The Medical Response to Disaster Overseas

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Experience of recent large scale disasters has highlighted the problems and benefits of foreign medical teams

When medical facilities are overwhelmed a disaster has occurred This may be confined to a single department of a hospital or involve a whole country. Wherever it will produce chaos, the depth and duration of that chaos will be determined by the time it takes to restore normal facilities

Outside help maybe summoned or simply arrive in an attempt to support those intimately involved with the disaster The unfamiliarity of this "outside help" with "local" arrangements can increase rather than decrease the chaos for a while. This can occur in a single hospital when one department attempts to assist another near, but unfamiliar, department in a time of crisis. The potential for an even greater increase in chaos arises when the teams are foreign in culture, training, experience and language

In spite of the problems there are circumstances where "outside" medical teams can be of benefit and help to reduce the period of chaos. Study of those occasions when obvious benefit has occurred has allowed basic "rules of engagement" to be drawn up

1. Only go if you are asked

Arriving in a foreign country with no official contacts, no accommodation and nowhere to work simply adds to the refugee and homeless problem they already have. Officials who have to look after you cannot be looking after the victims of the disaster Time spent identifying a clear and welcome route through to the disaster will be rewarded by an overall reduced time to active and useful involvement

2. When there, do what they want you to do

If the chaos is to be reduced there must be a plan and one plan only The only plan that will work is the one drawn up by the local authorities Find out what it is and how you can fit into it It may be that you are required to keep other services going while the locals deal with the disaster Whatever, if it is what they want it will help

3. Be self-sufficient in food, water, clothing, shelter and medicines

If you are not you will once again be adding to the disaster rather than relieving it Information is often scarce and confusing in the immediate aftermath. If the team is entirely self-sufficient they will be functional even when things are not quite how they were expected

4. Emergency medicine and public health medicine are interdependent

The long-term outlook for the community is clearly dependent on the re-establishment of public health services However, while this is happening many lives can be lost from easily treatable conditions. Much disability can be prevented by the early application of basic emergency medical and surgical skills An emergency team, if integrated into the local system, can fill this therapeutic vacuum for the time it takes for longer term facilities to be put in place.

5. Co-operation and not competition

The success of the response will depend upon how well everyone works with each other to carry out the plans of the host nations.

6. Prepare, practise and have a plan

Disaster work is difficult and not everyone is suited to it. Teams should be identified beforehand rather than be an ad hoc arrangement for a single event.

The type of work falls into several categories:

1. Assessment

Medical aid that is dispatched to a country that doesn't know what it is, what it is used for or where it should go is aid that will stay cluttering up the airport. This is a waste of time, effort and money and blocks the arrival of that which is truly needed. If aid is to be most effective it must be targeted on the needs of those particular people at that particular time. The most useful response in the early stages is often to send out an assessment team to find out the needs of the victims. The earthquake in Armenia was an example of large amounts of western aid despatched to a country unfamiliar with its use The response of the UK Overseas Development Administration to Bosnia, however, has been based on assessment missions to the hospitals. This has ensured that they have received what they needed rather than what others thought they required

2. Emergency primary care

The sudden displacement of large groups of people will precipitate illness in a previously healthy population. If general health care was already poor the problems will be that much worse. Teams of nurses, doctors and paramedics can very effectively support the health of large groups of people while the wider political and social problems are addressed. The Kurdish refugee crisis was addressed in this way. I was part of the wider response and led a team to the Iran/Iraq border where we could provide medical care to a tented community of over 20,000 people. Children, rigid and moribund with meningitis, responded to intravenous antibiotics The death toll in the camp was decimated by the application of basic emergency medicine. These people were previously well but had been exposed to extraordinary hardship. They succumbed to conditions they would otherwise have resisted and so responded dramatically when care was available. The impact of a drop of medicine in this sea of need must never be underestimated.

