Despite recent private equity interest, IVF and fertility treatment remains a highly fragmented market but that could be about to change. **Dr Leonid Shapiro**, managing partner at healthcare consultancy firm **Candesic**, argues the time is right for IVF to grow up.

IVF fertile ground for consolidation?

We have been asked countless times by private equity (PE) firms if In-vitro Fertilisation (IVF) clinics are a good investment. They are, but very few PE investors have ever put money to work here.

The main issue is the lack of sizable businesses in IVF and the relative difficulty investors have had with rolling up individual clinics to gain synergies and operational leverage that are worthy of the kind of returns PE expect. But things are changing. A number of factors are creating an environment where IVF may finally go the way of dentistry, where consolidation has become buoyant and countless infrastructure funds and family offices wield deadly multiples in a multi-site healthcare *Game of Thrones*.

What has held back consolidation in IVF? The IVF market is still highly fragmented. This has been driven by the complexity and lack of standardised or a common understanding of best practices in the industry. IVF is considered by some to be something of a black art. While this may conjure images of crazy scientists playing God in their living room, it is not far from the truth. The truth is that success rates in IVF, which are by far the most important consideration for people when choosing which IVF clinic to give their £5k per cycle, are dependent on a vast number of factors that are not completely understood by the scientific community. This is borne out in the equally huge variation in success rates of different clinics.

It is sort of like nutraceuticals (naturally occurring substances which, in theory, have a clinic effect). Nutraceuticals, such as a plant extract, are naturally occurring so they are not caught within the pharmaceutical legislation. This means they can be prescribed by non-clinicians and are unpatentable. The result is that while there are some very effective nutraceuticals (think the hundreds of Chinese herbal medicines that actually do work) there is no incentive for pharmaceutical companies to invest into clinical research of these compounds. IVF is similar, embryologists can do what they want as long as they get their result and few of them, outside academics, are interested in doing research that might reveal their 'secret sauce' to competitors.

IVF success is governed by hundreds of different factors, including drugs used, culture medium composition, time and temperature of incubation, the type of air filtration system used in laboratories, etc. And because IVF has been so artisanal, most training of embryologists has occurred through apprenticeships. This means that few embryologists agree on what is the best set of parameters or ways of doing things that brings the best success. As a result, there is no consensus on what best practice is.

Until this changes, there will be barriers to investors reaping the rewards of consolidation.

A new world order

Are we on the precipice of new world order for IVF? There are a number of factors which may push us over. These include:

- Staffing shortages caused by the rapid growth of IVF clinics
- Increased interest in research and codification of best practices in IVF
- Introduction of automation and growth in centralised labs
- Adoption of centralised success databases

FIGURE ONE DRIVERS OF ASSISTIVE REPRODUCTION TECHNOLOGIES (ART)

Underlying clinical need	• Delayed motherhood • STIs • Increasing male infertility • Lifestyle factors leading to obesity, etc.
Public perception	• Awareness of IVF • Acceptance of the use of ART • Increased consumer expectations
Technology	• Availability of genetic testing
Funding	• Availability of public funding • Private funding: - Affordability of treatment - GDP growth and increased disposable income - Access to external financing
Regulatory flexibility	• Expanded access to wider patient groups • Regulations driving ART tourism

SOURCE CANDESIC RESEARCH

- Increased investor and operator appetite

Staff shortages have become commonplace in IVF. A rapid growth of clinics has been seen and is driven by demand. Women delaying childbirth, increases in sexually transmitted diseases, increases in male infertility, increased obesity, availability of genetic testing, amongst others are all driving IVF demand (Figure One). The result is that the apprenticeship method of training staff that has supported IVF thus far is no longer effective. Increasingly, we hear that staff are in short supply and those who are available are often under-trained, spending only a short time under the tutelage of embryologists before opening their own clinics. This goes for embryologists as well as for support staff, given the deep expertise even the latter have to have to achieve good success rates. Clearly, this cannot continue. To support IVF's growth, staff training will have to become centralised, and with it an agreement of what is best practice.

