

THE ADAPT CENTRE
&
BLOOD PRESSURE UNIT

Beaumont Hospital & RCSI

ANNUAL REPORT, PUBLICATIONS

AND

SCIENTIFIC PRESENTATIONS

VOLUME 21

2005

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History & background

This is the 21st **and last** Annual Report of the Blood Pressure Unit, which was founded 27 years ago in the Charitable Infirmary, Jervis Street, Dublin.

I established the Blood Pressure Unit in 1979 in collaboration with Professor Kevin O'Malley with support provided by the Charitable Infirmary and the Royal College of Surgeons in Ireland. From the outset the Unit concentrated on research into the pharmacology of blood pressure lowering drugs, particularly in the elderly, and on the development of blood pressure measuring techniques, especially techniques of ambulatory blood pressure measurement. The 2005 report is the 21st bound volume of the publications and presentations from the Blood Pressure Unit (and latterly the ADAPT Centre), giving details of over 600 papers published in peer-reviewed journals together with numerous editorials, letters, books, book chapters, general and educational articles and abstracts. The report also lists the scientific and educational presentations made since 1988 in many countries around the world.

The Arterial Disease Assessment Prevention and Treatment (ADAPT) Clinic was established in collaboration with Professor David Bouchier-Hayes and Professor Desmond Fitzgerald in 1997. The rationale for this unique clinic was based on the concept that disease of the arterial organ was a fundamental denominator in all cardiovascular disease. The ADAPT Clinic was established to ensure that all patients with cardiovascular disease, regardless of the speciality to which they presented, would receive the most comprehensive risk factor assessment with appropriate life-style modification and evidence-based drug treatment directed at the arterial organ.

The ADAPT concept was further developed in 1999 with the establishment of the ADAPT Centre, which became the research facility of the Blood Pressure Unit. The ADAPT Centre was committed to the emerging role of translational research in bridging the void between the clinical 'bedside' and the laboratory 'bench'. The ADAPT Centre provided out-patient facilities and a cardiovascular laboratory equipped to perform state-of-the-art cardiovascular assessment that included echocardiography, electrocardiography with stress testing, Holter monitoring, applanation tonometry, pulse wave velocity analysis, 24-hour ambulatory blood pressure monitoring, beat-to-beat non-invasive blood pressure monitoring, 24-hour silent ischaemia monitoring, fundal photography and imaging, and carotid wall (intima-media thickness) imaging. Through its association with the Charitable Infirmary Trust Molecular Medicine Laboratories and the Clinical Research Centre in the RCSI Building at Beaumont Hospital, and with the Department of Clinical Pharmacology, the Centre for Proteomics, SURGEN, and BIOSYS at RCSI, the ADAPT Centre was able to further translational research into the biochemical and genetic markers of risk, thrombosis, and endothelial damage.

The events leading to the closure of the ADAPT Centre in 2006 and the effective transformation of the Blood Pressure Unit into a referral service for ambulatory blood pressure measurement, however disagreeable to recount, must none-the-less be placed on record alongside the academic and scientific achievements .

In 2003 the then Registrar of the Royal College of Surgeons in Ireland, Professor Kevin O'Malley convened a committee consisting of Professor Desmond Fitzgerald, Professor David Foley and me to "to find a means of ensuring continuation of the research projects being conducted in the Blood Pressure Unit and ADAPT Centre" in anticipation of my retirement from clinical practice in 2004. This Committee, which met on eight occasions, established an international search committee and considered three potential candidates, who were invited to the College. When Professors O'Malley and Fitzgerald subsequently left RCSI, the Committee was not reconvened and my exhortations to the new administration of the College expressing the urgency of protecting the research resource of the Blood Pressure Unit and the ADAPT Centre were without avail. Likewise my written and direct approaches to the consultants and administration of Beaumont Hospital expressing concern for the continuation of the service commitment to patients attending the Blood Pressure Unit and for the continuing international research projects being conducted by the ADAPT Centre were considered to be ill-founded. I am most grateful to Dr. Patricia McCormack, who undertook the role of principle investigator of on-going research studies, to Dr. Alice Stanton, who continued to oversee on-going studies and to Professor Dermot Kenny, who facilitated alternative arrangements in the Clinical Research Centre.