3. Emergency surgery

The surgical requirements for victims of severe injuries will continue long after the disaster has passed Victims of the M1 aircrash were still receiving further reconstructive surgery a year later. The victims of the Armenian earthquake still require further procedures When injury is the major component of a disaster, e g after an earthquake, the local surgical services will be overwhelmed for a long time afterwards Foreign teams, when integrated into the local surgical service, can greatly support their colleagues overseas In particular, when a large amount of mutilating surgery is required, e.g. for amputations, the second opinion of a colleague from abroad is often welcome

4. Rescue and resuscitation

This is often thought of as the first medical response to disasters However, the time it takes for the scale of a disaster to be recognised and for foreign aid to be requested is usually longer than the time within which resuscitative measures can be effective Nevertheless rescue workers require the support of medical practitioners in their search for survivors. Even when most if not all are dead medical support to the rescuers is required. They themselves get injured The identification of human tissue is difficult at times and medical help is required. The most effective course of action is always to be prepared and equipped to assist in the rescue phase but to expect to support the survivors.

After the Armenian earthquake many teams arrived too late although tragically many who were rescued died for lack of resuscitation

The Lockerbie aircrash and the Air India crash illustrate graphically the impact on medical services of a large number of dead bodies. Each has to be identified and the possibility of other casualties recognised. In Lockerbie there was concern for the fate of residents who may have been hit by debris or bodies

SUMMARY

If a disaster seems to be overwhelming, don't be overwhelmed If medical aid is targeted and focused on the recognised and identified needs of the victims its benefits will be substantial These benefits will be even greater as recognised training programmes in this challenging but rewarding aspect of medical practice are developed

DISCUSSION

Chair: John Lumley

Claude de Ville I would like to raise quite a few very important points First the criticism on statistics. A lot of the figures presented by Dr Noji are quite nicely rounded to 8,000, 20,000, etc This means it is a guess at local level, a political or a technical guess Then there is the problem of the golden hours. Normally in individual emergency medicine I think we came to the figure of eight hours. For convenience we stretched it to 24 hours and I have seen some statistics with golden hours of 72 hours This gives you a very convenient way, and the excuse, to bring in your team in time. So we have scientifically to come to some understanding of what is the real golden time for local and external response. Then coming to the definition of local Jumping from the local community affected to the international community at large is a kind of short cut If you take a country like Mexico where you have thousands and thousands of volunteers locally – medical volunteers – it makes local a kind of broad definition. It's not Mexico City, it's Mexico, the neighbouring countries, then the rest of the world We have to be a bit more subtle in our definition of local versus external terms. I like very much the emphasis of the last speaker on reconstructive surgery. This is something that doesn't need a major response, where you can take one or two days to really assess the need and where you can have a tremendous impact on the long term for the life of these people. We have been too much focused on the major resuscitations and we need to perhaps look at much more in detail this type of investment where the international community can be more effective.

John Lumley I think it is very important in Advanced Trauma Life Support Systems that the golden hour is one hour I think Dr Redmond laid out beautifully that we cannot get to this acute phase, but that there are many things that can be done and, if you assess accurately, you will send the right persons. Dr Redmond, would you like to comment?

Tony Redmond: One should assess what the local surgical needs are and also what they want. You might go in and say "we would do it this way" and "we will now do it this way for you" but they don't want that. One of our maxims has always been only go when you are asked, and do what they want you to do, because people have their own ways of doing things at their local level and if it is to be effective (after all we are just trying to help the people who have been involved) you must fit into their system And then, as a final point, we have been able to enjoy quite a good medical rapport with people. Over the weeks you are there, try to establish good surgical treatment patterns for the patients And then there is even a longer stage of further reconstructive surgery later, and artificial limbs, and dealing with spinal injuries It goes on a long, long, time I am sure you could go back to Armenia now and do some surgery or have some medical input, even though it's a long time since the earthquake.

John Lumley: Sticking to this point of timing, Dr Noji would you from your experiences consider we have lost most of the impetus after the first six to eight hours, or do you think there is a clear definition of time where you can send useful people?

