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embrace

Nurturing the bond between the Indian Embryologists



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President's Message



Dear Friends and Colleagues,

As my tenure as President of the Academy of Clinical Embryologists (ACE) draws to a close, I look back with immense gratitude, pride, and optimism for the future of our society.

Every leadership journey is built on foundations laid by those before us. I have been fortunate to walk a path created by our past presidents, whose vision, dedication, and perseverance shaped ACE into the vibrant professional community it is today. My role has simply been to build upon that legacy, and I am grateful for the opportunity to contribute to its continued growth.

Over the past three years, together, we have achieved several meaningful milestones. One of our proudest accomplishments has been setting the ACE Accreditation Examination in motion, an important step towards standardizing education, promoting professional excellence, and recognizing competency among clinical embryologists.

We have also strengthened ACE's global presence by forging a strategic alliance with ALPHA Scientists in Reproductive Medicine. This collaboration has brought exclusive benefits to our members, including a special membership concession extended uniquely to ACE members, while also fostering greater scientific exchange through reciprocal participation in each other's scientific meetings. I am confident that this partnership will continue to enrich our profession in the years to come.

Closer home, we have worked towards strengthening the governance of our society by streamlining and regularizing the election process, ensuring greater transparency, continuity, and stability for future leadership.

These achievements are not mine alone. They are the result of the collective efforts of our office bearers, Executive Committee members, volunteers, and every ACE member who believed in the vision of our society. I extend my heartfelt gratitude to each one of you for your trust, support, and unwavering commitment.

This newsletter is a reflection of that same spirit of learning and collaboration. The articles on microscopy in ART, embryo grading, male infertility and lifestyle, quality management, embryo culture practices, and the highlights of ACE activities over the past year showcase the depth of knowledge and passion within our community. I hope you enjoy reading them as much as our contributors enjoyed creating them.

As we welcome a new Managing Committee, I extend my warmest congratulations and best wishes to the incoming team. I have every confidence that they will build upon the strong foundation laid over the years and lead ACE to even greater heights.

Serving as your President has been one of the greatest privileges of my professional life. While my tenure comes to an end, my commitment to ACE and to the advancement of clinical embryology remains as strong as ever. I look forward to continuing this journey alongside all of you as a proud member of the ACE family.

With warm regards,

Dr. Sujatha Ramakrishnan

President

Academy of Clinical Embryologists (ACE)

President Elect's Message



Dear Colleagues,

It is a great honour and privilege to serve as the President of the Academy of Clinical Embryologists (ACE).

I accept this responsibility with gratitude and a deep commitment to advancing our profession through education, collaboration, and scientific excellence.

Clinical embryology continues to evolve at an unprecedented pace. As new technologies, laboratory practices, and evidence reshape assisted reproduction, it is our collective responsibility to ensure that innovation is matched by rigorous science, quality, ethics, and patient-centred care. ACE has always been at the forefront of fostering professional development and promoting best laboratory practices, and together we will continue to strengthen this foundation.

This newsletter reflects the spirit of our Academy. It brings together insightful articles on key topics in embryology, highlights the findings of our national survey on embryo culture practices, and showcases the many educational and academic activities undertaken by ACE over the past year. I hope these contributions stimulate discussion, encourage learning, and inspire continuous improvement in our daily practice.

I extend my sincere appreciation to the Editorial Team and the authors who worked towards this newsletter.

As we gather for our annual congress, let us reaffirm our commitment to knowledge sharing, mentorship, and excellence in clinical embryology. I look forward to working with all of you as we build an even stronger and more vibrant ACE.

Wishing you a successful congress and an enriching year ahead.

Dr. Gaurav Majumdar
Incoming President
Academy of Clinical Embryologists (ACE)

Secretary's Message



Dear ACE Family,

It is both an honour and an emotional moment for me to write this message as my final Secretary's note for the ACE Newsletter. As we gather for the ACE Annual Conference 2026 in Agra, I look back with immense gratitude on the journey we have shared over the past two years (2024–2026).

The Academy of Clinical Embryologists has continued to grow not only in numbers, but also in its academic strength, professional credibility, and national recognition. This progress has been possible because of the collective efforts of our members, Managing Committee, office bearers, faculty, and every embryologist who believes in the vision of ACE.

One of the most significant milestones of this term has been the development of the ACE Embryologist Accreditation and Certification Program. This initiative was conceived with the objective of creating a structured, transparent, and competency-based framework for assessing embryologists across the country. We hope this program will become an important step towards standardising embryology practice, promoting excellence, and strengthening public confidence in our profession.

Another important achievement has been strengthening the organisational framework of ACE. By streamlining our governance processes, introducing a more structured election system, and creating greater uniformity in the functioning of the society, we have laid a stronger foundation for future leadership. Institutions grow when systems become stronger than individuals, and I am confident that these changes will help ACE continue its remarkable journey in the years ahead.

This newsletter reflects the diversity and depth of modern clinical embryology. From advances in microscopy and embryo grading to the growing impact of lifestyle on male infertility, quality management through traceability, and the findings from the ACE Survey on Embryo Culture Practices, the articles in this edition showcase both scientific progress and practical relevance. Alongside these academic contributions, we have also captured memorable moments from ACE Bhubaneswar 2025 and the many activities that brought our community together throughout the year.

As I conclude my tenure as Secretary, I do so with immense satisfaction, knowing that ACE is stronger today than ever before. At the same time, I recognise that there is still much to accomplish. I have every confidence that the incoming leadership will continue to elevate ACE to even greater heights and further establish it as one of the world's leading professional organisations for clinical embryologists.

I sincerely thank all our members for their trust, encouragement, and unwavering support throughout this journey. Serving as your Secretary has been one of the greatest privileges of my professional life. Although my role may change, my commitment to ACE and to the advancement of clinical embryology will remain unchanged.

I wish everyone a successful, enriching, and memorable ACE 2026 at Agra.

With warm regards,

Dr. Parasuram Gopinath
Secretary
Academy of Clinical Embryologists (ACE)

Editor's Message



It gives me immense pleasure to be part of the 20th edition of the embrACE Newsletter. The field of embryology is progressing rapidly, and as a new generation of embryologists enters, the landscape is evolving – yet the basics remain the same. With this in mind, this edition focuses on the fundamentals of embryology and aims to cater to a wide audience while igniting thought.

We look at the routines embryologists follow as part of daily lab work – how we arrived at them, and their limitations. The article on microscopy traces its past, present, and future. The newsletter then turns to embryo grading – the holy grail of selecting the right embryo – its limitations, and what lies beyond it. From there, we move from the visible to the more abstract side of quality: is 99.9% accuracy sufficient in this field, or does it demand six-sigma precision and beyond? Accountability and transparency remain core principles of embryology. The article on male infertility and lifestyle goes a step further, addressing not just treatment but prevention. The ACE Survey section highlights the variability in practice and the ground realities of embryology in the Indian context. The final section highlights the wide range of ACE activities over the past year, including memories from the highly successful 2025 flagship event, ACE Bhubaneswar

I would like to thank all the contributors of the articles, my co-editor Ms Dhanya, and Ms Arthi, and Team ACE – and extend heartfelt thanks to all my fellow ACEians who elected me to the executive committee. I congratulate the present team on their excellent work and wish the incoming team continued success.

