National University Hospital

April – June 2021

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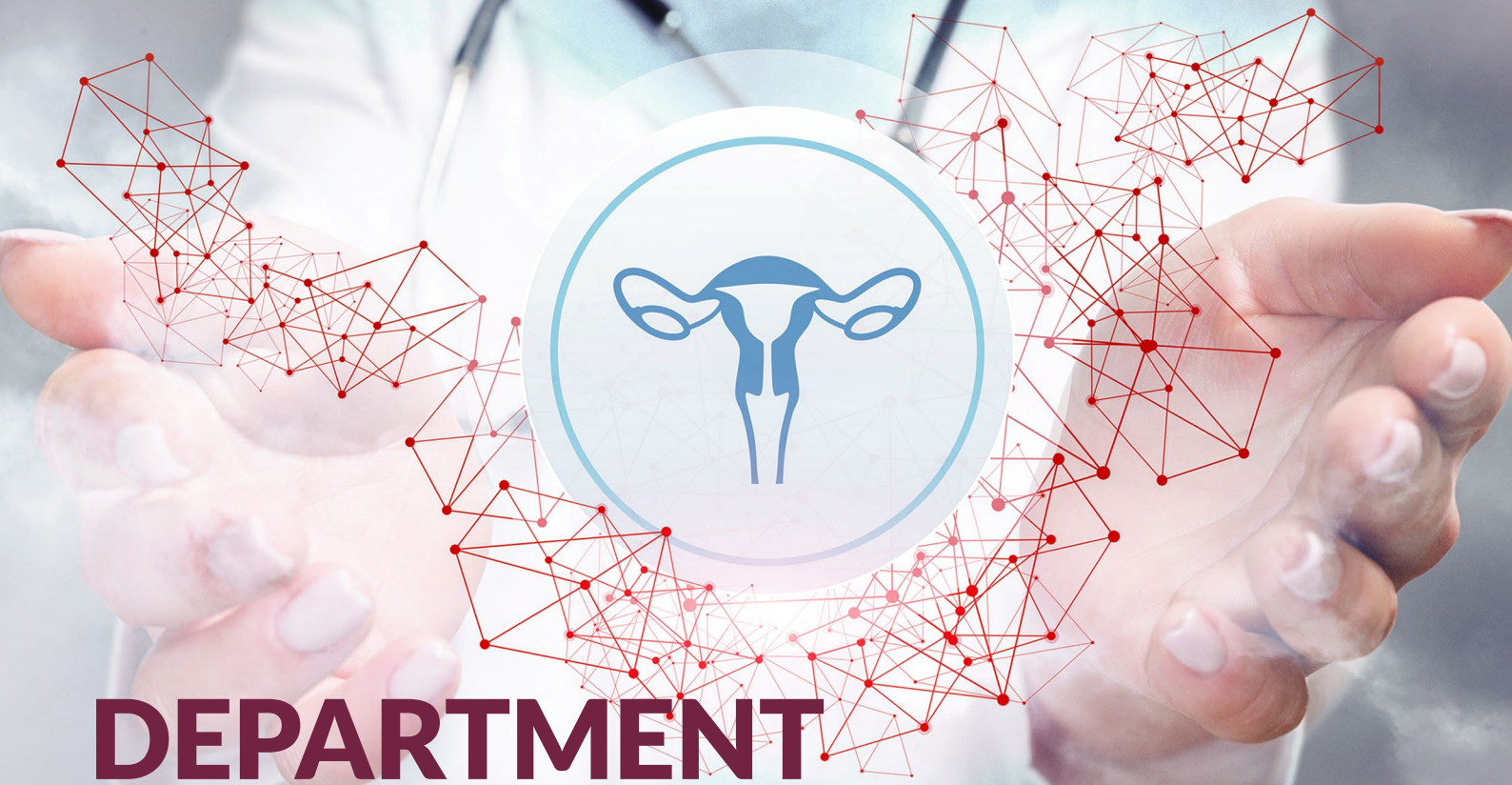
A QUARTERLY PUBLICATION OF GP LIAISON CENTRE, NATIONAL UNIVERSITY HOSPITAL



DEPARTMENT OF OBSTETRICS & GYNAECOLOGY

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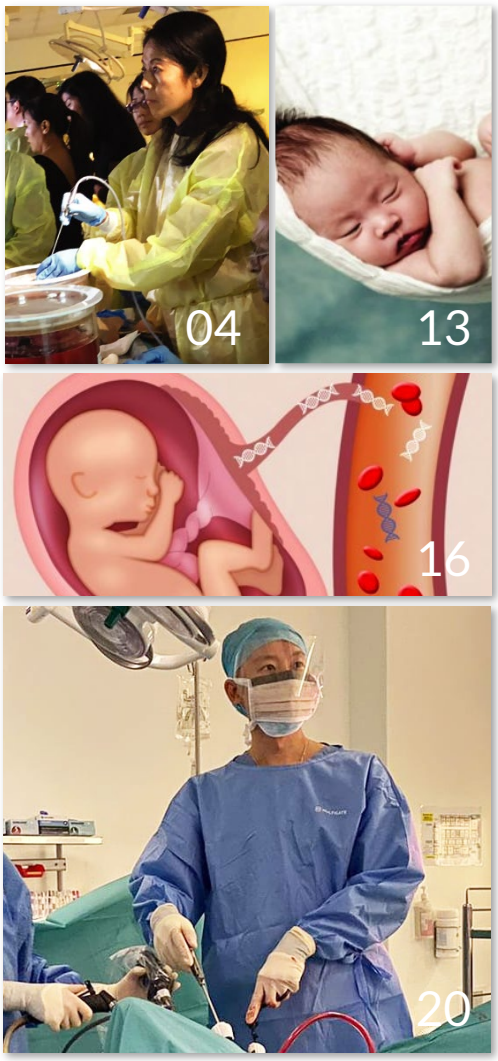

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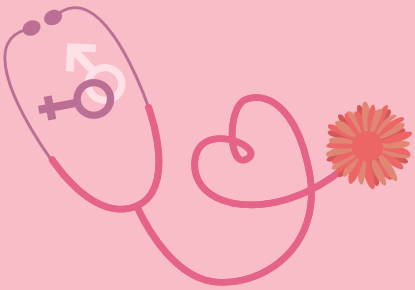

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FOREWORD FROM THE HEAD OF DEPARTMENT

Obstetrics & Gynaecology: To Serve, To Innovate, To Inspire — Modern Technologies in Women's Health

The Department of Obstetrics & Gynaecology at the National University Health System is going to be a hundred years old. For almost a century now, we have been serving our patients every day, without ever stopping. That's why even though COVID-19 might have stopped the world from rotating on its axis, it could not stop our department from making major strides in technology to better Women's Health. The juxtaposition of tradition and advancements blends beautifully in the way our department grows, matures, and nurtures the next generation.

In this issue of Medico, the team at National University Hospital's Department of Obstetrics & Gynaecology showcases novel diagnostic and therapeutic strategies: ranging from preimplantation genetic testing, non-invasive prenatal testing, first trimester screening for pre-eclampsia, and fetoscopic laser therapy, to trial of labour after a caesarean section, to HPV screening for cervical cancer, and robotic and single port minimally invasive surgery.

