Ulster Medical Society

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The Sir Thomas & Lady Edith Dixon Lecture
Cardiovascular Disease Prevention and Management: Current Guidance for Best Practice
Professor Ian Graham
Trinity College, Dublin

Dr Margaret Cupples:

Can I welcome you this evening, and especially welcome Professor Ian Graham for coming up from Dublin, all the more so because he had a little bit of minor surgery this morning. So he has been very good to keep to his commitment this evening, and very much appreciate him coming to tell us something in the line of the standard that we have come to expect over the years for the Sir Thomas and Lady Edith Dixon lecture, which lecture has been endowed by those two individuals who have probably given more to the province than anyone else in Northern Ireland over the years.

They were born at the end of the previous century, they've both lived through both World Wars. I'm not going to recount the various commitments and charitable donations that they gave, but of note they gave Cairndhu the current residential home at Larne, which at the beginning of the second World War was actually given to the country as the voluntary hospital for the war depot supplies for hospitals in Northern Ireland. They also donated one of their three Rolls Royces, to be an ambulance and then after Sir Thomas had died Lady Edith gave, of course, the rose gardens where the rose trials are Lady Dixon Park, and at that same time bequeathed lectures—she made several bequeaths to the Queen's University, but one in particular to the Royal, and it is this lecture that has been loosely connected, thereafter, to the Ulster Medical Society, which we're inviting Professor Graham to give us tonight.

He himself, has a string of achievements through his life. He's just recently retired from being the person in charge of the Adelaide Hospital in Tallaght where he ran the cardiology service, I think, for many years. He has been a professor of preventive cardiology and professor of cardiology at Trinity and RCSI and he is the chair of various European enterprises talking about cardiovascular prevention and management of the disease. So we look forward to hearing what he has to say this evening. Thank you very much.

Professor Ian Graham:

Thank you very much, Margaret, the minor procedure was a brain transplant and it didn't actually take all that well [laughter], unfortunately. I have to say I thought that I was just giving any old talk and then I found it was the Sir Thomas and Lady Edith Dixon lecture and I felt distinctly humbled, and I really do appreciate the very deep honour you have shown to me and I didn't actually put in the slides I put in on the history, which I was also sent, but they were the most formidable philanthropists I understand that he was a man, farmer and a businessman with very much the common touch. I think she was wealthy in her own right but they made so many endowments to the province and particularly to hospitals and to medicine and to this lecture, indeed. He is the kind of man that you would have loved to have met because he sounds like a man with very much humility and the common touch. So I'm really grateful and I'm very grateful to Margaret. There's no way I was going to get out of this—she's one of these serious organisers and I would have sat there—I wouldn't be here, I'd still be having some wine over dinner. But no I wasn't.

Anyway, what I was going to look at was a little bit about the evolution of some of the current guidelines. I'll be talking a lot about the European ones and I apologise for that in a UK audience, which is, in a way, in prevention, some ways hardly part of Europe but it's the bit I'm chairman of, it's the bit I know about, so I have to talk about that. A little bit about the future and which way it might be going, and I would also talk about guidelines and guidance. I'd like to say a bit about implementation as well as the guidelines themselves because when you get involved in guideline writing you get this kind of glow of satisfaction and you realise it's pointless because precisely nothing will happen unless there is some strategy to do something about it and that's the theme I'd like to develop as we go along.

First problem is that many of you have probably seen a slide of the number of guidelines that family doctors get per year, it's about this high, and including the ones that I was involved in, they're vastly too long , they're vastly too complex and what's the point if risk factors are fairly common effects internationally and having American, Australian, Canadian, European, UK, Scottish, New Zealand just to mention a few of them—what is the point in this plethora of incredibly turgid and complicated guidelines and surely the theme should be to simplify the process and find the common ground.

There's a great review, I have to say. I've just mentioned there Richard Hobbs' little booklet or monograph on cardiovascular risk management and they tabulate all of these guidelines and they don't actually quite finish the job by finding the common ground but they do at least allow you to make a comparison and it's a very nice resource, which is why I've given it. I was asked to review that and at first I felt a professional jealously. I thought, why are they doing this without me? It's a terrible thing to feel and then it was rapidly replaced by admiration because it's a great book.

So just by way of leading in, Europe, of course, is not homogenous and the extraordinary events of the last twenty years, the switch of the gradient of vascular mortality from south to north, to west to east and you see all the black there around Russia, and more or less as you get to Eastern Europe is the social class gradient as well, not far off it. So it tracks social

deprivation and then how can we really make guidelines, one size that fits all, when you have a health expenditure of say 50 euros per head in Eastern Europe and 3,000 in Switzerland? It's very, very difficult and we start talking about expensive medications that many of these countries have no way of affording. So one size does not fit all and it is important, I think, that we encourage people to interpret whatever we waffle on about in the light of what is culturally appropriate and, again, that's another point we might touch on.

There is—and I'm going to come back to the utter inertia of the European Union a little later on—but it was Geoffrey Rose who said that medicine and politics cannot and should not be kept apart and that is surely true for a disease where the determinants of the disease are social, much more than anything else. At least we've got as far with the EU as getting the European Heart Health Charter signed by the vast majority of countries in Europe, and it advocates the development and implementation of comprehensive health strategies, measures, policies at European, national, regional, at local level to promote health and to prevent it. The European guidelines are actually endorsed in the European Heart Health Charter. So there is, at least, paper agreement and it's been signed by lots of people, whether that means action is a very different matter altogether. Well, the process—you're going to see this logo again—because after several plugs the Europe Prevent conference comes to Dublin in 2012—3rd to the 5th May—and the logo is based on this cycle. This is a way the kind of process works within the European side of cardiology.