With warm regards,

Dr Akash Agarwal and Team

Evolution of Microscopy in In Vitro Fertilization: From Morphological Assessment to Advanced Non-invasive Embryo Imaging

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Introduction:

Microscopy has driven many of the advances that have transformed in vitro fertilization (IVF) from an experimental technique into a highly successful clinical treatment. Early embryo assessment relied on simple bright-field observation, whereas modern embryology laboratories use sophisticated imaging systems to evaluate embryo morphology, developmental kinetics, and cellular function without compromising embryo viability. Inverted microscopes, phase-contrast imaging, differential interference contrast (DIC), polarized light microscopy, and digital imaging have improved gamete handling and micromanipulation, particularly during intracytoplasmic sperm injection (ICSI). More recent innovations, including time-lapse imaging, quantitative phase imaging, digital holographic microscopy, hyperspectral imaging, and artificial intelligence (AI)-assisted image analysis, aim to provide objective and non-invasive biomarkers of embryo competence. This review summarizes the historical evolution of microscopy in IVF, highlights the contribution of major imaging technologies, discusses their clinical applications and limitations, and considers future directions toward AI-enabled, multimodal embryo assessment.

The development of assisted reproductive technology has closely paralleled advances in microscopy. Since the discovery of spermatozoa by Antonie van Leeuwenhoek in the seventeenth century, improvements in optics have progressively enhanced understanding of fertilization and embryogenesis. Clinical IVF depends on accurate visualization of oocytes, sperm, and embryos during every laboratory step, including fertilization assessment, embryo grading, micromanipulation, biopsy, and cryopreservation. Microscopy has therefore evolved from a simple observational tool into a diagnostic platform that supports embryo selection and laboratory quality control.

Historical Evolution

Before IVF, improvements by Zeiss, Abbe, and Schott established the optical principles underlying modern light microscopy. A major advance came with the inverted microscope, which positioned objectives beneath culture dishes, enabling observation of embryos without disturbing their environment. This configuration, combined with heated stages and long-working-distance objectives, became essential for IVF laboratories and remains the standard platform today.

Conventional Microscopy

Bright-field microscopy formed the basis of early embryo assessment, allowing evaluation of oocyte maturity, pronuclear formation, cleavage, blastocyst development, blastomere symmetry, fragmentation, and zona pellucida morphology. Although inexpensive and widely available, its limited contrast reduced visualization of transparent cells. Phase-contrast

microscopy improved visualization of pronuclei, blastomere membranes, and cytoplasmic structures without staining and became routine during the 1980s. Differential interference contrast microscopy further enhanced image quality by converting subtle optical differences into high-contrast pseudo-three-dimensional images. DIC remains the preferred technique for ICSI, assisted hatching, embryo biopsy, and other micromanipulation procedures because it provides excellent spatial resolution.

ICSI and functional imaging

The introduction of ICSI in 1992 fundamentally expanded the role of microscopy. Embryologists began performing microsurgical procedures requiring precision optics, micromanipulators, vibration-free stages, and temperature-controlled systems. Polarised light microscopy subsequently enabled visualization of birefringent structures such as the meiotic spindle and zona pellucida, providing functional information about oocyte maturity and spindle integrity. Although its routine clinical value remains debated, it offers additional information beyond conventional morphology.

Digital imaging and time-lapse

Digital cameras replaced eyepiece observation, facilitating image documentation, electronic records, teaching, quality assurance, and remote consultation. Automated image analysis also became feasible. Time-lapse incubators represented another major advance by capturing embryo images every few minutes without removing embryos from controlled culture conditions. Continuous monitoring allows analysis of morphokinetic parameters including cleavage timing, synchrony, and blastulation dynamics while minimizing environmental disturbance. Although these systems improve workflow and provide objective developmental data, evidence that they independently improve live birth rates remains inconsistent.

Emerging technologies

Current research focuses on quantitative, label-free imaging capable of identifying embryo competence objectively. Quantitative phase imaging measures optical path length and cellular dry mass. Digital holographic microscopy reconstructs three-dimensional images while providing quantitative information on refractive index, thickness, and intracellular organization. Hyperspectral imaging evaluates metabolic fingerprints, Raman spectroscopy assesses biochemical composition, fluorescence lifetime imaging explores cellular metabolism, and optical coherence microscopy provides high-resolution three-dimensional imaging. Most remain investigational but have considerable potential.

Artificial intelligence

AI-assisted microscopy is increasingly integrated with digital imaging and time-lapse systems. Machine-learning algorithms analyze embryo morphology, morphokinetics, and quantitative imaging data to reduce observer variability and improve embryo ranking. Combining AI with advanced imaging may create standardized, reproducible embryo selection strategies while minimizing subjective interpretation.

Future directions and conclusion

Future IVF laboratories are expected to combine advanced optics, AI, quantitative phase imaging, digital holography, and metabolic assessment into multimodal platforms capable of continuously evaluating embryo viability without invasive biopsy or fluorescent labelling. Such systems could improve embryo selection, encourage elective single-embryo transfer, and enhance clinical outcomes. Despite remarkable progress, many emerging technologies require multicenter validation before routine adoption. Nevertheless, the evolution of microscopy has consistently shaped IVF practice, and continued innovation will remain central to safer, more objective, and more effective assisted reproduction.

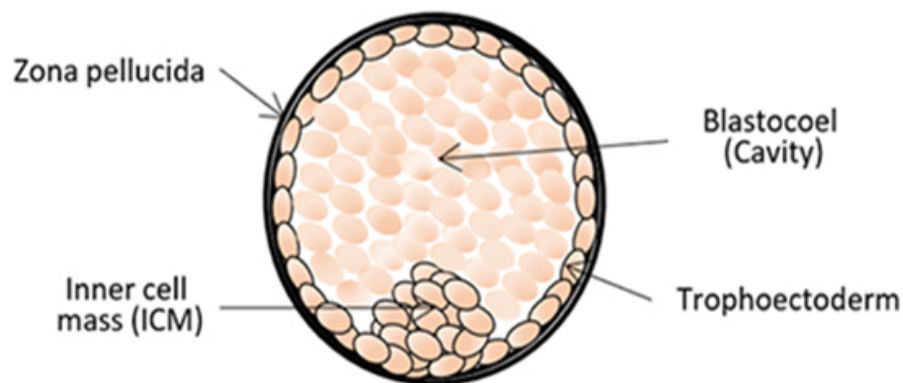


One Number & Two Alphabets

The Story Behind and Beyond the 3 Characters

What We Actually See When We Look at a Blastocyst

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I don't know how many times I've written "4AA" or "3CC" on a report and watched someone's face change. Three characters summarize five to six days of the most complex biology a human body will attempt – and it's the detail a patient remembers, sometimes for life.

Why do we let one code carry so much weight, when every embryologist at the scope knows it's only half the story? A "perfect" 5AA can fail to implant; a "modest" 3BB can become a healthy baby. The grade explains neither on its own.

A Snapshot, Not the Entire Film

Gardner-Schoolcraft morphological grading has earned its place [1,2]: fast, reproducible, and backed by more outcome data than almost any lab tool. But picture this familiar scenario - two euploid blastocysts graded identically; the first transferred doesn't implant and the second does. Morphological embryo grading alone can never explain this. Timing, chromosomal status, metabolic competence, even that week's incubator performance usually never survives into that three-character code. A grade is a photograph of one morning, not the road that led there.

A 2025 pooled analysis of Gardner-graded transfers confirmed expansion, ICM, and trophectoderm carry unequal predictive weight rather than contributing equally to one score [3].

Grade	Inner Cell Mass (ICM)	Trophectoderm (TE)
A – Good	Many tightly packed cells	Many cells, tight epithelial layer
B – Fair	Several loosely grouped cells	Fewer cells, loosely arranged layer
C – Poor	Very few or absent cells	Very few, sparse cells

Table 1. Gardner-Schoolcraft ICM and trophectoderm grading criteria.

