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The Endocrinologist

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Banks.



► Well of course we had to – focus this edition of *The Endocrinologist* on hormones and sport, that is. Would you have expected anything less with the Olympics just 2 months away? So, here we bring you a series of articles on how endocrinologists have risen to the various challenges in this arena. Ian Gallen discusses the management of chronic endocrine conditions in elite athletes (page 13), David Cowan and Peter Sönksen describe the anti-doping programme and endeavours to stay ahead of the less honourable competitors (pages 14 and 17) and Faisal Ahmed suggests how androgen status might be used to define competition categories in the future (page 16).

The Olympics are all about pushing boundaries and ground-breaking achievements, which puts me in mind of another major event: the Society BES meeting, held in Harrogate earlier this spring. This year saw another excellent programme with some outstanding basic and clinical science contributions from both the established plenary and symposia speakers and the Young Endocrinologists. Turn to page 10 for an account by one of our Nurse Members, Julie Andrew, who walked away with gold by winning the Annette Louise Seal Memorial Award for her poster on steroid replacement therapy. Perhaps her experience will help encourage other nurses to consider specialising in endocrinology? On page 11, Alex Vincent describes how she's been doing this by offering endocrine placements to student nurses.

It was at the meeting that I realised, with a weird mixture of pride and dismay, that it is now 20 years since I attended my first Society BES meeting, also in Harrogate, as a PhD student. Apoptosis was a hot topic, Jack Martin topped the plenary bill, but my enduring memory is of two of my male colleagues discovering they'd been allocated the particularly pink and frilly bridal suite at the little hotel where we were staying. Fortunately, for reasons none of us could fathom, it came complete with a spare single bed!

Many thanks are due to Márta Korbonits, not only for this year's meeting, but also for all the hard work she has put into the Society BES programmes over the last 3 years. She has certainly set the bar high for Chris McCabe, our incoming Programme Secretary. Our thanks also go to Julia Buckingham and Paul Stewart, who have now finished their terms as President and General Secretary. Ashley Grossman and David Ray have taken up the batons. You can read biographies of all the new Officers on pages 5–6.

The Society, in collaboration with the European Society of Endocrinology, has just launched another forum for disseminating your research findings: the new Open Access journal *Endocrine Connections* (see page 7 for more details). Or you could apply for a Society grant to sponsor a poster session or seminar, like the organisers of the 6th Hammersmith Endocrine Symposium (see page 8). And if you fancy getting your message across to the public, don't forget the Society offers grants, and other opportunities in this area too – see page 4 for recent and future activities.

Speaking of grants, I mentioned I was making an application in my last editorial. Despite getting 8/10 at the committee meeting (usually a winning score) I was not successful. Meanwhile, another application submitted to another funding body has also got through triage (introduced for the first time due to the unprecedented number of applications – 112), but the panel expect to fund just 3 or 4 of the remaining 50. You do the maths. More on funding in the next issue.

In the meantime, enjoy the summer and the London Games. Let's hope they're a great sporting success and remembered for all the right reasons.

MELISSA WESTWOOD

The Society welcomes contributions and article suggestions; contact the Editorial office at info@endocrinology.org. Deadline for news items for the Autumn 2012 issue: 10 August 2012. Deadline for news items for the Winter 2012 issue: 5 October 2012.



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Welcome to the new Trustees

As well as the new Officers, whose profiles you can read on pages 5–6, we are delighted to welcome Professor Ann Logan to the Society's Council. Ann previously served as the Society's Programme Secretary and we look forward to working with her again.

2014 Medals CALL FOR NOMINATIONS!

The Society awards several medals annually, in recognition of outstanding contributions to endocrinology. All members are invited to make nominations. Forms can be found at www.endocrinology.org/about/medals.html. They should be returned by 31 July 2012.

The **Dale Medal** is the highest accolade bestowed by the Society, and is awarded to an individual whose studies have changed our understanding of endocrinology in a fundamental way. Previous recipients include RM Evans, KS Korach, ER Simpson, S O'Rahilly, M Thorne, AS McNeilly, S Lamberts and JK Findlay.

The **Society Medal** is awarded to an endocrinologist working in the UK, in recognition of outstanding studies. It has previously been awarded to M Korbonits, IS Farooqi, GR Williams, W Arlt, A Hattersley, HOD Critchley, BR Walker and VKK Chatterjee.

The other medals are intended to promote links between the UK and different areas of the globe. The **European Medal**, presented to an endocrinologist in mainland Europe, has previously been awarded to A Spada, JJ Holst, X Bertagna, B Allolio, W Wiersinga, N Skakkebaek, AM Colao and C Strasburger.

The **Hoffenberg International Medal** (formerly known as the Asia and Oceania Medal and the International Medal) is awarded to an endocrinologist from outside the UK, to promote international collaboration. Previous recipients include F Labrie, G Karsenty, PJ Fuller, T Yoshimura, M Kawata, K Ho, K Morohashi and G Risbridger.

The **Transatlantic Medal** is awarded to an endocrinologist working in North America, and has previously been received by MJ Meaney, P Sassone-Corsi, JJ Kopchick, S Melmed, L Jameson, R Rosenfeld, B Spiegelman and DJ Mangelsdorf.

JOE/JME prize winner

We congratulate Dr Li Chan of the William Harvey Research Institute, London, who is the winner of the 2012 JOE/JME prize. The prize was presented to Dr Chan at ICE/ECE 2012 in Florence, Italy.

Designed to recognise an outstanding young researcher who has made a significant contribution to research in basic endocrinology, the prize is awarded in alternate years by *Journal of Endocrinology* and *Journal of Molecular Endocrinology*. This year's prize was awarded by *Journal of Endocrinology*.

For more information, visit www.endocrinology.org/grants. The deadline for applications for the 2013 JOE/JME prize is 31 December 2012.

Associate Editor required for *The Endocrinologist*

Are you interested in influencing the opinions of the Society's membership and shaping the future of endocrinology? If so, this could be the opportunity for you. *The Endocrinologist* is looking for an Associate Editor, preferably a basic scientist. We welcome applications from any endocrine-related discipline to bring creativity and inspiration to the newsletter. The two year term of office commences January 2013. If you are interested please contact Tracey Curtis on tracey.curtis@endocrinology.org.

Society BES prizes and awards

Many awards were presented at the Society BES in Harrogate. Here is just a selection of the top prizes:

Young Endocrinologists' prizes

The winners of the two highest-scoring oral communication presentations in the Young Endocrinologist Prize session were F Hannan (Oxford) for 'Structure-function analysis of calcium-sensing receptor (CaSR) mutations reveal clustering at calcium binding sites of the extracellular bilobed venus flytrap domain' and N Schoenmakers (Cambridge) for 'Growth retardation and severe constipation due to the first human, dominant negative thyroid hormone receptor alpha mutation'.

Poster presentations

The winners of the three highest-scoring poster presentations were V Smith (Birmingham) for 'PBF is a novel regulator of the thyroid hormone transporter MCT8', E Rog-Zielinska (Edinburgh) for 'Maturation effects of glucocorticoids on fetal cardiomyocytes are direct and mediated by glucocorticoid receptor' and H Asha (Vellore, India) for 'Osteoporosis in healthy South Indian males: the influence of life style factors and vitamin D status'.

For a full list, see: www.endocrinology.org/meetings/2012/SFEBES2012/prizes.aspx

SOCIETY CALENDAR

- 10 July 2012
Regional Clinical Cases
Macdonald Randolph Hotel, Oxford, UK
- 17–18 September 2012
Endocrine Nurse Update
Stratford-upon-Avon, UK
- 19–21 October 2012
Career Development Workshop
(FORMERLY THE AUTUMN ENDOCRINE RETREAT)
Milton Hill House, Oxfordshire, UK
- 5–7 November 2012
Clinical Update
Holiday Inn, Stratford-upon-Avon, UK
- 5 December 2012
Regional Clinical Cases
Double Tree Hotel, Leeds, UK
- 18–21 March 2013
**Society for Endocrinology
BES 2013 Meeting**
Harrogate International Centre, Harrogate, UK

'Hungry' for information?

► This February, the Society made its first foray along the south coast in search of public engagement opportunities when we teamed up with the Brighton Science Festival (www.brightonscience.com). We put on an event on the science of hunger and appetite as part of their Big Science Saturday. The Brighton Science Festival runs over the whole of February and aims to engage all sections of the local community in finding out more about science and how it affects their lives.

