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From MedscapeCME Diabetes & Endocrinology

What Happened Today at the 20th World Diabetes Congress of the International Diabetes Federation (IDF)? An Update on Insulin Therapy CME

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CME Released: 10/27/2009; Valid for credit through 10/27/2010

Welcome and Introduction

Philip Home, MA, DPhil, DM, FRCP: Hello, I'm Prof. Home from Newcastle University in the UK [United Kingdom], and I'd like to welcome you to our MedscapeCME spotlight entitled "What Happened Today at the 20th World Diabetes Congress of the International Diabetes Federation (IDF)? An Update on Insulin Therapy." I'm pleased to have with me today 2 distinguished experts in diabetes and endocrinology to help discuss key data presented during the IDF World Diabetes Congress. We have Dr. Vivian Fonseca, Professor of Medicine at Tulane University Health Sciences Center in New Orleans, Louisiana, and Dr. Jean-Francois Yale, Professor from the McGill Nutrition [and Food Science Centre] at McGill University here in Montreal, Quebec, Canada. We're pleased to be with you in Quebec at this time. Welcome to today's program. We are going to discuss a number of issues, and I thought we'd start with the issue of diabetes and cancer. There was a symposium here at the World Diabetes Congress of the IDF meeting concerning that and the papers published in *Diabetologia*.[1-4] I dare say you've heard a lot about this and read a lot about it. Particularly Vivian, as editor, you must have a view on whether *Diabetologia* should have published those observational papers, and is it real data we need to worry about?

Glucose-Lowering Drugs and Cancer

Vivian A. Fonseca, MD: Well, it's another journal (*Diabetes Care*), not the one that I edit, but my comment is that these are mostly observational studies or retrospective analyses. There's a lot of bias in these kinds of studies, and the data are not really conclusive. People say there were 4 studies relating cancer with insulin, but actually one of them was totally against that. So these are certainly inconclusive. In the same issue of *Diabetologia* is another paper, which was a randomized study -- the only randomized study among these that was designed to look at retinopathy.[5] But the editor asked us to look at cancer, and data from that study were published in the same issue of *Diabetologia*, and I'm an author on that.[6] We showed no difference in the cancer rates between insulin glargine and NPH. It doesn't address the question as to whether insulin treatment is associated with cancer, and when you look at the data from all these retrospective studies, the metformin group had less cancer. But they were younger. Naturally as you get older, cancer rates are higher and you're more likely to receive insulin if you have diabetes. This is the problem with these observational retrospective studies in that you have this bias in not having equal groups. All they can do is generate hypotheses. I think we need [additional] data to be conclusive about it, but I'm not convinced that there's a link between any particular insulin or insulin and cancer.

Prof. Home: Jean-Francois, have you looked at these data? I wonder what the feeling is in Canada.

Jean-Francois Yale, MD: What's quite impressive is that everybody is concentrating on cancer, but if you look at the mortality data in general, it was very good. The headline could very well have been "glargine causes less mortality than the other insulins" because the numbers are in that direction, and also the fact that in the German

study,[1] the increase in cancer was really after adjusting for insulin dose -- which is not a usual accepted adjustment that needs to be done.

Dr. Fonseca: They extrapolated what would happen in these patients.

Dr. Yale: And these people were taking less insulin. So if you don't do that adjustment, there is actually no message at all. You can basically have anything come out of any observational study if you study it by adjusting it in any number of ways. I think in this case it was in my view not at all conclusive because the raw data were certainly not showing any signal, and it took multiple adjustments to get one. Mortality even with those adjustments was in favor of glargine, so I think a lot has been done. The other studies [also] have the problem of being observational studies. Are people placed on one insulin or the other randomly? No. It's based on whether they had insurance, the capacity to pay, and many other factors, including the approach of the physician (whether he was aggressive or not), etc. To make an interpretation is very difficult, but personally, I see no major signal to worry about.