1. Timing Matters as Much as the Photograph

Every embryologist tracks cleavage synchrony, fragmentation and compaction. A 2025 meta-analysis of 49 studies and over 106,000 transfers found Day-5 blastocysts outperformed Day-6 on live-birth rate (both with and without PGT-A) (Table 2) [4]. Restricted to euploid transfers, a 2026 meta-analysis found live-birth odds even lower for Day-7 versus Day-5 or Day-6 [5]. The effect isn't absolute, though: a high-grade Day-6 blastocyst can still outperform a low-grade Day-5 one on direct comparison [4]. Direct cleavage and multinucleation – even when an embryo visually "catches up" by Day 5 – are red flags a static grade won't show.

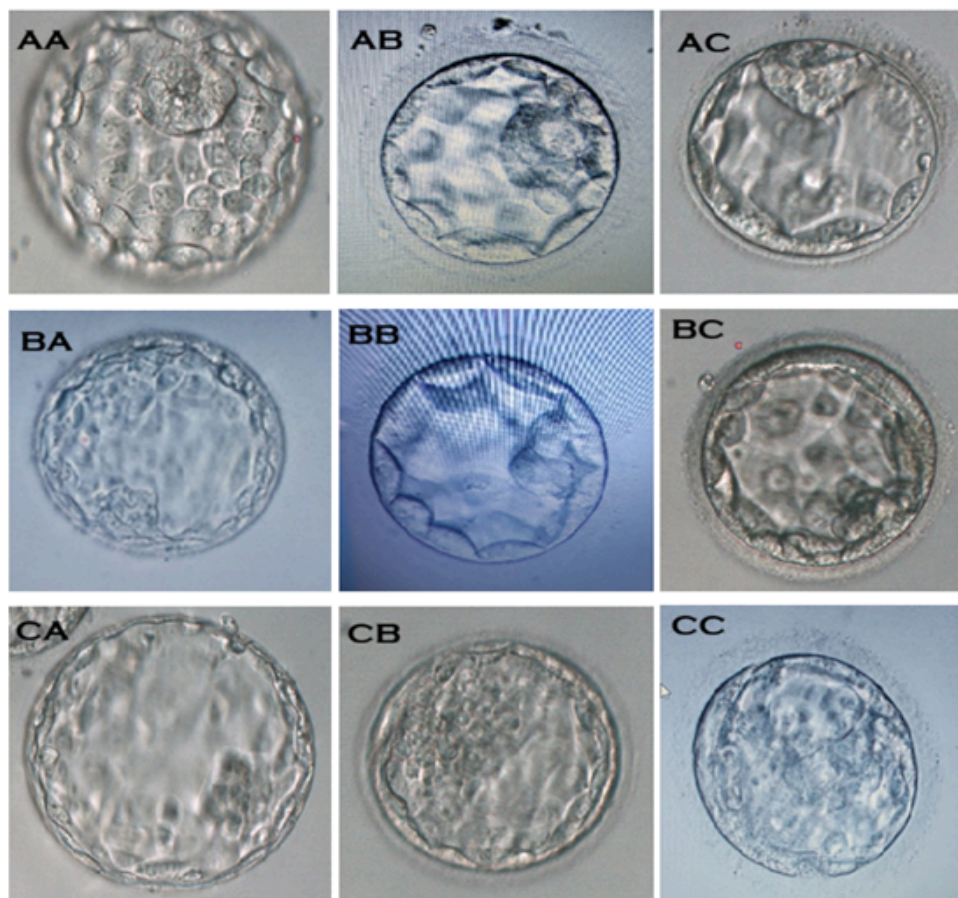
Comparison	Live-birth outcome (95% CI)
Day 5 vs Day 6 (no PGT-A)	43.8% vs 30.2%; RR 1.56 (1.42–1.71) [4]
Day 5 vs Day 6 (PGT-A euploid)	53.4% vs 43.4%; RR 1.27 (1.22–1.33) [4]
Day 7 vs Day 5 (PGT-A euploid)	OR 0.21 (0.17–0.28) [5]
Day 7 vs Day 6 (PGT-A euploid)	OR 0.36 (0.28–0.46) [5]

Table 2. Live-birth outcomes by day of blastocyst transfer, pooled across published cohorts.

2. The Inner Cell Mass (ICM): A Preview of the Baby-to-Be

Tucked inside every blastocyst is the cluster of cells destined to become the baby in future – the ICM. We're really assessing the 3 C's: Cell number, Compactness, cohesion.

Grade-A ICM is dense and unmistakable, but healthy babies are also born from Grade B, and sometimes even Grade C, ICMs. A cohort of 10,482 transfers found ICM morphology the strongest individual predictor of live birth among the graded parameters – evidence of its influence, though not proof it decides the outcome alone [6]. Recent studies on borderline blastocysts challenge outright discard of Grade C ICMs: live birth rate was lower than Grade A (5.5% vs 25.6%), but importantly, non-zero [7].



Blastocyst grading examples across the ICM (rows) and trophectoderm (columns) grade combinations.

3. Trophectoderm (TE): The Placenta Gets There First

Before there's ever a baby, there has to be a placenta – and that begins with implantation, carried out by the trophectoderm, the outer ring of cells wrapping the blastocyst. Cell number, cohesion, and early degeneration matter, since trophectoderm quality predicts implantation and pregnancy in its own right.

A multicentre analysis of 2,461 transfers found that blastocyst developmental (expansion) stage and then trophectoderm grade, were stronger independent predictors of live birth, surprisingly even more than ICM grade once confounders including female age were accounted for [8] A beautiful looking ICM can still underperform if the trophectoderm isn't carrying its weight; "the grade" is really two organs-in-waiting, scored in the same breath.

4. Expansion and Hatching: The Dress Rehearsal

As a blastocyst expands, the zona thins until it breaks free (Table 3). Higher expansion stages do better, and spontaneous hatching is a good sign; assisted hatching hasn't shown much added benefit.

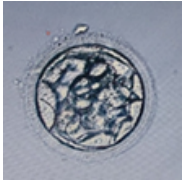
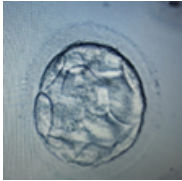
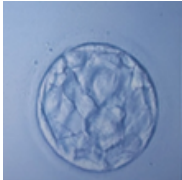
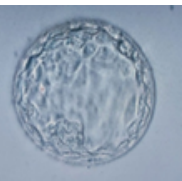
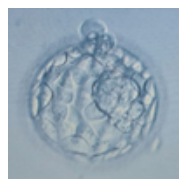
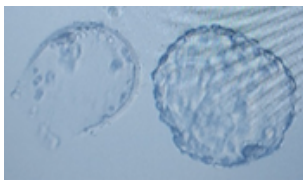
Stage	Description	Image
1 – Early blastocyst	< 50% cavity volume	
2 – Blastocyst	≥ 50% cavity volume	
3 – Full blastocyst	100% cavity volume	
4 – Expanded	> 100% volume; thinned shell	
5 – Hatching	Actively breaking out of shell	
6 – Hatched	Completely escaped from shell	

Table 3. Gardner embryo expansion stages 1–6.

5. What No Grade Will Ever Say Out Loud

Two embryologists can look at the same ICM and land on A versus B — not because one is wrong, but because grading a living cluster through a microscope is judgment dressed as measurement. We also have to weigh maternal age, sperm quality, and prior cycle history. Two embryos that are both graded the same as 4AB on paper but still carry different odds.

