

CURRICULUM VITAE

KEITH ROBERT DUNCAN

MD MRCOG

Summary of Curriculum Vitae

Current Appointment

- Consultant in Obstetrics, Fetal Medicine Chelsea and Westminster Hospital

General

- Born: Lytham St Annes Lancashire 11/10/64

Qualifications

- MBChB 1989 University of Leeds
- MRCOG 1993 RCOG London
- CCST 2000, Specialist Training Authority
- Doctor of Medicine 2001, University of Nottingham

Fetal Medicine Experience

- Subspecialty Accreditation in Maternal and Fetal Medicine 1999, Queen Charlottes and Chelsea Hospital, London
- 36 months as Lead Consultant in Teaching hospital delivering >4000 infants per year
- Over 500 CVS and 800 amniocenteses performed, with an associated fetal loss <0.5% excluding TOPs
- Practical experience of in utero therapy such as transfusion and shunt insertion

Academic achievements

- MRC funded Research Fellow leading to MD thesis on fetal and placental MRI
- 18 original research publications in: Lancet (2 papers), American Journal of Physiology, BMJ, American Journal of Obstetrics and Gynaecology, BJOG, Placenta, British Journal of Radiology and Journal of SGI
- 54 abstracts and invited presentations at home and abroad
- William Blair Bell Memorial Lectureship 1999

Teaching Experience

- Undergraduate Obstetrics and Gynaecology teaching and examination organiser when Lecturer at University Nottingham.
- Extensive experience of Junior Staff development.
- Registered Trainer for the RCOG/RCR Ultrasound Diploma.

Audit

- Outcome of monochorionic twin pregnancy- Development of a specific clinic for MC twins
- Outcome of matched controls for invasive procedures- Accurate information for local patients obtained

Committee Membership

- RCOG Council London Members elected representative 2004-present
- BAPM executive Committee Member 2003-present

PERSONAL DETAILS

NAME Keith Robert DUNCAN

DATE OF BIRTH 11th October 1964

NATIONALITY British

PLACE OF BIRTH Lytham St Annes
Lancashire

MARITAL STATUS Married

GMC REGISTRATION Full: Number: 3353835

MPS MEMBERSHIP 172329

MRCOG REG NO. 106350

INTERESTS

I like to keep fit by playing tennis, swimming and going to the gym. I recently completed the Bristol Half Marathon and hope to compete in the London Triathlon next year. I support my hometown football team Blackpool FC when I can, and enjoy visits to the Theatre.

GENERAL EDUCATION Edge End High School, Nelson, Lancashire
8 'O' Levels
Nelson and Colne College of Further Education
3 'A' Levels Maths (A), Chemistry (A) & Physics (B)
1 'S' Level - Chemistry (1)

MEDICAL EDUCATION Leeds University School of Medicine
Nottingham University School of Human Development

QUALIFICATIONS MB ChB Leeds University 1989
MRCOG March 1994
Subspecialist accreditation in Maternal and Fetal
Medicine August 1999
CCST August 2000
MD Nottingham University 2001

SOCIETY British Maternal and Fetal Medicine Society

MEMBERSHIP British Association of Perinatal Medicine
International Fetal Medicine and Surgery Society

COMMITTEE BAPM Executive Council representative 2003- to date

MEMBERSHIP RCOG Council London Members elected representative
2004-to date.