So, hopefully, the evidence base informs the guidelines—that's a waste of time without an implementation strategy and I happen to be chairman of the European PIC, Prevention and Implementation Committee, as well, and then you need some kind of cycle of audit to measure what's happening, hopefully, feeding back to the revision of the guidelines. The best know audit is EuroAspire, which is a formidably effective bit of work organised by David Wood but it's only two hospitals per country so it cannot be really representative, and it costs a lot of money to participate.

Recently we've launched a thing called eSURF, which is a sixty-second audit you can do with the patient in front of you and we've tested it and tested it and you can actually do it in sixty seconds so we're now beginning to roll that out. That's a separate talk rather than tonight. We've tested it in four different countries in Europe and eight Asian countries and it really is easy to use so I'm hoping that that will allow us slightly more representative audit data for the future. Well, that's the bit that I've been involved in because as chairman of the group that wrote these ones, and I have to tell you there is plenty wrong with them, they're far too long, the evidence base isn't explicit for reasons that I'll come to in a minute, and I'm happy to say that they're now being revised. But at least, Europe has been light years ahead of America in this process where the Americans still have their separate panels—the National [Cardiovascular?] Education Programme, the JNC for hypertension and so forth, they're more and more merging them. But at least, we started this process in the mid-nineties and we tried to get the major players together to sit down and we said, "Okay, you want to write your own specialist guidelines? That's fine but please engage with us by making sure our joint guidelines are compatible with the specialist ones which can be as detailed as you like."

So it's the Society of Cardiology, the European Association for Prevention and Rehabilitation, Society of Hypertension, behavioural medicine, the Heart Network, Diabetes, Atherosclerosis Society, Diabetes Federation, family doctors and the Stroke Initiative; and then we have experts from heart failure, from renal diseases and so forth. So the deal is if you're going to participate you will guarantee us that you would advise us enough that our joint guidelines are compatible with your specialist ones, which is working quite well on the new lipid atherosclerosis guidelines. It has not worked very well with hypertension. Are many of you members of the European Society of Hypertension before I speak out of turn? Well, it's a mafia and it doesn't matter how much they tell us they are going to be compatible, they're not. But what can you do? We try, that is the deal and we do our very best to encourage people and I don't see the point in telling us they'll participate in this and then writing guidelines with a really complex risk estimation system, for example. So you'll be very relieved to know I'm not going to drag you through the contents of the guidelines and again, you can see straightaway, it's the usual introduction and how to evaluate and priorities, behaviour change, quite a lot on behaviour change, which I understand not at all and then the individual components of risk and then, finally, implementation strategies. This will be considerably compacted and shorted in the Fifth Task Force.

Well, one thing everybody needs to know is how some kind of definition of what is high risk to trigger whatever you've going to do about high risk. So in the European guidelines, high risk tracks the priorities because the highest risk people get the biggest benefit,as individuals. It's quite different from the so called Rose paradox of a bigger global benefit, even though the individual gets much less benefit at community level. For those of us that are clinicians the people coming to see us as patients as opposed to groups of people those who've had an event at the highest risk can get the biggest benefit. So they get the highest priority. Followed by asymptomatic people who are at high risk because they've got multiple risk factors, because their diabetes, or because they have extremely high levels of individual risk factors particularly, for example, hypertension with end-organ damage. And then the bit for us clinicians and those of you who are family doctors would be much better at this, how often we fail to check and advise the relatives of high-risk families. Given that high risk families are some kind of composite of shared environment and genetics which needs to be, as far as we

can, disentangled. So those are the priorities but it's also the cascading level of risk.

Just about every guideline now recommends total risk assessment, the reason being, of course, is that very high single factors like familial hyperlipidaemia are rare and in the vast majority of people it's a composite of interlocking risk factors, which react in very complicated ways but sometimes multiplicatory. They all have some kind of pecking order like that but apart from that all the current ones have some kind of risk-scoring system, and this is where some of our problems begin. So in Australia it's a five year risk of cardiovascular disease over fifteen percent, Canada, CHD risk over twenty percent, Europe, odd man out, fatal cardiovascular disease over five percent. That's not a popular way of doing it, people don't like it, and I'll come back to that. UK mostly Framingham based ten year over twenty percent, America CHD over twenty percent, all CVD in some of the new revisions, New Zealand CHD twenty percent, International Atherosclerosis Society twenty percent but what does this twenty percent mean? And it means just about nothing, as you'll see in a minute, unless you know exactly how it's defined.

Well, the one I've been responsible for is the so called 'SCORE project', whether it's good or it's bad, it's big. It's based on twelve European population samples nearly all representative population samples, 205,000 people compared with Framingham, which is much more homogeneous but is, including the Austrian study, 8000 people, PROCAM about 8000 people, so it's very big whether it's good or bad. It's heterogeneous so it's quite representative of Europe, as far as we can tell but it's very crude, it's very crude, as many of you will know. You just find out which box you live in, so you've got men/women, smoker/non-smoker, blood pressure vertically, different ages, cholesterol horizontally, and that's your ten-year risk of a fatal cardiovascular event. That's for the high-risk areas of Europe.

