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Dear Colleagues and Friends:

Welcome to this, the latest issue of Cleveland Clinic’s Ob/Gyn & Women’s Health Research Perspectives. We are pleased to share a few examples of the exciting work being undertaken here.

This publication is intended to give you a sample of the pathbreaking research being conducted in our institute. Within these pages, you will learn about important studies comparing surgical options for benign hysterectomy, and decision models for obstetrical injury and urogynecological surgeries. In all these cases, our focus is providing the best possible care for each patient based on a variety of factors that, when taken together, point toward the best option for that woman.

We’re also pleased to share new research into a cutting-edge tool in our infertility arsenal — the EmbryoScope® incubator. This device helps us observe embryos without removing them from incubation, which allows us to select those with the best chance of successful pregnancy at the moment they are the most robust.

In 2012, U.S. News & World Report recognized our gynecology program as No. 3 in the country. This distinction means a great deal to us because our colleagues vote to bestow this honor. For information on how efficiently we care for our patients, please review the most recent edition of Cleveland Clinic’s Outcomes, available at clevelandclinic.org/outcomes.

We hope that you will find this issue valuable and inspiring. Please feel free to contact us with suggestions and questions — we look forward to the collaborative possibilities those interactions may bring.

Sincerely,

Tommaso Falcone, MD
Professor & Chairman,
Department of Obstetrics and Gynecology
Chairman, Ob/Gyn & Women’s Health Institute

Matthew Barber, MD
Vice Chairman, Clinical Research
Ob/Gyn & Women’s Health Institute
Intraoperative laser angiography for sentinel node detection and mapping

Sentinel Lymph Node Mapping and Gynecologic Cancers

By Pedro F. Escobar, MD, and Kim Levinson, MD

Recently, there has been increased interest in sentinel lymph node mapping and biopsy for early endometrial and cervical cancer. These procedures have the potential to reduce the morbidity associated with a complete lymphadenectomy while still providing important clinical and prognostic information for the management of these malignancies.

Sentinel lymph node biopsy was introduced in 1977 by Ramon Cabanas, MD. This technique was not introduced for gynecologic cancers, such as endometrial cancer, until 1996, by Burke et al. A number of researchers have studied sentinel node detection in vulvar, endometrial and cervical cancer patients using a variety of imaging and mapping techniques.

An injectate (dye) utilized for mapping that is quickly gaining popularity is indocyanine green (ICG). ICG is a tricarbocyanine dye that fluoresces in the near-infrared spectrum when illuminated/excited with a specific wavelength of light. ICG is promising for improving sentinel lymph node detection in multiple types of cancer, including gynecologic tumors such as endometrial and cervical cancers.

However, there remains significant debate in the academic community with regard to critical aspects of the procedure, including the optimal site for injection, surgical modality-approach and optimal injectate for mapping. Research being conducted in the Department of Gynecologic Oncology at Cleveland Clinic is beginning to explore these critical features by comparing different doses of ICG and their effect on the ability to distinguish discrete sentinel lymph nodes and the ability to perform the lymphatic mapping, detection and excision with novel surgical technology.

Dr. Escobar is Director of Laparoscopy and Robotic Surgery and Dr. Levinson is a fellow in the Ob/Gyn & Women’s Health Institute. Dr. Escobar can be reached at 216.445.8486 or escobap@ccf.org. Dr. Levinson can be reached at 216.448.5698 or levinsk@ccf.org.

For references, please contact the editor.
According to new research led by Marie Fidela Paraiso, MD, robotically assisted total laparoscopic hysterectomies may not be the clear choice for minimally invasive benign gynecological indications.

In concert with other findings in this area, Cleveland Clinic’s study found that although laparoscopic and robot-assisted hysterectomies are both safe approaches to a procedure that 1 in 9 women in the United States undergo, robotic-assisted hysterectomy requires longer operative time.

Study Methodology

The Cleveland Clinic researchers — Beri Ridgeway, MD; Amy Park, MD; J. Eric Jelovsek, MD, MMEd; Matthew D. Barber, MD, MS; and Tommaso Falcone, MD, — along with Brigham and Women’s Hospital’s Jon Einarsson, MD, conducted a blinded, prospective, randomized trial at the two institutions. Sixty-two patients with similar demographics agreed to participate in the study, and were randomly assigned to a laparoscopic or a robotic group.

