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30 August to 3 September 2009

Incorporating

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30 August to 3 September 2009

ASUM 2009 Multidisciplinary Ultrasound Workshop
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30 August to 31 August 2009

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3 September 2009

All Congress enquiries should be directed to:

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The WFUMB 2009 Congress is hosted by ASUM

Australasian Society for Ultrasound in Medicine (ASUM)

Promoting Excellence in Ultrasound

ASUM CEO Contact:
Dr Caroline Hong
Email: carolinehong@asum.com.au

ASUM General Society email enquiries:
asum@asum.com.au

Important Dates

Abstract Submission Deadline
Friday, 28 November 2008

Abstract Notification
February 2009

Early Registration Fee Deadline
March 2009

Registration Deadline
July 2009

Late Registration
From Saturday, 1 August 2009

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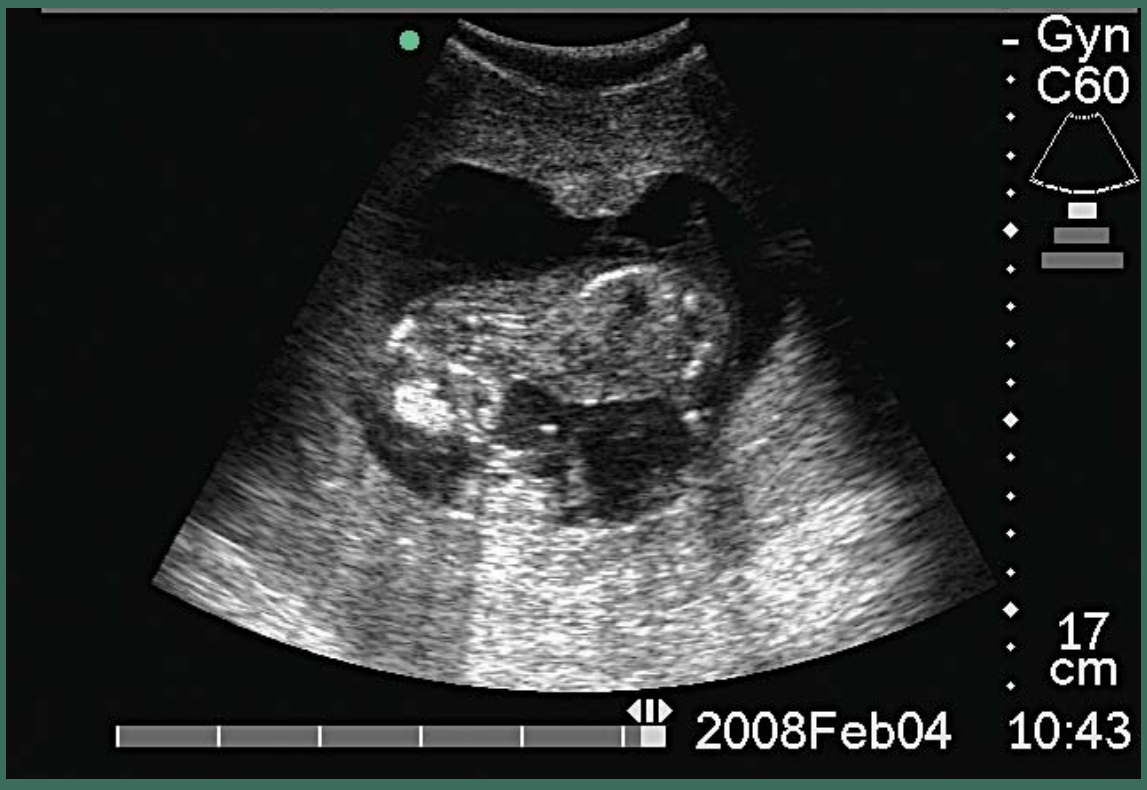
Ultrasound Bulletin

Journal of the Australasian Society for Ultrasound in Medicine



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2. Ultrasound training
The new ASUM College of Ultrasound accepts its first students in 2006

3. Online education
Free online physics education for DMU, DDU and CCPU candidates

4. Online clinical handbook
A reference collection of images, cases and differential diagnoses

5. Educational resources
Extensive library of ultrasound videos, CDs and DVDs

6. Policies and statements
Guidelines, updates and worksheets used by policy makers

7. MOSIPP
Recording of CPD/CME points

8. Professional advancement
Speaking opportunities at meetings in Australia, New Zealand and Asia

9. Published author
Publish your research in the ASUM Ultrasound Bulletin

10. Research Grants
ASUM supports research which extends knowledge of clinical ultrasound

11. Service to medical ultrasound
ASUM welcomes ultrasound professionals to its Council and committees

12. Attend ASUM meetings at reduced rates
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13. Professional, quality networking
Connect with your colleagues and ultrasound systems suppliers at meetings and workshops and through high quality networks

14. Free website employment advertising
Advertising for staff on the ASUM website is free to ASUM members

15. Ultrasound Bulletin delivered to your door
The quarterly ASUM Ultrasound Bulletin is highly regarded both for its medical ultrasound articles and professional news content

16. Educational meetings
Frequent meetings in regional and major centres

17. Networking
Contact with other ultrasound professionals

18. Professional indemnity insurance
Peace of mind for sonographer members for a modest annual premium

19. Special home loan rates from AMP
AMP is one of Australia's biggest home lenders. ASUM members qualify for special home loan rates

20. Drive for less with Hertz
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Australasian Society for Ultrasound in Medicine

Australasian Society for Ultrasound in Medicine

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Editorial contributions
Original research, case reports, quiz cases, short articles, meeting reports and calendar information are invited and should be addressed to The Editor at ASUM's address below

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Ultrasound Bulletin

ASUM Ultrasound Bulletin August 2008 11 (3)

THE EXECUTIVE

ASUM 2008

OPINION

EDUCATION FEATURE

ORIGINAL RESEARCH

CASE REPORT

VETERINARY ULTRASOUND

POLICIES AND STATEMENTS

GLEANER

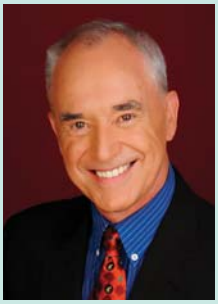
ASUM ASIA LINK

OBITUARIES

THE SOCIETY

Cover image: Ultrasound showing pregnancy in Asian elephant Thong Dee

Ultrasound: fifty years old but more useful than ever!


Prof Ron Benzie

The versatility of ultrasound never fails to impress.

In this issue, Deb Coghlan's well-illustrated article shows us how to use ultrasound to detect thrombosis as well as other pathology in the upper limbs. She gives clear instructions as to how to obtain the information needed to make diagnoses using B-mode, colour and spectral Doppler and reminds us that a detailed worksheet containing pathology and areas of interest is of value.

Richard Daris and his colleagues Jennifer Mitchell and Peter Stone from Auckland evaluate the usefulness of nasal measurement as part of the nuchal translucency examination. This large study of over 5143 women in the first trimester reveals that 37% of Down syndrome fetuses had nasal bones. Combining these with absent, hypoplastic or uncertain nasal bone increased the risk assessment.

Then, for something completely different, Frances Hulst of Taronga Zoo in Sydney enlightens us on the use of ultrasound in elephants. This is a fascinating account of the challenges these pachyderms present. The conclusion is that, as technology evolves and more veterinarians are trained in the use of ultrasound in elephants, the benefits to the conservation and captive care and management of these animals will only increase.

Dr Buraya Phattanachindakun and colleagues present a rare case of a limb body wall complex without cranial or facial defect and emphasise the value of 3D ultrasound images in counselling patients with an affected fetus.

We have a short piece on Professor Ian Donald, the pioneer of ultrasound whose first paper on its clinical use was produced 50 years ago. He was a giant on whose shoulders we all stand.

Dr Harley Roberts gives us a report from the 8th Vietnam France – Asia Pacific Congress, which attracted 1600 registrants. He and his colleagues, Drs Henry Murray and Alison Brand gave several lectures as well as contributing to the Tu Du Hospital orphanage. This is a fruitful ASUM Vietnam exchange initiated and originally funded by Dr Roberts.

Dr Yisha Tong shares with us his experience at the Korean Society of Ultrasound in Medicine (KSUM) Annual Scientific Meeting where he attended as a guest speaker. Dr Tong also took the opportunity to promote WFUMB 2009.

In the Policies section you will find ASUM's Statement on the Use of Ultrasound by Medical Practitioners. This important statement outlines the credentials available through ASUM for medical practitioners, the eligibility criteria and the training requirements.

This is my last editorial so I would like to thank all the contributors who submitted articles in the past two years. My thanks also to the Editorial Board who corrected my oversights. My special gratitude goes to the ASUM office, particularly Keith Henderson and the publishers, Bill and Jeremy Minnis for making my task easier.

Prof George Larcos is taking over as Editor in January 2009 so you can be assured that the Bulletin will be in capable hands. In the meantime Assoc Prof George Condous has kindly agreed to be the interim editor for the next two issues.

NOTICE OF ANNUAL GENERAL MEETING 2008

The 2008 Annual General Meeting of the Australasian Society for Ultrasound in Medicine will be held at Rooms 1 & 2, SKYCITY Auckland Convention Centre, Auckland, New Zealand, on Saturday 20th September 2008 at 12.00 noon

BUSINESS

1 MINUTES of the Annual General Meeting of 15th September 2007
2 ANNUAL REPORTS
2.1 President
2.2 Honorary Secretary
2.3 Honorary Treasurer
3 FINANCIAL REPORT for the year ended 30th June 2008
4 ANNUAL SUBSCRIPTIONS for the year 2009–2010 as recommended by Council:

Medical/Scientific/Sonographer members $368.50 ($352.00 if paid by 30th June 2009) **Associate members** $287.10 ($275.00 if paid by 30 June 2009)
Trainee members $287.10 ($275.00 if paid by 30th June 2009) **Retired members** $125.40 ($119.90 if paid by 30th June 2009)
Corporate $1370.60 ($1315.60 if paid by 30th June 2009) (incl 10% GST for resident Australian members only)
Corresponding members – ordinary $243.00 ($233.00 if paid by 30th June 2009) **Corresponding members** – associate $188.00 ($180.00 if paid by 30th June 2009)

5 ELECTION for 2008–2009 COUNCIL
6 LIFE MEMBER, HONORARY FELLOW, HONORARY MEMBER
7 GENERAL BUSINESS

By order of the Council

Dr Caroline Hong
Chief Executive Officer

Every Medical/Scientific/Sonographer member of the Society is entitled to appoint a proxy, provided that the proxy form is deposited at the registered office of the Society (Level 2, 511 Pacific Highway, St Leonards NSW 2065, Australia) not less than twenty four hours before the meeting. A proxy form is included with this mailing.

The ASUM President and Council acknowledge the contribution and support of the following:

The ASUM President and Council acknowledge the contribution and support of our major sponsors, Chairs and members of Committees, Chairs and members of DDU and DMU Examination Boards, the Chairs and members of the CCPU Certification Board and CCPU Panels, the speakers and presenters at ASUM meetings, the volunteers who contribute their time and last but not least, the ASUM Secretariat.

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Australasian Society for Ultrasound in Medicine

Australasian Society for Ultrasound in Medicine 38th Annual Scientific Meeting

ASUM08

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18 – 21 September 2008
SKYCITY Auckland Convention Centre, Auckland, New Zealand

www.asum2008.com.au

International Keynote Speakers Include

Dr Bernard Benoit, Monaco
Prof Peter Burns, Canada
Dr Rhodri Evans, Wales
Prof Syed Gilani, Pakistan
Dr Philippe Jeanty, USA
Dr Kevin Martin, London
Prof Christian Nolsoe, Denmark
Prof Liane Philpotts, USA
Dr Iryna Tsikhanenka, Belarus

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ASUM 2008 Provisional Program

This program was correct at the time of printing. The organisers reserve the right to alter the program.

Register online at www.asum2008.com.au

Nuchal Translucency Course Thursday 18th September 2008

The 11–14 Week Scan		
0900–0910	**Welcome / Introduction**	Dereck Souter
0910–1000	**Screening for Chromosomal Defects** Second trimester biochemistry Second trimester ultrasound Fetal nuchal translucency Maternal serum – hCG and PAPPA	Jon Hyett
1000–1020	**Pathophysiology of Nuchal Translucency**	Richard Davis
1020–1040	**Increased Nuchal Translucency and Normal Karyotype**	Jon Hyett
1040–1100	**Technique**	Richard Davis
1100–1130	Morning Tea	
1130–12 15	**Fetal Abnormalities at 11–14 Weeks**	Jon Hyett
1215–1300	**Multiple Pregnancy and Chorionicity**	Dereck Souter
1300–1400	Lunch	
1400–1500	**Other Markers for Down Syndrome** Nasal Bone Tricuspid Flow Ductus Venosus Facial Angle	Jon Hyett
1500–1515	**Local Experience with the Nasal Bone**	Richard Davis
1515–1545	Afternoon Tea	
1545–1700	**Exam and Process for FMF Accreditation**	Jon Hyett / Dereck Souter

Skills Development Workshops and Nuchal Translucency Course Thursday 18th September 2008

	Epsom Room 1 Philips Healthcare	Epsom Room 2 GE Healthcare	Epsom Room 3 Toshiba	Parnell Room Siemens – Medical Solutions
09.00–09.45	Applications on the Philips (brand) ultrasound machine Part 1	The 18 week scan	Challenges and pitfalls of bvascular imaging	Scrotal ultrasound
09.45–10.30	Applications on the Philips (brand) ultrasound machine Part 2	Fetal hearts Dr Philippe Jeanty	Carotids Prof Christian Nolsoe	Ergonomics – how to make our work environment pain free
10.30–11.00	Morning Tea			
11.00–11.45	Counselling – how to give bad news	Indicaton and applications of Doppler in high risk obstetrics	Doppler surveillance of endovascular treatment sites	Application on the Siemens (brand) ultrasound machine Part 1
11.45–12.30	3D/4D Scanning in Obstetrics (with Philips machine)	3D/4D Scanning in Obstetrics (with GE machine) (Dr Bernard Benoit)	Abdominal transplantation – liver and kidney (Prof Andrew Holden)	Application on the Siemens (brand) ultrasound machine Part 2
12.30–13.30	Lunch			
13.30–14.15	Neonatal heads (Dr David Perry)	Imaging multiple pregnancies and complications	Application on the Toshiba (brand) ultrasound machine Part 1	Ultrasound results related to clinical examination by physios & orthopaediatic surgeons
14.15–15.00	Neonatal hips (Dr David Davies-Payne)	Fetal hearts Dr Philippe Jeanty	Application on the Toshiba (brand) ultrasound machine Part 2	Ultrasound of the Shoulder Prof Syed Gilani
15.00–15.30	Afternoon Tea			
15.30–16.15	Paediatric spines (Dr David Perry)	Application on the GE (brand) ultrasound machine Part 1	Imaging lumps and bumps including biopsy techniques Dr Rhodri Evans	Ultrasound of the knee Prof Syed Gilani
16.15–17.00	The gastrointestinal tract	Application on the GE (brand) ultrasound machine Part 2	Neck ultrasound Dr Rhodri Evans	Image optimisation with new technologies

Friday 19th September

09.00–10.30	**Session 1 Plenary**
	Acoustic Safety of New Ultrasound Imaging Technologies Dr Kevin Martin
	Ultrasound in Developing Countries Prof Syed Gilani
	Novel Sonographic Technique in the Diagnosis and Treatment of Liver Tumours Prof Matatoshi Kudo
10.30–11.00 Morning Tea – Industry Exhibition	
11.00–12.30	**Session 2 Vascular/Intervention**
	US-Guided Ablations Techniques – Review and Future Aspects Prof Christian Nolsøe
	Extracranial Carotid Disease – Varied Presentation Prof Chander Vanjani
	Ultrasound in Renal Transplantation Prof Andrew Holden
	Imaging of Soft Tissue Hemangioma Dr Daniel Makes
11.00–12.30	**Session 2 Paediatrics**
	Correlation Between Antenatal and Postnatal Ultrasound Dr David Perry
	Use of Ultrasound in Chest Imaging and Intervention Dr David Davies-Payne
	Proffered Papers
12.30–13.30 Lunch – Industry Exhibition	
13.00–13.30	**Sponsors Symposia – GE Healthcare**
13.30–14.00	**Sponsors Symposia – Philips Healthcare**
14.00–15.30	**Session 3 Obstetrics and Gynaecology**
	3D Ultrasound in Gynaecology Dr Bernard Benoit
	Current Concepts in Fetal Growth Dr Katie Groom
	New Methods of Fibroid Treatment 30 mins Dr David Rogers
14.00–15.30	**Session 3 Musculo-Skeletal Ultrasound**
	Ultrasound of Wrist Joint Prof Syed Gilani
	Sonographic Assessment of Forefoot Pain Stephen Bird
	Ultrasound of Knee joint Prof Syed Gilani
15.30–16.00 Afternoon Tea – Industry Exhibition	
16.00–17.30	**Session 4 Breast**
	Comprehensive Use of Ultrasound in Breast Imaging: Screening, MR Correlation, and More Prof Liane Philpotts
	Breast Ultrasound in the Assessment of Calcifications Dr Jeremy Whitlock
	Breast Ultrasound and Biopsy: Techniques and Equipment Prof Liane Philpotts
16.00–17.30	Session 4 Paediatrics
	Ultrasound in Paediatric Liver Transplants Vanessa Galloway
	Paediatric Musculo Skeletal Ultrasound Dr Russell Metcalfe
	Proffered Papers 30 mins
17.30–19.30	Welcome Reception

Saturday 20th September

08.30–10.00	**Session 1 Plenary**
	WFUMB – Past Present and Future Prof Giovanni Cerri
	Skeletal Anomalies Dr Phillipe Jeanty
	Understanding New Technology in Ultrasound Prof Peter Burns
10.00–10.30 Morning Tea – Industry Exhibition	
10.30–12.00	**Session 2 Obstetrics and Gynaecology**
	The Fetal Face, How to Use 3D Ultrasound Dr Bernard Benoit
	How to Approach Difficult Diagnoses Dr Iryna Tsikhanenka
	Current Concepts in Fetal Growth Dr Lesley McCowan
10.30–12.00	**Session 2 Head and Neck / General**
	Thyroid Nodules – A Radiological Classification Dr Rhodri Evans
	Ultrasound Assessment of Acute Lower Abdominal Pain Prof Gebhard Mathis
	Salivary Glands – What to Look For and What Not to Miss Dr Rhodri Evans
10.30–12.00	**Session 2 PACS/IT**
	Osirix Dr David Davies-Payne
	Implementation of Osirix Dr David Rogers
	Use of Macromedia Director in Presentations Dr Philippe Jeanty
12.00–12.30	Annual General Meeting
12.00–13.00	Lunch – Industry Exhibition
12.30–13.00	**Sponsors Symposia – Siemens – Medical Solutions**
13.00–13.30	**Sponsors Symposia – Toshiba**
13.30–15.00	**Session 3 Fetal Heart**
	Cardiac Drawings Dr Iryna Tsikhanenka
	Normal Fetal Echo Dr Philippe Jeanty
13.30–15.00	**Session 3 Contrast**
	Guidelines for the Use of Contrast Agents in Ultrasound – 2008 Update Prof Christian Nolsøe
	Ultrasound Contrast in the Liver Prof Peter Burns
	Contrast-Enhanced US with New Contrast Agent Sonazoid for Liver Tumors Prof Matatoshi Kudo
13.30–15.00	**Session 3 Breast**
	Histologic Controversies in Breast Biopsy Prof Liane Philpotts
	Understanding Physical Principles That Influence Breast Ultrasound Prof Anthony Doyle
	New Techniques in Breast Imaging: MR, Tomosynthesis, CAD Prof Liane Philpotts
15.00–15.30	Afternoon Tea – Industry Exhibition
15.30–17.00	**Session 4 Fetal Heart**
	Fetal Echo: Anomalies Dr Philippe Jeanty
15.30–17.00	**Session 4 Head and Neck**
	Cysts – and Their Mimics. Signs to Look for and Pitfalls to Avoid
	Assessment of Doppler Ultrasound System Performance Dr Kevin Martin
	Chest Ultrasound Prof Gebbard Mathis
15.30–17.00	**Session 4 Musculo-Skeletal Ultrasound**
	The Role of Ultrasound in Soft Tissue Masses Prof Anthony Doyle
	Ultrasound in Tuberculosis Prof Syed Gilani
	Correlation of Shoulder Ultrasound with MR Dr Philip Weeks
15.30–17.00	Poster Defence
19.00–12.00	**ASUM Gala Dinner**

Sunday 21st September

09.00–10.30	**Session 1 Obstetrics and Gynaecology**
	Review of Nasal Bone Assessment Dr Richard Davis
	The Influence of Chorionicity in Twin Pregnancy Dr Emma Parry
	Fetal Medicine in New Zealand Prof Peter Stone
09.00–10.30	**Session 1 Vascular / Intervention**
	Doppler Assessment of Liver Transplants Alan Williams
	Ultrasound Assessment of Renal Tumours, Biopsy & Ablation Dr Brendon Buckley
09.00–10.30	DVT of Lower Limbs – Pitfalls 30 Prof Chander Vanjani, (session 1 cont'd)
10.30–11.00	Morning Tea – Industry Exhibition
11.00–12.30	**Session 2 Plenary**
	10 Good Reasons For Using 3D US in Obstetric Scanning Dr Bernard Benoit
	Vasa Previa Dr Philippe Jeanty
	The Future of Ultrasound Prof Peter Burns
12.30–12.35	**Closing**

Speakers ASUM ASM New Zealand

Dr Bernard Benoit

Dr Benoit grew up and went to school in Dakar (Senegal, Africa). He completed his medical studies at the University of Nice (France) and worked at the University Hospital in Nice from 1980 to 1997 and has been at the Princess Grace Hospital in Monaco since 1997. He started ultrasound in gynecology and obstetrics in 1980 and 3D ultrasound in 1993.

Mr Stephen Bird

Stephen Bird is currently employed as the Charge Sonographer at Benson Radiology in Adelaide. Stephen began sonography in 1990, holds a General and a Vascular DMU and a Masters of Medical Sonography from the University of South Australia. He is currently a member of the ASUM Federal Council and member of the DMU Board of Examiners. Previously, he has been Chairman of the ASAR, an ASA Federal Council member and recipient of the 2002 ASA Sonographer Achievement Award.

Prof Peter N Burns

Peter N Burns is Professor and Chairman of Medical Biophysics and Professor of Radiology at the University of Toronto and Senior Scientist at Sunnybrook Health Sciences Centre, Toronto. Prof Burns has had more than 120 peer-reviewed papers, three books and five patents in medical ultrasound imaging. In 1980 he reported the first detection of Doppler flow signals from tumours, and in 1991 Burns developed and patented the first harmonic greyscale and Doppler images, now found on most clinical ultrasound systems. In 1994 he demonstrated the first harmonic power Doppler images using microbubble detection to demonstrate microvessels and in 1999 developed and patented pulse inversion imaging and Doppler, creating first real time perfusion images of the heart's microcirculation with ultrasound.

Dr Brendan Buckley

Dr Buckley has been a consultant interventional radiologist at Auckland City Hospital since 2004. He qualified from University College Cork, Ireland in 1995 and then trained in surgery in London.
Dr Buckley has a special interest in interventional oncology, specifically radiofrequency ablation for renal tumours.

Prof Giovanni Cerri

Prof Cerri is the current president of the World Federation of Ultrasound in Medicine and Biology (WFUMB) and has had a long and distinguished involvement with the organisation and the Latin American Federation of Societies for Ultrasound in Medicine and Biology.
Giovanni Cerri is Professor of Radiology, at the Radiology Department, University of Sao Paulo, Brazil.
Prof Cerri is a distinguished international speaker and will be leading an executive delegation of WFUMB to Auckland.

Dr Richard Davis

Dr Richard Davis is a full-time private practice radiologist at Insight Radiology, Auckland with a special interest in obstetric ultrasound.
He has a hands-on approach and enjoys finding ways to incorporate new imaging techniques and technologies into practical areas of daily work.

Dr Anthony Doyle

Dr Doyle trained in medicine at the University of Otago and completed postgraduate training in radiology in Auckland. After several years teaching in South Carolina and at the University of Utah in Salt Lake City he returned to Auckland to be involved in several imaging initiatives including the introduction of image guided breast biopsy to New Zealand.

Dr Rhodri M Evans

Dr Evans is a consultant radiologist based in Swansea, South Wales. He is a member of the British Medical Ultrasound Society Scientific Committee, Chair of Organising Committee of Annual Scientific Meeting (December 2007), Editor/Author of two textbooks on head and neck imaging: Practical Head and Neck Ultrasound and Imaging in Head and Neck Cancer – A Practical Guide (both Cambridge University Press).

Prof Dr Syed Amir Gilani

Professor Gilani currently holds the position of Director Asian and Middle East Branch, The Burwin Institute of Ultrasound – Canada, which is located in Pakistan.
He is also Director of Afro-Asian Institute of Medical Sciences, Lahore and President of Musculoskeletal Ultrasound Society of Pakistan.
Prof Gilani has presented more than 150 papers at international conferences.

Dr Katie Groom

Katie Groom is a Registrar and Research Fellow at Auckland City Hospital.
Previous research interests in prematurity including transvaginal assessment of cervical length for prediction of preterm birth and the use of COX-2 inhibitors for the prevention of preterm birth. Currently working with the SCOPE group in Auckland investigating the use of second trimester uterine and umbilical artery Doppler for prediction of SGA and preeclampsia.