Eric Noji I think there are stages Each phase has requirements for specific medical specialists Clearly in the first 24-28 hours experts in resuscitation. As time goes on, other health problems start to emerge. Dr Redmond pointed out that you may have a situation where the local medical community has been destroyed and there is a need for primary health care doctors to

provide basic and ongoing medical services We clearly had that problem in Hurricane Hugo and Hurricane Andrew where a lot of the American medical teams went into the area thinking they would be doing trauma surgery and ended up doing equally valuable work in terms of primary services and maternal child health care over the next few weeks So I don't want to give the impression that there is not a need for clinicians out there at 48 hours. There is a need for more reconstructive surgery. There is a problem of complications from the initial injury, wound infections and later type surgery Clearly there is a need for surgeons at that point in time also So I think you have to look at each phase of the disaster which may require a different type of medical specialist.

Roger Feldman An additional comment to add to Dr de Ville's comments In the Guatemala earthquake in 1976 we were actually there within six hours of the earthquake. The idea of assessment, which was a very important one, was to be used to make a decision as to whether additional medical facilities should be brought into the country, but there wasn't enough data to make an adequate decision. But somebody had to make that decision and one of the things that happened is that over the next day-and-a-half enough information accumulated to change the appropriate decision from "bring help" to "don't bring help" By the time an appropriate decision was possible the help was on the way and indeed became (as Dr Redmond pointed out) a burden Where is this hospital going to be located? Who is going to give it water? How are we going to get to it? One of the problems that Dr de Ville brought up was data One of the important things is if it is static data It is not as if it is a number The process of decision making, I think, is a significant element for research because these decisions are made by the hour, and by the six hours they change. And certainly that is a useful area to review as part of a research effort. It is not only the number of 6,000 and 8,000 casualties, it is also the decision making

John Lumley: The important thing is not to say this is a failure but what have we learned from this, or else you never send doctors again. In other words, if we can learn what were the messages, and learn a bit more quickly next time, then we will send appropriate aid or not send aid as the case maybe

Mary Black. I would just like to add to something Dr Redmond was saying We worked together in Yugoslavia, and that is not exactly a sudden impact disaster but more a series of overlapping sudden impact disasters So you don't get the nice sequence of events, you get a series of events that overlap.
The response was often totally inappropriate I don't think it is a function of time. The response to Yugoslavia continues to be inappropriate I remember just before Christmas I had to field a request from a bunch of people who wanted to drive to Sarajevo dressed as Santa Claus to deliver supplies It was a totally inappropriate response and this was several months after the war had started So one of the things we need to look at is how, after the assessments are made, they publicise what is needed and you get out a checklist of what is needed I think this has been a very weak area in responding to disasters.

Howard Baderman. I am an accident and emergency consultant in London and adviser to the Department of Health on emergency medicine. I was fascinated to see the swing of the pendulum in assessment that there should be plural assessments because it's a changing/ developing situation. It may be staccato changes as in Yugoslavia or it may be progressive changes as in Kurdistan refugee camps. It is skilled people, epidemiologists as well as clinicians, who can actually say with this sort of population and this sort of situation in two weeks time it will be measles whereas now it's gastro-enteritis So it is a series of assessments relayed back to other areas within the host country and a wider panorama internationally, if necessary, too. I wonder whether it is appropriate for an audience such as today's to consider also the longer term, where the needs of a population in terms of rebuilding primary health care structures and other public services seems to me to get overlooked by the international community as it is not glamorous Memories fade, other priorities arise on the international scene or indeed within one's own country, and so forth. And there are needs within the communities that have been struck by disasters. For instance, in Armenia, where the needs of children who had been orphaned and the needs of sole survivors of families in terms of ongoing psychiatric care were really very pressing but proved very difficult, (a) to assess, and (b) to meet, because of cultural difficulties and so forth And I would hope that we are now developing a better understanding of how to respond to disasters. We are moving a bit away from the emphasis on six hours, 24 hours of whatever, but we can't forget the months, if not years, that follow a disaster Because communities have emergency needs that they may be ill-equipped to meet even after the phase of reconstructive surgery, which is currently our present focus of attention.

Ian Davis: It's not on this topic, but a question for Dr Coburn who put at the end of his presentation a series of strategies for reducing earthquake risks I was interested that you didn't include preparedness in that. Was that because you didn't regard that as being particularly significant?