Prof. Home: It's interesting that you commented, Vivian, on the outcome data from the retinopathy study, which is a 5-year study. I actually have an interest in this area. I've got a paper in press in *Diabetologia*, which looks at the other randomized controlled clinical trial data. Now it's all short term. It's only 6-month or 1-year data, but again, there's no signal within that either.

Dr. Yale: It will be interesting to see data from the ORIGIN (Outcome Reduction With Initial Glargine Intervention) trial when that comes out.[7,8]

Dr. Fonseca: I'm glad you brought that up because that is another randomized controlled trial. It's got 12,000 patients in it. Did they have a data safety monitoring board? I serve on several data monitoring committees, and our responsibility is always to look at any new data, go back, and look in the database. If there's a signal, you have the right to stop the study. They haven't given any data. They've just said they don't see any reason why that study should be discontinued. That's got 6000 patients on insulin glargine and 6000 patients on usual care and newly diagnosed diabetes, or even prediabetes -- so very much like the metformin population. If there was a protective effect from metformin and a bad effect from glargine, you really should have seen that by now. The study has been running almost 5 years, and I find that very reassuring.

Prof. Home: Prof. Edwin Gale [from the Department of Diabetic Medicine and Head of the Department of Clinical Science at the University of Bristol in the United Kingdom] is obviously also very keen that metformin is very protective in some way. Do you have a view on that at all?

Dr. Fonseca: Well, there's a lot linked with weight, and metformin does do something good for weight. If it doesn't cause weight loss, at least it doesn't cause weight gain, which is part of the natural history in this [group] of people who are obese and get diabetes. Many treatments cause weight gain, and we know that weight is associated with hormonal changes. If you have estrogen-sensitive breast cancer, for example, you may have a greater risk if you gain weight. Maybe there is something there. There are some theoretical theories about AMP [adenosine monophosphate]-activated protein kinase being involved also.

Prof. Home: So you're still keen, in the context of insulin therapy in today's discussion, on continuing metformin in people using insulin therapy of any kind. Is that right?

Dr. Yale: There are multiple reasons in terms of body weight, in terms of requiring less insulin, having low rates of hypoglycemia, and in terms of the mortality data from the UKPDS (United Kingdom Prospective Diabetes Study).[9,10]

I think there are many reasons to continue [metformin in people using insulin]. Metformin seems to be a very good agent, and it's plausible that it has this [protective] effect on cancer. I don't think it's proven because, again, these are observational studies. As you mentioned, these patients are younger, and they probably have less risk of cancer

otherwise. Whatever adjustments are done, we're not always certain it's done, but it certainly looks very good and supports its use.

Dr. Fonseca: Just to preannounce something that's going to happen in December [of 2009], the American Cancer Society and the American Diabetes Association are coming together for a consensus symposium, and they'll come out with a joint statement on this, which I think is very important.

Prof. Home: Jean-Francois, you mentioned that in UKPDS buried in one of their papers, there are data, in fact, for cancer in regard to sulfonylurea and insulin vs conventional therapy, which would largely be diet in that case. It's identical in the 2 groups. There is just no suggestion that those in the insulin and sulfonylurea groups did any worse. I dare say they're analyzing the data in more detail now, but that's in the original 1998 papers,[11,12] if you look.

Dr. Fonseca: Again, you need to look at what the study is designed for. This wasn't in a cancer-susceptible population; they're relatively newly diagnosed with diabetes. If you really want to study cancer, you've got to take a high-risk group, like risk for cancer, perhaps older maybe with a family history, and then randomize them and see what happens. There's no study doing that right now.

Prof. Home: The other new bit of data presented here during the meeting is a paper published in *The New England Journal of Medicine*, which is the 3-year results from the 4-T (Treating to Target in Type 2 Diabetes) study,[13] which as you know has compared basal insulin titrated up with prandial insulin after 1 year to biphasic insulin to a prandial insulin regimen to which basal could be added after 1 year. You've seen some of the headline results of that paper presented by Prof. Rury R. Holman. Would you like to tell us what your take-home message is?