Assoc Prof Andrew Holden

Andrew Holden is Director of Interventional Services at Auckland City Hospital and Associate Professor of Radiology at Auckland University School of Medicine. He is lead radiologist for the liver transplant and endoluminal stent graft programs at Auckland Hospital.
He completed his radiology training at Auckland Hospital before undertaking fellowships in interventional radiology and body imaging at Royal Perth Hospital.

Dr Philippe Jeanty

Dr Jeanty received his medical degree from the Free University of Brussels in Belgium in 1978 and completed his residency in 1982. He then travelled to the United States to work in Yale University's obstetrics and gynaecology and radiology departments until 1986 when he went on to complete his radiology residency at Vanderbilt University School of Medicine. Dr Jeanty stayed on in the positions of Assist Prof of Radiology, Assoc Prof of Radiology and Assist Prof of obstetrics and gynaecology until 1995, when he left to join Women's Health Alliance, where he is currently the Director of Ultrasound Section, and Chief Fetustician Inner Vision Women's Ultrasound.

Dr Masatoshi Kudo

Masatoshi Kudo is Professor and Chairman Department of Hepatology and Gastroenterology at the Kinki University School of Medicine in Osaka-Sayama City, Japan. He is currently President-Elect, Asian Federation for Societies of Ultrasound in Medicine and Biology (AFSUMB), a Vice-President of the World Federation of Ultrasound in Medicine and Biology (WFUMB) and an Executive Council Member and Chair of International Affairs Committee, Japan Society of Ultrasound in Medicine (JSUM). He is a pioneer of contrast-enhanced US for liver tumors and published Contrast-Enhanced US during Intra-arterial Carbon Dioxide (CO_2) Microbubbles in Radiology in 1991

Dr Daniel Makes

Dr Daniel Makes is currently a Senior Consultant Radiologist and Chief of Superfisial Organ Imaging, Department of Radiology, Faculty of Medicine, University of Indonesia, Jakarta and Chairman of continuing professional development of the same department.
He has given 165 invited presentations in international, regional and national scientific meetings and written two books.

Dr Kevin Martin

Dr Kevin Martin is a consultant clinical scientist in the Department of Medical Physics, Leicester Royal Infirmary, UK and an honorary lecturer at the University of Leicester. Dr Martin became Head of the Instrumentation Division at the Medical Physics Department in Leicester, UK in 1991. His current research includes mapping techniques for ultrasound fields, electronic measurement techniques for quality assurance of clinical Doppler ultrasound equipment and development of measurement systems for continuous non-invasive blood pressure measurement.
He has been a member of BMUS since 1978, has served on BMUS Council and as Honorary Secretary and is currently President of BMUS.

Prof Gebhard Mathis

Prof Mathis received his medical degree from the Medical University of Vienna in 1977. He has always worked using ultrasound probe as one would a stethoscope as the next step after clinical examination.
During the past two decades he has discovered a lot of US applications and interventions in pulmonary and bowel diseases. His publications include more than 100 peer-reviewed papers and two books now published in four languages.

Dr Christian Nolsøe

Christian Nolsøe is the President-Elect of the European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB) and the Past President of the Danish Society of Diagnostic Ultrasound (DSDU). He was the honorary secretary of the 6th WFUMB world congress in Copenhagen, Denmark 1991. He is a radiologist with a subspecialty in ultrasound and a PhD in image guided tissue ablation. He is Head of the Ultrasound Division at the Department of Diagnostic Imaging, Køge Hospital, University of Copenhagen, Denmark. His fields of interest include interventional and surgical US, Doppler, tissue ablation, US contrast, musculoskeletal US, 3D and new techniques.

Dr Emma Parry

Dr Emma Parry is a RANZCOG certified specialist obstetrician and gynaecologist who is also a subspecialist in maternal fetal medicine. Having completed her medical degree at Guys Hospital, London, she moved to Auckland City Hospital.
Her research fields include preterm and term Labour, Health Informatics in Women's Health and improving maternal and perinatal health in the developing world. Her first edited book is about to be published covering the role of health informatics in Women's Health.

Assoc Prof Liane Philpotts

Liane Philpotts is Associate Professor of Diagnostic Imaging, Chief of Breast Imaging and Co-Director of the Yale Breast Center, Yale University School of Medicine, New Haven, Connecticut, USA.
She completed her undergraduate, medical, and radiology residency training at McGill University in Montreal, Canada and became their first breast imaging Fellow. Upon completion of fellowship, she became an attending physician and has been ever since. She has interest in all aspects of breast imaging, but particularly in interventional procedures, breast pathology, MRI, and new techniques such as tomosynthesis.

Prof Peter Stone

Peter Stone is Professor of Maternal Fetal Medicine in the University of Auckland and currently Head of Department in Obstetrics and Gynaecology. He gained a Doctor of Medicine based on Doppler studies in fetal growth restriction from the University of Bristol.
He has been involved in obstetrics, maternal and fetal medicine and women's health throughout his professional career.

Dr Iryna Tsikhanenka

Dr Iryna Tsikhanenka graduated with distinction from Minsk State Medical Institute and is one of the leading specialists in the republic.
She has practiced as an obstetrician in the First City Hospital of Minsk since 1994 and as a doctor of diagnostic ultrasound from 1997. She has lectured at international conferences and congresses and undertakes research in the field of obstetrics and prenatal diagnosis.

Prof Chander Vanjani

Professor Chander Vanjani is Senior Cardiologist and Director of the Echocardiography and Vascular Lab at PD Hinduja Hospital and Medical Research Centre Bombay, India. Apart from emergency echo work, he has a special interest in carotid evaluation for early atherosclerosis and its regression and flow mediated dilatation of brachial arteries in various disease states and evaluation of deep venous system in critical care patients.
Professor Vanjani is the recipient of the Pioneer Award of WFUMB and AIUM for pioneering work in promoting ultrasound as a speciality in India and is currently Vice President of the Asian Federation of Ultrasound in Medicine and Biology (AFSUMB) and Convenor of the next AFSUMB Conference to be held in India in 2010.

Dr Jeremy Whitlock

Dr Whilock is the Clinical Head of Breast Imaging at Auckland City Hospital having graduated from the University of Auckland and completed his training in radiology with the Royal Australian and New Zealand College of Radiologists in 1997. Following a further two years of subspecialty fellowship training in mammography in the UK, he returned to New Zealand to work as a full-time radiologist specialising in breast imaging.
He has gained experience in various breast imaging modalities including mammography, ultrasound and MRI. His particular interest is in breast biopsy techniques, including ultrasound guided fine needle aspiration, ultrasound guided core biopsy, stereotactic core biopsy and vacuum assisted biopsy.

Alan Williams

Alan Williams has a degree in Medical Radiation Science from RMIT Victoria and practised as a sonographer (DMU general) in Tasmania before taking up the position of chief sonographer at Vision College, Kuala Lumpur, Malaysia in 2004. In 2006, he took up the position of Clinical Specialist Sonographer at Auckland City hospital.

ASUM 2008 Sponsors' messages

Philips Ultrasound @ ASUM

Philips Ultrasound will display the latest upgrade to the iu22 system along with our new HD15 ultrasound system at ASUM ASM 2008.

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GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our expertise in medical imaging, medical diagnostics, patient monitoring systems, performance improvement, drug discovery, and biopharmaceutical manufacturing technologies is helping clinicians around the world re-imagine new ways to predict, diagnose, inform, treat and monitor disease, so patients can live their lives to the fullest.

GE Healthcare's broad range of products and services enable healthcare providers to better diagnose and treat cancer, heart disease, neurological diseases and other conditions earlier. Our vision for the future is to enable a new 'Early Health' model of care focused on earlier diagnosis, pre-symptomatic disease detection and disease prevention. It's Healthcare Re-imagined.

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Siemens

Siemens Healthcare will feature the following systems at this years' ASUM Annual Scientific meeting:

The new Acuson S2000™. This amazing ultra premium platform features unique innovative technologies such as ARFI™, designed to make a difference in assessing and staging liver disease through the quantitative use of elastography. This platform will be the basis of much of Siemens' ongoing development in ultrasound with silicon transducer technology to be the next addition – provided for the first time by any ultrasound system – isotropic voxels for true 3D imaging. The S2000 also features truly automated obstetric measurements based on Siemens' pattern recognition technology which will have a huge impact in daily workflow.

Also featured will be the premium Acuson Antares™ System which includes technologies such as eSie™ Touch Elasticity imaging for qualitative tissue stiffness assessment in breast imaging, as well as FTI which dramatically improves visualisation of micro calcifications in the breast.

Additional systems on show will be a representative from the X-Class range (Acuson X300™) as well as the two new members of Siemens' portable ultrasound range, the pocket P10™ and the laptop P50™.

Siemens Acuson platforms also offer as standard, class leading image quality and unique technologies like Hanafy lens and Clarify VE™ across the various platforms.

Toshiba

Toshiba is honoured to be participating in the ASUM 2008 Scientific Conference in Auckland.

For over 130 years, Toshiba's research and development has improved the health and welfare of people around the world. In accordance with our Made For Life™ commitment, we continue to develop innovations that improve patient care and provide lasting quality for a lifetime of value

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Adjudication of ASM prizes and awards

Due to the generosity of ASUM corporate members a range of prizes and awards are offered for proffered presentations at the 2008 Annual Scientific Meeting. Prizes and awards are for specifically designated purposes as described on the published list of prizes and awards. Adjudication of the prizes and awards is undertaken by an Adjudication Panel under the auspices of the ASUM Education Committee.

In order to conduct the adjudication of prizes and awards in the most objective and equitable way, guidelines for adjudication and scoring sheets are used by the panel. The stated purpose of the prize or award is a major factor in determining the eligibility of contributions for a particular prize or award.

For the purpose of prizes and awards, contributions to the scientific program are broadly categorised into four groups:

1 **Oral presentation of a descriptive clinical or literature review type**
These may include a case study description, the description of a new technique or a literature based review of a particular topic.

2 **Oral presentation of original research**
This type of presentation will typically describe the methodology, results and conclusions of scientifically conducted, original research.

3 **Poster presentation of a descriptive clinical or literature review type**
These may include a case study description, the description of a new technique or a literature based review of a particular topic.

4 **Poster presentation of original research**
This type of presentation will typically describe the methodology, results and conclusions of scientifically conducted, original research.

Eligibility for particular prizes and awards is based on the nature of the presentation, professional category of the presenter and other criteria as described in the relevant prize or award description. In submitting a presentation for consideration for prizes and awards, contributors are advised to read carefully the following list of prizes and awards, and their descriptors, so as to determine the eligibility of contributions for a particular award.

Best Sonographer Research Presentation Award. Value $A2000. Sponsored by Philips Medical Systems Australasia Pty Ltd
To be awarded for the best proffered research paper by a sonographer.

Best Research Presentation Award. Value $A1500 Sponsored by Siemens Ltd – Medical Solutions
To be awarded for the best proffered research paper.

Anthony Tynan Best Clinical Presentation Award Value $A1000 Sponsored by Siemens Ltd – Medical Solutions
To be awarded for the best clinical presentation proffered as a paper or poster.

Best Poster Award. Value $A500 and a free registration for the presenting author to the next ASUM ASM. Sponsored by ASUM
To be awarded for the best poster.

Early Bird Registration Fee Extended to Friday 29th August 2008

The 38th Annual Scientific Meeting in Auckland New Zealand (18th–21st September 2008) has an exciting program that promises an outstanding event.

Come to Auckland and take this opportunity to combine learning with a holiday in one of the most beautiful countries on this planet.

Register online now on www.asum2008.com.au

For more information about the 38th ASUM Annual Scientific Meeting go to www.asum2008.com.au

Upcoming ASUM Meetings

Early Pregnancy & Gynaecological Scanning Foundation Theoretical Courses 2008
Sydney Australia 18th–19th October 2008, Melbourne Australia 25th–26th October 2008
Go to www.asum.com.au for more details

ASUM 38th Annual Scientific Meeting 2008
Auckland, New Zealand 18th–21st September 2008
Go to www.asum.com.au for more details

ASUM WA Branch Translabial Ultrasound Workshop 2008
Perth, WA, Australia 29th November 2008
Go to www.asum.com.au for more details

President's message

Dr Matthew Andrews

It's with great pleasure that I present my final report to ASUM as President.

ASUM's membership across Australia and New Zealand continues to be drawn from multiple medical craft groups, sonographers, scientists, the ultrasound trade and more recently clinicians. This broad spectrum reflects the collaborative team approach to ultrasound in Australia and New Zealand.

ASUM's promotion of excellence in ultrasound continues through its core educational activities. The Diploma of Medical Ultrasonography (DMU) for sonographers and the Diploma of Diagnostic Ultrasound (DDU) for medical specialists remain prestigious and highly regarded ultrasound qualifications. The recently-introduced Certificate of Clinician-Performed Ultrasound (CCPU) in response to the expanding utilisation of ultrasound by medical practitioners in their clinical practice, is proving very popular. Several certificates have been awarded in the past year. Large numbers of clinicians are expressing interest in obtaining the CCPU in their clinical disciplines, vindicating ASUM's decision to establish it. This rapid expansion is posing considerable logistical challenges to ASUM, which I am confident the Society will meet.

At the national level, ASUM's two major educational activities are the Annual Scientific Meeting (ASM) and the Multidisciplinary Workshop (MDW). In 2007 the ASM was held in Cairns in Northern Queensland. This was the first time the meeting was held outside a major capital city. The gamble paid off with a high quality, well attended conference. This year's meeting will be held in Auckland, New Zealand and promises a high calibre program. As its name implies, the MDW consists of a series of hands-on scanning workshops with small interactive groups gaining practical experience, interspersed with instructive lectures. Both the ASM and the MDW are extremely popular within the ultrasound fraternity, each attracting similarly large numbers of registrants every year. In addition, ASUM continues to provide various educational activities throughout the year at a local level including lectures and case presentations.

June 2007 saw the official opening ASUM's state of the art new offices in Sydney by the Federal Health Minister. This building provides not only a fitting administrative headquarters for the Society, but has facilities for on-site teaching and meetings. It has more than met expectations in its first year of operation.

ASUM's role as the peak ultrasound body in Australia and New Zealand has seen its profile expand as it advises government and other health service providers of the vital role ultrasound plays in the improvement of patient outcomes. ASUM is also increasing its collaboration with Medical Colleges and other Societies to ensure they are appropriately appraised of the current status of ultrasound in patient service provision.

ASUM continues its considerable interaction with other ultrasound societies around the world, fostering a spirit of cooperation and collaboration. Our high standard Australasian ultrasound is thus disseminated widely, whilst exchange visitors to Australia and New Zealand introduce cutting edge ultrasound from around the globe. In particular the Asia-link program, the CADUCEUS exchange with the Danish Ultrasound Society and the British Medical Ultrasound Society Presidential exchange program continue to facilitate this interaction

ASUM is privileged to be hosting the WFUMB 2009 World Congress in Sydney, defining a new peak for our Society. This will be a cutting-edge and dynamic meeting with particular emphasis on new ultrasound applications. The program will have broad appeal to sonologists, sonographers, clinicians, scientists, veterinarians and the ultrasound trade. The rapidly growing area of clinician-performed ultrasound will form a distinct section of the meeting, in addition to the more traditional ultrasound applications. Speakers will be drawn from around the world adding to a substantial Australasian faculty.

Finally, I would like to acknowledge those who contribute enormously to the success of ASUM. Our members enthusiastically devote huge amounts of their time, resources and knowledge to the betterment of ultrasound in Australasia. They are ably supported by the fantastic ASUM Secretariat staff. The incredibly high standard of ultrasound in Australia and New Zealand is testimony to the efforts of both the membership and the staff.

On a personal note, I would like to thank ASUM for the opportunity to be its figurehead over the past two years. I am pleased that the Society is now in as strong a position as it has ever been. In particular I am extremely grateful to the ASUM Council, my fellow Executive members and the ASUM Secretariat, without whose support, assistance and guidance my task would have been so much more difficult.

It is also important to acknowledge the contribution of the families of members who serve the Society in an honorary capacity. My family has been extremely understanding of the considerable amount of my time ASUM has taken from it.

Australasian ultrasound is of a very high standard and ASUM can be proud to have contributed significantly. I am confident it will continue to do so.

Dr Matthew Andrews
MB BS MMed FRANZCR
President

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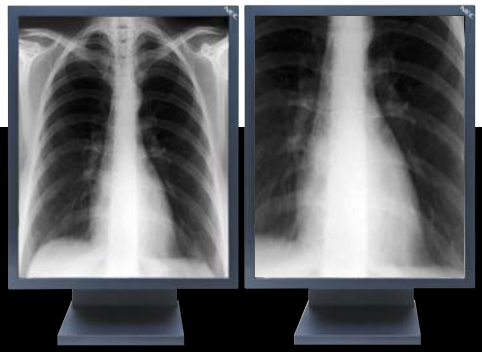

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CEO's message

Dr Caroline Hong

The last 12 months at ASUM have witnessed many activities and events, some historically significant enough to warrant mentioning. Our history is important and we are taking steps to preserve as much of our past as we can.

There are many people who have directly and indirectly contributed to the ASUM we are so proud of, that sometimes it is not always possible to acknowledge and thank them all. I hope this report and my entry in the ASUM Annual Report (appearing elsewhere) will address this.

July 2008 marks the beginning of my eighth year as ASUM CEO. In 2001, I joined ASUM, a move that has proven to be the most enjoyable of all positions I have held. I have found it to be the most challenging, diverse, and professionally fulfilling role of my career. It has certainly been a role which I found I could consolidate and utilise all that I have learned from my past years of experience working as a clinician, manager, director and association executive in the health sector.

Being the ASUM CEO is not always easy. What makes it enjoyable is working with a dedicated and motivated Board, Councillors, Executive, and the President of ASUM, Dr Matthew Andrews.

All the members of the ASUM Council deserve recognition for their

2007/2008 highlights

This is a snapshot of ASUM achievements for members and the ultrasound professional community.

- Membership increase by 9.8 % from previous year to 2926
- CCPU qualifications awarded since 2007: 9
- DDU qualification awarded since 1976: 535
- DMU qualification awarded since 1979: 1534
- DMU (Asia) qualification awarded since 2005: 22
- New ASUM Head Office and two training rooms fully established
- DMU Part 1 Learning Guides as a valuable resource completed
- ASUM ASM 2007 Cairns: 500 delegates
- ASUM MDW 2008 Sydney: 400 delegates
- ASUM RANZCR NZ Wellington: 350 delegates
- ASUM Early Pregnancy Foundation Courses: 70 delegates
- ASUM WA Branch Meeting: 120 delegates
- ASUM Travelling Fellowships: various offered
- WFUMB 2009 Call for abstract: online on target
- ASUM speakers delegation at the AFSUMB 2007 Bangkok Congress
- CADUCEUS training placement in Adelaide: Dr Akram Dakhil from Denmark
- CADUCEUS training placement in Copenhagen: Mr Rob Zeigenbein from Australia
- CADUCEUS Speaker exchange at ASUM 2007 Cairns: Prof Tobern Lorentzen from Denmark
- CADUCEUS Speaker exchange at DSDU 2008 Copenhagen: Prof Ron Benzie from Australia
- BMUS Presidential Exchange at BMUS 2007 Harrogate: Dr Matthew Andrews from ASUM
- ASUM Asia Link at KSUM 2008 Seoul: Dr Yisha Tong from ASUM
- ASUM Bulletin Four issues published; total of 12 000 copies circulated
- Major sponsors for ASUM meetings: Toshiba, GE Healthcare, Philips and Siemens
- Major sponsors for WFUMB 2009 World Congress: Toshiba, GE, Philips and Medison. Support achieved ahead of schedule
- ISO 9001:2001 Quality Management Systems certification maintained
- CCPU: various streams established by successful collaboration with medical colleges including Neonatal, Emergency, O&G, Intensivists. Others developing include Sports Medicine, Surgical, Phlebology and others
- Increase in ASUM activities supported by 10 staff members (9.6 FTE)
- Financial performance and financial position remain robust
- Representation on Department of Health and Ageing issues
- Contribution to the RANZCR QUDI project.

tireless work in the best interests of the Society. Special thanks go to all the committee members and volunteers, who selflessly contribute enormous amounts of their time and expertise for ASUM and its members.

Finally I know that many things would not be possible if it wasn't for the innovative work of the ASUM Secretariat and staff who strive to continually improve the level of service to members.

I recently read a study of associations including the Radiological Society of North America, (the RSNA) in the American Society for Association Executives (ASAE) called *7 Measures of Success – What Remarkable Associations Do That Others Don't.* It identified the main qualities of successful associations to include:

- A customer service culture
- Alignment of products and services with the mission
- Data driven strategies
- Dialogue and engagement
- The CEO as the broker of ideas
- Organisational adaptability
- Alliance building

While we are proud of our achievements over the past year, we know there is always room for improvement in all aspects of the activities and services we provide. The ASUM Secretariat will continue to work hard to make ASUM a remarkable organisation; one that achieves its objective of being a truly relevant ultrasound society for its growing and changing membership.

Membership grows by 9.8%

I am pleased to report that the membership of ASUM has grown from 2664 members at 30th June 2007 to 2926 members at 30th June 2008. This represents a 9.8% increase over the 12 months.

This increase reflects the trend of growing interest in the utilisation of ultrasound as a valuable and popular diagnostic, procedural and therapeutic tool. Many new members joined ASUM to be eligible to sit for the DMU or DDU examinations or to obtain a CCPU qualification.

I wish to thank Nancy Leung and David Bacic who provide Secretariat support for membership at ASUM.

For details on how to join, go to www.asum.com.au or contact membership@asum.com.au

President, Council and supporters

Thank you to President Dr Matthew Andrews

I had great pleasure in working with Dr Matthew Andrews, a radiologist practicing in Melbourne, during his time as President from 2006 to 2008. His term finishes at the AGM on 20th September 2008. Prof Ron Benzie will be the incoming President, for the next two years.

Dr Andrews has been a popular President who has given a lot of his personal time representing ASUM in government matters, medical college relationships and on numerous committees. I know I speak on behalf of all ASUM members in expressing my gratitude to Matthew for his generosity in giving ASUM so much of his expertise, knowledge and time.

ASUM Council

The ASUM Council meets four times a year, usually timed with ASUM meetings. During the past year, Council meetings were held to coincide with the ASUM RANZCR NZ Branch ASM 2007 in July in Wellington, ASUM 2007 ASM in September in Cairns, the AFSUMB 2007 Congress in Bangkok and the ASUM MDW 2008 in March in Sydney.

ASUM Secretariat

ASUM is fortunate to have a competent team of well-qualified professionals supporting me. As at 30th June 2008, we have 10 staff members, including the CEO, compared to six staff in 2001. The growth has been due to the increased volume and scope of work that the ASUM Secretariat requires to meet the needs of the Society.

Current ASUM staff

Iris Hui *CEO's Executive Assistant (Administration and Accounts)*
Louise Allsopp *CEO's Executive Assistant (Part time Administration)*
Keith Henderson *Education Manager*
Arthur Banos *Professional Development Officer*
Raghib Ahmad *DDU and DMU Examination Coordinator*
Nancy Leung *Administrative Officer (Membership and Education)*
Alya Almenahi *Administrative Officer (CCPU and Education)*
Kaly Tran Administrative Officer (*CCPU and Education*)
David Bacic Administrative Officer *(Membership and Ultrasound Bulletin)*

Additionally, ASUM engages project officers occasionally for specific jobs.

I thank Iris Hui, my Executive Assistant, who provides invaluable administrative support on work related to the Council, financial accounts and governance at the ASUM office and to Louise Allsopp who supports Iris.

ASUM staff development

I am pleased to report that ASUM continues to support the development of its staff. Nancy Leung is studying business administration while Keith Henderson is studying for an MBA part time.

Staff also attended work related short courses such as customer service, and occupational health and safety.

I attended various association CEO symposiums and networking events throughout the year. I have also served professionally on the Board of the Australian Society of Association Executives, a not-for-profit association, as Vice President, and was named the Ambassador of the Sydney Convention and Visitors Bureau, a government and industry-funded organisation.

For all enquiries about the ASUM Secretariat, email asum@asum.com.au or carolinehong@asum.com.au

ASUM AS/NZS ISO 9001:2000:

Quality Management Systems until 2010

Our commitment to the continuous improvement of our management systems within the Secretariat is one of many things we can be proud of. ISO Certification is not essential for the operation of ASUM, however our commitment to achieving and maintaining it demonstrates our desire to reach the gold standard for ASUM's management systems.

ASUM was certified in 2004, meeting the requirements of AS/NZS ISO 9001:2000 until 2010. ASUM has met its requirements each year since certification.

Financial performance and financial position

The 2007–2008 financial year once again delivered a surplus. The financial position reflects an increase of allocation of funds to special projects, such as the WFUMB 2009 Sydney World Congress. This project is anticipated

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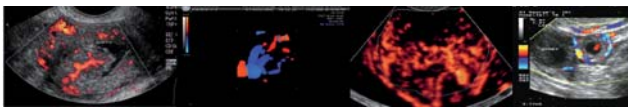

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Melbourne
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Website: www.asum.com.au Email: asum@asum.com.au

Convenor
A/Prof George Condous

ASUM Chief Executive Officer
Dr Caroline Hong

ASUM Education Manager
Mr Keith Henderson

Australasian Society for Ultrasound in Medicine

Upcoming ASUM Meetings

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Go to www.asum.com.au for more details

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Auckland, New Zealand 18th–21st September 2008
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ASUM WA Branch Translabial Ultrasound Workshop 2008
Perth, WA, Australia 29th November 2008
Go to www.asum.com.au for more details

World Federation for Ultrasound in Medicine and Biology 2009
Sydney, Australia 30th August–3rd September 2009
Go to www.asum.com.au for more details

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to cost ASUM in excess of $3 million. All measures have been taken to maximise the return and minimise the risk to the Society.

