2019 Andreas Grüntzig Ethica Award

Professor Jean Marco

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Ethica Award

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Each year the ETHICA Award recognises outstanding colleagues who have contributed in an exceptional way to our Mission, which is to serve the needs of each individual patient by helping the cardiovascular community to share knowledge, experience and practice.

Professor Jean Marco, as a colleague, as a teacher, as a person, is such an individual and has been nominated to receive the 2019 ETHICA Award.

Professor Jean Marco understood very early in his career that continuous education of healthcare professionals is an essential determinant of improved patient outcomes.

Ever since, he has devoted his entire professional life to the quest for "Excellence in Education at Work" by applying critical thinking. While working for the next generation, his relentless commitment to effective education has brought Professor Marco to study, adopt and teach evolving educational principles spanning over decades, but always based on respectful peer-to-peer interaction and non-judgmental sharing of experience.

Professor Marco's legacy is well alive, continues and will continue to inspire generations of colleagues worldwide who have inherited his fundamental principles of sharing impactful, relevant, lifelong and self-directed learning.

His 360 degrees vision demands constant curiosity, out-of-the-box thinking and open-minded adaptation to local needs and culture, enabling caring impact on the life of each and every individual patient and her/his family.

The generous principles that govern effective continuous medical education "à la Jean Marco" annihilate borders, privileges, biases or prejudice, fulfilling the unselfish essence of our Hippocratic oath:

I will respect the hard-won scientific gains of those physicians in whose steps I walk, and gladly share such knowledge as is mine with those who are to follow.

Dear Professor Marco, please accept this token of the personal gratitude of the thousands of colleagues from around the world, who remain respectfully thankful to you for enticing each and every one of us to become a better doctor, and a better person.

Dear friends and companions, please join us in paying tribute to Professor Jean Marco, the 2019 recipient of the ETHICA Award.

William Wijns

The Lambe Institute for Translational Medicine and Curam – Galway, Ireland

PCR Chairman

I thank Jean Fajadet, William Wijns and the EuroPCR Course Directors for giving me the 2019 Andreas Grüntzig Award. I consider this award as a special honour.

This moment allows me to share with all of you the key founding principles that led the PCR Family to become what is today – and also if I may – some thoughts that have guided me over the years.

If you adopt them in all your initiatives, they will bring you success!

The story started with Jean Fajadet and myself in 1986 when we decided to work together to build a long-term and ambitious project.

Our first key principle was:

We are capable of building the best.

Each of you is capable of building the best!

We considered it essential to reach consensual and clear answers on 3 key questions to be sure of having the same strategic vision.

1. Where are we going?

We agreed our common long-term vision was to build in parallel:

– the best unit of interventional cardiology in France;

– the best European annual course in the field of interventional cardiology.

My first piece of advice: start all your projects by clearly defining your main goals and ambitions!

2. What should we be doing?

For our project of a European annual course in interventional cardiology our consensus was:

– to create a large forum to allow participants to critically reflect on their experience and knowledge;

– to adopt, as the main purpose, the proficiency and experience of participants to propose for each individual patient the most appropriate management considering local experience and constraints.

My second piece of advice: start with the end in mind! Clearly identify what outcome you want to achieve and for what purpose.

3. How are we going to do it?

Our consensus was:

– to focus the course on *daily problems and case-based approaches* (using broadcasted live or recorded cases) aimed at stimulating participants' critical thinking; *using working situations* that enable participants to do or apply what is proposed; *offering*

interactive exchanges with and between the participants that enable them to share collaborative learning messages.

– to implement a continuous critical analysis and evaluation process, essential for continuous improvement and working to achieve well defined participant-oriented outcomes and purposes.

My third piece of advice: always clarify the working axes of your actions according to the outcomes you want to achieve and adopt a critical evaluation concept in your search for excellence.

Our vision was a long-term vision, so we agreed on a second important key principle:

We have to work for our successors.

We worked to build our project by engaging in the following actions:

Commitment and determination: live our dream with passion, work, drive, energy, to stimulate and share.

Teamwork: together we will achieve more, (1 plus 1 is greater than 3!), by having trust and confidence in each other.

Strong work ethic: that includes honesty, integrity and humility.

Attract and retain the best with an open minded and critical spirit.

Search for added value by encouraging innovation, creativity and flexibility.

Continuous quest for improvement based on a continuous critical analysis and evaluation of our actions.

Based on these key founding principles the first annual "Course on Complex Coronary Angioplasty and New Techniques in Interventional Cardiology", took place in Toulouse on 27, 28, 29 April 1989.

Geoffrey Hartzler from Kansas City, MI, USA and Cass Pinkerton from Indianapolis, ID, USA supported us and played a key role in the success of the project. They were true friends and we are indebted to them.

This Course was the starting point of a long journey.