Obviously, with the changes in mortality the definition what's high risk will be changing, and, of course, all risk charts will overestimate risk in a population whose risk is dropping like Western Europe and underestimate risk in Eastern Europe, where it's rising, that's just the nature of the beast and you deal with that by recalibration, as we'll see. Of course, there are problems with it apart from the simplicity, where is your favourite risk factor? Where is LPa? Where's fibrinogen? Where's homocysteine? Where's CRP? It actually doesn't matter. The additional effect of all the clever new risk markers is very, very, very small and, again, that's a different talk.

It also gives you the misleading impression that women are at lower risk than men, that's wrong. That's a fallacy, actually, more women than men die of cardiovascular disease in Europe—they just do it later. So what you get by virtue of being female is a ten-year holiday. So a 60-year-old woman in terms of risk is practically identical to a 50-year-old man. So it's merely a deferral, you don't escape it and I think that's really quite an important message. There is also the problem that all these people, especially women—youngish, middle aged women of 40—are at lower risk, that's the truth, but that may conceal a very high relative risk, this is an approach with absolute risk and to deal with that there are a number of approaches. Originally, you said, extrapolate to age 60 so this guy was only [?] but by the time he's 60 he's [?]. That seemed to us quite sensible.

We got beaten up by the Europeans who interpreted it very literally as we were going to prescribe drugs to every young person. We never meant that. We just said, flag somebody who will need intensive lifestyle advice and may need drugs but maybe our English wasn't clear enough. So we dealt with that with a relative risk chart that I'll show you in a moment but for the Fifth Joint guidelines we'll do what will probably happen in the UK as well and we will adopt, we will also express it in terms of risk-age. For example, and we've just submitted a publication with a new formula for calculating risk-age but you don't actually need it, you can see it. So this 40 year old man who's got a blood pressure of 180 and a cholesterol of eight, a four percent risk, not that impressive but he is the same as a 65 year old man with no risk factor, also four percent. So, in other words, his risk-age is 65 and that's quite a good way of expressing risk. The electronic version of this is called Heart Score and you can get it at the ESC website: escardio.org and that calculates it for you, there is more functionality going in, we are now putting in HDL cholesterol and body mass index and it gives you automatic print out of patient advice and it brings you into the guidelines if you can't quite remember what the guidelines say. So that's being upgraded at the moment and in some European countries like you can in the UK you can get into Heart Score automatically once you've entered your patient's data.

There is also cholesterol HDL ratio versions of this chart and we got that all wrong, the ratio does very little, it performs very little better than total cholesterol. We slowly worked out that that's because it was driven by the cholesterol, there is a much wider spread of cholesterols. With the new electronic version when you put in HDL it doesn't alter the performance of the risk prediction very much but it does reclassify people. So if you've a low HDL or a high HDL it will shift your risk category quite appreciably. We've also been re-looking at another simple thing, we re-looked at body mass index and it's more powerfully related to risk than we had realised. We kind of underestimated it and a bit like social class it's very much a driver of other risk factors. So body mass index is very much a driver, more strongly than we realised. There's been three or four huge papers on BMI in the last couple of months and it's been kind of rediscovered. Whereas, HDL works at every age and actually quite strongly in elderly women, which is a big surprise, body mass index is very much more powerful and a predictor of risk in young people. When I think of the number of middle-aged women I've nagged about their weight I feel thoroughly guilty because the lowest risk in women over 60 isn't in

mildly obese. So wrong again. It just shows when you go back and look at the simple things how much there really still is to learn.

We also made an even simpler risk chart based on age, gender—seeing it drives cholesterol and blood pressure—age, gender, smoking and BMI alone and it actually performs quite well. So if you go from a body mass index, for example, from twenty to thirty, which is a big jump, of course, that's worth nearly half a millimole of cholesterol, after adjusting for everything else. It's associated with a fifth of millimole reduction HDL and it's associated with an eleven-millimetre increase in blood pressure. Just purely from the weight alone at least in younger people. So it really is quite apparent—that's not to say a middle aged person who is fit and slightly overweight is probably the lowest possible but in younger people and, of course, what's young, we need to see how far back towards childhood BMI works.

That's the low risk part of Europe and that's the relative risk chart. We stopped using the colours on this because if confuses people but what this is saying is that nearly, and certainly in younger people—young to middle aged people—even if you are at risk your absolute risk from the chart is only two or three percent. Your relative risk maybe twelve time higher. So this person might have an absolute risk that's twelve times higher than it needs to be if it had an optimal risk profile. So these are the options we're trying to develop as a way of counselling tools with our patients to say "You're young, you're low absolute risk but look at your age 60, look at your fact you're twelve times higher than you need to be and look at your risk-age it's 25 years older than you need to be."

These are the kind of ways we're trying to explore making this kind of stuff accessible. It's interesting at the risk charts, I talk in schools a bit and school kids understand that instantly. You just give them a remote idea of what blood pressure and cholesterol is, they understand those risk charts incredibly well. And because the challenge, I suppose, for us is to de-medicalize this. Not to be so paternalistic about it but if you can get the concept across perhaps where actually it's your risk and you can choose whether you want to adjust it as you get older or not. It's not my risk it's yours, maybe then we'll stop thinking it's a medical problem and accept that it's a societal and a political problem.