These modern technologies are being driven by our five Clinical Divisions – Maternal Fetal Medicine, Reproductive Endocrinology & Infertility, Benign Gynaecology, Gynaecologic Oncology, and Urogynaecology & Pelvic Reconstructive Surgery. Our integration with National University of Singapore and the Yong Loo Lin School of Medicine allows us to draw on the best talent locally, regionally, and internationally; to be able to remain at the forefront in incorporating cutting edge medical knowledge and technologies into everyday clinical practice; and to remain a centre of excellence in Obstetrics and Gynaecology.

We are here to serve the doctors that charge us with the care of their patients, to care for the patients and the families that entrust their health to us, and to ensure the wellbeing of our future generation of Singaporeans. Since 1922, our raison d'etre has always been "To Serve, To Innovate, To Inspire".

Best wishes,

Associate Professor Mahesh Choolani
Department Head & Senior Consultant

Division of Maternal Fetal Medicine
Department of Obstetrics & Gynaecology
National University Hospital

FETAL MEDICINE AND THERAPY IN THE DIVISION OF MATERNAL FETAL MEDICINE

The Fetal Medicine and Therapy unit of the Division of Maternal Fetal Medicine, a tertiary-level referral centre for high-risk pregnancies, administers and performs routine non-invasive and invasive fetal screening and diagnosis (chorionic villus sampling, amniocentesis and fetal blood sampling). We perform intrauterine blood transfusions (IUT) for fetuses diagnosed with severe anaemia at risk of hydrops, cardiac failure and intrauterine demise due to conditions like rhesus isoimmunisation, congenital parvovirus infection and congenital bone marrow failure. We perform procedures for complicated twin pregnancies, including selective feticide by umbilical cord ligation or radiofrequency ablation) in monochorionic twin pregnancies where one fetus has a congenital structural or genetic anomaly that increases the risk of damage to the healthy second twin should the first one die in utero. A team of consultants takes care of monochorionic twins who develop twin-twin transfusion syndrome (TTTS), twin reverse arterial perfusion (TRAP), twin anaemia-polycythaemia syndrome (TAPS) and selective intrauterine growth restriction. We have performed selective fetoscopic laser photocoagulation (SFLP) for TTTS since 2015, and offer other temporising therapies like amnioreduction/amnioinfusion and IUT to optimise fetal well-being until delivery.

Our unit consists of clinician-scientists actively researching the fields of non-invasive prenatal diagnostics and fetal molecular therapies. We are investigators in an open-label trial of intrauterine transplantation of mesenchymal stem cells as a treatment for fetuses diagnosed with severe forms of osteogenesis imperfecta in utero, for which perinatal severe morbidity and early childhood mortality are high, and our consultants are members of various international societies promoting research in and clinical translation of novel fetal therapies. Our consultants have also undergone advanced training in fetal medicine and genetics to prepare our unit for the rapid advancements in precision medicine that are soon to impact reproductive technologies and perinatal medicine. We have conducted fetal therapy workshops featuring world-renowned fetal therapy experts for clinicians to learn and practise new skills in invasive fetal therapies for structural anomalies, such as insertion of chest tubes and fetoscopic surgery for spina bifida. Our unit has published numerous scientific and clinical research papers in these areas. Because of this pipeline we have developed, we will be in a favourable position to initiate clinical trials in fetal gene modification therapies together with our international collaborators when this is ready for clinical translation, and to introduce other new technologies that are rapidly progressing towards clinical application to the medical community.

ISPD Fetoscopy workshop 2019

FIRST TRIMESTER SCREENING FOR PRE-ECLAMPSIA

Medicine is constantly evolving in the face of new scientific advances and obstetrics is one of the areas where significant changes have occurred in the past decade. Besides disease treatment and management, the focus of medical research is increasingly shifting towards the early detection and prevention of diseases. One such area is the early screening and prevention of pre-eclampsia.

Pre-eclampsia is a common obstetric condition encountered in everyday practice and is a major cause of maternal and perinatal morbidity and mortality. Affected women are at risk of cerebrovascular accidents, eclampsia and even death in the short term, but also in the long term, they suffer from increased risk of chronic hypertension, diabetes and cardiovascular disease in later life. Fetal risks mainly result from the morbidity associated with preterm birth. Although this multi-system disorder unique to pregnancy commonly only manifests from the second trimester onwards with the typical signs of hypertension and proteinuria, the underlying pathophysiology of impaired placentation has been found to begin from the very start of pregnancy.

In addition, evidence-based preventive measures for pre-eclampsia have been found to be most effective if started early in the second trimester of pregnancy. Multiple studies have successfully demonstrated that the administration of low-dose aspirin in high-risk individuals is effective in reducing rates of preterm pre-eclampsia. In the ASPRE (Combined Multimarker Screening and Randomised Patient Treatment with Aspirin for Evidence-Based Pre-Eclampsia Prevention) trial, this risk reduction was more than 60% in women who were identified as being at high risk of preterm pre-eclampsia from first-trimester screening.[1] This finding is supported by the latest meta-analysis, which included 16 randomised controlled trials with over 18,000 participants and showed that aspirin was effective only if given at a dose of at least 100 mg daily and started before 16 weeks' gestation.[2]

With this, it became clear that the optimal screening model for pre-eclampsia would be one that allowed for early detection, ideally from the first trimester, so that timely implementation of preventive measures would be possible. This has been the target of extensive research for the past decade. The discovery of early biophysical and biochemical markers of impaired placentation was a pivotal spark that led to the subsequent development of first-trimester pre-eclampsia screening models. Among the many proposed models, the most validated first-trimester screening test for pre-eclampsia remains the one adopted by the Fetal Medicine Foundation (FMF). This model stratifies a woman's risk as high or low by utilising a combination of maternal characteristics (e.g. medical comorbidities, racial origin, body mass index, parity) and markers of impaired placentation – measurements of mean arterial pressure, uterine artery pulsatility index on Doppler ultrasound and serum placental growth factor. The performance of this model has yielded impressive results with a number needed to treat of 250 and detection rates of 90% and 75% for early and pre-term pre-eclampsia respectively, at a false positive rate of 10%.[3] This was a major improvement from the performance of traditional screening methods recommended by professional bodies, such as the National Institute for Health and Care Excellence (NICE) in the UK and the American College of Obstetricians and Gynaecologists (ACOG), which are mainly based on maternal risk factors obtained on history-taking **(Figure 1 and 2)**. The detection rate for pre-term pre-eclampsia is only 41% with a 10% false positive rate and 5% with a 0.2% false positive rate for NICE and ACOG recommendations respectively.[4]

Figure 1: NICE recommendations for aspirin prophylaxis for pre-eclampsia

High *(start aspirin if there is one or more risk factors)*

- Hypertensive disorder during a previous pregnancy
- Chronic hypertension
- Type 1 or 2 diabetes mellitus
- Chronic kidney disease
- Autoimmune disease, such as systemic lupus erythematosus or antiphospholipid syndrome