By implementing the principles, I have outlined – year after year – *Festina lente* or hasten slowly – PCR Family has become what it is today.

My part in this journey is coming to an end, but the journey goes on.

I would like all of you to take ownership of all these founding principles: I guarantee they will bring you success!

I have learned a lot from each and everyone of you – you have my sincerest thanks.

Professor Jean Marco

In the conclusions of all the clinical work reported, since the first publication of Andreas Grüntzig, one finds a common phrase: ***"percutaneous angioplasty is safe and effective in a subgroup of carefully selected patients"*****.**

The safety and efficacy of interventional cardiology depends on **patient selection**.

Patient selection is based on the operator's judgment, his capacity to evaluate and to synthesise the ensemble of potential problems, and his own experience versus his knowledge of major publications dealing with the same type of patient. Yet this patient selection also depends on a personal subjective component which includes dispassionate interpretation of one's own competence and threshold of risk tolerance.

Before making the decision to propose to one's own patient or a referred patient, transluminal interventional cardiology, surgical or medical therapy an "angioplaster" may be influenced by some conflicts of interest that can effect the objectivity of his decision.

The patient selection should be based solely on the objective appreciation not only of the possible benefits which angioplasty offers versus medical or surgical therapy, but also of the physician's own experience and competence. The decision should only be made in the best interest of the patient.

There are still three limitations of conventional balloon angioplasty:

1) anatomical: long and diffuse lesions, chronic total occlusions and diffuse old saphenous vein graft disease,
2) procedural: the unpredictable risk of acute closure,
3) restenosis: occuring in 25-40% of successfully treated patients.

Some new devices may be more effective or safer than balloon angioplasty in certain situations.

However, before using a new device, the operator must have prior knowledge of the equipment, and proper training to know exactly how and when to use the device.

It is easy to be seduced by the lure of what we can do with a new device, but: "*is the use of this device really in the best interest of the patient? What are the possible consequences of the device in terms of morbidity, quality and longevity of life? What is the cost in comparison with medical therapy, surgery or conventional balloon angioplasty?*"

Of course, it is necessary to encourage innovation, therefore, initial safety and efficacy testing of a new device must be evaluated be some investigators.

Yet, there needs to be a balance between the encouragement of new innovations and conflicts of interest including financial interests. Although the financial support of companies is necessary to promote innovation and research in new technology, the majority of investigators should be financially independent.

In order to appreciate what we can expect from a new device, the interventional cardiology community needs the unbiased results of large series reported by independent investigators, large multicentre studies well standardised and coordinated and, if necessary (but not mandatory), randomised studies comparing the device with other therapies.

Finally, the "angioplasters" should be conscience that the extraordinary development of all of the techniques presently used, allowing one to enlarge the indications of interventional treatment, increases the cost of health care: all of those participating in the development of interventional cardiology, or using the means of interventional cardiology, should make the effort to master the augmentation of costs before the health-care system imposes its own limits.

Professor Jean Marco

"The future of coronary angioplasty lies within the dissemination and teaching of technical skills, further refinement of catheter systems, further characterisation and limitation of restenosis, and in the development of new innovations allowing application of the procedure to larger groups of patients with coronary artery disease."

Geoffrey Hartzler – 1985

This conclusion, which was written ten years ago, was most relevant as angioplasty today can be applied to more than 40% of investigated patients with coronary disease. This evolution is indeed the consequence of training programs and sophistication of catheters; but it is only in the first phase of its flight, and the technologies are very likely to grow at an exponential speed in the next few years and the number of patients under potential treatment will increase proportionally.

However, one must always bear in mind that if many factors contribute to successful short- and long-term angioplasty procedures, the most critical of them is the experience of interventional cardiologists in:

- patient selection
- procedural strategy
- technical skill

– The selection should be carried out according to the patients' own best interests. Indeed, growing competition between centres and cardiologists has been gradually leading to clashes of interest that may damage the cardiologist 's objectivity in front of the patient. With some experience and the equipment at disposal, it is now very easy to introduce a balloon catheter everywhere in the coronaries. Therefore, the cardiologist should always wonder whether PTCA is absolutely necessary and whether this therapy is the most appropriate for the patient.

– In spite of all the spectacular improvements mentioned above, interventional cardiologists should always base their selected strategy on potential complications. They should always keep in mind the problems that may arise from the procedure so as never to be caught unaware, and always be mentally and physically prepared for unexpected events. Even someone very skilled and experienced may have to face complications.

– Technical skill requires a high-volume, regular practice and, for the safety of the patient one must have a dispassionate interpretation of one's own competence in front of difficulties.

Large single- or multicentre, comparative or non -comparative and randomised or non-randomised studies are regularly presented. Their results can warp the reasoning of interventional cardiologists should the latter analyse them only superficially.

Consequently, only a very critical analysis of these studies can turn them into guidelines.