In June 2006 the ADAPT Centre was closed at short notice with the exception of an office and a room to house the library of the Blood Pressure Unit and the blood pressure measuring equipment collected over a

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quarter of a century (which is destined ultimately for the Spengler Museum of Blood Pressure Measurement to be established in Paris).

In June 2006 I resigned from the Servier Chair of Cardiovascular Pharmacology at the Royal College of Surgeons in Ireland and I was appointed to the Servier Chair of Molecular Pharmacology at the Conway Institute of Biomolecular and Biomedical Research, University College Dublin.

Research

ASCOT Study: The Anglo-Scandinavian Cardiovascular Outcome Trial (ASCOT) is the largest international endeavour in which the Blood Pressure Unit and ADAPT Centre has participated. ASCOT has recruited over 20,000 patients at moderate risk from cardiovascular complications of hypertension to determine which blood pressure lowering or cholesterol-lowering drug is most beneficial in preventing stroke and heart attack. The ADAPT Centre, was one of the major centres (with over 500 participating patients) in ASCOT. The Lipid Lowering arm of the study was closed prematurely in 2003 because the benefit to patients receiving statin treatment was of the order of 30% reduction in heart attack and 25% in stroke compared with those patients receiving placebo. In 2004 the Data Monitoring Committee recommended that the blood pressure lowering arm of ASCOT be closed prematurely because of a lower total mortality in the 10,000 patients receiving the calcium-channel blocker and ACE inhibitor combination compared to the 10,000 patients receiving the beta-blocker and thiazide combination. These results, which have major implications for the future management of cardiovascular disease, have been published in the *Lancet* and analyses of the data in the main study and in more than 20 sub-studies are ongoing.

The RHASP Project: The ADAPT Centre has collaborated with the Department of Health and Children in linking the *dabl*[®] data base at Beaumont Hospital to six selected practices in primary care so as to transmit information on cardiovascular risk from specialist hospital clinics to primary care physicians. RHASP is bringing best management of cardiovascular disease to primary care so as to effect the 30% reduction in stroke and heart attack that has been possible in the ASCOT Study with rigorous drug treatment of hypertension and dyslipidaemia. The pilot project has now been completed and has been independently audited by Professor John Cairns from the London School of Hygiene and Tropical Medicine. This report was launched by An Tainiste and Minister for Health, Mary Harney in January 2005. The extension of the RHASP model to cope with the increasing burden of heart failure in Ireland has been approved by the Health Service Executive and is now being established at St. Vincent's Hospital.

Publications and communications

In 2005 the ADAPT Centre continued to contribute to hypertension research, publishing some 15 scientific papers, and delivering research presentations at home, in the UK, Italy, Sweden, Egypt and the US.

International collaborative research

The ADAPT Centre continued to participate in a number of important international collaborative studies, which included the ASCOT, HYVET, ADVANCE, ON-TARGET and AIB Phase III studies. Participation in these studies has necessitated collaborative research with a number of institutions and universities abroad, which include Imperial College, London, St. Mary's Hospital, London, St. Bartholomew's Hospital, London, the Hammersmith Hospital, London, the Western Infirmary, Glasgow, the University of Louvain, the University of Ghent, Columbia University, New York, Sydney University, Australia, and the Universities of Florence and Milan, Italy.

Epidemiological research projects

The Allied Irish Bank Phase III Study, completed collecting genetic samples from 1000 AIB personnel to replenish the valuable genetic bank originally provided in the AIB Phase II Study. The ADAPT Centre data base contains comprehensive blood pressure data on over 26,000 patients. A collaborative partnership has been established with Dr. Jan Staessen in the Catholic University of Leuven to analyse the predictive value of blood pressure parameters in cardiovascular deaths in this cohort. Led by Dr. Eamon Dolan, this study, which showed the superior value of ambulatory blood pressure and particularly nocturnal blood pressure in the management of hypertension, was published in *Hypertension*.