Moderate *(start aspirin if there are two or more risk factors)*

- First pregnancy
- Age 40 years or older
- Pregnancy interval of more than 10 years
- Body mass index of 35 kg/m^2 or more at booking
- Family history of pre-eclampsia
- Multi-fetal gestation

Figure 2: ACOG recommendations for aspirin prophylaxis for pre-eclampsia

High *(start aspirin if there is one or more risk factors)*

- History of pre-eclampsia, especially if accompa nied by adverse outcome
- Chronic hypertension
- Type 1 or 2 diabetes mellitus
- Renal disease
- Autoimmune disease, such as systemic lupus erythematosus or antiphospholipid syndrome
- Multi-fetal gestation

Moderate *(consider aspirin if there are two or more risk factors)*

- First pregnancy
- Age 35 years or older
- Body mass index of 30 kg/m^2 or more at booking
- Family history of pre-eclampsia
- Sociodemographic characteristic *(African-American race, low socioeconomic status)*
- Personal history factors *(e.g. low birthweight or small for gestational age, previous adverse pregnancy outcomes, more than 10-year pregnancy interval)*

To take things closer to home, efforts are in place to validate this model and the efficacy of low-dose aspirin prophylaxis in the Asian population and the local setting. The ongoing FORECAST trial (Implementation of First-trimester Screening and Prevention of Pre-Eclampsia Trial) is a multicentre cluster randomised trial involving maternity units from 10 regions in Asia, including Singapore with NUH as the main participating centre. It is hoped that, with the findings from this trial, we continue to improve our practice to provide our obstetric patients with the most updated and advanced evidence-based care, with the shared aim of reducing morbidity and mortality and improving overall patient outcome.

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Dr Arundhati Gosavi
Consultant

Division of Maternal Fetal Medicine
Department of Obstetrics & Gynaecology
National University Hospital

Dr Eliane Hong
Resident

Department of Obstetrics & Gynaecology
National University Hospital

REVISITING THE RISKS IN TOLAC

The caesarean rate in Singapore has continued to rise steadily from 32.2% in 2005 to 37.4% in 2015.[3] The two major predictors of caesarean in singleton term pregnancies are nulliparity and previous caesarean deliveries. Repeat caesarean deliveries increase the risks of postpartum haemorrhage, postnatal infections, placenta accreta and caesarean hysterectomies. Some of the strategies adopted by countries around the world include avoiding unnecessary induction of labour, encouraging external cephalic version for breech presentation and allowing trial of labour among women with previous history of caesarean delivery. The National Institute for Health and Care Excellence (NICE), Royal College of Obstetricians and Gynaecologists (RCOG) and American College of Obstetricians and Gynaecologists (ACOG) have arrived at a consensus that planned vaginal birth after caesarean (VBAC) is a clinically safe choice for the majority of singleton women after one previous caesarean delivery.

The success rate of planned VBAC is 72% to 75%. Successful VBAC has potential health advantages for women by avoiding major abdominal surgeries that may increase rates of haemorrhage, infection, thromboembolism and prolonged post-op recovery time. Repeated caesarean deliveries put patients at increased risk for uterine rupture, placenta praevia, placenta accreta, caesarean hysterectomy, blood transfusion, bowel and bladder injuries.

A trial of labour after caesarean (TOLAC) is not without risks. In NUH, women undergoing TOLAC are counselled by a dedicated high risk team regarding maternal and neonatal risks. Maternal morbidity occurs most when the TOLAC fails and repeat caesarean delivery becomes necessary.

The most significant risk of VBAC is the risk of uterine rupture, which occurs in approximately one in 200 (0.5%) in women with history of one previous low transverse caesarean delivery. Uterine rupture associated with TOLAC increases risk for both maternal and neonatal morbidity. In these cases of uterine rupture, meta-analysis has shown that hysterectomy was required in 14% to 33%. VBAC is also associated with a very low (0.25%) increased risk of perinatal mortality or serious neonatal morbidity compared to elective caesarean delivery. Compared to nulliparous women in labour, the absolute risk of delivery-related perinatal death for VBAC patients is four per 10,000 (0.04%).

The National University Hospital Obstetrics team is highly regarded for promoting TOLAC. Our specialised team of obstetricians are trained to weigh the chances of a successful TOLAC and to counsel our pregnant mothers in making informed decisions. Our midwives and doctors are highly experienced to manage TOLAC patients in labour and follow strict protocols to ensure the safe conduct of the process.

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Associate Professor Su Lin Lin
Division Head & Senior Consultant
Division of Maternal Fetal Medicine
Department of Obstetrics & Gynaecology
National University Hospital

Dr Lim Tak Yein
Senior Resident
Department of Obstetrics & Gynaecology
National University Hospital

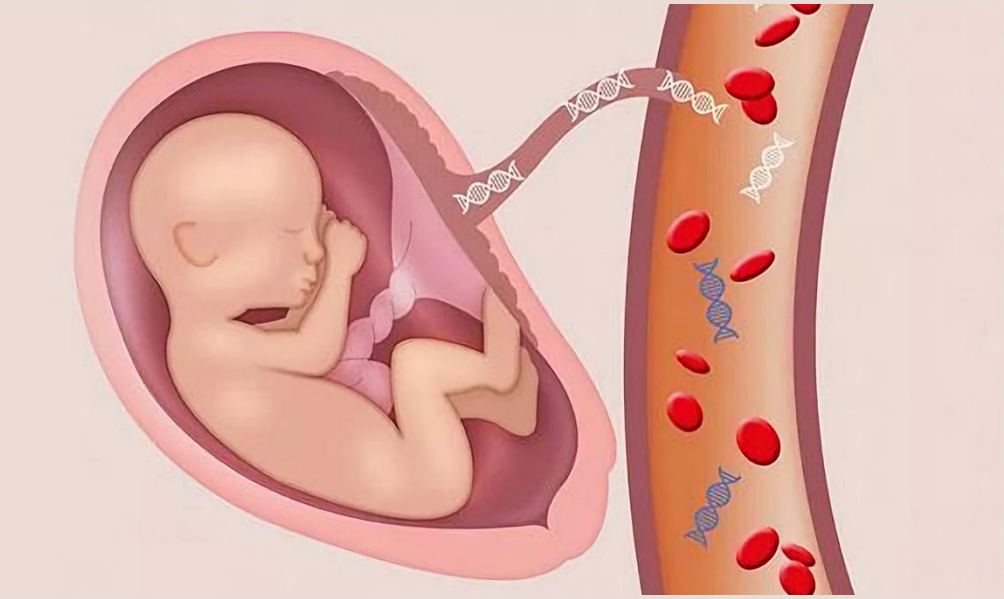
NON-INVASIVE PRENATAL GENETIC TESTING

The commonest chromosomal abnormalities are trisomies involving chromosome 21 (Down syndrome), 18 (Edwards syndrome) and 13 (Patau syndrome). Another relatively common abnormality is Monosomy X (Turner syndrome). Of these, Down syndrome is the most common, where about one in 700 to 800 babies are born with the condition.[1,2] Edwards and Patau syndromes are rare, lethal conditions, where the affected fetuses die in utero or shortly after birth. Therefore, most prenatal diagnostic efforts have been focused on Down syndrome. The risk of a pregnancy being affected by Down syndrome increases with maternal age; the risk of having a Down syndrome affected baby is one in 900 at age 30, and this increases to one in 100 at age 40.[3] This is pertinent, as the average age of pregnant women is increasing in Singapore. Despite this, regardless of age, all pregnant women are at risk; therefore, screening for chromosome abnormalities should be offered to everyone.