The strong support from our corporate sponsors Toshiba, GE Healthcare, Philips and Siemens is greatly appreciated. ASUM members have benefited from their generous sponsorship of our major annual and branch meetings.

ASUM education

Education is the core activity and purpose of ASUM. Education resources continue to grow with the addition of ultrasound DVDs, the Ultrasound Bulletin, videotape and CD lending library and MOSIPP CPD/CME recording service. MOSIPP is also recognised by the NZ MRT Board for the NZ CPD/CME program.

I wish to acknowledge Keith Henderson, Education Manager, and all ASUM staff who support the education programs.

Diploma of Medical Ultrasonography

ASUM is proud to have established the Diploma of Medical Ultrasonography (DMU) in 1979 as the first certification for sonographers. The main prerequisite for DMU is a Bachelor degree in any discipline.

The DMU qualification is achieved through self-directed learning and by satisfactory completion of the Part I and Part II DMU examinations. Available throughout Australia and New Zealand, more and more people have access to a professionally accredited qualification that is flexible enough to fit in with the demands of their work.

As at 30th June 2008, the DMU has been awarded to 1534 sonographers and doctors. ASUM's DMU provides a valuable service to the ultrasound profession and the community.

We thank Margaret Condon, Chair of the DMU Board of Examiners (BoE) and the members of the BoE, for their hard work throughout the year in contributing to the success of the DMU.

Additionally we thank Margo Gill who, with a team of dedicated expert volunteers developed the learning guide for Part 1 of the DMU. Margo will now seek to develop learning guides for Part 2 of the DMU.

The member volunteers – over 60 in number – who work as examiners, helpers or DMU preparation course lecturers each year also deserve our acknowledgement.

For the 2008 DMU Handbook, and enrolment information go to www.asum,com.au or contact dmu@asum.com.au

ASUM DMU (Asia)

The ASUM DMU (Asia) was taken on successfully by Vision College in Kuala Lumpur, Malaysia with the first intake of 10 students in June 2005. As at 30th June 2008, there have been seven intakes for a total of 77 students in the program.

The DMU (Asia) is showing encouraging results from the successful collaborative partnership between ASUM and Vision College in introducing a sonography qualification in Asia.

The level of interest should increase due to the recent decision from the Malaysian Government to allow Vision College to accept international students.

ASUM members involved either as examiners or presenters at Vision College include: Brian Starkoff, Peter Murphy, Mark Bryant, Lynette Hassall, Roger Gent, Barry Lennon and Naomi Rasmussen.

We are grateful to all ASUM volunteer lecturers, examiners and the members of the DMU (Asia) Board of Examiners, chaired by Dr Andrew Ngu.

For full details of requirements of the DMU (Asia) go to www.vision.edu.my or contact by email info@vision.edu.my

ASUM Diploma in Diagnostic Ultrasound

The Diploma of Diagnostic Ultrasound (DDU), established in 1976 by ASUM, was the first and remains the only diploma certification for doctors in diagnostic ultrasound. As at 30th June 2008, the DDU has been awarded to 535 medical specialists.

The Council of ASUM awards the DDU to appropriately qualified medical graduates of good standing, on the recommendation of the Board of Examiners. A candidate for the Diploma must be a Bachelor of Medicine of an Australian or New Zealand University or hold unrestricted (as opposed to temporary) registration as a medical practitioner with appropriate the Medical Board or Council.

We appreciate the hard work of the DDU Board of Examiners, chaired by Dr Chris Wriedt and the volunteer examiners, for their contribution to the DDU.

I thank Raghib Ahmad from the ASUM office for his coordination of the DMU, DMU (Asia) and DDU.

For full details of requirements of the DDU go to www.asum.com.au or contact ddu@asum.com.au

Certificate in Clinician Performed Ultrasound

During 2008, the Certificate in Clinician Performed Ultrasound (CCPU) further consolidated its position as the recognised credential for medical practitioners who are not imaging specialists, but need ultrasound as a diagnostic tool at the point of care.

ASUM has been busy staging CCPU courses, developing procedures and curriculum to meet the new levels of interest generated amongst medical practitioners in specialty areas.

The ASUM Council awarded the CCPU to 9 candidates in 2008.

Simultaneously the special membership class of Clinician Affiliate has grown in numbers to 130.

The current holders of the CCPU are:

CCPU (Emergency) Dr Tony Joseph, Dr Justin Bowra and Dr Kylie Baker

CCPU (Neonatal) Prof Nick Evans, Dr Andrew Gill, Dr Martin Kluckow, Dr David Knight

CCPU (O&G) Dr Bernard Brenner, Dr Meiri Robertson, Dr Talat Uppal.

The heightened interest in CCPU has seen considerable activity from the CCPU Certification Board and the CCPU Panels involved in developing discipline specific curriculum, courses and advanced standing criteria. Along with ASUM staff, the Neonatal, Emergency, Obstetrics and Gynaecology and Critical Care Panels have worked hard to see basic and advanced courses run in Sydney and Melbourne.

The educational components for CCPU are offered through on-line modules as well as accredited interactive courses, details of which can be found on the ASUM website.

The CCPU is fulfilling the expectations the ASUM Council envisaged when it was launched in 2003. ASUM is indebted and grateful to the Chair, Dr Glenn McNally and all members of the CCPU Certification Board, CCPU Panels and Council members for their

enthusiastic support of this exciting program.

Secretariat support to the CCPU consists of Keith Henderson, Arthur Banos, Alya Almenahi and Kaly Tran.

For full details of requirements of the CCPU go to www.asum.com.au or contact ccpu@asum.com.au.

Ultrasound Bulletin

Prof Ron Benzie, together with Keith Henderson and all members on the Editorial Board have worked hard to produce the official journal of ASUM, the *Ultrasound Bulletin*.

The *Ultrasound Bulletin* is distributed quarterly to ASUM members. This publication's circulation includes Australia, New Zealand, Asia and affiliated societies of WFUMB worldwide. Selected articles are also included on the SonoWorld website.

The production requires many hours of dedication to ensure a high quality outcome. We thank Prof Ron Benzie and all members of the Editorial Board for their fine work.

ASUM member services

ASUM has negotiated the following member services at competitive rates.

- AMP Home Loan packages
- Hertz Rental car service
- Professional indemnity package for sonographers.

Other ASUM services, such as the ASUM Bookshop, website, policies and statements, online ultrasound encyclopaedia, educational resources and discounts at meetings continue to be developed and grow. As ASUM's local and international profile increases, members benefit from the increased opportunities to participate in global networking, local and international committee work and speaking engagements.

World Federation for Ultrasound in Medicine 2009 World Congress (WFUMB 2009) 30th August to 3rd September 2009

Call for abstracts open. Many prizes and awards to be won

Submit online at www.wfumb2009.com

Abstracts close 28th November 2008.

Planning is well underway for this major meeting. Sponsorship packages and scientific programs have been completed and mailed out to interested potential sponsors and exhibitors. Prof Ron Benzie is the Program Coordinator who is well supported by a team of dedicated Scientific Convenors.

Dr Stan Barnett resigned from his position as Convenor of WFUMB 2009. Council accepted his resignation with regret. We thank him for his contributions to ASUM.

ASUM will be embarking on an active marketing campaign in the next few months, which will continue up to the opening day.

We are receiving worldwide interest to this important event. For updates visit; www.wfumb2009.com.

The IBUS Symposium and the WINFOCUS Workshop will also be held jointly with ASUM during WFUMB 2009.

The ASUM MDW 2009 and the ASUM Annual Scientific Meeting 2009 will be incorporated into the Congress program.

ASUM meetings

More than 1400 members attend ASUM meetings

The following five major meetings were held during the 2007–2008 financial year:

- ASUM RANZCR NZ Branch Annual Scientific Meeting, Wellington, July 2007 – 350 delegates
- ASUM 2007 Annual Scientific Meeting, Cairns, September 2007 – 500 delegates
- ASUM Multidisciplinary Workshop, Sydney, March 2008 – 400 delegates
- ASUM WA Branch meeting, Perth, July 2007 – 120 delegates
- ASUM Early Pregnancy Foundation Courses, Sydney and Melbourne – 70 delegates attendees.

ASUM meetings have a reputation of being fun as well having high quality presentations and workshops. They also provide great social and networking opportunities for the ultrasound companies to meet the medical and sonographer profession.

We are grateful to the international speakers, Dr Joseph Polak (USA), Dr Eugene McNally (UK), Dr David Evans (UK), Prof Torben Lorentzen (Denmark), Dr Carlo Martinoli (Italy), Dr Yves Ville (France), Dr Tom Stavros (USA) and Dr David Nyberg (USA), all of whom travelled long distances to deliver a high quality program at the ASUM 2007 meeting in Cairns.

We also thank Prof Alan Cameron (UK) and Dr Ashley Robinson (Canada) who presented at the ASUM MDW 2008 in Sydney and Prof Lil Valentin (Sweden) who presented at the ASUM RANZCR NZ meeting in Wellington.

Many renowned Australian and NZ speakers and presenters also contributed to the success of these meetings.

The work of the meeting convenors during the year is also acknowledged.

The ASUM Council gratefully acknowledges Toshiba, GE Healthcare, Siemens and Philips for their strong sponsorship support of ASUM events during the year.

ASUM Asia Link program

ASUM Asia Link sent Dr Yisha Tong to represent ASUM at the KSUM Annual Scientific Meeting, in Seoul in May 2008. Dr Tong was a good ambassador for ASUM, giving several clinical talks as well as promoting the WFUMB 2009 Congress.

The relationship between KSUM and ASUM continues to strengthen, with friendship and cooperation fostered since the 2001, when Prof Byung Ihn Choi, was first invited to Sydney for the ASUM 2001 Annual Scientific Meeting.

Another Asia Link project in progress involves a scholarship recipient, Dr Sakshi Tomar, nominated from IFSUMB (India). Dr Tomar will be spending some clinical time with Dr Glenn McNally who has kindly agreed to provide placement at the Royal Hospital for Women in Sydney.

ASUM international linkages

ASUM works collaboratively with local and international organisations with common education objectives. In particular, successful exchange programs with BMUS (UK) and DSDU (Denmark) have forged strong relationships.

The ASUM BMUS Presidential exchange program started in 2002 and occurs on alternate years. Dr Grant Baxter, past BMUS President, presented at the ASUM 2006 meeting in Melbourne. Dr Matthew Andrews presented at the BMUS 2007 meeting in Harrogate in December 2007. Dr Kevin Martin, the current BMUS President has been invited to present at the next ASUM 2008 meeting in Auckland.

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Excellence in **U**ltra**S**ound, (CADUCEUS), was launched officially in Copenhagen at the 9th International Congress for Ultrasound this year. Mary Langdale was the first ASUM scholarship recipient for the CADUCEUS program in November 2006. Dr Morten Boesen was the second young Danish scholarship recipient to be placed in Australia for short-term ultrasound training with Dr Cheryl Bass and her team at Victoria House Medical Imaging, in January 2008. Dr Ahkram Dakhil from Denmark spent some time with Dr Neil Simmons in Adelaide early this year.

The CADUCEUS exchange of congress speakers involved Prof Torben Lorentzen (Denmark) presenting at the ASUM 2007 Cairns meeting and Prof Ron Benzie presenting at the DSDU 2008 meeting in Copenhagen.

ASUM Awards

ASUM congratulates all the following prize winners recognised at the ASUM 2007 Cairns meeting.

Honorary Fellowship Mrs Mary Young and Mrs Rosina Davies were awarded Honorary Fellow. They were recognised for their longstanding service to the ultrasound profession and distinguished service to the Society.

Chris Kohlenberg Teaching Fellowship Martin Necas (Regional NSW), sponsored by GE Healthcare.

Beresford Buttery Teaching Fellowship George Condous (NSW and Vic), sponsored by GE Healthcare.

Giulia Franco Teaching Fellowship Elvie Haluszkiewicz (NT and Regional Nth Qld), sponsored by GE Healthcare.

Anthony Tynan Award for Best Clinical Presentation Award Kerry Thoirs, sponsored by Siemens, value $1,500.

Best Research Presentation Award Peter Coombs sponsored by Siemens, value $1,500.

Best Sonographer Research Presentation Award David Fauchon, sponsored by Philips, value $2000.

Best Poster Award Jackie Cartmill, sponsored by ASUM, value $1500. (made up of free registration to ASUM meeting 2008 Auckland and $500 spending money).

UI/UL Plenary Award Assoc Prof Jon Hyett.

The Chris Kohlenberg Fellowship Award, sponsored by GE Healthcare, and the Giulia Franco Teaching Fellowship, sponsored by Toshiba, were established to increase the educational opportunities for members outside the major centres. Each teaching fellow is appointed by the Education Committee to conduct workshops and seminars primarily, but not exclusively, in centres that would not normally host a major scientific meeting. From 2006, the Beresford Buttery Overseas Traineeship was replaced with a teaching fellowship that will focus on major city centres in either Australia or New Zealand.

New office and training rooms

One of the most visible changes to ASUM is the new office at 511 Pacific Highway, St Leonards, NSW. We were privileged to have the new facilities officially opened by the Hon Tony Abbott, (previous Minister for Health and Ageing), on 28th June 2007. The ASUM Council approved the $1.32 million (plus GST) purchase and sale of the old Willoughby office.

The two new training rooms are used for committee meetings, DDU and DMU examinations and for education courses and workshops.

The new office is located on Sydney's lower North Shore, close to train and bus routes, the Royal North Shore Hospital, Private North Shore and the Mater Hospital.

Vale
Margaret Tabrett, James Grimwade and Coll Fisher

All at ASUM were saddened by the passing of three distinguished and honoured members of the ultrasound profession, Margaret Tabrett (NSW), James Grimwade (Vic) and Coll Fisher (NSW). Margaret Tabrett was a founding member of ASUM and instrumental in creating the ultrasound profession. James Grimwade was a member of ASUM from 1975 and Coll Fisher was a member of ASUM from 1976. We offer our sincerest condolences to the loved ones that they left behind.

Department of Health and Ageing

The Commonwealth Department of Health and Ageing (DOHA) consults with ASUM regularly on all issues relating to ultrasound imaging. The DOHA conducted a national forum of more than 20 colleges, societies and associations on 5th September 2007, on the mandatory accreditation of diagnostic imaging services under Medicare. Dr Fergus Scott and Dr Glenn McNally represented ASUM to put a strong case in favour of ASUM's policies and standards in ultrasound.

The DOHA also consulted with ASUM for its discussion paper relating to the transition to digital imaging.

RANZCR – QUDI

ASUM was consulted by the RANZCR for input into the document, *Ultrasound Scan – Consumer Information*. ASUM, being the peak body representing medical specialists, sonographers and corporate members, is the ideal body to provide input in the document as part of the QUDI program. Information about QUDI is available on the website at www.ranzcr.com.au. The RANZCR continues to consult ASUM on ultrasound related issues for its QUDI project; the college has just received news of continuing funding from the government for a further 12 months.

2008/2009 year

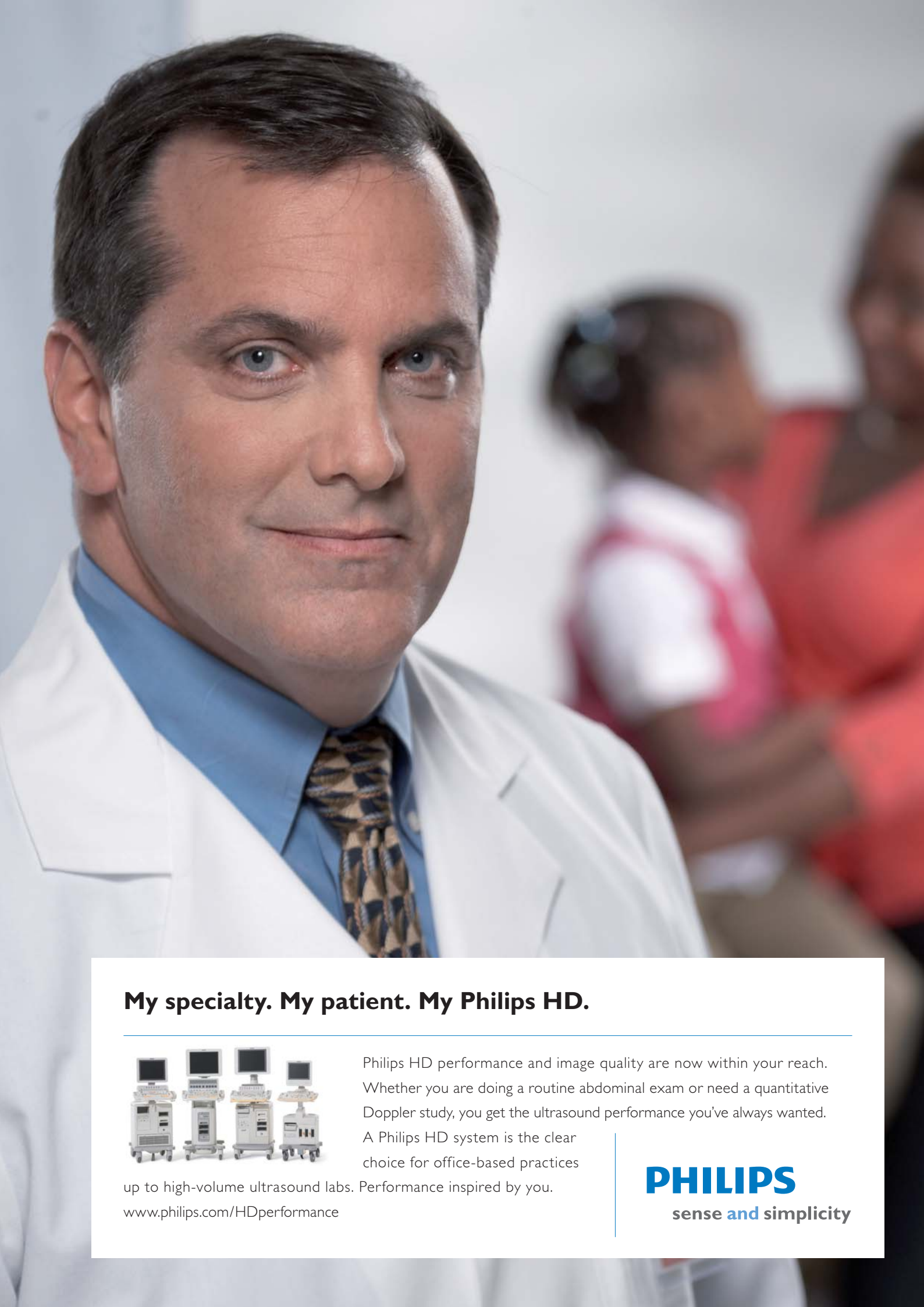
The focus for the financial year 2008/2009 will be devoted to the planning and coordination of all matters relating to the success of the WFUMB 2009.

Other activities expected to engage the resources of the Secretariat include further development of the CCPU, increasing membership growth, completing the *DMU Part 2 Learning Guides*, supporting the Council, Boards of Examiners, Committees, special projects and providing quality member services.

Conclusion

I am privileged to serve ASUM. The past seven years have been an enriching experience, working first with Dr Stan Barnett, a CSIRO scientist and President from 2001 to 2002, second, with Dr Glenn McNally, an obstetrician and gynaecologist sonologist, practicing in Sydney and President from 2002 to 2004; third, with Dr David Rogers, a radiologist practicing in Auckland and President from 2004 to 2006; and most recently with Dr Matthew Andrews, a radiologist practicing in Melbourne and President from 2006 to 2008.

I thank Matthew Andrews and the Executive for the ongoing support they have provided to me in my role as CEO. I look forward to working



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with Prof Ron Benzie the incoming President over his two-year term from 2008 to 2010.

I recently heard David Gonski, Chancellor of University of NSW, present a speech, in Sydney, where he said:

'In most not- for-profits, a slight turn on the wheel means the wheels jar immediately. You immediately get the feeling that you're involved. You get the feeling that you are going to make a difference.'

There is a lot of passion and energy amongst the volunteers and staff who work in a mission driven, volunteer driven organisation. It is due to the sense of contributing to a worthy cause and leaving behind a legacy. I believe that is why ASUM is so fortunate to have such a thriving volunteer spirit among its members and staff. I thank all my staff and ASUM members for their support and contribution.

As always, this report would not be complete without thanking my family, my husband, Dr Thomas Boland, daughter Vera Hong and son James Boland for their understanding and support of my work at ASUM. My role requires long hours and weekends as well as frequent travel away from home.

One has to love the job and the role to continue to thrive in the not-for-profit environment.

I look forward to seeing many of you at the ASUM 2008 Annual Scientific meeting in Auckland from 18th to 21st September 2008.

Dr Caroline Hong
Chief Executive Officer
carolinehong@asum.com.au

We want your memories

ASUM has been in existence for almost 40 years and is approaching some significant milestones such as our 40th year issue of the *Ultrasound Bulletin* in Feb 2010.

We are keen to preserve as much of our history as possible.

Apart from having a historical feature in the 40th year issue we intend to have a historical display at WFUMB 2009.

So if you have historically significant material ASUM would like access to it. What is historically relevant?

- Old photos of interest such as equipment, buildings and premises
- Old posters or brochures of events, equipment
- Group photographs of former ASUM Councils, Branches etc
- Movie clips, videos or slides
- Documents of historical significance
- Short articles recording pioneering work in medical ultrasound (usually 500–200 words).

Contact ASUM on (02) 9438 2078 to discuss this further.

WFUMB 2009

World Congress in Medical Ultrasound

Sydney Australia

IBUS

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30 – 31 August 2009

In conjunction with the

12th World Congress of the World Federation for Ultrasound in Medicine and Biology

Incorporating

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30 August to 3 September 2009

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30 August to 2 September 2009

WFUMB – WINFOCUS Workshop
3 September 2009

All Congress enquiries should be directed to:

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Host Organisations

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The WFUMB 2009 Congress is hosted by ASUM

Australasian Society for Ultrasound in Medicine (ASUM)

Promoting Excellence in Ultrasound

ASUM CEO Contact:
Dr Caroline Hong
Email: carolinehong@asum.com.au

ASUM General Society email enquiries:
asum@asum.com.au

Register Online
Submit your Abstract Online

www.wfumb2009.com

Important Dates

Abstract Submission Deadline
Friday, 28 November 2008

Abstract Notification
February 2009

Early Registration Fee Deadline
March 2009

Registration Deadline
July 2009

Late Registration
From Saturday, 1 August 2009

ASUM Ultrasound Bulletin August 2008; 11 (3): 24

50 years on …

Ron Benzie

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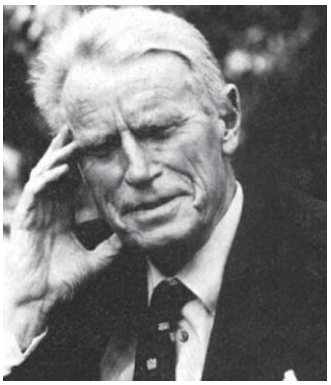


Ian Donald, the father of the clinical use of ultrasound

It is fifty years since the first paper on obstetrical and gynaecological sonography was published in *The Lancet* by Ian Donald, John McVicar and Tom Brown. Titled *Investigation of Abdominal Masses by Pulsed Ultrasound* it described their experience in 100 patients with a variety of mainly gynaecologic problems. Ovarian cysts, fibroids and ascites were illustrated in 12 pictures of B-mode sonography.

The paper started with a description of the properties of ultrasound and, for the first time in a clinical journal, explained what ASUM members now know from elementary physics courses, namely, when an ultrasound beam crosses an interface between two substances of differing specific acoustic impedance five things happen: reflection, attenuation, refraction, heat production and cavitation.

The safety of ultrasound was also discussed in some detail, reflecting concerns that are still important.

The authors noted, with an honesty often lacking in scientific papers, that they were far from satisfied with the crude results so far obtained. They were also sceptical about claims other workers had made about their ability to distinguish malignant from benign tissue. Donald recognised that the temptation to try to make this distinction was well nigh irresistible, but as a clinician he was fully aware of the difficulty that even a pathologist may have in assessing malignancy in the laboratory. He recognised that to be of any use to clinicians, the echo patterns obtained by pulsed ultrasound had to be not only intelligible but also consistently reproducible. Not surprisingly, the obstetrical medical establishment of the day was not impressed, as is so often the lot of the innovator.

So who was Ian Donald? He was born in Scotland in 1910 and educated at Fettes College, Edinburgh (Tony Blair is another famous alumnus). His family moved to South Africa where he graduated BA from Cape Town University. He studied medicine and graduated with an MBBS from London University in 1937. During World War II he was awarded the MBE for rescuing airmen from a burning aircraft. After demobilisation, he became Reader in Obstetrics and Gynaecology at St Thomas Hospital Medical School, London. In 1954, he accepted the Regius Chair of Midwifery at Glasgow University. Despite its name this was in fact a Chair of Obstetrics and Gynaecology.

His knowledge of radar from RAF days and his, in his own words, 'continuing childish interest in machines, electronic and otherwise' laid the foundation for his pioneering research. Today we can hardly conceive of a medical world without ultrasound. Donald was, however, not only interested in research. As a doctor and teacher he was also outstanding. His single-handed authorship of *Practical Obstetric Problems*, had an enormous influence on obstetricians worldwide. Who can forget his description of being reminded of a patient with massive postpartum haemorrhage every time he filled his car with petrol, a graphic but very apt analogy of blood loss in the delivery suite?