Interventional cardiologists must consider it a duty to explain clearly the pros and cos of angioplasty to their patients with or without their families. They should take time to speak with the patients, insist on the potential disadvantages and take into account their wishes. Of course, they should avoid resorting to the balloon catheter immediately.

1995. A new vision is emerging: the anatomical reconstruction of the coronary artery via percutaneous approach.

That is one of the reasons why interventional cardiologists are more and more confronted with the "temple moneychangers" and with the ever-advancing technologies. It is so easy to be seduced by the lure of what we can do with a new device. Their responsibility is thus to know the literature very well, and to base their practice on their critical judgement of the data. On the other hand, the investigators should be unbiased when presenting their results.

Nevertheless, among all these improvements, we may wonder whether Mother Nature will respond to the advancing technology in interventional cardiology, and whether we will be able to master her whims.

Professor Jean Marco

1996: Fabulous improvements have been carried out in interventional cardiology. However, we should be careful not to fall apart but to keep course.

Technology continues to make great strides forward, thus today the endoluminal anatomical reconstruction of the complex coronary artery lesion can be achieved.

Dilatation can be performed with endoprostheses in all coronary artery branches and the number of percutaneous revascularisation procedures blow up.

But do we reflect properly? Do we really act in our daily work for mid- or long-term patients' interest?

What is the most frequent scenario in most countries today?

A patient with a suspected coronary atheroma is early oriented to a cascade of examinations (stress test, thallium scintigraphy, stress echocardiography...). The results end by disturbing the physician who conveys his anguish to the patient and, in most cases, a coronary angiogram is performed.

How to explain to a patient and his attending physician that if a stenosis or lesion are noted, it will be seen later how it will evolve? At this stage, the interventional cardiologist's opinion is required. With a great deal of practice, he can dilate all the lesions.

Do we have to wait before dilating? The practitioner can be disturbed by the medico-legal fear.

In this scenario, do we really think about the patient's interest? Does our way of reasoning not lead us too quickly to the interventional cardiology act? Do we really analyse the possibilities and medical treatments in low-risk lesions?

Interventional cardiologists have at their disposal a whole gear of endoprostheses: at present about 18 stents (or probably even more in the few days following the printing of this page) are presented from 8mm to 60mm in length; various drugs allow to minimise to a very low rate the risk of clinically detectable thromboses.

Long or short lesions, large or small vessels, thrombus, bifurcation do not slow down the cardiologist anymore: the frontiers of interventional cardiology are pushed back.

But are we not sometimes deleterious, harmful? Are we not limiting the possibilities of revascularisation in the future?

We have not understood the mechanisms of restenosis yet: remodelling is secondary to a multitude of factors we do not understand, endoprostheses are not always the absolute weapon to abolish restenosis and can induce, in some unforeseen cases, and particularly on small vessels (or even large ones), a vascular wall injury with consequences that cardiologists are not fully aware of.

"We have not mastered the whims of Mother Nature yet".

The opportunities that technology offers should not make us forget about the aim of our profession. We must always know about the results of the clinical studies on the way, about experiences before anticipating or being aggressive with the patients.

We must always have a clear discussion with the patient to be treated (looking him straight in the eye), inform him clearly and react as a physician and not as a technician.

Professor Jean Marco

Before suggesting a complex coronary endovascular therapy, the interventional cardiologist must have a clear discussion with his patient, looking him straight in the eye, and explaining as clearly as possible the pros and cons of balloon angioplasty or stenting or surgical revascularisation to make sure he will understand his meaning. He must also take time to listen to him and try to understand his wishes. Above all, he must react as a physician, aware of the human side of his duty, and not as a brilliant technician who is able to handle very sophisticated technologies.

Our human task must prevail over our technical skills.

As interventional cardiologist, we must consider it our **duty** not only to give a straight analysis of the angiographic lesions and to think about an appropriate therapy, but it is also our **duty** to keep ourselves regularly informed on the short- and long-term results of studies scientifically carried out.

One must always bear in mind the following question: Will the complex interventional procedure that I suggest to the patient really modify his quality of life and/or his life expectancy?

An analysis with a critical sight of our own results and the results of other teams reported in conditions that can't be open to criticism, can help us to reach these goals.

It is, however, obvious that new investigations are needed to move progress forward and to find new technologies. But they must be conducted in the strict respect of medical ethics, without any external constraints that might influence analysis of the results, in order to improve medicine and the patient's own best interests.

Technical advances are spectacular with the miniaturisation of many devices that can be placed within the coronaries, and the practitioner's skill has become outstanding.

Interventional cardiologists can be too easily seduced and taken in by the "brio" of the picture and the result of our interventions.

Ulysses and the Mermaids: Don't let yourself be tempted by the immediate lure of the picture.

The angioplasty act is attractive and the placement of ever sophisticating stents can allow us to improve the "aesthetic" quality of the majority of our procedures.