Traditionally, the combined First Trimester Screening (FTS), also known as the OSCAR test (One-Stop Clinic for the Assessment of Risk for fetal anomalies) is the best available screening test for chromosome abnormalities, especially for Down syndrome. It is performed between 11 to 14 weeks' gestation, and involves measurement of maternal serum PAPP-A (Pregnancy Associated Plasma Protein A) and beta-HCG, alongside with ultrasound assessment of nuchal translucency thickness and nasal bone. If the calculated risk is greater than one in 250, it is deemed 'high-risk'. Conventionally, confirmation via chorionic villus sampling (CVS) or amniocentesis will be offered following a high-risk result. However, these invasive tests are associated with a risk of pregnancy loss of 0.3 to 0.5%.[4] In addition, although this test has the ability to detect 85 to 90% cases of Down syndrome, it has a poor positive predictive value, estimated to be about 5% in the general low-risk population.[5,6] This means that 95% of women with a 'high-risk' result actually do not have an affected pregnancy but would have undergone an unnecessary invasive test based on the conventional work flow.

The discovery of cell-free DNA (cfDNA) in maternal serum is one of the biggest advances in obstetrics since the invention of ultrasound. This technology has since matured to a state of global clinical practice in the field of Non-Invasive Prenatal Testing (NIPT). CfDNA is produced by trophoblast (placenta) and represents 10% of free DNA fragments in maternal serum. It can be reliably measured in maternal serum from about 10 weeks' gestation, and is quickly cleared from maternal circulation shortly after birth, therefore being specific to that pregnancy.[7] CfDNA from maternal serum is analysed using a whole genome sequencing approach; therefore, apart from Trisomy 21,18 and 13, it can also test for sex chromosome aneuploidies (Monosomy X, Klinefelter syndrome) and some microdeletion syndromes, such as DiGeorge syndrome, Cri du Chat syndrome and Prader-Willi / Angelman syndrome. NIPT has an overall sensitivity of 99% for the detection of Down syndrome, with a low false positive rate of less than 1%. It is also well-validated for Edwards and Patau syndromes although at about 97% and 90% detection respectively. Its ability to detect sex chromosome aneuploidies is less well-validated with an overall sensitivity of 50%. NIPT can also be used in twin pregnancies with sensitivities of about 90% to 94%. Despite it being a powerful test, NIPT is not 100% accurate due to the very small but not absent possibility of false positive and inconclusive results, which can occur in up to 6% of test.[6] This may be due to factors such as confined placental mosaicism (different lineage between placenta and fetus) and maternal cancers or undiagnosed maternal aneuploidies. For these reasons, NIPT is still a "screening" test. This means that should a patient receive a 'high risk' result, it should be followed up with an amniocentesis to confirm the findings. One other limitation is its cost, which, though significantly lowered over the last five years, still costs the patient approximately $800 in a public institution and is an unsubsidised expense.

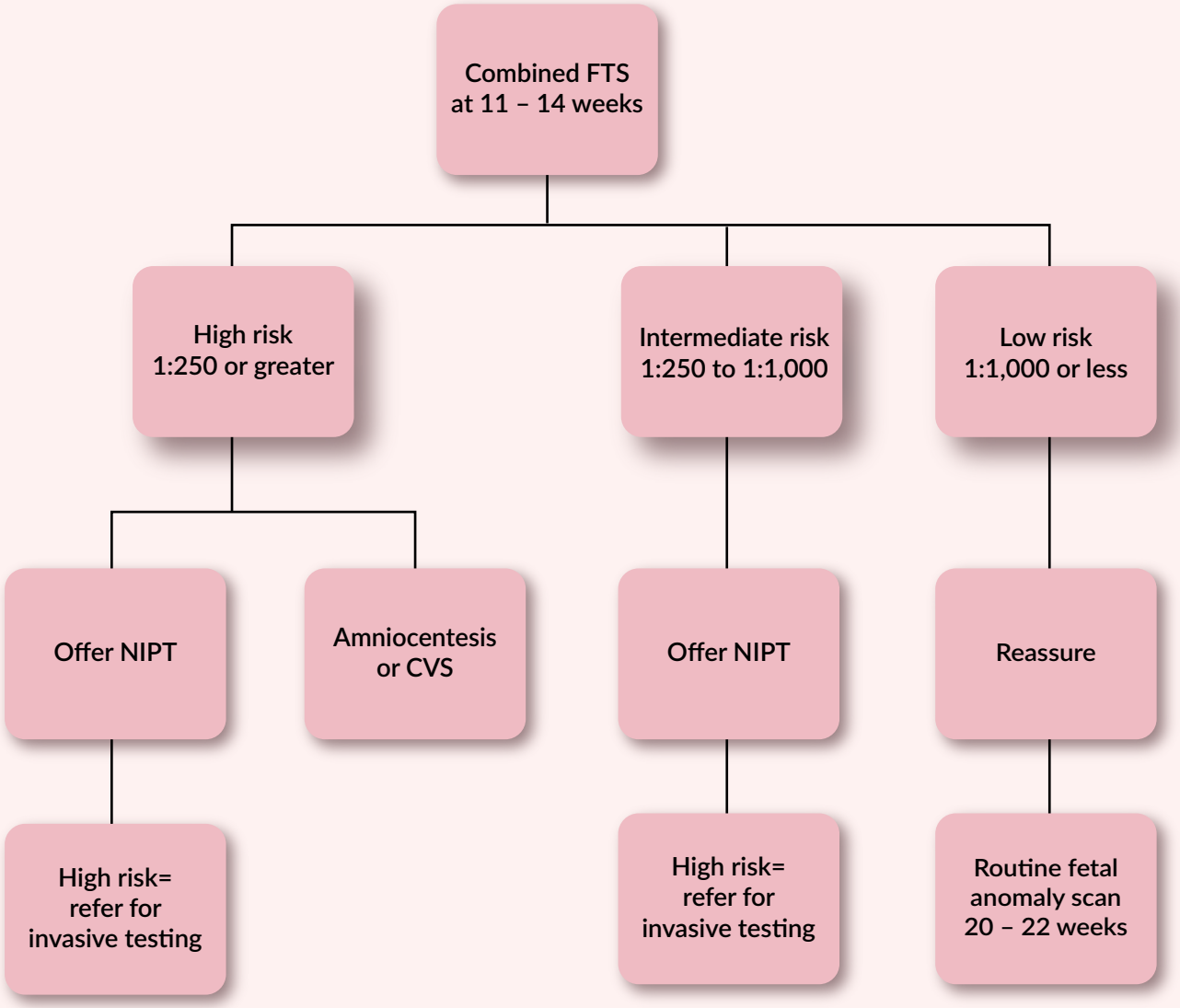
The turnaround time is about 10 to 14 working days. Despite these limitations, NIPT is becoming increasingly ingrained in routine obstetrics practice due to its very high sensitivity and low false-positive rate. As the cost of whole genome sequencing is anticipated to decrease further over the next few years, NIPT is expected to find increased utility as a first-line screening test in the general population.



