Assisted Reproduction

Annual Report 2017

Department of Obstetrics and Gynaecology
Queen Mary Hospital, The University of Hong Kong

Table of contents

Introduction

The year two thousand and seventeen marks the beginning of the thirty-first year of the Assisted Reproduction Program at Queen Mary Hospital.

A total of 655 assisted reproduction treatment cycles were initiated in 513 couples during this period. The numbers of treatment cycles and of patients were similar to those in previous years. The number of frozen-thawed embryo transfer cycles was similar in 2016 and in 2017. The mean number of embryos replaced reduced to 1.4 per transfer in conventional IVF and ICSI cycles respectively as all our patients agreed to replace at most two fresh embryos and more chose to have elective single embryo transfer. The mean number of embryos replaced in frozen-thawed embryo transfer cycles also reduced to 1.3 per transfer because our patients are requested to freeze at most two embryos per straw and some prefer to replace a single frozen embryo first. This year, we encountered one set of triplets in IVF-ICSI.

Similar to last year, women who were younger than 35 years in their first treatment cycle and had at least two good quality embryos were encouraged to have elective single embryo transfer. The pregnancy and ongoing pregnancy rate per transfer cycle were 41.4% and 34.6% respectively in elective single embryo transfer whereas the corresponding rates in non-elective single embryo transfer cycles were 31.5% and 24.5% respectively.

In 2017, preimplantation genetic testing was performed in 73 (69 stimulated, 1 cycle of vitrified oocytes and 3 frozen cycles) cycles in 55 women at risk of having babies with serious chromosomal or genetic disorders.

Professor William Yeung was conferred Honorary Fellowship of Hong Kong College of Obstetricians and Gynaecologists in 2017.

Staff list

Gynaecologists

Professor HO Pak Chung, Emeritus Professor, University of Hong Kong
Dr. WONG, Ho Yan Queenie, Associate Consultant, Department of Obstetrics and Gynecology, Princess Margaret Hospital
Dr. YUNG Shuk Fei Sofie, Clinical Assistant Professor, Department of Obstetrics and Gynaecology, Queen Mary Hospital
Dr. KO Ka Yee, Jennifer, Associate Consultant, Department of Obstetrics and Gynaecology, Queen Mary Hospital
Dr. LEE Chi Yan, Vivian, Associate Consultant, Department of Obstetrics and Gynaecology, Queen Mary Hospital (till April)
Dr. LI Hang Wun, Raymond, Clinical Associate Professor, Department of Obstetrics and Gynaecology, University of Hong Kong
Professor NG Hung Yu, Ernest, **Person Responsible**, **Head,** Division of Reproductive Medicine Clinical Professor, Department of Obstetrics and Gynaecology, University of Hong Kong

Trainees

Dr. WAI, Kar On Joan	(15 Feb to 31 Mar)
Dr. TONG, Yu Wing Paul	(16 May to 30 Jun)
Dr. WONG, Keedon	(1 Oct to 31 Dec)

Scientists

Dr. LAU Yee Lan, Estella, Scientific Officer (Medical), Department of Obstetrics and Gynaecology, Queen Mary Hospital, Hospital Authority
Professor YEUNG Shu Biu, William, Professor, Department of Obstetrics and Gynaecology, University of Hong Kong

Consultant Molecular Geneticists

Professor LAM Ching Wan, Professor, Department of Pathology, University of Hong Kong

Consultant Geneticists

Dr. CHUNG Hon Yin, Brian, Clinical Associate Professor, Department of Obstetrics and Gynaecology and Department of Paediatrics and Adolescent Medicine, University of Hong Kong
Dr. KAN Sik Yau, Anita, Consultant, Department of Obstetrics and Gynaecology, Queen Mary Hospital
Dr. TANG Hoi Yin, Mary, Clinical Associate Professor, Department of Obstetrics and Gynaecology, University of Hong Kong

Consultant Endocrinologist

Professor TAN Choon Beng, Kathryn, Professor, Department of Medicine, University of Hong Kong

Consultant Urologist

Dr. TSU Hok Leung, James, Consultant, Department of Surgery, Queen Mary Hospital, Hospital Authority
Professor TAM Po Chor, Honorary Professor and Consultant (Part-time), Department of Surgery, Queen Mary Hospital, Hospital Authority

Medical Social Workers

Ms CHAN Hoi Yan, Celia, Department of Social Work and Social Administration, University of Hong Kong
Professor CHAN Lai Wan, Cecilia, Professor, Department of Social Work and Social Administration, University of Hong Kong