However, isn't this the mermaid trying to lure Ulysses?

We are not always aware of the fact that we have not mastered the whims of Mother Nature yet.

We have created a new disease: in-stent restenosis; now, we are trying to analyse the best strategy to treat it, in particular in the case of diffusely long in-stent restenosis.

Couldn't we have avoided such a situation by a less aggressive attitude? Isn't medical treatment as good as angioplasty? Did we take enough time to analyse ischaemia with non-invasive techniques and evaluate medical treatment?

The fear of a major cardiac event rarely explains the systematic revascularisation of a stenosis.

Are we conscious, with the same critical mind, of the fact that restenosis (sometimes predictable or even with a high probability rate before the procedure) can impair the quality of life of some patients? (PTCA followed by stress test and angio control, repeat PTCA, repeat stress test and angio control, repeat PTCA, ...) and that sometimes, after these repeated procedures, the cardiologist is finally led to explain that medical treatment is enough...

Why do we must come to that conclusion after several aggressive procedures?

The concept of angiographic restenosis seems to disturb somehow our way of thinking. We express the results in terms of "target vessel revascularisation". Did we perform these interventions to patients who really needed them?

Nevertheless, all these comments demonstrate that our responsibility is to keep a critical judgement on our profession. Ever advancing technologies allow application of endovascular therapy procedure to a larger group of patients with coronary artery disease.

In 1977, Andreas Grüntzig opened a fantastic way. BENESTENT II study showed that a majority of patients initially proposed by Andreas could be treated with a 99% success rate and less than 15% of restenosis. This is fantastic!

CABRI, EAST and BARI studies demonstrated that two thirds of very selected patients with multivessel disease candidates for surgery could avoid surgical revascularisation by angioplasty. This is fantastic! However, we must keep in mind that it refers to very selected patients and we mustn't apply this reasoning to every patient with multivessel disease.

We do hope the outstanding improvements made since that date will keep going on.

Professor Jean Marco

"A good candidate is a patient who has discrete stenosis, which means 4, 5, 6 mm long, and maybe 1, 2 or 3 spots in different arteries, that is possible, but not diffuse long segments of arteries. For these arteries, the balloon will not work. ... The coronary stenosis itself can be as severe as possible, 99% stenosis is not the problem. The problem is the length of the stenosis. The more material you have to move, the more difficult it will be for the bloodstream to keep that artery open... Basically, I do not see any specific contraindications... You can do in patients with renal insufficiency, diabetes, hypertension or whatever,... If this patient has in his own concept 2 or 3 stenoses and in a major artery a total occlusion which you can not pass with a catheter, which means normal long occlusion, he will not be a good candidate for dilatation... Left main stem, poor LV function and more than 1 or 2 lesions who turned me more to bypass graft surgery... We dilate monthly around 120 patients, the primary success rate is always underlying around 90%... It is realistic to think about 25-30% of recurrence rate..."

Such were the words – the indications and concepts – that Andreas Grüntzig gave to us during his interview on the Cardiology Video Journal in 1983.

Materials have evolved and we now have at our disposal sophisticated balloons and guidewires, debulking devices and high performing stents in different length, diameter and design: their deployment is possible to achieve successful stenting in all types of lesions irrespective of their morphology, location or length with a low rate of subacute stent thrombosis.

This evolution led us to enlarge indications to lesions that Andreas considered as contraindicated: diffuse disease, long lesions, long occlusions.

What has changed compared to Andreas's comments 14 years ago?

Coronary stenting has increased the immediate success rate up to 98%, even in complex lesions.

The restenosis rate for discrete lesions, as advised by Andreas, has decreased, but not so drastically, by 10-15% after stenting vessels larger than 3 mm. However, a new disease, in-stent restenosis, has appeared and remains around 25-30% (or more) for short lesions in vessels smaller than 2 mm.

For other lesions we remain confronted to the vexing problem of more than 30% instent restenosis rate: "***We have not mastered the whims of Mother Nature yet***".

Endoluminal reconstruction of long and complex lesions is technically feasible: between 1995 and 1996, we were lured by the attractive "cosmetic" immediate results of this technique. The euphoria for stenting appeared to us surrealistic.

The biological counter-reaction of wall injury induced by the stent let us consider coronary stenting of long lesions or lesions located in small vessels as a mid-term failure in over 50% of cases. Besides, diffuse instent restenosis is not such a benign disease: we do not have an efficient treatment yet.

Maybe we should have a break in our rush to new technologies and ask ourselves:

Didn't we go too far? Mustn't we come back to a more conservative behaviour?

Before reconstructing the vessels at any price, mustn't we impose a better approach to the control of ischaemia of the myocardium? Do we perform these interventions to patients who really need them?

Is the future really in device progress or in the chemical treatment of coronary atherosclerosis?