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Working Parties

I handed over Chairmanship of the Blood Pressure Measurement Working Group of the European Society of Hypertension to Dr. Jan Staessen in June 2005 but agreed to continue as joint-chairman for the Madrid and Fukoka meetings in 2006. Dr. Alice Stanton is Chairman of the Irish Heart Foundation Council on High Blood Pressure. I am a member of the EU Standards Committee on Blood Pressure Measurement, the WHO Committee for blood pressure measurement in low resource countries, the British Standards Institute and the Association for the Advancement of Medical Instrumentation in the US. I am also a member of the ASCOT Steering Committee and Genetics Committee and Chairman of the ASCOT Sub-study Committee, and Professor Desmond Fitzgerald and Dr. Alice Stanton are also members of the ASCOT Genetics Committee. As a member of Board of the International Centre for Health and Cooperation at Fordham University, I continued to participate in international humanitarian endeavours.

Acknowledgements

The research achievements outlined in this report have been facilitated by the Charitable Infirmary Charitable Trust, which has given valuable support to the Blood Pressure Unit and ADAPT Centre over many years. Research has also been funded by grants from RCSI, Servier Laboratories, Imperial College, London, HEA PRTLII Cycle 3, Pfizer International, Institute for International Health, University of Sydney, Boehringer Ingelheim and MacMaster College, Department of Health and Children and the European Society of Cardiology, all of which are acknowledged with gratitude. Finally, tribute is paid to the diligence and loyalty of all the staff in the Blood Pressure Unit and ADAPT Centre, characteristics, which have facilitated the team approach so necessary in scientific research.