Program Nurses

Ms. CHAN Po Ling, Phoenix, RN
Ms. CHAN Yuk Chun, Jane, RN
Ms. CHEUNG Hoi King, Amy, RN
Ms. CHEUNG Long Yi, Rosita, RN
Ms. CHEUNG Wai Man, RN
Ms. CHIANG Yuin Wei, Loretta, RN
Miss DO Chui Pik, RN
Ms. HO Pui Wai, Ada, RN
Miss HUNG Wai Fong, Doris, RN
Miss LEE Suet Kwan, Sandy, RN

Patient Care Assistants

Ms. LAU Yuk Mui
Ms. CHUNG Sau Lan
Ms. FOK Hung Chai, Shirley

Laboratory Staff

IVF Laboratory

Miss CHAN Ching Yu, Connie
Mr. CHAN Kin Wa, Tommy
Dr. CHAN Yiu Leung, David
Mr. CHEUNG Chi Man, Leo
Mr. CHEUNG Tak Ming
Ms. CHOW Fung Cheung, Judy
Miss HO Choi Wan, Wanda
Ms. JIN Zhan Qun, Jenny
Mr. KWAN Siu Lun Tristan
Miss KWONG Fung Mei Venise
Dr. LAM Ka Wai, Kevin
Ms. LOCK Hiu Yan, Crystal
Mr. NG Kwok Hung, Victor
Mr. TSANG Chi Kit, Percy

Hormone Assay

Mr. CHAN Chan Keung, Milton
Ms. WONG Po Chau, Benancy

Laboratory Assistants

Ms. CHUNG Chi King, Gloria

Clerical Staff

Miss DO Chui Mei, May
Ms. KO Yuk Chun, Jennie
Miss NG Hoi Suet
Miss WONG Mei Ngor, Lisa

Front Row: (Left to Right)
Miss HS NG, Miss May DO, Dr. Raymond LI, Professor William YEUNG, Professor Ernest NG, Dr. Estella LAU, Ms. Carrie LEE

Second Row: (Left to Right)
Ms. WM CHEUNG, Miss CP DO, Dr. Jennifer KO, Dr. Sofie YUNG, Ms. Jane CHAN, Dr. Vivian LEE, Ms. Ms. Celia NG, Judy CHOW, Ms. Jennie KO

Third Row: (Left to Right)
Miss Sandy LEE, Miss Connie CHAN, Miss Veta WANG, Ms. Jenny JIN, Mr. TM CHEUNG, Miss SH CHAN

Back Row: (Left to Right)
Ms. Loretta CHIANG, Miss Wylie WONG, Ms. Amy CHEUNG, Miss Venise KWONG, Dr. Kevin LAM, Ms. Gloria CHUNG, Miss Doris HUNG, Ms. SL CHUNG

Work-Load Statistics

Table 1: Workload Statistics I

No. of Cycles	IVF	Natural cycle IVF	Oocyte donation	Sperm donation	Vitrified oocyte	ICSI	MESA	TESE	IVM	PGT	**TOTAL**
Initiated	326	2	2	3*	3	214	16	13	3	73**	**655**
Cancelled	17 (5.2%)	1 (50.0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (7.7%)	0 (0%)	0 (0%)	**19 (2.9%)**
With Oocyte Retrieval	309 (94.8%)	1 (50.0%)	2 (100%)	2 (100%)[#]	-	214 (100%)	16 (100%)	12 (100%)	3 (100%)	69 (100%)[#a]	**628 (96.5%)**[#a]
With Embryo Transfer	201 (61.7%)	0 (0%)	0 (0%)	2 (66.7%)	3 (100%)	147 (68.7%)	7 (43.8%)	1 (7.7%)	0 (0%)	0 (0%)	**361 (55.1%)**

("IVF": Conventional IVF-ET; "IVM": In vitro maturation; "ICSI": ICSI with ejaculated sperm; "MESA": MESA + ICSI; "TESE": TESE + ICSI; "PGT": Preimplantation genetic testing)

( ) % of initiated cycles

***2 fresh + 1 vitrified oocyte cycles**
****70 fresh + 1 vitrified oocyte + 3 FET**
[#]vitrified oocyte cycles are excluded
[a]denominator does not include FET cycles