CURRENT Consultant in Obstetrics and Fetal Medicine

APPOINTMENT Chelsea and Westminster Hospital, Fulham Rd.
LONDON SW10 9NH

PREVIOUS APPOINTMENTS

<i>April 2001-Mar2003</i>	Consultant Obstetrics/ Fetal Medicine/Gynaecology Southmead Hospital, Bristol
<i>August 1999-</i>	Lecturer in Obstetrics and Gynaecology
<i>March 2001-</i>	University of Nottingham. (Ian Johnson/Phil Baker)
<i>August 1997-</i>	Subspecialty trainee in Fetal and Maternal Medicine
<i>July 1999</i>	Queen Charlotte's Hospital, London. (Nick Fisk/Pam Johnson)
<i>August 1995-</i>	Research Fellow/Registrar
<i>July 1997</i>	University Dept. Obs/Gynae City Hospital Nottingham. (Ian Johnson/Phil Baker)
<i>November 1992 -</i>	Merseyside Region Registrar Rotation.
<i>July 1995</i>	Year 1: Whiston Hospital, Prescot, Merseyside. Year 2: Warrington District General Hospital, Cheshire. Year 3: Liverpool Women's Hospital, Liverpool.
<i>February 1992 -</i>	Senior House Officer, General Surgery
<i>August 1992-</i>	St James' University Hospital, Leeds.
<i>August 1991</i>	Senior House Officer, Medical Oncology
<i>February 1992</i>	St James' University Hospital, Leeds.
<i>August 1990-</i>	Senior House Officer, Obstetrics and Gynaecology
<i>August 1991</i>	St Mary's Hospital, Manchester.
<i>February 1990 -</i>	Senior House Officer, Obstetrics and Gynaecology
<i>August 1990</i>	University Hospital of South Manchester, Manchester.
<i>August 1989 -</i>	House Officer Appointments
<i>February 1990</i>	Wharfedale Hospital / Manchester Royal Infirmary

EXPERIENCE

Fetal Medicine and Obstetrics

I have a wide training and experience in Fetal Medicine. I achieved Subspecialty Accreditation in Maternal and Fetal Medicine in 1999 after two years training at Queen Charlotte's and Chelsea Hospital. During this time I was trained in fetal medicine ultrasound, the use of Doppler, amniocentesis, chorionic villus sampling, and the use of in utero therapy such as transfusion and shunt insertion. The Department also had a specific interest in complications of twin pregnancy. As a Lecturer I continued to develop my practical skills with my own dedicated Fetal Medicine session and was able to obtain specific experience of trans-cervical CVS.

As a Consultant, I provide the lead in Fetal Medicine, receiving scan referrals, performing cardiac scans for high risk pregnancies, counselling regarding high risk screening results and performing the majority of invasive procedures in the Unit. I have continued my interest in multiple pregnancy by having a dedicated clinic. I am also registered with the RCOG as a trainer for the Diploma in Ultrasound.

I maintain a database of scans and invasive procedures performed, and I have now performed over 500 CVS and 800 amniocenteses procedures, with an associated fetal loss rate of <0.5% excluding TOPs.

I continue my interest in Labour Ward management by having two dedicated sessions where I can continue my interest in the management of high-risk pregnancy and teaching of Junior Staff.

RESEARCH

Doctoral Thesis

My work for my MD was funded by the Medical Research Council under the supervision of Professors Ian Johnson and Philip Baker in one of the leading Obstetric and Gynaecology research units in the UK. We were in the unique position of having a dedicated echo-planar magnetic resonance imager that has been used extensively in fetal research for the past 8 years. My thesis is entitled '*The investigation of fetal development using echo-planar magnetic resonance imaging: boundless possibilities or possible boundaries?*' The chapters range from normal fetal organ growth on a longitudinal basis, fetal lung maturity, changes in fetal liver physiology, amniotic fluid assessment, placental maturation and placental perfusion along with demonstration of safety aspects and acceptance of the technique. I was awarded the William Blair Bell Memorial Lectureship to present the work from my thesis.

While working for Professor Johnson and Professor Baker I had excellent supervision allowing me to develop the skills and meticulous approach necessary for medical research. I am skilled in using computers to handle data, graphics, word processing, statistical analysis and image processing in MRI and ultrasound. I have presented my work at both basic science and medical, national and international meetings. This has honed my skills as a confident public speaker.

Post Doctoral Studies

I continued to develop my Research interest whilst working with Professor Fisk at Queen Charlotte's Hospital where I produced two further publications in relation to Doppler investigation of the fetus and the outcome of fetal blood sampling.

During my time as Lecturer I pursued an interest in vascular biology in particular in relation to cortisol metabolism, and completed the outstanding publications from my MD thesis.

As a Consultant I have published and submitted a number of reviews and completed two chapters for a Membership revision textbook. I am submitting two further papers from further data obtained from my thesis work.

PRIZES AND AWARDS

Pfizer travel award 1996. Twelve awarded to a national competitive field.