Dr. Fonseca: To me, there's no surprise there. If you go back to the DCCT (Diabetes Control and Complications Trial),[14] which was, of course, in type 1 diabetes, they showed that people who took the biphasic of or 2 injections a day in any form didn't do as well as those who took 4 injections a day. Now the problem with the prandial approach is with 3 injections, which leaves you uncovered for many, many hours of the day. Again, that's not satisfactory. Adding on basal insulin to oral antidiabetic agents can work for a while, but as those orals stop working, you're going to need some additional therapy. So again, to no surprise, there was a lot of crossover in this study with people going from one therapy to another. Did you find that surprising?

Dr. Yale: Well, I was surprised by the results, I must say, because I was hoping they would be equal. The majority would support basal by being a simpler approach --

Dr. Fonseca: But that would support basal even more.

Dr. Yale: But basal is even better because 2 injections a day provide better glucose control similar to prandial, but less weight gain and hypoglycemia. These are fairly dramatic differences. I'm surprised because of most of the trials we've seen before, and they all have their biases in the way they're designed; in general, they were not showing dramatic differences.

Prof. Home: To summarize, you talk about differences, and the differences point to an A1c [glycated hemoglobin]. There were hypoglycemic differences, particularly in the first year, and that's important to people with diabetes. The hypoglycemia was then equal at 3 years. What was different, I suppose in addition to that, were the body weight changes, which -- you'd expect -- are least in the basal group.

Dr. Fonseca: But from the patient's point of view and what matters most is what harm they perceive or unpleasantness they perceive. It's hypoglycemia and weight gain with insulin therapy. They want to be at goal, but it doesn't matter to them whether they are maybe 0.1% higher. If they get hypoglycemia, they're extremely upset about it and they don't like gaining weight.

Dr. Yale: But certainly basal is very simple. The good news is that the simple approach works at least as well and better in many aspects than the more complicated approaches. Now, it does seem to be a temporary approach. That's the unfortunate part of this trial; over two thirds of patients within 3 years required something else to be added.

Prof. Home: But to be fair, it was protocol driven because they were actually -- and we'll come back to this — targeting an A1c of 6.5%.

Dr. Yale: Absolutely. But I think the concept is that you often require something else. With basal, you often require prandial to be added, and with the prandial, you'll need basal to be added.

Prof. Home: Overall, I'm getting the hint from both of you that because there aren't a lot of differences between the 2 arms -- though there are important differences in the first year in regard to hypoglycemia and weight gain, but because basal insulin is the simplest place to start -- it now looks as though that's the place we ought to be more formally endorsing in our guidelines. Is that correct?

Dr. Fonseca: Absolutely. That's what I think.

Dr. Yale: I think that's the case. I think we know we have a problem with insulin initiation. That's clear. It's often delayed too much, and if there's a protocol which is simpler, I think that should help. I think these are all in many cases ideal situations for family physicians to get involved starting insulin. The fact that the simpler protocol works very well is very good news because we can go to family physicians, implement different protocols -- simple protocols to use, and hope that we'll be able to stop this huge delay in starting insulin, which is present.

Prof. Home: We'll come back to that question because there were other interesting data at the meeting. Some of the figures here I find quite interesting. This is the abstract and refers to the number of people getting to target: in the basal group, 43%; prandial group, 44%; and biphasic group, lower at 32%.[15] Now 2 questions arise from that. Is it good that you can get 40%-45% of people to target to 6.5% with these rates of hypoglycemia? Second, conventionally, at least on this side of the Atlantic, we're in America now -- Canada, sorry -- 7% has been the target. Should we now be going for 6.5% if we can?

Dr. Fonseca: What is the target from the Canadians?