Table 2: Workload Statistics II

No. of cycles	IVF	Natural cycle IVF	Oocyte donation	Sperm donation	Vitrified oocyte[#]	ICSI	MESA	TESE	IVM	Fresh-PGT	TOTAL
Without Oocyte Retrieved	3 (1.0%)	0 (0%)	0 (0%)	0 (0%)	0 (-)	3 (1.4%)	0 (0%)	1 (8.3%)	0 (0%)	0 (0%)	**7 (1.1%)**
Without insemination	1 (0.3%)	0 (0%)	1 (50.0%)	0 (0%)	0 (-)	3 (1.4%)	0 (0%)	8 (66.7%)	2 (66.7%)	1 (1.4%)	**16 (2.5%)**
Without Normal Fertilization	11 (3.6%)	1 (100%)	0 (0%)	0 (0%)	0 (-)	13 (6.1%)	0 (0%)	0 (0%)	0 (0.0%)	1 (1.4%)	**26 (4.1%)**
Without Normal Cleavage	3 (1.0%)	0 (0%)	0 (0%)	0 (0%)	0 (-)	1 (0.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	**4 (0.6%)**
Without embryos suitable for transfer	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (-)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	19 (27.5%)	**19 (3.0%)**
With ET Postponed	90 (29.1%)	0 (0%)	1 (50.0%)	1 (33.3%)	1 (-)	47 (22.0%)	9 (56.3%)	2 (16.7%)	1 (33.3%)	48 (69.6%)	**199 (31.7%)**
Without Embryo Transfer	108 (35.0%)	1 (100%)	2 (100.0%)	1 (33.3%)	0 (-)	67 (31.3%)	9 (56.3%)	11 (91.7%)	3 (100%)	69 (100%)	**271 (43.2%)**