Their 'Big Science Saturday' is a day of popular science, talks, debates and games aimed at the over-16s. The day covered a wide variety of topics from 'The hidden mathematics of sport' to 'The art of medicine', and attracted a large audience eager to learn more.

Our event, 'Hungry?', examined the role that hormones play in appetite and obesity and how the feedback circuits change in normal versus obese people. The event began with Dr Kevin Murphy (London) explaining the role of hormones in appetite and the feedback mechanisms that operate between the gut and the brain, as well as whether any of these mechanisms might lend themselves as potential targets for obesity treatment.

Professor Gary Frost (London) gave the second talk, examining the role of obesity in the functioning of appetite. The floor was then opened for questions, which were fielded by our excellent chair, Dr Anna Crown (Brighton). The audience had obviously paid meticulous attention as question time yielded a wide variety of intricate and thought-provoking observations and inquiries.

The Society is committed to informing and educating the public about all aspects of endocrinology. We have a number of exciting events lined up later in the year at Cheltenham Science Festival (see right) and the British Science Festival. See www.endocrinology.org/public/events for details.



Society at Cheltenham Science Festival

► In June, the Society for Endocrinology will continue to develop its public engagement programme by heading to Gloucestershire to deliver two events at The Times Cheltenham Science Festival.

Bones takes place at 12.00 on Friday 15 June, as Dr Neil Gittoes and Professor Juliet Compston break down the surprising dynamism of bone metabolism for the audience and discuss the marrow of current thinking on osteoporosis and rickets.

Evolution out of Africa follows at 17.00 on Saturday 16 June, when Dr Angela Clow, Dr Mark Thomas and Dr Jonathan Rees discuss human adaptation to changing latitude over the history of the species, and what this means for man today.

To book tickets, visit www.cheltenhamfestivals.com/science.

If you've got a great idea for a public engagement project, find out how to apply for up to £1000 of funding with our new Public Engagement Grant scheme: visit www.endocrinology.org/grants.

Society for Endocrinology **CU 12** Clinical Update

5-7 November 2012 HOLIDAY INN, STRATFORD-UPON-AVON, UK

Save the Date

a Society for Endocrinology event supported by the Clinical Endocrinology Trust and *Clinical Endocrinology*



DEADLINES:

1 October 2012 - early bird online registration and accommodation *at web address below*

1 October 2012 - submission of cases

CPD APPROVAL PENDING

www.endocrinology.org/meetings/2012/cu2012



New Society Officers

The Society for Endocrinology is delighted to welcome Ashley Grossman, David Ray and Chris McCabe to their new positions as Society Officers. We very much look forward to working with them and to their contributions throughout their terms of office.



**Ashley
Grossman**
PRESIDENT

▶ Ashley Grossman initially graduated with a BA in psychology and social anthropology from the University of London, and then entered University College Hospital Medical School in London, where he took the University Gold Medal in 1975. He subsequently obtained a BSc in neuroscience. He joined the Department of Endocrinology at St Bartholomew's Hospital where he spent most of his career, eventually as Professor of Neuroendocrinology, but he recently moved to become Professor of Endocrinology at the Oxford Centre for Diabetes, Endocrinology and Metabolism. In 2000 he was appointed a Fellow of the Academy of Medical Sciences and in 2011 he was made a Fellow of Green-Templeton College at the University of Oxford. He has published more than 700 research papers and reviews.

He has a major interest in tumours of the hypothalamo-pituitary axis, especially Cushing's disease, but his clinical concern and research have expanded increasingly to include broad areas of endocrine oncology, most especially neuroendocrine tumours of all types, including pheochromocytomas, paragangliomas, adrenocortical cancer, medullary thyroid cancer and hereditary endocrine tumour syndromes. In terms of basic research, he has developed many studies on hypothalamic regulation, eventually exploring the interaction between the hypothalamus and the immune system in terms of cytokines and gaseous neurotransmitters. For the last decade, and most recently in collaboration with Márta Korbonits, he has focused on the molecular pathogenesis of pituitary, adrenal and neuroendocrine tumours.

He is immediate Past-President of the European Neuroendocrine Association (ENEA), current Chairman of the UK and Ireland Neuroendocrine Tumour Society (UKI NETS), Chairman of the European Neuroendocrine Tumor Society (ENETS) Advisory Board, and a Member of Council of the European Society for Clinical Investigation. He is past Editor of the journal *Clinical Endocrinology*, on the Editorial Board of the major textbook De Groot and Jameson's *Endocrinology*, Vice-Chairman of the major online textbook Endotext.org, and serves on the Editorial Boards of many journals.



David Ray
GENERAL
SECRETARY

▶ David Ray graduated in medicine from University of Manchester in 1987, and went on to train in general medicine as well as endocrinology. In 1991 he won an MRC clinical research training fellowship to work with Professor Anne White and Julian Davis, again in Manchester, to research the endocrinology of human small cell lung carcinoma.

A chance meeting, at the BES meeting in Bournemouth in 1994, led to a 2-year fellowship in Los Angeles with Professor Shlomo Melmed and to a change in direction, to work on the pituitary. He never got the hang of surfing, and so after 2 enjoyable years on the west coast he sought a return to the UK. This was secured following a surreal televised job interview – conducted well before the era of Skype – and he took up a lecturer post in Manchester. The position was time-limited, and the only route to stay was via an external fellowship, which was secured courtesy of Glaxo-Wellcome. The fellowship permitted the establishment of an independent research group, and also opened up useful collaborations with the company, and in particular with Stuart Farrow. More recently Stuart has joined David in Manchester to run a joint university/industry research centre.

David's interests in nuclear receptors have broadened from glucocorticoid receptors to orphans, including Rev-Erba, and so to the field of circadian biology. Over the last few years David has joined forces with Andrew Loudon in Manchester to build a comprehensive programme of research into nuclear receptors and circadian biology applied to human disease, which he enjoys while contributing to the clinical endocrinology service in Manchester with colleagues Julian Davis, Fred Wu and Neil Hanley.

David has previously served the Society as Programme Secretary and is Deputy Editor of *Journal of Endocrinology*.



Chris McCabe
PROGRAMME SECRETARY

▶ Chris McCabe is Professor of Molecular Endocrinology at the University of Birmingham. He received a first class BSc with special honours in genetics at the University of Sheffield in 1990, and a PhD in genetics at the University of Birmingham in 1995. Apart from a stint in the laboratory of Professor Shlomo Melmed at UCLA in Los Angeles, he has been based predominantly at the University of Birmingham.


His research within the School of Clinical and Experimental Medicine focuses mainly on the roles of the transforming genes PTTG and PBF in thyroid, breast and colorectal cancer. Recent publications from the McCabe group include those in *Endocrinology*, *Journal of Clinical Endocrinology and Metabolism*, *Oncogene*, *Journal of Cell Science* and *Cancer Research*. He holds funding from the MRC, Wellcome Trust and CRUK, and reviews funding applications for multiple funders.

Chris served on the Science Committee of the Society for Endocrinology from 2006 to 2010. During this period, he fulfilled numerous roles, including organising the molecular endocrinology workshops at the Society BES meetings in 2007 and 2008, chairing and co-organising symposia at various Society BES meetings, and proposing numerous symposia for inclusion in the Society BES programme.

He is a Senior Editor of *Endocrine-Related Cancer*, chairs a number of local committees including the School of Clinical and Experimental Medicine Postgraduate Committee, and is an active member of several other committees. He is also the Director of Postgraduate Research in the School of Clinical and Experimental Medicine at the University of Birmingham. He is an active member of numerous other societies, including: the American Endocrine Society (since 1998), the American Association of Cancer Research (since 2004) and the British Thyroid Association (since 2008).

Chris is passionate about endocrine research, about supporting talented basic and clinical researchers, about providing excellent PhD student training, and about striving for the highest quality scientific research within endocrinology. He is committed to ensuring that the Society for Endocrinology BES meeting will continue to grow and evolve into a world-leading conference.

WRITERS & REVIEWERS NEEDED FOR PUBLIC WEBSITE!



Are you an endocrinologist with a flair for science writing?
Would you like to be part of an exciting new public engagement project?
You & Your Hormones needs You!

You & Your Hormones (www.yourhormones.info), an online resource for the public covering all things endocrine, needs your help! The website is a hub of reliable and accessible information on glands, hormones and endocrine conditions aimed at patients and members of the public. We need your help to write and review articles for the website: contact us today at public@endocrinology.org to become part of this exciting new project.