His abhorrence of the use of ultrasound in the prenatal diagnosis of severe fetal anomaly leading to termination of pregnancy, led him to be unswerving in his public opposition to abortion, yet countless women have been thankful for the information gained by prenatal ultrasound.

Remarkably, considering his many activities, he was dogged by ill health due to cardiac valvular disease and had three cardiac operations. He was particularly happy to have had an ultrasound diagnosis of retroperitoneal haematoma made on himself, much to the consternation of a dubious cardiologist.

A man of many talents, he was also a watercolourist, and paintings of boats and seascapes hung on the walls of his office. It is fair to say, however, that his artistic endeavours were dwarfed by his scientific ones. After a full life, Ian Donald died in 1987 aged 77.

Since then ultrasound has seen remarkable advances that even he could not have foreseen. But we should remember its beginnings and the research that advanced our speciality.

Reference

1 *Lancet* 1958: i; 1188–1195

Duplex imaging of venous disorders of the upper extremity

Deb Coghlan

Queensland Vascular Diagnostics, Brisbane, Queensland, Australia.
Correspondence to Deb Coghlan. Email vasultra@bigpond.net.au

With more frequent use of pacemakers, internal cardiac defibrillators and chronic indwelling central venous catheters for chemotherapy and hyperalimentation, upper extremity venous thrombus is becoming more prevalent. The use of ultrasound for detecting thrombus and other upper extremity pathology is a safe and proven method.

Venous pathology

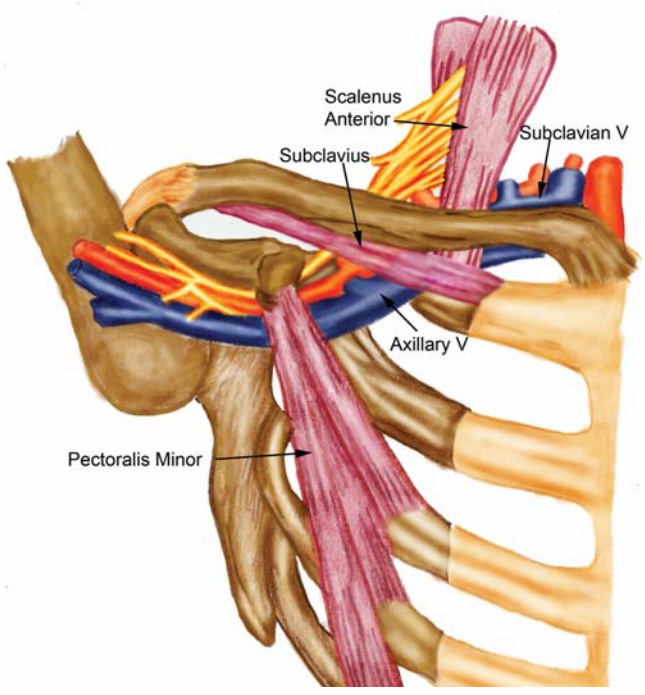
Thrombosis

The incidence of deep venous thrombus (DVT) of the upper extremities is very low in comparison with that of the lower extremities and accounts for less than 2% of all deep venous thromboses. However, DVT is the main pathology that affects the upper extremity venous system.

In general, axillosubclavian vein thrombus may be a result of extrinsic compression, trauma, venous scarring from central venous catheterisations or indwelling catheters or hypercoagulable states, which are often associated with malignancy.

Thoracic outlet syndrome and effort-related thrombus are the most common causes of primary axillosubclavian vein thrombus.

Spontaneous or effort-related thrombosis in a fit young patient is known as Paget-Schroetter syndrome. Hypertrophy of the subclavius and scalenus anterior muscles elevates the first rib. As the clavicle borders the compartment superiorly, the subclavian vein is compressed between the two. As there is a constant valve within the subclavian vein at the level of the inner border of the first rib, most thromboses start at this point.



Tumours

Primary or metastatic neoplasms may obstruct the axillary or subclavian veins, leading to severe stenosis without thrombosis or complete obstruction with thrombosis. Stenosis may be due to compression by lymphadenopathy or primary neoplasm.

Venous anatomy

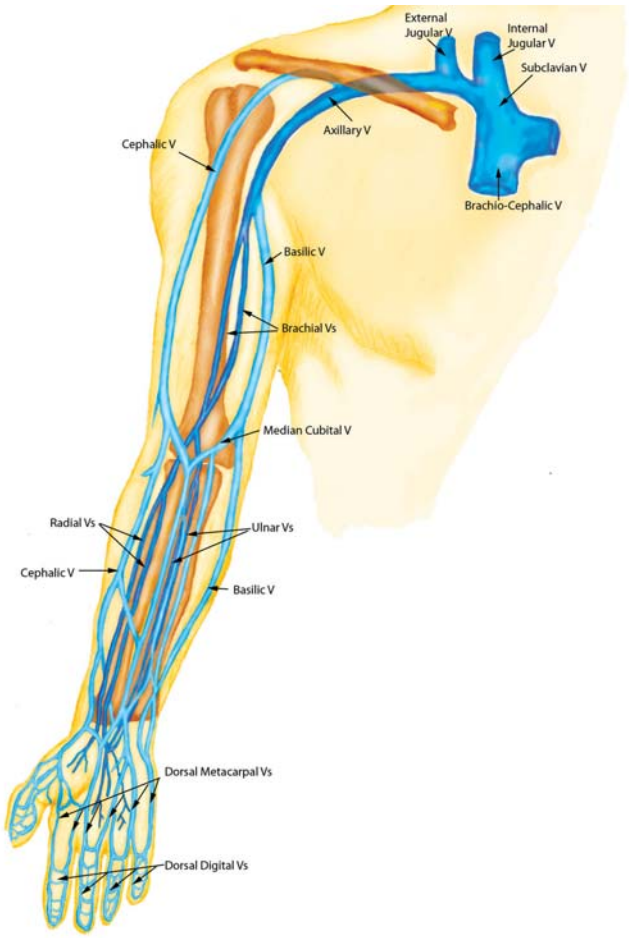
In the upper extremity, the deep veins are generally paired structures and are always accompanied by arteries. In contrast to the lower extremity, the superficial venous system is a primary route of upper extremity venous drainage. Therefore, examination of the major components of the superficial system is important.

Deep veins of the upper extremity

- Blood returning from the digital veins empties into a venous network in the hand called the palmar arch.
- There is both a deep and superficial arch in the hand, and these unite to form the beginning of the radial and ulnar veins of the forearm.
- The radial and ulnar veins move proximally in the forearm, next to the arteries. They join in the area of the antecubital fossa to form the brachial vein.
- The brachial vein is usually duplicated and flanks the brachial artery and they join the axillary vein near the lower margin of the subscapularis. The medial branch however, often joins the basilic before it becomes the axillary.
- The axillary vein increases in size as it ascends and ends at the outer border of the first rib as the subclavian vein. Just distal to the clavicle, it drains the cephalic vein.
- The subclavian vein extends from the outer border of the first rib to the medial border of scalenus anterior, where it joins the internal jugular to form the brachiocephalic vein.

Superficial veins of the upper extremity

- The cephalic vein begins in the radial part of the dorsal venous network and ascends along the lateral aspect of the arm within the superficial fascia. Below the front of the elbow, it gives off the median cubital vein which receives a communicating branch from the deep veins of the forearm and passes across to join the basilic vein. The cephalic vein then ascends in front of the elbow to the lateral aspect of the arm and pierces the deep fascia



to enter the axillary vein just distal to the clavicle.

- The basilic vein begins in the ulnar part of the dorsal venous network. It passes along the medial aspect of the forearm, and is joined by the median cubital vein. It then ascends and joins the brachial vein.
- The median vein (also known as the median antebrachial vein) drains the venous plexus on the palmar surface of the hand. It ascends on the ulnar side of the forearm and ends in the basilic or median cubital vein.

Venous assessment

Purpose

- To provide direct assessment of the deep and superficial veins of the upper extremities to determine the presence, location and extent of partial or total obstruction of the veins in the upper extremities.
- To obtain anatomical and functional information.
- To compare the progression or resolution of thrombus.

Indications and clinical presentation

Upper extremity conditions that include, but are not limited to, the following:

- Unilateral arm swelling, tightness or heaviness, with or without erythema or discoloration of the arm (Fig. 1).
- History of trauma to the arm (Fig. 2).
- History of indwelling intravenous catheter into the internal jugular, subclavian or other veins in the upper extremity.
- Recent surgical procedures, particularly those involving the upper torso of the body.

Fig. 1: The skin may be slightly cyanotic but also mottled.

Fig. 2: Arrow points to broken clavicle. Note the increased superficial veins on the chest. This patient has an occluded subclavian vein, the superficial veins are a result of collateral flow around the occlusion.

Fig. 3: Prominent superficial veins are usually indicative of underlying pathology.

- Question of pulmonary embolism, as noted by sudden onset of shortness of breath and/or changes in arterial oxygenation.
- Surveillance before and/or after surgery or other high-risk events.
- Arm pain of questionable etiology.
- Prominent superficial veins (Fig. 3).

Limitations

- Limited access to the scan areas due to open wounds, casts, etc.
- Severe obesity.
- Severe arm oedema.
- Patients who can't be positioned adequately.

Equipment and supplies

- High-resolution real-time imager and integrated, pulsed, range-gated Doppler, with colour flow imaging capabilities.
- Transducer (7–10 MHz) that allows visualisation to 6 cm as well as excellent views in the near field.
- A 5–7 MHz transducer that allows visualisation deeper than 6 cm.
- Acoustic gel.
- Hard copy representation.
- Pillows and other amenities for patient comfort and for proper positioning of extremities.
- Cleaning agent, such as Transeptic (Parker Laboratories, NJ, USA), that is approved for use with ultrasound equipment.

Patient preparation

- Explain the procedure to patient. Assure the patient the study is non-invasive in nature. Allow time for questions.
- Take note of patients symptomatology or appropriate indications and other relevant history, including a description, location, duration, severity and onset of pain.
- Have patient disrobe so that there is access to the arm being imaged.

Venous test protocol

Normal imaging observations

- The vein walls should be smooth and thin, the vein should contain no echoes. Valves are present, however, slow flowing blood behind the valve cusps can create the appearance of thrombus (Fig. 4a). The limb should be augmented to make sure blood flow can be removed from behind the valve cusps (Fig. 4b).

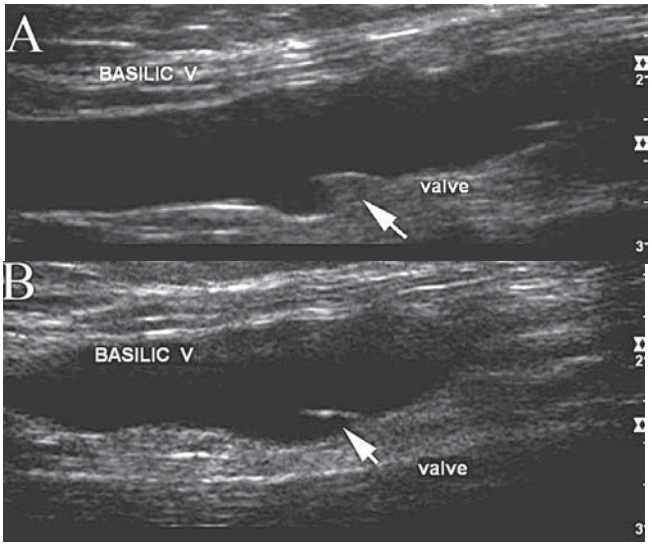


Fig. 4a: Valves are bicuspid. Blood can become trapped behind the valve cusp (arrow).

Fig. 4b: With limb augmentation, the valve should move and the trapped blood should move from behind the valve.

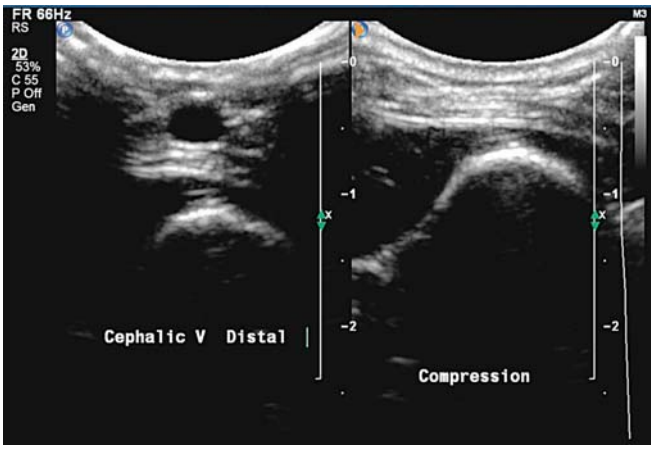


Fig. 5: Note the full compression of the vein with light probe pressure.

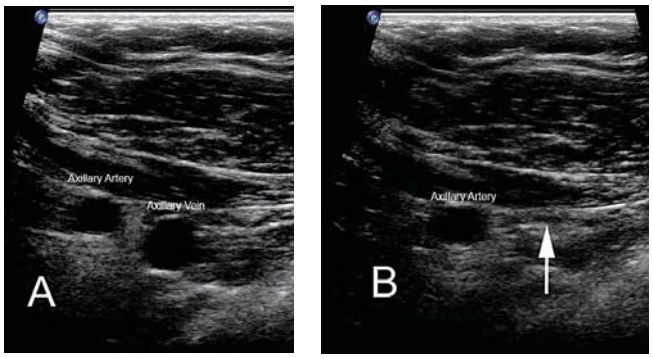


Fig. 6a: B-mode transverse image of the axillary artery and vein.

Fig. 6b: During the sniff manoeuvre the vein walls coapt if no thrombus is present.

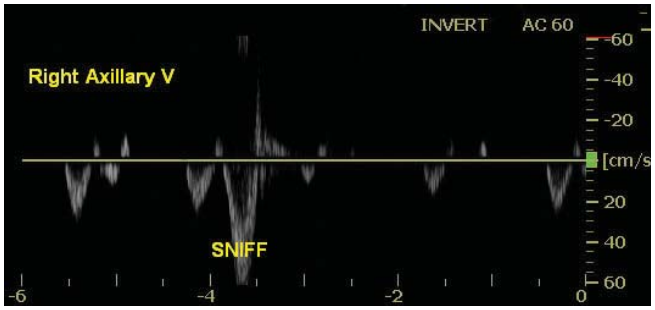


Fig. 7: In the unobstructed vein as the patient performs the sniff manoeuvre there is a sharp surge of flow before returning to normal phasic flow.

- If the vein collapses completely, and no echogenic material is seen, the vein is thrombus-free at that location (Fig. 5).
- In the shoulder region it is not possible to compress the vein, one method to assess collapsibility of a vein is to have the patient perform a 'sniff' manoeuvre; if the vein is thrombus-free, the walls will coapt (Figs. 6, 7).
- Doppler signals in the subclavian and axillary veins should have a pulsatile flow pattern superimposed on the phasic flow pattens due to atrial contractions of the heart (Fig. 8).
- Valsalva manoeuvre: The patient breathes in deeply then bears down on the abdomen muscles while blowing into their cheeks. During Valsalva manoeuvre, the vein diameter should increase, followed by an abrupt cessation of blood flow. This will be followed by a surge of flow during expiration, the end of the Valsalva manoeuvre (Figs. 9, 10).

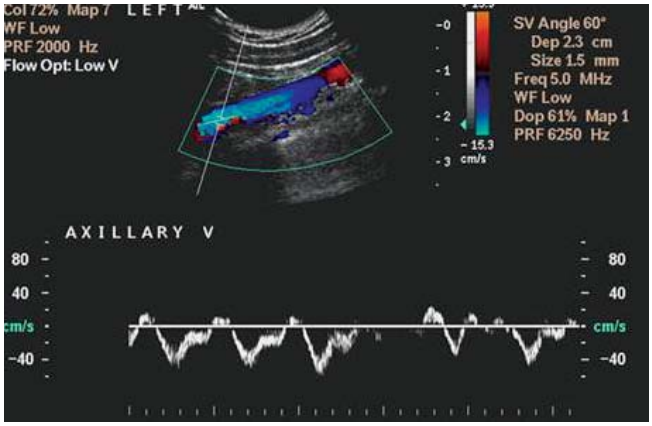


Fig. 8: Normal venous flow is phasic and is affected by both respiratory and cardiac cycles.

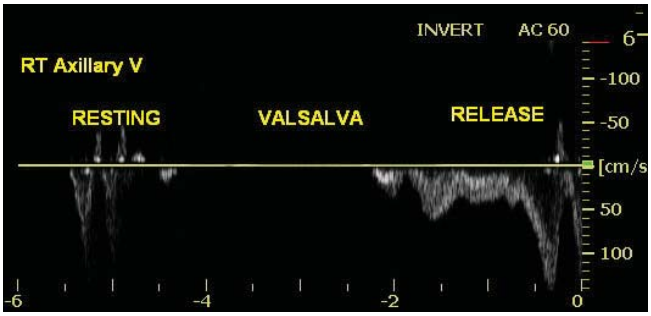


Fig. 9: Doppler demonstrates cessation of the normal phasic flow during the Valsalva manoeuvre, followed by a surge of flow during expiration.

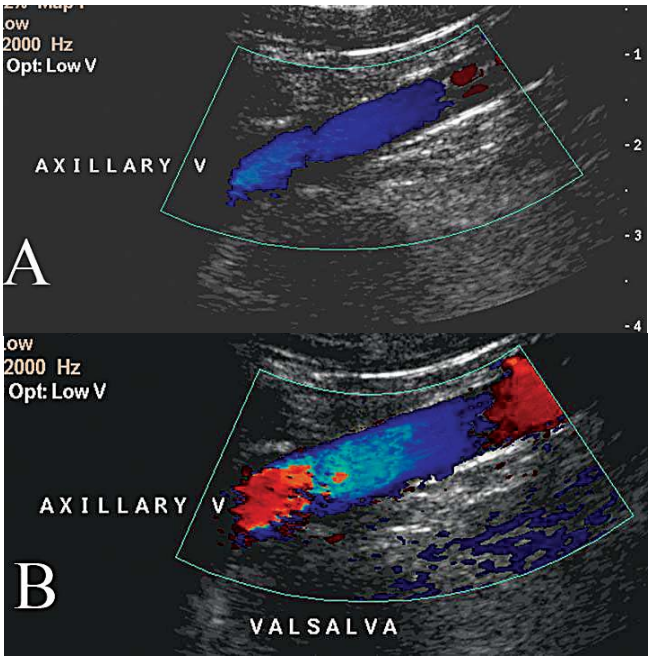


Fig. 10a: Colour will fill the vein completely in response to the Valsalva manoeuvre. Fig. 10a shows patient with normal respiration. **Fig. 10b:** note how the vein fills with colour after Valsalva has been completed.

Abnormal imaging observations

B-mode imaging

When thrombus is present the vein will not fully compress (Fig. 11).

- In the very early stages of thrombus, the clot is often anechoic and may be difficult to define on B-mode imaging. Over the next few days the echogenicity will increase.

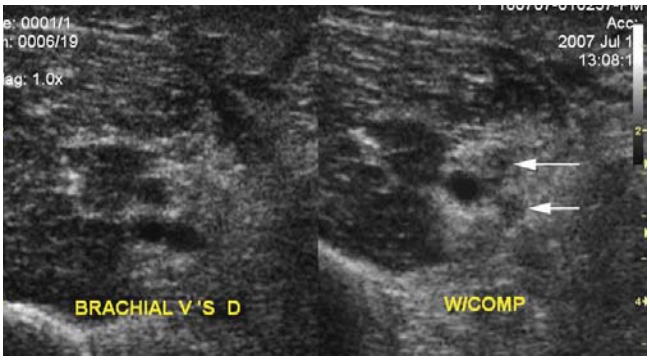


Fig. 11: Echogenic material is visualised within the vein (arrows) and compression of the vein is limited by the contained thrombus.

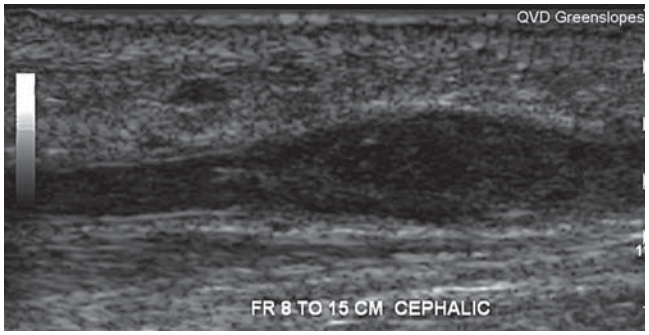


Fig. 12: In the acute phase the thrombus is often smooth with a sac like appearance. The vein is often dilated and tense.

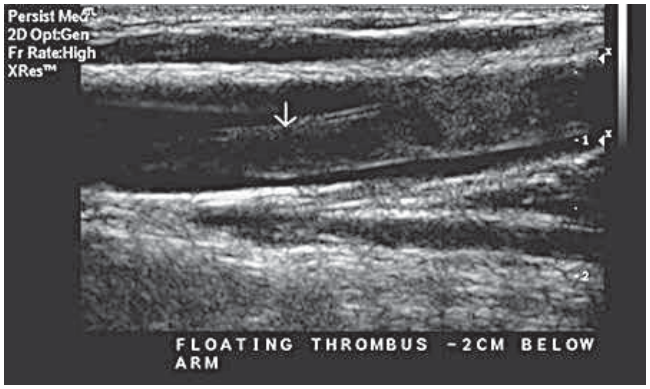


Fig. 13: Free floating thrombus within the basilic vein. There are large areas that are non-adherent to the vein wall.

- Look for distension of the vein (Fig. 12) or free-floating thrombus (Fig. 13).

Spectral Doppler

- Thrombus in the proximal subclavian vein can be difficult to image, therefore careful examination of the Doppler waveform is important.
- Abnormal waveforms will lose their 'sharp' pulsatile nature, and depending on the degree of obstruction, some phasic flow may be seen (Fig. 14).
- It is useful to compare the waveform to the opposite side.

Colour flow

- In the occluded vein, there is absence of colour filling (Fig. 15).
- In order to avoid a 'false positive' result the setting of the machine must be correct.
  - ✦ Lower the colour wall filter – lowest possible setting

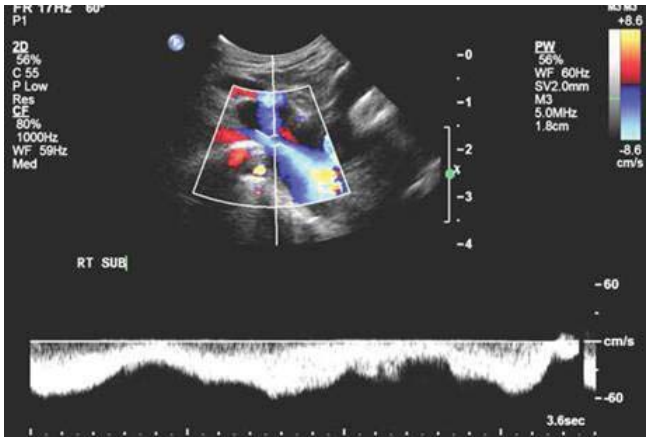


Fig. 14: Abnormal subclavian vein Doppler waveform – note the loss of pulsatile flow.

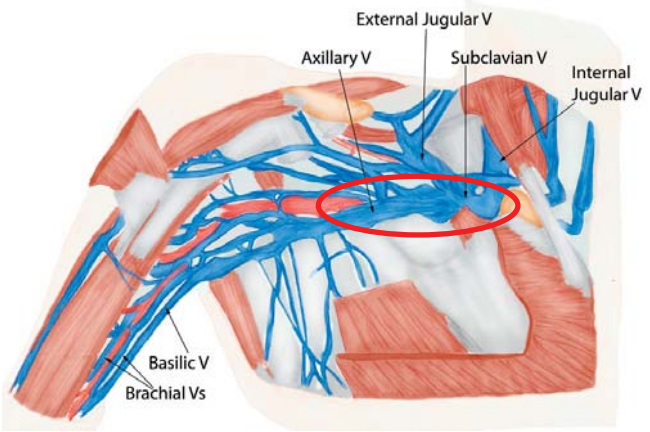


Fig. 17: Most of the upper limb venous thrombi will occur within the circled region.

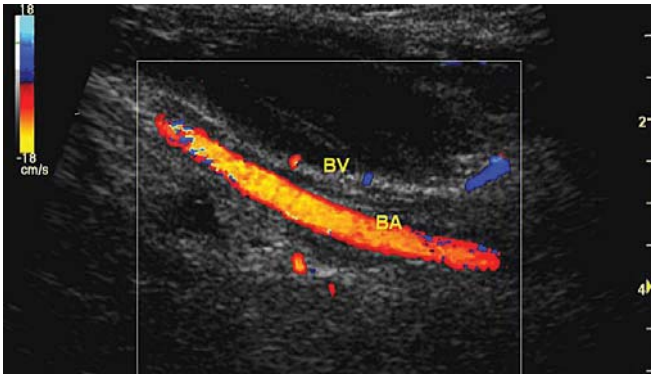


Fig. 15: No venous flow is seen in the occluded brachial veins.

Fig. 18: Begin as close to the sternal notch as possible.

