

2020 Gap Analysis and Educational Needs

Developed by the ASRM Continuing Medical Education Committee

TOPIC	GAP(S) IDENTIFIED	EDUCATIONAL NEED(S)
Access to care	Advocacy skills to influence social, political, and economic systems for patients.	Workshop on advocacy strategies/techniques to improve services for patients and address institutional and state-wide political barriers to promote positive change for patients.
	Insurance coverage of medical management of new drugs for endometriosis and fibroids.	Learn how to advocate for expansion of services covered by payers, particularly endometriosis and fibroid new drug treatments and how to effectively counsel patients on options.
Andrology / Male Infertility	Advances in sperm testing.	Review of evidence on clinically used and novel tests to evaluate sperm quality including DNA fragmentation and genetic evaluation.
	Male infertility interventions.	Evidence based education on the outcomes of the different male infertility interventions.
	Testicular biopsy practices.	Identification of REI and urology best practice integration, TESE outcomes and techniques, and frozen vs. fresh transfers.
	Male reproductive anatomy and physiology.	Education regarding male reproductive biology, current evaluation of male infertility, and treatment mechanisms in humans (not research or animal studies).
ART	Endometrial receptivity and recurrent implantation failure.	Evidence based data review on endometrial receptivity and recurrent implantation failure.
	Is the use of exogenous androgens prior to and during IVF stimulation safe and effective.	Review of the evidence of adjuvant androgens prior to and during IVF stimulation, including data on transgender individuals, and incorporating add-on patients effectively with a multidisciplinary team.
	Thorough understanding of types of patients that benefit from minimal stimulation.	Review evidence on varied minimal stimulation protocols and prediction models on live births by ovarian reserve parameters.
	Optimization of ART patient treatments.	Evidence based presentations on IVF from embryo culture, storage of gametes to add-ons such as antioxidants, acupuncture, AH, treatment of endometritis, supplements, vitamins, and lifestyle factors.
	Stimulation cycles.	Education on different protocols and when to implement changes in them to assist clinicians to improve outcomes on ART patients.
	Lack of understanding of ART patient treatments for various disease states.	Strategies to optimize ART patient outcomes by treating disease states (PCOS and recurrent pregnancy loss) with evidence-based protocols.

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	Navigation of donor identity and registration.	Expert discussion/strategies on setting up donor identity and registration for ART practices.
ART Laboratory	Consistency in the IVF lab.	Analyze the how and why of an embryology/andrology lab in terms of protocol, policies, QA/QC, personnel, equipment, and justification for the above.
	Oocyte freezing and thawing techniques.	Review current protocols to determine best practice techniques of oocyte freezing and thawing to improve patient outcomes.
	Lack of or substandard proficiency in ICSI and embryo biopsy.	Hands on training to improve skills with ICSI and embryo biopsy.
	Factors associated with embryo selection.	Education session on current evidence of embryo selection issues and evidence-based algorithms on embryo selection to maximize patient outcomes.
	Lab design, technology adoption, and implementation.	Discuss laboratory technologies and revise current protocols to best fit various settings and needs in the design of a laboratory. Identify key criteria to assess potential lab purchases. Financial stewardship.
	Time-lapse imaging (TLI) and morphokinetics.	Debate on new technologies and upcoming new approaches to TLI.
	Extended embryo culture: practical and experimental.	Review on current Day 0-7 embryo culture methodology, experimental technologies in culturing embryos beyond Day 7, as well as technical and ethical concerns.
	Artificial embryo.	Derivation from extended cultured embryonic and extraembryonic structures, as well as stem cells. Future utilization in translational research, testing platform, and therapeutic applications.
	Total solutions in laboratory environment control.	Air quality, toxicity detection, external and internal environment of the ART laboratory, and implementing new design/improvement for the laboratory.
	Humid versus dry incubators for embryo culture.	Discuss pros and cons of those two major incubator settings. Concerns about and how does that change depending on laboratory protocols.
	Embryo development and pH.	Education on what we should target and how do embryos respond to pH variations.
	In vitro maturation of gametes.	Oocyte, sperm, various protocols and applications, and feasibility for routine laboratory practice.
Embryo quality assessment.	Evaluate the current status of embryos, other than morphology and PGT, what tools do we use and are they reliable. Discuss how to	

