] Fomepizole, on the other hand, is administered as a weight-based fixed dose at regular intervals, without the need for monitoring of serum levels[4], however, the cost of the drug may make its use impractical.[3]

The consequences of not treating people who may have been poisoned through the ingestion of methanol are so serious, that the risk of *not treating* is greater than the *risk of treating* patients with oral ethanol. The mortality from poisoning reported in the literature is over 30% with many others suffering severe and permanent brain damage and blindness. While follow-up data is scarce, a study which followed up a group of patients from Estonia[16] found that, damage to patients seen at the time of initial diagnosis was still present six years later. Further, apparently new neurological and visual complications were also identified in

approximately one third of the patients. Some 35% of the patients initially discharged with sequelae and 29% discharged without sequelae were dead six years later.

Because of the severe consequences of not treating suspected methanol poisoning it seems that treatment with a readily available and relatively cheap antidote such as ethanol is a socially responsible, evidence-based and practical treatment. Many of the victims of methanol poisoning are young men who could otherwise have led productive and useful lives.

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*Fomepizole was added to the WHO Essential Medicines List in 2013.

4.4: Examples of Information Flyers

- Banners
- Note pads
- Public education flyers
- Public education postcards
- Public education warnings (business cards)

Go to www.methanol.org and www.Liamcharity.com to download these examples, and/or contact The LIAM Charitable Fund monty.rock@bigpond.com) or Methanol Institute (MI – sg@methanol.org) for a copy of these resources.

4.5: Training Videos

Training Video #1 – Community Village education video example
Training Video #2 – Medical Education Video example

Go to www.methanol.org and www.Liamcharity.com to download these examples, and/or contact The LIAM Charitable Fund monty.rock@bigpond.com) or Methanol Institute (MI – sg@methanol.org) for a copy of these resources.

Below is a link to a television documentary that was aired in Australia the month after Liam died. This documentary may give you an insight into the struggles families dealing with methanol poisoning may encounter within themselves, as well as with in-country authorities.

"Poison in Paradise:" http://www.abc.net.au/7.30/content/2013/s3667764.htm

4.6 Community Education Presentation (CEP) Examples

Module 1	Health worker training (PowerPoint example)
Module 2a	Community and Village education (PowerPoint example)
Module 2b	Community Student Education (PowerPoint example)
Module 3	Producer training (PowerPoint example)

Go to www.methanol.org and www.Liamcharity.com to download these examples, and/or contact The LIAM Charitable Fund monty.rock@bigpond.com) or Methanol Institute (MI – sg@methanol.org) for a copy of these resources.

4.7 Medical Education Presentation (MEP) Examples

Module 1	Regional hospital/clinic (PowerPoint example)
Module 2	Major general hospitals (PowerPoint example)
Module 3	Doctors working outside of hospitals (PowerPoint example)

Go to www.methanol.org and www.Liamcharity.com to download these examples, and/or contact The LIAM Charitable Fund monty.rock@bigpond.com) or Methanol Institute (MI – sg@methanol.org) for a copy of these resources.

5. Timeline

We have outlined below a list of targets you will be wanting to reach in five years. Keeping in mind you will have times where things come together well for you but you will also come up against resistance to change, uncertainty in regard to your intentions, as well as authorities not wanting to be the 'one' who makes the final decision. This is intended as a guideline only. If you are able to move ahead more quickly, then please do!

It is very important from day one that you pay extra attention to building honest and strong working relationships with authorities, and set the culture and ethos that your team will follow, reminding them regularly that what you do today paves the way for future plans.

Five-year timeline

New Country/Region pre-planning	-Understand legal requirements.
Lay your Foundations **0-3 months**	-Obtain work permits, visas. -Study political, religious and regional climates. -Reference section 1-1.12 training module.
MOU with major training hospital **3-6 months** (MEP)	-Use existing contacts with foreign aid groups to sell the need for the training programs. Host general poisoning treatment workshops focusing on methanol poisoning to build relationships and contacts. -Reference section 3-3.3.
Build hospital competencies 6-12 months (ongoing)	-Develop a Needs Analysis. -Conduct specialty-specific training e.g., A&E processes, medical staff. Provide training including ICU and Dialysis. -Reference section 3.2-3.5.

Five-year timeline (continued)

Other Hospital, clinic, Specialist training 8 months (ongoing)	-Expand the training to other hospitals, clinic nurses, doctors, specialists. Provide front line medical training to the Police, increasing both awareness of methanol poisoning cases and front line medical knowledge. Invite medical staff from the region to workshops, not just your hospital. Workshops can work for 50-120 people. -Arrange medical staff exchanges. -Reference 3.2-3.5.
Engage University 10 months (CEP)	-Use relationships built from hospital programs to engage community health faculties. -Reference 1-1.12. -Reference 2-2.2.
MOU with University 12-16 months	-Develop a Needs Analysis. -Reference 2.1-2.5.
Community Education Training 16 months (ongoing)	-Once you start your first community training, word will spread. Take note of other areas having methanol poisoning issues. -Conduct health clinic training first (use team members from the Hospital program to assist with medical front line education. -Begin community education Training. -Begin producer training.

Five-year timeline (continued)

MEP 24-36 months	-Expand your program to another region, taking into consideration logistics expenses, cultural differences, etc. You may wish to train a whole new team or use your medical education team from your original hospital.
CEP 28-52 months	-Expand your program to more regions. Concentrate on areas with high methanol poisonings recorded, as well as known producer areas.
MEP 36-48 months	-You should be seeing the benefit of your train the trainer model. Provide refresher courses inviting medical staff from your past clinics and hospitals. -Assess if your sustainability focus will be effective. If not, alter training to ensure sustainability once you finish. -Arrange staff exchanges to your two hospitals from regional hospitals.
MEP 40-60 months	-The last 16 months will see your program evolve to a more pro-active focus while winding back your medical training. You are wanting to ensure that future medical staff have correct methanol poisoning information while they are students. -Guest speaking at medical conferences gives you wider audience. -Is methanol poisoning medical treatment part of curriculum at medical universities? If not, engage the education department to make changes. -Employ a lecturer to provide methanol poisoning treatment presentations to doctors and nurses. -Maximise your social media outlets to keep people thinking about methanol poisoning risks.

Five-year timeline (continued)

CEP 52-60 months	-The last year will see you shift your focus to ensure sustainability. Refresher courses are needed for community clinics and producers to reinforce the methanol poisoning information. -Ensure that methanol poisoning treatment and knowledge is part of the education department curriculum for community health faculties as well as education faculties. -Engage a lecturer to provide methanol poisoning education presentations to community health students, hospitality students, tourism students, and teacher students. -Maximise your social media outlets. Push messages on mobile phones prior to festive events.

As stated, this timeline is to be used as a guide only. Model your training with sustainability as the foundation. You may have enough budget and manpower to engage more hospitals and regions, so do not limit yourself. Ensure you get media coverage of as many training workshops as possible, this doubles as education and advertising. If you hear of methanol poisoning cases ensure you maximise the media coverage to raise awareness.

Cultural sensitivity, clear vision and pushing for what is right are what you carry forward!