We thank the following people, who have recently contributed to *You & Your Hormones*:

Dr A Abbas, Leeds	Dr P Foster, Birmingham	Dr C Sadler, Derbyshire
Dr A El-Laboudi, Leeds	Dr R Neary, Lancaster	

YOU & YOUR HORMONES the exciting new website from the
Society for Endocrinology

www.yourhormones.info

Congratulations!

Are due to Professor David Dunger, Professor of Paediatrics at the University of Cambridge, and Professor Philippa Saunders, Director of the MRC Centre for Reproductive Health at the University of Edinburgh, who have been elected as Fellows of the Academy of Medical Sciences. Professor Saunders is also a member of the Society's Science Committee.

Endocrine Connections: the importance of Open Access in scientific publishing



'*Philosophical transactions, giving some accompt of the present undertakings, studies, and labours of the ingenious in many considerable parts of the world.*'

► So reads the title of one of the very first scientific periodicals, published by the Royal Society in 1665–6, and now known as

Philosophical Transactions of the Royal Society. Edited and published by Henry Oldenburg, a German theologian and one of the leading figures of the Enlightenment, the venture was a bold articulation of Oldenburg's ambitions for the open dissemination of scientific research, including establishment of peer review practices.¹ Oldenburg's innovative print journal attracted research from the most brilliant minds of the time: Isaac Newton, Charles Darwin and Michael Faraday, to name but a few. The publication of *Philosophical Transactions* was a defining moment in the European scientific movement.

Scientific results become valuable only if they are made public, and periodicals offered society members the opportunity to publish their ideas for the literate public to consume. As the scientific revolution grew and established itself, so too were more scientific academies and societies established. During the 17th and 18th centuries, contemporaries claimed that the role of the learned society was to create knowledge, whilst that of the university was to transmit knowledge.² Today, learned societies have a remit to educate both their members and the public. For those societies that publish journals for their scientific communities, the progressive Open Access model has become an integral method by which to achieve this.

Open Access enables publishers to make research freely and immediately available to anyone and everyone, allowing it to be reused without the need for permission or payment of fees. This allows societies to fulfil their mission to educate those who would not otherwise have access to this research, including the public, patients and those institutions which may have been otherwise restricted by size or budget.

As Brewster Kahle, founder of the Internet Archive, said, 'Universal access to all knowledge will be one of humanity's greatest achievements'.³

Journals that publish research from niche scientific disciplines are often read only by scientists in those disciplines. Open Access publishing allows researchers in connecting and intersecting disciplines to access relevant research, stimulating cross-disciplinary collaboration and inspiring innovation. Open Access publishing thus accelerates progress and discovery in scientific and medical research, with resulting worldwide benefits.

In an open letter to the US Congress, a group of Nobel Prize winners reflected that 'Open Access truly expands shared knowledge across scientific fields - it is the best path for accelerating multi-disciplinary breakthroughs in research'.⁴

The Society for Endocrinology and the European Society of Endocrinology, two leading not-for-profit societies, have launched a major new interdisciplinary Open Access journal, working together to further research, education and clinical practice in endocrinology. *Endocrine Connections*, led by Dr Jens Sandahl Christiansen, publishes original quality research in all areas of endocrinology, with a focus on papers that have relevance to its related and intersecting disciplines and the wider biomedical community.

Endocrine Connections will offer authors visibility on a global scale, leading to worldwide recognition and impact. The same rigorous standards of peer review and production are applied to *Endocrine Connections* as to the Societies' regular subscription journals, such as *Journal of Endocrinology* and *European Journal of Endocrinology*, all of which are published by BioScientifica Ltd. All articles are made available online on a high quality platform and are fully referenced and linked to a wide variety of discoverability services.



Above all, publication in *Endocrine Connections* will be rapid. The continued unfurling of the digital age has dramatically reshaped the landscape of scientific publishing, enabling the publication of research online with minimal delay.

This is, of course, fortunately a far cry from the long and arduous publication process of the journals of yesteryear, where, at the Paris Academy, there was an 'average delay of 3 years for publication. At one point the period extended to 7 years'.⁵ In the Age of the Enlightenment, science was provocative and controversial. Today it is exciting for a whole host of different reasons, not least the global and immediate dissemination of scientific research that is now possible.

Endocrine Connections is now open for submissions and is offering half-price article publication fees to authors of the first 200 papers accepted. To find out how to submit your research visit www.endocrineconnections.com.

VICTORIA MERRIMAN AND DAVID RAY

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6th Hammersmith Endocrine Symposium

► The Society for Endocrinology sponsored the 6th Hammersmith Multidisciplinary Endocrine Symposium on 9 December 2011 at Hammersmith Hospital, London.

This annual meeting brings together trainees and consultants from all specialties who manage complex endocrine patients in multidisciplinary teams, so that they can share best practice and discuss difficult cases. The 145 delegates also included MEN-1 and MEN-2 patients, who attended the main meeting and the parallel sessions specifically designed for them.

This year's meeting had a strong pituitary theme. The audience was updated regarding recent advances in pituitary imaging and surgery by Dr Amrish Mehta and Mr Nigel Mendoza (Charing Cross Hospital). Dr Nick Plowman (St Bartholomew's Hospital) gave an overview of the radiotherapy options now available for patients with pituitary tumours. This was followed by interactive case discussions, with clickers to allow voting for particular options, and roving microphones.

The theme then changed to discuss the controversies in the management of patients with hyperparathyroidism. Following a fascinating case presented by Dr Matthew Oldfield (Kingston Hospital), which illustrated the difficulties encountered with some hyperparathyroid patients, Dr Channa Jayasena and Prof Karim Meeran (Hammersmith Hospital) gave an entertaining interactive presentation regarding pitfalls in the diagnosis of primary hyperparathyroidism. This was followed by a lengthy discussion on the question of 'To D or not to D - should we replace vitamin D when managing patients with primary hyperparathyroidism?', with expert advice from specialists in the audience. The overall consensus was 'yes'.

As an important addition to this year's meeting, two medical students who had undertaken a BSc in endocrinology presented their project work. There were many experts in the audience, and both Jeremy Cox (London) and James Ahlquist (Southend-on-Sea) added vastly to the discussion.

The Society for Endocrinology Seminar was led by Prof Zyg Krukowski (Aberdeen), who demonstrated typical surgical grit in fighting through the gales and heavy rains that closed most of Scotland's airports, bridges and roads, in order to make it to the meeting! Despite sleep deprivation, he gave an excellent, pragmatic and comprehensive overview of the evidence for parathyroid surgery in hyperparathyroidism.

The delegates viewed the excellent posters over lunch. The Society supported a prize for the best poster, which was awarded to Dr Agnieszka Falinska (Chelsea and Westminster Hospital).

The theme for the afternoon was endocrine neoplasia, starting with an update on adrenocortical carcinoma. Surgical approaches were discussed by Mr Fausto Palazzo (Hammersmith Hospital) and Mr Radu Mihai (Oxford) and adjuvant treatment was elegantly reviewed by Prof Wiebke Arlt (Birmingham). This was followed by the final session on neuroendocrine tumours, with case-based discussion of gastrinomas (Prof Waljit Dhillon, Hammersmith Hospital) and an update on medical therapies (Dr Tricia Tan, Hammersmith Hospital).

You can enjoy all the abstracts online at www.metmed.info. The same website also has details for the 7th Hammersmith Endocrine Symposium on 7 December 2012.

Further details regarding Society grants can be found at www.endocrinology.org/grants



GERALD POPE 1918–2011

► Gerald Pope was a dedicated endocrinologist who had a gift for encouraging and inspiring all those close to him with his interest in steroid action. Even in his final years when his health was failing, he always managed a smile when the topic of oestrogens was discussed. Sometimes he would warmly say, 'I have been thinking about our discussion when you last visited. What if you tried X?' His enthusiasm for endocrinology carried him from his youth to his final hours.

He was born on 21 May 1918 in Newport Pagnell, and spent his childhood in the village of Great Haseley, Oxfordshire. He attended Lord Williams School, Thame, and went on to read chemistry at the University of Reading (1936–1939). His education was interrupted by the war years and his confidential work in the Second World War was little discussed even in close family circles, apart from mentions of 'Porton Down' or 'smoke screens'. After the war, Gerald moved to study for a DPhil at the University of Oxford in the Dyson Perrins Laboratory, where his thesis on miroestrol began his lifelong interest in phyto-oestrogens. He met his wife Norah on a walking holiday in the Lake District; they married in 1946 and had one son.

