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# Universal warming protocol

**Submission date**
23/03/2017

**Recruitment status**
No longer recruiting

**Registration date**
24/03/2017

**Overall study status**
Completed

**Last Edited**
26/11/2020

**Condition category**
Pregnancy and Childbirth

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[X] Results
[ ] Individual participant data

## Plain English summary of protocol

Background and study aims
In order for a woman to become pregnant, the fertilized egg must attach (implant) itself to the lining of the womb. In vitro fertilization (IVF) is a technique used to help people with fertility problems to have a baby. During IVF, couples donate their own sperm and eggs (or use sperm and eggs from a donor). The egg is fertilized by the sperm outside of the body to create an embryo and then returned to the woman's womb to develop. In many cases, some of the embryos are frozen so that they can be thawed out and used in IVF at a later date (frozen embryo transfer). Current freezing techniques mean that the majority of these embryos survive the freezing process, however scientists are constantly trying to refine these techniques. Embryos are frozen by using ready-to-use freezing solutions. The aim of the study is to assess the effect of various combinations of different brands for freezing/thawing solutions on embryo survival.

Who can participate?
Infertile women who are undergoing fertility treatments

What does the study involve?
All participants have eggs removed and fertilized so that embryos can be created. The fertilised embryos are frozen using one of two freezing brand solutions, for later use. Embryos are randomly allocated to one of two groups for freezing and subsequently to one of the two groups for thawing. The embryos are frozen by using ready-to- use freezing solutions made by different commercial brands. These freezing solutions have just slight modification in their composition and it remains to be demonstrated that a thawing solution of a given brand can be used to thaw the embryos frozen with another brand. After the embryos have been thawed, the number that survive the process are recorded. In addition, the number of women who have the embryos implanted who become pregnant is recorded.

What are the possible benefits and risks of participating?
There are no direct benefits or risks involved with participating

Where is the study run from?
GynePro Medical (Italy)

When is the study starting and how long is it expected to run for?
April 2016 to January 2018

Who is funding the study?
GynePro Medical (Italy)

Who is the main contact?
Dr Lodovico Parmegiani

# Contact information

### Type(s)
Scientific

### Contact name
Dr Lodovico Parmegiani

### Contact details
GynePro Medical
Via Tranquillo Cremona, 8
Bologna
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# Additional identifiers

### Protocol serial number
UWP1

# Study information

### Scientific Title
Testing the efficacy and efficiency of a single “universal warming protocol” for vitrified human embryos: a randomized controlled study

### Study objectives
The aim of this study is to establish whether it is possible to use a single “universal warming protocol” for warming vitrified human embryos, irrespective of the vitrification protocol and of the type of vitrification medium used for freezing.

### Ethics approval required
Old ethics approval format

### Ethics approval(s)
Institutional Medical Ethics Committee of GynePro Medical Center, Bologna, 22/02/2017, ref: GP22022017

### Primary study design
Interventional

## Study design
Prospective randomised controlled trial

## Study type(s)
Other

## Health condition(s) or problem(s) studied
Warming cryopreserved human oocytes

## Interventions
All participants undergo controlled ovarian stimulation between day 12 and 20 of their menstrual cycle using gonadotropin-releasing hormone analogs in combination with a graded gonadotropin administration. Oocyte retrieval is performed 35 hours after ovulation induction with human chorionic gonadotropin (hCG). Mature oocyte are inseminated with partner's sperm by intracytoplasmic sperm injection (ICSI). Injected oocytes are cultured for 3-5 days at 37 ° C in an atmosphere of 6% CO2. All, or part, of the embryos generated by this treatment are frozen by vitrification.

Embryos are randomly allocated using randomisation software to one of four groups. Embryos are frozen and thawed in the 4 groups by a standard vitrification protocol, according with the manufacturer instruction. The vitrification/warming solutions have just slight modifications in components and the protocol performed for freezing and thawing is the same in the 4 groups.

The embryos are first equilibrated in a solution with 7.5% concentration of criprotectant cocktail with DMSO and EG for 12 minutes. They are then immersed for 1 minute in vitrification solution containing 15% of cryoprotectants. Finally they are loaded on a specific vitrification carrier (Cryotop - Kitazato- Japan) and directly plunged in liquid nitrogen. At warming, the carrier containing the embryo is immersed in a 1 M solution with extracellular crioprotectant (ECCP- Sucrose or Threalose, depending on the brand), then then embryo is moved in a 0.5 solution with ECCP and finally washed in basic medium.

Group A - 25 embryos vitrified with Kitazato and warmed with Kitazato. This involves Threalose and Hydroxypropyl Cellulose (HPC) in vitrification and warming solutions
Group B - 25 embryos with Kitazato and warmed with Sage. This involves Threalose and HPC in vitrification and Sucrose and Human serum albumin (HSA) in warming solutions
Group C - 25 embryos were vitrified with Sage and warmed with Kitazato. This involves Sucrose and HSA in vitrification and Threalose and HPC in warming solutions
Group D - 25 embryos were vitrified with Sage and warmed with Sage. This involves Sucrose and HSA in vitrification and warming solutions

Vitrification performed with the carrier Cryotop SC (Kitazato, Japan)

One hour after thawing, embryos are observed using an optical microscope to assess survival. 30 days after embryo transfer, ultrasound examinations are used to determine implantation rate.

## Intervention Type
Procedure/Surgery

## Primary outcome(s)
Survival rate (number of embryos surviving per number of embryo warmed) is measured using observation a optical microscope one hour after thawing.

### Key secondary outcome(s)
Implantation rate (number of embryos implanted per number of embryos transferred in utero) is measured using ultrasound observation of gestational sacs at 30 days after the in-utero embryo transfer.

### Completion date
01/01/2018

## Eligibility

### Key inclusion criteria
1. Infertile patients
2. Undergoing to fertility treatments via Intracytoplasmic Sperm injection (ICSI)
3. Aged 18 years and over
4. Female

### Participant type(s)
Patient

### Healthy volunteers allowed
No

### Age group
Adult

### Lower age limit
18 Years

### Sex
Female

### Total final enrolment
169

### Key exclusion criteria
Patients undergoing to preimplanatation genetic screening (PGS)

### Date of first enrolment
01/03/2017

### Date of final enrolment
01/10/2017

## Locations

### Countries of recruitment
Italy

**Study participating centre**
**GynePro Medical**
Via Tranquillo Cremona, 8
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# Sponsor information

**Organisation**
GynePro Medical

**ROR**
https://ror.org/03segdh23

# Funder(s)

**Funder type**
Hospital/treatment centre

**Funder Name**
GynePro Medical Centers

# Results and Publications

**Individual participant data (IPD) sharing plan**
The datasets generated during and/or analysed during the current study are/will be available upon request from l.parmegiani@gynepro.it

**IPD sharing plan summary**
Available on request

**Study outputs**

| Output type | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|---|---|---|---|---|---|
| Results article | results | 01/10/2018 | 26/11/2020 | Yes | No |