

HSD60

Determining costs, cost predictors, and resource requirements in assisted reproductive technology care pathways

a value-based fertility care costing tool using time-driven activity-based costing

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BACKGROUND

-  Rising costs and demands on the healthcare system are unsustainable
-  European and global demand for (in)fertility care is rising, with 11% of US residents and 15% of EU residents impacted [1-4]
-  Time-driven activity-based costing (TDABC) may enable decision making based on patient level costs and outcomes [5] on a daily basis, but also concerning technological advancements such as Artificial Intelligence (AI) embryo selection



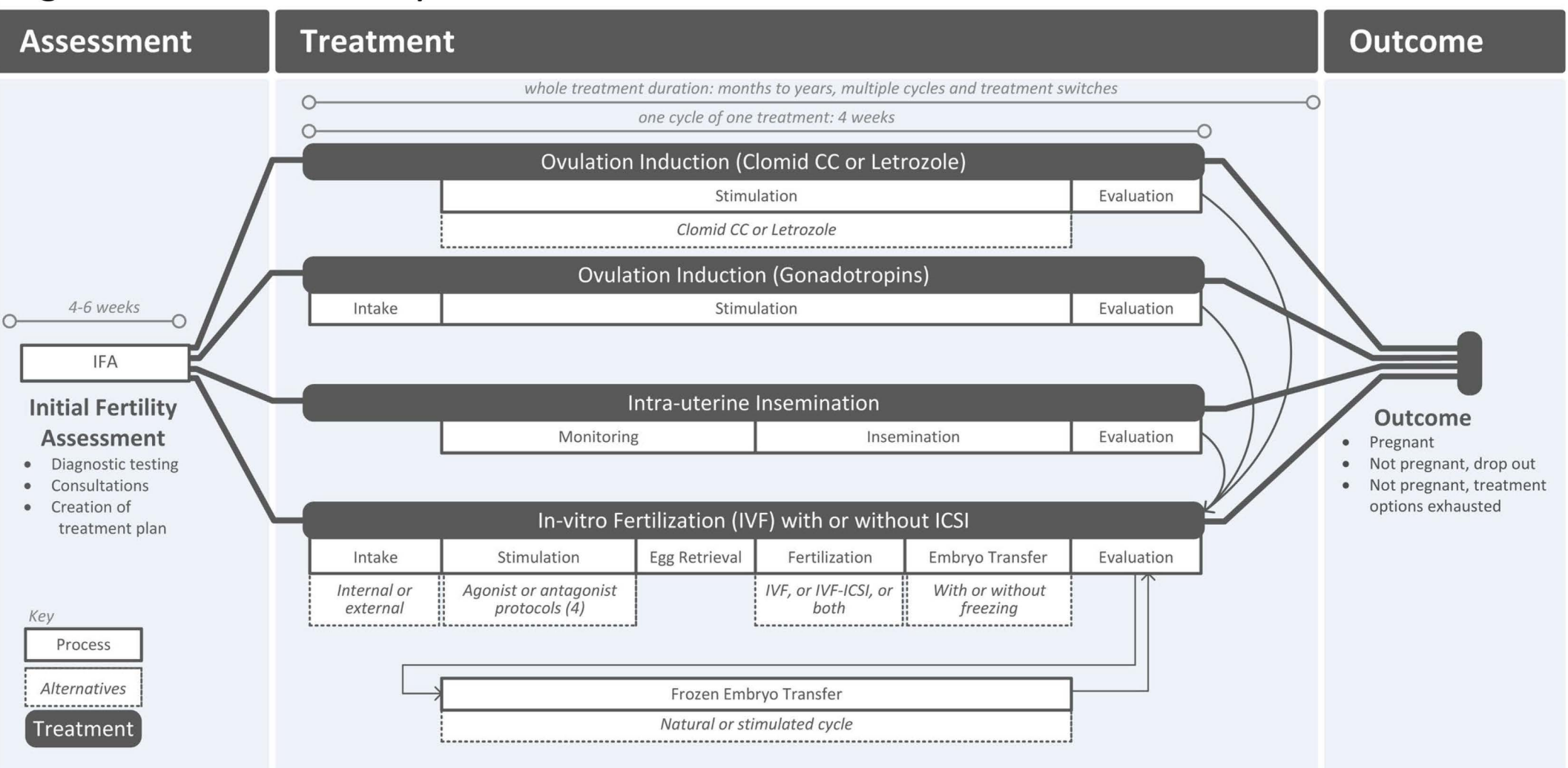
METHODS & DATA

- Time-driven activity-based costing (TDABC) [6,7]
- Direct observations to measure activity durations (n=218), supplemented by clinician input
- Activities exhibiting variation observed more frequently
- Sources of variation documented (cost predictors)
- 2022 annual clinic cost data and direct disposables costs
- Capacity cost rates (CCRs) [6]
- Calculator tool built in MS Excel