So why are our score charts out of line with everybody else using fatal cardiovascular disease? I've had to defend this, many times, well, what we did is we took all the ICD international classification disease codes and we took out all the ones that were clearly not atherosclerotic, congenital heart disease and stuff like that. So it's a hard and a reproducible end point. We have spent a lot of time looking at the multiplier for total events and if you want to multiply [?] hard events, unequivocal strokes and myocardial infarctions, it's about threefold. Slightly higher in young people and slightly lower in old people where of course their first event is more likely to be fatal, so the multiplier won't be so high. We've done that working with the Finn Risk collaborators where they've very well-defined end points and that's reasonably robust.

But one particular point if you stick to cardiovascular mortalities you can recalibrate, and recalibration process allows you to calibrate for changes in mortality over time and changes in risk factors over time. So if these charts are ten or fifteen years old and you've got up to date mortality figures and up to date risk factor data you can recalibrate and when you test it, it works very well, it works nearly as well as making a new chart on that population, which you can't do for non-fatal events because of their instability, you can't recalibrate the total events easily. And the problem with non-fatal events to me is that they're very unstable, they vary over time, they're not stable and they are very hard to reproduce. So it depends which non-fatal events you choose. Do you want something soft like angina or do you want unequivocal myocardial infarction? It depends on the definition and it depends on the diagnostic techniques. For example, troponins have totally and completely altered both our definition and our way of diagnosing myocardial infarction. So how do you allow for that if you want a total event chart? And it depends on the ascertainment, how well have you ascertained them, how hard have you tried to ascertain the event? All these charts are twenty percent CHD or CVD risk, it's meaningless unless you know how it's defined and I have to justify that and this is Catherine McGorrian's thesis, I'm not going to particularly show you the data but the point is that, for example, they're mostly based on the 1998 Framingham function but there're actually four different Framingham functions, different techniques and subtly different ends points, hard end points, soft end points, and if you start off with the 1998 Framingham function [?] at twenty percent then you put the same risk factors into the other four Framingham functions, you get results of anything from about sixteen percent to forty percent. So unless you know which function has been used, and there's another one for PROCAM and many others, unless you know which function has been used and what end points have been chosen it doesn't have a great deal of meaning. So we are sticking with our mortality charts.

We will publish the multiplier and all the problems with it and the point of Catherine's thesis has been to—everyone thinks it's easy. They think, I see many more non-fatal events than fatal events, the multiplier has got to be such and such. It's not easy, it's very complicated. The other problem is with total events or with non-fatal events is that all risk estimation systems culminate at the first event, they don't count the subsequent events so when you think you see [following?] non-fatal events they haven't got counted. So it ain't that easy.

Everybody wants targets. You get so trapped when you're dealing with European stuff because some European countries don't like the word "targets" because they feel many patients won't get to them, and then there will be a kind of a failure so the term is

"the characteristics of the healthy European", that's Euro jargon for target, okay? And to try and help us to remember it we had this kind of telephone number, it's nearly a palindrome so there's zero, zero tobacco, the three is exercise—thirty minutes or three kilometres a day, five portions of fruit and vegetables, blood pressure under one forty, cholesterol under five, LDL under three and avoidance of awaiting diabetes and healthy people tend to be like that. But for the high-risk people all risk estimation systems including the European ones have more stringent targets so for high risk people the blood pressure target is one thirty. Now, recent work in diabetes suggest maybe that is actually too low. So I'm not sure if that's right. Then there's two for the high-risk people with cholesterol, 4.5 and 4, LDL 2.5 and 2. That 4.5 and 4, and 2.5 and 2, is if feasible. So in other words 2.5 anyway, if your budget and your ability to your culture allows you to get to 2, that's regarded as being more or less ideal. Well, actually, if you look at the international ones the targets don't differ that much. Not the LDL or cholesterol targets, but they don't actually differ all that much. I've tabulated it here.

Now, when there's two figures, like in Europe, that's feasible. For other people the sub categories are a risk. The people with more severe disease get the upper target but what's nice about that slide is that there is, actually, given these huge gigantic cumbersome guidelines the targets are not that different, and that's where we should be going is parsing the guidelines saying, "Fine, fine, fine I've read the eighteen hundred references and the six hundred and twenty-two pages but actually, the take home messages are not that different and arising out of that again, do we need all these different guidelines?"

I think it's relevant that Europeans and Australians and New Zealanders read American guidelines and the Americans never read anything—if it wasn't born in America then it doesn't exist. There are notable exceptions to that, there are several American major publications where they put in European risk charts because they actually like them better but it is the exception. And for blood pressure for Irish people, it's somewhere between 140/90, 130/80 and with more aggressive goals than those with clinical cardiovascular disease, diabetes and renal disease so, again, if you're not going to fuss too much about whether you're going a millimetre here or there the degree of concordance is not that bad. So it is possible to try and simplify the take home messages and I think if we can do that we have some hope of making the implementation easier.

Well, the Fifth Joint Task Force has started under Joep Perk's guidance now and I'm very pleased to be on it and even more pleased not to be chairman, and I have to say he's doing a better job than I did. We are learning, they'll be considerably shorter and more succinct you'll be relieved to know. We have had a big debate on the evidence base and I don't quite know the answer. The European Society of Cardiology use the same system as the Americans and you're probably familiar with it and it quite appropriately gives the highest grading to robust meta-analyses and multiple randomised controlled trials. That's fine except it's a guarantee of more drugs and that's where we got stuck and we refused, to the annoyance of the ESC, and my guidelines refused to use it. He said, "Well, alright. You want us to consistently give a higher grading to blood pressure drugs and statins than you to do lifestyle or nutrition or exercise or stopping smoking," which has, of course, a bigger effect than any statin. "What do we do? How can we resolve this?" They said, "Stop annoying us, just use our gradings." We said, "No, no grading." Well, we're now, for the present ones we are doing that but we're also comparing it having looked at some of the gradings, the World Health Organisation grade system, and those of you who know about that it's a bit complicated but the end result is not just the quality of the science it's a "do it, don't do it" decision. So you do it, probably do it, probably don't do it, and don't it, for a harmful thing, which will be grade 3C or whatever in the European nomenclature and maybe that's, again, a little bit more practical.