As a postdoctoral scientist, he moved to the National Institute for Research and Dairying (NIRD) at Shinfield, Berkshire, where he continued work on isoflavones in

plants and established numerous international collaborations through a constant stream of PhD students and overseas visitors. I (RG) met Gerald as a student through work on red clover, and in 1970 came to NIRD to work with him. By this time he was developing



interests in oestrogens and progesterone, and close collaborative ties were established with the Biochemistry Department at the University of Reading through his work in developing radioimmunoassays to measure cyclic variations in progesterone/oestrogen in the blood of poultry and cows. He remained at NIRD until its closure, which coincided with his retirement.

However, retirement from endocrinology was never to be for Gerald. He continued to work at the Cattle Breeding Centre in Shinfield, helping to develop enzyme-linked immunoassays for measuring progesterone in farm animals, and stayed there until that institution also closed. Closure of two centres still did not persuade Gerald to retire, and it was at that time that I (PD) was introduced to him by colleagues in Reading. From the mid-1990s onwards, Gerald became a pillar of wisdom for me as I grappled with the new concepts of endocrine disruption and molecular actions of environmental compounds which were able to mimic oestrogen action and enter the human breast.

Gerald will be remembered as a dedicated endocrinologist, absorbed by his work, but always willing to stop at any time to discuss steroids. In general, he did not look for new questions but believed new discoveries would come from attention to detail in the answering of current questions. He was most at ease in small groups and had a very special gift for mentoring postgraduate/postdoctoral staff with constant encouragement and guidance. His numerous colleagues and ex-students in many corners of the globe all remember him with great affection and will miss him immensely, but for all of them his life will have made a difference.

PHILIPPA DARBRE AND RICHARD GLENCROSS

With regret

We are sorry to announce the deaths of Alison Douglas and Bob Hodges, members of the Society. Also of Howard Bern. Their obituaries will follow in a future issue.



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Nurses' News



► It was great to see so many of you at the Society BES meeting in Harrogate. The nurses' sessions were well-attended and, thanks to the excellent speakers, were very interesting and informative.

You may be aware that there is now a Nursing Practice category for abstracts, and it was good to see more of you entering abstracts in this category this year.

Congratulations to Violet Faizal-Sanderson from Oxford for winning the Clinical Endocrinology Trust prize for top-scoring abstract in the Nursing Practice category, and to Julie Andrew from Leeds for winning the Annette Louise Seal Memorial Award presented by the Addison's Disease Self Help Group (see right). Congratulations must also go to Caroline Jagger from Manchester whose poster was highly commended.

As you can see from Julie's report on this page, writing an abstract and producing a poster can seem daunting, but it is not too difficult and can be well worth the effort! I look forward to seeing more of you submitting abstracts for next year's conference.

Thanks to Alex Vincent for taking the time to share with us how Oxford endocrine nurses are working with student nurses to raise the profile of endocrinology and endocrine nursing (facing page). Well done all – keep up the good work!

Finally, remember that the Endocrine Nurse Update will take place in Stratford-upon-Avon on 17–18 September. This will be the third year of our curriculum. Don't forget you can apply for a grant from the Society to attend if you have not received an overseas conference grant this year (the next deadline for applications is 15 August). AMEND are also able to fund some places. Further details are available at www.endocrinology.org/meetings/endocrinenurse. See you all there.

NIKKI KIEFFER, CHAIR, NURSE COMMITTEE

Why everyone should pen a poster...

Julie Andrew gives a personal insight into the background of her award-winning poster presentation at the recent Society BES meeting.

► Following an audit performed by Dr Sophie Thomas, we decided to look at our practice around steroid replacement therapy in the Endocrine Day Unit in Leeds. The audit looked at the documented evidence that steroid replacement therapy education and teaching had taken place. This audit was performed in the out patient's area during an endocrine clinic.

Overall the findings were quite positive. However, it was documented in only 41% of the notes reviewed that the patients had received training in self-administration of emergency hydrocortisone.

Consultant Dr Robert Murray and I discussed the outcomes, and decided to review our practice. We felt that the audit didn't accurately reflect the service that we provide. We aim to see every patient who is steroid-deficient, whether this is due to pituitary problems or adrenal insufficiency, and to discuss sick day rules, emergency hydrocortisone, etc.

I was then 'persuaded' by Dr Murray that it would be a good idea to create a poster for the Society for Endocrinology BES meeting in Harrogate. I got my information together, did a draft of the poster and spent 2 hours carefully working on it - before it was inadvertently deleted by my husband as he kindly checked it over!

I submitted the abstract in October 2011, and was over the moon when Claire Arrigoni contacted me to say that I had won the ADSHG (Addison's Disease Self Help Group) Annette Louise Seal Memorial Award. The pressure was then on to do justice with the poster.

We got to the conference with the poster presentation, and I was feeling good - until Dr Murray told me I would have to give a thank you speech - bless him! I attended a lecture in the Main Auditorium, and promptly started to have palpitations at the thought of going up on to such an impressive stage to receive my award. I was on the verge of missing the ceremony until Claire confirmed that it would simply be a handshake - thanks Claire!

Since we all strive to maintain high standards, I feel really proud that the work that our team does has been recognised in such a way. Reflecting upon this experience, I would encourage all nurses to look at elements of their practice that they could promote and share in the endocrine arena - and get a poster submitted!

JULIE ANDREW



Julie Andrew receiving her award from Professor Julia Buckingham

Enhancing endocrine experience: a valuable lesson for student nurses

► I joined the Oxfordshire Centre for Diabetes Endocrinology and Metabolism (OCDEM) Endocrine Specialist Nurse Team in October 2005. I had spent the previous 2 years working on the inpatient ward, so I arrived with some endocrine experience.

Two years earlier, having secured NHS funding to support another full time specialist nurse and found that none of the applicants had any endocrine experience, my colleague and manager Viv Thornton-Jones had decided the time had come to raise the profile of endocrinology and endocrine nursing. She felt this could be best achieved by targeting student nurses. She then contacted the placement facilitator at Oxford Brookes University, offering our department as a placement. Then followed 2 years of consultation, as Brookes wanted to ensure that the department would offer suitable and relevant experience.

I had been mentoring student nurses for 12 years, and had also been practice development nurse in my previous job.

Viv asked if I would become the link person and Student Nurse Mentor. We welcomed our first student in summer 2006. Since then we have had one on placement each semester, usually for 6–8 weeks. We feel that we can only appropriately support one student, and that they should be in their second or third year of training. They have been many and varied, but the vast majority have been enthusiastic and very willing to learn.

Brookes contacts and informs me of the student's start date 1–2 weeks before their arrival. I then start completing the student programme template (see example below), by taking it around the department to be filled in by the various areas. I also send the student a placement profile; this includes information about the department, an idea of the medical conditions they are likely to see while with us and a copy of our nursing philosophy.

They always spend the first week within the Endocrine Department, to allow them to become orientated and *continued on page 12*

Sample programme for an OCDEM student nurse

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Mon am	B&D Alex	Diabetes clinic SpR	B&D Alex	Podiatry Laurie	Link lecturer Paula	Podiatry	Diabetes clinic SpR	B&D Alex
Mon pm	<i>above continued</i>	B&D	<i>above continued</i>	<i>above continued</i>	B&D	<i>above continued</i>	B&D	<i>above continued</i>
Tue am	B&D Alex Pre-TSA joint clinic Prof and CN	DSN Amanda	B&D Alex Pre-TSA joint clinic Prof and CN	B&D Alex Pre-TSA joint clinic Prof and CN	Nurse-led thyroid clinic Violet	B&D Alex Pre-TSA joint clinic Prof and CN	B&D Alex Pre-TSA joint clinic Prof and CN	B&D Alex Pre-TSA joint clinic Prof and CN
Tue pm	<i>above continued</i>	<i>above continued</i>	<i>above continued</i>	<i>above continued</i>	B&D	<i>above continued</i>	<i>above continued</i>	<i>above continued</i>
Wed am	Endo clinic SpR	Endo clinic SpR	Endo clinic SpR	Endo clinic SpR	Growth hormone Anne	Endo clinic SpR	B&D Alex	Inpatient DSN Team JR2
Wed pm	Alex (<i>start of placement meeting</i>)	Testosterone Rachel	Diabetes meeting	Alex (<i>mid-placement meeting</i>)	Transition Anne	Research Rachel	Diabetes meeting	Alex (<i>end of placement meeting</i>)
Thu am	B&D Viv	B&D Judy	DSN Jenny	B&D Maria	Diabetes clinic SpR	B&D Diana	B&D Judy	B&D Viv
Thu pm	B&D	B&D	<i>above continued</i>	B&D	B&D	B&D	B&D	B&D
Fri am	B&D Post-TSAs	B&D Post-TSAs	B&D Post-TSAs	B&D Post-TSAs	B&D Post-TSAs	B&D Post-TSAs	B&D Post-TSAs	B&D Post-TSAs
Fri pm	Endocrine meeting	Endocrine meeting	Endocrine meeting	Endocrine meeting	Endocrine meeting	Endocrine meeting	Endocrine meeting	Endocrine meeting