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		reduce the number of embryos cryopreserved and genetically tested.
	Laboratory risk and disaster management.	Review laboratory safety, monitoring and alarm systems, contingency plans, and patient material rescue to determine best practices. New developments and liability concerns.
	Laboratory quality management.	Discuss concept of QC/QA, KPI, staff evaluation, and how to implement these into the lab in a practical way to develop best practices.
	Training new generations of clinical laboratory technologists.	Analyze the current status of educating staff, paradigm shift, available educational tools, and new learning technologies and trends.
	Laboratory staff wellness, professional development, and staffing.	Evaluation of job security, financial stability, mental health, employee-employer relationship, continuous development, and mentoring mechanism to meet high complexity of today's laboratory tasks. Guideline development to meet the needs.
	Embryo abandonment and disposition.	Guideline review and development to ensure best practices can be followed by labs to ensure proper disposition of embryos.
	Changing landscape of laboratory practice.	Evolving laboratory practice in franchised clinics, non-fertility specialty corporate management, etc.
	Communication between clinicians and the laboratory personnel.	Discuss clinical regimens and laboratory strategies on treating various types of patients.
Biology of Reproduction	Endometrial receptivity, including the interaction between implantation and placentation.	Present the current state of knowledge on endometrial receptivity, how it affects pregnancy outcomes and ways to improve those outcomes.
	Emerging technology in embryo implantation and uterine receptivity.	Applicable and experimental methods in improving embryo implantation and embryo-uterine interaction.
	Inner cell mass (ICM) and trophoctoderm (TE).	Review the mechanisms of differentiated ICM and TE lineages, and to explore technologies to examine and potentially repair defects during embryo implantation and the earliest stage of pregnancy initiation.
Complementary/ Alternative Medicine	Vitamin D and probiotics as dietary supplementation in infertility patients.	Educational teaching on implementing Lifestyle Medicine in the reproductive practice along with nutritional supplements to improve patient health.
	Acupuncture in infertile couples.	Discuss the use of an acupuncture program to reduce stress/anxiety in infertility patients.

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Contraception	New contraception technology and contraceptive use in patients.	Evidence based literature update for learners on new contraceptive technologies and use in medically complex patients.
Counseling	Counseling to support couples with infertility.	Educate on the role of counseling in patient retention to assist with patient continuity of care. Factors that assist patient to stay with clinic.
	Lack of understanding of culturally effective communication across generations.	Education on generational differences and how to effectively communicate across the generations including staff and patients. Ensure that counseling is done in a culturally acceptable way.
	Counseling to support patients with PCOS and RPL.	Counseling approaches for patients with complex diseases and infertility.
	Counseling patients on embryo donation and disposition.	Review best practices of counseling patients for embryo donation and disposition, research versus destroyed. Donor and recipient screening and counseling.
COVID-19	Telemedicine	Technology, practice, finances, and lessons learned from Tele-health.
	ART practice management in the COVID-19 pandemic.	Examine effective laboratory practices, clinic practice management, and impact of COVID-19 on embryos or early pregnancy. Review guidelines, pathophysiology of disease, and risk assessment.
	Best laboratory practice during the time of COVID-19.	Emergency/short-term responses and long-term strategies to meet practical and financial challenges. Discuss how to prepare for future pandemics.
	Surgery in the setting of the COVID-19 pandemic.	Review best practices regarding surgery during the COVID-19 pandemic. Guidelines used.
Early Human Development	Factors inherent to the fetus that impact recurrent implantation failure.	Review current knowledge on early human development and its role in recurrent implantation failure.
Endometriosis	Management options for endometriosis beyond standard therapy.	Explain newer medical therapies and surgical treatments for endometriosis. Pros/cons of both treatments.
	Advanced surgical management of endometriosis.	Education regarding advanced surgical management of endometriosis via live surgery, video-recorded surgical cases, and review of literature.
Ethics/ Legal	Lack of knowledge in the ever-changing legal climate as it relates to REI practice.	Review legal aspects of care including international families and reproduction. Minimize/mitigate legal risk with regards to advanced technology.
	Communication with patients about ethical concerns of genetic alteration.	Discuss ethical issues and education of open communication with patients and

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		administration to address concerns regarding genetic alteration specifically.
	Embryo disposition and donation.	Education for staff, administration, and patients for donation of embryos to research versus destroyed. Explain ways to cope with moral and psychological aspects of our jobs.
	Research programs liability.	Discuss the liability of research programs with focus on IVF programs.
	Ethical perspectives of patients from different cultures.	Examine and discuss the ethical perspectives of patients from different cultures in relationship to IVF.
	Gamete donation.	Analyze the implications of being a donor and a recipient. Describe how to maintain and preserve anonymity in an age of social media and technical piracy.
Environmental	Lack of knowledge of how to create a sustainable health care environment.	Discuss options on providing a culture of sustainability in the health care setting.
Fertility Preservation	Elective and oncology preservation.	Evidence based protocol selection and outcomes for elective and oncology patients. Protocols for ovarian stimulation in the fertility preservation patient.
	Ovarian tissue preservation/uterine transplant.	Review the technical aspects of ovarian tissue preservation and uterine transplant.
	Sperm cryopreservation for male cancer patients.	Educate on the best methods of sperm retrieval in male cancer patients.
	International issues in fertility preservation including restrictions.	Knowledge and expertise on international issues in fertility preservations, including discussion of country-specific restrictions and resources to aid providers and patients in achieving desired care.
	Oocyte preservation skills and best practice.	Skill development forum on oocyte preservation skills and a review of guidelines and best practices.
Leiomyomas	Medical and surgical management of leiomyomas.	Review of new medical and surgical management interventions for leiomyomas, including addressing their costs, and risk/benefit of each option.
Genetics/PGT	Genetic counseling.	Course taught by Genetic Counselor focused on genetics of different infertility diagnoses, interventions through ART, and relationship of genetic factors to outcomes.
	Lack of knowledge of non-invasive PGT.	Review of evidence on non-invasive genetic testing of embryos. Current progress, platforms, approaches (blastocoel sampling,