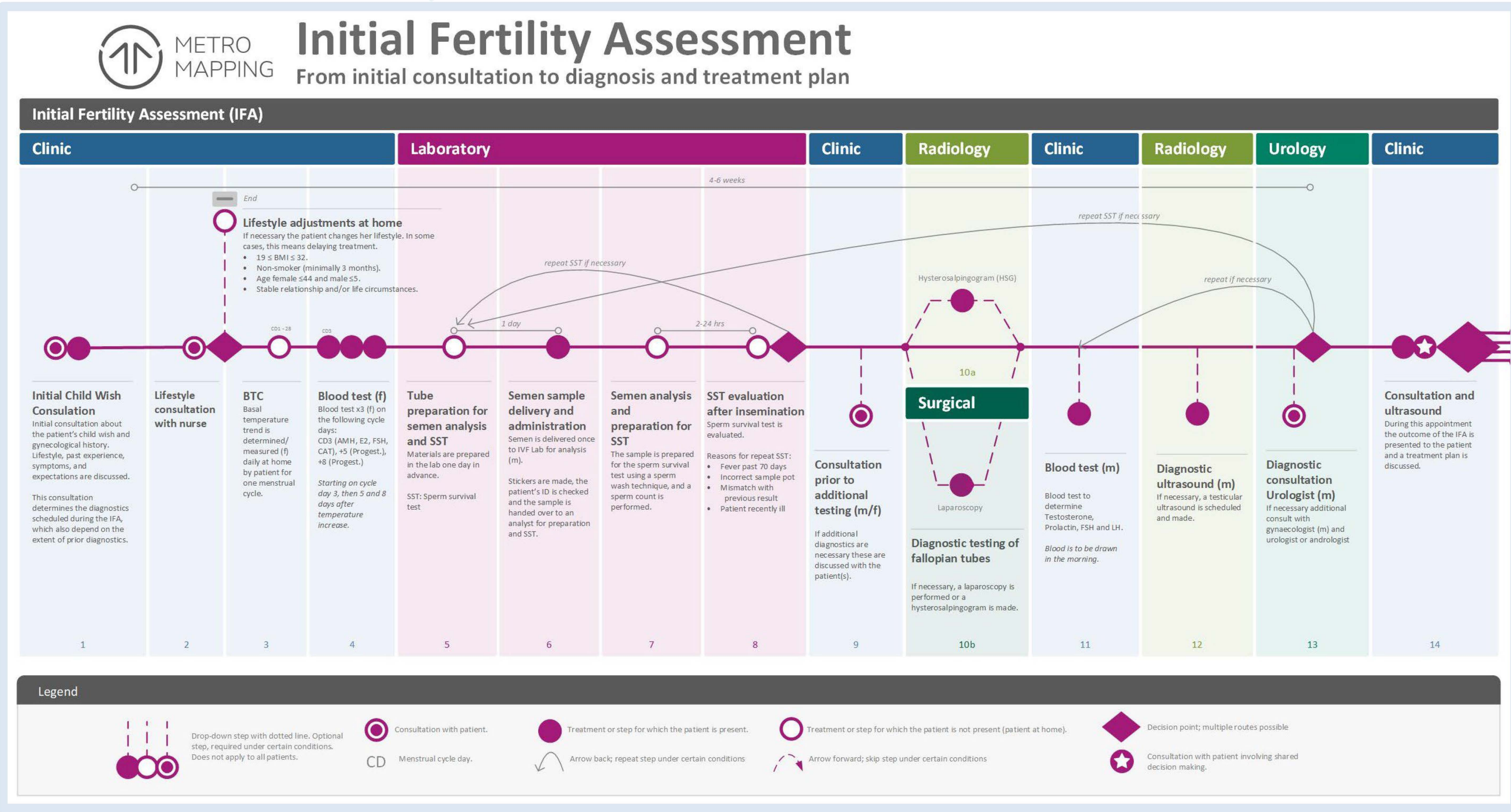
RESULTS

- Fertility care is cyclical
- Patients repeat cycles
- Patient journey can last months to years, with repeated cycles and treatment switches
- Costs differ significantly across cycles (fig 3)
- Cost variation is greatest in the laboratory phases of treatment

Figure 1: Process map



The process map above summarizes the patient pathways we have mapped (example below)



One column on the metro line corresponds to one ‘activity’ in the time-driven activity-based costing calculator tool built in MS Excel.

CONCLUSIONS

- TDABC can capture patient level cost variation in complex care and can inform care path redesign
- Current Dutch reimbursement system (fee for service) does not incentivize outcomes, and instead rewards volume
- Technological advancements in the laboratory phase of fertility care can improve value and reduce burden
 - e.g. Artificial Embryo Selection to reduce workload and reduce chance of failed cycle
 - e.g. Vitrification as a newer and faster method of embryo freezing and thawing

ACRONYMS

TDABC Time-driven activity-based costing

ART Assistive reproductive technology

IVF In-vitro fertilization

VBHC Value-based healthcare

CCR Capacity cost rate

AI Artificial Intelligence

REFERENCES

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FUNDING

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ETHICS

This study was approved by the ESHPM Research Ethics Review Committee (ETH122-0355) and the Reinier de Graaf Hospital (2022-032).

We used the metro line tool from Metro Mapping to capture activities and processes, which informed the costing tool