The Genetics Behind the Grade

A 2023 meta-analysis of 370+ papers found no single factor explains why euploid blastocysts fail to implant — quality, age, obesity, and repeated failure or manipulation chip away at the odds together [9]. PGT-A confirms chromosome number alone; it was never built to confirm whether the right genes switch on, at the right moment, inside a uterus ready to listen. Table-4 summarises the evidence briefly:

Level	What current evidence shows
Embryo (trophectoderm)	~85 genes differ between attaching and non-attaching euploid blastocysts. In human trophoblast stem-cell models, VGLL1 partners with TEAD4 to drive trophoctoderm lineage commitment — a pathway negligible in mice. [10,11].
Uterus (endometrium)	HOXA10/11, integrin $\alpha\beta 3$, LIF, and "pinopodes" mark the receptive window; HOXA10 is suppressed in endometriosis, adenomyosis, and hydrosalpinx. [11,12].
Lineage self-correction	The epiblast (fetus) seems better able to clear aneuploid cells than the trophoctoderm (placenta); a 5–10 cell biopsy often won't always reflect the rest of the embryo completely. [7,14,15].

Table 4. Molecular contributors to implantation failure, and why a low trophoctoderm or ICM grade is not a verdict on the fetus.

Where the Field Is Heading

We're already moving past the microscope alone. Spent culture-media analysis — reading an embryo's metabolic footprint — is promising but not standardized, since formulations differ by manufacturer [16]; a companion meta-analysis found no single metabolite predicts outcome alone, so the realistic path combines metabolomics with morphokinetics [17]. The one rigorous test to date, a 2024 double-blind RCT, found deep learning selection did not meet non-inferiority versus manual morphology on clinical pregnancy rate (46.5% vs 48.2%) [18].

PGT-A remains the only proven adjunct, but offers little added benefit in females aged under 35years: two RCTs in ASRM's guidance found no live-birth benefit in that age group [19]. It's also a probability statement, not a certainty — a 2025 review found false-positive and false-negative results both occur at meaningful rates [20], and parental-origin analysis has reclassified over half of "mosaic" results in one cohort as euploid on closer inspection [14].

It's this absence of a non-invasive, reliable, and time-tested alternative that keeps morphological grading the gold standard. It has real limits – reproducibility, inter-observer variability, being a snapshot and not the film – but that snapshot is the foundation for many things newer, AI included, is built on.

The Bottom Line

Morphological Embryo grading remains one of the most useful tools we have, but it was never built to tell the whole story. An embryo is built from two components – the oocyte and the sperm. A successful pregnancy needs a third, the uterus, which has no place in a grading system. That's not a flaw we'll engineer away; it's built into the biology of mammalian reproduction.

Every blastocyst arrives at Day 5, or Day 6, carrying a history nobody wrote down. The grade is the last freeze-frame of that journey, and behind it sits a judgment call built on evidence, precision, and years of getting it wrong before getting it right. A "perfect" 5AA is not a promise; some fail to implant. A "modest" 3BB is not a verdict; some become healthy babies. The grade gives us a shared language; the assessment behind it gives us judgment. Until we have something better to be used daily, beyond the morphological grade, together these 3 characters remain how we choose the best.

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Lifestyle and Male Infertility: Are We Ignoring the Biggest Modifiable Risk Factor?

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Male infertility contributes to nearly half of all infertility cases worldwide, yet public awareness, preventive strategies, and routine reproductive health assessment remain disproportionately focused on women. Despite remarkable advances in assisted reproductive technology (ART), comparatively little attention is directed toward preserving male reproductive health before fertility problems become clinically apparent. In fertility clinics, embryologists and andrologists routinely evaluate semen parameters, sperm morphology, motility, and DNA integrity. However, an important question remains: **what happens to male reproductive health long before a man enters an infertility clinic?**

Over the past decade, increasing attention has been directed toward the role of lifestyle in shaping male reproductive potential. Rising rates of obesity, sedentary behavior, poor dietary habits, sleep disturbances, chronic psychological stress, smoking, alcohol consumption, and environmental exposures have coincided with growing concerns regarding declining semen quality and reproductive health. While these factors are traditionally associated with cardiovascular and metabolic disorders, their impact on fertility is equally important and frequently underestimated. Male preconception health is increasingly recognized as an integral component of reproductive medicine, with implications extending beyond conception to pregnancy outcomes and the health of future generations.

Many lifestyle-related factors exert their effects through common biological pathways, particularly oxidative stress and chronic low-grade inflammation. Excessive production of reactive oxygen species can impair spermatogenesis, alter sperm function, damage sperm membranes, and increase sperm DNA fragmentation. Mitochondrial dysfunction, impaired antioxidant defenses, and persistent inflammation collectively create an unfavorable testicular microenvironment that compromises sperm production and function. Consequently, lifestyle choices may influence not only conventional semen parameters but also the genetic integrity of spermatozoa.

One of the most significant lifestyle challenges affecting reproductive health today is obesity. The prevalence of overweight and obesity among reproductive-age men continues to rise globally. Adipose tissue is now recognized as an active endocrine organ capable of influencing hormonal regulation. Increased aromatization of testosterone to estrogen, insulin resistance, systemic inflammation, and oxidative stress may collectively impair spermatogenesis and sperm function. Numerous studies have demonstrated associations

between obesity and reduced sperm concentration, motility, morphology, and increased sperm DNA damage.

Sleep is another frequently overlooked determinant of male fertility. Modern lifestyles are characterized by prolonged screen exposure, irregular work schedules, and inadequate sleep duration. Emerging evidence suggests that poor sleep quality may disrupt the hypothalamic–pituitary–gonadal axis, alter testosterone secretion, elevate cortisol levels, and negatively affect semen quality. Despite the growing market for fertility supplements and nutraceuticals, adequate sleep remains one of the simplest, most accessible, and yet underutilized interventions for preserving reproductive health.

Psychological stress has also emerged as an important factor influencing male fertility. Professional demands, financial pressures, relationship challenges, and the emotional burden associated with infertility itself can contribute to chronic stress. Elevated stress levels have been associated with hormonal disturbances, increased oxidative stress, reduced sexual well-being, and impaired semen quality. Although stress is often difficult to quantify during routine clinical evaluation, its influence on reproductive function should not be underestimated.

Increasing attention is also being directed toward sperm DNA fragmentation as an important marker of male reproductive health. Lifestyle factors such as smoking, obesity, environmental pollutants, excessive heat exposure, physical inactivity, inadequate sleep, and chronic stress have all been linked to elevated DNA fragmentation levels. In clinical practice, it is not uncommon to encounter men with apparently normal semen parameters but significantly increased DNA fragmentation indices. Such observations highlight the limitations of relying solely on conventional semen analysis when assessing fertility potential.

Emerging evidence also suggests that adverse lifestyle exposures may induce epigenetic alterations in sperm, potentially influencing embryo development, pregnancy outcomes, and even offspring health. Although further longitudinal studies are required to fully establish these associations, these findings reinforce the concept that paternal health before conception has consequences extending beyond fertilization itself.

The encouraging aspect of lifestyle-associated infertility is that many of its contributing factors are modifiable. Lifestyle optimization should be considered an integral component of male fertility management rather than merely an optional adjunct to treatment. Improvements in nutrition, regular physical activity, healthy weight maintenance, restorative sleep, stress reduction, smoking cessation, moderation of alcohol consumption, and reduction of environmental exposures collectively represent evidence-based interventions capable of improving reproductive health. Considering that spermatogenesis requires approximately 74–90 days, meaningful improvements in sperm

quality may be observed following sustained lifestyle modification. Although lifestyle interventions may not overcome every cause of infertility, they can significantly enhance overall reproductive health and potentially improve both natural conception and assisted reproductive outcomes.