Eoin O'Brien
20th June 2006

The ADAPT Centre & Blood Pressure Unit

Staff 2005

Medical

Eoin O'Brien	Patricia McCormack
Alice Stanton	Eamonn Dolan

Nursing - Blood Pressure Unit

Cora McTiernan	Mary Lyons
Evelyn Clarke	Helen O'Neill

Nursing - ADAPT Centre

David Farrell	Anne Murphy
Geraldine McCarthy	

Technical

<i>Echocardiographer</i>	<i>Computer Analyst</i>
Simon Lyons	Neil Atkins

Secretarial

Valerie Hughes	Eunice Carey
Barbara Gallagher	Orla Lambe

SCIENTIFIC AND EDUCATIONAL PUBLICATIONS 2005

Original papers

1. Parati G, Mendis S, Abegunde D, Asmar R, Mieke S, Murray A, Shengelia B, Steenvoorden G, Van Montfrans G, O'Brien E. Recommendations for blood pressure measuring devices for office/clinic use in low resource settings. *Blood Press Monit* 2005;**10**:3-10
2. Sever PS, Dahlof B, Poulter NR, Wedel H, Beevers G, Caulfield M, Collins R, Kjeldsen SE, Kristinsson A, McInnes GT, Mehlsen J, Nieminen M, O'Brien E, Ostergren J; ASCOT Investigators. Prevention of coronary and stroke events with atorvastatin in hypertensive patients who have average or lower-than-average cholesterol concentrations, in the Anglo-Scandinavian Cardiac Outcomes Trial--Lipid Lowering Arm (ASCOT-LLA): a multicentre randomised controlled trial. *Drugs*. 2004;**64** Suppl 2:43-60.
3. [O'Brien E and Mendis S. Co-chairs] Affordable Technology. Blood Pressure Measuring Devices for Low Resource Settings. WHO Publication. Geneva.2005.pp.32
4. O'Brien E, Asmar R, Beilin L, Imai Y, Mancia G, Mengden T, Myers M, Padfield P, Palatini P, Parati G, Pickering T, Redon J, Staessen J, Stergiou G, Verdecchia P on behalf of the European Society of Hypertension Working Group on Blood Pressure Monitoring. Practice guidelines of the European Society of Hypertension for clinic, ambulatory and self blood pressure measurement. *J Hypertens* 2005, **23**:697-701
5. Dolan E, Stanton A, Thijs L, Hinedi K, Atkins N, McClory S, Den Hond E, McCormack P, Staessen JA, O'Brien E. Superiority of Ambulatory Over Clinic Blood Pressure Measurement in Predicting Mortality: The Dublin Outcome Study. *Hypertension*. 2005;**46**:156-161
6. Sever PS, Poulter NR, Dahlöf B, Wedel H, Collins R, Beevers G, Caulfield M, Kjeldsen SE, Kristinsson A, McInnes GT, Mehlsen J, Nieminen M, O'Brien E, Ostergren J for the ASCOT investigators. Reduction in Cardiovascular Events With Atorvastatin in 2532 patients with type 2 diabetes. ASCOT-LLA. *Diabetes Care* 2005;**28**:1151-1157.
7. O'Brien E, Stanton A. Clinical Review: Shared care can help prevent heart disease. *Forum* 2005;**22**:33-35
8. Dahlöf B, Sever PS, Poulter NR, Wedel H, Beevers DG, Caulfield M, Collins R, Kjeldsen SE, Kristinsson A, McInnes GT, Mehlsen J, Nieminen M, O'Brien E, Östergren J for the ASCOT investigators. Prevention of cardiovascular events with an antihypertensive regimen of amlodipine adding perindopril as required versus atenolol adding bendroflumethiazide as required, in the Anglo-Scandinavian Cardiac Outcomes Trial-Blood Pressure Lowering Arm (ASCOT-BPLA): a multicentre randomized controlled trial. *Lancet*. www.thelancet.com Published online September 4, 2005 DOI:10.1016/S0140-6736(05)67185-1. *Lancet* 2005;366:895-906.
9. Poulter NR, Wedel H, Dahlöf B, Sever PS, Beevers DG, Caulfield M, Kjeldsen SE, Kristinsson A, McInnes GT, Mehlsen J, Nieminen M, O'Brien E, Östergren J, Pocock S for the ASCOT investigators. Role of blood pressure and other variables in the differential cardiovascular event rates noted in the Anglo-Scandinavian Cardiac Outcomes Trial-Blood Pressure Lowering Arm (ASCOT-BPLA) *Lancet*. www.thelancet.com Published online September 4, 2005 DOI:10.1016/S0140-6736(05)67186-3. *Lancet* 2005;366:907-913.
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Editorials

1. O'Brien E. Unmasking Hypertension. *Hypertension* 2005;**45**:481-482.
2. O'Brien E. From measurement to profiles, phenomena and indices: a workshop of the European Society of Hypertension. *Blood Press Monit* 2005;**10**:291-295.
3. O'Brien E. Whither blood pressure measurement? *Am J Hypertens* 2005;**18**: ??

Letters

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3. O'Rourke MF, Nichols WW, O'Brien E. Effects of Ramipril on Arterial Stiffness. *Hypertension* 2005;**45**:e14-e15

General and Educational

1. O'Brien E. Striving for accuracy in blood pressure measurement in the clinic setting. *Irish Medical News* 2005; May 3:46-47
2. O'Brien E. The art of detecting hidden hypertension. *Forum* 2005;June:47-48
3. O'Brien E. ABPM: Your questions answered. *Modern Medicine* 2005;**35**:45.
4. O'Brien E, Stanton A. Less Heart Disease with Shared Care *Diabetes Professional* 2005;24-26
5. O'Brien E. Foreword. Protecting Personal Health Information in Ireland; Law and Practice. Peter Lennon. Oak Tree Press. 2005.xi-xv
6. Dolan E, Duggan J. Cardiovascular prevention in the aged. *Medicine Weekly* 2005:38