So I've always said we will be addressing [this information?], we'll have more on the multiplier to convert from mortality to total events. We'll be looking at this concept of risk-age and how to express it in more detail and in the new version, the electronic version of Heart Score you'll get a risk-age automatically if you want it. Targets will be similar, we might have a really dramatic seismic shift from 2 to 1.8 millimoles of high-risk people to be in line with the new lipid guidelines. The reason—and there is time for feedback so any thoughts you may have, give them to us—and what I'm really delighted about normally the [?] guidelines get launched at the main ESC conference, which is in Paris this year and I think it is Stockholm next year. But there was a cascade effect, the present lipid guidelines are delayed and they're delayed because they were awful. The lipid guidelines are written by lipidologists who wanted endless, endless pages of minutia and you can't find a guideline anywhere in them and they've had to be totally and completely written under [?]'s guidance and they're quite good now, but that's had a cascade effect in delaying the joint guidelines, which would have been launched in Paris this year but now getting delayed to Europe events in Dublin next year and I'm hoping this will attract all the allied healthcare professionals and family practice and not just the cardiologists who are meeting. So, that's my second plug.

Well, good guidelines are good for the vanity of the authors and bad for rainforests. I mean, you really do feel rather pleased when it comes out on print, you pick it up and you touch it and it feels great. Nothing happens, of course. Because why would it? It's just a load of paper. So, hence the various implementation endeavours like our European Prevention Implementation Committee. And this is where it gets a little bit boring and a bit difficult. Well, of course, you've got to know what's in the guidelines, you need to know the gap of what audited information is available. You'd like to know about the barriers and strategies to improve

it and you'd like to know how you're going to coordinate the many players. Well, that's fine but this process from here on gets less and less evidence based and what gives me nightmares about my Prevention and Implementation Committee is I don't know what to do. I don't know what's effective and I don't know how to measure the effect. I mean, mortality is changing, that's great, but was it anything to do with what you've done? It's a nightmare.

Then when you start to look at what's happening at European level it is like herding cats. The EU should be vital, but they're a waste of space. There is no legislative framework for health within the European Union. There is for food safety but not for health. So all they can do—I mean, it's nice to have a Heart Health charter but again, it's more words. We had a conference at the European Heart Health in Nice in November about closing the loop between science and political action, and the EU guy there gave us the same old waffle that he's been giving us at the same conferences for the last five years and just for once he got named by Lars Rydén, who's been the liaison person, who pointed out to him they had actually done nothing.

It is difficult for them because there isn't a legal framework and the individual Departments of Health really don't want the EU telling them what to do very much, so, but until they have some kind of legal teeth the EU—bearing in mind the EU should have carried a government health warning—and what do they do? They promoted tobacco in large parts of Europe because of the cash crop in poor areas, and they [promoted?] saturated fats for years. So, they're only now beginning to get the semblance of a social conscience and to think about health, but it's been a particularly ineffective social conscience so far. Then there's the specialist bodies ESC, our own Association of Prevention and Rehabilitation, and then you've got the national cardiac societies, the other specialist bodies, the GP societies, the Ulster Medical Society. Then you've got the [?] health professionals, the educators and the industry, which could be working either way. Tobacco may have shifted appreciably to destroying Asia but it's still around. Food, of course, is very much around with these monstrous portion sizes and the global epidemic obesity. The pharmaceutical industry—let's not knock them, maybe they're not supporting this meeting, but they support ninety-five percent of the meetings in the south. But they've got their own agenda and then some of them might be good like Nike, and Adidas could be regarded as benign than those who might be neutral. So how does anybody make a picture out of all these competing influences in a coherent way that's effective? It's just not easy.

This is from my friend, Ulrich [?]: "Said is not heard, heard is not understood, understood is not agreed, agreed is not applied and applied is not all maintained", and that's guideline implementation in a single phrase.

Well, what about the gap? This is where everybody would have seen the next slide on Euro Prevent and Euro Prevent you will recollect as David Wood's audit of risk factor management and so people with established vascular disease who survived the six months so they're the people who should do best in because they're the highest risk people attending doctors, attending GPs, attending hospitals. As I said a little earlier on it may or may not be representative, it's two hospitals per country and having done it twice I'm not sure if I can bear to do it again because it cost you two nurses' salaries for a year and a half to participate, and very little help. But it's a bit gloomy in a way, it's telling you statins work—is that really an advertisement for the polypill? It's scary. Even though blood pressure medication has gone up, blood pressure control has not improved. That's maybe where we do need a polypill because anti-hypertension treatment is nothing like statins. Statins do exactly what they say on the can. Blood pressure medication doesn't. But our old friend John Feely, who sadly died recently, he made the first blood pressure polypill, and there was a quarter dose of calcium antagonist a thiazide, a beta blocker and an ACE inhibitor, and it had a phenomenal effect on blood pressure in his initial studies so combination therapy, even though it's against what we were taught in pharmacology, is presently probably the way hypertension is going.