City Hospital Research Fund travel award 1996.

William Blair Bell Memorial Lecture 1999.

AUDIT AND TEACHING

I am an enthusiastic teacher and throughout my medical career have enjoyed teaching both staff and medical students. I have continued my interest in medical education by regularly teaching in a postgraduate capacity. I have presented lectures on the Nottingham and Imperial College part I and II MRCOG and DRCOG courses on a number of occasions. The topics included multiple pregnancy, home birth, complications of early pregnancy, fetal acid base balance, screening for Down syndrome, water birth, prescribing in pregnancy, and assessment of the at risk fetus, on a number of occasions. I have set up a CTG discussion group in each of my Registrar posts to improve labour ward management and overall education.

As a Lecturer I was responsible for organising the formal teaching of the Undergraduates at Nottingham City Hospital, and organise their examinations three times per year.

Throughout my career I have attended and presented at audit meetings. During my Consultant appointment I audited the outcome for twin pregnancies, which resulted in the establishment of a dedicated twins clinic. I continue to audit my invasive procedures, and I am hoping to publish an audit of pregnancy outcome for women who had a high risk serum screening result, to establish an accurate figure for the associated fetal loss rate for the local population.

INVITED LECTURES

1. RCOG course Antepartum fetal surveillance: MRI assessment of placental function Jan 1997
2. RCOG part 1 Course Chairman 1997-2000
3. Advanced Course in Fetal medicine: Fetal MRI June 1998
4. RCOG Specialist Registrars' Conference Debate 'Home deliveries are for pizzas and not for pregnancy' September 1998
5. Perinatal management of fetal abnormalities: University College London: The role of MRI and other imaging techniques in prenatal diagnosis of CNS abnormalities.
6. Trent Junior Obstetric and Gynaecology Society (JOGS). Nottingham November 1999: Debate 'Kielland's forceps should be condemned to the labour ward rubbish bin'.
7. RCOG Senior Staff Conference London November 1999: William Blair Bell Memorial Lecture: Fetal MRI: Boundless Possibilities or possible boundaries?
8. McGill University, Montreal, Royal Victoria Hospital March 2000: Fetal MRI Grand Round.
9. 14th Congress of the International Perinatal Doppler Society, Stellenbosch, South Africa, April 2001: Measurement of flow and perfusion in the fetus, placenta and uterus. Fetal MRI: The future?

I have also been invited on a regular basis to Lecture on the Nottingham parts I and II MRCOG courses. I was invited to Lecture on many courses at Imperial College whilst I was a subspecialty trainee, and have been invited to lecture on various study days on fetal imaging and screening strategies around the country at London, Birmingham, Bristol, Nottingham and Liverpool.

PUBLICATIONS

Original scientific research in peer review journals

1. **KR Duncan**, PN Baker, PA Gowland, B Issa, R Moore, B Worthington, IR Johnson. The demonstration of changes in fetal liver erythropoiesis using echo-planar magnetic resonance imaging. **American Journal of Physiology** 1997; 273:G965-967.
2. C Myers, **KR Duncan**, PA Gowland, IR Johnson, PN Baker. Failure to detect intrauterine growth restriction following in utero exposure to MRI. **British Journal of Radiology**. 1998; 71:549-551.
3. **KR Duncan**, P Gowland, S Francis, R Moore, PN Baker and IR Johnson. The investigation of placental relaxation and estimation of placental perfusion using echo-planar magnetic resonance imaging. **Placenta** 1998; 19:539-43.
4. ST Francis, **KR Duncan**, RJ Moore, PN Baker, IR Johnson, PA Gowland. Non-invasive mapping of placental perfusion. **Lancet** 1998; 351:1397-99.
5. PA Gowland, A Freeman, B Issa, **KR Duncan**, RJ Moore, PN Baker, RW Bowtell, IR Johnson and BS Worthington. *In vivo* relaxation time measurements in the human placenta using echo-planar imaging at 0.5T. **Magnetic Resonance Imaging**. 1998; 16:241-247.
6. PA Gowland, ST Francis, **KR Duncan**, AJ Freeman, B Issa, RJ Moore, RW Bowtell, PN Baker, IR Johnson BS Worthington. *In vivo* perfusion measurements in the human placenta using echo-planar imaging at 0.5T. **Magnetic Resonance in Medicine** 1998;40: 467-73.
7. **KR Duncan**, PA Gowland, A Freeman, B.Issa, R.Moore, PN Baker, IR Johnson. The changes in magnetic resonance properties of the fetal lungs: a first result and a potential tool for the non-invasive in utero demonstration of fetal lung