KEY: B&D=Bagot & Drake Ward, CN=Consultant Neurosurgeon, DSN=Diabetes Specialist Nurse, JR2=JR2 site (John Radcliffe Hospital), TSA=Trans-sphenoidal adenectomy)

Enhancing endocrine experience: a valuable lesson for student nurses

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comfortable, and also because Nursing and Midwifery Council rules state that they should spend a minimum of 40% of the placement working with their named mentor. They also spend time with endocrine research nurses, attending both doctor- and nurse-led outpatient clinics, and experiencing our weekly Friday meeting (where patient care pathways are discussed), as well as seeing dietician clinics, podiatry and the Diabetes Specialist Nurse Team. They have the opportunity to visit the operating theatre to see trans-sphenoidal surgery.

We encourage them to take any opportunity to learn, and if they hear of something happening in our department or in the rest of the hospital that is relevant and accessible they are encouraged to attend. We encourage them to gain a basic knowledge, but also to look at two conditions in more depth (for example, acromegaly and Addison's disease), using the times when we are attending to admin

and telephone calls to study these and complete small assignments that we may give them.

The feedback from individual students and from Brookes has so far been excellent. We are considered to be one of the best student nurse placements. There is such enthusiasm and encouragement in the whole of OCDEM: all are very supportive of our efforts and give their time and expert knowledge freely. Sometimes it is the student's first experience of seeing what true teamwork can do for patient care. Patients are also very willing to talk about their journey and how living with a chronic condition (that may very often affect their outward appearance as well as their physical health) affects their quality of life.

Students arrive with little or no knowledge of what endocrinology is all about and leave us with a good basic understanding, and they have been able to experience firsthand the enthusiasm of the whole team. They see what a difference having an informed expert specialist team can make to patients' experience. They leave willing to spread the word that endocrinology is a fascinating, stimulating and worthwhile specialty.


ALEX VINCENT

Travel grants available

Did you know, if you are a Nurse Member of the Society of at least a year's standing, you may be eligible to apply for a travel grant to attend the Endocrine Nurse Update 17–18 September 2012, in Stratford-upon-Avon. The deadline for applications is 15 August 2012. Places on the update are limited so book your study leave and apply online now at www.endocrinology.org/grants/grant_sfeoverseas.html

Nursing Ideas?

If you are a nurse either working in endocrinology, or who have an interest in endocrinology, and would like to suggest an idea for publication in this Nurses' News section, please contact Tracey Curtis (tracey.curtis@endocrinology.org).

 Society for Endocrinology

Endocrine Nurse Update 2012

17-18 September 2012 Holiday Inn, Stratford-upon-Avon



This very successful specialist endocrine nurse event provides an update on best practice and the latest developments in treatments. The 2 day residential course is aimed at established and new-to-post nurses.

Topics covered this year include:

- **Genetics** (incl. Turner/Klinefelter's syndromes and genetic counselling)
- **Obesity**
- **Thyroiditis**
- **NETs**
- **MEN 1 and 2**
- **Cushing's**
- **CAH**
- **Acromegaly**
- **Advanced Practice workshops**
- **Hypothyroidism**
- **Nurse-led Clinics workshops**

To register your interest in the event please contact conferences@bioscientifica.com
Funding opportunities are available for Nurse Members via the Society's travel grants scheme. RCN accreditation pending.



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An endocrinologist's role in elite sport



▶ As physicians and endocrinologists, we are used to seeing people with life-threatening endocrine disorders, and to helping people manage the frequently disabling consequences of chronic conditions. However, there are those who have a chronic endocrine disorder, but are at the peak of physical fitness. These unusual individuals require specific support, and we have developed a service to help them manage their endocrine and other disorders and also excel in sports.

My arrival in the arena

My interest in this field was accidental. I had studied the physiology of energy expenditure for my MD, and am a keen, but now failing, rower. In 1997, Steven Redgrave came to see me to discuss his then newly diagnosed diabetes. Steven was preparing for his fifth Olympic Games, this time rowing in the 'coxless fours' event. Steven was sceptical but pleased to hear that I believed that, with careful management, he could return to maximal physical performance, and be able to compete at the 2000 Olympic Games. I believed that this might be possible because Steven had extensive pre-diabetes physiological studies which would provide a unique baseline to work from, and because short-acting analogue insulin had recently been introduced.

Teething problems

The initial period of conventional diabetic management was a failure, with Steven complaining of very low levels of energy and work output, and suffering frequent episodes of hypoglycaemia on the water. We decided to return Steven to his successful pre-diagnosis food intake and training programme, and to manage his diabetes around the 6500–7000 calorie diet of high glycaemic index foods. This would require the development of an unusual multiple daily insulin injection regime. To maintain glycaemic control avoiding hypoglycaemia required five or six injections of analogue insulin per day, each at a very small dose, and two unusually timed basal insulin doses.

Initial progress was swift, but further issues were identified following high energy expenditure rowing events. Again, physiological studies were essential to identify problems with refeeding and energy storage. Further refinement of this regime enabled specific refeeding programmes to normalise Steven's work output to close to that seen before diagnosis of diabetes.¹

Fine tuning

In the preparation for the Olympic Games, every potential rowing eventuality, such as delayed start of racing, repechage

(additional races for qualification) or multiple races in a day, was considered and the appropriate response practised. The iconic video image of the race and Steven's celebrations has been voted as our outstanding sporting achievement.

As a result of the publicity following Steven's success, young sportsmen with diabetes asked to see us to help in their management. Over the following decade, we have found that patients attending the service complain of three main groups of symptoms:

- ▷ seemingly inexplicable dysglycaemia during and immediately following exercise
- ▷ unexpected and severe hypoglycaemia, particularly at night
- ▷ excessive fatigue, impaired physical performance and increased muscle weakness and cramps when compared with their prediabetic state or with peers (this is probably the most subtle of the three groups of symptoms).

To deal with these issues, we aim to reduce day-to-day variation in insulin therapy technique and to improve insulin dosage relative to carbohydrate intake. A focus on detail is extremely important, as we frequently find that much of the apparently inexplicable variation in glycaemic control is not due to exercise but due to these factors. A detailed history of the sporting/exercise programme is made. Particular attention is paid to the timing, duration, intensity and type of exercise on each day of the week. This allows the exercise to be characterised so that the anticipated effect on blood glucose levels can be identified. In general, the exercise is classified as endurance (in which case blood glucose can be predicted to fall), high intensity (where blood glucose is likely to rise) or mixed exercise, such as team sports, where the effect may be variable from day to day, depending on the intensity of each event (although the general effect tends to be a fall in blood glucose levels which is attenuated when compared with pure endurance exercise).

Importantly, the timing of each event in relation to the bolus dose of insulin is identified, as well as any adjustments which are made to this dose. Particular care and attention are paid to symptoms suggestive of hypoglycaemic unawareness. Severe hypoglycaemia in young adults who are sleeping on their own is of special





An endocrinologist's role in elite sport

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concern, and where found requires specific attention. Listening to what those young people had to tell us has led to practical recommendations for managing different sporting activities.² The experience of our patients is also disseminated through our website (www.runsweet.com) and its forum.

Academic perspective

There was, however, a significant lack of scientific evidence underlying this clinical field. Steven Redgrave's experience spurred on our investigations and those of others in this area, and we now have good evidence of the metabolic and endocrine effects of insulin-treated diabetes on risks and avoidance of hypoglycaemia, and on how to optimise insulin and continuous insulin infusion therapy.^{3,4}

We understand the hormonal and metabolic responses to exercise, how these responses are altered by type 1 diabetes and insulin therapy, and how a number of endocrine disturbances can influence glucose regulation during exercise, making the management of glycaemia challenging for patient and caregiver. We have seen how increased insulin sensitivity and the reduction in counter regulatory hormone response to hypoglycaemia seen following exercise, particularly in men, may predispose to severe nocturnal hypoglycaemia. There remains a lot more to understand.

