

## Professor Arri Coomasamy

Professor of Gynaecology

Reproduction, Genes and Development

### Contact details

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### About

Professor Coomasamy leads a research group within the College of Medical and Dental Sciences, working at the forefront of gynaecological studies with a focus on miscarriage and global women's health. He maintains a keen interest in randomised controlled studies and evidence synthesis, and his numerous grant awards (of total value over £10million) include six national and international multicentre randomised trials. Additional systematic reviews and meta-analyses assess the clinical and cost effectiveness of existing and alternative healthcare interventions.

Professor Coomasamy is also a founding trustee of [Ammalife \(http://www.ammalife.org/\)](http://www.ammalife.org/), an international charity with a mission to find solutions to maternal health problems through practical research and sustainable projects in the developing world. He maintains clinical responsibilities as a consultant gynaecologist with a special interest in early pregnancy management and reproductive medicine.

### Qualifications

MBChB, MD, FRCOG

### Biography

Professor Coomasamy received his undergraduate medical training from the University of Birmingham, and completed his subspecialist training in reproductive medicine and surgery at Guy's Hospital, London. He gained his MD qualification in 2004 for work exploring the integration of diagnostic and therapeutic information, and since then has continued to move from strength to strength in the development of gynaecological research.

### Postgraduate supervision

Professor Coomasamy tremendously enjoys supporting the next generation of academic and clinical investigators. He currently guides a cohort of six doctoral researchers in the fields of gynaecology and early pregnancy management, and his most recent PhD graduates have achieved outstanding success with publications in acclaimed academic journals such as the BMJ and Lancet.

### Research

Professor Coomasamy pursues clinical and applied aspects of translational research including evidence synthesis, clinical trials, diagnostic and prognostic studies and mixed methodology research.

#### EVIDENCE SYNTHESIS

Professor Coomasamy has accumulated significant expertise in the meta-analysis of effectiveness and test accuracy data, including advanced literature searching and data synthesis skills such as meta-regression, bivariate meta-analysis, pooling of receiver operating characteristics curves and funnel plot analysis. His work with Professor Zamora (Madrid, Spain) achieved the first and most comprehensive data analysis software (Metadisc) and it was made available free of charge to researchers worldwide. The software has been cited in the Lancet, JAMA, BMJ and other journal articles more than 880 times. Professor Coomasamy is now collaborating to produce the next version of the product, with a facility for bivariate meta-analysis.

Postpartum Haemorrhage (PPH) is the leading cause of maternal mortality in the developing world and contributes to nearly a quarter of all maternal deaths globally. Professor Coomasamy is conducting a systematic review and network meta-analysis to evaluate the most effective uterotonic agents for preventing the condition. The study already promises to reap important findings for international policy development.

#### CLINICAL TRIALS

- *First trimester progesterone therapy in women with a history of unexplained recurrent miscarriages (PROMISE)*

The recently completed PROMISE trial tested whether treatment with progesterone in the first trimester of pregnancy can reduce the risk of miscarriage in women with a previous history of unexplained recurrent loss. The study took place in approximately 50 hospitals across the UK and the Netherlands.

- *Effectiveness of progesterone to prevent miscarriage in women with early pregnancy bleeding: a randomised placebo-controlled trial (PRISM)*

PRISM tests whether progesterone hormone treatment for women with bleeding in early pregnancy can reduce their risk of miscarriage. The study will be conducted at more than 30 study sites across the UK PROMISE network.

- *A multicentre placebo-controlled randomised trial of levothyroxine to reduce miscarriage risk in euthyroid women with thyroid auto-antibodies (TABLET)*

TABLET seeks to evaluate the effects of thyroxine to prevent miscarriage in women with thyroid antibodies but normal thyroid function. The trial is now operating in more than 30 centres across the UK, with several thousand screens to randomise 900 participants.

- *Effectiveness of antibiotic prophylaxis during surgical evacuation of the uterus for miscarriage management in low income countries (AIMS)*

The AIMS (Antibiotics in Miscarriage Surgery) project proposes that antibiotics given just before miscarriage surgery could reduce the chances of infection, and tests the

hypothesis through a large clinical trial in Malawi, Tanzania, Uganda and Pakistan. The study is endorsed by the WHO, FIGO and RCOG.

- *A randomised, double blind, multi-centre, placebo-controlled study to evaluate the efficacy, safety, and tolerability of NT100 in pregnant women with a history of unexplained recurrent pregnancy loss (RESPONSE)*

RESPONSE tests the efficacy, safety, and tolerability of NT100 in pregnant women with a history of unexplained recurrent pregnancy loss, at study sites throughout the UK.

- *Carbetocin RTS for preventing postpartum haemorrhage: a randomised non-inferiority controlled trial*

The Carbetocin RTS trial was commissioned by the WHO to test carbetocin RTS for preventing postpartum haemorrhage. The project brings together 12 participating centres from around the globe (Argentina, Brazil, Egypt, India, Kenya, Nigeria, Pakistan, Singapore, South Africa, Thailand and Uganda in addition to the UK).

- *Selection of sperm for assisted reproductive treatment by prior hyaluronic acid binding: increasing live birth outcomes and reducing miscarriage rates – multicentre randomised controlled, blinded trial (HABSelect)*

Professor Coomarasamy is a co-applicant to the HABSelect project, testing a new method to select sperm for injection into the egg by their ability to stick to hyaluronan, a naturally occurring substance in the female tract. This is important because studies indicate that less than a quarter of all fertilised eggs implant to the womb and develop normally.