Then gloom and doom, obesity, that may be a large reason why the blood pressure controls are difficult; diabetes going the wrong way, parallel obesity, BMI going the wrong way and smoking hardly changing. So how badly we've done in controlling what's happening with lifestyle and this is not a judgement or it maybe more a judgment on the food industry than it is on people. With the portion sizes and the high-density calorie foods being almost force-fed into children and the cleverness of supermarkets where they put the goodies at small child's eye-level height and the way out of checkout and so on. So it is a huge challenge. Might be bad here—just wait until you see what's going to happen in China and India, it is happening, because they do not appear to tolerate putting on weight at all well. I've been up to China several times recently, in Beijing it might be pure chance but there is a direct linear correlation between the number of McDonalds outlets and the increase of body weight in Beijing. There are now one thousand McDonald outlets and fifteen years ago there were none. It may be chance. They're still in China advertising tobacco as being good for health for athletes, like they used to fifty years ago in America. In one province in China the governor passed a law that every adult must smoke—true, because it was the only cash crop in the area. Now, nobody like being laughed at—he did lose his job. But that is not even fiction. Three hundred and twelve million Chinese men smoke, and they do not tolerate putting on weight. So they're facing a devastating epidemic. You have to be very careful in China saying this—you don't understand the culture very well and there is a slight culture—so we've already got one point three billion people if we lose a million, is that so bad? It's kind of complicated.

There's a fair literature mostly based on questionnaires, so it's hard to know how scientific it is, on barriers to implementation and again, many of you know this relating—and, again, this is a different talk where we look at all these settings relating to the person, their position in the healthcare setting and community and society. Indeed we did our own—I'm not sure if it's science we did an actual market research survey on why people don't do prevention a few years ago, and the REACT study of Richard Hobbs and Leif Erhardt is quite well known and that's compacting a lot of information.

This is very judgemental. I suppose adherence or the degree to which my patients' behaviour coincides my advice is the politically correct way of saying it but of course, there is again a big issue on compliance and if we talk rubbish it's going to be hard for them to comply, if we give them seventeen medications when they're 80 years old it's hard to comply and so on—we can't afford it. But we will know many statin prescriptions cease to be filled after two years. Virtually every physician says, I don't get enough time. I simply don't have enough time, and the future, certainly in many countries is, I'm quite sure, the hired health professionals. Many of our experiences are that nurses do it more reliably, more obsessionally, and are nicer to the patients than we are. Well, at least, in the UK there is some financial incentive if I understand it right, may be ineffective but in most healthcare jurisdictions you get paid to treat ill people, you do not get paid to keep people healthy—problem.

Guidelines—are they clear? Complicated, confusing, too much information, too general, don't fit my patient, and is government policy helpful or is it passively hostile in terms of helping you, paying you, helping the patients? So, the same surveys say what would help the guideline users—the inverse of what I've just said. Well, simple, clear, credible national guidelines—we actually found with the European guidelines we don't say to people, "Please, please use our guidelines." We say, "Why don't you make them Northern Irish?" Well you have your own UK guidance. "Why don't you make them Swedish?" "Why don't you make them Slovenian?" But just take them and modify them, and then people rather like the national guidelines so we would very much encourage people not to just—in the south we have adapted the European ones—we've endorsed them—but in many other countries have, if people want to change them great. Obviously, more time, facilitated with government policy with defined prevention strategy in the south. We had a very good preventive strategy but it's sort of withered away in the last couple of years. It's gone backwards. Reimbursement for health professionals and public awareness, this whole thing of the jargon empowering.

Making the information accessible. Why shouldn't it be part of the curriculum? If you know geography, why shouldn't you know your chances of being dead in thirty years' time? What's wrong with knowing about it? Some kind of implementation strategy and I'm going to say a few more words on this but if it's just another committee let's set up a committee. It's a bit like writing a guideline, you feel like you've done something useful. So we've written a bit on this trying to work out what you might do about it and this is a bit of waffle and then I'll finish. At European level—well, of course, you've got to publish the things. We made a prevention tool-kit, which is readily available to anybody who wants it. It's now electronic, it's on a CD, it has guidelines, paper and electronic posters, heart scores [?], dissemination strategy and implementation grouping and I will come back to that, presentations at meetings, and lobbying, lobbying and again, lobbying. Eventually, the EU will start to take health policy seriously. ESC has engaged in this very much more vigorously in the last couple of years I'm glad to say.

So the tools then, we have the guidelines, we have Heart Score—the electronic version, which you can either work with online, which allows you to store the information or you can download it onto your desktop and have it available to you. We've developed a new guideline learning tool and this is an interactive case-base learning that we've just finished piloting and if you can do the online version you can get or will be able to get accreditation and gets credits for it, because once you've registered you're automatically logged in. If you go through the whole thing it's case based so, although, it has a little bit about general principles and mostly it's fourteen case histories that you interact with and it brings you and it's got all sorts of little tweaks in it, like it will bring you to the risk charts. It will tell you how to calculate risk and so on and so on. Then there's the eTool kit that contains these and then SURF I've already mentioned to you which is the simplified audit that we're doing. So, at national level we encourage the adaption of the European guidelines, the formation of multidisciplinary implementation groups and multifaceted communications, all very generic. I mean, these are pretty obvious principles, in a way. So we asked the national cardiac societies to nominate national coordinators and to develop the national guidelines, the partnerships that are necessary, the communication strategy but it needs political access. In some countries the cardiac society appointed somebody, and they just wanted the title, and nothing happened. So, we're now suggesting two national coordinators—a cardiologist and one from the department of health. In the south, I think it's not going to go on doing it but we have Mahen Varma from Enniskillen to provide some kind of coordination and to advise us, and we have Siobhan Jennings, because she is in the health service executive and has direct access to the politics, so I hope that will work.