Fifty-three of the patients underwent their assigned procedure: 27 women were in the laparoscopic group and 26 had the robotic procedure. One patient in the laparoscopic group had incomplete data and was excluded from the final analysis. Ninety-two percent of the cases were completed per the randomization assignment.

The study was conducted between June 2007 and March 2011. Five enrolling surgeons who had each performed between 75 and 400 total laparoscopic procedures participated in the study. All five surgeons had also completed robotic training that was provided by Intuitive Surgical Inc., the manufacturer of the da Vinci® system, and had performed at least 20 cases with that system before enrolling patients in this study.

Patients were carefully tracked throughout the procedure and for more than six months afterward. Operating room personnel recorded total operating room time and total case time and noted any intraoperative complications. Patients completed journals, and pain medications were tracked,
both in the hospital and after discharge. Research nurses contacted patients by phone at six months post-procedure for additional follow-up.

**Shorter Surgical Time for Traditional Laparoscopy**

The major finding of the study was that the total operating time was significantly shorter in the laparoscopic group than in the robotic surgery cohort. There were no differences between the groups in estimated blood loss, hematocrit change or uterine weight.

“There are very few randomized trials in benign gynecology that have compared clinical outcomes between these two types of surgeries,” says Dr. Paraiso.

Other studies have suggested that although the robotic procedure times were longer, quality of life immediately after surgery was better than for those who underwent the laparoscopic procedure, but that advantage did not continue over time (Sarlos et al.). This research indicates that in experienced laparoscopic centers, laparoscopic hysterectomy should be the access of choice for benign disease.

As Wright et al. recently published in the *New England Journal of Medicine*, the frequency of robotic hysterectomy has increased exponentially since the introduction of the da Vinci system in 2007. Laparoscopic hysterectomy for benign reasons offers almost identical benefits at a lower cost per procedure.

Dr. Paraiso agrees with that assertion. Few randomized trials in benign gynecology have been conducted that examine the true costs and benefits of each approach weighed against the other.

Additional arguments hold that robotic-assisted surgery shortens the learning curve for those who practice it, although this effect does not remain for experienced practitioners. Unless there are specific situations where robotic-assisted surgery is most appropriate, as in morbid obesity or if the patient expresses a specific preference, the newest technology may not always be the right answer.

**An Eye on the Future**

Dr. Paraiso says that further studies are needed that take into account a complete calculation of costs involved in the two procedures inclusive of time lost to society while patients recover. Additional investigations should also consider surgeon ergonomics, overall surgeon tenure, and ways to further improve robotic efficiency and safety and diminish costs.

“Increased hospital costs,” she says, “should be balanced by a shorter hospital stay or by an earlier return to work or to productive society.”

Dr. Paraiso can be reached at 216.444.3428 or paraism@ccf.org. The study is available online and in the May 2013 issue of *American Journal of Obstetrics & Gynecology*.
Pregnancy poses a serious challenge for maintaining normal maternal blood pressure. Pregnancy-induced hypertension, which occurs in about 10 percent of pregnancies, is a major cause of maternal and fetal deaths. During pregnancy, the uterus undergoes profound morphological changes, including trophoblast invasion and spiral artery remodeling. In pre-eclampsia, impaired spiral artery remodeling is common, but the underlying mechanisms are unclear.

Corin is a cardiac protease that activates atrial natriuretic peptide (ANP), a cardiac hormone important in regulating blood pressure. In mice, lack of corin prevents ANP generation and causes hypertension. In humans, corin variants are associated with hypertension. Unexpectedly, corin expression was detected in the pregnant uterus. As a transmembrane protein, corin is predicted to act at the expression sites, suggesting a possible function of corin in the pregnant uterus.

In a recent study published in Nature, we identified a novel function of corin and ANP in promoting trophoblast invasion and spiral artery remodeling. In this study, we created a mouse model in which a corin transgene was expressed under a cardiac promoter. The transgenic (Tg) and corin knockout (ko) mice were crossed to generate ko/Tg mice expressing corin only in the heart. In these mice, transgenic corin expression restored pro-ANP processing in the heart and normalized blood pressure, indicating that cardiac corin was sufficient to maintain normal blood pressure in nonpregnant mice. In pregnant corin ko/Tg mice that did not have pre-existing high blood pressure, blood pressure increased at approximately 17 days post-coitus and rose further before returning to the normal level after delivery. This phenotype resembled late gestational hypertension in preeclamptic women. The data indicate that cardiac corin expression did not prevent pregnancy-induced hypertension.

