Obstetric care in the 21st century

Obstetrics care have changed over time. To give the best medical care to pregnant women, Dr. Gozali's practice has evolved to include new tests/investigations (highlighted below in red).

General advice

Being pregnant brings with it tremendous joy. Plans are made (and implemented) to care for the precious baby, starting from the time the baby is still inside the womb.

Most expectant mothers are aware of the need to take folic acid, even before conception occurs. If you are not already on folic acid, do start ASAP. The purpose of folic acid intake in early pregnancy is to reduce the baby's risk of neural tube defects such as spina bifida.

Equally important is behaviour modification to that of a healthy lifestyle, if you have not already done so. Healthy, balanced and varied diet is recommended. Regular exercise is encouraged. Avoid unnecessary medications including non-prescription medicines. Cigarette smoking and alcohol consumption must be stopped immediately. Avoid ingesting harmful bacteria by consuming uncooked/raw/unhygienic food. Take note of chemicals in the forms of pesticides (in fruits and environment), food additives and food colourings.

To count the number of weeks you are pregnant (gestational age- GA), go back to the first day of your last menstrual period (LMP)- that was zero week gestational age. On the day you conceived, you were already 2 weeks pregnant (medically speaking). Your expected due date (EDD) is when you are 40 weeks pregnant, or when you are 38 weeks away from your conception date.

Antenatal care in the clinic

Do get seen in the clinic at 6 weeks GA to confirm the pregnancy. It is important that an *ectopic* pregnancy is excluded especially in high risk women such as those with a history of ectopic pregnancy, pelvic inflammatory disease or subfertily. (Ectopic pregnancy is life threatening and is removed laparoscopically).

Pregnancy viability is confirmed at 8 weeks GA by observing fetal heart activities using *transabdominal* ultrasound scan as the clinic uses quality/high resolution machine. Once the pregnancy is noted to be viable, a routine blood test is advised. The test will screen for relevant infections (those that can harm the baby) including the immunity status. Maternal health will also be examined. Where appropriate, paternal blood will also be tested.

Carrier screening is a new test being introduced in the clinic. The test looks for an abnormal gene (a "variant") that causes inherited disease. A carrier is a person in whom the set of two chromosomes contains only *one* variant gene. A homozygous is a person with the full-blown disease; because the set of two chromosomes contains *two* variant genes- one variant gene in each chromosome. Homozygosity occurs when your baby receives the "wrong" chromosomes from *both* parents at fertilisation.

If *both* mum and dad are carriers of the same variant gene, the baby has a 1 in 4 chance of being a homozygous. There is an argument for performing a carrier screening test on one or both parents. It can also be argued that the test be performed not just during pregnancy but before conception occurs. The argument is more convincing if there is a family history of inherited diseases or the patient has a personal history of miscarriages.

Illnesses that are investigated with the carrier screening test are thalassaemia (alpha and beta), fragile X syndrome, cystic fibrosis, congenital adrenal hyperplasia, spinal muscular atrophy, sickle cell disease, G6PD deficiency, severe combined immune deficiency, Tay-Sachs disease, autosomal recessive deafness, haemophilia A and B, familial hypercholesterolemia and many more (well over 200 conditions). This test can be done at anytime during the pregnancy, or before conception as part of pre-conception investigations.

At 9 weeks GA, non invasive prenatal test (NIP) is recommended. NIPT is a *maternal blood* test (*not* amniotic fluid test) that analyses fetal cell-free DNA that is found in minute amount in maternal circulation. This new technology looks for chromosomal aneuploidies- notably Down's syndrome (Trisomy 21). Other conditions that can be detected are Edwards' syndrome (Trisomy 18), Patau's syndrome (Trisomy 13), Turner's syndrome (Monosomy X), Klinefelter syndrome (47, XXY), Jacob's syndrome (47 XYY) ,Triple X syndrome (47, XXX). Gender of the baby can also be revealed if the patient wishes.

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NIPT has now progressed and can additionally test for, not just the presence of abnormal number of chromosome pairs, but also gene abnormalities on the chromosome itself- microdeletion syndromes and illnesses caused by gene variants. Examples of such conditions include DiGeorge syndrome, 1p36 deletion syndrome, Angelman syndrome, Cri-du-chat syndrome, Prader-Willi syndrome, spinal muscular atrophy and achondroplasia.

Do note that NIPT is a *screening* test, hence an abnormal result will need further confirmation by a diagnostic test. This will require amniocentesis at 16 weeks (earliest) GA. Choriovillous sampling (CVS) as a diagnostic tool is not available in the clinic.

Alternative screening tests for Down's syndrome are still available in the clinic. They are less accurate but may be an option for some patients. These tests include a simple nuchal translucency (NT) measurement at 11 to 14 weeks GA, Combined First Trimester Screening test at 11 to 14 weeks GA and Triple Test at 16 weeks GA.

Dating scan, best performed at 12 weeks GA, determines accurately your gestational age. Its importance cannot be understated because proper management of a pregnancy depends heavily on the gestational age especially when complications arise. **Please ensure that you attend the dating scan at 12 weeks GA.**

Fetal anomaly (FA) scan, to be done between 20 and 22 weeks, will examine the baby's anatomical structures / internal organs meticulously. It is to be performed on *all* babies as anomalies detected will prompt further investigation and treatment, either in-utero or ex-utero (after delivery). Some of these anomalies are *not* associated with chromosomal aneuploidies, hence despite NIPT results being normal, FA scan should still be performed. To illustrate the importance of FA scan, congenital heart defects (with an incidence of 1:1000) can often be detected by such scan. Planned management of the newborn will significantly improve the survival outcome of the baby.