Perhaps the greatest challenge is that fertility awareness often begins too late. Most men become concerned about their reproductive health only after fertility problems arise. By that stage, years of adverse lifestyle exposures may have already compromised reproductive function. Fertility education should therefore extend beyond infertility clinics and become an essential component of preventive healthcare, particularly during adolescence, early adulthood, and the preconception period. Routine lifestyle assessment and reproductive health education should be integrated into primary healthcare rather than reserved exclusively for fertility specialists.

Male fertility should not be viewed solely as a reproductive endpoint. Increasing evidence suggests that semen quality reflects broader aspects of general health and well-being, making it a potential biomarker of overall health status. As embryologists, andrologists, reproductive biologists, and fertility professionals, we have an opportunity not only to assist conception but also to promote healthier lifestyles that preserve reproductive potential across the lifespan.

As reproductive medicine continues to evolve, equal emphasis must be placed on prevention alongside treatment. Assisted reproductive technologies can overcome many biological barriers, but they cannot fully compensate for years of accumulated lifestyle-related reproductive damage. Integrating lifestyle assessment, reproductive education, and early intervention into routine healthcare may represent one of the most effective strategies for preserving male fertility in future generations. The future of male fertility management may depend as much on prevention and lifestyle optimization as it does on advances in assisted reproductive technology.

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Ninety-Nine Point Nine

What our laboratories can account for, and what we have simply never written down

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There is a month every embryologist has had.

Nothing changed. Same media, same incubators, same hands. And the blastocysts stopped coming. You check the gas. You check the temperature. You go back through the logs and find nothing, because the logs were never built to answer that question. Six weeks later the numbers drift up on their own and you never learn what it was. You tell yourself it was the cohort. Sometimes it was.

This article asks one narrow question. On the morning your rate falls, what can your laboratory actually reconstruct?

The number we are proud of

Our field has a statistic it likes.

Boston IVF reviewed thirteen years of its own records. A hundred and eighty-two thousand laboratory procedures, every non-conformance logged since 2003. Ninety-nine point nine per cent ran without error. Clinical laboratory medicine generally reports three to twelve per cent. We quote our figure often, and fairly.

Now set a second number beside it.

A Brussels centre published ten years of electronic witnessing. Eight hundred and forty-nine thousand witnessing points. The system flagged a mismatch at nought point two five one per cent of them, which works out at **one point nine four per cent of cycles**. A hundred and forty-four of those were graded critical.

Be careful with that number, because it is easy to misuse. Most of those flags are workflow, not error. A tag still in range. A dish scanned out of turn. An override entered by an administrator. The system catching them is the system working.

That is precisely the point. The same events were occurring in laboratories witnessing by hand, and went unrecorded, because nothing was there to record them. One number reports what a person noticed and wrote down. The other reports what a machine saw whether anyone noticed or not.

Which leads somewhere uncomfortable. Most Indian laboratories do not have a low non-conformance rate. They have no rate at all, because nothing is being counted. A clean register can mean a safe laboratory. It can equally mean nobody was writing anything down.

Why that matters more here than in Brussels has nothing to do with science. In much of Europe a failed cycle is a setback inside a funded programme and the couple returns in three months. In India a large share of cycles are paid out of savings, or on a loan against gold, and are not repeated. Decided once. The biology is identical in Nagpur and in Bologna. The cost of an error is not.

We have spent twenty years building traceability around a single nightmare, which is the wrong embryo reaching the wrong patient. Electronic witnessing, barcoding, one patient to a workstation. That work was necessary and nothing written here should undo it. But notice what the Brussels figures actually say. The system was not reporting an absence of trouble. It was reporting trouble at a rate no manual register in the world had been picking up.

But there are two kinds of error in a laboratory like ours, and witnessing was only ever designed to see one.

The error that announces itself

Rare, catastrophic, visible within the hour. At Cleveland in 2018 an alarm was switched off and nobody noticed for two nights. Close to four thousand oocytes and embryos were lost. No scientist made a technical mistake. Our systems are built for these and they broadly work.

What I want to add is the version we have made for ourselves, and it has a specifically Indian sharpness. The ART (Regulation) Act, 2021 requires a clinic to keep records for at least ten years, after which they pass to the National Registry. If proceedings are instituted they must survive until final disposal, which in our courts can mean a very long time.

Ten years.

Now consider the laboratory that has moved its whole chain of custody inside one witnessing platform. No export, no backup, no readable copy outside that software. It has not removed a single point of failure. It has digitised one and given it a licence renewal date.

Ask your vendor one question, in writing. If the contract ends, or the company is acquired, or the database corrupts in year seven, in what format do I receive ten years of records, and can I read them without your software? Most of us have never asked. The Act will not care whose fault it was.

The chain that begins before you

Now the link nobody discusses, and the one I have come to think is our largest silent exposure.

Your culture medium was made in Europe or the United States. It flew, cleared customs, waited in a warehouse, travelled by road, and arrived in a box with a gel pack that may or may not still have been cold. Somewhere in there it crossed an Indian summer.

What temperature did it reach, and for how long?

You cannot answer that. Neither can I. In more than two decades I have never once received a consignment of culture medium carrying a temperature record. No colour-change indicator, no time-temperature strip, no logger in the carton.

None of that technology is exotic. Vaccines have moved under documented cold chain for decades, and cell therapies ship with continuous monitoring as a condition of supply. We ask for six-sigma at the bench and accept a gel pack and a challan at the door.

It matters because degradation is not a cliff. It is a clock. Warmth runs it faster, the effect accumulates, and nothing about it is visible. A consignment that spent two days at thirty-two degrees has been ageing the whole way, and it will look entirely normal when you open it. The bottle is clear. The expiry is months away. Nothing tells you.

And here is the consequence that should trouble us most.

The mouse embryo assay was performed at the factory. Before shipping.

The certificate in your file certifies a product as it left Europe. It cannot certify what arrived in your refrigerator. Our confidence in incoming quality rests on a test run upstream of the least controlled part of the journey, and we file it as a guarantee.

The suppliers have an answer and it deserves stating. Stability testing is designed with transport excursions built in, and packaging is qualified against defined temperature profiles. All true. None of it tells you what happened to your consignment.

Two things are within reach today. Ask for monitoring in writing on every purchase order; an order is a stronger instrument than a complaint. And record what you can see. Date received, state of the packaging, whether the gel pack was still cold. None of that is a logger. All of it is more than a delivery challan.

Until suppliers ship with monitoring as standard, every certificate we file is a statement about a bottle that no longer exists.

The links we never write down

What follows is a list rather than an argument, meant to be used at a bench. Mark the ones you could not answer this morning. Almost none cost money to fix.

Minutes out of the incubator, per dish. The most modifiable variable we have. Ten minutes at room temperature disrupts the meiotic spindle, and after four hours back at thirty-seven fewer than half resemble untreated controls. Known since 1990. We still do not count minutes.

The excursion, not the power cut. Most units log the outage and the generator. Very few log what the chamber did, how far it fell, or whether pH came back.

The equivalent consumable. The usual dish was out of stock, so something similar was used for a fortnight. Unrecorded, it is invisible forever, and it falls in exactly the month you cannot explain.

Cryo-tank levels, honestly recorded. Saturday's entry written on Monday is a reconstruction, not a record. It is how a slow leak survives three weeks of complete-looking documentation.

Who performed it, and in which hour of their day. Witnessing captures identity at the moment of the check. Not that this was the fourteenth hour of a shift, or the fourth injection after a night retrieval.

Discard and disposal. Which embryos, on whose consent, on what date, witnessed by whom. Under the Act, our most exposed record. Often our thinnest.