Figure 3: Entire patient pathway mapped using metro line tool from Metro Mapping

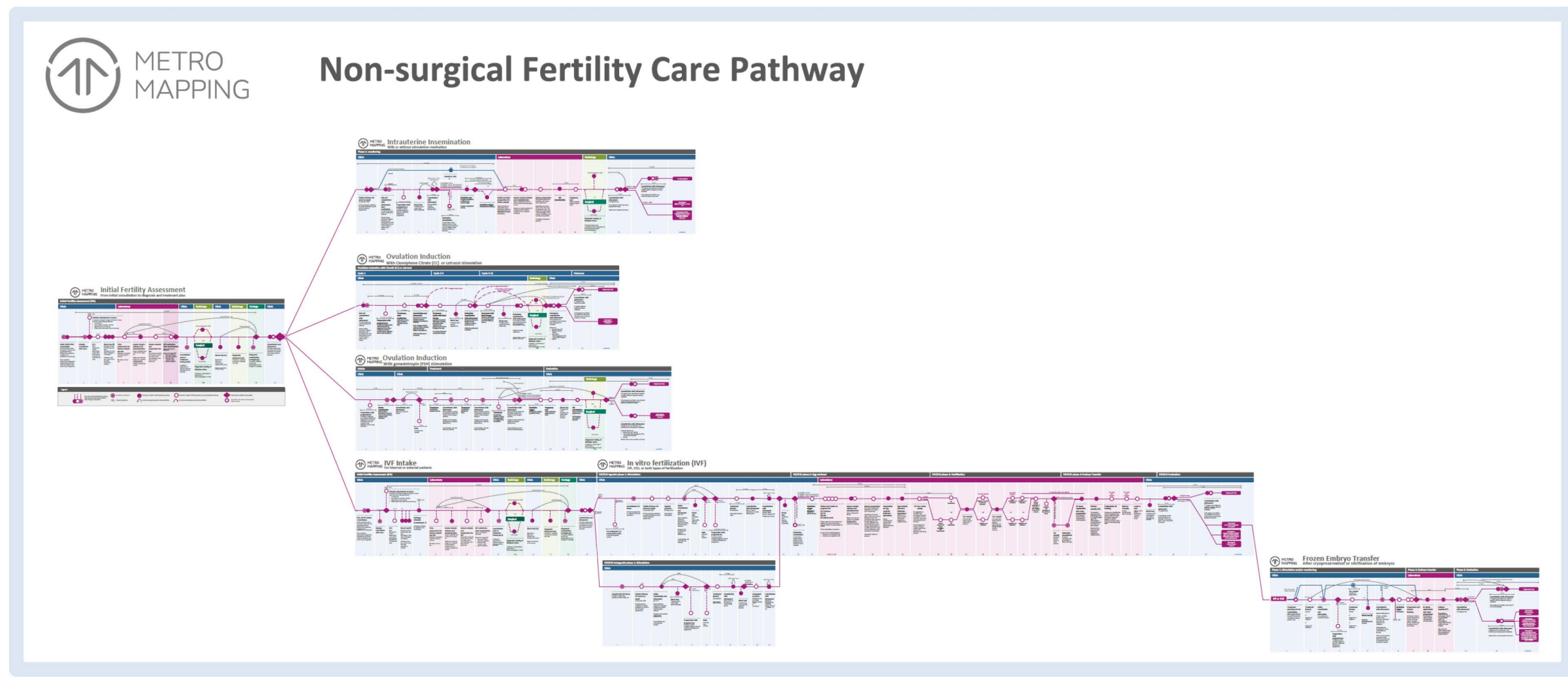


Figure 4: Total costs per cycle under ideal conditions (€)

