Royal Hospital for Women (RHW)
BUSINESS RULE
COVER SHEET

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EXECUTIVE SPONSOR	Dr Rachael Rodgers (Clinical Director, Fertility and Research Centre, RHW) Maria Fenn (Clinical Nursing Co-Director, RHW)
AUTHOR	Ashlee Rea (Clinical Nurse Consultant, Fertility and Research Centre, RHW)
SUMMARY	This clinical business rule has been developed to guide clinical practice at the Fertility & Research Centre, Royal Hospital for Women, for patients undergoing Intrauterine PRP infusion for thin endometrium. It provides guidance on the process and procedure for PRP.
Key Words	Platelet Rich Plasma (PRP)

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Within this document we will use the term woman, this is not to exclude those who give birth and do not identify as female. It is crucial to use the preferred language and terminology as described and guided by each individual person when providing care.

1 BACKGROUND

Endometrium receptivity and thickness play an important role in achieving a pregnancy. Intrauterine Platelet Rich Plasma (PRP) infusions are an adjuvant therapy offered to women with a history of thin endometrium or recurrent implantation failure.

The aim of this CBR is to provide a guideline for PRP use in clinical practice, as deemed appropriate by the FRC medical team, and where an embryo transfer is planned.

2 RESPONSIBILITIES

2.1 Medical Director

Oversee all policy development and final approval of all clinical practice in accordance with RTAC guidelines and evidence-based practices.

2.2 Medical staff

Recognition of patients who meet criteria for PRP, counselling patients, completing consent to treatment, and facilitating PRP procedures at the Fertility and Research Centre (FRC)

2.3 Registered Nurses/Midwives

Ensuring patients receive adequate information on the PRP procedure. Assistance in the coordination of PRP procedures including blood collection and procedural set up and ensuring consent to treatment has been obtained.

2.4 Endocrine department

Endocrinology laboratory only assist clinical staff with the centrifugation step to ensure that it is performed safely and correctly.

3 PROCEDURE

3.1 Equipment

- Dressing Trolley
- Kidney Dish
- Non - sterile gloves
- Tourniquet
- Pillow
- Alcohol Swab
- Cotton ball/Band aid
- 20ml Syringe
- 3ml Syringe
- 21G Butterfly Needle (Green) OR 23G Butterfly Needle (Blue)
- 18G 1 1/2 blunt drawing up needle X 3 (Pink)
- IUI Catheter
- Ultrasound Machine (with abdominal probe)
- Dressing Pack OR Sterile Drape
- Sterile gloves
- Speculum
- Cotton Tips
- Saline

PRP equipment provided by YCellbio	FRC Endocrine lab equipment
Anticoagulant 1.5ml	Centrifuge
YCellbio tube (PRP device)	Bucket adaptors & Rack

3.2 Clinical practice

- Patient to receive information sheet on Platelet Rich Plasma
    - Obtain consent for PRP treatment, witnessed by medical practitioner
- Patient to contact clinic with day 1 of menses
- Nursing team to arrange blood test and ultrasound appointment day 8 of cycle
    - Ultrasound and blood test results are to be reviewed by medical team, if endometrium measuring <7mm, plan for PRP
- Nursing team to coordinate with endocrine scientists and medical team on scheduling PRP appointment from day 8 – 10 of the cycle for the initial PRP infusion
- Inform patient of scheduled PRP appointment, to arrive 15 minutes prior to PRP procedure for blood collection
    - Allow additional time for ultrasound and blood test if occurring on the same day as PRP
    - Venepuncture for hormone surveillance must be separate from PRP collection
- PRP treatment can be repeated within the same cycle if deemed necessary by medical team

3.2.1 Day of PRP Procedure

- Complete pre-procedure requirements in accordance with level 2 procedures Ministry of Health PD2017_032 - Clinical Procedure Safety.pdf including:
    - Confirmation of patient ID
    - Procedure verification confirmed with patient and written consent obtained and valid
    - Procedure matches treatment plan
- Explain the procedure to the woman
- Ensure patient identifier labels are available

Prepare Syringe (Nursing or Medical Professional only)