The one that noticed

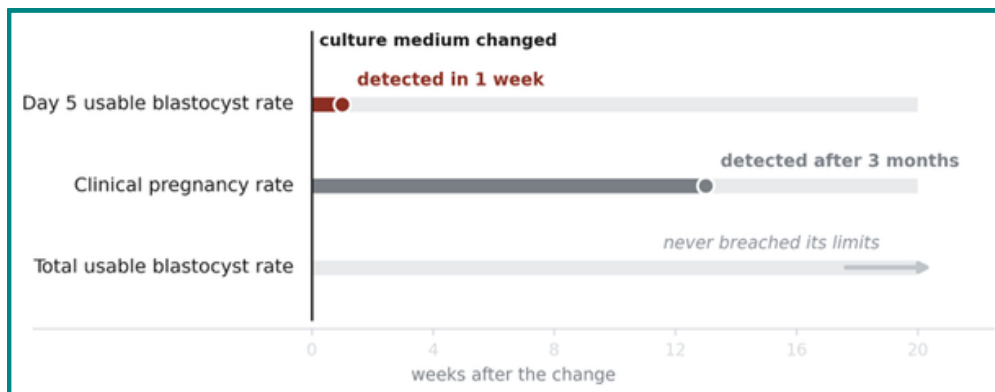
The uncomfortable part comes with numbers.

Hammond and Morbeck reported a multicentre series of one thousand nine hundred and seventy-one fresh cycles, in which a laboratory changed its culture medium for five months and then changed back. Clinical pregnancy fell from fifty-one per cent to thirty-six. Every witnessing system in that laboratory worked perfectly throughout and said nothing, because no sample had gone anywhere it should not have gone.

Which number noticed? Total usable blastocyst rate, the figure most of us track, never moved. Forty, thirty-nine and forty-three per cent across the three periods, sitting comfortably inside control limits for all fifteen months. Day 5 usable blastocyst rate, plotted on an ordinary control chart, fell from thirty-two per cent to twenty-five and was detected within one week of the change. Pregnancy rate did not breach its limits for another three months.

One week against three months. On that centre's throughput, something close to three hundred cycles sit inside that gap.

In this country, most of those are somebody's only cycle.



When each indicator noticed. One laboratory, 1,971 fresh cycles, a culture medium changed and then changed back. Constructed from the detection intervals reported by Hammond and Morbeck.

Where it actually breaks, which is between us

Traceability rarely fails at the equipment. It fails in the space between the person who signs the protocol and the person who fills the register.

The senior signs the procedure and never opens the log. The junior fills the log and is never told what it is for. Give that a year and the register is complete, neat and meaningless.

I have seen liquid nitrogen levels recorded in the same handwriting, same pen, same spacing, for a fortnight.

That is what happens when documentation is taught as compliance instead of as instrumentation. Something is owed in both directions.

To the senior. Your name is on the accreditation certificate and the registration under the Act. Open a register unannounced, once a month, and read it. Ask one question about one entry. Not to catch anyone, but to show that somebody reads it. That changes how it is written afterwards, faster than any circular you will ever issue.

To the junior. The log you fill at eleven at night is not paperwork. On the day the rate falls it becomes the only evidence anybody has, and the senior standing over your shoulder that morning will be reading your handwriting. Write it as though someone will need it. One day somebody will.

And when you make an error, say so the same day. Our published error rate is low partly because we are careful and partly because we are silent, and from outside the two look identical. A laboratory that never records a non-conformance has not achieved zero. It has achieved zero reporting.

Two chains, not one

Sample traceability answers where this embryo went. Process traceability answers what was different that month. Separate chains, breaking in different places. Most of us, ours included for years, have built only the first.

The second is the cheaper one, and it needs no new equipment.

Plot Day 5 usable blastocyst rate, per 2PN, every month, with warning and control limits. You already record every embryo transferred or frozen, so the data exists. It is simply not being drawn.

Bind every lot number, media, oil and consumable, to the cycle rather than to a stores register. A lot nobody can link back to a patient is not traceability.

Ask three questions about every media lot. Which mouse strain. What pass threshold. How was it kept cold on the way to me.

Record non-conformances, especially the trivial ones. A laboratory with a non-conformance register can improve. One without is guessing.

Hold an exportable, human-readable copy of the witnessing record outside the witnessing software. The Act says ten years.

One caution, from the same authors. Statistical control works less well at low volume. Twenty cycles a month gives you wide limits and a slow signal, and one bad month will not breach them. Plot it anyway, and plot a rolling quarter beside it. The trend finds what the month cannot.

None of it needs a budget line, which is the point worth making in an Indian room. One witnessing installation can absorb a small clinic's annual margin. A control chart costs a spreadsheet and twenty minutes a month.

A laboratory in a tier-three city can hold that to exactly the standard of the largest chain in the country. On the evidence above, it is also the part most likely to catch the error actually happening to you.

Buy the witnessing system when you can afford it. Start the control chart on Monday.

Nine oocytes

Somewhere inside the month I described at the start were women who had borrowed against gold to be there. One of them asked me how many days it would be before we knew.

She did not ask which medium we were using, or how it had travelled, or whether anyone had written down the lot number. She would not have wanted to know any of it.

What we owed her was not an explanation. It was a laboratory that could answer, if it came to that, what had been different that month.

Most of us cannot answer it yet. The instruments are cheap and the science is settled. What it asks for is a decision, taken by seniors and juniors in the same room: that a laboratory should account not only for where an embryo went, but for why an embryo did not grow.

Nine oocytes. One cycle. A loan against gold.

We could not have promised her a child. Nobody can promise that. We could have promised that if it failed we would know why, and that the woman after her would not fail the same way.

That promise costs a pen and a line in a register.

It is the only one we are in a position to keep.

The authors' earlier article on sample traceability and international standards appeared in ICMED Magazine, Issue 7, June 2026. This is a different argument written for an Indian readership; the cold chain, statutory retention and process traceability material is new.

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Current Embryo Culture Practices in Indian IVF Laboratories: Insights from an ACE National Survey

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Dr. Sujatha Ramkrishnan

Introduction

Embryo culture remains one of the most critical determinants of success in Assisted Reproductive Technology (ART). Over the past decade, IVF laboratories have witnessed significant advancements in culture media, incubator technologies, embryo assessment systems, and laboratory workflows. Despite the growing body of evidence supporting various approaches, considerable variation continues to exist in routine laboratory practice. To better understand contemporary embryo culture trends across India, the Academy of Clinical Embryologists (ACE) conducted a national survey among practicing embryologists and IVF laboratory directors. The survey aimed to evaluate current laboratory practices, identify areas of consensus, and highlight aspects of embryo culture where significant variability remains.

The findings provide an important snapshot of how Indian IVF laboratories currently approach embryo culture and may serve as a foundation for future discussions on standardization, quality improvement, and evidence-based practice (Figure 1).

Survey Overview

Table 1. Survey Overview

Parameter	Details
Survey Type	National Online Survey
Participants	Practicing Embryologists and IVF Laboratory Directors
Geographic Coverage	India
Objective	To evaluate current embryo culture practices in IVF laboratories
Conducted By	Academy of Clinical Embryologists (ACE), India

Respondent Characteristics

The survey captured responses from embryologists representing a broad spectrum of experience levels and institutional settings, providing a representative overview of current IVF laboratory practices in India.

Table 2. Demographic Profile of Survey Respondents

Parameter	Findings
Embryologists with ≥ 5 years experience	44%
Junior Embryologists	38%
Senior Embryologists	42%
Laboratory Directors / Leads	18%
Corporate IVF Chains	54%
Private IVF Clinics	42%
Academic / Research Institutes	4%

The participation of experienced embryologists and laboratory directors strengthens the relevance of the survey findings and provides valuable insights into contemporary IVF laboratory practice.