Proteinuria is a hallmark of preeclampsia. Wild type, corin ko and ko/Tg mice had similar urinary protein levels before pregnancy and at midgestation. The levels, however, increased in corin ko and ko/Tg mice at late gestation, consistent with reported proteinuria in mouse models of preeclampsia. Ischemic glomeruli, indicated by fewer red blood cells, were found in pregnant corin ko and ko/Tg mice, but not in non-pregnant mice. PAS staining revealed increased extracellular matrices and collapsed glomerular capillaries in pregnant corin ko and ko/Tg mice. Electron microscopy showed narrow glomerular capillary lumens and thick basement membranes, suggesting endotheliosis and increased extracellular matrices. Additional pathological features such as necrotic cells and calcium deposits in the placental labyrinth also existed in these mice, indicating insufficient uteroplacental perfusion. Consistently, corin ko and ko/Tg mice had smaller litters. We also showed that trophoblast invasion and spiral artery remodeling were impaired in corin ko and ko/Tg mice and that this defect occurred before blood pressure increased in these mice.

Pro-ANP is expressed in the uterus. If corin acts on pro-ANP to promote trophoblast invasion and spiral artery remodeling, thereby preventing hypertension in pregnancy, ANP and corin ko mice should have similar phenotypes. Indeed, we found similarly increased blood pressure in pregnant ANP ko mice. The mice also had late gestational proteinuria and smaller litters. Thus, ANP and corin ko mice had very similar phenotypes, indicating that the role of corin in pregnancy is likely mediated by ANP.

ANP is known to relax vascular smooth muscles. Recently, ANP and its downstream cGMP-dependent protein kinase were shown to be important in angiogenic processes by promoting endothelial regeneration. Thus, ANP may function locally to remodel uterine arteries and promote trophoblast invasion. In a cell-based experiment, we found that ANP markedly stimulated human trophoblasts to invade Matrigel™ matrices. In these cells, ANP receptor mRNA expression was confirmed and ANP-stimulated intracellular cGMP production was detected.
Our findings underscore the importance of ANP produced locally by corin, which acts on trophoblasts and vascular cells in the uterus. Because heart-derived ANP circulates inside the vessel, our model may explain why cardiac corin failed to promote trophoblast invasion and uterine artery remodeling, as shown in corin ko/Tg mice. To verify this hypothesis, we quantified corin mRNA and protein in human uteruses by RT-PCR and ELISA. The levels were low in nonpregnant women but increased in pregnant women. In preeclamptic women, the levels were significantly lower than in normal pregnancies. These results support a local corin function in the pregnant uterus.

We then sequenced the corin gene in preeclamptic patients and identified a mutation that altered Lys to Glu at position 317 in LDL receptor repeat 2 in one woman and another mutation that altered Ser to Gly at position 472 in frizzled 2 domain in two women from the same family who had preeclampsia. The data were consistent with previous findings that LDL receptor repeats and frizzled domains are critical for corin activity, suggesting that the mutations may impair corin function in the patients, thereby contributing to preeclampsia. Interestingly, corin variants in frizzled 2 domain that impaired corin function have been reported in blacks, a high-risk population for pre-eclampsia.

In summary, we have identified a novel local function of corin and ANP in promoting trophoblast invasion and spiral artery remodeling to prevent hypertension in pregnancy. Our data suggest that impaired corin expression or function in the pregnant uterus may represent an important mechanism underlying preeclampsia.

Dr. Wu is staff in the Lerner Research Institute. He can be reached at 216.444.4351 or wuq@ccf.org.

A version of this article appeared in Nature.
The health risks for both patient and fetus associated with high-order multiple pregnancy have spearheaded a movement to limit the overall number of embryos transferred during in vitro fertilization (IVF) to just two for young patients.

During IVF, patients undergo a surgical procedure to extract oocytes. The oocytes are subsequently inseminated or directly injected with sperm to create embryos. The average young patient generates eight to 15 embryos per IVF cycle.

Embryo selection for transfer is based on critical assessment of morphologic parameters during embryonic development. Currently, these morphological assessments are limited to once a day at set times, since repeated removal of embryos from the incubator environment for observation may result in undesired temperature and pH shifts in the embryo culture dish.

Embryo development is a dynamic event. Static observations on embryonic growth can therefore be limiting in their ability to discern differences between embryos at a similar cell stage.

Numerous data suggest that the timing of specific events such as pronuclear formation, syngamy, early cleavage, compaction and cavitation are indicators of an embryo’s developmental potential. The ability to continuously monitor an embryo’s progression toward these benchmarks may therefore aid in selecting the best embryos for uterine transfer.