At 28 weeks GA, test for gestational diabetes is performed; pertussis and influenza vaccines are recommended. If you are Rhesus negative, anti-D is administered.

At 34 weeks, baby's growth is assessed to look for small-for-date baby or large-for-date baby. Close surveillance of fetal well-being may be subsequently required.

Group B streptococcus (GBS) is said to be found in the vaginal/bowel flora of 20-40% of women. The bacterial colonisation is asymptomatic but GBS can be passed on to the baby during vaginal delivery, and causes severe early-onset infection in the newborn infants. As a routine, the clinic offers GBS test at 36 weeks GA.

Delivery

Term pregnancy is defined as pregnancy at 37 weeks to 42 weeks GA. Pregnancy before 37 weeks + 0 day is pre-term and those beyond 42 weeks + 0 day is post-term. **Ideally, baby is delivered between 37 week + 0 day and 42 week + 0 day, by vaginal route, having laboured spontaneously.** Dr Gozali will aim for this outcome in all pregnant women. Medical intervention, including caesarean section, will only be performed if there is a medical indication. *(Caesarean section rate is low under the care of Dr. Gozali).* During labour patient is encouraged to be mobile and find her own suitable position. ***Pain-free labour*** by means of epidural is available.

Puerperium

Care during post-delivery period requires close attention to both mother's and newborn's health. Baby blues is common but self limiting. Baby massage is available from the clinic.

Newborn screening test (Guthrie test) should be performed on all newborn infants as it tests for *serious* conditions that can have significant improved outcome following early treatment. Among the commonly tested conditions include congenital hypothyroidism, G6PD deficiency, phenylketonuria (PKU), maple syrup urine disease, galactosaemia, Gaucher disease, mucopolysaccharidosis and homocystinuria.

Genetic Testing for Newborns is an extended test to the above Guthrie test. The conditions being tested are rare but serious. They include immunodeficiency disorders, hearing loss and cardiac conditions. Early treatment can improve the health of the baby and prevent severe disability or even death.

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At-a-glance obstetrics care in Dr. Gozali clinic

Antenatal Care (ANC)- Consultation and ultrasound scan

0 - 28 weeks gestational age (GA): ANC is every 4 weeks.
28 - 36 weeks GA: ANC is every 2 weeks.
36 - delivery: ANC is every week.

Blood tests

I. **Early pregnancy**- blood test to check on the mother's health and to screen for infections that may harm the baby.
II. Consider carrier screening test any time in pregnancy.
III. **9-14 weeks GA**- Screening test for chromosomal/genetic abnormalities by means of NIPT.
IV. **28 weeks GA**- Screening for gestational diabetes (2 hours glucose tolerance test), as well as checking the haemoglobin level.

Ultrasound scan (USS)

I. **Early pregnancy scan**- location of pregnany, number of babies and viability.
II. **12-14 weeks scan**- Dating scan.
III. **20-22 weeks scan**- Fetal anomaly scan.
IV. **32-34 weeks scan**- Growth scan

Vaccination in pregnancy

I. **Influenza** (at any gestational age)
II. **Pertussis/whooping cough** (in the form of tetanus, diphtheria and acellular pertussis- Tdap) after 27 weeks GA.
III. **Hepatitis B**, **rubella** and **chickenpox**, *after* delivery if not immunised.

Group B streptococcus (GBS)- tested at 36 wk.

Puerperium

- Mum- follow-up at **1 week** and **6 weeks** post delivery.
- Baby- **Newborn screening test**- to consider Guthrie test and the expanded genetic testing for newborn.

Trimester	GA	Test done	What to expect?
First	6 wk	Ultrasound scan	• Pregnancy is confirmed. • One baby or twins? • Intrauterine or ectopic pregnancy? • May occasionally need transvaginal scan, which is safe to perform.
	7-10 wk	Ultrasound scan	• Viability test. • Is heart beat seen and heard?
		Blood test	• A routine blood test for Hb, iron, blood group (including Rhesus status), thalassaemia, infection screen, immunity status, liver/kidneys functions and diabetes. • NIPT by Panorama, USA at 9 wk.
Second	11-14 wk	Ultrasound scan	• Dating scan- very important to confirm the expected due date (EDD). Proper management of the pregnancy depends on *accurate* gestational age. • If NIPT is *not* done, combined first trimester screening test is advised.
	20-22 wk	Ultrasound scan	• Fetal anomaly scan.
Third	28 wk	Blood test	• Screening for gestational diabetes. • Check haemoglobin level. • Vaccine vs pertussis.
	32-34 wk	Ultrasound scan	• Fetal growth scan.
	36 wk	Vaginal swab	• Test for Group B Streptoccocus.
	37 wk		Baby is already "term". Term or mature baby is between 37 & 42 weeks GA.
	39 wk	Delivery of baby	If the baby is to be delivered electively, say by caesarean section, 39 week is the time.
	40 wk	Delivery of baby	Statistically speaking, baby will be born on this day.
	42 wk	Delivery of baby	Baby is post-mature. It is not advisable that the baby go beyond 42 wk GA.
Puerperium	1 wk post discharge		• Vaccine vs hepatitis B, rubella and chickenpox, if mum is not already immunised. • Baby to get the newborn screening test.
	6 wk post delivery		• ThinPrep and HPV DNA test. • Contraception advice.

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