Scientific advances

Interest in research and codifications of best practices will not only be supported by centralised training, but by the professionalisation of the industry and the desire to push the science forward. There are a number of scientific advancements that are transforming IVF. These are becoming enabled by genetic, computational, and robotic advancements. Everything from unique media used to support fertilisation and incubation to genetic testing to identify the best eggs are having a massive impact on success rates. Drivers, such as these, are becoming super technical and the amount of data available is increasing exponentially. This is not something a single embryologist, no matter how famous or successful he or she was historically, can master alone. Hence the world is moving to more institutional research and development of tools and techniques by larger chains of IVF clinics, who have more firepower to spend on such development. Enter the privy of the PE playland.

Benefits of scale

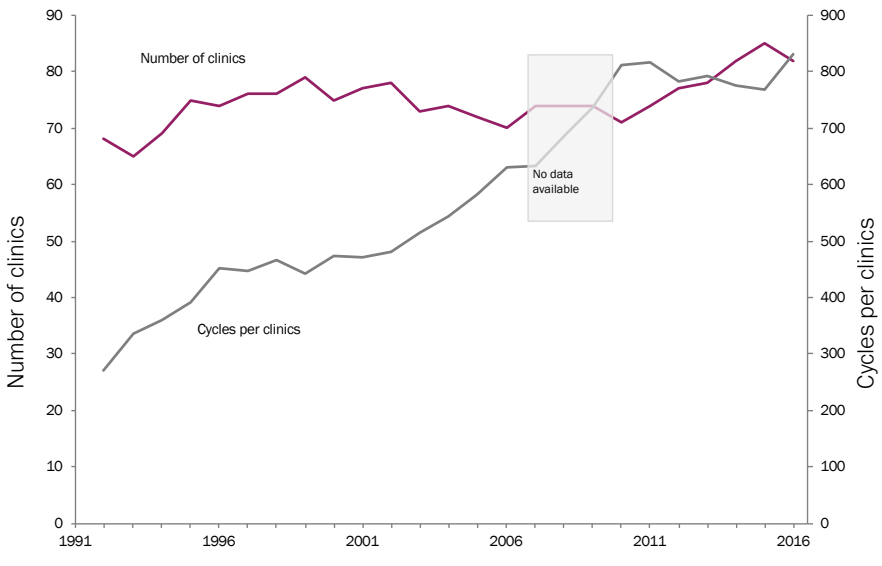
Automation and scale have also been discussed by many in the industry as having the potential to change the landscape. Automation using robotics can replace some of what is largely hand-based processes in IVF.

This has the potential not only to reduce the requirement for trained staff but also to eliminate operator variation and mistakes. While this is something that is in its infancy, the larger chains will again have the firepower to develop these systems and spread best practices across multiple clinics.

Scale is also an advantage, making it more economical to introduce industrial processes which increase consistency and quality.

For example, in Madrid, there is discussion about consolidating the embryology of various competing IVF clinics in the area into one 'shared' central lab. Clients have the convenience of attending local clinics for the bulk of their consultations with only egg collection and implantation having to be done in the central lab.

FIGURE TWO SIZE AND NUMBER OF IVF CLINICS (LABS) IN THE UK



SOURCE HFEA

The central lab, however, benefits from efficiencies and staff utilisation which not only reduces cost per cycle but also improves quality and consistency of results. Scale is also coming to providers. In the UK, we have seen the average number of cycles per clinic lab double over the last 15 years (Figure Two). At the same time the number of clinic labs has been stable, meaning the industry is maturing.

Adoption of centralised databases for IVF success rates is also driving consolidation.

The UK has the Human Fertilisation and Embryology Authority (HFEA), a state-run organisation collecting and publishing IVF success rates which clinics are legally required to provide. Until recently, few other countries have had such a centralised database whereby clients can check the success rates of clinics. Now, there is a European directive that is mandating all EU countries to establish such a database and increase the transparency of success rates in IVF.

This will drive consolidation because it will be the groups who will benefit, as they have the ability to use shared best practice to improve success rates overall.

Increased investor and operator appetite for scale in IVF will also drive consolidation.

Investors have for years looked for opportunities to invest in IVF and the market has matured enough to show some early success in consolidation. Bowmark owns the largest IVF chain in the UK, Care Fertility, which continues to add clinics/labs and deploys new technologies such as Embryiscope – a time lapse embryo imaging technique.