Our particular interest is managing perceived impairment in physical performance in diabetes, but we have been asked to review athletes without diabetes, who have performed well, but who are currently off the pace. Such impairment of performance is frequently attributed to a 'post-viral' condition. This has led to a further, very interesting area of development. We are able to study these young people in our well equipped exercise laboratory and, following a standardised exercise programme to exhaustion, we can monitor gas exchange, electrolytes and intermediary fuels. In the cases we have studied, we have found interesting variation of glucose metabolism, alteration in fuel utilisation and variation in electrolyte fluxes at maximum performance which have responded to treatment.

The future

The merging of endocrinology, physiology and metabolism provides a fascinating clinical experience and an exciting new area for translational clinical research. For the athletes, it offers the promise of a return to optimal performance. The prospect of the Olympics coming to London provides a good springboard for the UK to be at the forefront of this area.

IAN GALLEN

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Testing times: keeping ahead of doping

► I had the privilege of being a member of the bid team for the 30th Olympiad and was therefore delighted when the International Olympic Committee (IOC) awarded the Games to London in July 2005.

Then the race began to find suitable accommodation for the laboratory for the anti-doping programme, under my direction. Over 6200 samples need to be analysed in a matter of weeks for both the Olympic and Paralympic Games. This is almost as many as would be analysed in a normal year, and many more than could be dealt with in the current facilities at King's College London. We were thus very fortunate to be able to partner with GlaxoSmithKline, who wished to support the Games.

Jurisdiction

Anti-doping now comes under the jurisdiction of the World Anti-Doping Agency (WADA), which was founded in November 1999, funded initially solely by the IOC and now 50% by them and 50% by governments around the world. WADA has taken over the IOC's role to help control doping in sport, harmonising the rules and several other activities including laboratory accreditation. The rules include the annual *Prohibited List* (<http://list.wada-ama.org>), which details the substances and methods that are prohibited.

Put simply, these may be conveniently grouped into the synthetic substances foreign to the body and the pseudo-endogenous substances, such as testosterone. Modern analytical techniques enable detection of substances at increasingly small concentrations. In the case of foreign substances, this raises the question of 'inadvertent doping'. Strict liability rules, with evidence of intent not being required to prove guilt, are imposed. Thus, contaminants in foods become a real possibility as thresholds are lowered.

For example, although the use of clenbuterol in animals is against the law in most countries, this law is not always well policed and athletes could be at risk of inadvertent doping when they visit those countries. However, in the Athletes' Village at an Olympic Games, food is carefully monitored and any claim by an athlete that clenbuterol in their urine has come from eating in the village is unlikely to be accepted by a disciplinary panel.

The pseudo-endogenous anabolic steroid nandrolone has been marketed as an anabolic steroid, but is also produced endogenously in very small amounts. With current



analytical techniques, long-lasting preparations such as nandrolone decanoate may be detectable for periods in excess of 6 months following administration. Contaminated food supplements have been implicated in a number of high profile doping prosecutions. Either the manufacturer was deliberately putting nandrolone into the preparations or, more likely, did not take sufficient care when cleaning their manufacturing equipment after using nandrolone in the preparation of other products.

Techniques

Today WADA requires its laboratories to use isotope ratio mass spectrometry (C-IRMS), based on the ¹³C isotope signature, to evidence that small concentrations of 19-norandrosterone are, indeed, exogenous, since foreign 19-norandrosterone typically is different from an individual's own natural stable isotope signature.

The detection of the administration of testosterone is based generally on detecting an elevated ratio in urine of testosterone to epitestosterone, its 17-epimer (the T:E ratio). Although the exact origin of epitestosterone is still unclear, in the male it is produced mainly in the Leydig cells of the testes alongside testosterone, but at about 5% of the amount, under the influence of luteinising hormone (LH). Since administration of testosterone suppresses LH production, it will also suppress testosterone production, thereby augmenting the T:E ratio. Similarly, T:LH can provide a useful indication of testosterone administration. Nevertheless, currently C-IRMS is the sole test accepted by WADA to evidence administration. Elevated endocrine values are used merely to indicate 'atypical findings' that require follow-up by means of longitudinal profiling samples from the individual concerned, where variation in T:E greater than 30% is considered highly suspicious and often as evidence of administration of testosterone.

Over 6200 samples need to be analysed in a matter of weeks for both the Olympic and Paralympic Games.

Other important pseudo-endogenous substances misused by athletes include erythropoietin and growth hormone (hGH). The current WADA-approved hGH test is based on measuring the ratio of the 20 kDa and 22 kDa isoforms, since recombinant hGH consists solely of the 22 kDa isoform. Unfortunately, because of the very short half-life of GH, the detection time is as little as several days. An indirect approach based on the measurement of the biomarkers IGF-I and P-III-NP is hoped soon to provide an alternative method that will detect misuse for a longer period of time.

Biological passports and industry support

At the Games in London, data from tests on blood samples will form part of the athletes' biological passports. These tests include measurement of haemoglobin concentration and also reticulocytes percentage, which will be uploaded to WADA's Anti-Doping Administration and Management System (ADAMS), that allows the tracking of an individual athlete's biomarkers to provide a more sensitive measure of possible doping.

The link between WADA and major pharmaceutical companies to provide intelligence regarding new drugs with misuse potential is already greatly aiding the work to deter drug misuse in sport. In preparation for the Games, we have advanced our research into better detection techniques in several important areas, for both screening samples and confirming any suspicious findings in the 24 hours allowed.

GlaxoSmithKline have provided King's College London with the space, equipment and support to help us provide super-fast and super-sensitive sample analysis for the Games. I hope that this will enable drug-free athletes to compete fairly this summer in London.

DAVID A COWAN





All in the balance: gender in sport



► As we approach the Olympics, we should prepare ourselves for revelations of the 'endocrine health' of athletes. Whilst the use of performance-enhancing drugs is often raised, the scenarios that gain greatest publicity are those that relate to the

testing of sex. These cases are rare, but do question our own beliefs about sex and gender development, as well as how they influence daily life.

Physical development

In my paediatric endocrine clinic, discussions with children and their parents about the link between physical development and sporting success are not uncommon. Boys with short stature or delayed growth and puberty are often disappointed as they get sidelined in football teams, and I try to reassure them with examples of Messi and Owen. Interestingly, I do not see many girls with tall stature any more, and I suspect this may be related to the greater acceptability of tall stature and increased participation of girls in sports such as netball, basketball and tennis. In fact, I often encourage these girls to make the most of their height.

I would like to do the same for the girls and boys with conditions such as congenital adrenal hyperplasia, who may continue to have higher circulating androgens, despite my best attempts at suppressing them, but I also worry that it may expose their condition to public scrutiny. In fact, many of these children are excellent at sports whilst having normal levels of circulating androgens, albeit at the upper end of the normal range.

Consider the spectrum

Given that biological sex may not necessarily equate with one's own gender development and that there is a biological spectrum of what is considered male and female, the argument for the dichotomous concept of sex testing, especially in a contemporary society, is somewhat weak. Although sex testing has been officially stopped by the International Olympic Committee (IOC) and the International Association of Athletics Federations, both organisations retain the option of assessing the sex of a participant should suspicions arise. This was invoked most recently in August 2009 with the mandated testing of South African athlete Caster Semenya, who was cleared to continue competing as a woman, although the results of the sex testing were never officially released for privacy reasons. However, the damage had been done as the life of this young athlete was now in the full glare of the media.

As physical prowess is believed to be strongly linked to androgens, a classification that takes the androgen status of the athlete, irrespective of their karyotype, may be the way forward. Although we may not be ready for this leap

yet, in 2011, the IOC's Medical Committee released new recommendations that highlighted the importance of considering androgen levels over the innate sex or gender in the apparently female athlete. In brief these recommendations state that:

- ▷ a female recognised in law should be eligible to compete in female competitions provided that she has androgen levels below the male range (as shown by the serum concentration of testosterone) or, if within the male range, she has androgen resistance
- ▷ an evaluation with respect to eligibility should be conducted confidentially and made on an anonymous basis by a panel of independent international experts in the field of hyperandrogenism
- ▷ should an athlete be considered ineligible to compete, she would be notified of the reasons why, and informed of the conditions she would be required to meet should she wish to become eligible again.