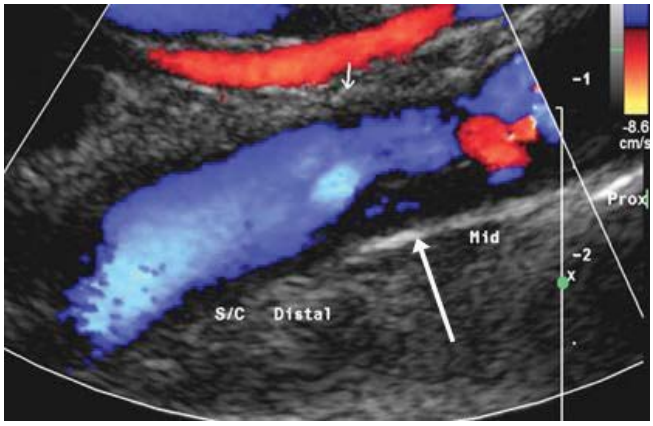


Fig. 16: Non-occlusive wall thrombus (arrow). Colour will course over this non-occlusive thrombus.

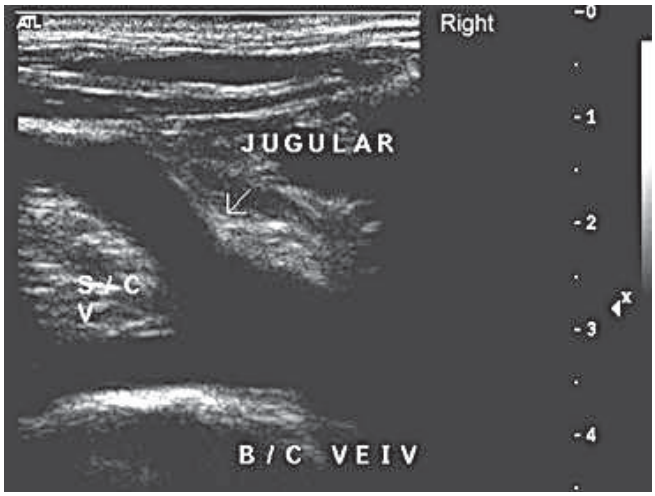


Fig. 19: B-mode image of the distal brachiocephalic vein, proximal jugular and subclavian veins.

- Decrease the PRF; between 9–20 cm/s
- Increase the colour gain. Increase the gain until the colour 'bleeds' then decrease slightly.

- The colour moves around the echogenic material with Valsalva when the thrombus is not fully occlusive (Fig. 16).

Duplex examination

The patient should lie supine to allow for maximum distension of the subclavian and axillary veins. The upper extremity shoulder region has a diffuse network of veins. The subclavian and axillary veins are the commonest sites for thrombosis and this area requires careful examination (Fig. 17).

- Begin imaging the subclavian vein in the supraclavicular position with the edge of the probe resting in the sternal notch (Fig. 18).
- The subclavian vein and internal jugular vein should be imaged in this view. Place the probe on the clavicle rocking the probe back and the first vessel seen should be the subclavian vein (Fig. 19).
- Colour flow and Doppler is then performed to confirm patency. The Valsalva manoeuvre may need to be performed to fill the vein.
- The axillary vein can be imaged in either the axillary approach or anterior (infraclavicular) approach (Figs. 20A and 20B).

Fig. 20a: Axillary approach **Fig.20b**: Anterior approach.

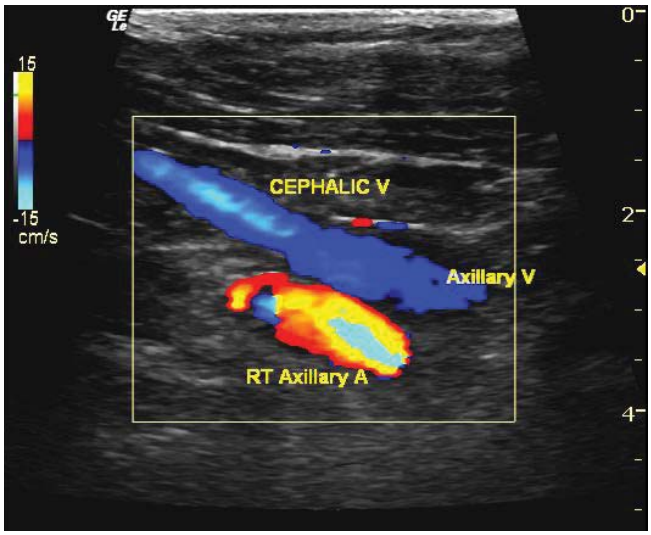


Fig. 21: Cephalic vein draining into the proximal axillary vein.

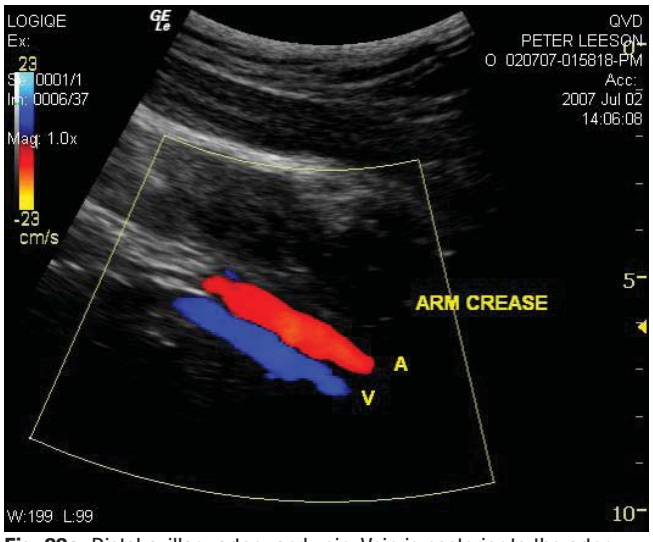


Fig. 22a: Distal axillary artery and vein. Vein is posterior to the artery.

- The cephalic vein can often be seen draining into the proximal axillary vein just distal to its origin (Fig. 21).
- The axillary vein can be seen lying adjacent to the artery. Colour is useful particularly if the B-mode imaging is poor. With the anterior approach, the vein is posterior to the artery (Fig. 22a).
- Compression of the vein at this level is usually not possible; performing the 'sniff' manoeuvre will demonstrate vein compressibility.
- The brachial, basilic and cephalic veins are imaged with the arm straight, slightly abducted and palm up (Fig. 22b).

Fig. 22b: Compressions of the veins are performed in the transverse view slightly abducted and palm up. Use a generous amount of gel to help maintain a light probe pressure.

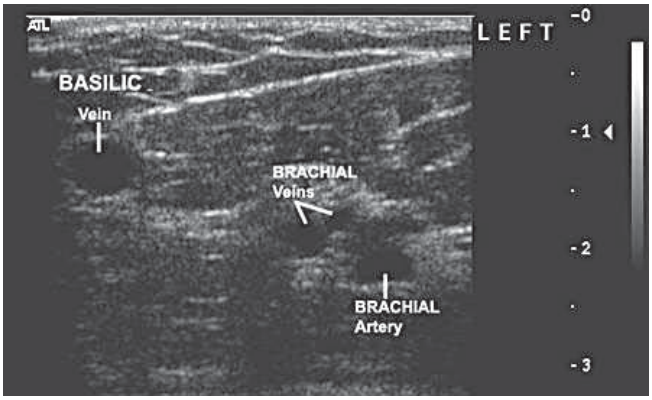


Fig. 23: B-mode image showing the brachial and basilic veins. In the upper extremity the superficial veins are usually larger than the deep veins.

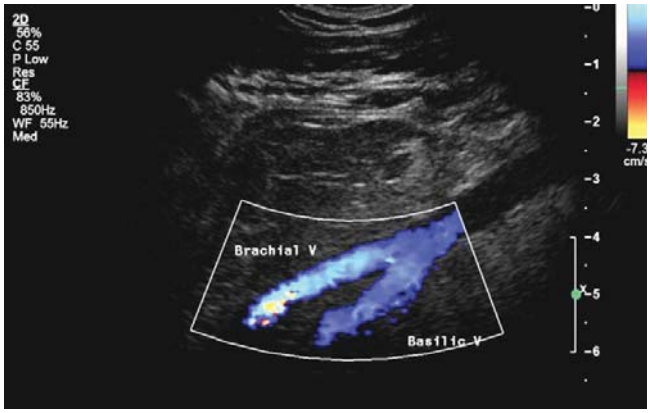


Fig. 24: Using the correct colour settings the veins can be readily imaged.

- Begin in the transverse position compressing the veins in 1 cm segments. Once the vein is visualised in the transverse view, the vein is compressed using probe pressure directly over the vessel. If the vein is thrombus-free, it will collapse completely.
- Light probe pressure must be used because the veins in the upper extremity are usually very superficial. Heavy probe pressure will compress the veins making them difficult to find.
- The brachial and basilic veins can be imaged in the same view (Fig. 23). The basilic vein will usually merge with

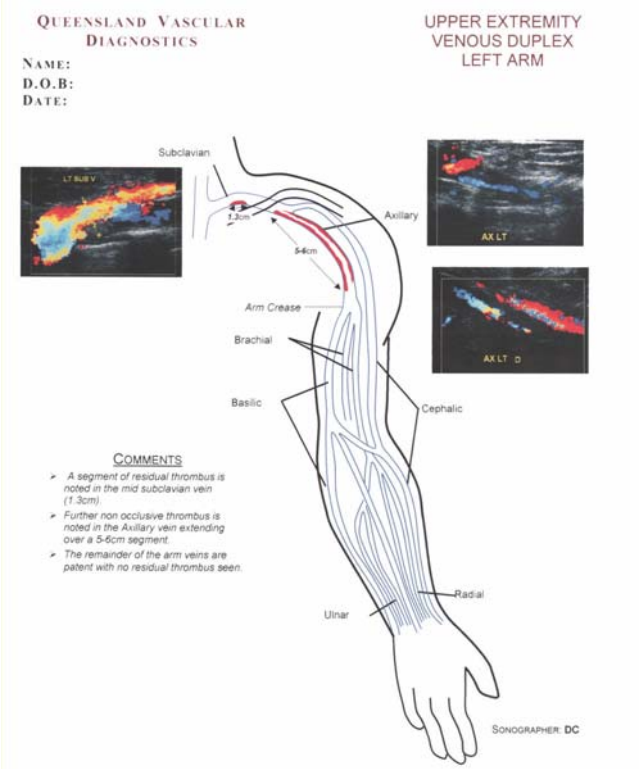


Fig. 25: Example of a worksheet used at QVD.

the axillary vein at the level of the arm crease (Fig. 24).

- Colour flow can be useful if b-mode imaging is poor.
- The cephalic vein will need to be imaged separately.
- Using the same technique as above, scan the forearm compressing the radial and ulnar veins. These are often small and difficult to image.
- Below the elbow the basilic and cephalic veins merge with the median cubital vein. Distal to this the cephalic and basilic veins can be quite small with numerous branches.

Documentation

- Still prints of representative segments of the examination should be taken.
- A detailed worksheet containing pathology and areas of interest is useful (Fig. 25).

Further reading

1 Grays Anatomy 39th e-edition. Amsterdam: Elsevier Inc: 2006. pp 803, 845, 857, 885, 930, 1026.

2 Frank H Netter. An Atlas of Human Anatomy, 2nd Edition. Philadelpia: Rittenhouse Book Distributors Inc: 1989. Pp 410.

3 Clinically Oriented Anatomy 4th Edition. Philadelphia: Lippincott Williams & Wilkins; 1999. pp 706.

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5 Vascular and Endovascular Surgery 2nd Edition. Amsterdam: WB Saunders Company Ltd; 2001. pp 212–15.

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7 Rutherford Vascular Surgery, 6th Edition. Amsterdam: Elsevier; 2005. pp 1371–381.

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10 Alexander Chao, Winkle Yung, Jacqui Robinson, Peter Chong, John Crozier. Duplex Ultrasonography in the Detection of Superficial and Deep Venous Thromboses in the Upper Limb. *J Vasc Tech* 2001; 25 (1): 27–30.

11 Image library COGRAL Corporation Pty Ltd.

ASUM Ultrasound Bulletin August 2008; 11 (3): 32–36

How useful is the nasal measurement in an obstetric scanning practice?

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Abstract

The aim of this study was to investigate the usefulness of recording the presence of, and measuring, the fetal nose at the time of the nuchal translucency assessment and at the 18–20 week scan as a screening tool for Trisomy 21. The study was conducted at two practices in Auckland, New Zealand. This is a descriptive study of whether the detection of nasal bones in Trisomy 21 fetuses is useful or not.

Methods All patients referred to these practices for nuchal translucency assessment for Trisomy 21 and their anatomy scan between 22nd January 2005 and 1st December 2006 had the nasal bone included into the standard scanning protocols. Nasal bones were recorded as present, absent or uncertain and measured when possible, following the guidelines from the Fetal Medicine Foundation (FMF)[1].

Results There were 5143 women who were referred for a risk assessment for Trisomy 21 between 11 weeks 5 days and 13 weeks 6 days gestation. Thirty cases of Trisomy 21 (Down syndrome) and 23 other chromosomal defects were present overall. Twenty-five fetuses were in the high-risk group for Trisomy 21 at the NT assessment. Two fetuses demonstrated markers for T21 at the time of their anatomy scan. Three fetuses were not detected, although one had a cardiac defect.

The nasal bone was clearly absent in nine of the Trisomy 21 cases. It was 'uncertain' whether the nasal bone was present in five cases, even though the fetus was in a good position for visualisation. Nasal bones were present in 16 of the 30 T21 cases. In five of these cases, the nasal bone was recorded as 'present' but hypoplastic with measurements below the third centile at the time of the nuchal translucency assessment. Two of these cases who presented for their anatomy scans at 19 weeks gestation and had nasal bone measurements below the third centile – one with other markers – were offered amniocentesis (both declined). The nasal bone lengths for chromosomally normal fetuses were produced for the first trimester screening group and the 18–22 week anatomy scan group. The measurements of the nasal bones that were measured in the Trisomy 21 group are superimposed onto the graphs, (Figs. 3 and 6). There were two false positives of absent nasal bone at the time of the NT scan.

Conclusion The evaluation of measuring the fetal nasal bone and recording the presence or absence of the nasal bone is a marker for screening at the time of the nuchal translucency scan and the anatomy scan. Of the Trisomy 21 fetuses, 63% had absent nasal bones, uncertainity or hypoplastic nasal bones at the time of their nuchal translucency scan and 37% had nasal bones identified. Two fetuses demonstrated hypoplastic nasal bones at their 18–20 week anatomy scan. Three fetuses with T21 were not detected at either the time of the nuchal scan or the anatomy scan. Detection rate for T21 at the time of the nuchal scan was 83.3% and detection rate overall (NT and anatomy scan) in these two practices during 2005–2006 was 93%.

Background

Nasal bone absence was first documented in Down syndrome babies by Langdon Down in 1866, along with the increased thickening of the back of the neck, when he observed the flat noses typical of Trisomy 21[2]. In 2004, the Fetal Medicine Foundation (FMF) introduced the presence or absence of the nasal bone in the assessment of risk for Trisomy 21 in conjunction with the nuchal translucency measurement and maternal age.

Facial development occurs mainly between the fourth and eighth weeks of gestation. During the early fetal period the nose is flat and the mandible is under developed. They obtain their characteristic forms, while facial development is completed[3]. Ossification of the nasal bone appears from one centre, at the beginning of week 12 of gestation, in the membrane overlying the anterior part of the cartilaginous nasal capsule[4,6].

The nose is one of the most important parts of facial aesthetic and expression.

The nasal skeleton is composed of bones, cartilage and fibrous tissue. The bony framework is formed by the nasal bones, frontal processes of the maxilla and anterior nasal spine of the maxilla. Nasal bones are two small, barely rectangular bones united on a median line called the internasal suture[5,6].

Laterally, they are in touch with each frontal process of maxilla at the nasomaxillary suture, and cranially with the frontal bone at the frontonasal. Nasal bones vary in length, width, position and curvature, making up racial differences and affecting nasal and facial aesthetic appearance. Male noses are wider (having larger distance between nasal alae) than female[4].

Cicero and co-workers produced a normal nomogram of fetal nasal bone lengths and reported that if the presence of

Table 1: Over view of number of patients, their ages and T21, T18, T13 incidence in the two practices.

	Practice P	Practice T	Total
Women scanned	2486	2657	5143
Age > 35 years	992 (39%)	913 (34%)	1905
On the basis of maternal age distribution it would be expected that the population contains *	13.5 cases of T21 + 13.5 cases of other chromosomal defects	14 cases of T21 + 14 cases of other chromosomal defects	
Risk estimate *	> 1:300 in 149 (5%)	> 1:300 in 172 (6%)	
Trisomy 21 cases	9	21	30
Trisomy 18 cases	5	2	7
Trisomy 13	2	2	4
Other chromosomal abnormalities	5	7	12

*Data from the audit submitted to the Fetal Medicine Foundation December 2006.

Table 2: Trisomy 21 cases – Practice P.

No	Age	CRL	BPD	Gestational age	NT	NB	Est risk	Other abnormalities	Outcome
1	35	54		11.6	1.8	present	1:542	Heart	Normal birth CHD
2	39	75	21	13.5	3.2	uncertain	1:12		TOP
3	38	70	24	12	7.3	absent	1:3		TOP
4	41	70	22	13.1	4.9	absent	1:2		TOP
5	35	70	22	13	3.1	present	1:84		TOP
6	39	84		13.6	2.7	present	1:100		TOP
7	39	74	23	13	8	uncertain	1:2		TOP
8	43	70		13	3.7	uncertain	1:2		Selective reduction Twin pregnancy
9	31	74	22	13.3	3.4	present	1:100		TOP

the fetal nasal bone is incorporated in screening for Trisomy 21, by a combination of maternal age and fetal nuchal translucency thickness, the sensitivity would increase and the false-positive rate would decrease[7].

Bromley and her co-workers reported that the absence of the nasal bone is a powerful marker for Trisomy 21 at the time of the 18–20 week anatomy scan[8].

Methods

Screening for assessment for Down syndrome (Trisomy 21) using the nuchal translucency measurement and visualising the nasal bone combined with the maternal background risk (age and if there has been a previous Down syndrome pregnancy) commenced in January 2005. All measurements adhered to the guidelines from the FMF[1].

The study was from January 2005 until 1st December 2006 (23 months).

Visualisation and measurement of the nasal bone was also performed at the time of the anatomy scan at 18–20 weeks.

The data were collected from two private practices in Auckland, (Practice P and Practice T) where all the sonologists/sonographers have been audited by the FMF for measuring the nuchal translucency and the nasal bone. The ultrasound machines used were the GE Voluson expert series, and the Philips HDI 5000.

Data recorded were retrieved from the database to include maternal age at the time of scan, fetal gestation by the last menstrual period (LMP), fetal measurements, crown rump length (CRL), bi parietal diameter (BPD), nuchal translucency measurement (NT), and the nasal bone measurement (NB). If the nasal bone could not be measured due to fetal position, this was recorded as 'unable to be measured due to fetal position'. If the nasal bone could not be measured due a lack of knowledge as to where to measure from, or where the guidelines from the FMF could not be adhered to, results were recorded as 'uncertain'.

In Practice P, no measurement was actually recorded in the majority of cases of the nasal bone, at the NT assessment, but the presence, absence, or uncertain visualisation at the time of the risk assessment for Trisomy 21 at the 12–13 week scan were recorded. In practice T, all measurements for the nasal bone were recorded at the time of the Trisomy 21 risk assessment scan and the 18–20 week anatomy scan.

Nasal bone lengths from all patients with normal outcome have been plotted onto graphs to provide a normal reference range for the 11 weeks 6 days – 13 weeks 6 days gestational age (Fig. 1), and from 18–21 weeks (Fig. 2).

The outcome has been recorded from information obtained from the hospital data bases, the patient's referrers (midwives and obstetricians) and patients themselves.

Table 3: Practice T: Trisomy 21 cases.

	Age	CRL	BPD	Gestation	NT	NB	NBL	Est risk	Other markers	Outcome
1	35	70	21	13	11.4	absent		1:3	Pleural effusion	TOP
2	38	79	26	13.2	1.6	present	2.2	1:825	Heart Tet of Fallot	Amnio declined Born alive
3	36	78		13.4	5.6	present	2.0	1:8	VSD	TOP
4	41	63		13	4.9	uncertain		1:2	Omphalocele	TOP
5	37	72	24	13	4.6	present	2.6	1:6		TOP
6	39	83	25	13.4	3.7	present		1:9		TOP
7*	35	62			5.7	uncertain		1.7		TOP
8*	35	67			2.9	present	2	1:18		TOP
9	32	69	22	13.2	4.8	present	2	1:18		TOP
10	28	81	24	13.5	2.6	present	2.1	1:1242	Renal pelves heart, small nose at 18 weeks	Declined amnio at 18 weeks AVSD
11	40	63	22	12.3	5.4	absent		1:2		TOP
12	40	72		13	2.8	present	2.2	1:54		TOP
13	34	77			2.7	absent		1:4		TOP
14	36	75	25	13.2	4.3	present		1:9		TOP
15	37	72	22	13.2	4.4	absent		1:2		TOP
16	39	76			2	present		1:457		TOP **
17	32	70			1.8	present		1:3344		A/W
18	36	61	20	12.4	6.2	absent		1:2		TOP
19	42	80			5.3	absent		1:2		TOP
20	41	74			4	absent		1:2		TOP
21						present				TOP

* Twin pregnancy

** requested amniocentesis because of maternal age

Table 4: Descriptive statistics for the 11 weeks 6 days – 13 weeks 6 days nasal bone lengths.

Normal nasal bone lengths 11wks 6 days – 13 wks 6 days	
Mean	2.633726
Standard error	0.021686
Median	2.6
Mode	2.5
Standard deviation	0.446546
Count	424
Confidence Level(95.0%)	0.042626

Table 5: Descriptive statistics for chromosomally normal fetuses at 18–21 weeks gestation.

Nasal bone length in normal fetuses 18-21 weeks gestation	
Mean	6.108594
Standard error	0.059153
Median	6.1
Mode	6.8
Standard deviation	0.669237
Confidence level (95.0%)	0.117053

Results

In the present study, 5143 women were referred for a risk assessment for Trisomy 21 between 11 weeks 5 days and 13 weeks 6 days gestation. Excluded from this group were failed pregnancies and fetuses with no heart activity. In practice P, 2486 pregnant women were scanned and 39% of those women were aged 35 years or over. In practice T, 2657 pregnant women were scanned and 34% were aged 35 years or over.

Thirty cases of Trisomy 21 were present and 23 other chromosomal defects were present over all. Nine cases of Trisomy 21 were detected in practice P and 21 cases of Trisomy 21 in practice T.

The nasal bone was clearly absent in nine of the Trisomy 21 cases. Uncertain whether the nasal bone was present was recorded in five cases, even though the fetus was in a good position for visualisation.

Nasal bones were present in 16 of the 28 T21 cases, however five of these cases had measurements below the third centile. Two of these cases, who presented for their anatomy scans at 19 weeks gestation, had nasal bone measurements below the third centile and other markers and were offered amniocentesis (one declined).

The nasal bones lengths for all chromosomally normal fetuses were produced for the first trimester screening group (Fig. 1, and the actual nasal bone lengths from

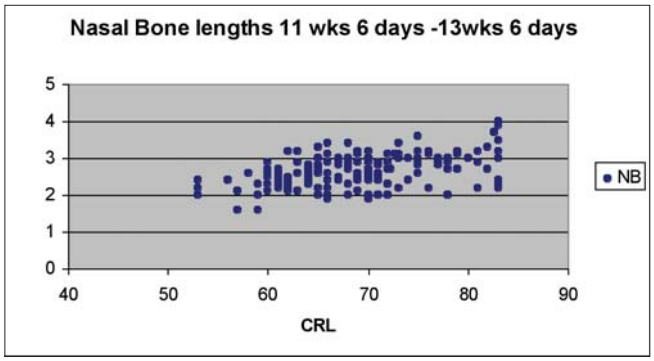

Fig. 1

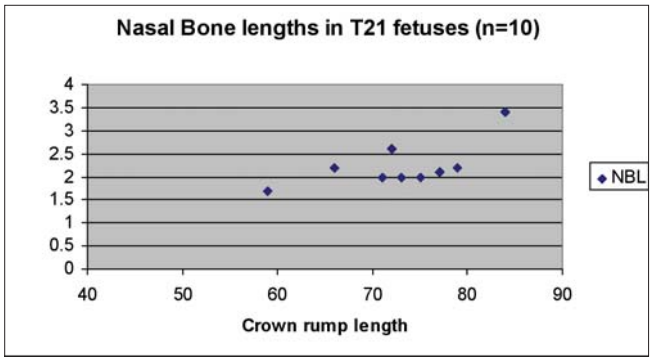

Fig. 2

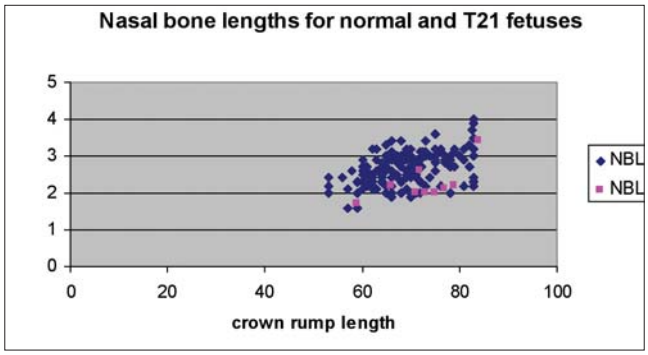

Fig. 3

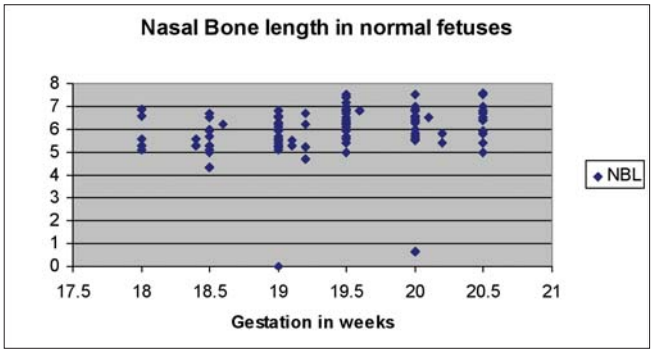

Fig. 4

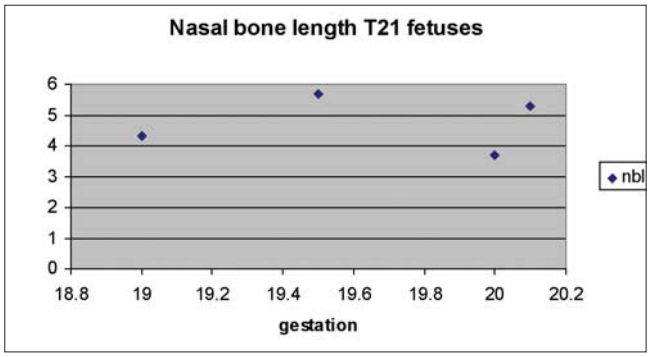

Fig. 5

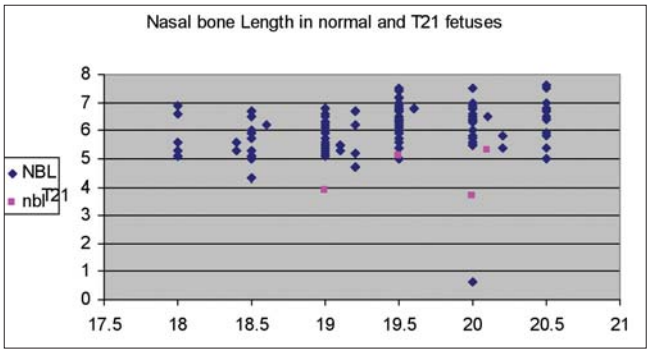

Fig. 6

practice T in Fig. 2.) The nasal bone lengths at 18–20 weeks are shown in Figs. 3, 4. The measurements of the nasal bones that were measured in the Trisomy 21 group are superimposed onto the graphs, (Figs. 3, 6). There were two false positives of absent nasal bone at the time of the NT scan.