- maturation. **British Journal of Obstetrics and Gynaecology** 1999; 106:122-125.
8. **KR Duncan**, PA Gowland, R Moore, PN Baker, IR Johnson. Assessment of fetal lung growth in utero using echo-planar magnetic resonance imaging. **Radiology** 1999;210:197-200.
 9. TG Overton, ML Denbow, **KR Duncan**, NM Fisk. First trimester cord entanglement in monoamniotic twins. **Ultrasound in Obstetrics and Gynaecology** 1999;13:140-42.
 10. ML Denbow, **Duncan KR**, TG Overton, P Cox, NM Fisk. High failure rate of umbilical vessel occlusion by ultrasound guided injection of absolute alcohol or enbrucrilate gel. **Prenatal Diagnosis** 1999;19:527-32.
 11. J Hykin, R Moore, **KR Duncan**, S Clare, P Baker, I Johnson, R Bowtell, P Mansfield, P Gowland. Fetal brain activity demonstrated by functional magnetic resonance imaging. **Lancet** 1999;354:645-6.
 12. JMA Texeira, **KR Duncan**, E Letsky, NM Fisk. The prediction of Middle cerebral artery peak systolic velocity does not predict fetal anaemia in Rh alloimmunization. **Ultrasound in Obstetrics and Gynaecology** 2000;15:205-208.
 13. M Taylor, ML Denbow, **KR Duncan**, TG Overton, NM Fisk. Antenatal factors at diagnosis that predict outcome in twin-twin transfusion syndrome **American Journal of Obstetrics and Gynaecology** 2000;183:1023-8.
 14. H Clements, **KR Duncan**, K Fielding, P Gowland, I Johnson, P Baker. Infants exposed to MRI in utero have a normal paediatric assessment at nine months of age. **British Journal of Radiology** 2000;73, 190-194.

15. P Johnson, **KR Duncan**, S Blunt, G Bell, Z Ali, P Cox, GE Moore. Confined placental mosaicism of trisomy 16 and multiple fetal anomalies. **Prenatal Diagnosis** 2000; 20:417-421.
16. Moore RJ, Strachan BK, Tyler DJ, **Duncan KR**, Baker PN, Worthington BS, Johnson IR, Gowland PA. In utero perfusing fraction maps in normal and growth restricted pregnancy measured using IVIM echo-planar MRI. **Placenta** 2000;21:726-32.
17. **KR Duncan**, DA Sahota, PA Gowland, R Moore, AMZ Chang, PN Baker, IR Johnson. Multi-level modelling of fetal and placental growth using echo-planar magnetic resonance imaging. **Journal of the Society of Gynaecological Investigation** 2001;8:285-90.
18. TG Overton, **KR Duncan**, M Jolly, E Letsky, NM Fisk. Serial aggressive platelet transfusion for fetal alloimmune thrombocytopenia: platelet dynamics and perinatal outcome. **American Journal of Obstetrics and Gynaecology** 2002;186:826-31.

Research Letters in peer review journals

1. **KR Duncan**, PN Baker, IR Johnson, PA Gowland. Treat patients with kindness during magnetic resonance imaging. **British Medical Journal** 1996;312:1421.
2. **Duncan KR**, Baker PN, Johnson IR. Estimation of fetal lung volume using enhanced 3-dimensional ultrasound: a new method and first result **British Journal of Obstetrics and Gynaecology** 1997;104:971-2.
3. **Duncan KR**, Baker PN, Johnson IR. Complementary role of echo-planar magnetic resonance imaging and 3-dimensional ultrasound in fetal lung assessment. **American Journal of Obstetrics and Gynaecology** 1997;177:244-5.