At European level we established the Prevention Implementation Committee and the ESC has asked the association to do this and that's the purpose of my Implementation Committee. It's the [?] of the ACPR and the various worthies and then the section representatives but that's just coming…and whether it's good, bad, or indifferent we have defined our core activities, our strategies and our activities with the

national coordinators and we have regular meetings with them and the core activities is a benchmarking project, again, why do people do it and why they don't do it around Europe? What [Hannah Magee?] has found in many European countries—you cannot find a government [member?] who is responsible for prevention, there isn't anybody or if there is they're well hidden. There is a lot more than that. We're doing health economic modelling based a bit on EuroAspire to try and see what's most affective. We have several demonstration industry projects—I'm leading the SURF simple audit thing. If you Google "implementation strategies" you'll get about three thousand hits but it's all waffle, it's just generic principles.

Political lobbying Lars [?] well, he's now been succeeded. A how-to manual, which is like standard operation procedures for prevention, which I think might be much more practical than the guidelines and then we're working a bit on lay communications. We're doing a lay version of SCORE so that you can make it easier to access your own risk and that's been partly run by [?] in pharmacies in Sweden, which will help you to go through the risk yourself.

So I'd like to draw to a conclusion, if I might. Guideline development is becoming more sophisticated but the grading of evidence as I indicated to you, I just think it needs more debate and it's been very hard to get the ESC to even undertake that debate. We've got a system it's the same as America, it's fine but it's not fine. It's incredibly resource intensive and in America and to some extent in the UK there is money available for systematic reviews. In the ESC there's not and I don't think we'd expect people to go on giving up weeks and sometimes months of their time every year. It's lovely to participate in the process but there is a very heavy price to pay. My own feeling is there is far too little international debate and discussion about this. As I said, I really don't understand the need for a six, eight and in fact, well over one hundred prevention guidelines—I just picked out the top six or eight. Surely, we should focus on finding the common ground. As long as the common ground is evidence based and, as I've said, at least with the targets it's much more agreement than you think at first. If you go looking for differences, you'll find them. If you're looking for similarities, they are there. There's still a huge gap between the guidelines themselves and the practice. Implementation is not well evidence based because it's very hard to study. It's really hard to randomise controlled trials and implementation strategies, it's very, very difficult to do. Then the EU, as I've said, and I've said it to them, as well, so, I don't mind, is largely inert and the lobbying needs to continue at every level, at Northern Irish government level and Republic government level and this EU level. So, I thank you and my third plug is to come to you. Thank you very much indeed. Again, I feel honoured.

Dr Margaret Cupples:

Thank you very much indeed. Could I invite some questions? To this master of the management of complexity I think that we've seen in relation to cardiovascular disease across the world and particularly in Europe. I know we've cardiologists and general practitioners in the audience and perhaps they're coming from the different sides of the same perspective. Anyone would like to? Could I ask you a question to start with? What do you think is the most important aspect of implementing prevention in cardiac disease?

Professor Ian Graham:

I suppose…well, we have to accept that most hospital cardiologists really want to blow up balloons and not be annoyed with talking to people too much. So that puts family practice on the agenda, and I suppose, the simple observation that eighty percent of people visit their family doctor over a course of two years so, I think, as a really simple approach to use every possible opportunity especially somebody who is a smoker or middle-aged man to assess risk. So, maybe opportunistic approach is the simplest and most—it's grand to say you must assess everybody but unless there's a financial incentive to do it, it's not going to happen, is it?

Audience Member:

Thanks very much for that great talk. Just on that point about general practice—we have a plethora of tools available and certainly in UK general practice, at our computer, at our desk with the patient beside us, and just at the touch of a button you can calculate a patient's risk factors based on Framingham data or you can choose to base it on JBS guidelines. It comes up with a very confusing conflict, for example, the same patient you might get Framingham data predicting seven percent or five percent risk of coronary event in ten years and on the same patient you get JBS coming up with twenty-nine percent. So—what do we do with the patient sitting right beside us with you having a look at this, and being quite clear to the patient the conflict between those two seemingly expert guidelines?

Professor Ian Graham:

Yeah, well, that's exactly the point of this twenty percent being a mythical figure. I mean, the first Framingham function included non-specific chest pain in women, for example, whatever that is. The last one is hard reproducible cardiovascular events. Although, I don't really like to promote relative risk it is relatively robust—within the different systems relevant risks would be rather similar and risk-age looks as if it's almost independent of the system used to estimate risk and of culture and of country, and that means you don't have to recalibrate so I think if one really doesn't know what to say at the absolute figure, to say—it's reasonable to use the relative risk to say, your risk is actually high enough. It's actually ten times higher than it needs to be, or your risk-age is twenty-five years older than it needs to be. That's part an answer to the dilemma. Otherwise, you've got to be an expert in all the different algorithms to say it's ten percent here and twenty percent there, and

the reason for that is that this one is including all the soft end points. So, that's a partial answer.

Audience Member:

So, in a way, these tools can be counterproductive just in general practice?