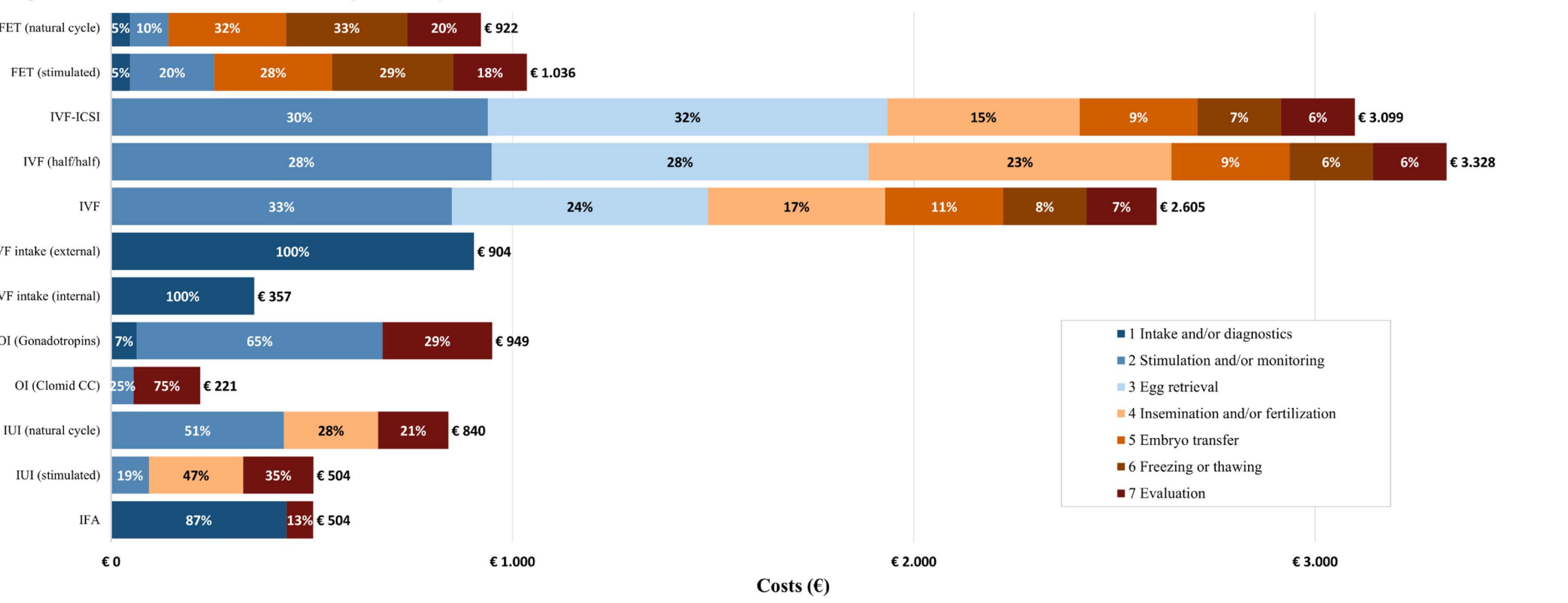
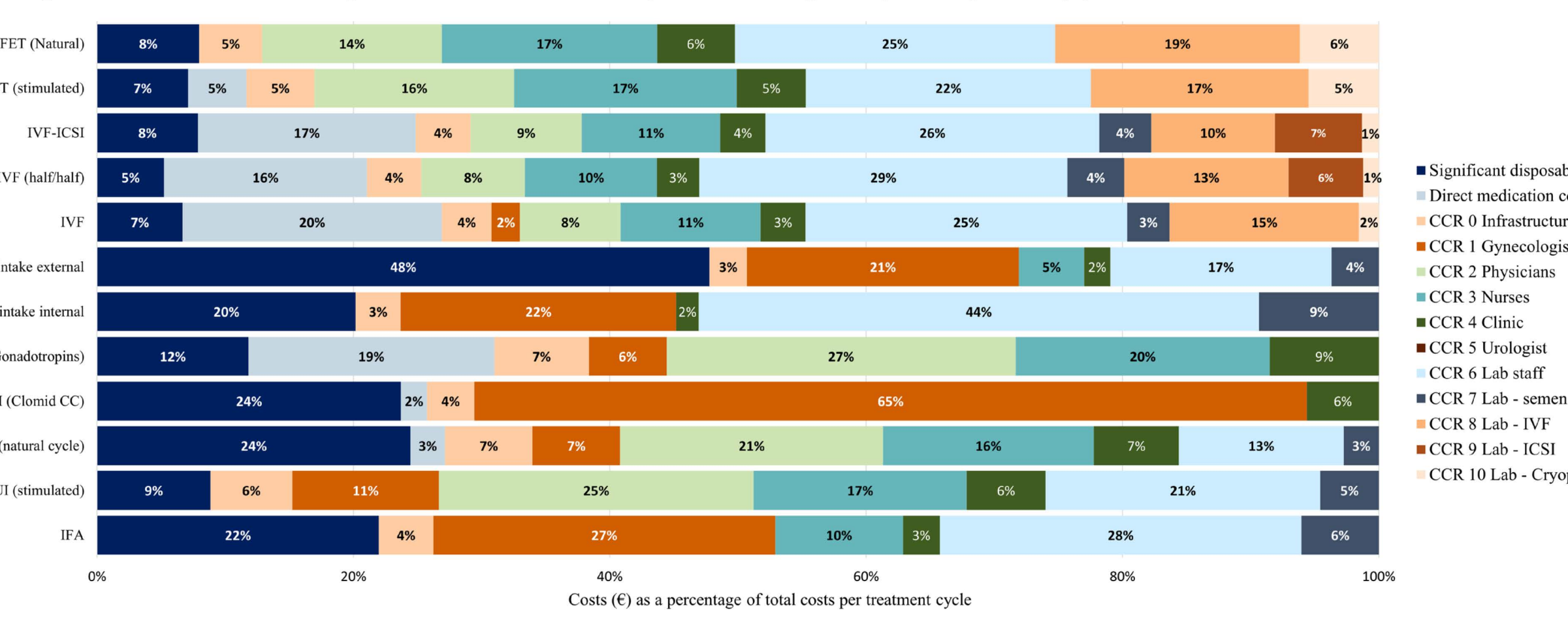


Figure 5: Cost stratification, relative percentages, per cycle type



Direct observations (n=218) were used to identify cost predictors, which explain the variation in costs per patient. Variation was greatest in phases 3 & 4 of the IVF/ICSI treatment trajectory (see fig 4). We identified the following cost predictors:

- Predicted number of oocytes
- Number of oocytes available to fertilize
- Number of fertilized embryos
- Experience of analyst/embryologist
- Type and success of thawing method

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