METHODS FRAMEWORK · RAPID RESEARCH PRESENTATION

The ART Reporting Completeness (ARC) Framework: an approach for analyzing how international ART outcome registries report and present results, to support rigorous appraisal and valid comparison studies in restorative reproductive medicine

Brian Whittaker · Naomi M. Whittaker, MD · ORCID 0000-0003-3706-3112 · RRM Academy, Camp Hill, Pennsylvania

RRM Academy
22nd International Clinical & Scientific Congress for Restorative Reproductive Medicine
Orlando, Florida · October 9 to 10, 2026

The problem

Two IVF success rates from two countries can't be compared.

Eleven scoreboards on five continents publish an IVF success rate. Each registry builds that rate on a different base. They differ in who has to report, how many clinics are in, what the rate is counted per, and how they add up a woman's tries.

In the United States, SART and the CDC added a rate that adds up every transfer from one egg retrieval. It still counts retrievals, not women. A woman with two retrievals is two rows.

The rate closest to how RRM counts follows one woman across all her tries. Only Australia and New Zealand publish it in full. The US and Sweden publish part of it, then stop counting: the US after about a year, Sweden after 18 months.

CROSS-REGISTRY CHECK · LIVE BIRTH ONLY

Same report year. Same baby. Three numbers.

SART CORS
United States, 2021

27.5%

per **intended egg retrieval**, first transfer only

Counts every cycle started. Computed from SART's published age bands

CDC
United States, 2021 report

33.2%

per **intended egg retrieval**, every transfer within a year

Cycles started in 2020. Computed from CDC's published age bands

HFEA
United Kingdom, 2021

22%

per **embryo transferred**, fresh; a retrieval with nothing to transfer never counts

Preliminary, from HFEA's 2021 report

Same endpoint, live birth, patient's own eggs, all ages. None of the three is wrong.

None is the odds one woman has of taking home a baby after all her tries.

What ARC does

ARC is a checklist. It asks seven questions of every registry's published report and writes down the answer in the registry's own words, or marks it absent. It's descriptive: it ranks no registry and doesn't say what a registry should collect. The result is a reading key. Before you set two success rates side by side, it tells you whether they can be compared at all. Registries have been compared on their results before (ICMART world reports [6]; Kushnir 2017 [19]; De Geyter 2020 [20]). To our knowledge, this is the first framework to grade the completeness of the reporting itself, across all the major registries at once.

QUESTION	IN PLAIN WORDS	WHY IT MATTERS
5. Denominator	What is the rate per? A cycle started, an egg retrieval, or an embryo transfer.	The same clinic, same year, gives a different number on each base.
6. Cumulative rate	Does the registry follow one woman across all her tries, and publish that?	This is the rate closest to how RRM counts. One report publishes it in full, three in part.
7. Child outcomes	Does follow-up continue past the birth: weight, prematurity, defects?	A live birth rate says nothing about how the baby is.
1. Mandate	Who has to report? Required by law, or voluntary.	Voluntary registries can miss the clinics with the worst results.
2. Coverage	How many clinics and cycles are actually in?	A national rate from half the clinics isn't national.
3. Data structure	Is a row a cycle, or a woman followed over time?	Only a woman-linked registry can count her whole journey.
4. Treatment types	Which procedures count? IVF only, or frozen, donor, and IUI too?	Mixing them changes the rate without changing the care.

37 steps to a baby. The public sees 11.



public headline · buried in tables · research only · reported nowhere

1	**Cycle started**	14	Embryos discarded after testing	27	Transfer cancelled, thin lining
2	Cancelled before retrieval	15	Assisted hatching used	28	**Embryo transferred**
3	**Eggs retrieved**	16	Hatching outcome	29	**How many embryos transferred**
4	No usable eggs	17	**Frozen or fresh**	30	Why it didn't implant
5	How many eggs	18	Embryos survive thaw	31	Positive blood test
6	Eggs mature	19	Embryos left over	32	**Heartbeat seen**
7	**ICSI or standard**	20	Semen analysis values	33	Miscarriage
8	Eggs fertilized	21	Male factor severity	34	**Baby born**
9	Embryos stop at day 2 to 3	22	Surgical sperm retrieval worked	35	**Twins or more**
10	**Embryos reach day 5**	23	Sperm selection outcome	36	Mother harmed
11	Embryo graded, kept or discarded	24	Why fertilization failed	37	Child followed up
12	**Genetic testing used**	25	**Male factor label**		
13	Embryos pass genetic testing	26	Donor sperm tracked		

Dark = published as a headline somewhere. Grey = buried in clinic tables, research only, or reported nowhere. Row 10, embryos that reach day five: no registry publishes it. Enumeration by the authors; counts are bounded to it.