Professor Ian Graham:

Yeah, and our score—you know, because it's fatal events you say, your risk is four percent. Now, that might be very high but that means, anyway, that's ninety-six percent chance I'm not going to die. That's fine [laughter]. So they can, yeah. But I think to maybe get familiar with one tool is usable and then the relative risk and the risk-age.

Dr Carol Wilson:

Ian, I enjoyed that tremendously and I apologise for blowing up balloons occasionally. First of all, I commend you on trying to reduce the volume of the guidelines and if you'd like to talk to all the other ESC groups that would be very helpful, as well. But if you were a health autocrat with a limited budget where would you put your resource? Would you put your resource into the reduction of a population basis or onto living for specific high-risk individuals?

Professor Ian Graham:

Yeah, that's a clever question because that's Geoffrey Rose—well, the best value would be to let the high-risk people die as quickly as possible because in terms of less dead bodies you get a far bigger impact from the community ride, very small change in risk, apply to the whole community. That is so, the individual gains less, the paradox—the individual doesn't gain very much but the community gains more, and that's the whole nature of the paradox. So, in other words to have a high-risk strategy only would be a dismal failure—you want both. But if it had to be more one or the other it would be the community strategy. As an invasive epidemiologist who has only just blowing up balloons I do have sympathy.

Professor David Hadden:

Just to tell you a story for a short time, I once by chance found myself in Framingham, on a wet night, like this, and wondered about getting something to eat. At twelve o'clock at night in Framingham it is almost impossible to find anything to eat except the local chippy. In the local chippy I got an enormous deal of all the wrong things, full of fat and everything else, but the really frightening thing about Framingham was that nobody spoke English. They all spoke Spanish and therefore it was quite difficult to find your way around in Framingham. So, I wonder what the actually population of Framingham is now—it's certainly not what it was thirty/forty years ago. That's one question, the second question is—and my real question is: I come from a background that thinks that cardiovascular disease, bless its heart, is a subset of diabetes rather than the other way around. So, looking at the world through the diabetes spectrum we would like to think that there is a difference, what Carol was saying, between what the public health doctor thinks the population should have as their normal blood sugar and what the individual family doctor would think their particular patient should have. Should there be different guidelines for public health people or countries or actually what you do at best?

Professor Ian Graham:

Yes, with regards to Framingham it was a very much Caucasian, relatively well educated, and that has certainly been diluted. But they're still studying their first generation offspring, which is probably less diluted and, yes, there should be certainly different—the targets are aimed at the level of baseline risk and that's why they're more rigorous for the diabetics and high risk people so, absolutely, there should be different targets in—I'm not sure different guidelines but certainly different targets for the healthy people and, say, diabetes.

Your point on diabetes is, of course, well made. But there is a common substrate of risks and—we have a new chronic disease management programme, and it is nonsense because it's silos; it's diabetes and it's chronic lung disease and it's coronary disease and it's stroke. In other words, it's salvage stuff and it doesn't recognise the common substrate. To get back to your point different targets and guidelines for individuals, I absolutely agree.

Professor Sidney Lowry:

I agree with you the confusion and European confusion with the definitions. I was a delegate on the European Cancer Control Commission and the French delegate wouldn't agree that beer and wine were alcohol [laughter]. It was only many years later that I discovered that the French 'alcool' refers exclusively to spirits and hard liquor but the same thing seems to be true with alcohol and cardiovascular disease, you keep getting contradictory messages.

Professor Ian Graham:

Yeah, I wonder about this red wine stuff, I mean, it would be great but all human behaviour has a J shaped curve, virtually, except smoking where there is no benefit but it's quite difficult with alcohol. When you look at the teetotallers but you take out the alcoholics who can't drink and the ones are dying of cirrhosis and so on, it's much less J shaped and I'm just not sure that it's not more reflection that moderate people do better than people with extremes of behaviour in either direction. I'm not really convinced that red wine is any different from any other form of alcohol.

Professor Sidney Lowry:

It's not the alcohol in red wine, it's the [resveratrol?], isn't it?

Professor Ian Graham:

Maybe, I don't know.

Dr Margaret Cupples:

I have an exhausted audience. I hope we haven't exhausted you. Thank you very much indeed for speaking to us and I would like to present you with this medal of the Dixon clan, for your efforts this evening.

Professor Ian Graham:

I didn't like to ask. I saw in one of the things that there was a medal [laughter]. I was too embarrassed to ask if it was just fifty years ago.

Dr Margaret Cupples:

Not at all, it's very much today.

Professor Ian Graham;

Thank you very much.

Dr Margaret Cupples:

Sir Thomas Dixon was, indeed, a senator—he was a master of complexity too. He managed several Ulster steam-ship companies, so the records tell me, and he was a business man, but he went out to the fields when he looked after the cattle to determine good meat, but also, good vegetables. So he did adhere to the simple principles of healthy living. So he has set a good example there. So, thank you again.

Professor Ian Graham:

I'm very honoured, thank you, very much.

Dr Margaret Cupples:

Can I in closing say "Thank you all" for coming and it's nice to see some younger people among the audience and I hope that you might come back again in two weeks' time on the 24th March. We're opening officially the Ulster Medical Society rooms downstairs. Professor Richard Clarke is going to help in the opening of those and to unveil a bust of James McDonnell who was the founder of the Belfast Medical School. The other thing I should say to you, there are some certificates of attendance for this evening, for your appraisal folders, if you wish to have those or a memento of the occasion, at the back. One other thing would be just to say there's a cup of tea, we hope, downstairs, or coffee, to continue informal discussions. Thank you again for coming.