Professor Jean Marco

Interventional Cardiology on the edge of the 21st century: Where are we? Where are we going?

Over the past 4 years, we have been the witnesses of an outstanding improvement in the stent technology. Skilled interventional cardiologists are able to implant a stent in their daily practice either in a small vessel, a bifurcation lesion, a thrombus containing lesion, a saphenous vein graft, a long lesion, and so on...

Maybe the time has come to ask some questions:

1. Do the short-term results of the series reported in the literature (the basis of our reasoning) reflect the "real world" in the so numerous centres performing interventional cardiology?
   Seventy, eighty percent of stenting or more! How many vessels really remain patent?
   To improve immediate results we needed – and still need – more aggressive antiplatelet agents: with the strong pharmacologic advances in this field, is the cost-effective ratio really positive?
   Given these advances, does the patient benefit from the aggressive interventional approach of acute coronary syndromes?
2. In selected patients with multivessel disease, long-term results of randomised studies have demonstrated similar results in terms of mortality or non-fatal MI rate for patients treated by PTCA or surgery.
   We have been unable to prove at this time the superiority of the endovascular techniques compared to the medical treatment for the patients with stable angina and single or two-vessel disease.
   On the edge of the second millennium, "we have not mastered the whims of Mother nature yet" and diffuse in-stent restenosis is the price to pay for some aggressive technology.
3. Interventional cardiologists express their mid-term results in terms of TVR or TLR.
   In some specific indications (such as small vessels), is the endovascular approach, even with stent, superior to the medical treatment?
   Do we improve the quality of life in some patients with repeat procedures or are we too neglectful?
   Beyond the spectacular technologic advances, we must raise the question of the long-term efficacy for patients receiving repeat procedures.

End of the 20th century: where are we going?

In order to treat the vexing problem of in-stent restenosis, brachytherapy seems to be the emerging technique.

This new therapy imposes a new training for the operators, new organisation, equipment, expensive devices and the creation of new teams concepts (brachytherapy units) including interventional cardiologists, oncologists and medical physicists: isn't the heaviness of this strategy delaying the real problem?

What is the long-term outcome of the patients treated this way? Brachytherapy could be used to treat restenosis: will we have the financial resources to adapt this technique towards the "unknown"?

Stent coating will undoubtedly be the emerging technique in the coming years. We do not know yet which will be the ideal drug, but the answer will be given soon.

New technologies tackle and will tackle again and again the symptoms to improve the quality of life of patients not candidates for any of the revascularisation procedures. PTMR, gene therapy, has a nice future since a lot of patients who do not accept to be limited by angina will ask for that treatment.

We must train our operators and plan our equipment to face this demand.

We must consider in parallel to drug development the progress in surgery: hybrid revascularisation with mini-invasive surgery (including robotics) and interventional cardiology will increase more and more in the next coming years.

We must form new multidisciplinary teams to explore this fascinating new revascularisation era.

Professor Jean Marco

Year 2000: we are still confronted with adverse lesion morphologies (very long lesions, complex lesions in small vessels or bifurcations, chronic total occlusion, diffusely diseased and calcified lesions, old degenerated saphenous vein grafts...) and high-risk patients that continue to be our day-to-day issues. Complex coronary or peripheral lesion morphologies require appropriate and efficient techniques with currently available tools but also the development of new technologies to improve short and long-term percutaneous intervention results.

At the beginning of this new millennium, "we have not mastered the whims of Mother Nature yet".

Diffuse proliferative in-stent restenosis still remains a vexing problem; we obviously know its predictive risk factors (diabetes, small vessel diameter, long lesion...) but we do not have the weapons to prevent it in the high-risk subset of patients or how to treat it.

Brachytherapy seems to be an emerging and efficient treatment. However, essential questions remain: What about late thrombosis? Geo miss? Which source, which lesion in which patients? Which dose? What are the long-term results on the vessel wall? We have still a lot to learn before using it in our daily practice.

Coating stents with antiproliferative agents might be an alternative solution to avoid intra-stent restenosis in high-risk patients. But what are the long-term results? The consequences of such device/drug on the vessels?

What is the respective place of mini-invasive surgery vs. hybrid revascularisation vs. extensive endovascular stand-alone therapy?

End-stage or unrevascularisable patients: this is an important issue for the coming years. We hear a lot (even from the patients themselves!) about new emerging therapies such as DMR, stand-alone or combined with gene therapy, but what do we really know about these techniques? What is the place of pacing in advanced cardiac insufficiency? Cost, safety, efficacy of all these techniques remain to be proved.

One of the objectives of The Paris Course on Revascularisation is to find the balance between teaching the appropriate techniques applicable in daily practice and the use of new emerging technologies, while always keeping a critical and ethic spirit on their limits and effectiveness.