Culture Media Practices

Single-step culture media has become the dominant embryo culture system among Indian IVF laboratories, with more than four-fifths of respondents reporting its routine use. Sequential media systems are now utilized by a relatively small proportion of laboratories.

Table 3. Embryo Culture Media Usage

Culture Media Type	Percentage
Single-Step Media	82%
Sequential Media	9%
Combination / Patient-Specific	9%

The widespread adoption of single-step media likely reflects increasing preference for uninterrupted culture systems, reduced embryo handling, and compatibility with modern benchtop incubators.

Embryo Transfer Strategies

Blastocyst-stage transfer has emerged as the preferred embryo transfer strategy among surveyed embryologists.

Table 4. Preferred Stage of Embryo Transfer

Transfer Strategy	Percentage
Day 5 Blastocyst Transfer	68%
Based on Embryo Number/Quality	18%
Clinician Preference	9%
Day 3 Transfer / Similar Outcomes	5%

Fertilization Practices

The survey confirmed the overwhelming dominance of Intracytoplasmic Sperm Injection (ICSI) within contemporary IVF laboratories.

Table 5. Fertilization Strategy

Method	Percentage
ICSI Only	78%
Split IVF/ICSI	18%
Conventional IVF	4%

Furthermore, 86% of laboratories reported performing routine fertilization assessment at 16–18 hours post-insemination. Rescue ICSI practices varied considerably between laboratories, reflecting a lack of uniform consensus.

The predominance of ICSI mirrors a global trend in ART, where concerns regarding fertilization failure often outweigh strict indication-based utilization.

Embryo Culture Configuration

Group culture remains more common than individual embryo culture.

Table 6. Embryo Culture Configuration

Strategy	Percentage
Group Culture	52%
Individual Culture	21%
Hybrid Approach	27%

Interestingly, opinions regarding the benefits of group culture remain divided. While 39% of respondents reported improved blastocyst development, 61% observed no significant benefit. This variation highlights the ongoing debate regarding embryo-to-embryo communication and its practical clinical significance.

Incubator Systems and Embryo Monitoring

Benchttop incubators have become the standard incubation platform across Indian IVF laboratories.

Table 7. Incubator Systems

Incubator Type	Percentage
Benchttop Incubators	74%
Conventional Incubators	18%
Time-Lapse Systems	8%

Time-lapse technology remains an area of active debate. While 36% of respondents believed it improves embryo selection, 37% considered it overrated or lacking sufficient evidence of clinical benefit. Most laboratories continue to rely primarily on conventional microscopic embryo assessment.

Media Handling Practices

Laboratories demonstrated substantial consistency regarding media handling procedures.

Table 8. Media Handling and Culture Workflow

Practice	Most Common Approach	Percentage
Media Equilibration	Overnight (≥ 16 h)	81%
Culture Strategy	Uninterrupted Culture	63%
Oil Overlay	Light Mineral Oil	69%

These findings indicate a strong shift toward stable, low-disturbance embryo culture systems.

Key Findings at a Glance

- 82% of laboratories use single-step culture media.
- 68% prefer Day 5 blastocyst transfer.
- 78% routinely perform ICSI.
- 74% utilize benchtop incubators.
- 63% practice uninterrupted embryo culture.
- Time-lapse incubator adoption remains below 10%.

Discussion

One of the most notable findings of the survey was the convergence of laboratory practices toward simplified embryo culture systems. The widespread adoption of single-step media, uninterrupted culture protocols, and benchtop incubators suggests increasing confidence in stable, low-intervention culture environments.

At the same time, several areas of practice variation remain evident. Rescue ICSI utilization, group culture strategies, media renewal protocols, and perceptions regarding time-lapse technology continue to differ considerably between laboratories. Such variability likely reflects differences in laboratory philosophy, infrastructure, patient populations, and interpretation of the available evidence.

Interestingly, while blastocyst transfer has become the preferred transfer strategy, embryologists continue to emphasize individualized patient selection and remain aware of the potential risks associated with extended culture and cycle cancellation.

The divided opinion regarding time-lapse technology is particularly noteworthy. Although some embryologists perceive improved embryo selection capabilities, others remain

unconvinced regarding its routine clinical value. This finding highlights the need for robust outcome-based studies to better define the role of emerging technologies in IVF practice.

Overall, the survey reflects an embryology community that continues to balance technological innovation with practical laboratory experience and evidence-based decision-making.

Conclusion

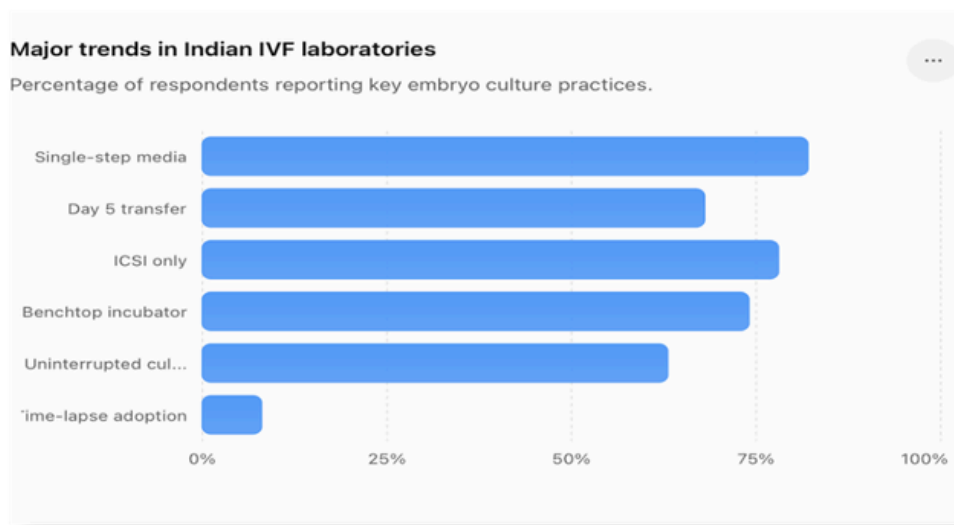
The ACE National Survey provides a valuable snapshot of contemporary embryo culture practices across India. The findings demonstrate a strong shift toward single-step media, blastocyst transfer, ICSI-based fertilization, benchtop incubation systems, and uninterrupted culture protocols.

However, variations in rescue ICSI practices, group culture strategies, and time-lapse technology adoption highlight opportunities for further research and standardization. Continued surveys, collaborative discussions, and multicenter outcome studies through ACE will play an important role in strengthening evidence-based embryology practice and improving ART outcomes nationwide.

Acknowledgements

The authors sincerely thank all embryologists and IVF laboratory professionals who participated in this survey and contributed their valuable insights. Their collective experience has provided an important perspective on contemporary embryo culture practices in India. Academy of Clinical Embryologists (ACE), India

Figure 1. Key Findings from the ACE Embryo Culture Survey



ACE in Action: Advancing Clinical Embryology Through Science, Learning, Leadership and Excellence

Dr.Dhannya Binoy, Mitera hospital, Kottayam, Kerala .

ACE is India's largest professional association dedicated specially for clinical embryologists, bringing together over 1,000 members and serving as the nation's leading platform for education, research, networking, and academic excellence in clinical embryology. Progress in embryology begins with curiosity integrity and academic excellence. At ACE we remain dedicated to bring international best practices and high standard scientific disclosure to Indian embryologists. Hence we had upscaled our academic activities in the form of webinars, journal club and ace conversation.