Invited peer reviewed articles

1. **KR Duncan** The development of Magnetic Resonance Imaging in Obstetrics and Gynaecology. **British Journal of Hospital Medicine** 1996; 55:178-81.
2. **KR Duncan**, PA Gowland, PN Baker, IR Johnson. Placental Magnetic Resonance Relaxation. **Contemporary Reviews in Obstetrics and Gynaecology**. 1997;9:43-48.
3. **KR Duncan**, ML Denbow, NM Fisk. The aetiology and management of twin-twin transfusion syndrome. **Prenatal Diagnosis** 1997;17:1227-1236.
4. **KR Duncan**, P Johnson. The use of ultrasound in the detection of fetal chromosomal abnormalities. **Postgraduate Doctor** 1999;15:16-20.
5. **KR Duncan**, P Johnson. Smoking in Pregnancy. **The Obstetrician and Gynaecologist** 2001.
6. **KR Duncan**. Fetal and placental volumetric and functional analysis using echo-planar imaging. **Topics in Magnetic Resonance Imaging** 2001;12:52-66.

First author abstracts

1. **KR Duncan** Hyperemesis gravidarum and thyrotoxicosis: cause or effect?
Transactions of North of England Obstetrical and Gynaecological Society:
Vol 3 1993.
2. **KR Duncan** Unexplained intra peritoneal haemorrhage associated with pregnancy. **Transactions of North of England Obstetrical and Gynaecological Society:** Vol 5 1995.
3. **KR Duncan**, PN Baker, PA Gowland, B Issa, R Moore, and IR Johnson. Echo-planar magnetic resonance imaging; a new method for demonstrating fetal hepatic physiology. **Clinical Science** 1996; 91, 4P.
4. **KR Duncan**, PN Baker, PA Gowland, B Issa, R Moore, and IR Johnson. Echo-planar magnetic resonance imaging: a new method for demonstrating the dynamics of fetal haematopoiesis. **Proceedings of British Maternal and Fetal Medicine Society** Warwick, England April 1996.
5. **KR Duncan**, PN Baker, PA Gowland, B Issa, R Moore, and IR Johnson. The demonstration of uterine artery blood flow using echo-planar magnetic resonance imaging. **Proceedings of British Maternal and Fetal Medicine Society** Warwick, England April 1996.
6. **KR Duncan**, PN Baker, PA Gowland, B Issa, R Moore, B Worthington, IR Johnson. The use of echo-planar imaging to demonstrate changes in fetal liver physiology. **Proceedings of the International Society for Magnetic Resonance in Medicine** New York, USA April 1996; vol1:158.
7. **KR Duncan**, PN Baker, PA Gowland, B Issa, R Moore, B Worthington, IR Johnson. A novel approach to estimation of flow within the uterine artery. **Hypertension in Pregnancy** 1997 ;16:305.

8. **KR Duncan**, PN Baker, PA Gowland, B Issa, R Moore, B Worthington, IR Johnson. The demonstration of placental perfusion using magnetic resonance imaging. **Hypertension in Pregnancy** 1997;16:306.
9. **KR Duncan**, PN Baker, PA Gowland, RW Bowtell, R Moore, , IR Johnson, B Worthington. Changes in fetal liver physiology demonstrated by echo-planar imaging. **British Journal of Radiology** 1997.
10. **KR Duncan**, PN Baker, PA Gowland, B Issa, R Moore, B Worthington, IR Johnson. Placental magnetic resonance relaxation: a novel tool for fetal assessment. **British Journal of Obstetrics and Gynaecology** 1997;104:635.
11. **KR Duncan**, PA Gowland, R Moore, IR Johnson. PN Baker. Investigation of normal fetal growth parameters using echo-planar magnetic resonance imaging and ultrasound. **Journal of the Society for Gynecologic Investigation** 1997;4 (1Suppl):528.
12. **KR Duncan**, PA Gowland, R Moore, IR Johnson. PN Baker. Measurement of placental magnetic resonance in pregnancy: a novel non-invasive method for the identification of fetal compromise. **Journal of the Society for Gynecologic Investigation** 1997;4 (1Suppl):477.
13. **KR Duncan**, PA Gowland, R Moore, IR Johnson. PN Baker. The changes in placental magnetic resonance with gestational age: a tool for the identification of growth restriction? **Journal of Obstetrics and Gynaecology** 1997;17:S11.
14. **KR Duncan**, PA Gowland, R Moore, IR Johnson. PN Baker. Monitoring fetal lung maturation using echo-planar magnetic resonance imaging. **Journal of Obstetrics and Gynaecology** 1997;17:S29.