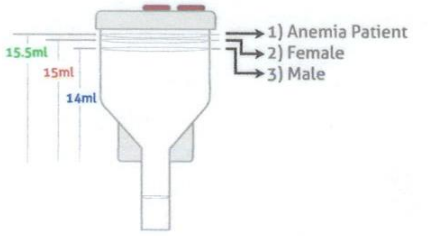
- Take a 20ml syringe and push the syringe plunger in and out several times to remove the air pressure within the syringe.
- Attach a 18G blunt needle (pink drawing-up) to the 20ml syringe.
- Draw 1.5 ml of anticoagulant into the 20ml syringe.
- Remove 18G blunt needle and dispose.
- Coat the walls of the 20ml syringe by carefully drawing back and pushing the plunger without expelling anticoagulant.
- Attach 21G needle (Green butterfly) or 23G needle (Blue butterfly) which will be used for blood collection.
- Prime needle connector with the anticoagulant
- Affix patient label to 20ml syringe

Blood Collection (Nursing or Medical Professional only)

- Position patient for blood collection follow procedure guidelines as per Venepuncture POWH/SSEH CLIN010
- Draw 15 ml of blood into the 20ml syringe (draw blood slowly, fast & forcefully can damage cells)
- Remove butterfly needle and replace with 18G blunt needle (cap on)
- Once collected rotate the syringe slowly to mix the blood and anticoagulant.

Transferring Blood into Tube (Nursing or Medical Professional only)

- Affix Patient ID label to the (white) bottom of the YCELLBIO tube
- Transfer the collected blood into the YCELLBIO tube by inserting the needle into inlet maintain a 45-degree angle until the blood reaches the slim neck.
- Once the blood is at the slim neck, transfer the remaining collected blood at 90 degrees.
- Fill the tube until it reaches the second line (female patients).
- Refer to diagram 1.



· Fill up the blood in the tube following the singled lines depending on each condition of patients (Anemia, Female and Male).

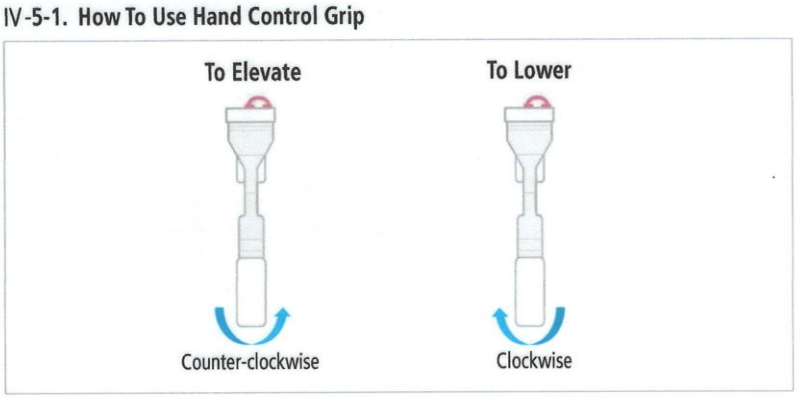
- Once the blood is loaded, seal the inlet blood port of the tube with the attached red silicon cork.
- Nursing staff to give the YCELLBIO tube to medical professional to take to the centrifuge.

Centrifugation of blood (Medical Professional only)

- Turn on centrifuge, open lid and arrange buckets and adaptors to ensure centrifuge balance.
- Medical professional to place YCELLBIO tube into the centrifuge and turn on machine.
- Close lid, set centrifuge to 6 minutes.
- Once spin is complete, open lid and retrieve YCELLBIO tube. Place the tube into rack to keep upright and prevent red blood cells from mixing into the buffy coat.
- Please see manual from manufacturers about troubleshooting/ scenarios where further spinning is required.
  Hospital Lab staff are only able to assist with direction on using the centrifuge machine and are not to be involved in the process of blood collection/ PRP extraction

PRP Extraction

- Adjust the height of the blood cells to situate the PRP in the slim part by using the bottom control knob (white) of the YCELLBIO tube. ***The buffy coat needs to be elevated to the buffy coat line.***
- To elevate the control grip of the YCELLBIO turn the bottom of the device counter-clockwise, similarly; to lower the control grip turn clockwise. Refer to diagram 2.



- Connect a 18G drawing needle to a 3ml syringe, label the syringe with patient's identification sticker.
- Open the outlet and using the syringe extract 1.5-2ml of PRP (each patient will vary) from the slim neck using a "tornado" technique, by drawing up whilst swirling the needle in a clockwise direction
- Remove 18G needle place labelled PRP in kidney dish ready for intrauterine transfer

PRP infusion

- Position woman for PRP infusion
- Prepare sterile field by opening dressing drape or pack onto trolley, open IUI catheter, speculum, sterile gloves, cotton tips and saline/lubricant
- Perform abdominal ultrasound, measure endometrium, take photo for patient records, and document measurement of endometrium in patients' medical records.
- Perform speculum examination to visualise cervix
- Pass Intrauterine insemination catheter through cervix
- Connect the syringe containing PRP to the IUI catheter
- Slowly inject PRP and remove catheter.
- Remove speculum.
- Encourage patient to remain supine for 15-20 minutes post procedure.
- Book patient for a follow-up ultrasound in 2-3 days' time and organise subsequent PRP infusions if endometrium remains <7mm.