Operators have also expanded as they seek to grow their business beyond the borders of their home country.

IVI, a Spanish IVF chain, now has over 70 clinics in 13 countries after it merged with US group RMANJ last year. Many of IVI's clinics are not owned entirely by them.IVI has a strategy of 'donating' their systems, process, know-how, and even their brand to investors in countries as far as Russia and South America, in exchange for an equity stake in the local business.

NMC Healthcare, which acquired Clinic Eugin in Spain and Fakih IVF in the UAE, is already leading consolidation globally and creating opportunities for not only sharing best practices but also taking their model to other countries.

Bourn Hall in the UK, where IVF was invented, has taken its model to the UAE and India through participation in Bourn Hall International.

Time to grow up

So is IVF finally growing up? Consolidation brings plenty of opportunities to investors and operators alike. Indeed operators/owners are getting increasingly ready access to capital to formalise and update their systems and processes. Investors should focus on backing embryologists who have ambition beyond self-grandeur and lifestyle business. They should back clinics who have codified their practices and have a regular process of introducing innovations. They should buy a platform and then actively identify clinics which have a solid client base but lack those same codified processes and innovative mind-set, as these are the clinics where the best synergies and improvement potential are to be had.

Operators should ensure they instil change and innovation into the heart of their culture.

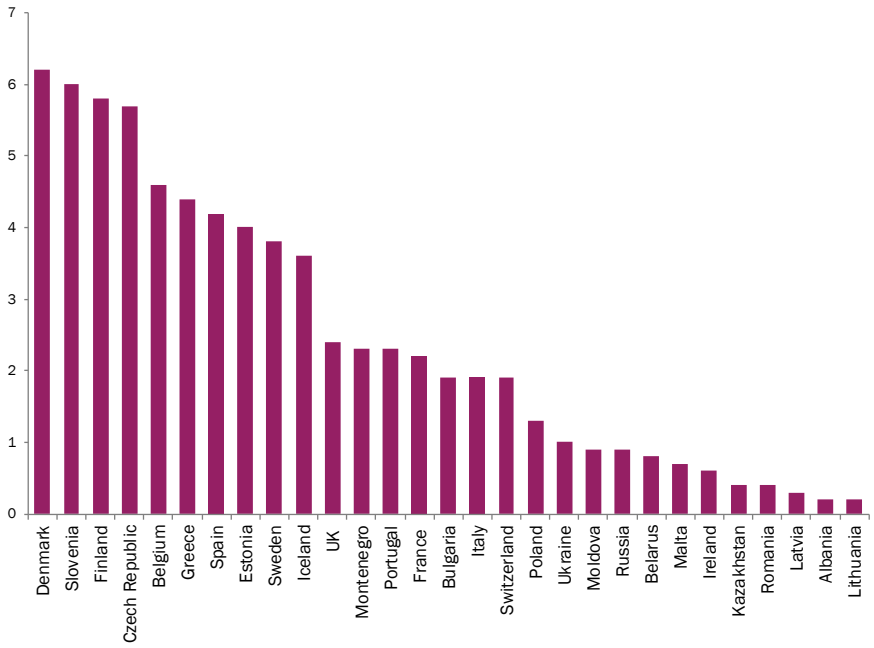
They should participate in international research studies and try out new ideas and technology. They should codify their practices and ensure they are best in class using hard evidence, not wise old man beliefs.

They too should look for clinics to acquire and bring on to their best practice platform, as well as open greenfield clinics in markets lacking professional operators.

Shareholder value is not the only thing that will benefit from all of this. We must not forget the patients. They are the ones who will experience the joy of parenthood due to increased success rates, particularly for older women. More of them will have the chance to try IVF as costs fall, democratising access and increasing volumes. In some EU countries, IVF accounts for one in every 16 babies born, while in others it is as low as one in 500 (Figure Three).


Dr Leonid Shapiro, managing partner, Candesic

FIGURE THREE ART INFANT PENETRATION ACROSS COUNTRIES
% OF BIRTHS USING ART



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