What we found

No two registries report success on the same terms. Eleven registries use eight different kinds of reporting rules, some required by law, some voluntary. HFEA links each patient's cycles but prints no per-woman rate. Sweden's Q-IVF covers nearly every clinic and links to the country's birth, patient, and cancer registers. ICMART pools other scoreboards, so it inherits their gaps. The rate closest to how RRM counts isn't reported the same way everywhere.

A second gap sits under the headline number. Between the start of a cycle and a live birth there are about 37 steps where something can fail. Only 11 ever reach a public report. The lab, sperm, and transfer steps in the middle are almost all missing.

Of about 37 steps, only 11 reach a public report.

Eleven registries, eight sets of rules, no shared way to count.

Only 1 of 12 reports publishes a per-woman rate in full. Three publish part of it.

What each scoreboard actually publishes

	GETTING PREGNANT, LIVE BIRTH PER				EMBRYOS	STAYING PREGNANT		HARM TO HER			AFTER BIRTH			
	Per cycle	Per retrieval	Per transfer	Per woman	Embryos lost	Miscarriage	Loss by week	Stillbirth	OHSS	Complications	Preterm	Baby died	Healthy baby	NICU
SART (US)	●	●	●	◐	○	●	○	○	○	○	●	○	○	○
CDC (US)	●	●	●	◐	○	●	○	●	○	○	●	○	○	○
HFEA (UK)	○	○	●	○	○	○	○	○	○	○	○	○	○	○
France	○	◐	●	○	●	◐	◐	●	○	○	○	○	○	○
Germany	●	●	●	○	○	●	○	●	●	●	●	○	○	○
Canada	○	●	●	○	○	●	○	●	○	○	●	○	○	●
Australia, NZ	●	●	●	●	○	●	○	●	○	○	●	●	●	○
Japan	●	○	●	○	○	●	○	◐	○	○	○	○	○	○
Sweden	○	◐	●	◐	○	◐	◐	◐	◐	◐	○	○	○	○
Europe (ESHRE)	○	●	●	○	○	●	○	○	●	●	●	○	○	○
Latin America	○	◐	●	○	◐	◐	○	◐	○	○	●	○	○	○
World (ICMART)	?	●	●	○	?	?	?	?	?	?	◐	?	?	?
REGISTRIES THAT PUBLISH IT	5 of 12	10 of 12	12 of 12	4 of 12	2 of 12	10 of 12	2 of 12	8 of 12	3 of 12	3 of 12	8 of 12	1 of 12	1 of 12	1 of 12

● published as a rate ◐ partly: counts only, one subgroup, freeze-all removed, or capped at 12 to 18 months ○ not published, a blind spot: nobody counts it
? full report not reachable. Latest report of each registry, read September 2026; CDC, SART, HFEA held at 2021. US: two rows. ICMART pools the others.

In one example

A woman under 35, United States, 2021, her own eggs. One scoreboard, one year, three answers to "what are my chances?"

39.8%	per intended egg retrieval (every cycle started), counting only her first transfer
54.0%	per intended egg retrieval, counting every transfer from that retrieval within a year
68.5%	per new patient, counting all her retrievals and transfers that year
?	**Her real number.** One woman, all her tries, a healthy baby home. Not printed by any of the eleven.

All three rates are printed on the same SART page. The closest anyone gets is Australia, which follows each woman for up to four years: 39 in 100 have a baby after their first full cycle, and after six cycles the figure is 60 in 100 if every woman who quit is counted as a failure, or 78 if you assume she'd have done as well as those who stayed. Even there, "healthy baby" is counted per baby born, never per woman.

Registries examined

Eleven registries across three tiers, national, multi-country, and meta-registry, covering all eight mandate architectures. Each contributes its published methodology and most recent annual report at the time of review, in English, French, German, Japanese, Spanish, and Portuguese primary sources.

NASS and SART CORS United States, CDC 2021 and 2023, SART CORS 2021

Agence de la biomédecine France, 2023 report, published 2025

HFEA United Kingdom, 2021, preliminary

DIR Germany, Jahrbuch 2024

CARTR Plus Canada, CFAS annual report 2025, 2024 data

ANZARD Australia and New Zealand, NPESU, 2023 data

JSOG ART registry Japan, 2021 summary (Katagiri 2024)

Q-IVF Sweden, Annual Report 2024, treatment year 2022

ESHRE EIM Europe, ART in Europe 2019 and 2020

REDLARA Latin America, 2019 to 2022 report

ICMART World Report global, 2018 and 2019

What a patient actually wants to know

Will I take home a healthy baby?
One number, one woman, all her tries: only Australia and New Zealand publish it in full.