Dr. Yale: In Canada, the A1c target is under 7% for everyone. It says that we may aim for 6.5% in order to get protection of the kidneys, the ADVANCE (Action in Diabetes and Vascular Disease: Preterax and Diamicron MR Controlled Evaluation) data.[16,17] But we must take into consideration, when we do, the potential for higher rates of hypoglycemia and potentially higher rates of death in those that are challenged on the cardiovascular side, as in the ACCORD trial.[18] It basically says that early on when hypoglycemia is not a problem, let's say it's a question of adding metformin or agents that don't cause hypoglycemia, we should aim for an A1c of 6.5%. But the longer the duration of the diabetes, the more we are using insulin therapy, the more we should be careful at going to an A1c of 6.5%. So in patients, like the patients in this trial, probably 7% would be the A1c goal for most of the Canadian physicians.

Prof. Home: You wouldn't think that having seen these data, where people are on average getting 10 symptomatic episodes per year, but half of them were getting to an A1c of 6.5%, that this isn't a reason if you can for taking people lower than 7%.

Dr. Yale: Absolutely, and the mortality rates were extremely low.

Prof. Home: So there was none of the ACCORD worries apparently, for whatever reason.

Dr. Yale: Certainly these data are encouraging that we can aim to an A1c of 6.5% for many subjects. Again, the ACCORD data showed that it's particularly in those people with higher A1cs and in whom we have difficulties getting them down to goal. Perhaps the ACCORD trial was asking to push, push, push, and in those patients, those are the ones that didn't do very well. Perhaps it is a question of being reasonable when we see that a patient is having difficulty getting down to goal, that it is not just a question of doubling the dosages and that other strategies need to be explored. But it's very encouraging that for many, many patients, in close to half the patients we can achieve those goals very safely.

Prof. Home: Can I ask, Vivian, you mentioned body weight, and I couldn't agree more. It's very important to our patients. They go on about it to me a lot, and they don't like gaining weight. How important is a difference of 2 or 3 kg, and let's ignore the cosmetic area, in the metabolic terms, do you think?

Dr. Fonseca: We are actually right now looking at the implications of weight gain in the ACCORD study. There was a fair amount of weight gain in people who improved their glycemic control in the intensive group. I don't think it's the only one cause responsible for the increased mortality. There are multiple reasons for that and we may never know, but there were other implications. People who gained weight often meant they took more insulin and they needed more blood pressure medication, but in general, we tell patients that they need to lose weight. This is a disease that's very intricately linked with obesity, and we give them therapies that cause weight gain, which to me I find philosophically disturbing. We need to look for therapies that will cause weight loss, and when we use therapies, use a strategy that will cause less weight gain. I'm very encouraged by the basal insulin group having less weight gain in the 4-T study. Again, there are interesting data about analogue insulins causing less weight gain than NPH,[19-21] whether there's something intrinsic about the insulin, as claims have been made with detemir, or whether there's just less hypoglycemia. Does that mean you snack less and get less weight gain? We will probably talk about the other data that we presented here on less hypoglycemia and with the analogue.[15] I think that that is a very important consideration.

Prof. Home: We ought to be clear here when we keep talking about basal insulin, but as you say, this is detemir. Do you think it matters whether it's detemir or glargine from these points of view with the investigators who have got identical results or different results, or is that too speculative had they been using glargine?

Dr. Yale: It's difficult to be certain because the study used detemir. There are many studies that seem to show a difference of a few kilograms. Would glargine be exactly where detemir is? Would it be halfway between the others? It's difficult to know. It's speculation at this point.

Dr. Fonseca: There is one study by Julio Rosenstock which tried to make comparisons between insulins.[22]

Prof. Home: I'm a coauthor.

Dr. Fonseca: It's a relatively short-term study compared to this study, and it did show that there was the least weight gain with detemir. Also glargine had less weight gain than NPH. Whether this is hypoglycemia or something beyond that, we need to work out.