Abstracts

1. Dolan E, Stanton A, Thijs L, Atkins N, McCormack P, Staessen JA, O'Brien ET. Prognostic significance of the nocturnal decline in systolic blood pressure: Dublin mortality outcome study. *J Human Hypertens* 2005;**19**:826
2. Tapp R, Sharp A, Chaturvedi N, Stanton A, Mayet J, Hughes AD, Thom S. Effects of blood pressure lowering with beta-blocker/diuretic-based therapy and calcium antagonist/angiotensin-converting enzyme inhibitor-based therapy on left ventricular diastolic function. *J Human Hypertens* 2005;**19**:827
3. Dolan E, Stanton A, Thijs L, Atkins N, McCormack P, Staessen JA, O'Brien ET. Ambulatory heart rate predicts cardiovascular and non-cardiovascular mortality: Dublin mortality outcome study. *J Human Hypertens* 2005;**19**:829
4. Poulter NR, Chang CL, Dahlof B, Sever PS, Wedel H for the ASCOT Investigators. The effect of doxazosin on blood pressure of subjects with treated but uncontrolled hypertension: evidence from the ASCOT trial. *J Human Hypertens* 2005;**19**:846
5. Dolan E, Thijs L, Atkins N, McCormack P, O'Brien E, Staessen JA, Stanton A. Ambulatory arterial stiffness index (AAS), a novel measure of arterial stiffness, provides additional prediction of cardiovascular mortality. *J Hypertens* 2005;**23** (suppl 2): S258
6. Li Y, Wang J-G, Dolan E, Gao P-J, Guo H-F, Nawrot T, Stanton AV, Zhu D-L, O'Brien E, Staessen JA. Ambulatory Arterial Stiffness Index Derived from 24-Hour Ambulatory Blood Pressure Monitoring. *J Hypertens* 2005;**23** (suppl 2): S227
7. Dolan E, Stanton A, Thijs L, Hinedi K, Atkins N, McClory S, Den Hond E, McCormack P, Staessen JA, O'Brien E. Prediction of Cardiovascular Mortality by Ambulatory Blood Pressure Monitoring: The Dublin Outcome Study. *J Hypertens* 2005;**23** (suppl 2): S136
8. De Buyzere M, Clement DL, De Bacquer DA for the OvA Investigators. Prognostic Value of Ambulatory Blood-Pressure. New data of the OvA Study. *J Hypertens* 2005;**23** (suppl 2): S146

SCIENTIFIC AND EDUCATIONAL COMMUNICATIONS 2005

General Practice Symposium. Raising the Standard in Blood Pressure Measurement. Osprey Hotel. Naas. 15th January 2005.

O'Brien E. *Clinical case studies in ABPM*

O'Brien E. *When is high blood pressure hypertension?*

General Practice Symposium. Raising the Standard in Blood Pressure Measurement. Dunraven Arms Hotel, Adare, Co. Limerick. 16th April 2005.

Dolan E. *A user's perspective: Interpretation of ABPM reports and clinical case studies.*

O'Brien E. *When is high blood pressure hypertension?*

15th European Meeting on Hypertension. Milan. Italy. 17th – 21st June 2005

Breakfast Workshop. 20th June 2005. *Self vs Ambulatory Blood Pressure in Clinical Practice.* Chairman: Eoin O'Brien

O'Brien E. *Which measurement is best in clinical practice?*

Scientific Workshop: 18th June 2005. *From measurement to profiles, phenomena and indices*

Chairman: Eoin O'Brien

Dolan E. AASI: rationale and methodology

Dolan E, Thijs L, Li Y, Atkins N, McCormack P, O'Brien E, Staessen JA, Stanton A. Cardiovascular mortality in relation to the ambulatory arterial stiffness index (AASI): a novel measure of arterial stiffness

Tripartate Colorectal Meeting, Royal Dublin Society. Dublin. 7th July 2005.

O'Brien E. *Let humour be thine medicine!*

European Society of Cardiology Meeting. Stockholm. Sweden. 5th September 2005.

O'Brien E. *Do we need nighttime blood pressure?*

Dolan E, Thijs L, Li Y, Atkins N, McCormack P, O'Brien E, Staessen JA, Stanton A. Ambulatory arterial stiffness index (AASI), a novel measure of arterial stiffness, provides additional prediction of cardiovascular mortality. *Poster presentation.*

Li Y, Wang J-G, Dolan E, Gao P-J, Guo H-F, Nawrot T, Stanton AV, Zhu D-L, O'Brien E, Staessen JA. Ambulatory arterial stiffness index derived from 24-hour ambulatory blood pressure monitoring. *Poster presentation.*

British Hypertension Society Scientific Meeting. Cambridge. UK. 13-14th September 2005.