The descriptive statistics for this group are presented in Table 4.

Discussion

The presence of the nasal bone combined with the NT assessment certainly decreases the risk assessment for T21 and consequently reassures the parents when deciding whether to have an amniocentesis. In our population, there were two false positives in the screening cohort, $n = 5132$, where the nasal bone was not seen and the chromosomes were normal. Of the fetuses with T21, 63% had absent, hypoplastic or uncertainity of the nasal bone and, when combined with the nuchal translucency measurement, the risk assessment was certainly increased. However, in all of these cases the nuchal thickness was increased. The two cases of T21 with hypoplastic nasal bones at the 18–20 week scan did not have increased NT measurements. These findings concur with those of Cicero, *et al*. (2001)[7].

Conclusion

The evaluation of measuring the fetal nasal bone and recording the presence or absence of the nasal bone is a marker for screening at the time of the nuchal translucency scan and at the anatomy scan. Of the Trisomy 21 fetuses, 63% had absent nasal bones, uncertainity or hypoplastic nasal bones at the time of their nuchal translucency scan and 37% had nasal bones identified. Two fetuses demonstrated hypoplastic nasal bones, and structural heart defects at their 18–20 week anatomy scan and one fetus had a heart defect. Two of these patients declined amniocentesis. Two fetuses with T21 were not detected at either the time of the nuchal scan or at the anatomy scan. Detection rate for T21 at the time of the nuchal

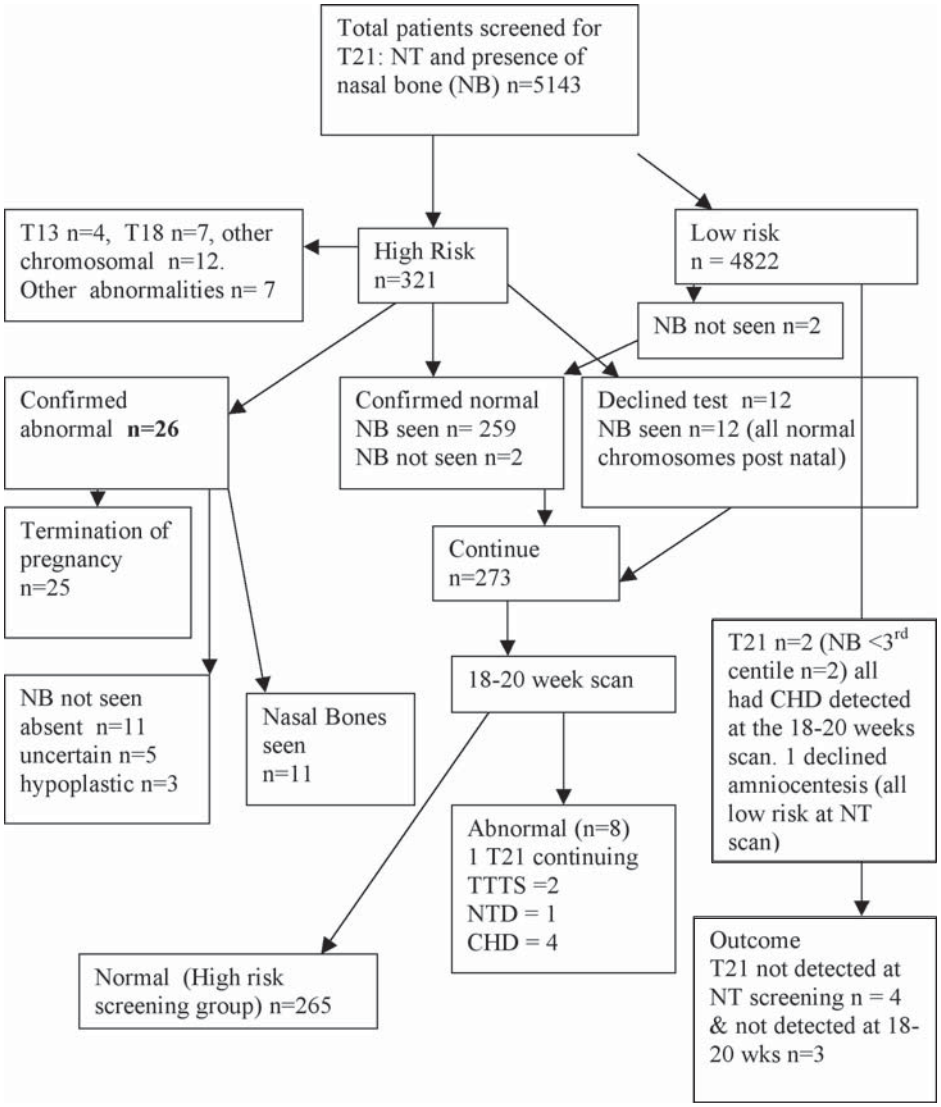

Fig. 7: Flow chart for Trisomy 21 fetuses with/without nasal bones.
NB = nasal bone, T21 = Trisomy 21, T13 = Trisomy 13, T18 = Trisomy 18. Other chromosomal abnormalities included Turners, Mosaic translocation, Tripoidy. TTTS = Twin to Twin Transfusion syndrome, NTD = Neural tube defect, CHD congenital heart defects. Abnormalities other than chromosomal abnormalities were not audited in the low risk group as this was out of the scope of this study.

scan was 83.3% and detection rate overall (NT and anatomy scan) from these two practices during 2005–2006 was 93%. There were two false-positives where fetuses with normal chromosomes were reported as having absent nasal bones.

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CASE REPORT

A case of limb-body wall complex without craniofacial defect in the first trimester diagnosed with 2D and 3D ultrasound

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Abstract

With more first trimester screening tests have being performed and as ultrasound machines' capabilities develop, abdominal wall defects have been more readily detected in the first trimester. Three-dimensional (3D) and four-dimensional (4D) ultrasound techniques can also aid in diagnosis and counselling of patients whose fetuses display these defects. Limb-body wall complex (LBWC) is a rare fetal malformation with at least two of three features that include: craniofacial defects (exencephaly or encephalocele with or without facial cleft), body wall disruption and limb abnormalities. We report a case of LBWC without craniofacial defect or body stalk anomaly diagnosed during the first trimester using 2D and 3D ultrasound including volume contrast imaging (VCI) techniques.

Keywords: 3D ultrasound, body stalk anomaly, first trimester, limb-body wall complex.

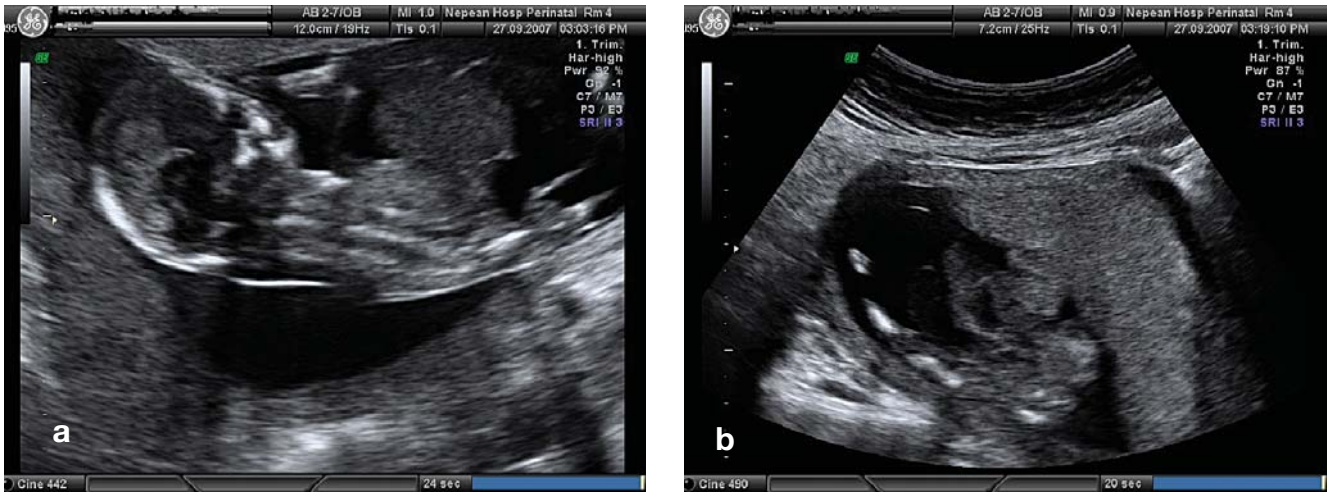

Fig. 1: (a) Note the large anterior abdominal wall defect. (b) Cross-sectional view of the abdominal area. Note the continuity between the defect and placental tissue.

Case report

At gestational age 13 weeks and four days by her last menstrual period, a 25-year-old Caucasian primigravida was referred from a private hospital where a nuchal translucency screening had been done due to a suspected abnormal abdominal mass. She had a cousin who had a baby with a body wall defect. She had taken no medication during her first trimester pregnancy and had no history of drug abuse.

She was rescanned transabdominally and transvaginally at Nepean Hospital with a GE Voluson 730 Expert using 2D and 3D imaging. We noticed a single live fetus with the angulation of lower part of the spine, which made the standard view of CRL difficult to obtain. However, the measurements suggested a gestational age of 12 weeks six days to 13 weeks four days (CRL 67.2 mm = 12 + 6 weeks, BPD 19.6 mm = 13 + 1 weeks and HC 82.5 mm = 13 + 4 weeks. The NT measurement was 1.7 mm).

A detailed scan revealed a normal fetal head, upper limbs, thorax and four-chamber view of the heart and upper spine. Marked deformities of the lower half of the fetus were observed. There was a large abdominal wall defect with evisceration of internal organs that were difficult to identify (Fig. 1a). The defect seemed to be continuous with placental tissue (Fig. 1b). Severe scoliosis was noted at the lower part of the spine and the distal part of the spine could not be well visualised. Three-dimensional ultrasound including VCI A plane was applied to show the abdominal wall defect and a clearer view of the spine. (Figs. 2 and 3) The right leg appeared to have a fixed flexion at the knee. The umbilical cord was difficult to identify and a single umbilical artery

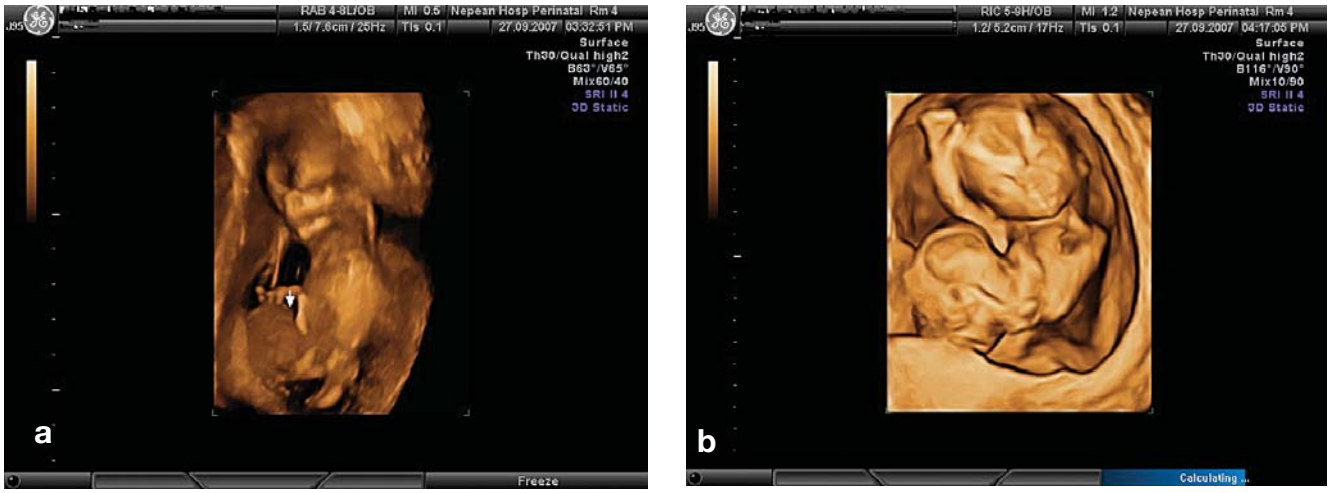

Fig. 2: (a)Transabdominal 3-dimensional ultrasound. The arrow shows the abdominal wall defect. Behind the arrow is the right leg with the fixed flexion knee. (b)Transvaginal 3-dimensional ultrasound shows the abdominal wall defect.

Fig. 3: VCI technique was applied to show the deformity of the spine which is indicated by the arrows.

was suspected. The patient was counselled regarding the ultrasound findings and requested termination of pregnancy. Induced abortion with prostaglandin E1 analogue suppository was performed at 14 weeks and four days by dates.

At autopsy, the findings were as follows: the fetus had indeterminate external genitalia with weight and measurements in keeping with a gestational age of 13–14 weeks, large anterior abdominal wall defect with the abdominal organs largely present outside of the body encompassed within a thin walled sac (Fig. 4), with short umbilical vessels running within the membranes of the sac from the placenta and no separate umbilical cord (Fig. 4), imperforate anus with rectal atresia. The right kidney was absent, however, the left kidney presented but was abnormally located high in abdomen. Most of the bowel located was within the sac and prominent scoliosis at lower thoracic/upper lumbar region was present. Moreover, the right leg was extremely gracile, shortened and abnormally positioned with fixed flexion at the knee (Fig. 4b). The left leg was grossly normal. The thoracic viscera appeared to be grossly normal. Unfortunately, there was failure of fetal tissue culture for karyotype analysis.

Discussion

Limb-body wall complex (LBWC) is a rare entity, diagnosed when at least two of the following three features are observed: craniofacial defects (exencephaly or encephalocele with or without facial cleft), body wall disruption and limb abnormalities[1,2]. Various phenotypes of LBWC are discussed in the literature. No single features occur consistently. However, two clearly distinguishable phenotypic variations have been proposed: one with and one without craniofacial defect. The first shows craniofacial defects and amniotic bands or adhesion between the cranial defect and placenta whereas the second often presents with urogenital anomalies, anal atresia, lumbo-sacral meningocele as well as placental abnormalities characterised by intact amnion, short cord and persistence of extraembryonic coelom[2,3]. Due to the wide phenotypic spectrum, many names other than LBWC have been given to the condition, such as amniotic band syndrome, amniotic rupture sequence and body stalk anomaly[4].

Our reported case had a phenotype of LBWC without craniofacial defects or body stalk anomaly. The incidence of body stalk anomaly is reported in about one per 14 000 births in a retrospective study in Scotland in which diagnoses of body stalk anomaly were made after maternal serum alpha-fetoprotein screening in the second trimester of pregnancy[5]. A later study by Daskalasis, *et al.* demonstrated that the prevalence of this anomaly at 10–14 weeks is higher (1: 7500)[6]. As ultrasound technology has been continuously improved and first trimester ultrasound screening has been performed widely, we expect to see more cases of this anomaly in the first trimester. Prenatal diagnosis of body stalk anomaly has been proposed. Goldstein, *et al.* suggested that body stalk anomaly should be strongly considered when there is a body wall defect, there are skeletal abnormalities – particularly severe scoliosis and/or lordosis of the spine – and the umbilical cord is either absent or very rudimentary[7].

There is no consensus about the aetiology of LBWC. However, there are three main theories: early amnion rupture (Torpin, *et al.*)[8], early vascular disruption leading to creation of amniotic bands (Van Allen, *et al.*)[1,9] and early embryonic maldevelopment (Hartwig, *et al.* and Herva, *et al.*)[10,11]. Russo, *et al.*[3] proposed that the two phenotypes of LBWC have different pathogenesis and are the consequence of different pathogenetic mechanisms. The phenotype with craniofacial defect might be explained by the early vascular disruption and early amnion rupture theory. The one without craniofacial defect or body stalk anomaly could be due to

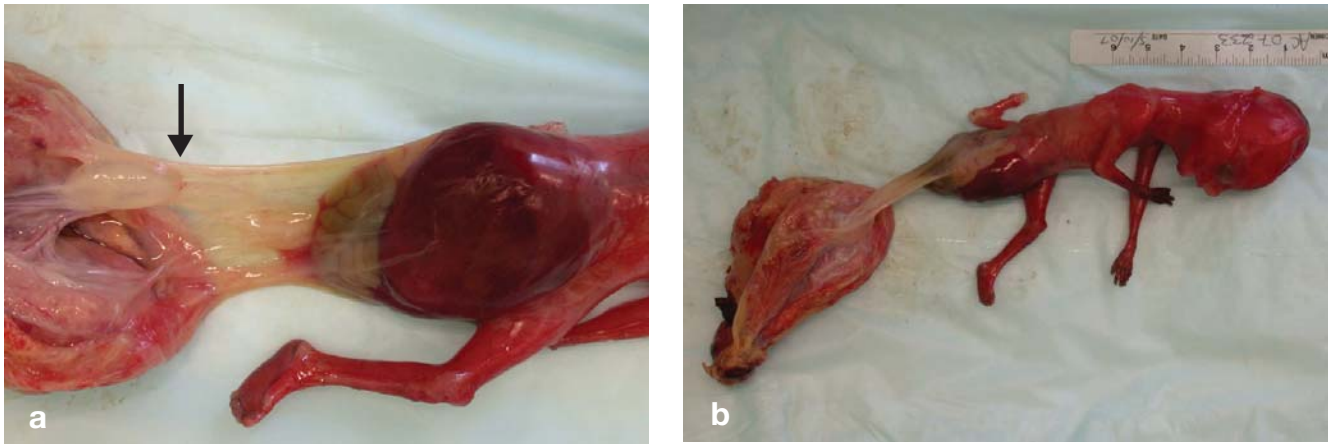

Fig. 4: (a) Close up view of the defect showing the eventrated abdominal organs which are enveloped by an amniotic sheet that connects the skin margin of the defect to the placenta. The arrow indicates a thick, short and not free umbilical cord within the membrane. (b) Shortening and the fixed flex knee of the right leg with traumatic amputation of the right foot after birth.

early embryonic maldevelopment involving body folding. This theory can explain three specific pathological elements of this type of LBWC: the abdominal placenta attachment, the short and not free umbilical cord and the persistence of the primitive cloaca. Most authors agree that LBWC without craniofacial defect pathogenesis can be explained by an abnormal development of the body stalk. Because of this, names have been given to this type of LBWC such as: agenesis of the body stalk, umbilical cord agenesis, missing cord sequence and body stalk anomaly[2].

Early in the embryonic period, the embryo is a flat germinal disk. The rapid growth in the sagittal axis results in curving of the germinal disk and transformation into a cylindrical embryo through lateral folding. Eventually, the body wall of the embryo closes, the body stalk forms and intraembryonic coelom or peritoneal cavity separates from the chorionic cavity or extraembryonic coelom. The amniotic cavity dorsal to the embryonic disk then grows and finally encircles the fetus, obliterates the chorionic cavity, and envelops the umbilical cord. Some authors suggested that primary defect in the germinal disk results in disturbance of the embryonic folding process and could lead to body stalk (forerunner of the umbilical cord) associated with body wall defect[10,11]. The finding of a primitive cloaca supports the embryonic maldevelopment pathogenesis and is associated with the absence of a bladder and the abnormal development of both the internal and external genitalia. If the folding at the caudal end is not complete the urorectal septum cannot divide the cloaca. Therefore, the disturbance of the embryonic folding process could explain both the attachment of the body wall defect to the placenta and the persistence of the primitive cloaca together with its anomalies. Scoliosis is considered to be secondary to the absence of thoracolumbar and paraspinal muscles on the ipsilateral side of the abdominal wall defect[1].

Most LBWC cases have been reported as sporadic, although concordance in twins has been reported[2,12]. Moreover, in one case series, a patient who delivered consecutive affected male infants has been reported[4]. This was the first report of a familial recurrence of LBWC, suggesting that in some cases genetic factors may be involved in the etiology. In our case, the patient had a history of a cousin's baby with body wall defect, but ,unfortunately, details of the abnormality were not available. Association between the occurrence of LBWC and cocaine abuse has been reported and the underlying mechanism is thought to be impaired placental perfusion due to vasoconstrictive properties[13]. Our patient has not reported any vasoconstrictive agent use. A series of 14 cases of body stalk anomaly diagnosed at 10–14 weeks of gestation reported by Daskalakis, *et al.* also did not have vasoconstrictive drug use[6].

Body stalk anomaly is not associated with chromosomal abnormalities. To date, no specific chromosomal defect has been reported[12]. Prenatal chromosomal diagnosis has not been made, as this anomaly is lethal. We found that 3D ultrasound plays an important role in terms of counselling. The patient could understand the 3D ultrasound images more easily compare to the 2D images and this influenced her decision-making.

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The use of ultrasonography in elephants

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Fig. 1: Given their large size, ultrasound in elephants is often conducted internally.

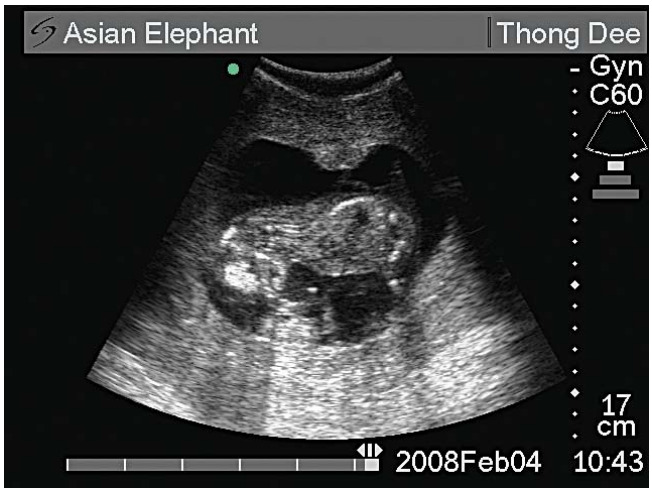

Fig. 2: Image showing pregnancy in Asian elephant Thong Dee.

The use of ultrasonography as a diagnostic tool is now well established in veterinary medicine. Within the last 20 years, its use has expanded into the field of zoological and wildlife medicine[1] where the non-invasive nature of ultrasound technology offers significant advantages. For instance:

- Examinations can be accomplished in a short period of time, usually with minimal prior preparation of the patient. This is a particular advantage in animals that are part of a herd or family group where lengthy separation of an individual may result in aggressive encounters on reintroduction.
- It is safe and has no lasting or physical effect on the animal, allowing quick return to normal behaviour.
- It provides real-time information and generates high resolution images of soft tissue. Images and data can be recorded and stored.
- The size of organs and lesions are readily measured and movement and direction of flow (heart-beat, vascular flow, fetal movement) can be examined.
- It is economical, efficient, and portable in zoo and field conditions where moving the animal may not be feasible.
- In many species, particularly megavertebrates such as elephants and rhinoceros, it offers the opportunity to evaluate parts of the body that are inaccessible with other imaging systems due to the huge size of the animals[2,3].

Historically, internal anatomical features of the elephant have been identified mainly through detailed opportunistic postmortem examinations, particularly during culling of wild animals. The introduction of ultrasound imaging in both captive and free ranging elephants has enabled a more detailed documentation of the physiological and pathological changes that take place over time. It is useful as a diagnostic tool, but has proved particularly valuable in reproductive medicine of the elephant[3].