( ) % of oocyte retrieval cycles, [#]vitrified oocyte cycles are excluded

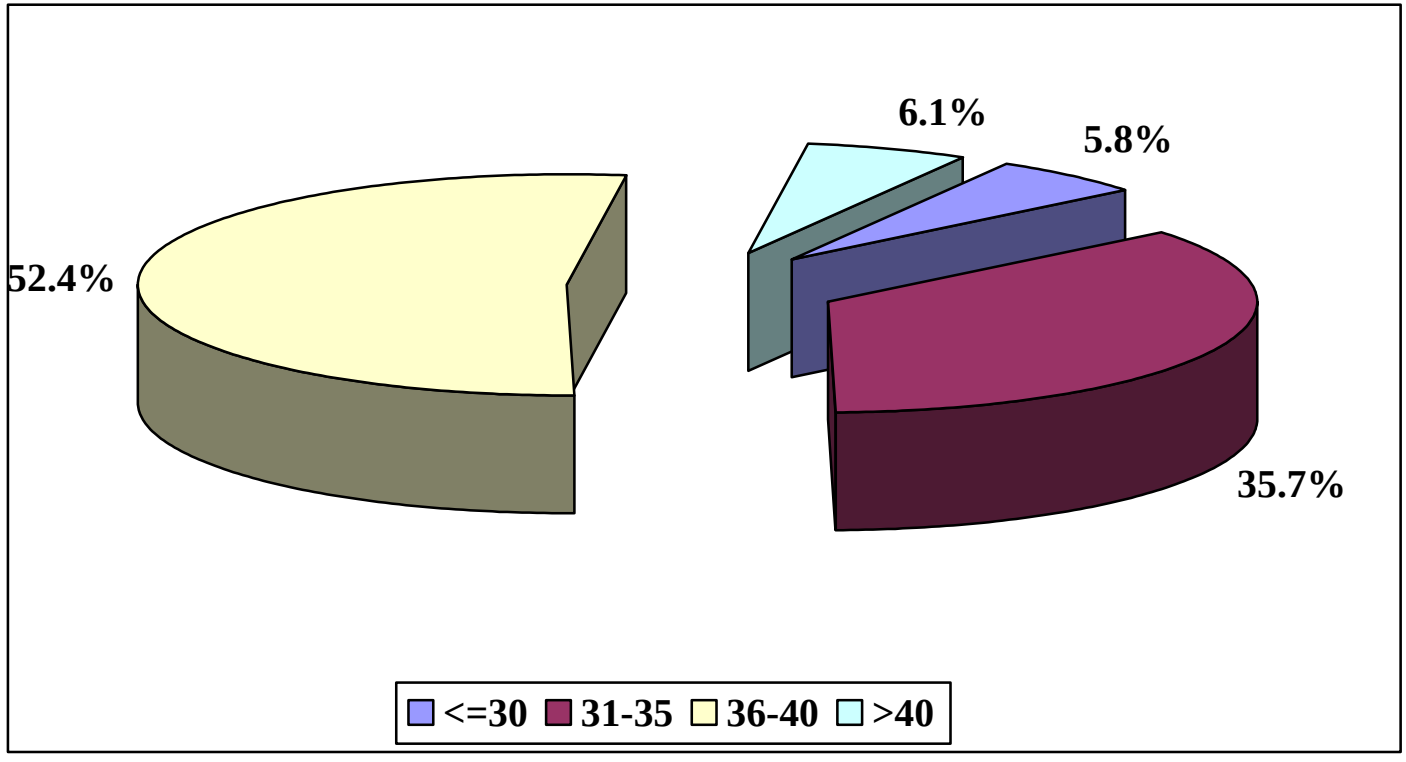

Figure 1: Age Distribution of Patients

Table 3: Ongoing Pregnancy Rates in Different Age Groups

Age (yrs)			No. of ongoing pregnancies / No. of cycles initiated								
	IVF	ICSI	Natural cycle IVF	IVM	Oocyte donation*	Sperm donation#	Vitrified oocyte	MESA	TESE	PGT#	Total
<= 30	1 / 12 (8.3%)	2 / 6 (33.3)	0 / 0 (-)	0 / 0 (-)	0 / 2 (0%)	0 / 0 (-)	0 / 0 (-)	0 / 0 (-)	0 / 3 (0%)	0 / 14 (0%)	3 / 37 (8.1%)
31 - 35	35 / 115 (30.4%)	15 / 71 (21.1%)	0 / 3 (0%)	0 / 1 (0%)	0 / 0 (-)	0 / 3 (0%)	0 / 1 (0%)	1 / 8 (12.5%)	0 / 5 (0%)	0 / 18 (0%)	51/ 225 (22.7%)
36 - 40	30 / 176 (17.0%)	28 / 121 (23.1%)	0 / 2 (0%)	0 / 1 (0%)	0 / 0 (-)	0 / 0 (-)	0 / 2 (0%)	2 / 5 (40.0%)	0 / 5 (0%)	0 / 34 (0%)	60 / 344 (17.4%)
> 40	1 / 23 (4.3%)	2 / 16 (12.5%)	0 / 1 (0%)	0 / 0 (-)	0 / 0 (-)	0 / 0 (-)	0 / 0 (-)	0 / 3 (0%)	0 / 0 (-)	0 / 7 (0%)	3 / 49 (6.1%)
Total	67/ 326 (20.6%)	47 / 214 (22.0%)	0/ 6 (0%)	0 / 2 (0%)	0 / 2 (0%)	0 / 3 (0%)	0 / 3 (0%)	3 / 16 (18.8%)	0 / 13 (0%)	0/ 73 (0%)	117 / 655 (17.9%)

( ) % of initiated cycles, *no embryo transfer, #all FET cycles

In Vitro Fertilization and Embryo Transfer~ IVF-ET

Stimulated cycle IVF-ET

During 2017, 304 couples underwent a total of 326 conventional stimulated IVF cycles at our center. Unexplained cause (31.6%) was the commonest indication, which was followed by tuboperitoneal problem (29.4%), male factor (14.1%) and endometriosis (12.9%). (Table 4)

Table 4: Indications for IVF-ET

Indications	No of Initiated cycles	No of Pregnancies	Pregnancy Rate*	Ongoing Pregnancy Rate*
Tuboperitoneal	96 (29.4%)	18	18.8%	16.7%
Endometriosis	42 (12.9%)	8	19.0%	19.0%
Male Factor	46 (14.1%)	15	32.6%	30.4%
Unexplained	103 (31.6%)	23	22.3%	18.4%
Mixed	39 (12.0%)	10	25.6%	25.6%
Total	**326 (100%)**	**74**	**22.7%**	**20.6%**

*** Per initiated cycle**

A total of 17 cycles (5.2%) were cancelled: 9 due to poor ovarian response, 5 due to premature luteinization and 3 due to other reasons. Oocytes were not obtained in 3 planned retrieval cycles and no insemination in 1 cycle. There were 11 cycles without normal fertilization and 3 cycles without normal cleavage. Therefore, no embryo was transferred in these 18 cycles. Embryo transfer was postponed in 90 cycles because of the risk of developing ovarian hyperstimulation syndrome (OHSS), high serum progesterone level or other reasons.

The **oocyte retrieval rate** was 77.4% with an average of 10.2 oocytes obtained per retrieval cycle. The **fertilization rate** was 73.7% and the **cleavage rate** was 96.3%. The oocyte retrieval rate, fertilization rate and cleavage rate were similar to the figures in previous years. The results are summarised in Table 5.