Dolan E, Stanton A, Thijs L, Atkins N, McCormack P, Staessen JA, O'Brien ET. Prognostic significance of the nocturnal decline in systolic blood pressure: Dublin mortality outcome study.

Tapp R, Sharp A, Chaturvedi N, Stanton A, Mayet J, Hughes AD, Thom S. Effects of blood pressure lowering with beta-blocker+diuretic-based therapy and calcium antagonist+angiotensin-converting enzyme inhibitor-based therapy on left ventricular diastolic function.

Dolan E, Stanton A, Thijs L, Atkins N, McCormack P, Staessen JA, O'Brien ET. Ambulatory heart rate predicts cardiovascular and non-cardiovascular mortality: Dublin mortality outcome study.

Poulter NR, Chang CL, Dahlof B, Sever PS, Wedel H for the ASCOT Investigators. The effect of doxazosin on blood pressure of subjects with treated but uncontrolled hypertension: evidence from the ASCOT trial.

Centre for International Health and Cooperation. International Diploms Course in Humanitarian Affairs. University of Cairo. Egypt. 11th September 2005.

O'Brien E. *The global burden of cardiovascular disease.*

Evolution of Medical Care in Ireland over the last 350 years. Royal College of Physicians. Dublin. 12th October 2005.

O'Brien E. *Dominic Corrigan: A force beyond these shores.*

American Heart Association Meeting. Dallas, Texas. Mexico. US. 14th November.2005.

O'Brien E, Stanton A, Jensen C, Nussberger J, Aliskiren, An Orally Effective Renin Inhibitor, Suppresses Plasma Renin Activity And Improves Blood Pressure Lowering In Combination With Irbesartan In Patients With Hypertension.

Williams B, Lacy P on behalf of the ASCOT CAFÉ investigators. Differential impact of blood pressure-lowering drugs on central arterial pressure influences clinical outcomes – principal results of the conduit artery function evaluation (CAFÉ) Study in ASCOT.

EDITORIAL BOARD MEMBERSHIP

Journal of Human Hypertension: E. O'Brien

Blood Pressure: E. O'Brien

Blood Pressure Monitoring: E. O'Brien

COMMITTEE MEMBERSHIP

World Health Organisation. Geneva. Committee for Blood Pressure Measurement in the Developing World. E. O'Brien. Chairman

International Centre for Health and Cooperation. Fordham University. New York

E. O'Brien. Board Member

Working Group on Blood Pressure Monitoring. *European Society of Hypertension*

E. O'Brien. Chairman

Committee on Blood Pressure Measurement. *British Hypertension Society.*

E. O'Brien. Member.

HCC/10 Committee for the revision of standards for mercury and aneroid sphygmomanometers.

British Standards Institute. E. O'Brien. Member

CEN/TC205 EEC Committee for Non-active medical devices. E. O'Brien

Association for the Advancement of Medical Instrumentation (AAMI), Arlington, US

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Steering Committee. *European Study of Systolic Hypertension in the Elderly (Syst-Eur)*

E. O'Brien. Member

Side-project on Ambulatory Measurement. *European Study of Systolic Hypertension in the Elderly (Syst-Eur).* E. O'Brien. Member

Steering Committee. *European Study of Ambulatory Blood Pressure Measurement.* E. O'Brien

Council on High Blood Pressure. Chairman. A. Stanton. E. O'Brien, Member

Steering Committee. THOP (Home Pressure and Treatment of Hypertension) Study. E. O'Brien.

Steering Committee Anglo-Scandinavian Cardiac Outcomes Trial (ASCOT): E. O'Brien

Sub-study Committee. Anglo-Scandinavian Cardiac Outcomes Trial (ASCOT): E. O'Brien. Chairman

Genetics Committee. Anglo-Scandinavian Cardiac Outcomes Trial (ASCOT): D. Fitzgerald, A. Stanton, E. O'Brien.