The New Tool: EmbryoScope — An Incubator with Eyes

The EmbryoScope (Unisense® Fertilitech, Rockland, Va.) is a new FDA–cleared incubator with a built-in camera that allows continual observation of embryos using time-lapse imaging. This special incubator and the software to simultaneously analyze and contrast developmental benchmarks for up to
72 embryos at a time (six patients with 12 embryos per dish) is a powerful new tool for the IVF laboratory. This instrument will also contribute to our understanding of early events in preimplantation embryo development and to identification of new grading criteria that may be more predictive of implantation potential. The EmbryoScope also provides a safe, controlled environment for human embryo cultivation without disturbance.

Promising Early Results

We initiated a study in April 2012 to measure the effectiveness of the EmbryoScope in the clinical IVF laboratory. The study had three primary objectives: (1) to collect data on embryo development using continuous embryo monitoring, (2) to determine if kinetic data in conjunction with conventional grading criteria could be used to identify high-quality embryos, and (3) to determine if there are specific events or cleavage patterns that are more often associated with embryos leading to pregnancy or in vitro blastocyst formation.

Patients under 39 years of age with 10 or more mature oocytes, and/or at least eight embryos, were offered the opportunity to participate in this study. A total of 81 patients were enrolled. Embryo selection for transfer was based on conventional criteria.

Culture in the EmbryoScope yielded a wealth of information on normal growth patterns and cleavage anomalies, as well as high pregnancy outcomes. The results showed that the clinical pregnancy rate for patients having a Day 5 transfer was 72 percent (41/57) vs. 65 percent (13/20) for those having a Day 3 transfer.

Morphokinetic data indicated significant differences in timing of specific cellular events in embryos leading to formation of high-quality blastocysts and ultimately pregnancy. The laboratory is now using some of these morphokinetic criteria to aid in embryo selection for transfer with the hope of further increasing pregnancy rates and ultimately reducing the number of embryos being transferred. ♦

For more information, contact Dr. Desai at 216.839.2907 or desain@ccf.org.
One of the most common questions that physicians are asked in any clinical setting is: What is my risk of developing a particular condition?

“The challenge is that the scientific literature commonly provides information on risk for an average patient — not individualized risk,” says J. Eric Jelovsek, MD, MMEd, of Cleveland Clinic’s section of Female Pelvic Medicine and Reconstructive Surgery.

“One way that we can improve our ability to identify high-risk individuals is by creating better clinical prediction tools,” he says. “A prediction model for ob/gyn patients allows us to tell a patient what her individual percentage risk is of developing a specific condition during a certain time frame based on her medical and obstetrical history.”

UI and FI in Primiparous Women

In obstetrics, primiparous women want to know about incontinence risk, and physicians counsel them on limited preventive measures such as pelvic muscle exercises, restrictive episiotomy at the time of delivery and, sometimes, Cesarean delivery.

“There is a growing understanding among women that delivery can result in pelvic floor injury that can cause urinary incontinence [UI] and fecal incontinence [FI],” says Matthew D. Barber, MD, MHS, Vice Chairman of Clinical Research in Cleveland Clinic’s Ob/Gyn and Women’s Health Institute. “What has not always been clear is who is going to get incontinence, how common it is and what the best ways are to prevent it.”

He adds, “When looking at incontinence risk as one factor in deciding whether to undergo a cesarean delivery, it can be challenging to make a decision based on averages.”

Individualized Risk Prediction

Enter Cleveland Clinic’s new interactive, web-based tool to predict a woman’s individual probability of developing UI or FI after her first delivery. The tool, which is designed for physicians to interpret for patients, includes four statistical prediction models in the form of nomograms that have been vetted through internal and external validation.

A prediction model for ob/gyn patients allows us to tell a patient what her individual percentage risk is of developing a specific condition during a certain time frame based on her medical and obstetrical history.

This interactive calculator is one of many that Cleveland Clinic has developed in various therapeutic areas. “There’s a lot of data to be collected and analyzed, and software to be written to develop these tools — but they are critical,” says Michael W. Kattan, MBA, PhD, Chairman of Cleveland Clinic’s Department of Quantitative Health Sciences, which developed the prediction tool in collaboration with clinicians from the Ob/Gyn & Women’s Health Institute.