At the moment, in Singapore, several institutions recommend NIPT as a second-line screening test following an 'intermediate risk result' from FTS (one in 250 to one in 1,000). The largest local study to date has revealed that there were four missed cases of Down syndrome within this intermediate risk group of 545 patients, as they were previously not offered further testing.[8] Now, these patients are offered NIPT, instead of an invasive test that exposes them to a miscarriage risk. A systematic review reported that the implementation of NIPT has reduced unnecessary amniocentesis by 94%.[9] In certain cases where a pregnant woman is deemed to be at higher risk for having a Down syndrome affected baby such as maternal age above 35 years old, NIPT may be offered as a first-line screen in view of its better performance compared to the combined FTS. Figure 1 illustrates the NUH protocol for aneuploidy screening.

In summary, NIPT for chromosomal abnormality screening has revolutionised antenatal care worldwide, and in maternity units in Singapore its use is evolving from a second-line contingency screen to, increasingly, a first-line investigation. As technology advances, it is very likely that NIPT will become a first-line screening tool in the general population for not only Down syndrome, but also for other less common genetic abnormalities. However, as part of holistic antenatal screening, we strongly advise that a formal dating ultrasound scan be performed prior to NIPT to rule out obvious structural malformations that may warrant direct invasive testing.

Figure 1: Contingent Screening with NIPT for Down Syndrome at NUH



Practical Points

- All women should undergo a formal dating ultrasound scan in the first trimester of pregnancy, preferably between 10 to12 weeks' gestation.
- All women should be offered screening for chromosome abnormalities especially Down syndrome, and be aware of the option of NIPT as a first-line screening test with its benefits and limitations.
- NIPT can be used as a contingent (second-line) screening method following a high-risk FTS result.

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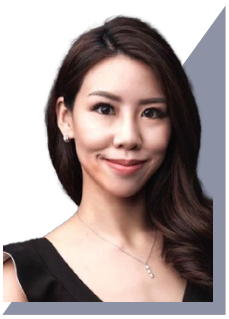
Associate Professor Mahesh Choolani
Department Head & Senior Consultant

Division of Maternal Fetal Medicine
Department of Obstetrics & Gynaecology
National University Hospital



Dr Sarah Li
Associate Consultant

Division of Maternal Fetal Medicine
Department of Obstetrics & Gynaecology
National University Hospital

DIVISION OF REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY (REI), NUH

Serving From The Heart And Fulfilling Couples' Dreams Of Being Parents

The Division of REI is dedicated to assisting our couples to create families of their own and providing reproductive healthcare for all women from adolescence to their golden years. Helmed by highly skilled REI specialists, our specialised clinical services focus on up-to-date practices in adolescent gynaecological services, sexual health and menopause care as well as handling couples with fertility problems.

Our fertility/IVF services are led by our Head of Division of REI and MOH-accredited IVF specialists, a compassionate team of nurses and a skilled embryology team. To ensure the best possible outcomes, we maintain quality standards of care for our couples, who are able to access individualised fertility treatments unique to their needs.

The Division works closely with our genetic counselling team, state-of-the-art Preimplantation Genetic Testing (PGT) Centre and RTAC-accredited IVF laboratory team. Our PGT laboratory is the sole tertiary referral centre and processes all monogenic disease (PGT-M) and structural rearrangement (PGT-SR) testing nationwide. We had performed more than 200 cycles since 2005 for couples with common genetic conditions such as alpha- and beta-thalassaemia, spinal muscular atrophy, haemophilia, and fragile X syndrome to very rare conditions such as Wilson's disease, Wolcott-Rallison Syndrome and Lowe syndrome, in order to achieve healthy pregnancies and live births. We offer one-stop services for genetic counselling, fertility/IVF consultations, and IVF and PGT laboratory services with subsequent tertiary obstetric care at NUH. Additionally, with the approval of the Ministry of Health, Singapore, we are able to offer preimplantation genetic testing to detect aneuploidy (PGT-A) for selected couples under a research protocol for couples who experience recurrent implantation failures and have a history of recurrent miscarriages, and women of advanced maternal age.

The Division continues to contribute unreservedly in the provision of health education for our patients. Our healthcare staff are deeply involved in research in the fields of sexual medicine, menopause health, reproductive ageing, fertility and embryology, continuously innovating and providing novel solutions to push the frontiers of REI and to serve couples and women.

Our REI specialists

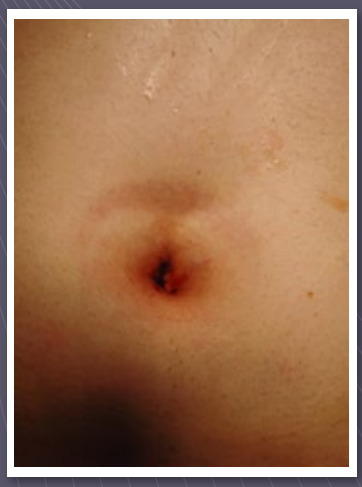
- Dr Stephen Chew, Division Head & Senior Consultant
- Prof PC Wong, Senior Consultant
- Dr Susan Logan, Senior Consultant
- Dr Huang Zhongwei, Associate Consultant
- Dr Nau'shil Kaur Randhawa, Associate Consultant

To read more about our specialists, please visit our webpage at www.nuh.com.sg/nuhgynae

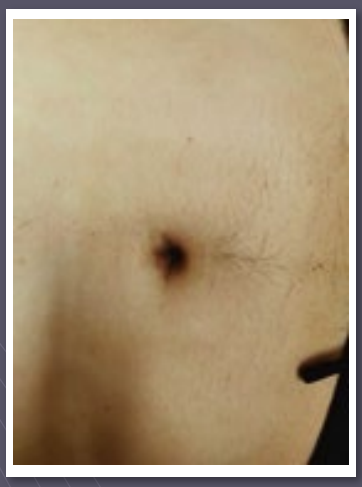
ROBOTICS AND SINGLE PORT TECHNIQUES IN GYNAECOLOGY

Robotic surgical platforms were first approved for gynaecological surgery by the Food and Drug Administration in 2005. This has facilitated the shifting of cases that were done traditionally via the open approach to minimally invasive surgery (MIS). The rapid adoption of robotic surgery in gynaecology is multifactorial, but the main driver is the introduction of technology that bridges the skills gap between open surgery and traditional laparoscopy. It is well-established that MIS is advantageous over open surgery in terms of reduced complications such as surgical site infection, less pain and blood loss, and associated with more rapid recovery. The performance characteristics of the robotic platform allows for a smoother transition from open surgical expertise to MIS. In gynaecological cancer surgery, the introduction of robotic surgery has resulted in the single largest move from open surgery to MIS since the introduction of laparoscopy in the 1990s.