- *A multicentre trial of outpatient hysteroscopy before IVF, after recurrent IVF failures (TROPHY)*

Professor Coomarasamy also supported the TROPHY trial of whether or not it may be useful to perform an outpatient hysteroscopy prior to the commencement of an IVF cycle, to improve the likelihood of achieving a live birth in women who have previously experienced between two and four IVF implantation failures. Located across three fertility centres in the UK, two sites in Belgium, two facilities in Italy and a clinic in the Czech Republic, the pan-European recruitment programme was recently completed with a total of 700 patients.

## DIAGNOSTIC AND PROGNOSTIC STUDIES

- *Accuracy of bladder ultrasound in the diagnosis of detrusor overactivity: a study to evaluate whether ultrasound can reduce the need for urodynamics (BUS)*

Professor Coomarasamy is a co-applicant and key methodologist in the BUS study. BUS follows the progress of almost 700 patients to evaluate the diagnostic accuracy of bladder wall thickness scanning in the identification of detrusor overactivity in women with urinary urge incontinence. Urodynamic tests are currently accepted as a gold standard in the investigation of urinary symptoms, but they are invasive and expensive. The BUS study was designed to overcome these problems with an alternative means of assessment.

- *Vitamin D and IVF Outcome*

Professor Coomarasamy is also supervising an exciting postgraduate project to investigate whether or not there may be any association between serum vitamin D levels and IVF outcome. The study is based at the Birmingham Women's Fertility Centre.

## MIXED METHODOLOGY RESEARCH

- *United Kingdom Early Pregnancy Surveillance Service (UKEPSS)*

Professor Coomarasamy is the chief investigator of the **UKEPSS (<http://www.ukepss.org/>)** programme which employs observational, cohort, case-control, qualitative and health economic studies to investigate serious conditions of early pregnancy and emergency gynaecology. The UKEPSS programme has established an extensive network of more than 80 Early Pregnancy Units across the UK.

## Other activities

Professor Coomarasamy is a board member of numerous academic committees and working groups such as the RCOG Clinical Studies Groups in Early Pregnancy and Reproductive Medicine. He also maintains an international advisory role in the field of gynaecology, contributing to the recommendations of organisations such as the WHO.

Professor Coomarasamy is a founding trustee of **Ammalife (<http://www.ammalife.org/>)**, an international charity with a mission to find solutions to maternal health problems through practical research and sustainable projects in the developing world. He is an enthusiastic communicator on the theme of research into global women's health, and frequently delivers talks and seminars on this theme to a range of groups at local and national levels.

Professor Coomarasamy held scientific editorial responsibility for the BJOG for several years until 2010, and he continues to review numerous manuscripts for this and other leading publications in the field of reproductive health. He also maintains clinical responsibilities as a consultant gynaecologist with a special interest in early pregnancy management and reproductive medicine.

## Publications

### Selected recent publications (total >125)

- Prost A, Colbourn T, Seward N, Azad K, Coomarasamy A, Copas A, et al. Women's groups practising participatory learning and action to improve maternal and newborn health in low-resource settings: a systematic review and meta-analysis. *Lancet*. 2013;381(9879):1736-46. Epub 2013/05/21.
- Wilson A, Hillman S, Rosato M, Skelton J, Costello A, Hussein J, MacArthur C, Coomarasamy A. A systematic review and thematic synthesis of qualitative studies on maternal emergency transport in low-and middle-income countries. *International Journal of Gynecology and Obstetrics*, Vol. 122, No. 3, 2013.
- Verhaegen J, Gallos ID, van Mello NM, Abdel-Aziz M, Takwoingi Y, Harb H, et al. Accuracy of single progesterone test to predict early pregnancy outcome in women with pain or bleeding: meta-analysis of cohort studies. *Brit Med J*. 2012;345:e6077. Epub 2012/10/10.
- Thangaratinam S, Rogozinska E, Jolly K, Glinkowski S, Roseboom T, Tomlinson JW, et al. Effects of interventions in pregnancy on maternal weight and obstetric outcomes: meta-analysis of randomised evidence. *Brit Med J*. 2012;344:e2088. Epub 2012/05/19.
- Wilson A, Gallos ID, Plana N, Lissauer D, Khan KS, Zamora J, et al. Effectiveness of strategies incorporating training and support of traditional birth attendants on perinatal and maternal mortality: meta-analysis. *Brit Med J*. 2011;343:d7102. Epub 2011/12/03.
- Wilson A, Lissauer D, Thangaratinam S, Khan KS, MacArthur C, Coomarasamy A. A comparison of clinical officers with medical doctors on outcomes of caesarean section in the developing world: meta-analysis of controlled studies. *Brit Med J*. 2011;342:d2600. Epub 2011/05/17.
- Sunkara SK, Rittenberg V, Raine-Fenning N, Bhattacharya S, Zamora J, Coomarasamy A. Association between the number of eggs and live birth in IVF treatment: an analysis of 400,135 treatment cycles. *Hum Reprod*. 2011;26(7):1768-74. Epub 2011/05/12.
- Coomarasamy A, Truchanowicz EG, Rai R. Does first trimester progesterone prophylaxis increase the live birth rate in women with unexplained recurrent miscarriages? *Brit Med J*. 2011;342:d1914. Epub 2011/04/20.