By providing patients with estimates of benefits and the risk of harm, Dr. Kattan says, physicians are offering the ultimate in informed consent. “These tools allow clinicians to provide the most accurate prediction of what could happen to you — and it’s up to you to decide if the trade-off is worth it.”

Drs. Jelovsek, Barber, Kattan and colleagues wrote about the UI/FI prediction models in the March/April 2013 issue of Female Pelvic Medicine & Reconstructive Surgery.

Patient Counseling

The UI/FI prediction tool focuses on improving patient counseling in real time, which could lead to increased prevention
Prediction Tool Available Online

The UI/FI risk calculator, which will be integrated with Cleveland Clinic's electronic medical record system later this year, is believed to be the first in the country that addresses individualized risk of developing incontinence in this patient population.

“We did this not just for the enterprise but to help inform patients and obstetricians across the United States,” says Dr. Barber, who is immediate past president of the American Urogynecologic Society.

“Our prediction models are on our website at no cost and are available to any clinician.”

Access Cleveland Clinic’s interactive Prediction Models for Postpartum Urinary and Fecal Incontinence in Primiparous Women at lerner.ccf.org/qhs/risk_calculator.
of pelvic floor disorders, Dr. Jelovsek says. In addition, the calculator could be used in clinical trial design to identify high- or low-risk individuals and to develop better global prevention strategies.

When applying the tool to clinical practice, it’s important to look at risk factors such as maternal age, body mass index, mode of delivery, race, incontinence history, duration of labor, episiotomy and fetal head circumference and weigh those factors only in combination with each other, Dr. Jelovsek explains.

The relative scoring in the four nomograms (two for UI and two for FI) optimizes the predictive accuracy, and risk factors may be correlated. So if a patient’s risk moves as related to a specific factor, other risk factors could be affected as well.

Clinical Practice Innovation

The risk calculator provides greater clarity when it comes to medical decision-making.

“For every clinical decision, we have a window with the doctor and patient on one side, and on the other side is the best decision for that patient,” Dr. Jelovsek says. “The window is easier to see through now because of accurate estimates of what it looks like on the other side. It’s not totally clear, but it’s much clearer and increases the likelihood of the patient making a more informed, accurate decision.”

For additional information, contact Dr. Jelovsek or Dr. Barber at 216.444.2488. Dr. Kattan can be reached at 216.444.0584.

Research Uncovers Surprises About Incontinence Risk After Delivery

“We were surprised that adding mode of delivery variables into the models didn’t improve their accuracy,” Dr. Jelovsek says. “We also were surprised that the addition of variables that occur during active labor didn’t change the predictive accuracy. We think of events that occur at the time of labor as being large predictors of incontinence.”

For example, when looking at the length of labor in isolation, it appears to have some role in pelvic floor damage. However, when viewed in the context of the predictive models along with other factors, adding that variable did not improve the accuracy of predicting incontinence.

One mustn’t rule out the possibility of a data error as related to these findings, but that is less likely due to the internal and external validation process. “If we go beyond that,” Dr. Jelovsek says, “maybe we overemphasize actions that occur at the time of labor and delivery as being more important than they actually are — and underemphasize the ones that we know ahead of time.”

The models will continually be assessed, and further studies will add validity.◆
Selected Publications

From Cleveland Clinic’s Ob/Gyn & Women’s Health Institute


Rose PG. Which is the best foot to put forward in recurrent ovarian cancer? *Cancer*. 2012 Jul 1;118(13):3229-3231.

Rose PG. Are the differences in treatment outcome for adenocarcinoma of the cervix different enough to change the treatment paradigm? *Gynecol Oncol*. 2012 May;125(2):285-286.
March of Dimes Research Grant Awarded

Ruth Farrell, MD, was recently awarded a research grant from the March of Dimes Foundation for her work in genetic testing in pregnancy.

The study, “Preparing Pregnant Women to Make Informed Decisions About Noninvasive Genetic Testing,” was funded for $220,000 over a two-year period.

The study will look at a new form of prenatal genetic testing called noninvasive prenatal testing. While being introduced as a screen for fetal genetic anomalies, it is anticipated to be able to provide diagnostic information about the fetus.

This study will examine pregnant women’s educational needs and decision-making preferences regarding this new test, specifically, what information pregnant patients require to make informed choices. The goals of this work are to not only help develop educational tools for patients but also to teach physicians and obstetric providers how to discuss these tests with patients.

For more information, contact Dr. Farrell at 440.312.7771 or farrelr@ccf.org.