The benefits of robotic surgery in gynaecology include more accuracy, flexibility and dexterity during complex surgical procedures, compared to conventional laparoscopy. It also provides high-definition, magnified 3-dimensional view of the operating field, which is advantageous over open surgery. The Department of Obstetrics and Gynaecology at NUH, through its Gynaecologic Robotic Assisted Cancer and Endoscopic Surgery programme (GRACES@NUH), has successfully established same-day discharge workflow for patients undergoing robotic hysterectomy for endometrial cancers, reducing patients' hospital stay and cost, without compromise on safety, and reports no post-operative readmissions or complications in a pilot study. From its first introduction in 2008, the robot is now a mainstay in the NUH Gynaecology Operating Theatre, complementing our surgeons to perform more complex cancer and gynaecological surgeries with greater precision.



SILS – Immediately post-operation



SILS – Three months post-operation

Single incision laparoscopic surgery (SILS) is another field that is growing in stature internationally. This involves performing a surgery via a 1.5 cm to 2 cm umbilical incision. This is another service offered by the NUH Gynaecology team. In contrast to conventional laparoscopy, which involves placing multiple ports in the abdominal cavity, SILS provides a more aesthetic approach. The learning curve is steep due to the lack of conventional triangulation. Our NUH SILS surgeons have to adapt and accustom themselves to different techniques and use of special equipment, such as flexible instruments, articulating tips or handles, and laparoscopes of varying lengths.

Newer robotic platforms had been designed to mitigate the difficulties. Our GRACES team is excited to acquire our second and latest state-of-the-art robotic system. We are also collaborating with engineers to develop a robotic assisted device to flatten the learning curve for SILS techniques.

Dr Joseph Ng and Dr Jeslyn Wong with the robotic system to meet our patients' healthcare needs.

Dr Joseph Ng
Senior Consultant

Division of Gynaecologic Oncology
Department of Obstetrics & Gynaecology
National University Hospital

Dr Jeslyn Wong
Associate Consultant

Division of Gynaecologic Oncology
Department of Obstetrics & Gynaecology
National University Hospital

CERVICAL SELF-SAMPLING

Pushing cervical cancer screening to the next frontier

Gynae-Oncology team and participants at the GP HPV Masterclass 2017

Cervical cancer is known to be the most preventable malignancy through both vaccination and screening. However, it remains the tenth most common cancer among Singaporean women. This is largely due to the poor compliance of women to cervical cancer screening intervals. Under-screened women are at the highest risk of cervical cancer, a life-threatening and debilitating disease if diagnosed at an advanced stage. Major reasons for poor compliance have been studied and largely include fear, feeling uncomfortable during the procedure and a busy schedule.[1] Hence, HPV self-sampling has been mooted to potentially circumvent the various reasons for poor compliance, especially if patients can avoid clinic visits by mailing their self-sampling swab back to the clinic.

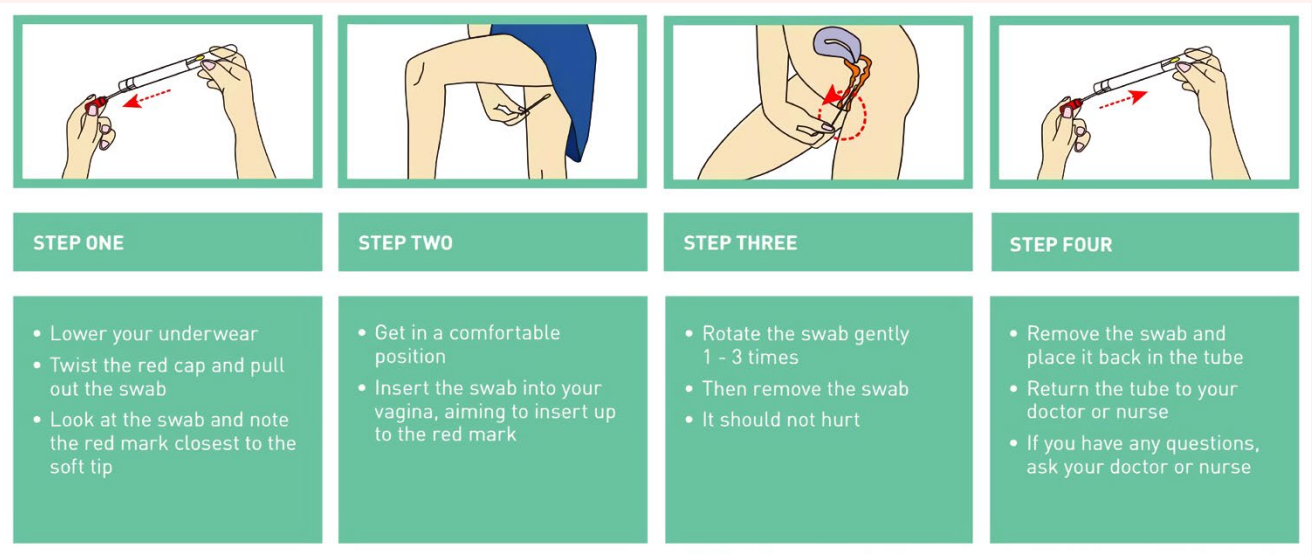
From international studies, self-sampling has shown that it has comparable sensitivity to physician-sampling.[2-4] A survey of the literature also showed high concordance in HPV DNA detection rates between the two methods.[5-8] With regard to the diagnosis of high-grade cervical intraepithelial neoplasia (CIN), both methods were also similar in terms of sensitivity, specificity, predictive values and detection rates.[9-11] A meta-analysis of 56 studies evaluating the diagnostic accuracy of self-sampling in under-screened women showed that HPV assays based on polymerase chain reaction (PCR) were equally sensitive on self-collected samples compared to physician-collected samples.[12]

Self-sampling as a form of screening is also well-received among patients who find it more convenient and less uncomfortable compared to physician-sampling.[1] Studies from both developed and undeveloped countries showed that women generally reported significantly lower levels of shame, nervousness, discomfort and pain during self-sampling compared to physician-sampling.[13-16] Importantly, data from other Asian countries such as Korea and Japan also reflected the same sentiments.[17, 18]

There is now an ongoing prospective study conducted by the NUHS Gynae-Oncology pre-invasive team to determine the acceptability and sensitivity of self-sampling among Singaporean women, the first-ever of such a study in our local setting. This local data will be important in the integration of the self-sampling method into our national screening programme.

Increasing screening uptake is one of the three-pronged approaches identified by the World Health Organization to achieve our ultimate goal of eradicating cervical cancer.[19] It is our hope to eventually incorporate self-sampling tests in our screening programme. When the time comes, our Family Medicine physicians will play an extremely crucial role to partner our pre-invasive team in facilitating the roll-out of this initiative to the public.