The challenges of ultrasound use in elephants

Ultrasonography requires close contact with the animal, which generally means that some form of physical or chemical restraint is required. The restraint process carries its own inherent dangers and may increase the opportunity for harm to the animal and operator. This is true for wild elephants which require potentially high risk chemical immobilisation, delivered by projectile dart, to allow examination. Fortunately, elephants maintained in a captive environment can be readily trained, through positive reinforcement, to accept many non-invasive veterinary procedures without any form of restraint.

Elephant skin is up to 3 cm thick with a thickened and folded epidermis that readily traps air and dirt and, unless thoroughly cleaned, prevents efficient coupling of the transducer. In addition, the epidermis and subdermis are highly absorptive, reducing penetration of the ultrasound beam to deeper structures and having a negative effect on image quality[2]. Mature elephants can weigh from 2500–5500 kg or more depending on species and gender. This huge body size together with skin characteristics necessitate internal placement of transducers for many organ examinations.

Equipment

Ultrasound machines for use in the larger zoo or wild animals must be portable (generally battery operated) and robust so that they can be taken to the animal rather than the other way round. The machine must be able to be supported with the screen in view of the operator who may be

standing on a platform or crouched under the elephant. This may necessitate transducer cable extensions and protection of the screen from sunlight. Alternatively, a monitor helmet with inbuilt screen can be worn by the operator allowing real-time visualisation[1]. A range of probe frequencies are used, however, transducers and cables must be waterproof, and care must be taken to ensure electrical safety in the presence of water if non-battery operated equipment is used.

Transcutaneous ultrasonography

Transcutaneous ultrasonography of the elephant may be used for diagnostic purposes, limited only by penetration depth and the thickness of the elephant's skin. Thorough cleaning of the skin and the use of gently running water over the scanned area may allow better image quality than ultrasound gels. Low frequency probes (2–4 MHz) are generally necessary to achieve adequate penetration. The transcutaneous approach is used mainly for cardiology, lower limb orthopaedics, dentistry (tooth root abscesses), and ophthalmology though applications may be broader in very young elephants which are smaller and have thinner less folded skin. Transcutaneous ultrasound may also be used to monitor late stage pregnancies and allow examination of mammary gland development and function[1,2].

Transrectal ultrasonography

Transrectal ultrasonography in large animals can provide images of internal organs otherwise beyond reach, such as portions of the intestinal loops, rectal wall and peritoneum. It is considered the gold standard for evaluation of the urogenital systems of the elephant and the rhinoceros. The better coupling achieved with the rectal wall compared to the skin allows transducers with a range of frequencies from 2–10 MHz to be used, giving improved image detail[3]. The elephant rectum is of sufficient diameter in animals over about 3–4 years of age to allow the use of hand-held convex or linear probes. Transvaginal ultrasound examinations are not feasible in the female elephant due to their unique anatomy: the vagina opens into the vestibule or urogenital canal which is a tube-like structure over 1 m long running from the pelvic canal to open on the ventral part of the body between the hind legs. Male elephants are also unusual in that the bulbourethral glands and root of the penis are located subcutaneously ventral to the anus; however, the testes are located within the abdominal cavity and cannot be scanned transcutaneously. Transrectal ultrasound examinations are done with an anaesthetised elephant in lateral recumbence. Trained conscious elephants may be scanned either standing, or laterally recumbent, however the transrectal approach requires a higher level of training and cooperation from the elephant than transcutaneous ultrasonography. Faeces must first be removed from at least the distal 2 m of rectum by warm water enema delivered by hose. This serves also to relax the rectal and anal tone and usually results in the elephant raising its tail out the way of the operator. Sufficient lubrication together with water allows the operator to introduce the transducer through the anus into the rectum. The more caudally located parts of the urogenital tract can be imaged by manipulating the transducer probe against the rectal wall by hand. In larger elephants the more anterior organs such as the gonads and kidneys may be beyond arm's reach: in an adult female elephant, the ovaries may be located 1–1.5 m cranial to the anus. To overcome this challenge, custom built rigid probe extenders have been developed varying in length from 45–60 cm, which enable the full length of the reproductive tract, including the ovaries, to be imaged sonographically[1]. Depending on the position of the gonads relative to the other organs, it is sometimes necessary for the elephant to lie in lateral recumbence for imaging.

Ultrasound use in elephant reproductive medicine

Historically, the global success with breeding elephants in captivity has been poor and the captive population has been non-sustainable[1]. Paradoxically, overpopulation in some parks and game reserves in Africa has become a problem due to range restriction and fragmentation. Progress in regular endocrine monitoring, reproductive examinations using ultrasound and the development of assisted reproductive technologies have contributed to improved success in elephant captive breeding programs. Ultrasonography is an essential supportive tool in assisted reproduction procedures and has led to the development of innovative species specific tools for reproductive manipulation[3].

Great progress has been made in the last 15 years in the use of transrectal ultrasonography for reproductive assessment of free ranging and captive elephants and rhinoceros, with much of the work pioneered by Drs Thomas Hildebrandt, Robert Hermes and Frank Göritz of the Berlin Institute of Zoo and Wildlife Research. Ultrasonography, including colour flow Doppler, 3D and 4D computerised imaging, has allowed assessment and characterization of the entire reproductive tracts of male and female elephants over time. Changes in sonographic appearance during puberty, oestrus cycles, pregnancy, early stages of parturition and the development of pathology have in many cases been correlated with changes in reproductive hormone levels[1]. The knowledge gained has allowed elephant managers and veterinarians to develop strategies to ensure ongoing reproductive health of their elephants, more easily detect reproductive disease, ensure appropriate genetic management of captive populations and to time and monitor pregnancies and manage births. In free ranging elephants, research into effective forms of contraception is facilitated by the use of imaging technology[4,5].

Elephants are long-lived animals that require specialist housing in captivity. Many facilities cannot provide the extra housing required for a mature bull that undergoes prolonged periods of musth, during which behaviour is unpredictable. Space and opportunity for captive breeding is limited and necessitates careful planning, selection of optimal candidates, and if a fertile bull is not available nearby, the use of assisted breeding techniques. Routine ultrasonographic assessment of the reproductive tract of both male and female elephants allows suitable animals to be included in breeding programs. Those with pathological changes in the urogenital tract that may affect fertility can be monitored and excluded from breeding attempts if necessary. Ultrasound evaluation of young animals is essential to determine the onset of sexual maturity since this cannot be determined by phenotype[4].

In the bull elephant, transrectal ultrasound examination of the genital tract together with semen analysis is the most reliable method of assessing breeding potential, since the bull may show absent or suboptimal breeding behaviour. Ultrasound is used to visualise the position of the accessory

sex glands to allow correct placement of electroejaculatory probes and optimum sites for manual stimulation during semen collection[6]. It has facilitated the development of electro ejaculation probes of specific size and shape for elephants[3].

In the elephant cow, ultrasound examination can confirm the stage of oestrus cycle as predicted by hormone analysis and can accurately predict ovulation, especially important for timing of artificial insemination. It is now routinely used to confirm pregnancy, diagnose twins, monitor fetal development in early to mid term before the growing fetus drops below the pelvic rim, and in late pregnancy via a transcutaneous approach, and to optimise the timing of medical intervention during dystocia. During artificial insemination procedures, ultrasound guided placement of the insemination catheter is essential to ensure that semen is placed into the best position for fertilisation[1,7].

As ultrasound technology evolves and more veterinarians are trained in its use for elephants, the applications will continue to expand and the benefits to the conservation and to the captive care and management of these magnificent animals will only increase.

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Statement on the Use of Ultrasound by Medical Practitioners

B8: This statement was adopted by the ASUM Council on 19th July 2008

Statement on the Use of Ultrasound by Medical Practitioners

This is a new and evolving statement that sets out the theoretical and practical training requirements for medical practitioners who use ultrasound. The statement outlines the credentials available through the Australasian Society for Ultrasound in Medicine (ASUM) for medical practitioners, the eligibility criteria and the training requirements.

1. Introduction

1.1. All medical practitioners who provide an ultrasound service should be specifically trained and hold an appropriate credential.

1.2. In Australia and New Zealand diagnostic ultrasound has historically been largely provided through radiology services with scans being performed by sonographers and medical practitioners, and reported by sonologists with radiology or DDU equivalent qualifications.

1.3. The increasing portability and affordability of ultrasound has seen an increasing demand from a number of clinical specialties which have recognised an increasing utility for the use of diagnostic ultrasound in the clinical environment in the treatment of their patients.

1.4. Medical specialists other than radiologists and sonologists are increasingly wishing to undertake ultrasound examinations on patients as a direct extension of the clinical examination.

1.5. There is a demand by a number of the Australian and New Zealand Medical Colleges to incorporate ultrasound experience into clinical training and accreditation where appropriate.

1.6. The Australasian Society for Ultrasound in Medicine (ASUM) supports the devolution of diagnostic ultrasound to the clinical specialties only where the necessary regulatory environment and infrastructure exist for the supervision of training in the medical and surgical specialties.

1.7. Training of clinicians in medical ultrasound should be adequately funded and planned with a defined curriculum, standards and scope of practice that appropriately reflects the role of clinical diagnostic ultrasound within a defined specialty with access to nationally recognised qualifications that are recognised for credentialing purposes.

1.8. The Australasian Society for Ultrasound in Medicine (ASUM) has the necessary infrastructure and experience to provide guidelines for the training of the medical and surgical specialties in consultation with the Medical Colleges and Societies.

The Following ASUM Policies and Statements were revised by ASUM Council on 19th July 2008

A1-A7 Statements Relating to Ultrasound Safety

C1 Policy on Sonographer Training

C5 Supervision of Student Sonographers

D6 Statements Relating to The Use of Ultrasound In the Diagnosis of Developmental Hip Dysplasia And Dislocation

D10 Statements Relating to Ultrasound Safety

D12 Guidelines For the Performance of Third Trimester Ultrasound

D13 Guidelines For Neurosonography in Infants

The Following ASUM Policies and Statements were reaffirmed by ASUM Council on 19th July 2008

C2 The Role of The Sonographer

C3 Policy On Vaginal Scanning By Sonographers

C6 Guidelines For Reducing Injuries To Sonographers/Sonologists

2. Aims and Principles

2.1. The medical use and interpretation of ultrasound is highly operator-dependent requiring both training and experience.

2.2. All medical practitioners who provide an ultrasound service should be adequately trained with access to appropriate qualification and credentialing pathways. The Australasian Society for Ultrasound in Medicine (ASUM) provides the necessary qualifying and credentialing pathways for clinicians wishing to use ultrasound in their clinical practice through the Diploma in Diagnostic Ultrasound (DDU) and Certificate in Clinician Performed Ultrasound (CCPU).

2.3. The Australasian Society for Ultrasound in Medicine (ASUM), in consultation with the Australian and New Zealand Medical Colleges, provides definitions of the appropriate level of training and the scope of practice appropriate to meet the requirements of the various medical and surgical specialties.

3. Credentialing

3.1. The Diploma in Diagnostic Ultrasound (DDU) is provided by the Australasian Society for Ultrasound in Medicine (ASUM) as an appropriate qualification for Sonologists, who accept referrals from other medical practitioners. The training required to attain these levels is defined in the syllabus of the DDU

3.2. The Certificate in Clinician Performed Ultrasound (CCPU) provides credentialing for medical practitioners who have met the minimum training requirements for the use of diagnostic ultrasound as a direct extension of their clinical examination in the course of their normal clinical practice.

3.2.1. The Australasian Society for Ultrasound in Medicine (ASUM) recognises two levels of training corresponding to the CCPU Level 1 and the CCPU Level 2.

3.2.2. Trainees require supervision to provide the highest possible standard of ultrasound examinations and to fulfil their educational requirements. The standard of supervision is defined in the CCPU Regulations.

3.2.3. Medical practitioners who have completed Level 1 (Level 1 medical practitioners) will display the following abilities:

- Practice in accordance with the Polices and Statements of The Australasian Society for Ultrasound in Medicine (ASUM).
- Perform a range of examinations, defined in the CCPU curriculum as common or core to the specific specialty, safely and accurately.
- Recognise and differentiate normal anatomy and pathology as they relate to the range of studies defined in the CCPU curriculum.
- Diagnose common abnormalities as defined in the CCPU curriculum.
- Recognise when a referral to an imaging specialist is indicated.
- Understand the relationship between ultrasound imaging and other diagnostic imaging techniques.
- Train, supervise and assist Level 1 trainees in the appropriate use of ultrasound in their clinical practice.

3.2.4. Medical practitioners who have completed Level 2 and have been awarded the CCPU will display the following abilities:

- Practice in accordance with the Polices and Statements of the Australasian Society for Ultrasound in Medicine (ASUM).
- Use ultrasound within their normal clinical practice.
- Perform a broader extended range of studies as defined by the specialty.
- Perform common non-complex ultrasound guided invasive procedures.
- Train, supervise and assist level 1 trainees, level 1 medical practitioners and level 2 trainees in the appropriate use of ultrasound in their clinical practice.
- Conduct some research in ultrasound.

4. Eligibility

4.1. Enrolment in the DDU is available to medical practitioners who have:

- permanent resident status in Australia or New Zealand; and
- unrestricted registration to practice in Australia or New Zealand; and
- held approved resident medical officer posts in related subjects for a period of not less than two years and enrolled in (or graduated from) a course of study leading to Fellowship of the Royal Australian College of Obstetricians and Gynaecologists, the Royal New Zealand College of Obstetricians and Gynaecologists the Royal Australasian College of Physicians, the Royal Australasian College of Radiologists, the Royal Australasian College of Surgeons, the Australian and New Zealand College of Anaesthetists;
- applied to and been accepted by the ASUM DDU Board of Examiners for admission to the DDU.

4.2. Enrolment in the CCPU is available to medical practitioners who:

- have a visa to work in Australia or New Zealand and
- have registration to practice in Australia or New Zealand and
- will be practicing in Australia or New Zealand for sufficient time to substantially complete the requirements of the CCPU and
- are practicing in an approved specialty area or clinical discipline as prescribed by the ASUM Council and listed in the CCPU Curriculum.

5. Training

5.0.1. Training programs should be designed to meet the practice needs of medical practitioners in order to ensure the highest possible standards of ultrasound practice.

5.0.2. ASUM supports and encourages the involvement of sonologists, radiologists and sonographers in the training of clinicians in diagnostic and procedural ultrasound.

5.0.3. A system for recording the results of any ultrasound examination in patients' records is mandatory. The permanent recording of images, where appropriate, is desirable for the purposes of correlative imaging, future comparison and audit.

5.0.4. Knowledge of the appropriate use and integration of other imaging techniques, as well as the clinical and economic impact of ultrasound on the demand for other imaging, should be required.

5.0.5. The requirement to deliver training for clinicians must acknowledge the time commitment of the trainer and trainee, the provision of funding, the content and practicability of the syllabus and the availability of trainers and training courses. It must be recognised that training requires additional time, space and equipment. Training should be properly costed and funded.

5.0.6. Training should be related to the specialist requirements of the trainee. Within any one level of training it may be appropriate for a trainee to become proficient in some but not all of the individual modules and only undertake ultrasound practice in this /these areas.

5.0.7. Training should be given in departments which have a multidisciplinary (medical, surgical, radiological etc.) philosophy, an adequate throughput of work, a suitable supervisor/trainer with experience and an interest in

training in the module required, appropriate equipment and an active audit process.

5.0.8. Training should be structured with regular appraisals during the training period. At the end of the training period a recommendation from the trainee's training supervisor shall be required to determine eligibility to be awarded the CCPU. The responsibility to be adequately trained and to maintain skills lies with the individual practising ultrasound. An assessment of competence is a reflection only of the position at the time the assessment is undertaken.

5.0.9. Following training, regular and relevant continuing professional development (CPD) should be undertaken and documented. It is the responsibility of the trainee to ensure that their practical skills are maintained by ensuring that regular ultrasound sessions are undertaken and that there is an adequate range of pathology seen in their ultrasound practice

5.1. Training should consist of both theoretical and practical syllabi.

5.1.1. Theoretical training

- Preliminary theoretical training should cover physics and instrumentation including levels and sophistication of equipment, image recording, reporting, artefacts and the relevance of other imaging modalities to ultrasound. The content for this physics and instrumentation component is defined in the CCPU syllabi.
- The clinical theoretical content is defined for each subspecialty in the CCPU syllabus.

5.1.2. Practical training

- The practical content is defined for each subspecialty in the CCPU syllabus, listing conditions which should be included in the experience of the trainee.
- Practical experience should be gained under the guidance of a supervisor appropriately trained in ultrasound practice.

5.2. Training Requirements

5.2.1. Different trainees will acquire the necessary skills at different rates and the end-point of the training program should be judged by an assessment of practical competence.

5.2.2. Examinations should encompass the full range of pathological conditions listed in the syllabi.

5.2.3. A logbook listing the number and type of examinations undertaken by the trainee themselves should be kept. An illustrated logbook of specific normal and abnormal findings may be appropriate for some syllabi.

5.2.4. Level 2 training usually requires at least 1 year of experience at Level 1, with regular use of ultrasound in the clinical environment. A significant further number of examinations should have been undertaken in order to encompass the full range of conditions and procedures encountered in each module.

5.3. Supervision of Training:

5.3.1. Supervision of training may be undertaken by a person who holds one of the following qualifications and is registered to practice as a medical practitioner or sonographer:

- Diploma in Diagnostic Ultrasound (DDU)
- Sonographer accredited by the Australasian Sonographer Accreditation Registry(ASAR) to practice in Australia
- Sonographer accredited to practice in New Zealand by the New Zealand Medical Radiation Technologists Board to practice in New Zealand (NZMRTB).
- Diploma in Medical Ultrasound (DMU)
- Fellow of the Royal Australian and New Zealand College of Radiologists (FRANZCR)
- Fellow of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (FRANZCOG) with Certificate in Obstetrical and Gynaecological Ultrasound (COGU)
- Vascular Fellow of the Royal Australasian College of Surgeons (FRACS(Vasc))
- CCPU (as defined for each specialty) plus two years experience at that level

5.3.2. In the event that the training supervisor is a sonographer there should also be a medical supervisor who must hold one of these qualifications. This medical supervisor may practice at a different location.

5.3.3. The Council of The Australasian Society for Ultrasound in Medicine (ASUM) may, at its discretion, allow other persons to supervise training, or disqualify a qualified person from acting as a training supervisor.

6. Maintenance of Certification

6.1. It is necessary for each practitioner to maintain competence through study and practice.

6.2. The minimum amount of on-going experience in ultrasound as outlined in each syllabus should be maintained.

6.3. Continuing Professional Development (CPD) should be undertaken which incorporates elements of ultrasound practice.

6.4. Regular audit of the individual's ultrasound practice should be undertaken to demonstrate that the indications, performance and diagnostic quality of the service are all satisfactory.

6.5. Recertification requirements prescribed in the regulations for the CCPU must be met.

DMU KEY DATES FOR 2008

DMU Part II Oral Examination Period – 13th September 2008
DMU Part II Practical Examination Period – August 2008
DMU Part I Supplementary Written Exam – 1st November 2008

DMU TABLE OF FEES 2008

2008 DMU Examination Fees
DMU Enrolment (once only fee) $A326.00 + GST = $A358.60
DMU Part I APP $ A326.00 + GST = $A358.60
DMU Part I PHY $ A326.00 + GST = $A358.60
DMU Part II Written $A540.00 + GST = $A594.00
DMU Part II Oral $A540.00 + GST = $A594.00
DMU Part II Practical $A800.00 + GST = $A880.00

Supplementary Examinations

DMU Part I Supplementary APP $A326.00 + GST = $A358.60
DMU Part I Supplementary PHY $A326.00 + GST = $A358.60

fetus 2009

We are pleased to be able to bring the 25th International Congress 'The Fetus as a Patient' to Australia, providing an opportunity to hear a host of international experts in the field of obstetric ultrasound and perinatology.

These include Kypros Nicolaides and Mark Kilby from the UK, Yves Ville, Giovanni Monni and Eberhardt Merz from Europe, Frank Chervenak and Ruben Quintero from the United States and TK Lau, Ritsuoko Pooh and SH Yeo from Asia. Local speakers will include current national leaders in our field, John Newnham, Nick Fisk and Brain Trudinger.

This is an exciting program providing some scientific background and discussion on techniques for many of the newer areas of obstetric imaging including the application of 3D/4D technology in routine practice, cervical assessment for preterm delivery and advances in first trimester imaging.

We look forward to your participation in Sydney!

The 25th Fetus as a Patient International Congress

7–9 March 2009

Hilton Sydney | Australia

Proudly supported by

asa
australian sonographers association

www.fetus2009.com

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Scanning the journals

Detection of ovarian tumours in chicken by sonography: a step toward early diagnoses in humans?
Barua A, *et al. J Ultrasound Med* 2007; 26: 909–19
Apparently laying hens are the only animals that get spontaneous ovarian cancer similar to humans. So this group from the United States and Israel studied 29 White Leghorn laying hens with two-dimensional transvaginal ultrasound and color Doppler. They correctly diagnosed gross ovarian tumours and more importantly they were able to distinguish the morphologic characteristics of ovarian tumours from those of normal ovarian structure. Ultimately, laying hens may serve as a model for assessment of imaging modalities with suitable contrast agents for improved evaluation of ovarian cancer in women. Who would have thought it?

Appendicitis caused by a foreign body of dental origin: diagnosis with ultrasonography
Asad S, *et al. J Ultrasound Med* 2007; 26: 967–70
This is a case report of a man in Korea who accidentally swallowed an endodontic file during root canal therapy. The foreign body then lodged in the appendix and caused acute appendicitis. Ultrasonography made the diagnosis and operative removal was successful before perforation occurred. So, although ultrasound has a limited use for foreign body detection in the abdomen, where there are clinical signs of possible appendicitis, it is the key diagnostic tool.

First trimester ultrasound diagnosis of skeletal dysplasia associated with increased nuchal translucency thickness
Ngo C, *et al. Ultrasound Obstet Gynecol* 2007; 30: 221–26
The author reviewed the current literature on skeletal dysplasia in the first trimester associated with increased nuchal translucency and added five cases of their own. Almost half of the more than 200 types of skeletal dysplasia described are lethal so it is important to make as early a diagnosis as possible. This French group remind us that if the chromosomes are normal and the NT is abnormal, lethal skeletal dysplasias may be diagnosable from 12–16 weeks.

Vasa praevia: a preventable tragedy
Daly-Jones E, *et al. Ultrasound* 2008; 16: 8–14
This review should be read by everyone who performs ultrasound on pregnant women. The incidence of vasa praevia is approximately 1 per 2500 deliveries but in IVF pregnancies is 1 in 300. The diagnosis can be made antenatally in one minute by abdominal scan of the cervix with colour Doppler in situations of high risk. These include succenturiate or multilobate placenta, velamentous insertion, multifetal, low placenta, IVF pregnancy. The UK Vasa Praevia Awareness Group can be found at www.vasapraevia.co.uk where an excellent presentation by Philippe Jeanty is available on line.

Triploidy: 109 prenatal diagnosis
Watters I and Fryns J P. *Ultrasound* 2008; 16 (1): 21–3
This review of a large number of triploidies from Lewen reminds us of the two types – diandric triploidy (type I) where the extra set of chromosomes is of paternal origin and digymic (type II), the rarer form, due to extra maternal chromosomes.

Diandry predominated in triploidy without embryos after nine weeks or in the second trimester with normally grown fetuses with partial molar placentas. Digyny is seen mainly in early (< 9 weeks) miscarriages with embryos or in IUGR fetuses with small non-molar placentas.

Second trimester cases may be diagnosed on ultrasound so we should be alerted by IUGR with oligohydramnios (type II) and partial molar changes (type I). It is important to recognise diandric triploidy prenatally because of the higher incidence of pre eclampsia and persistent trophoblastic disease.

Assessment of factors that affect the quality of performance and interpretation of sonography of adnexal masses
Levine D, *et al. J Ultrasound Med* 2008; 27: 740–28
This paper describes how 31 radiologists reported 610 different sonograms in women who underwent subsequent oophorectomy for ovarian lesions. Results indicated that on the basis of type of training, years of practice or numbers of examinations read there were no significant differences in the reports. But, and this is probably a big but, specialisation in women's imaging improved the ability to provide an accurate impression. So the type of practice is important.

Role of sonography in the recognition, assessment and treatment of caesarean scar ectopic pregnancies
McKenna DA, *et al. J Ultrasound Med* 2008; 27: 779–83
Caesarean scar ectopic pregnancies are rare but becoming more common with the rise in C-Section rates worldwide. While only describing two cases, the authors show how to diagnose scar implantation as well as how to perform sonographically guided transcervical injection of methotrexate. They note that in an analysis of 112 cases one third of patients had no symptoms, one third had only vaginal bleeding and only a quarter of all patients presented with pain. As this can be a life threatening condition, their message is: keep it in mind in a patient who has had a previous caesarean section.

The Gleaner

Vietnam-France-Asia Pacific Congress in Vietnam

Harley Roberts

The meeting featured high standard clinical sessions and an enjoyable social component.

This year we were fortunate that three doctors from Nepean and Westmead Hospitals were able to attend the 8th. Vietnam-France-Asia Pacific Congress held in Ho Chi Minh City on 15th–16th May 2008.

As our attendance was self-funded, it was not necessary to call on funds from the ASUM Vietnam Scholarship and I thank Dr Henry Murray and Dr Alison Brand for generously accepting to pay their own travel costs.

The congress, held over two days, was very successful, with approximately 1600 registered delegates. Dr Henry Murray and I gave presentations on ultrasound and related subjects, mainly associated with high-risk pregnancy, and Dr Alison Brand gave presentations related to oncology.

Prior to the congress, Dr Murray attended and lectured at Tu Du Hospital where he demonstrated fetal scalp sampling for pH and lactate analysis.