Table 5: Results of Conventional IVF-ET

		per Oocyte Retrieval Cycle	per Follicle Aspirated (Oocyte Retrieval Rate)	per Oocyte Retrieved (Fertilization Rate)	per Fertilized Oocyte (Cleavage Rate)
Number of Oocyte Retrieval Cycles	309				
Number of Follicles Aspirated	4059	13.1			
Number of Oocytes Retrieved	3142	10.2	77.4%		
Number of Oocytes Fertilized	2317	7.5		73.7%	
Number of Fertilized Oocytes Cleaved	2231	7.2			96.3%
Number of Embryos Transferred	277	0.9 (1.4 / ET)			
Number of Pregnancies	74				
Number of Embryos Frozen	839	2.7			

All our patients used a GnRH antagonist protocol. (Table 6)

Table 6: Ovarian Stimulation Protocols Used

Protocol	No. of Initiated Cycles	No. of Pregnancies	Pregnancy Rate*	Ongoing Pregnancy Rate*
GnRH antagonist	326 (100.0%)	74	22.7%	20.6%
GnRHa (long)	0 (0%)	0	0%	0%
GnRHa (short)	0 (0%)	0	0%	0%
Total	**326 (100%)**	**74**	**22.7%**	**20.6%**

*** Per initiated cycle**

All oocyte retrievals were successfully performed under transvaginal ultrasound guidance using intravenous sedation and analgesia. The degree of difficulty of embryo transfer and the corresponding pregnancy rate are shown in Table 7.

Table 7: Difficulty of Transfer

Difficulty	No. of ET Cycles	No. of Pregnancies	Pregnancy Rate#	Ongoing Pregnancy Rate#
Easy	199 (99.0%)	74	37.2%	33.7%
Vulsellum	2 (1.0%)	0	0%	0%
Vulsellum & Sound	0 (0%)	0	-	-
Dilatation	0 (0%)	0	-	-
Total	**201 (100%)**	**74**	**36.8%**	**33.3%**

 # Per transfer cycle

Among the 309 oocyte retrieval cycles, 5 had moderate to severe OHSS. (Table 8)

Table 8: Complications of Conventional IVF-ET Treatment

Complications	No of Retrieval* Cycles
Nil	304 (98.4%)
Infection	0 (0%)
Significant haemoperitonem	0 (0%)
Moderate to severe OHSS	5 (1.6%)

There were 74 pregnancies resulting from stimulated IVF-ET cycles. The **pregnancy rate** was 22.7% per initiated cycle and 36.8% per transfer cycle (Table 9). The **miscarriage rate** was 9.5%. The **ongoing pregnancy rate** was 20.6% per initiated cycle and 33.3% per transfer cycle. The average number of fresh pre-embryos transferred was 1.4 per transfer. The **multiple pregnancy rate** was 9.5%. Seven sets of twins were encountered (Table 10). The **implantation rate** was 28.5%.

Table 9: Pregnancy Rates of Conventional IVF-ET

	Pregnancy Rate	Ongoing pregnancy Rate
per Cycle Initiated	74/ 326 (22.7%)	67 / 326 (20.6%)
per Oocyte Retrieval Cycle	74 / 309 (23.9%)	67 / 309 (21.7%)
per Transfer Cycle	74 / 201 (36.8%)	67 / 201 (33.3%)

Table 10: Outcome of Pregnancies

Outcome	Number of Cycles	
Preclinical Miscarriage	4	(5.4%)
Clinical Miscarriage	3	(4.1%)
Ectopic Pregnancy	0	(0%)
Lost to follow up	0	(0%)
Ongoing Pregnancy	67	(90.5%)
Total Pregnancies	**74**	
No. of Fetuses	74	
No. of Multiple Pregnancies	7 (9.5%)	- all twins

The outcome in relation to the number of embryos transferred is shown in Tables 11 and 12.

Table 11: Number of Embryos Transferred & the Outcome

No. of Embryos	No. of ET Cycles	No. of Pregnancies	Pregnancy Rate[#]	Ongoing Pregnancy Rate[#]	Multiple Pregnancy Rate[+]
1	125 (62.2%)	47	37.6%	33.6%	2.1%
2	76 (37.8%)	27	35.5%	32.9%	22.2%
Total	**201 (100%)**	**74**	**36.8%**	**33.3%**	**9.5%**

#Per transfer cycle
+Per pregnancy cycle

Table 12: Outcome of Single Embryo Transfer

Elective	Average Age of Women	No. of ET cycles	Pregnancy Rate#	Ongoing Pregnancy Rate[#]	Multiple Pregnancy Rate[+]
Yes	35.2 years	92	41.3%	37.0%	2.6%
No	36.4 years	33	27.3%	24.2%	0%

#Per transfer cycle
+Per pregnant cycle

Intracytoplasmic Sperm Injection~ICSI (with ejaculated sperm)

Two hundred and fourteen treatment cycles were initiated in one hundred and ninety-seven couples (excluding preimplantation genetics testing). ICSI was decided in 205 treatment cycles because of severe male factor infertility. It was also performed in those who had either failed fertilization or poor fertilization rate (less than 30%) in a previous conventional IVF cycle. This latter group accounted for 8 of the cycles initiated (Table 13).