Prof. Home: So no real feel for the differences as far as this is concerned then. Let's move on to some of the other things that are actually in the meeting. You had a poster yourself, together with the just-named Julio Rosenstock, addressing issues of hypoglycemia with insulin glargine and absolute rates of hypoglycemia in the number of people that need to be treated, I think.[15]

Dr. Fonseca: This is taking data from the same study I mentioned that's in *Diabetologia*, the head-to-head comparison between glargine and NPH for looking at retinopathy. One of the things we found was both groups had equal glycemic control, and this has been shown multiple times. We should never claim that any of these is better than NPH in terms of lowering glycemia because after all, if you titrate the dose of insulin enough you will get equal glycemic control. But repeatedly, you're seeing less hypoglycemia with analogues such as insulin glargine. That was

seen in a meta-analysis of short-term studies and a kind of regression. Two regression lines were drawn (A1c against hypoglycemia), and they're clearly separate between NPH with glargine being lower. That's precisely what we saw in this randomized 5-year study. Over a 5-year period, you got less hypoglycemia. The question we asked in this analysis, which we presented yesterday, was: How many people do you need to treat in order to avoid 1 episode of severe hypoglycemia in a year? It's actually very low; it's 23. For every 23 patients that you treat in a year with glargine as opposed to NPH, you will save 1 person from getting severe hypoglycemia. I would put to you that 1 episode of severe hypoglycemia for an older person with type 2 diabetes is not a pleasant experience.

Dr. Yale: It's clearly what patients fear the most. In that sense, I think it's extremely important. This comes from treat-to-target kinds of studies. My suspicion is that in real life, it's treat to side effect. In other words, physicians [will back off] when they get to a side effect. They won't say, "Oh, it doesn't matter." We push, push, push because we need to get to target like in the clinical trials.

Dr. Fonseca: Well, the patients back off.

Dr. Yale: It may have a controlled improvement in terms of real-life situations.

Dr. Fonseca: It's the patients who back off. You tell them you've got to get to this target and you go up on the dose, and they won't do it because they're getting hypoglycemia.

Prof. Home: Let me get that right then. This number needed to treat then of 23 was for severe hypoglycemia.

Dr. Fonseca: That's correct.

Prof. Home: Defined as?

Dr. Fonseca: Needing assistance from somebody else. The concept of number needed to treat is very important when you're looking at an outcome in a large long-term trial because you see differences, and you want to know how many people you need to treat. Its statistical significance can be obtained when you have thousands of patients in a trial, but what does it matter in practice? If I were to tell you that you had to treat 5000 patients to be saving 1 episode of hypoglycemia, it's probably irrelevant. The figure here was 23.

Prof. Home: That's interesting. The meta-analysis you referred to I think said the number needed to treat was 8.[23] But that was for nocturnal hypoglycemia.

Dr. Fonseca: That's correct.

Prof. Home: Nocturnal hypoglycemia is also a significant burden to people with different targets.

Dr. Fonseca: I would agree with that. But here, we went specifically for severe hypoglycemia -- and these data over a 5-year period, which is important.

Prof. Home: Some other data within the data, which I guess you may have seen, there's a paper from Prof. S. Tsai, in Taiwan, looking at some comparisons of insulin, detemir, and glargine. What's your take on these papers? There are quite a lot of them around now. This was the FINE Asia (First Basal Insulin Evaluation in Asia) study or the Asia version of the FINE study.[24]

Dr. Yale: I haven't seen the data in detail, but I think the results from these studies must be taken with precaution because they are observational trials. The dosages are not necessarily very aggressive. I much prefer to rely on randomized trials in terms of comparing directly 2 insulins and making conclusions. I find them interesting to see what kind of insulin dosages are given, what kind of outcomes they get. In terms of making claims of superiority over one to the other, I think we have to be careful.

Prof. Home: Again, if I could call on your editorial latitude to these observational studies, clearly long-term observational studies can be quite useful in gathering safety data. In terms of efficacy, do you readily publish that kind of thing in *Diabetologia*?

Dr. Fonseca: I think you need to take my answer with a little caution. We have a lot of competition for space in our journal. We can't print everything. We don't want to cut too many trees. It's very competitive for the space. We prefer randomized controlled trials. That doesn't mean observational data are bad. It is more hypothesis generating, and then you can go out and do the randomized trial to prove it.