The holder and disposable blades for this procedure were donated by Promedica Pty Ltd and Rocket Medical (London) and I thank them particularly for their assistance in providing the equipment.

Tu Du Hospital is a very large maternity and women's hospital in Ho Chi Minh City with approximately 43,000 deliveries/year. The hospital is anxious to advance the level of care to include procedures such as CVS and pH/lactate analysis.

Our attendance and participation at the Congress was much appreciated and as usual we were very well looked after, particularly by Dr Thanh, (Director of Tu Du Hospital and congress organiser) and Dr Nguyen Ha, (Head of Imaging), with several day tours organised before and after the Congress.

There is no doubt that the Vietnamese are most generous hosts and they have extended a warm friendship to all those who have visited and participated in the ASUM Vietnam exchange in the past.

On this occasion I am pleased to report that Henry, Alison and I were able to donate to the 'orphanage' at Tu Du Hospital and a separate donation had also been sent by Dr Valeria Lanzarone who has previously been supported by the ASUM Vietnam Scholarship to work at Tu Du Hospital. The 'orphanage' is a special section of the hospital caring for seriously deformed and disabled children who are unable to be cared for by their families.

We hope to further support this close association with Vietnam and it should be possible for the ASUM Vietnam Scholarship to fund several Vietnamese ultrasound specialists to attend WFUMB 2009 in Sydney next September.

ASUM Asian Link: 2008 KSUM Annual Scientific Meeting

Yisha Tong

Professor Ki Hwang Kim (KSUM President), Professor Seung Hyup Kim (KSUM Chairman) and Dr Yisha Tong (ASUM member) (from left to right) at the KSUM 2008.

In May this year, I attended the Annual Scientific Meeting of the Korean Society of Ultrasound in Medicine (KSUM) as an ASUM guest speaker. It was a wonderful opportunity for me to learn about KSUM's activities and exchange our experience with KSUM members.

The KSUM has more than 1000 members. Most are radiologists, as there are no sonographers in Korea. Previously, KSUM successfully hosted the 3rd Congress of Asian Federation of Societies of Ultrasound in Medicine and Biology Congress in 1992 and the 11th Congress of World Federation for Ultrasound in Medicine and Biology (WFUMB) in 2006.

Starting from 2008, KSUM has set up an Asian Fellowship Program to train ultrasound specialists from other Asian countries in Korean academic institutions. A doctor from Nepal was chosen as the first Fellow from nine applicants (five countries).

This year, the KSUM Annual Scientific Meeting was held at the COEX Convention and Exhibition Centre in Seoul on May 16th and 17th. About 700 members, trainees and exhibitors attended the meeting. There were 42 oral presentations and 84 scientific or educational posters. The posters were displayed in electronic format on computers in a dedicated room in the conference venue.

The KSUM annual scientific meeting has an invited lecture session called the *Jisan Lecture Session*. Jisan is Prof Chu Wan Kim's pen name, the founder and honorary president of the KSUM. He has been donated half a million dollars to the KSUM research and education fund and plans for another half a million dollars in 2010.

This year, the Jisan lecture session was chaired by Prof Seung Hyup Kim, the Chairman of the KSUM. I presented *Duplex ultrasound assessment of lower limb with varicose veins* and Prof Ki Hwang Kim from Yonsei University delivered *How to manage the thyroid incidentaloma* at that session, which were well attended and received. Prof Ki Hwang Kim was later elected as the new President of the KSUM at the meeting.

At the conference dinner, I gave a slide and video presentation to promote ASUM and WFUMB 2009, which will be held in Sydney. The promotional slides and video about Sydney and WFUMB 2009, provided by Dr Caroline Hong, the CEO of our society, were very informative and entertaining, and enjoyed by Korean colleagues. Many of them said that they would love to come to Australia and join us at the WFUMB 2009 meeting. The KSUM has also set up a fund to support its members who submit abstracts and present at the WFUMB 2009.

In addition to participating in the KSUM activities, I had the opportunity to see a little bit of the beautiful city of Seoul, both new and old. I also learned some Korean, 'gam-sa-ham-ni-da', which means 'thank you'.

Wine Bottle Winner
ASUM members had the opportunity to win a bottle of wine by renewing their membership on-line.
This year's winner is Member No. 2606.

Margaret Sheldon Tabrett 1930–2008

When Margaret Tabrett decided that her home needed new carpets she joined the Commonwealth Acoustic Laboratory, latterly, the Ultrasonics Institute (UI) on 12th December 1968. The 11-man team of scientists was directed by George Kossoff in collaboration, with his clinical advisers – William Garrett, Obstetrician Gynaecologist, Royal Hospital for Women; William 'Bill' Hughes, Ophthalomogist, Royal Prince Alfred Hospital; Thomas Reeve, Surgeon, Royal North Shore Hospital; and David Wilken, Cardiologist, Prince Henry Hospital, Little Bay.

Margaret estimated that the carpet venture would return her back home in 12 months. Kossoff hoped Margaret would stay for 18 months. As Margaret had been a radiographer before marrying her wonderful Robert and nurturing her family, 'she knew how to push buttons' (Margaret's quote). Kossoff gleefully added Margaret to his team, which was about to expand its research and take medicine to another dimension.

In less than a decade Margaret Tabrett's contributions to medical ultrasound were truly spectacular. She was really the Southern Hemisphere's first sonographer. She was at the forefront of the development of greyscale ultrasound in obstetrics and gynaecology, ophthomology, the abdomen and in particular, paediatric echoencephalography and in the superficial organs.

The UI at Hickson Rd Sydney was the hub of the research. Margaret worked with engineers contributing to the ergonomics of examinations and travelled to hospitals to undertake ultrasound examinations with the scientists and clinical collaborators at the Royal Hospital for Women with William Garrett in obstetrics, gynaecology and paediatrics and of course in the clinical development of the UI Octoson; the Royal Prince Alfred Hospital, with Bill Hughes; and Thomas Reeve, breast, thyroid and scrotum at Royal North Shore Hospital.

With the introduction of commercial ultrasound machines in the early '70s, the UI added education to its repertoire, resulting in the UI/RHW Ultrasound Courses which continued to run for much of UI's existence. The initial courses ran for three months, attracting doctors from all over the world with Margaret being instrumental to their education.

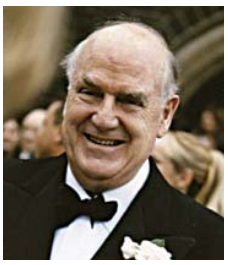
In 1978, after leaving the UI, Margaret worked with Dr Joan Croll, Director and founder of breast screening in Australia at the Sydney Square Breast Clinic. Here, Margaret performed breast ultrasound on a dedicated high frequency UI Octoson. The combination of ultrasound and mammography allowed a greater understanding of the parity and aging of the breast.

Margaret was a founding member of the Australian Society for Ultrasound (ASUM) and was instrumental in creating the sonography profession. She was elected as the inaugural President of the Ultrasonographers Group of ASUM in 1977 and in 1978 was appointed by the ASUM Council to the inaugural Chair of the Diploma of Medical Ultrasonography. Margaret's leadership was truly striking. In 1992, Margaret was elected as the first sonographer Life Member of ASUM. She was honoured as a Pioneer of Medical Ultrasound by the Smithsonian Institute of History in Washington DC USA, on the 40th Anniversary of the History of Medical Ultrasound Symposium, in 1988.

The world is a better place because of Margaret Tabrett and she will be greatly missed. She is survived by her three sons and daughters-in law and seven grandchildren.

Kaye Griffiths

James Carnegie Grimwade 1937–2008



James Grimwade graduated from the University of Melbourne in December 1961. He completed his post-graduate training in obstetrics and gynaecology (O and G) at the Alfred Hospital and the Queen Victoria Medical Centre in Melbourne. He lectured at Queen Charlotte's Hospital in London, worked as a registrar at both Westminster and Lewisham Hospitals, and obtained membership to the Royal College of Obstetricians & Gynaecologists in 1967. From 1971, he was a practicing obstetrician and gynaecologist at the Queen Victoria Medical Centre/Monash Medical Centre acting as the Head of Unit in Obstetrics from 1978 to 1987, and as Chairman of the O&G Division from 1981 to 1990.

James was one of the pioneers in establishing a dedicated O&G ultrasound service in Melbourne, becoming the first full time ultrasonologist at Monash Medical Centre, founding the Ultrasound (O&G) Unit in 1976. He obtained his DDU from ASUM in 1978, and continued to practice as a committed O&G ultrasonologist until his death in May of this year. His special interests in the field of O&G ultrasound were in particular endometrial diagnosis and the use of saline infusion sonography, with an especially passionate interest in fetal cardiology. He was one of the first, if not the first, in Australia to develop the area of fetal cardiology and recognise it's importance.

James was a pillar of support to many who were fortunate enough to know him. He guided the careers of so many, not only in the discipline of obstetrics and gynaecology but also in O&G ultrasound. James was committed throughout his medical career to providing a caring and quality service to his patients. His gentle manner, command of the specialty and modest disposition were the foundations of a very successful private practice at Dixon Street in Clayton, immediately adjacent to Monash Medical Centre. James had a passion for ultrasound and at a time in life when most choose to retire, he was in full flight. It was this enthusiasm and commitment that inspired so many who were close to him. He embraced new technologies, was himself inspired by youth and enthusiasm and during this time he played an active role within ASUM and at other local meetings.

James passed away peacefully at his new home in Mount Martha. He will be sadly missed by all, especially his wife Robin and his four children, Anthony, Timothy, Jennifer and Stephen. Time can only ease the feelings of pain and anguish, and treasured memories hopefully fill the gap left by this very sad loss. Farewell to a great friend, a scholar and a gentleman.

Simon Meagher

Associate member survey – results

A survey of Associate members was conducted by ASUM recently to gauge this group's view on ASUM services.

It was pleasing to receive the key finding that ASUM is offering the correct educational opportunities, meetings/courses to associate members.

Associate members were asked to rate the importance of services;

- The *Ultrasound Bulletin* was considered the most important service by associate members
- Professional Advancement-Educational and/or Speaking opportunities for the members at formal/informal meetings organised by ASUM and its branches, including the Annual Scientific Meeting
- On-line Education – free physics tutorial to DDU/DMU candidates
- Discounted registration fees for ASUM meetings
- Free advertising on the ASUM website.

ASUM thanks all associate members who participated in this survey and encourages members generally to make use of the opportunity to give feedback to ASUM about services.

ASUM history is important! Do you have any of the following?

- Old photos of ultrasound equipment
- Photos of ASUM buildings and premises
- Old posters or brochures of meetings, events or equipment
- Group photographs of former ASUM Councils, Branches etc
- Movie clips, videos or slides
- Documents of historical significance.

With ASUM now approaching 40 years of existence there is a good reason to preserve our shared history. ASUM intends to have a historical display at WFUMB 2009 and will mark the significant milestone of our 40th year edition of the *Ultrasound Bulletin* in February 2010 with a special feature.
We are keen to preserve as much of our history as possible, so if you have historically significant material ASUM would like access to it.
If you have memories that you would like to share with us please record them. Up to 500 words is acceptable.

Contact ASUM on (02) 9438 2078 to discuss the collection and preservation of this important material

DDU report

Enrolments in the Diploma of Diagnostic Ultrasound (DDU) remained strong in 2008, indicating the continued high regard held for this qualification.

Thirty-two candidates sat the Part 1 DDU. Fourteen candidates sat the Part 2 DDU. In 2008 the Part 1 Examination was again conducted entirely by multi-choice questionnaire (MCQ). The format of the Part 2 Examination is unchanged with the long written exam now structured with a marking template to ensure consistency for each question. Each candidate completing a Viva Examination receives a detailed critique of pertinent comments to each of their answers.

Our thanks go to the volunteers for invigilating all the DDU exams and to Raghib Ahmad and ASUM staff for their efforts in supporting the DDU BoE.

Dr Chris Wriedt
Chair for DDU Board of Examiners

DDU 2008 Pass Candidates

ASUM Congratulates the following DDU 2008 Pass Candidates

DDU Part I	Clare Myers	Brian Hollis	Sophia Chuang
Rosalie Grivell	Thuy Dinh	Andy Yong	Warren Yan
Annalisa Meyer	Karim Al-Khafaji	Therese Mcgee	Chern Lo
Mathew Claydon	Anjana Thottungal	Lindsay Cochrane	Alan Adno
Sandeep Prabhu	Richard Hay	**DDU Part II**	John Bridgman
Tai Kian Wong	Sarah Clements	Rosemary Reid	Roshini Nayyar
Tania Hingston	Talat Uppal	Janine Haran	Yasmin Tan
Dina Rubinfeld	Austin Ng	Christine Russell	Shiva Muthu

CCPU report

The Certificate in Clinician Performed Ultrasound (CCPU) is continuing to generate interest among medical practitioners who are not imaging specialists, but need ultrasound as a diagnostic tool at the point of care.

Each CCPU specialty area is overseen by a CCPU Panel. In turn CCPU Panels report to the CCPU Certification Board. CCPU Panels have been established for O&G, Neonatal, Critical Care, Emergency and Surgical. Discussions to finalise CCPU Panels for Sports Medicine and Military are progressing.

Eligibility for the CCPU

You must be a Fellow of the appropriate college or a registrar in the second or subsequent year of your training program. Evidence of the applicant's status needs to be provided in the application.

How to gain the CCPU

1 Become a member of ASUM
2 Enrol into the CCPU
3 Complete the Online physics module
4 Complete the relevant Basic (Level 1) theoretical course
5 Complete the practice requirement for course completed (Log book)
6 Complete the relevant Advanced (Level 2) theoretical course
7 Complete the practice requirement for course completed (Log book).

CCPU Recipients

Congratulations to the following candidates who were awarded the Certificate in Clinician Performed Ultrasound (CCPU) by the ASUM Council in July 2008.

CCPU (O&G)	CCPU (Emergency)
Dr Roopa Ghanta	Dr Matthew Bragg

Schedule of CCPU Fees Effective 1st July 2008
All fees are inclusive of GST

1 Enrolment fee	$110.00
2 On-line Physics Course	$352.00
3 Course accreditation (external providers)	$550.00 per course
Accreditation is for three years	
4 Course Re-accreditation	$275.00 per course
Re-accreditation is for three years	
5 Advanced Standing for Accredited Course	$ 60.50 per course
6 Advanced Standing for Non-accredited Course	$374.00 per course
7 Advanced Standing for workplace training, other Qualifications held, extensive practice and mastery application	$198.00 per
8 Log book assessment	$198.00 per assessment

Special fees have been negotiated for some institutional programs

ASUM new members

New members – April 2008

Full
Elena Chechelnitskiy Vic
Priya Dhalli NZ
Scott Fergus NSW
Lisa Meyer NZ
Donovan Middleton Qld
Ritu Mogra NSW
Hahed Mohamed NSW
Norzilawati Mohd Naim Qld
David Mowat NSW
Norzilawati Naim Qld
James Opperman NSW
Adam Pendlebury Vic
Roba Rasheed SA
Sally Reid SA
Alice Robinson SA
Brian Whitlocke NSW
John Younger Qld

Associate
Samar Bachir NSW
Greg Baker NSW
Caroline Ellis NZ
John Goodison Qld
Jennifer Hoh SA
Delphine Hunter WA
Leah Ieraci WA
Rania Lew Tas
Jielan Lu NSW
Elise Mclachlan NSW
Kelly Mclaughlin WA
Michelle Millar SA
Lipsa Modi NSW
Milomir Moosilovic NZ
Kim Nguyen SA
Rosa Pia Nicolas Vic
Renee Olsen Qld
Chirag Pandya NSW
Summit Patolia NSW
Cameron Perrin NSW
Mark Schultze Vic
Randhir Sengolam NZ
Suneena Shetty Qld
Katrina Smith NSW
Nicky Stanners
Louise Steblina NSW
Claire Steyns NSW
Ashley Tan Tas
Troung Thanh NSW
Lachlan Waite Qld
Daniel Walkley SA
Courtney Warr WA
Joanna Webster Qld
Kaylene Wellings NSW
Cheung Yeo Vic
Janis Zenchyson Qld

Trainee
Gabriel Blecher Vic

Affiliate
Louise Cullen Qld

Corresponding
Ashley Robinson Canada
Anjali Singh USA

New Members – May 2008

Full
Kathryn Carmo NSW
Andrew Lawrence Vic

Associate
Mark Adams NSW
Isabel Bayot NSW

Affiliate
Said Alkindi NZ
Guy Bloomfield NZ
Ulrike Brandenburg NSW
Rowena Clark NSW
Lucy Cooke Qld
Patrick Feeny NSW
Adam Hoellering Qld
Luke Jardine Qld
Athol Johnson NZ
Rahul Joshi NSW
Alison Kent ACT
Pieter Koorts Qld
Carl Kuschel Vic
Melissa Luig NSW
Angela Mcgillivray NSW
Arun Nair NZ
Islam Ramadan NZ
Steven Resnick WA
Arvind Sehgal Vic
Vijay Shingde NSW
Rajesh Singh SA
Javeed Travadi NSW
Stuart Watkins NSW
Claire West NZ
Paul Woodgate Qld

Student
Kylie Burnley NSW
Sophia Englezos Vic
Marta Fonseca Qld

New Members – June 2008

Full
Stephen Huang NSW
Stuart Stapleton NSW

Associate
Meena Rani Sumathykutty Amma Qld

Affiliate
Pranav Jani NSW
Anuradha Kochar SA
Kai Konig Vic
Umesh Mishra NSW
Peter Stevenson Qld

Corresponding
Jing Yien Chan Malaysia
Siew Fei Chau Malaysia
Lih Jing Cheah Malaysia
Thanyialakshmi Davedasan Malaysia
Enid Gomis Malaysia
Sook Fong Lee Malaysia
Guat Ling Lim Malaysia
Xiao Ting Lim Malaysia
Ragina Robert Malaysia
Kartini Santhran Malaysia
Seeta Selvaraj Malaysia
Chee Tian Tan Malaysia
Jeanne Tang Malaysia
Jia Yieng Tang Malaysia
Ummi Faustina Wafi Lim Malaysia
Nurhayati Binti Yahya Malaysia
Siu Foong Yap Malaysia
Siew Ting Yu Malaysia

Student
Ngaire Abboud Vic
Giovanni Gentiluomo Vic
Erin Jones NSW
Natalie Khominsky Vic
Joanne Kitley NSW
Frauke Lever Vic
Phoebe Long NT
Natalie McGoogan NSW
Jessica Moody WA
Novella Morosini Qld
Kate Noske SA
Charlotte Poposki NSW
Maureen Quinto Vic
Mieka Tingle SA
Jacqueline Toy NZ
Andrew Wilkinson Vic
Vicki Wilkinson Qld

Calendar of ultrasound events

2008

24th–28th August 2008
18th World Congress on Ultrasound in Obstetrics and Gynaecology
Venue Navy Pier, Chicago, United States of America
Ph +44(0) 20 7471 9955
Fax +44(0) 20 7471 9959
Contact congress@isuog.org
For registration and submission of abstracts please visit www.isuog.org

1st–6th September 2008
IBUS International Breast Ultrasound Course
Multimodality Imaging and Interventional Techniques
Residential six day program
Venue Ferrara, Italy
Contact Administrative Secretary convegni@unife.it
Ph +39 0532 762404
Fax +39 0532 767347
www.iuss.unife.it or www.ibus.org

18th–21st September 2008
ASUM Annual Scientific Meeting 2008
Venue SkyCity Convention Centre, Auckland, New Zealand
Contact ASUM PO Box 943, Crows Nest NSW 1585 Sydney Australia
Ph +61 2 9438 2078
Fax +61 2 9438 3686
Email asum@asum.com.au

18th–19th October 2008
ASUM Early Pregnancy & Gynaecological Scanning Foundation Theoretical Courses
Venue Nepean Hospital, Kingswood, Sydney Australia
Contact ASUM, PO Box 943, Crows Nest NSW 1585, Sydney Australia
Contact Ph +61 2 9438 2078
Fax +61 2 9438 3686
Email education@asum.com.au

25th–26th October 2008
ASUM Early Pregnancy & Gynaecological Scanning Foundation Theoretical Courses
Venue Epworth Hospital, Richmond, Victoria Australia
Contact ASUM, PO Box 943, Crows Nest NSW 1585, Sydney Australia
Contact Ph +61 2 9438 2078
Fax +61 2 9438 3686
Email education@asum.com.au

28th–29th November 2008
ASUM CCPU Advanced Neonatal Workshop
Venue ASUM Head Office, Level 2, 511 Pacific Hwy, Crows Nest NSW 2065
Royal North Shore Hospital, Pacific Hwy, St Leonards NSW 2065
Contact Ph +61 2 9438 2078
Fax +61 2 9438 3686
Email ccpu@asum.com.au

29th November 2008 ASUM WA Branch Translabial Ultrasound Workshop
Venue Health Department, Royal Street, East Perth, WA
Contact ASUM C/-ASUM PO Box 943, Crows Nest NSW 1585 Australia
Ph +61 2 9438 2078
Fax +61 2 9438 3686
Email asum@asum.com.au
Website www.asum.com.au

2009

11th–12th April 2009
ASUM New Zealand Branch Annual Meeting
Venue Palmerston North, New Zealand
Contact ASUM PO Box 943 Crows Nest NSW 1585 Sydney Australia
ASUM Head Office: PO Box 943, Crows Nest NSW 1585, Sydney Australia
Email info@wfumb2009.com
www.asum.com.au and www.wfumb2009.com

30th August–3rd September 2009
ASUM hosts WFUMB 2009 World Congress in Sydney Australia
Venue Sydney Convention and Exhibition Centre
Contact Dr Caroline Hong ASUM CEO
ASUM Head Office: PO Box 943, Crows Nest NSW 1585, Sydney Australia
www.asum.com.au and www.wfumb2009.com

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ASUM invites suppliers of medical equipment, services and consumables to join the Society. Call Dr Caroline Hong tel +61 2 9438 2078 for intormation

Guidelines for authors

Authors are invited to submit papers for publication in the categories described below. Final responsibility for accepting material lies with the Editor, and the right is reserved to introduce changes necessary to ensure conformity with the editorial standards of the *Ultrasound Bulletin.*

Original research

Manuscripts will be subject to expert referee prior to acceptance for publication. Manuscripts will be accepted on the understanding that they are contributed solely to the *Ultrasound Bulletin.*

Quiz cases

A case study presented as a quiz, involving no more than three or four images and a paragraph briefly summarising the clinical history as it was known at the time. It will pose two or three questions, and a short explanation.

Case reports

Case reports are more substantial presentations resembling short scientific papers which illustrate new information, or a new or important aspect of established knowledge.

Review articles

Review articles are original papers, or articles reviewing significant areas in ultrasound and will normally be illustrated with relevant images and line drawings. Unless specifically commissioned by the Editor, articles will be subject to expert referee prior to acceptance for publication.

Forum articles

Members are invited to contribute short articles expressing their observations, opinions and ideas. Forum articles should not normally exceed 1000 words. They will not be refereed but will be subject to editorial approval.

Calendar items

Organisers of meetings and educational events relevant to medical ultrasound are invited to submit details for publication. Each listing must contain: activity title, dates, venue, organising body and contact details including name, address, telephone and facsimile numbers (where available) and email address (where available). Notices will not usually be accepted for courses run by commercial organisations.

Corporate news

Corporate members are invited to publish news about the company, including structural changes, staff movements and product developments. Each corporate member may submit one article of about 200 words annually. Logos, illustrations and tables cannot be published in this section.

Format

Manuscripts should be submitted in triplicate in print and on PC formatted diskette as MS Word documents.
Images must be supplied separately and not embedded. PowerPoint presentations are not accepted.

- Font size: maximum 12 pt, minimum 10 pt
- Double spacing for all pages
- Each manuscript should have the following:

Title page, abstract, text, references, tables, legends for illustrations.

- Title page should include the:

Title of manuscript, the full names of the authors listed in order of their contribution to the work, the department or practice from which the work originated, and their position.

Corresponding author's name, contact address, contact telephone number and facsimile number (where available) for correspondence.

- Abbreviations may be used after being first written in full with abbreviation in parentheses.
- References should be cited using the Vancouver style, numbered according to the sequence of citation in the text, and listed in numerical order in the bibliography. Examples of Vancouver style:

1 In-text citation Superscript. If at the end of a sentence the number(s) should be placed before the full stop or comma.

2 Journal article Britten J, Golding RH, Cooperberg PL. Sludge balls to gall stones. *J Ultrasound Med* 1984; 3: 81–84.

3 Book: Strunk W Jr, White EB. The elements of style (3rd ed.). New York: Macmillan, 1979.

4. Book section Kriegshauser JS, Carroll BA. The urinary tract. In: Rumack CM, Wilson SR, Charboneau JW, eds. *Diagnostic Ultrasound*. St Louis, 1991: 209–260.

Abstract

Manuscripts for feature articles and original research must include an abstract not exceeding 200 words, which describes the scope, major findings and principal conclusions. The abstract should be meaningful without reference to the main text.

Images

Images may be submitted as hard copy (in triplicate) or in digital format. Images sent must have all personal and hospital or practice identifiers removed. Do not embed images in text. Separate images are required for publication purposes.

A figure legend must be provided for each image. Hard copy images should be presented as glossy print or original film. Any labelling should be entered on the front of the glossy print using removable labels. Send one copy of illustrations without labelling as this can be added electronically prior to publication. On the back of the print include the author's name, figure number and a directional arrow indicating the top of the print.

Digitised graphics should be supplied as JPG or TIFF files on PC formatted 3.5" diskette or CD, which must be clearly labelled with the author's name and the names of the image files.

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