Cardiologists: You have a strong expertise and ability in the manipulation of complex coronary lesions and you move logically and naturally to manage patients with non-cardiac peripheral vascular disease in order to extend your field of activity. You have to be cautious and learn step by step the immediate and long-term specific problems of peripheral vascular disease.

Radiologists: You can probably learn the cardiologists' expertise to improve your technique and you should collaborate with the vascular surgeons to extend your activity.

Vascular surgeons: More and more many of you tend to apply endovascular therapies and non-invasive techniques but probably your interest would be to evolve in a new working environment and habits.

Radiotherapists: You start to work in a cathlab and apply brachytherapy to the coronary and the peripheral field. Be welcomed.

The other objective of The Paris Course on Revascularisation is to show that all of us have an interest to cross the frontiers of our own specialty to share this new multidisciplinary concept in order to offer the best patient care.

Professor Jean Marco

In interventional cardiology, the stent could be described as the great equaliser. Even in adverse coronary morphologies, stent implantation, with aggressive adjunctive antiplatelet therapy, allows us to achieve excellent short- and medium-term results.

In day-to-day practice, however, the interventional cardiologist practitioner builds his reasoning for percutaneous interventions, not only on feasibility, but also on an on-going analysis of the balance between risk and long-term benefit, using his knowledge of "evidence based medicine".

Retrospective analysis of complications of percutaneous intervention in adverse lesion morphology frequently exposes judgemental errors in indication, strategy, material selection, or lack of awareness of the risks and their potential prevention...

One of the principal objectives of EuroPCR is to teach an "evidence-based medicine" approach to solving the problems presented by patients with complex coronary lesions, by using currently available tools and new technologies. Another objective is also to highlight our previous errors of judgement and approach, in a spirit of openness and constructive criticism, and to demonstrate how to avoid them in the future.

"We have not yet mastered the whims of mother nature"

Diffuse-proliferative in-stent restenosis in now "Public Enemy Number 1" for interventional cardiologists!

Endovascular brachytherapy, according to "evidence-based medicine" should be the treatment of choice for patients with reversible ischaemia and diffuse in-stent restenosis. Stent coating with antiproliferative agents is a promising emerging technology which may rapidly establish its place in the interventional armamentarium, but as yet the evidence supporting their widespread use is awaited. It must also be recognised that other exciting tools are being evaluated, including sonotherapy, red light therapy, cryotherapy, stent heating, new atherectomy devices, combined strategies, etc.

"No-hope patients": Unrevascularisable patients with diffuse coronary disease and/or non-viable myocardium and/or end-stage heart failure, represent an increasing percentage of our patient group. Do we have any hope to offer these no-hope patients? Well, the initial enthusiasm for percutaneous direct myocardial revascularisation has not been confirmed by the clinical trials, however, new ideas are already being explored and myogenic cell grafting to the damaged myocardium represents an exciting and promising approach.

New technologies: The challenge and spirit of EuroPCR. One of the principal objectives of EuroPCR is to is highlight and demonstrate the use and potential place of

emerging new technologies, always maintaining a balanced and critical view of their limitations. The challenge to the directors of EuroPCR was, keeping in mind the spirit of "evidence-based medicine", to strike the balance between teaching the appropriate use of currently applicable techniques in day-to-day practice, and exposing and demonstrating the potential value of emerging technologies, which will become the day-to-day techniques of the future.

EuroPCR is a platform of expression for all practitioners (**cardiologists, radiologists, vascular surgeons and radiotherapists**) who take charge of patients with coronary or vascular disease. Although such a congress is greatly facilitated by generous sponsorship of the medical industry, its central reason for existence ("raison d'être") is our thirst for knowledge and the need to continue pushing back the barriers of ignorance and improving health care, driven by us the physicians. It is our common interest to cross the frontier of our own specialty and share this new multidisciplinary concept in order to offer the best patient care to those who need it. We continue to make incredible strides on an annual basis, often thanks to the medical industry, but we must retain our independence and objectivity and sometimes resist the inexorable force of the industry, remembering the old proverb: "festina lente" (make haste slowly...)

Professor Jean Marco
Professor Patrick Serruys

The principal objectives of EuroPCR are:

- to teach an "evidence-based medicine" approach to manage patients with complex coronary and peripheral vascular lesions, by using currently available tools and novel technologies,
- to highlight and demonstrate the use and the potential place of emerging novel technologies, always maintaining a balanced and critical view of their clinical application,
- to highlight previous errors of judgement and approach, in a spirit of openness and constructive criticism, and to demonstrate how to avoid them in the future.

The challenge of the directors of EuroPCR is, keeping in mind the spirit of "evidence-based-medicine", to strike the balance between teaching the appropriate use of currently applicable techniques in day-to-day practice, and exposing and demonstrating the potential value of emerging technologies, many of which will become incorporated into routine practice in the future.