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		spent medium, etc.), utilization, and timeframe for routine use.
	Counseling to support patients with mosaicism embryos and sub chromosomal variations.	Discuss best practice on transfer or not to transfer mosaic embryos. Education on the techniques behind PGT and how mosaics are identified. Review the clinical implications of transferring mosaic embryos.
	Gene editing to improve outcomes.	Provide learning opportunities on all aspects of PGT, including techniques, and clinical use of results. Provide comprehensive education on current state of gene editing and associated issues.
	Genetic workup for patients.	Review of different genetic workups, practice patterns, and best practices. Develop protocols for patients that should or should not receive PGT-A testing.
	Genetic mechanism in male and female gametes contributing to embryo aneuploidy and mosaicism.	Summarize common genetic conditions that have reproductive consequences for patients.
	PGT 3.0 and moving forward.	Discuss history of PGT, review accuracy of platforms, definition of next generation PGT (3.0, 4.0, etc.), and barriers of implementing those technologies.
	Discarding PGT-A abnormal and mosaic embryos for the laboratory embryologist/technologist.	Review origins, detection, and communication on PGT-A of aneuploidy and mosaic embryos. Discuss issues in discarding mosaic (low vs. high) embryos. Consistency of data interpretation and reporting.
	PGT-A technology information.	Course for MDs, nurses, and laboratory personnel to understand the key differences among various PGT technologies, as well as other ART-related genetic testing. Limitations of various platforms/methodologies.
	Impact of ART on epigenetics.	Review research on effect on the embryo and long-term offspring health. Discuss future applications.
	Time-lapse imaging (TLI) for aneuploidy	Review data on TLI for aneuploidy.
		Are there differences between abnormal embryos? Best approaches to discuss with clinicians and patients on mosaic embryos? Issues in discarding mosaic (low vs. high) embryos? How does the program interpret the data and report it, and does that make a difference in how we feel about discarding an embryo? How do we deal with this aspect of our jobs morally and psychologically?
	Good practice in embryo biopsy.	Guidelines in embryo biopsy and re-biopsy/vitrification for repeated PGT-A.

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Imaging	New ultrasound technologies.	Hands on skill development in ultrasound.
	3D/4D ultrasound and how it has impacted the reproductive practice.	Review of uses of 3D/4D ultrasound in reproductive medicine and benefits for patients.
	Saline infusion sonography and its use in infertility.	Review of saline infusion sonography benefits and limitations for use in the infertility patient.
Infertility	Lack of knowledge of medical practices to discontinue based on evidence of improved technology in infertility evaluation and management.	Session on practices and technology that are considered to not be standard of care in infertility evaluation and management.
	Male reproductive specialists want to understand more about female factors in infertility.	Education on female infertility specifically designed for the male reproductive specialist.
Lesbian, Gay, Bisexual, and Transgender	Multidisciplinary team approach to meet the needs of LGBTQ and population.	Describe best practice of cultural competencies in the care of LGBTQ and population through a multidisciplinary approach.
	Transgender care in the IVF practice.	Review legal, economic, and medical concerns of the transgender population regarding reproductive care. Discuss ways to be an advocate for this population of patients.
	Lack of knowledge of how to care for LGBT patients from the practice management viewpoint.	Provide information about how to make a practice more LGBT friendly, train staff, review treatment options, and provide more evidence on treatment outcomes from a practice management perspective.
Menopause/ Ovarian Insufficiency	Management of Primary Ovary Insufficiency (POI).	Discuss stimulation protocols, challenges for POI patients, techniques in oocyte activation/maturation, and best management of poor responders.
	Menopausal hormone therapy management.	Educate on the WHI study and the use of postmenopausal hormone therapy, including difficult cases and pearls of wisdom.
	Risk factors for POI.	Summarize risk factors of paternal age and its effect on ART cycles, and emotional support for the infertile older couple.
PCOS/ Androgen Excess	PCOS diagnosis and management.	Current diagnostic criteria and management throughout a women's life; differences in that management for adolescents, for fertility and for symptoms. Depression management and weight management options.