15. **KR Duncan**, PA Gowland, R Moore, IR Johnson. PN Baker. Monitoring fetal growth:the old and the new. **Journal of Obstetrics and Gynaecology** 1997;17:S30.
16. **KR Duncan**, PA Gowland, B Issa, R Moore, B Worthington, PN Baker, IR Johnson. Amniotic fluid estimation in two and three dimensions. **British Journal of Obstetrics and Gynaecology** 1997;104:866.
17. **KR Duncan**, PA Gowland, R Moore, P Baker, I Johnson. The demonstration of fetal lung maturation using a novel non-invasive technique. **Acta Obstetricia et Gynecologica Scandinavica** 1997;76:S167:5:15.
18. **KR Duncan**, PA Gowland, R Moore, P Baker, I Johnson British Maternal and Non-invasive imaging of placental perfusion in normal pregnancies and in pregnancies complicated by intra-uterine growth restriction **Journal of Obstetrics and Gynaecology** 1998;18:S33.
19. **KR Duncan**, PA Gowland, R Moore, P Baker, I Johnson. Fetal lung growth assessment using echo-planar magnetic resonance imaging. **Journal of Obstetrics and Gynaecology** 1998;18:S34.
20. **KR Duncan**, PA Gowland, R Moore, PN Baker, IR Johnson. Longitudinal assessment of fetal lung growth using echo-planar magnetic resonance imaging. **Journal of the Society for Gynecologic Investigation** 1998; 5 (1Suppl):153A
21. **KR Duncan**, S Francis, P Gowland, I Johnson, P Baker. Non-invasive imaging of placental perfusion in normal and growth restricted pregnancies **British Journal of Obstetrics and Gynaecology** 1998; 105 (S17:28th British Congress of Obstetrics and Gynaecology):118.

22. **KR Duncan**, DS Sahota, AMZ Chang, PA Gowland, I Johnson, PN Baker. Normal fetal and placental growth defined using echo-planar MRI. **Journal of the Society for Gynecologic Investigation** 1999; 6(Supplement):89A.
23. **KR Duncan**, DS Sahota, AMZ Chang, PA Gowland, I Johnson, PN Baker. Asymmetrical fetal organ growth in intrauterine growth restriction: first demonstration using MRI. **Journal of the Society for Gynecologic Investigation** 1999; 6 (Supplement):184A.
24. **KR Duncan**, T Overton, NM Fisk. The effect of sampling site on fetal middle cerebral artery Doppler waveforms. **Journal of Obstetrics and Gynaecology** 1999; 19 (Supplement 1) S34.
25. **KR Duncan**, P Driver, P Stewart, A Warren, JC Brockelsby, PN Baker, MD Kilby. Cortisol is a vasoconstrictor of myometrial vessels; This effect may be controlled by the expression of type 2 11 β Hydroxysteroid dehydrogenase. *J Soc gynecol Investig* 2000; 7 (Supplement):85A
26. **KR Duncan**, R. Moore, PA Gowland, I Johnson, PN Baker. MRI fetal liver volume to predict liver IUGR. 10th International Conference on prenatal Diagnosis and Therapy, Barcelona 2000; Supplement O18:272.

28 other abstracts as collaborative author have also been presented around the world.

REFEREES

Mr Philip Savage

Consultant Obstetrician and Gynaecologist

The Chilterns

Southmead Hospital

Professor Nick Fisk

Institute of Reproductive Biology

Imperial College

Hammersmith Campus

Professor Philip Baker

Director, Maternal and Fetal Health Research Centre

St Mary's Hospital

Whitworth Park

Manchester

Professor Ian Johnson

University Department of Obstetrics and Gynaecology

Queen's Medical Centre,

NOTTINGHAM