Table 13: Indications for ICSI

Indications	No. of Initiated Cycles	No. of Pregnancies	Pregnancy Rate*	Ongoing Pregnancy Rate*
Severe male factor	205 (95.8%)	59	28.8%	22.0%
Fertilization problem	8 (3.7%)	2	25.0%	25.0%
Others	1 (0.5%)	0	0%	0%
Total	**214 (100%)**	**61**	**28.5%**	**22.0%**

***Per initiated cycle**

GnRHa antagonist protocol for ovarian stimulation was used in all 214 cycles (100.0%) (Table 14) and transvaginal ultrasound-guided approach was used in all 214 cycles proceeding to ovum pick-up.

Table 14: Ovarian Stimulation Protocols Used

Protocol	No. of Initiated Cycles	No. of Pregnancies	Pregnancy Rate*	Ongoing Pregnancy Rate*
GnRH antagonist	214 (100.0%)	61	28.5%	22.0%
GnRHa (long)	0 (0%)	0	0%	0%
GnRHa (short)	0 (0%)			
Total	**214 (100%)**	**61**	**28.5%**	**22.0%**

***Per initiated cycle**

The results are summarized in Table 15.

Table 15: Results of ICSI

		per Oocyte Retrieval Cycle	per Follicle Aspirated (Oocyte Retrieval Rate)	per Oocyte Retrieved (Fertilization Rate)	per Fertilized Oocyte (Cleavage Rate)
No. of Oocyte Retrieval Cycles	214				
No. of Follicle Aspirated	2626	12.4			
No. of Oocytes Retrieved	2094	9.8	79.1%		
No. of Oocytes Fertilized	1288	6.0		61.5% (74.4% per oocyte injected)	
No. of Fertilized Oocytes Cleaved	1268	5.9			98.4%
No. of Embryos Transferred	200	0.9 (1.4/ET)			
No. of Pregnancies	61				
No. of Embryos Frozen	580	2.7			

Oocytes were not obtained in 3 planned retrieval cycles and insemination was not performed in another 3 cycles. Normal fertilization was not achieved in 13 cycles and one cycle did not have normal cleavage. Therefore, no embryo was transferred in these 20 cycles. Embryo transfer was postponed in another 47 cycles because of the risk of developing OHSS, high serum progesterone concentration or other reasons. The fertilization rate was 74.4% per oocyte injected this year and was similar to that of last year. The mean number of embryos transferred was only 1.4 per transfer and was comparable to that of conventional stimulated IVF cycles. The degree of difficulty of embryo transfer is shown in Table 16.

Table 16: Difficulty of Transfer

Difficulty	No. of ET Cycles	No. of Pregnancies	Pregnancy Rate#	Ongoing Pregnancy Rate#
Easy	147 (100.0%)	61	41.5%	32.0%
Vulsellum	0 (0%)	0	-	-
Vulsellum + Sound	0 (0%)	0	-	-
Total	**147 (100%)**	**61**	**41.5%**	**32.0%**

 # Per transfer cycle

There were 61 pregnancies and 47 were ongoing (Tables 17 & 18). The **multiple pregnancy rate** was 8.2%. Four sets of twins and one set of triplets were encountered. The **implantation rate** was 30.0%. Three patients (1.4%) had moderate or severe OHSS.

Table 17: Pregnancy Rates of ICSI

	Pregnancy Rate	Ongoing Pregnancy rate
per Cycle Initiated	61 / 214 (28.5%)	47 / 214 (22.0%)
per Oocyte Retrieval Cycle	61 / 214 (28.5%)	47 / 214 (22.0%)
per Transfer Cycle	61 / 214 (41.5%)	47 / 147 (32.0%)

Table 18: Outcome of Pregnancies

Outcome	Number of Cycles	
Preclinical Miscarriage	6	(9.8%)
Clinical Miscarriage	8	(13.1%)
Ectopic Pregnancy	0	(0%)
Ongoing Pregnancy	47	(77.0%)
Total Pregnancies	**61**	
No. of Fetuses	53	
No. of Multiple Pregnancies	5 (8.2%)	4 twin and 1 triplet

The outcome in relation to the number of embryos transferred in shown in Table 19 and Table 20.