Too simplistic?

I remain ambivalent about these recommendations for a number of reasons. Women with hyperandrogenism rarely have levels in the male range, and may be physically superior at serum androgen levels below the male range. In addition, I know that a girl with a condition such as congenital adrenal hyperplasia can easily suppress her high androgen levels into the normal range by a short course of glucocorticoids. And what about the male athletes with hyperandrogenism? The IOC's recommendation seems to be focused on female athletes, probably as a reaction to the Semenya case.

I, therefore, maintain that we should move away from these arbitrary biological distinctions and have athletes compete in broad bands of androgen concentrations. However, given that there are whole journals dedicated to andrology, linking physical performance to a one-off serum androgen level sounds a bit simplistic. Maybe categorising by a biological endpoint of androgen effect may be more appropriate. The concept is similar to wrestling and boxing, where competitors are categorised according to their weight. We could even have so-called male and female athletes competing together and perhaps also consider categories for hypogonadal athletes.

S FAISAL AHMED





Growth hormone: the 'Marmite' of doping agents?

► Well, clearly Ben Johnson liked it – you don't get deltoid muscles like his just by working out in the gym!

I suppose you could call him the Olympic Doping Ambassador, as his amazing triumph in the 100 metres in Seoul in 1988 highlighted what can be achieved by an elite athlete with the help of a little (or maybe a lot) of anabolic steroids and growth hormone (GH). Then, he and his trainers were way ahead of us scientists and the doping police.

In 1988 we were all blissfully unaware of the GH deficiency syndrome¹ and the importance of GH in regulating body composition in adults. It was, after all, a 'child's hormone'. The first peer-reviewed medical papers showing the powerful effects of GH in adults were published a year later.^{2,3} What is more, the increased efficacy of GH when combined with testosterone in healthy adults was not known in the medical world until 2002.^{4,5}

Speed of discovery

This anecdote highlights both the ability of elite athletes and their entourage to undertake scientific research, and the increased anabolic effects of androgenic steroids coupled with GH. How do they make these discoveries? My own theory is that it is because of the power of 'the trial of one'. Knowing their best performance very accurately and being entirely objective, they can test a number of regimens and new drugs quickly and select the ones that work for them. It's an alternative model to the established randomised controlled trial that actually has many advantages, and is undoubtedly more sensitive in finding new performance-enhancing routines. Using this technique the 'poachers' have managed to keep ahead of the 'gamekeepers', despite the powerful new technology and other resources of the anti-doping community.

Testing for GH abuse

I became involved in developing a test to detect GH abuse after being invited as an expert to join the Medical Commission of the International Olympic Committee (IOC) in 1993. At this stage, they were aware of GH as a new anabolic agent and that existing anti-doping technology was not suitable for detecting protein hormones. Strangely, the IOC wanted a test but were against supporting the research needed to develop one. After an uphill struggle they were persuaded to join a consortium of academic endocrinologists and two GH manufacturers in a bid for EU research support under their BIOMED 2 programme. Thus the GH-2000 Project was born in 1996 with a 3-year contract and about \$2 million (\$1 million from the IOC) to deliver a test for GH in time for the Sydney Olympics in 2000.

The results of this very successful (and very enjoyable) collaborative project were submitted to the EU and IOC in January 1999. The recommendation was to use a series of

GH-sensitive biological markers (each with a different half-life) to detect GH abuse. It was proposed that initially IGF-I and P-III-NP (collagen type 3 N-terminal propeptide) should be used and the results combined according to a formula that yielded in men a sensitivity of nearly 100% at a specificity (of false positive) of 1:10 000. The sensitivity was lower in women who were shown to be less sensitive to GH. The 'window of opportunity' of the proposed test using these markers was up to 14 days, but could be extended by using markers with a longer half-life. Expert review of the project raised a number of issues, such as possible ethnic effects, that required dealing with before the test could be introduced.

Final adjustments

An offer of a further \$1 million was made by the President of the IOC but, before contracts could be drawn up, the offer was withdrawn and the IOC effectively buried the results of the GH-2000 Project.⁶ There followed a hiatus in the project, until Richard Holt and I were successful in a bid to the United States Anti-Doping Agency. GH-2004 was born in March 2003, and over the next 3 years, resolved the known outstanding issues as well as building an important collaboration with UK Sport.⁷

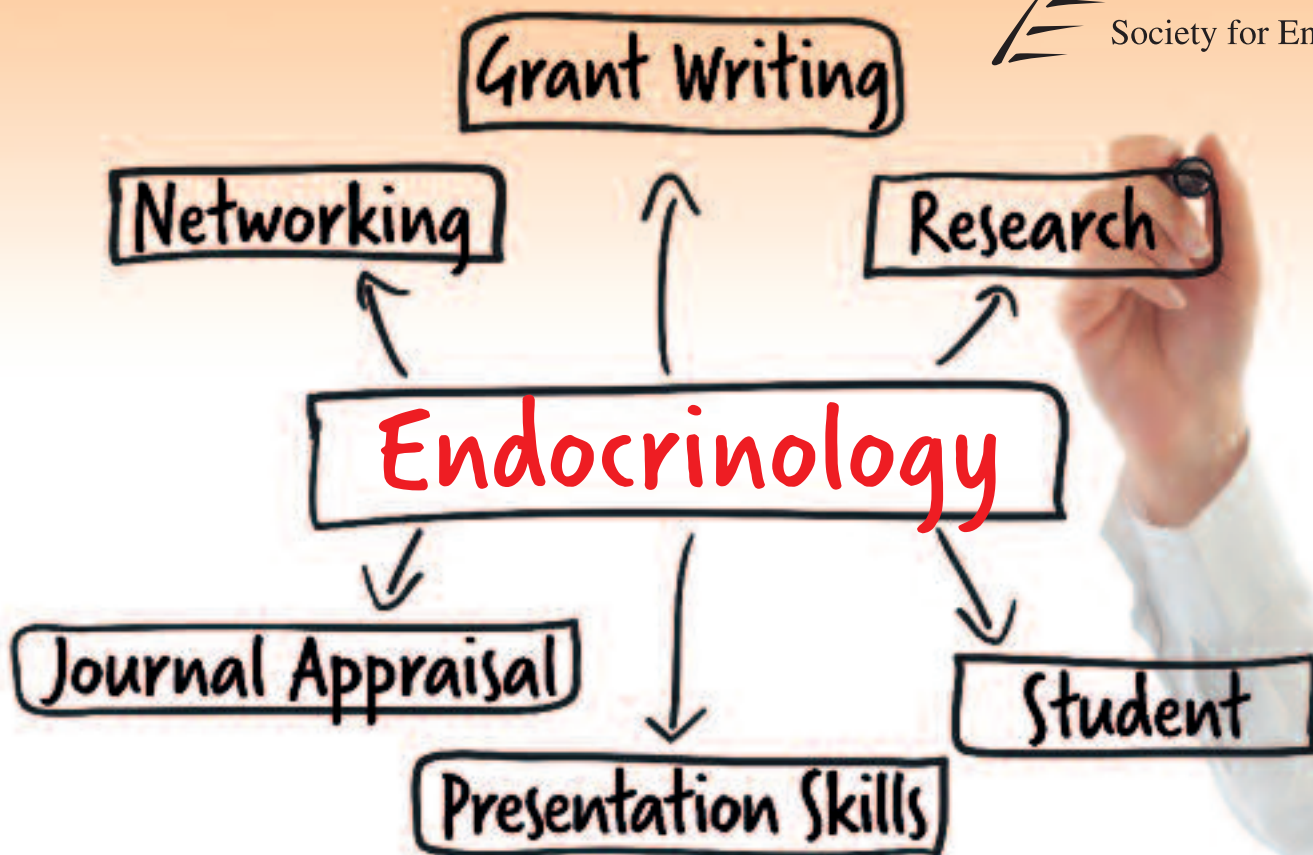
Meanwhile the World Anti-Doping Agency (WADA) was formed, and they introduced the 'Isoform' test for GH at the Athens Olympic Games in 2004. In partnership with UK Sport, we have liaised with WADA and received further funding to address yet more issues (such as multiple assay validation⁸ and sample collection and storage⁹) that had to be resolved before the GH-2000 test can be introduced.

We are now at the stage where we believe that all the i's have been dotted and all the t's crossed, and we are hopeful that the GH-2000 test will be implemented for the London Olympics, only 12 years late!