Clinical Trials

Cleveland Clinic Ob/Gyn & Women’s Health Institute offers an online tool for physicians, patients and caregivers to search for open clinical trials underway at Cleveland Clinic.

To search for a clinical trial, go to clevelandclinic.org/obgynclinicaltrials.
Resources for Physicians

Referring Physician Center and Hotline
Cleveland Clinic’s Referring Physician Center has established a 24/7 hotline — 855.REFER.123 (855.733.3712) — to streamline access to our array of medical services. Contact the Referring Physician Hotline for information on our clinical specialties and services, to schedule and confirm patient appointments, for assistance in resolving service-related issues, and to connect with Cleveland Clinic specialists.

Physician Directory
View all Cleveland Clinic staff online at clevelandclinic.org/staff.

Track Your Patient’s Care Online
DrConnect is a secure online service providing real-time information about the treatment your patient receives at Cleveland Clinic. Establish a DrConnect account at clevelandclinic.org/drconnect.

Critical Care Transport Worldwide
Cleveland Clinic’s critical care transport teams and fleet of vehicles are available to serve patients across the globe.

- To arrange for a critical care transfer, call 216.448.7000 or 866.547.1467 (see clevelandclinic.org/criticalcaretransport).
- For STEMI (ST elevated myocardial infarction), acute stroke, ICH (intracerebral hemorrhage), SAH (subarachnoid hemorrhage) or aortic syndrome transfers, call 877.379.CODE (2633).

Outcomes Data
View clinical Outcomes books from all Cleveland Clinic institutes at clevelandclinic.org/outcomes.

Clinical Trials
We offer thousands of clinical trials for qualifying patients. Visit clevelandclinic.org/clinicaltrials.

CME Opportunities: Live and Online
The Cleveland Clinic Center for Continuing Education’s website offers convenient, complimentary learning opportunities. Visit ccfcme.org to learn more, and use Cleveland Clinic’s my CME portal (available on the site) to manage your CME credits.

Executive Education
Cleveland Clinic has two education programs for healthcare executive leaders — the Executive Visitors’ Program and the two-week Samson Global Leadership Academy immersion program. Visit clevelandclinic.org/executiveeducation.

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On the Web at
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Same-Day Appointments
Cleveland Clinic offers same-day appointments to help your patients get the care they need, right away. Have your patients call our same-day appointment line, 216.444.CARE (2273) or 800.223.CARE (2273).

About Cleveland Clinic
Cleveland Clinic is an integrated healthcare delivery system with local, national and international reach. At Cleveland Clinic, more than 3,000 physicians and researchers represent 120 medical specialties and subspecialties. We are a nonprofit academic medical center with a main campus, eight community hospitals, more than 75 northern Ohio outpatient locations (including 16 full-service family health centers), Cleveland Clinic Florida, Cleveland Clinic Lou Ruvo Center for Brain Health in Las Vegas, Cleveland Clinic Canada, Sheikh Khalifa Medical City and Cleveland Clinic Abu Dhabi.

In 2012, Cleveland Clinic was ranked one of America’s top 4 hospitals in U.S. News & World Report’s annual “America’s Best Hospitals” survey. The survey ranks Cleveland Clinic among the nation’s top 10 hospitals in 14 specialty areas, and the top hospital in three of those areas.
Healthy Expectations:
Helping Patients Achieve the Right Weight for a Healthy Pregnancy

Obesity is a chronic and growing problem in the United States, and has been shown to be a contributing factor in cases of infertility and in problems in both the mother and fetus in pregnancy.

Healthy Expectations is a new program that focuses on assisting patients in achieving a healthy weight to ensure the best possible outcome before, during and after pregnancy. Shared medical appointments are used to counsel patients on the risks of carrying extra weight during gestation and after delivery. Studies show that achieving a healthy weight translates into healthier outcomes for both patients and their newborns.

The program is directed by Karen Cooper, DO, a physician expert who explains how fertility can be enhanced and how negative outcomes such as miscarriage can be reduced by maintaining a healthy weight during pregnancy. A registered dietitian calculates patients’ BMI, establishes realistic weight goals, and provides nutritional advice for achieving those goals. After delivery, patients who have gained excessive weight during gestation are monitored in a medically supervised weight management program.

Cleveland Clinic’s Healthy Expectations program is offered at multiple locations across northern Ohio. Visit clevelandclinic.org/healthyexpectations for more information. To refer a patient, call 800.553.5056 x46601.