How To Take Your Own HPV Test



This image is adapted from Garrow SC et al. The diagnosis of chlamydia, gonorrhoea, and trichomonas infections by self-obtained low vaginal swabs in remote northern Australian clinical practice. Sex Transm infect. 2002 Aug. 78 (4) 278-81.

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Associate Professor Jeffrey Low
Division Head & Senior Consultant

Division of Gynaecologic Oncology
Department of Obstetrics & Gynaecology
National University Hospital

Dr Lim Li Min
Associate Consultant

Division of Gynaecologic Oncology
Department of Obstetrics & Gynaecology
National University Hospital

AFTER THE MESH, WHAT ARE WE LEFT WITH

Pelvic floor dysfunction is a major health issue for older women and affects up to 24% of adult women. Pelvic organ prolapse is a condition defined as the downward descend of the pelvic organs causing the vagina to protrude. Surgical success in the reconstruction was notoriously poor. Failure rate using native tissue techniques in anterior colporrhaphy was unacceptably high and ranges from 40% to 65%. Reoperation rate was as high as 29.2%.

The vaginal mesh, which rode on the success of the tension-free transvaginal tape that was used to treat incontinence, was fashioned to treat an entirely different pathology of prolapse. However, early exuberance was quickly cooled by the complications that came after: dyspareunia and mesh erosion. This was initiated by the updated U.S Food and Drug Administration safety communication in 2008 and 2011 on the efficacy and the complications that the vaginal mesh kits produce. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG), Royal College of Obstetricians and Gynaecologists (RCOG UK), Scottish government and the Ministry of Health Ireland had come up with advisories that the use of vaginal mesh is not recommended for the first-line treatment of any form of vaginal prolapse. In patients with severe prolapse, what options do we have?

Transvaginal surgery remains the cornerstone in pelvic floor repair. Before the evolution of the mesh, traditional methods include stitching the vaginal vault or the cervix to the sacrospinous ligament in a procedure called the sacrospinous ligament fixation. In milder cases, the apex can also be fixed to the uterosacral ligament in a procedure called a McCall's culdoplasty or high uterosacral ligament suspension. Uterus conserving procedures can also be performed. The Manchester-Fothergill operation involves the amputation of the cervix and the reattachment of the uterosacral ligament to the anterior stump. The colpocleisis is reserved for frail patients with multiple co-morbidities and essentially is a vaginal obliteration procedure.

A fast-evolving method around the world is the traditional sacrocolpopexy. This procedure involves the use of an abdominally inserted mesh that is attached to the vaginal, and fixed to the sacral promontory. With innovations and new techniques in minimally invasive surgery (MIS), we are now able to perform the same procedure laparoscopically or with robotics. MIS techniques have proven to have the same benefits as the traditional abdominal sacrocolpopexy but with less blood loss, quicker recovery and shorter hospital stay. The continuous investment in technology and training in NUH had allowed our team to keep up with advances internationally in this ever-changing field of Urogynaecology.

Dr Harvard Lin
Consultant
Division of Urogynaecology & Pelvic Reconstructive Surgery
Department of Obstetrics & Gynaecology
National University Hospital

Dr Harvard Lin, Consultant
Division of Urogynaecology & Pelvic Reconstructive Surgery

Department of Obstetrics & Gynaecology
National University Hospital

01

COULD YOU TELL US MORE ABOUT YOUR TRAINING AND SUBSPECIALISATION?

When I was a resident, I was obsessed with surgery: be it abdominally, vaginally or laparoscopically. I spent hours in the training lab after clinics perfecting my technique. Unlike most traditional urogynaecologists who are primarily vaginal surgeons, my early training was in minimally invasive surgery where I learnt to deal with gynaecological pathologies such as endometriosis and fibroids via 'keyhole' techniques. As I progressed, my fascination with the pelvic anatomy led me to where I am – urogynaecology: a specialty where I restore the female pelvis damaged by childbirth and old age and reconstruct it as close as I can to its original state.

02

HOW DO YOU KEEP ON TOP OF THE LATEST DEVELOPMENTS IN YOUR FIELD?

Urogynaecology is undergoing change constantly. From Ulf Umsten who radicalised the management of incontinence with his transvaginal tape to the catastrophic demise of mesh use, new techniques with better patient outcomes are being innovated every day. A deep appreciation of pelvic anatomy coupled with a strong surgical foundation is fundamental to the urogynaecologist to be adaptable to these changes.

Dr Harvard Lin and his family

03

HOW DO YOU STAY ENTHUSIASTIC ABOUT THE WORK YOU DO?

Urogynaecology is like architecture; you see your work constructed from scratch into beautiful buildings. Similarly, you can see your results formulating in front of your eyes instantaneously as you take every stitch, and tie every knot. It is always a privilege and honour that patients entrust their lives in my hands. Seeing them regain their quality of life, doing the things they enjoy – that excites me every day.

04

HOW CAN DOCTORS IN PRIMARY HEALTHCARE WORK TOGETHER WITH YOU AND YOUR COLLEAGUES TO IMPROVE THE CARE OF WOMEN WITH UROGYNAECOLOGICAL PROBLEMS?

As I always tell my Family Medicine trainees, 90% of urogynaecological issues can be managed at the primary setting. I always believe in empowering our primary practitioners to manage common problems – problems that do not make it to the tertiary service. Simple advice from pelvic floor exercise, bladder training, lifestyle modification and even prescribing of medications will go a long way to make that difference in someone's quality of life. Knowing what we can offer is just as important to provide positive options in dealing with patients' symptoms.

05

CAN YOU TELL US MORE ABOUT YOUR INVOLVEMENT IN THE TEACHING AND MENTORING OF THE UNDERGRADUATES AND RESIDENTS?

As a core faculty, I develop the postgraduate programme together with my program director for our residents and registrars. Surgery is my passion and it is immensely satisfying to see your residents develop their core competencies and witness their eventual evolution into becoming full-fledged specialists. I am also the site director for the Family Medicine programme and I engage the general practitioners who rotate to us. I hope their experience with us can improve the primary standards in women's health.