ACE Prime Scientific Session 18th Dec 2025 ACE proudly hosted a landmark scientific session, **"The Future of the IVF Laboratory,"** featuring one of the most influential leaders in reproductive medicine, **Professor David Gardner** who is **highly cited scientist in reproductive medicine**. A pioneer who transformed modern clinical embryology and the most, Professor Gardner shared his vision for the future of IVF laboratories and emerging technologies. The session inspired and empowered embryologists across the country, providing rare insights from a global icon. One of the most memorable take-home messages from the session was: **"Embryologists will not be replaced by AI and robots. Embryologists will be replaced by embryologists who use AI and robots."** The event witnessed an exceptional response, attracting more than **500 registrations and over 800 YouTube views**, making it one of ACE's most successful educational webinars.

The session also marked another historic milestone with the **Official launch of the ACE Accreditation Certificate Examination**, India's first structured accreditation program designed to standardize competencies, promote excellence, and elevate the professional standards of clinical embryologists nationwide.

One can watch this remarkable event on youtube with the following link

 **YouTube** https://www.youtube.com/live/g0hz2lqLwlQ?si=spUFonouYW_wCr_X



ACE Webinar Series | 3 Sessions of Scientific Excellence

Re- vitrification in Focus: Practical realities and Future Directions (25th Nov 2025) This was a power packed session where experts revealed unspoken challenges and shared precise techniques that chose to reshape everyday embryology practice. The practical learning made the session a valuable educational platform for advancing clinical embryology practice

 **YouTube** <https://www.youtube.com/live/uDBQdGRQ3Ys?si=ezcQQwgJjvzJJM7->



"Selecting the Right Sperm for ICSI," (30 April 2026), This highly engaging scientific webinar, focused on one of the most critical aspects of assisted reproduction—optimal sperm selection for ICSI. The session explored evidence-based approaches to selecting the most suitable sperm and highlighted current and emerging technologies available to enhance sperm selection. Expert panellists shared practical insights, real-world laboratory experiences, and clinical perspectives, The webinar received an overwhelming response, with **more than 400 registrations, over 250 live participants, and more than 400 YouTube views**, reflecting the strong interest among embryologists and fertility professionals.

 **YouTube** https://www.youtube.com/live/GbEgBlyC3QE?si=mVH9lgtWx7q_2XFs



The Human Side of ART: Communication, Counselling and Care (18 June 2026) Recognizing that successful fertility care extends beyond laboratory excellence, ACE, in collaboration with the IFS Special Interest Group (SIG), conducted this webinar. Since embryologists play a vital role in fertility care and patients often look to them for explanations about laboratory procedures embryo development treatment outcomes and test results, ACE came forward as a platform and taught embryologists the art of patient communication where they explored the effective way of communication empathy and counselling to strengthen the patient care and enhance the overall ART. This unique initiative reinforced the **importance of patient-centred care** and highlighted the indispensable role of embryologists in enhancing the overall ART experience through effective communication and compassionate care.

 **YouTube** <https://youtu.be/hu8pcznC6il?si=OtXv6NtElrDbFiwR>



ACE journal club :

“CULTURE MEDIA Age does not affect ivf outcome 23rd January 2026 by Dean E Morbeck. When a question that concerns every IVF lab is answered in Human Reproduction, ACE Team invited Dr Dean E Morbeck himself who presented and discussed his latest edition Human Reproduction showing that culture media age doesn't not affect outcomes

 **YouTube** <https://www.youtube.com/live/DtR4KEENef4?si=EGWbqo9KRqgoveqm>



ACE CONVERSATIONS with Padmashri Dr. Indira Hinduja; **1st lady of Indian IVF** women s day Special (7th march 2026) ACE celebrated **Women's day** with the strong power behind India s first scientifically documented test tube baby on August 6 1986
ACE ACEDOMIC FORUM (18 june 2026) scientific programme addressing evolution of cryopreservation in ivf : from early freezing techniques to contemporary advances with special felicitation honoring **Dr Priya Selvaraj for remarkable achievement of summiting Mount Everest**

 **YouTube** https://www.youtube.com/live/WrTGvA9_5yM?si=VBOAhpWNxrxtNf-J



ACE Accreditation Certificate Examination – India's First Clinical Embryology Accreditation

ACE introduced the **ACE Accreditation Certificate Examination, India's first national-level clinical embryology accreditation program**, marking a significant milestone in the advancement and standardization of clinical embryology in the country.

Designed to validate an embryologist's **IVF laboratory skills, quality management practices, scientific knowledge, and clinical expertise**, the accreditation aims to establish a nationally recognized benchmark for professional competency in clinical embryology.

The program was officially launched with the announcement of the **Level 1 Accreditation Examination**, scheduled to be conducted during **ACE 2026, Agra**. This prestigious certification provides embryologists with an opportunity to objectively assess and validate their expertise, strengthen their professional credentials, and benchmark their competencies against nationally accepted standards.

ACE
ACADEMY OF CLINICAL EMBRYOLOGISTS

ACE ACCREDITATION EXAM 2026
LEVEL I CERTIFICATION
IN CLINICAL EMBRYOLOGY

EXAM SNAPSHOT

- 150 MCQs**
Comprehensive assessment of embryology knowledge and lab practices.
- 2 HOURS**
Focused and time-bound assessment.
- NO NEGATIVE MARKING**
Attempt with confidence.
- 80% PASSING SCORE**
(Minimum 120 correct answers)
- MCQ BASED EXAMINATION**
Designed to test knowledge and application.

A STEP TOWARDS EXCELLENCE.
BE ASSESSED. BE CERTIFIED. BE RECOGNISED.

Benchmark your expertise.
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07 AUGUST 2026 | **ITC MUGHAL, AGRA** | **04:00 PM IST**

Learn more & apply at www.theaceorg.in/accreditation | accreditation@theaceorg.in | +91 97406 85293

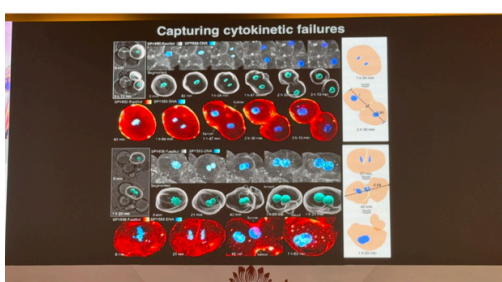
ACE Executive Managing Committee Elections 2026 (25–31 July 2026)

ACE successfully conducted the **Executive Managing Committee Elections 2026 from 25th to 31st July 2026**, upholding the principles of transparency, fairness, and democratic participation.

Every eligible ACE member was given the opportunity to cast their vote and actively participate in electing the **Executive Managing Committee for the 2026–2028 term**. The election process reflected ACE's commitment to inclusive governance, empowering its members to shape the future leadership and strategic direction of the organization.

The successful completion of the election reinforced ACE's strong organizational framework and its dedication to fostering member engagement, accountability, and representative leadership within India's largest professional association dedicated to clinical embryologists.

ACE CONFERENCE 2025 - BHUBANESWAR





ACE MANAGING COMMITTEE 2026-2028

OFFICE BEARERS

Guiding ACE with vision, commitment, and purpose



Dr. Gaurav Majumdar
President



Dr. Parasuram Gopinath
Vice-President



Dr. Rajvi Mehta
Secretary



Dr. Keshav Maloitra
Joint Secretary



Dr. Krishna Chaitanya
Treasurer



Dr. Yamini Asokan
Joint-Treasurer

EXECUTIVE COMMITTEE

Driving progress through collective expertise and leadership.



Dr. Manisha Vajpeyee



Dr. Sanjay Yatnale



Mr. Naval Navin Shah



Dr. Sargunadevi Sivanantham



Mrs. Lakshmi S Udayan



Dr. Dhannya Binoy



Ms. Lalita Upadhyay



Mr. Shamsheerali



Dr. Prabhakar Singh



Dr. Viren Patel