What could it cost me?
Harm to her body, embryos lost, money, time: most scoreboards publish none of it.

So she can't weigh one against the other.
That's what eleven ways of counting does to the person the numbers are about.

Before you compare any two rates, ask what they're counted per and for which women; RRM counts couples over time, so an RRM number should say whether it counts everyone who started or only the couples who stayed.

Limits and next steps

ARC characterizes what an outside reader can see in a registry's published reports, not what a registry collects internally: SART CORS, CDC, and HFEA each hold material beyond the headline metric. The checkpoint enumeration is analyst-constructed, so its counts are bounded to that enumeration. Registry editions differ in reporting year.

The full paper carries an extended axis set and adds candidate procedural-cascade axes, still to be scored against the registry sample. A companion paper takes up what registries should publish. A parallel completeness check of RRM-side reporting, including the iNEST consortium, is a separate exercise.

References

1. Zegers-Hochschild F, et al. International Glossary on Infertility and Fertility Care, 2017. Hum Reprod 2017;32(9):1786-1801.
2. Maheshwari A, McLernon D, Bhattacharya S. Cumulative live birth rate: time for a consensus? Hum Reprod 2015;30(12):2703-7.
3. Smeenk J, et al. (ESHRE EIM). ART in Europe, 2019. Hum Reprod 2023;38(12):2321-2338.
4. Smeenk J, et al. (ESHRE EIM). ART in Europe, 2020. Hum Reprod 2025;40(11):2038-2055.
5. Achotegui Sebastián E, et al. EuMAR stakeholder engagement. Hum Reprod 2024;39(11):2379-2386.
6. Baker VL, Dyer S, Chambers GM, et al. (ICMART). World report for cycles conducted in 2017-2018. Hum Reprod 2025;40(6):1110-1126. Dyer S, Chambers GM, Jwa SC, et al. (ICMART). World report: assisted reproductive technology, 2019. Fertil Steril 2025;124(4):679-693.
7. Kotevski DP, Newman JE, Chaitarvornkit A, Paul RC, Chambers GM. Assisted reproductive technology in Australia and New Zealand 2023. NPESU, UNSW Sydney, 2025.
8. Katagiri Y, et al. Assisted reproductive technology in Japan: a summary report for 2021. Reprod Med Biol 2024;23(1):e12552.
9. Deutsches IVF-Register. Jahrbuch 2024. J Reproduktionsmed Endokrinol 2025, Sonderheft.
10. CARTR Plus. Annual report 2025, treatment year 2024. Canadian Fertility and Andrology Society.
11. Zegers-Hochschild F, et al. Latin American Registry of Assisted Reproduction, 2022. JBRA Assist Reprod 2026;30(2).
12. Agence de la biomédecine. Rapport médical et scientifique, AMP et DPI 2023. Published 2025.
13. CDC. 2021 and 2023 ART Fertility Clinic and National Summary Reports. HHS, 2023 and 2025.
14. HFEA. Fertility treatment 2021: preliminary trends and figures. 2023.
15. Q-IVF Annual Report 2024, treatment year 2022.
16. Fertility Clinic Success Rate and Certification Act of 1992, Public Law 102-493.
17. Human Fertilisation and Embryology Act 1990 (c. 37) and 2008 (c. 22).
18. Stanford JB, Parnell T, Kantor K, et al. iNEST: enrollment and methods. Hum Reprod Open 2022;2022(3):hoac033.
19. Kushnir VA, et al. Systematic review of worldwide trends in assisted reproductive technology 2004-2013. Reprod Biol Endocrinol 2017;15(1):6. PMID 28069012.
20. De Geyter C, et al. 20 years of the European IVF-monitoring Consortium registry: what have we learned? A comparison with registries from two other regions. Hum Reprod 2020;35(12):2832-2849. PMID 33188410.

Disclosure. The authors declare no competing financial interest. Speaker honorarium and travel support for this congress were provided by IIRRM. A generative AI language model assisted with structural drafting and prose editing; all registry facts, figures, and citations were verified by the authors.

Corrected e-poster, 25 September 2026. Differs from the printed poster in the counts and references noted in the online version.

Abstract and paper
naomiwhittakermd.com/publications