3.3 Documentation

- Patient Medical Records

3.4 Education Notes

Infertility affects approximately 12-15% of couples[1] 5% of which will experience 2 consecutive miscarriages, 75% of which are due to an implantation failure[2]

Recurrent implantation failure (RIF) can be associated with a thin endometrium and poor receptivity. The endometrium is a thin layer of tissue that lines the uterus to which an embryo may implant leading to a pregnancy, RIF can be caused by several factors including altered endometrial receptivity. PRP is an adjunct therapy offered to RIF patients or patients with significant thin endometrial lining <7mm who haven't responded to alternate ART modalities. Studies on the effectiveness of PRP are limited and further research is required into its effectiveness within a larger cohort. In a 2023 meta-analysis of 14 PRP trials involving 1075 women undergoing FET (with RIF or thin endometrium), it was found that intrauterine PRP showed significant improvements in clinical pregnancy, implantation rate and endometrial thickness compared to placebo groups[3], live birth rates were not measured.

PRP injections work by delivering a highly concentrated form of the patients own growth factors & anti – inflammatory compounds (cytokines) found in the plasma, into the endometrium. These products are used in an "autologous" manner, which means the blood is first collected from a patient, processed in the laboratory, and then returned to the same patient**.** For PRP to be effective the platelets retrieved from the patient must be healthy[4], lifestyle considerations included on the information sheet should be implemented prior to the procedure.

3.5 CBR should include implementation, communication and education plan

This CBR will be distributed to all medical, nursing staff within the Fertility & Research Centre via @health email. The CBR will be discussed at ward meetings, education and patient quality and safety meetings. Education will occur through in-services, open forum and local ward implementation strategies to address changes to practice. The staff are asked to respond to an email or sign an audit sheet in their clinical area to acknowledge they have read and understood the revised CBR. The CBR will be uploaded to the CBR tab on the intranet and staff are informed how to access

3.6 Related Policies/procedures

In Vitro Fertilisation (IVF) Embryo Transfer

3.7 References

1. An update on platelet-rich plasma (PRP) therapy in endometrium and ovary related infertilities: clinical and molecular aspects
Hajipour, H., Farzadi, L., Latifi, Z., Keyhanvar, N., Navali, N., Fattahi, A., Nouri, M., & Dittrich, R. (2021) *Systems Biology in Reproductive Medicine*, *67*(3), 177–188.

2. Platelet-Rich Plasma Intrauterine Infusion as Assisted Reproduction Technology (ART) to Combat Repeated Implantation Failure (RIF): A Systematic Review and Meta-Analysis Huang, C., Ye, X., Ye., Lu, L. & Liu, F (2023)
3. Platelet-rich plasma treatment in patients with refractory thin endometrium and recurrent implantation failure: A comprehensive review *Clinical and Experimental Reproductive Medicine*.Kim, E. K., Song, H., Lyu, S. W., & Lee, W. J. (2022)

4. Platelet Rich Plasma Users Manual (2015)

4 ABORIGINAL HEALTH IMPACT STATEMENT DOCUMENTATION

- Considerations for culturally safe and appropriate care provision have been made in the development of this Business Rule and will be accounted for in its implementation.
- When clinical risks are identified for an Aboriginal and/or Torres Strait Islander woman or family, they may require additional supports. This may include Aboriginal health professionals such as Aboriginal liaison officers, health workers or other culturally specific services

5 CULTURAL SUPPORT

- For a Culturally and Linguistically Diverse CALD woman, notify the nominated cross-cultural health worker during Monday to Friday business hours
- If the woman is from a non-English speaking background, call the interpreter service: NSW Ministry of Health Policy Directive PD2017 044-Interpreters Standard Procedures for Working with Health Care Interpreters.

6 NATIONAL STANDARDS

- Standard 1 - Governance
- Standard 5 – Comprehensive Care
- Standard 6 – Communicating for Safety
- Standard 7 - Blood and Blood Products

7 REVISION AND APPROVAL HISTORY

Date	Revision No.	Author and Approval
15.7.24	1	Clinical Nurse Consultant (IVF)
11.10.24	1	Endorsed BRGC