Dr. Yale: I think they show some good data on efficacy, but not in terms of comparing one drug to the other because they're not necessarily used the same way by the same people. I think they show us what's happening in real life, to some degree. I think if, for example, the targets are not attained, the insulin dosages are blocked at 20 U, whereas in the 4-T trial they needed 88 U to get them.

Prof. Home: Yes.

Dr. Yale: There's a huge difference. It might give us clues on how we must adopt our educational initiatives to bring physicians to better use insulin. I think they're very useful, but not for the same thing as randomized trials.

Dr. Fonseca: This study is important in another aspect that I'm very conscious of; if you look at this World Diabetes Congress, it tells you what a big problem diabetes has become all around the world.

Prof. Home: Globally, yeah.

Dr. Fonseca: Globally, and you have representatives here from every country talking about how diabetes is affecting not just their healthcare, but their economies. This is important to them. It's important worldwide, but it's also important in a society like ours and in Canada and the US [United States] because we are multicultural. Every doctor has patients who came from different parts of the world and different genetic makeup and different body mass indexes, and are sensitive to insulin in different ways and therapies in different ways.

Prof. Home: I was talking to a physician from Libya during the week, and they've just completed a survey there -- 21% prevalence of diabetes. We knew it was high in the Gulf countries, but this is now extending along the North African coast, and it's going to be a real problem. Another study I found interesting was one which looked at -- and you referred to it a little -- about educational initiatives in people on insulin or enough insulin.[25] It looks as though weight gain is something which can be done about in people who are insulin treated if you choose to actually make the effort and put the educational programs into place. Do you think in light of these studies showing you can bring weight down in people on insulin that we're making enough effort in our own practices to provide them with optimal dietary advice?

Dr. Fonseca: People who are on insulin sometimes get more education than the average person with type 2 diabetes. It's so easy to write a prescription for metformin or a sulfonylurea and tell your patient to go away. They never come to the class because they don't perceive it as being important. For insulin, they probably will. We published a study in *Diabetes Research and Clinical Practice* a while ago showing lower mortality in a large diabetic database in the US, but we've also found that those people were better compliant with their statins and angiotensin-converting enzyme inhibitors and everything, perhaps because they had had much more education and more attention from the physician.

Dr. Yale: When we talk about lifestyle, they think there's a tendency -- at least in Canada and elsewhere -- to implement these measures particularly at diagnosis or shortly after. Once that's done, people say, "Ah, there's a failure. Now we forget about this; we go to medications," and so on. I think this trial shows that when you actually implement good medical nutrition therapy, you can have just as good results late when they're on insulin as earlier when they're not on insulin in terms of reducing A1c and reducing body weight. We must not be pessimistic when we

have somebody on insulin who's saying, "Ah, diet is just as important in terms of coordinating with insulin, but in terms of trying to reduce weight, it's too late." No, it's not too late.

Dr. Fonseca: There's still so much more we have to learn about insulin therapy. You're just starting up another study.

Prof. Home: There are some data from the CREDIT (Cardiovascular Risk Evaluation in people with T2D on Insulin Therapy) study at this meeting,[26-29] which you will have seen particularly in relation to baseline status of people starting insulin. This is from a very large number of countries around the world. I wonder if you have any comment on the current status of these people who are starting insulin.

Dr. Yale: I think what's interesting with that trial is that, as you say, it's in many countries. The data had been analyzed in different countries separately. To see that from country to country, it's the same message. It seems that we wait way too long before starting insulin. The average A1c in this insulin initiation is about 9% in Italy. In some Asian countries, it's even 10%. I think it's way beyond what's usually recommended in the guidelines. It shows that there is still this barrier, this other insulin resistance, this difficulty in having physicians start insulin -- whether it's the patient that resists, the physician, the organization, or how easy it is to just prescribe it.

Prof. Home: I'm going to interrupt you there because you've identified the barrier and you're telling us where the barriers might be. But with respect to your not telling us where you think the real major barrier is, is it really multifactorial, a bit of everything? Or is there something in particular that you think is causing the problem?