PETER H SÖNKSEN

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Adiponectin prevents early death from metabolic syndrome

Otabe *et al.* investigated how adiponectin prolongs lifespan using KK/Ta mice (a model of metabolic syndrome), which have a shorter lifespan than controls. Adiponectin prevented their premature death without affecting body weight or food consumption. This was not attributable to prevention of neoplasms or cardiovascular disease, or to upregulated *Sirt1* expression. Adiponectin may inhibit AKT signalling, so attenuating chronic low-grade inflammation.

Read the full article in *Journal of Endocrinology* **213** 67–76

Testosterone and NO pathway

The higher incidence of cardiovascular disease in postmenopausal women may be partly due to changes in regulation of vascular behaviour by androgens. Campelo and colleagues investigated testosterone's effects on modulation of cellular events associated with vascular homeostasis such as vasoactive production, cell growth and platelet aggregation. Testosterone modulates vascular endothelial cell growth and platelet aggregation by acting on endothelial NO production.

Read full article in *Journal of Endocrinology* **213** 77–87

Nicotine and body composition

Mangubat *et al.* examined the effect of nicotine vs saline on body weight and fat composition in mice fed a high fat diet (HFD) or standard chow. Nicotine reduced HFD-induced weight gain and led to lower body fat and a trend towards more subcutaneous and less visceral fat. Thus, superficially, the HFD plus nicotine might appear beneficial compared with the HFD alone.

Read full article in *Journal of Endocrinology* **213** 317–326

Maternal obesity and the placenta

Oliva and co-workers determined protein expression in human placental samples from lean and obese pregnant women with normal glucose tolerance at term Caesarean section. Proteomic analysis revealed differential expression of several proteins implicated in cellular functions (regulation of growth, cytoskeletal structure, oxidative stress, inflammation, coagulation and apoptosis). These disturbances may have significant implications for fetal growth and development.

Read full article in *Journal of Molecular Endocrinology* **48** 139–149

Heat stress and adipokines

Using C57BL/6 mice, Morera *et al.* found chronic heat stress (HS) decreased blood glucose and non-esterified fatty acids and increased leptin, adiponectin and insulin secretion and glucose disposal. Leptin, adiponectin, leptin and adiponectin receptors, insulin receptor substrate-1 and glucose transporter mRNAs were upregulated. HS appears to improve leptin and adiponectin signalling in adipose tissue, muscle and liver. It improved insulin sensitivity and glucose uptake in peripheral tissues, probably mediated by adipokines.

Read full article in *Journal of Molecular Endocrinology* **48** 129–138

Endocrine-Related Cancer

Endocrine-Related Cancer

Sorafenib and prostate cancer therapy resistance

Oh and colleagues found multikinase inhibitor sorafenib induced growth inhibition and apoptosis in prostate cancer cell lines and affected androgen receptor expression and signalling. Its maximal effect may be expected in androgen-sensitive prostate cancer before development of resistance to castration and chemotherapy. Sorafenib could be suitable in docetaxel-resistant carcinoma or as an adjuvant therapy to current androgen ablation treatments and in progressed cancers that become unresponsive to standard therapies.

Read full article in *Endocrine-Related Cancer* **19** 305–319

Receptor bioactivity and breast cancer risk

Studying 200 postmenopausal women, Fourkala *et al.* found oestrogen receptor (ER) α and ER β serum bioactivities (SBs) were significantly higher before diagnosis of breast cancer compared with controls. Women had a 2-fold increased risk if ER α SB was high >2 years pre-diagnosis or if oestrone was high <2 years pre-diagnosis. High levels of androstenedione and testosterone were associated with a 3-fold increased risk, independent of time to diagnosis.

Read the full article in *Endocrine-Related Cancer* **19** 137–147

CLINICAL ENDOCRINOLOGY

Spontaneous remission of idiopathic aldosteronism

Fischer and co-workers evaluated in a cohort of 37 patients with primary aldosteronism (PA) whether remission of idiopathic bilateral adrenal hyperplasia (IHA) occurred during follow-up after prolonged treatment with mineralocorticoid receptor (MR) antagonists (mean period of treatment 5.8 \pm 0.7 years). Two patients (5.4%) had spontaneous remission. Remission of IHA in PA may occur in some patients after long-term treatment.

Read full article in *Clinical Endocrinology* **76** 473–477

Distant metastasis of thyroid cancer

Huang *et al.* reviewed 1665 patients with differentiated thyroid cancer (DTC) with distant metastasis who were followed-up to identify prognostic factors of long-term survival and optimal therapeutic strategy. The prognosis is favourable, especially in younger patients or those with low thyroglobulin at discovery of metastasis. Survival may be improved by surgical dissection of neck lymph nodes, but repeated ¹³¹I therapy >600 mCi is not advisable unless the probability of benefit is high.

Read full article in *Clinical Endocrinology* **76** 439–447

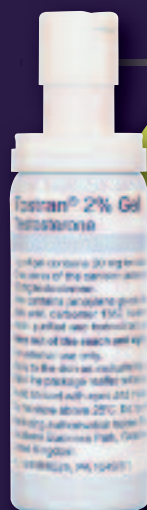
Metabolite profiling in diabetes

As a significant proportion of patients with type 2 diabetes mellitus display few of the classical risk factors, much work has centred on finding biomarkers not associated with classical risk factors in order to improve the risk prediction for the disease. In their commentary, Karakas & Koenig discuss research by Ha and colleagues, which found a cluster of six metabolites which could improve diagnostic power.

Read the full article in *Clinical Endocrinology* **76** 674–682

Commentary in *Clinical Endocrinology* **76** 615–616

Hypogonadism – an endocrine issue which causes significant morbidity and substantial reduction in quality of life¹



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Presentation

Tostran 2% Gel, contains testosterone, 20 mg/g.

Indications

Replacement therapy with testosterone for male hypogonadism when testosterone deficiency has been confirmed by clinical symptoms and laboratory analyses.

Posology

The starting dose is 3 g gel (60 mg testosterone) applied once daily at approximately the same time each morning to clean, dry, intact skin, alternately on the abdomen or to both inner thighs. Adjust dose according to clinical and laboratory responses. Do not exceed 4 g of gel (80 mg testosterone) daily. Patients who wash in the morning should apply Tostran after washing, bathing or showering. Do not apply to the genitals. Do not use in women, or children under the age of 18 years.

Contraindications

Known or suspected carcinoma of the breast or the prostate; hypersensitivity to any of the ingredients.

Special warnings and precautions for use

Tostran should not be used to treat non-specific symptoms suggestive of hypogonadism if testosterone deficiency has not been demonstrated and if

other aetiologies responsible for the symptoms have not been excluded. Not indicated for treatment of male sterility or sexual impotence. All patients must be pre-examined to exclude a risk of pre-existing prostatic cancer. Perform careful and regular monitoring of breast and prostate. Androgens may accelerate the development of subclinical prostatic cancer and benign prostatic hyperplasia. Oedema with/without congestive heart failure may be a serious complication in patients with pre-existing cardiac, renal or hepatic disease. Discontinue immediately if such complications occur. Use with caution in hypertension as testosterone may raise blood pressure. Use with caution in ischemic heart disease, epilepsy, migraine and sleep apnoea as these conditions may be aggravated. Care should be taken with skeletal metastases due to risk of hypercalcaemia/hypercalcuria. Androgen treatment may result in improved insulin sensitivity. Inform the patient about the risk of testosterone transfer and give safety instructions. Health professionals/carers should use disposable gloves resistant to alcohols.

Interactions

When androgens are given simultaneously with anticoagulants, the anticoagulant effect can increase and patients require dose monitoring of their INR. Concurrent administration with ACTH or corticosteroids may increase the likelihood of oedema and caution should be exercised.

Undesirable effects

Very common ($\geq 1/10$): application site reactions (including paresthesia, xerosis, pruritis, rash or erythema); common ($\geq 1/100$, $< 1/10$): increased

haemoglobin, haematocrit; increased male pattern hair distribution; hypertension; gynaecomastia; peripheral oedema; increased PSA. Certain excipients may cause irritation and dry skin. Consult SPC for other undesirable effects of testosterone.

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Legal Category POM

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Marketing Authorisation Number PL16508/0025

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Adverse events should be reported. Reporting forms and information can be found at www.yellowcard.gov.uk. Adverse events should also be reported to ProStrakan Limited on 01896 664000.

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