Table 19: Number of Embryos Transferred & the Outcome

No. of Embryos	No. of ET Cycles	No. of Pregnancies	Pregnancy Rate#	Ongoing Pregnancy Rate[#]	Multiple Pregnancy Rate[+]
1	94 (63.9%)	38	40.4%	29.8%	2.6%
2	53 (36.1%)	23	43.4%	35.8%	17.4%
Total	**147 (100%)**	**61**	**41.5%**	**32.0%**	**8.2%**

 # Per transfer cycle
+ Per pregnant cycle

Table 20: Outcome of Single Embryo Transfer

Elective	Average Age of Women	No. of ET cycles	Pregnancy Rate#	Ongoing Pregnancy Rate[#]	Multiple Pregnancy Rate[+]
Yes	34.9 years	70	41.4%	31.4%	3.4%
No	37.6 years	24	37.5%	25.0%	0%

#Per transfer cycle
+Per pregnant cycle

Microsurgical Epididymal Sperm Aspiration - MESA

Fifteen couples underwent 16 treatment cycles in 2017. The urological team at Queen Mary Hospital performed a total of 8 MESA procedures, which were arranged before ovarian stimulation or the oocyte retrieval. Indications for MESA cycles are given in Table 21.

Table 21: Indications for MESA

Indications	No. of OPU Cycles	No. of Pregnancies	Pregnancy Rate*	Ongoing Pregnancy Rate*
Congenital Absence of Vas deferens	3 (18.8%)	1	33.3%	33.3%
Obstructive Azoospermia	11 (68.8%)	4	36.4%	18.2%
Severe male factor	1 (6.3%)	0	0%	0%
Ejaculatory problem	1 (6.3%)	0	0%	0%
Total	**16 (100%)**	**5**	**31.3%**	**18.8%**

***Per initiated cycle**

The antagonist protocol was used in all 16 cycles. Oocyte retrieval was performed under transvaginal ultrasound guidance in all 16 cycles and oocytes were obtained in the retrieval cycles. An average of 12.9 oocytes was retrieved in these 16 cycles. The fertilization rate was 72.6% per oocyte injected (Table 22). Embryo transfer was performed in 7 cycles and embryo transfer was postponed in 9 cycles.

Table 22: Results of MESA+ ICSI

		per Oocyte Retrieval Cycle	per Follicle Aspirated (Oocyte Retrieval Rate)	per Oocyte Retrieved (Fertilization Rate)	per Fertilized Oocyte (Cleavage Rate)
Number of Oocyte Retrieval Cycles	16				
Number of Follicles Aspirated	284	17.8			
Number of Oocytes Retrieved	207	12.9	72.9%		
Number of Oocytes Fertilized	122	7.6		58.9% (72.6% per oocyte injected)	
Number of Fertilized Oocytes Cleaved	120	7.5			98.4%
Number of Embryos Transferred	11	0.7 (1.6 / ET)			
Number of Pregnancies	5				
Number of Embryos Frozen	63	3.9			

No patient developed moderate to severe OHSS.

Table 23: Pregnancy Rates of MESA + ICSI

	Pregnancy Rate	Ongoing pregnancy rate
per Cycle Initiated	5 / 16 (31.3%)	3 / 16 (18.8%)
per Oocyte Retrieval Cycle	5 / 16 (31.3%)	3 / 16 (18.8%)
per Transfer Cycle	5 / 7 (71.4%)	3 / 7 (42.9%)

There were five pregnancies resulting from MESA + ICSI procedures. The **pregnancy rate** was 31.3% per initiated cycle and 71.4% per transfer cycle (Table 23). The **ongoing pregnancy rate** was 18.8% per initiated cycle and 42.9% per transfer cycle. The **implantation rate** was 45.5%. There was one set of twins (Table 24).

Table 24: Outcomes of Pregnancies

Outcome	Number of cycles
Preclinical Miscarriage	1 (20.0%)
Clinical Miscarriage	1 (20.0%)
Ectopic Pregnancy	0 (0%)
Ongoing Pregnancy	3 (60.0%)
Total Pregnancies	**5**
No. of Fetuses	4
No. of Multiple Pregnancies	1 (20.0%) – twins

The pregnancy rate in relation to the number of embryos transferred is shown in Table 25.