Andrew Coburn. Dr Noji concentrated quite a lot on behavioural changes or education. I would have put preparedness before all of my five various options It is a prerequisite for carrying out any of the strategies I had assumed that as given

Michel Lechat What you have just said about moving from the 24 golden hours to the long term needs – I think the message was really that the 24 golden hours was part of the primary health care and self-help for the community. So it is absolutely no contradiction, on the contrary it is to leave the external teams to do what they can do best later on.

John Lumley: It is important that the "intermediate" people leave something behind That is another message that comes out. Some of you perhaps won't be aware that there has recently been set up something called the New Pathfinders which includes a number of people in the room and a number of groups to facilitate people getting to a disaster fast We are looking at links with the military because they are so important on logistics, communications, and so when you get there to have a tent over your head. Dr Redmond is an important part of this. And we are looking very closely at how we link up with Médecins Sans Frontières and anyone else. Hugh Canning has been trying to expand this link with the military for at least 10 years

Claude de Ville I would like to dream and wish perhaps the system will get slower rather than faster

John Lumley: No, the whole idea is that it is to facilitate. That the assessment is the most important of all and people with adequate training is the other aspect – people adequately trained so they know what to expect, and linked with this is the enormous amount of information from the engineering side

Mary Black The issue of the rapid response: in general what people send quickly is often what you don't need because it's what *they* don't need either! It's because it is excess Also, when it arrives people in the field have to do something with it Often they destroy it, sometimes they distribute it because it is in boxes and they don't know what is good and what isn't – and then it just clogs up the whole system I'd like to add to what was said about a rapid response –it should be targeted and rapid to be useful.

John Lumley You were reluctant to put rapid in there. I agree that targeted is the most important of all We shouldn't wipe out all possibility of responding because someone before failed

Mary Black: . which probably links in with the issue of preparedness, that one of the things you have to build into preparedness is how to get exactly what people need, or as near as possible, as quickly as possible

Roger Feldman: I want to add to Dr de Ville's comment Rather than sending things fast, one of the advantages of having rapid assessment, which I doubt he would disagree with, is so you know what is appropriate to send. And just to echo Dr Mary Black, we ended up with enough medicine in Guatemala to fill a whole warehouse It took nearly a year for six pharmacists to logistically go through and decide what it was and where it might be used, by which time it couldn't be used and many of the medicines were things that weren't appropriate anyway If that could have been prevented by rapid assessment and publicity of what was appropriate maybe it would have been avoided.

Robin Spence: I want to raise a slightly different point from Dr Noji about the difficulty of retrieving or lack of retrieved data after the event on the distribution of the types of injuries In particular (because structural engineering and architecture is my concern) the relationship between that and the type of building and the type of collapse it came from, which is exactly the data we need if we are to give better information on designing buildings or how to construct them in such a way that people could survive better I am interested in the fact that there is so little data of this sort. One would have expected medical records to have been kept rather precisely in disasters when histories were taken. You would expect that to be there. But, as Dr Noji says, in our own experience of attempting to collect this data we find it is extremely difficult to get. And I am impressed that he has data on the distribution of the types of injuries in different types of buildings in Armenia. I wonder how hard that data is. More important for this gathering is the question of what we need to do. I think perhaps Dr Noji is the person to answer this. What do we need to do to make sure that this important data is collected and made available?

Eric Noji: It is a key problem for those of us interested in disaster research If you aren't there relatively quickly we call that data perishable. The data is just gone. If you are interested in doing an investigation two or three months later it is very difficult to reconstruct Medical records are generally terrible. Records are difficult to understand with no information on where the injury occurred or where the death occurred. I don't have good answers on how to improve the collection of health impact and engineering information

John Lumley: I think that this is a reflection on this immediate disparate response. If you put a trained military team in you will get good records because this is part of the training.

Speaker from audience: Two points I would like to congratulate you on this meeting – it is so good that I hope you do roughly what we do and report verbatim with the agreement of speakers On a specific point I'd like to ask our Guatemalen expert how it was the first team got it wrong after six hours? Were they not big enough? Did they not have good enough transport? Did they have have enough interdisciplinary diversity? Or were they just stupid?