Since the very beginning of the Toulouse Angioplasty Course in 1989 and the EuroCVS in Rotterdam, this book has always been critical to the ethos of the teaching for these two Courses.

This book has evolved and has been continually modified in its content and composition reflecting the importance of evidence-based teaching emphasised throughout the course.

This year's version is the fruit of the effort and work of all the team – working year by year on the success of EuroPCR.

Some chapters have been reviewed and updated by their authors and new chapters – corresponding to the relevant current issues – have been added and those considered less relevant have been withdrawn.

All the members participating in this revision of the 2002 edition hope the book will find a place in your personal library and will be a daily educational tool providing answers to questions arising in your day-to-day practice.

A sincere thank you to all those who contributed to this improved and updated version of the book that reflects the spirit of EuroPCR.

Professor Jean Marco

"The key words of EuroPCR are
EDUCATION
and
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which both entail a critical and ethical spirit."

The key words of EuroPCR are EDUCATION and LONG-TERM CREDIBILITY, which both entail a critical and ethical spirit.

This book is one of the educative tools of EuroPCR. We hope that you will find this 2003 edition improved compared to the previous versions.

Targeted towards interventional cardiologists, radiologists, vascular surgeons, the book has benefited from the collaboration of 40 primary authors who have dedicated their precious time towards the success of EuroPCR: a sincere thank you to all those who have contributed.

This educative tool reflects the objectives of EuroPCR: after a general review on atherosclerosis, a number of chapters are dedicated to technical and practical tips and tricks related to current techniques for the performance of percutaneous intra-vascular and intra-cardiac interventions. Other chapters provide a synopsis of results of clinical trials and previously reported studies. Finally, the book includes chapters dedicated to future technologies – permitting a forward vision at a high scientific level.

One of the key commitments of EuroPCR is to adopt the methodology of modern teaching: the content of this book and the other educative tools (including the slide library, the book of trials, and all of the course content) will be available on the web-site www.europcronline.com. However, we hope that EuroPCR books will always find a place in your personal library and provide answers to your daily questions.

If you find the content of this book useful in your daily practice, this in itself will display a sincere appreciation to all the contributing authors.

Professor Jean Marco

EuroPCR is an annual multidisciplinary course dedicated to interventional cardiologists, radiologists, vascular surgeons, angiologists, nurses, technicians, related healthcare professionals, and allied professionals interested in the improvement of patient care in the cardiovascular field.

Each EuroPCR edition is driven by a desire to continually improve. However, the key words remain constant: EDUCATION and LONG-TERM CREDIBILITY, whilst keeping a critical and ethical spirit.

EuroPCR is a course aiming to balance a clinically orientated programme maintaining evidence-based medicine, incorporating data from late-breaking trials. It also ensures a larger orientation towards educational tools on one hand, and a "glimpse into the future" towards new technologies on the other.

The programme consists of coronary/non-coronary percutaneous cardiac interventions and peripheral interventions, including a large place for non-invasive imaging techniques.

The scientific content of EuroPCR has been determined in close collaboration with the Scientific Board and various scientific societies. Thanks to all the chairmen and the members of the ESC and European and national working groups for their contribution.

This book is traditionally an educative tool of EuroPCR.

This edition is the fruit of the participation of numerous authors of different disciplines who have dedicated their time and efforts: a sincere thank you to all those who have contributed to EuroPCR with the aim that it be successful.

One of the key issues of EuroPCR is to adopt the methodology of modern teaching: the content of this book and the other educative tools (the slide library, the syllabus of trials, and the complete course contents) will be available on the website www.europcronline.com.

However, as with previous editions, we hope that this book will still find a place in your personal library and provide answers to your daily questions. If you still find this book useful in your practice, this will display a sincere appreciation to all the authors.

On Behalf of the all the Board of Directors
Professor Jean Marco & Professor Giancarlo Biamino

PCR-EAPCI percutaneous interventional cardiovascular medicine Textbook: a step and benchmark for a future model in education

The PCR-EAPCI Percutaneous Interventional Cardiovascular Medicine Textbook is the successful realisation of the combined and constantly growing reflections, actions and experience of the entire "PCR Family" and it will become the benchmark at the core of education for our community in the future.

Historical roots and collaborations: EuroPCR

Since 1983, our motto, "innovation in education and sharing" has been the basis of all our actions. Thanks to a tight, strong and efficient collaboration with Marc Doncieux and Europa Organisation, by sharing both a common vision ("together we achieve more") and common ethics (our joint commitment to integrity, responsibility and excellence) we have progressively built innovative processes in education and established fruitful European collaborations. This resulted in the annual PCR course of worldwide renown, a platform of exchange widely open to the whole cardiovascular community and with its own course book.