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	Multi-disciplinary team approach for PCOS care.	Education and examples of clinics who have designed comprehensive, multi-disciplinary services for PCOS patients and their complex medical needs including mental health, lifestyle medicine, reproductive and medical endocrinology, and other services.
Mental Health	Theoretical constructs behind the psychological and emotional reactions of infertility and pregnancy loss.	Review of psychologic theory and foundation knowledge on grief and trauma, specifically to infertility and pregnancy loss as data is available.
	Grief counseling and helping patients through trauma (e.g., of infertility diagnosis, loss of reproductive capability).	Provide training via examples and role play demonstration on grief and trauma counseling with patients to improve skills.
Practice/ Risk Management/ Team-based Care	Growth and core business principles.	Utilization of ads/social media and the role of 3 rd parties in business growth and development.
	Administrative functions of practice management.	Review best practice examples of on boarding and retention of staff, building a harmonious collaborative multidisciplinary team with high satisfaction, and financial counselor training and retention.
	Coding for maximizing reimbursement.	Provide coding workshop and resources for learners.
	Management of FDA inspection.	Workshop on FDA inspections and how to optimize the outcomes for the clinic.
	Multidisciplinary care in ART.	Interdisciplinary education regarding the medical (MD, PhD), legal (attorneys), ethical (bioethicists), mental health issues (psychiatry, social work), and genetics (genetic counselors) related to all aspects of infertility treatment.
Pregnancy/ Pregnancy Loss	Management of Recurrent Pregnancy Loss.	Review management of chronic endometritis, thyroid, and microbiome manipulation to manage RPL.
	Different platforms for genetic testing of products of conception.	Comparison of different platforms and methods for testing POC.
	Recurrent implantation failure causes, workup and interventions evolving.	Review of recurrent implantation failure workup and evidence on interventions that improve outcomes.
Reproductive Surgery	Types of instruments available for office hysteroscopy.	Review of surgical set ups for office hysteroscopy. Workshop on office/hysteroscopy set up.

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	Flexible hysteroscopy for evaluation of infertile female.	Equipment considerations in office hysteroscopy, financial reimbursement as justification for equipment.
	Minimally invasive reproductive surgery technique/skill set.	Hands-on course for laparoscopy and hysteroscopy.
	Cesarean section scar separations.	Surgical approaches to cesarean section scar separation (isthmocele) and educate on whether to treat or not.
	Effect of adenomyosis on fertility.	Overview of adenomyosis and its relationship to the biology of reproduction with a focus on current techniques for treatment.
	Surgical management of Mullerian anomalies.	Review technique and education on characterization of anomalies and address fertility component for anomalies.
	Surgical management of abnormal anatomy to improve outcomes.	Discussion on how to manage hydrosalpinges, endometriosis, septate uterus to improve outcomes.
	IVF versus reproductive surgery.	Discuss which process to use IVF or reproductive surgery, when and how they integrate and augment each other.
	Single-port laparoscopy skill development.	Review the equipment, advantages, and disadvantages of single-port laparoscopy along with other novel laparoscopic techniques.
	Robotic surgery in reproductive medicine.	Current state of robotic surgery in reproductive medicine and how to start a robotic surgery program in your institution.
Stem Cells	Therapeutic applications of stem cells in reproduction.	Review of current application of stem cell research as it applies to reproductive medicine and future application.
	Progress and outlook in utilizing artificial gametes and embryos.	Scientific studies on the current progress, limitations, ethical concerns, and potential timeline for utilization of artificial gametes and embryos.
	Stem cell research and gene editing.	Summarize research studies and issues associated with gene editing of stem cells.
	Stem cell 101.	Review of pathophysiology of stem cells.
	New frontiers and next innovative disruption(s) in reproductive and regenerative technology.	Discuss potential future innovative disruption(s) in reproductive and regenerative technology and impact on IVF.
	Long-term preservation of stem cell for clinical use.	Evaluating the efficacy of cryopreserving stem cells relative to solution and container types used.

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Technology	AI in ART	Integration of technology and new office management tools to streamline and improve IVF.
	Future of IVF and personalization of the process.	Refining the ovarian stimulation protocols and transfer protocols to allow for more personalization.
	Automation, artificial intelligence (AI), and robotics in the laboratory.	Education on artificial intelligence systems and application for laboratory management and infertility treatment of patients.
Miscellaneous	Speaking skills.	Methods/strategies to improve speaking skills.
	Lack of understanding of research, finding grant funding, and grant writing skills.	Expert to educate on how to get involved in research, find grant- funding and improve grant-writing skills.
	Status of virtual meetings.	Education on best practices of putting together virtual meeting and data on what is best type of information presented virtually versus in person.
	Communication skills development and implementation.	Workshop on basic communication skills with patients, staff, and colleagues.