Roger Feldman. I am not sure I got all the question but I think I can answer part of it. There was an enormous organisation of competent people There was no question of incompetent people making decisions The problem was in adequate data The bulk of the difficulties that didn't occur in Guatemala City – that occurred in rural areas – were very hard to evaluate It wasn't clear how many dead there were and how many were still alive And the question was do you need more surgery space? Do you need more surgeons? Do you need them now and if you do where are you going to put them? And with the information that was available the answer was no we don't, but by that time the military had already decided that the appropriate thing was to put a hospital in that area and flew it in. So within 48 hours that hospital in 16 trucks was on the ground trying to drive to the appropriate area. By which time the second earthquake had occurred and the road to the appropriate area was closed, but it was open ultimately and those trucks drove to that area. But the

decision, had it been made on the third day, would have been "don't send", but the decision was made within 24 hours when the amount of data suggested "yes, I guess we do need it" And it came And it wasn't from lack of competence or intelligent people, or a lot of people worried about the cost. It was the inadequacy of the initial surveillance And I don't know how we could have improved on that because the area affected was large, the difficulties of collecting data were great, and you made a guess

John Lumley So you guessed wrong So what? I mean everyone in this room can quote a failure – let's go for the successes!

Michael Leonard Whilst I realise today we have focused on the medical aspect of the problem, I was encouraged to note that you did feel it was a good idea if civil engineers turned up in the fire brigade team, as it were, to assess the nature of the buildings so that the doctors and others could know the nature of the attention they would have to give I thought that was an important point that should be made and I will certainly make it with the Institution of Civil Engineers.

Permeating right through most of the discussions was a question of buildings and the question of earthquakes This has always interested me whenever I come to these meetings, and I've come to quite a few Earthquakes do tend to predominate, I suppose they are dramatic In actual fact you have raised the question of statistics and the reliability of statistics. There are said to be 10 times as many deaths from storms and 10 times as many deaths from floods. Nevertheless earthquakes permeate all these discussions And that brings up buildings which of course I am interested in I haven't heard the magic words "quality assurance" or "quality control" mentioned this morning It was brought home, and very well, with the slide showing the difference between the damage done in San Francisco and that done in Armenia Now the situation as I understand it in San Francisco was that they had good building codes, good standards set down by the authorities but they also had means to put them into effect Whereas I understand in Armenia they did make an attempt to get the structures right, but they had no facilities whatsoever to see the construction was all right and this, of course, does bring us back to why should it happen in the first place? I think civil engineering has progressed enough for us to make positive contributions to all kinds of things that the doctors have to mend afterwards I will give you an instance in Geneva when I was at the Scientific & Technical Committee of IDNDR. The question of earthquake predictability arose and it seemed that it was very unlikely that there would be much progress in the foreseeable future to identify the time and order of magnitude of an earthquake. So what is the engineer to do? Well, he can of course build to a standard of 5, 6 or 7 Richter's, for example. And the cost may not be all that much. But he can at least prepare for the worst situation It's like trying to choose a car that will have the best protection against damage. You have the same choice with buildings and we can do this A lot of research has been done on earthquakes and building design so we can reduce the chances of a building toppling over, and in the studies we are doing it raises the last point that was mentioned – the question of hospitals and centres for dealing with disasters. We can surely design these so that they are the last buildings that will ever fall down, and access roads to them. We must specifically get the authorities to agree to designing and paying for hospitals and access to be absolutely 100% to cover all potential risks. I think that by these methods, Mr Chairman, we can get a long way ahead from the present situation and maybe it does make less work for the doctors, but it certainly saves a lot of lives.

John Lumley: Thank you for those comments, they are very important. Now I'm a converted doctor and I think most in this room are . Very few want to be there within 48 hours because they know there is little they can do And they want it assessed and they want to send the right people, and they do appreciate that prevention is far more important than cure. It is not a question of competition between doctors and engineers – this is a team effort