Sharing these same values with Patrick W. Serruys (Director of the Rotterdam course Euro-CVS), we created EuroPCR (2000) and mutually matured the concept of one annual Course with its own course book to one annual course with a continually accessible website, PCRonline (2002) and a monthly published journal, EuroIntervention (2006).

The constructive and open-minded spirit of the former Presidents of the ESC (European Society of Cardiology), Jean Pierre Bassand and Michael Tendera, allowed to us to join the forces of EuroPCR, EuroIntervention Journal and the ESC Working Group on Coronary Interventions for the creation of the EAPCI – European Association of Percutaneous Cardiovascular Interventions (2007), a registered branch of the ESC.

From EuroPCR to the "PCR Family"

Progressively, we saw a growing number of open-minded and passionate young people uniting around the EuroPCR concept, dedicated to serving the needs of the cardiovascular community, committing to achieving a common mission, sharing the same concept of "innovation in education at work" and continuously searching for excellence at work.

The "PCR Family" was created.

Its mission is "to serve the needs of each individual patient by helping the cardiovascular community share knowledge, experience and practice".

Again, thanks to Europa Organisation, the "PCR Family" extended its educational activities well beyond EuroPCR towards PCRonline, PCR London Valves, AsiaPCR/SingLIVE, GulfPCR-GIM, PCR on the road, with PCR-branded sessions delivered in international meetings; PCR Editions, producing Textbooks and EuroIntervention; PCR Seminars, now delivered in Europe and India... and each one – in all we do – always sharing the same ethics and values, along with a great respect for cultural differences.

This allows the "PCR Family" to achieve greater levels of innovation and creativity in education for the benefit of all patients who present with cardiovascular diseases, while taking into consideration local context and/or cultural differences as opportunities for widening our common views.

The PCR-EAPCI Percutaneous Interventional Cardiovascular Medicine Textbook represents a successful achievement from a combination of all the above "innovation, creativity, search for excellence, passion, open-mindedness and inclusive reasoning" for the benefit of each individual patient and the increasingly close ties between PCR and EAPCI.

The PCR-EAPCI Textbook is the living illustration of the "together we achieve more" idea and concept.

It represents the ability of a small group of editors (Patrick W. Serruys, William Wijns, Eric Eeckhout, Alec Vahanian, Marc Van Sambeek and Rodney De Palma), to unite 266 authors around a coherent project, a comprehensive and exhaustive educational tool which will serve the whole interventional medical community.

Next step: building the future

This book may have its foundations and its origins in the past, but it contains the future within it. The seeds of tomorrow are in these pages.

Our future step and goal is to embed – as the central and critical core of our learning – all of the chapters of the Textbook across all the PCR- EAPCI educational activities, encouraging all our worldwide community to challenge what is being proposed, to constantly press speakers, trainers and fellow participants for greater clarity, understanding and up-to-date knowledge.

The chapters from the PCR-EAPCI Textbook should be logically linked and put into perspective along with the daily practice and experience of future participants and of new and innovative forms of educative activities. This will require additional input from academic and clinical teachers, creating innovative formats adapted to local needs, expectations, constraints and regulations.

The expertise of PCRonline ensures that the latest developments concerning the Textbook will be echoed in the various electronic mediums (such as the iPad) and on the internet (using our website experience). The Textbook has been designed from the beginning to be constantly evolving.

A group of PCR-EAPCI members (Andreas Baumbach, Christoph Naber, and Alec Vahanian) have initiated and taken on this ambitious task. They will surely bring together "new-comers", who will share PCR's values ("we must work for our successors"). These new-comers will be unified around a coherent project of a new innovative model of educative processes, adapted to the co-evolution of our world; stimulating creativity, constantly searching for excellence, endowed with a self-critical spirit, and committed to the continuous evaluation of what we do for the improvement of the quality of care delivered to each individual patient.

Strength to strength

Our ability to evolve constantly, to be reactive and to offer such cutting edge tools is again due, in large part, to the strong and very efficient partnership we developed with Marc Doncieux and Europa Organisation. This Textbook embodies many of the innovations that have sprung from this partnership, and its strengths.

These creative strengths will allow the PCR-EAPCI Percutaneous Interventional Cardiovascular Medicine Textbook to play a key role in our ability to offer the best care to the individual patient. It is part of a process coming out of the core of what is PCR and the EAPCI, building on what was before, and embodying what remains active and vital... our experiences, ideas and ethics.

By sharing this spirit of "innovation in education at work", by joining our strengths, together PCR and EAPCI will "achieve more". Once we know how to share, we can consider the PCR-EAPCI Textbook as a source of inspiration to enable "new-comers" to innovate, while always taking into consideration both the science of adult learning and respect for differences and cultures, considering them all as a great strength.

Our experience has led us to this today, to federate strength to strength, creatively, together, opening a great future.

Jean Marco, Chairman of PCR
and **Jean Fajadet, President of EAPCI**

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