06

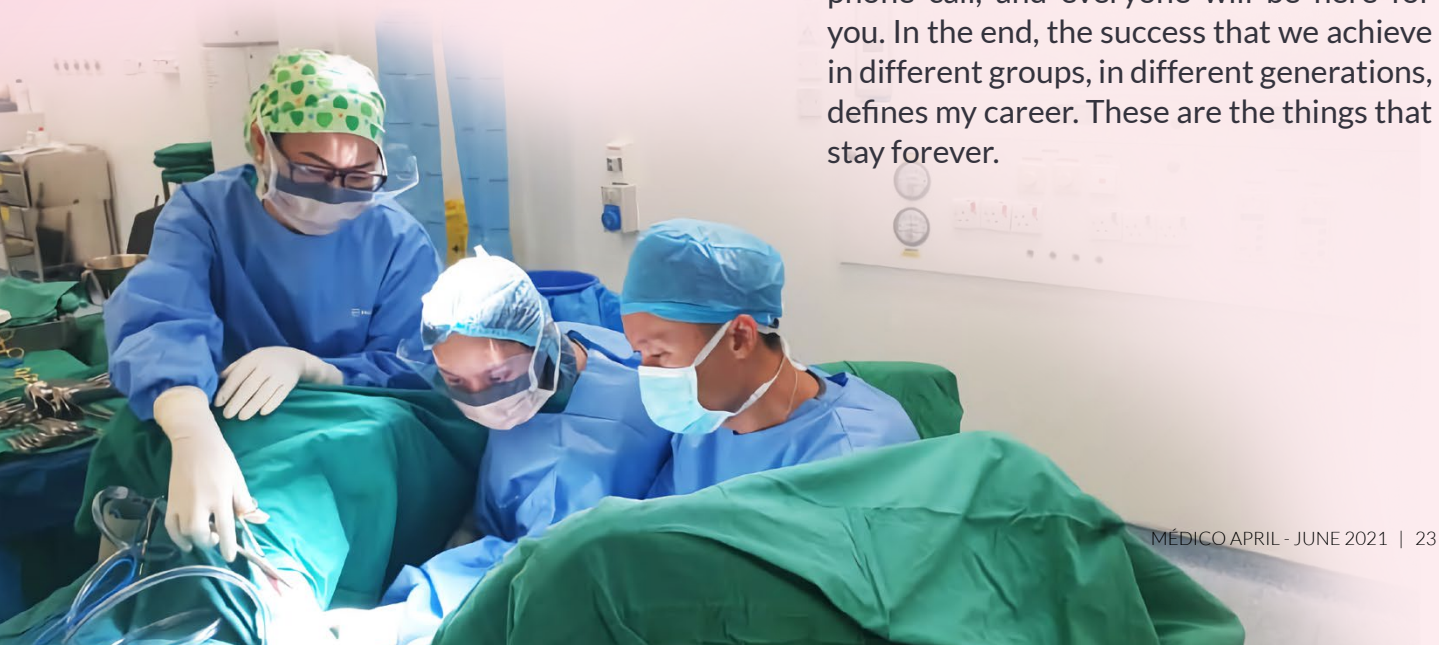
WHAT DO YOU LIKE TO DO IN YOUR FREE TIME?

A surgeon requires fitness, both physically and mentally. I keep fit by running, skipping and going to the gym. I maintain mental stamina and hand-eye sharpness by practising on the piano daily. And of course, watching sports. Lots of sports in my free time like football, basketball, racing and tennis!

07

DESCRIBE YOUR MOST REWARDING EXPERIENCE SO FAR.

Medicine is about the human touch. That is seeing people around me grow. I train teams rather than individuals. That concept of a team is one of the most beautiful things in medicine. I have been part of different teams – teams from 10 years ago, teams from three years ago – and we play different roles. We are still a team. If anyone of us has a problem or needs the other, just make one phone call, and everyone will be here for you. In the end, the success that we achieve in different groups, in different generations, defines my career. These are the things that stay forever.



DEPARTMENT OF OBSTETRICS & GYNAECOLOGY

Department Head

A/Prof Mahesh Choolani	Senior Consultant

Benign Gynaecology

Prof Yong Eu Leong	Division Head & Senior Consultant
Prof Kuldip Singh	Senior Consultant & Director, NUH O&G Student Posting
Dr Winnie Wun	Senior Consultant
Dr Ma Li	Associate Consultant

Gynaecologic Oncology

A/Prof Jeffrey Low Jen Hui	Division Head & Senior Consultant
A/Prof Arunachalam Ilancheran	Senior Consultant
Dr Joseph Ng	Senior Consultant & Dept Informatics Officer; Chairman, Gynaecologic Robot Assisted Cancer and Endoscopic Surgery Programme; Deputy Clinical Director, NUH-NUP O&G Outreach and Liaison
Dr Pearl Tong	Consultant & Associate Programme Director - Postgraduate Education
Dr Lim Li Min	Associate Consultant
Dr Jeslyn Wong	Associate Consultant

Maternal Fetal Medicine

A/Prof Su Lin Lin	Division Head & Senior Consultant
Prof Arijit Biswas	Senior Consultant & Clinical Director
Prof Chong Yap Seng	Senior Consultant
A/Prof Mahesh Choolani	Senior Consultant
Dr Chua Tsei Meng	Senior Consultant
Dr Vanaja Kalaichelvan	Senior Consultant
Dr Anita Kale	Senior Consultant & Deputy Clinical Director, NUH O&G, Patient Safety Officer and NUH Representative for the High Risk Pregnancy Consortium
A/Prof Mary Rauff	Senior Consultant
A/Prof Wong Yee Chee	Senior Consultant
A/Prof Chan Shiao-Yng	Senior Consultant
Dr Arundhati Gosavi	Consultant & Director Phase 4 O&G Posting
A/Prof Citra Mattar	Consultant & Research Director Core Faculty, O&G Residency
Dr Sarah Li	Associate Consultant & Deputy Patient Safety Officer
Dr Nau'shil Kaur Randhawa	Associate Consultant & Clinical Champion for Telemedicine
Dr Pradip Dashraath Vijayakumar	Associate Consultant

Reproductive Endocrinology & Infertility

Dr Stephen Chew	Division Head & Senior Consultant
Dr Susan Logan	Senior Consultant & Director, Postgraduate Education
Prof PC Wong	Senior Consultant
Dr Huang Zhongwei	Associate Consultant & Deputy Director, NUH O&G Student Posting and Phase 4 O&G Posting

Urogynaecology & Pelvic Reconstructive Surgery

A/Prof Roy Ng	Division Head & Senior Consultant
Dr Ng Kai Lyn	Consultant
Dr Harvard Lin	Consultant & Deputy Clinical Director, NUH-NUHS, NTFGH, AH, JMC O&G Outreach and Liaison; Site Director, Family Medicine

April – June 2021

GPLC

NUH GP Liaison Centre

At the National University Hospital (NUH), we recognise the pivotal role general practitioners (GPs) and family physicians play in general healthcare provided within the community. As such, we believe that through closer partnerships, we can deliver more personalised, comprehensive, and efficient medical care for our mutual patients.

The General Practitioner Liaison Centre (GPLC) aims to build rapport and facilitate collaboration among GPs, family physicians and our specialists. As a central coordinating point, we provide assistance in areas such as patient referrals, continuing medical education (CME) training, and general enquiries about our hospital's services.

Through building these important platforms of shared care and communication, we hope that our patients will be the greatest beneficiaries.

FOR ASSISTANCE, PLEASE FEEL FREE TO CONTACT US

Tel: +65 6772 2000 / +65 6772 4829
(GP referral appointments and other enquiries)

Fax: +65 6777 8065
Email: gp@nuhs.edu.sg

NUH Continuing Medical Education (CME) Events

At NUH, we strive to advance health by integrating excellent clinical care, education and research. As part of our mission, we are committed to providing regular **CME** events for GPs and family physicians. These events aim to provide the latest and relevant clinical updates practical for your patient care.

Organised jointly by the **GPLC** and the various clinical departments within **NUH**, our specialists will present different topics in their own areas of specialties in these symposiums.

*For more information on our **CME** events, please visit: www.nuh.com.sg/GPLC*