Dr. Yale: I think it's a combination of 2 things. First of all, there's no doubt patients don't want to start insulin. They have this fear of weight gain, of hypoglycemia, and of coma. They also feel guilty. Diabetes is a terrible disease in terms of guilt. They have this guilt of failure. They often ask for a second chance. I've never had, in 25 years, a patient tell me, "I'm so happy you're putting me on insulin." It never happens. They always try to negotiate. "Give me a chance. I'll be careful now. I'll follow my diet. I'll do exercise. I'll do everything you want. I see you're serious now; you're talking about insulin. I'll do everything." The patients certainly don't like it. On the physician side, if we're not convinced that we're doing good, if the physician has some fears of hypoglycemia, fears of weight gain, and agrees that lifestyle would be better, they may give in and say, "Okay; we'll wait a bit more." There's also the organization. If it's seen as complicated, family physicians are very comfortable with pills. They don't need anybody else. When it comes to insulin, they need an educator, a pharmacist, someone to teach the technique because often they don't have the time. Depending on how easy it is, how organized the care is, it might be a more significant barrier. That might vary a lot from country to country.

Prof. Home: So, Vivian, last words. How are you going to overcome this barrier, the most important thing you can do?

Dr. Fonseca: I just want to take up something that Jean-Francois just said. The patient says, "I don't want this," but very often, patients will come back a month after starting insulin and then they thank me.

Dr. Yale: Yes.

Dr. Fonseca: And say, "I feel so much better, and it's not as bad as I thought."

Prof. Home: Too late by then if you waited 2 years before starting the insulin.

Dr. Fonseca: That's right.

Dr. Yale: On the other hand, maybe we can use these people to convince the others because there's no doubt. Some studies have shown better quality of life when starting insulin.

Dr. Fonseca: That is actually one of the strategies we use; people who have done it successfully teach other patients.

Prof. Home: Thank you very much to my dear colleagues. Thank you to MedscapeCME and our viewers for taking part in this activity. Personally, I'd like to welcome you to Dubai in 2 years' time to the next World Diabetes Congress. Meanwhile, you can proceed to the online CME test. Click on the Earn CME Credit link on this page. Thank you very much.

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Disclosure: Philip Home, MA, DPhil, DM, FRCP, has disclosed the following relevant financial relationships:
Received grants for clinical research from: Novo Nordisk; sanofi-aventis; Bristol-Myers Squibb Company; GlaxoSmithKline
Received grants for educational activities from: Novo Nordisk; sanofi-aventis; GlaxoSmithKline
Served as an advisor or consultant to: Novo Nordisk; sanofi-aventis; GlaxoSmithKline; Novartis Pharmaceuticals Corporation; Roche; MannKind Corporation; Merck & Co., Inc.
Other: Nearly all major pharmaceutical manufacturers support healthcare development activities of institutions with which I am involved.

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Received honoraria for consulting and lectures from: GlaxoSmithKline; Novartis

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Received grants for clinical research from: sanofi-aventis; Merck & Co., Inc.; GlaxoSmithKline; Eli Lilly and Company; Bayer HealthCare Pharmaceuticals; Pfizer Inc.; Novo Nordisk; Roche; Abbott Laboratories; Medtronic, Inc.

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CME Released: 10/27/2009; Valid for credit through 10/27/2010

Target Audience

This activity is intended for diabetologists, endocrinologists, primary care physicians, certified diabetes educators, and other clinicians who care for people with type 2 diabetes mellitus.

Goal

The goal of this activity is to present expert insight on the significance and clinical relevance of new data on insulin therapy presented during the 20th World Diabetes Congress of the International Diabetes Federation (IDF).

Learning Objectives

Upon completion of this activity, participants will be able to:

1. Discuss the clinical significance of data on efficacy, and safety of early initiation of insulin therapy on the basis of data presented at the 20th World Diabetes Congress of the International Diabetes Federation (IDF)
2. Explore strategies to prevent hypoglycemia in people with type 2 diabetes mellitus

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