Table 25: Number of Embryos Transferred & the Outcome

No. of Embryos	No. of ET Cycles	No. of Pregnancies	Pregnancy Rate#	Ongoing Pregnancy Rate#	Multiple Pregnancy Rate+
1	3 (42.9%)	3	100.0%	33.3%	0%
2	4 (57.1%)	2	50.0%	50.0%	50.0%
Total	**7 (100%)**	**5**	**71.4%**	**42.9%**	**20.0%**

#Per transfer cycle

+Per pregnancy cycle

Testicular Sperm Extraction - TESE

During 2017, thirteen treatment cycles were initiated in thirteen couples (Table 26). The urological team at Queen Mary Hospital carried out sixteen testicular sperm biopsies.

Table 26: Indications for TESE

Indications	No. of OPU Cycles	No. of Pregnancies	Pregnancy Rate*	Ongoing Pregnancy Rate*
Non-obstructive Azoospermia	7 (53.9%)	0	0%	0%
Obstructive Azoospermia	5 (38.5%)	0	0%	0%
Ejaculatory problem	1 (7.7%)	0	0%	0%
Total	**13 (100%)**	**0**	**0%**	**0%**

*** Per initiated cycle**

Thirteen IVF-TESE cycles were initiated. The antagonist protocol was used in all 13 cycles. One cycle was cancelled before oocyte retrieval. Oocyte retrieval was performed in 12 cycles under transvaginal ultrasound guidance and oocytes were obtained in 11 cycles. An average of 13.8 oocytes were retrieved. Insemination was not performed in 9 cycles because of the absence of spermatozoa found in TESE or asynchrony of oocyte retrieval and TESE in 8 cycles and no oocyte was retrieved in 1 cycle. In the cases of asynchrony of oocyte retrieval and TESE, the oocytes were frozen first and TESE re-arranged in hormonal replacement cycles, with thawing of the frozen oocytes for fertilization if sperms were found in TESE. ICSI was performed in 3 fresh cycles with spermatozoa retrieved from TESE procedures and the overall fertilization rate was 84.8% per oocyte injected (Table 27). Embryo transfer was postponed in 2 cycles and performed in one cycle.

Table 27: Results of TESE+ ICSI

		per Oocyte Retrieval Cycle	per Follicle Aspirated (Oocyte Retrieval Rate)	per Oocyte Retrieved (Fertilization Rate)	per Fertilized Oocyte (Cleavage Rate)
No. of Oocyte Retrieval Cycles	12				
No. of Follicles Aspirated	165	13.8			
No. of Oocytes Retrieved	140	11.7	84.8%		
No. of Oocytes Fertilized	28	2.3		20.0% (84.8% per oocyte injected)	
No. of Fertilized Oocytes Cleaved	28	2.3			100%
No. of Embryos Transferred	1	0.1 (1.0/ ET)			
No. of Pregnancies	0				
No. of Embryos Frozen	71	5.9			

There was no case of moderate to severe OHSS recorded.

Preimplantation Genetic Testing - PGT

We continue to provide preimplantation genetic testing (PGT) to women at risk of having babies with serious chromosomal or genetic disorders. In 2017, PGT was performed in 69 stimulated cycles, 1 vitrified oocyte cycle and 3 frozen cycles for 55 couples and indications for PGT were shown in Table 28.

Table 28: Summary of PGT cycles

Indication	No. of patients	No. of cycles	No. of embryo	
			PGT	Normal
Chromosomal abnormalities				
Numerical chromosomal abnormalities	2	2	18	11 (61.1%)
Reciprocal translocation	10	12	63	9 (14.3%)
Robertsonian translocation	4	4	28	16 (44.0%)
α Thalassaemia	11	15	65	35 (53.8%)
β Thalassaemia	5	8	23	13 (56.5%)
β Thalassaemia/ single gene defect + HLA typing	1	1	10	4 (40.0%)
Others single gene defects	15	21	28	38 (43.7%)
PGT-A#	7	10	90	16 (53.6%)
Total	**55**	**70**	**322**	**141 (43.8%)**

#PGT for aneuploidy (PGT-A) is done for advanced maternal age, repeated implantation failure or recurrent miscarriage.

FET after PGT

All blastocysts for PGT were frozen after biopsy and frozen-thawed transfer of the blastocysts was arranged after the results were available for counselling. Next generation sequencing and aCGH were used in PGS and in PGD for structural rearrangement (structural rearrangement) respectively. Starting from May 2017, next generation sequencing was used for PGT-A and PGT-SR. PGT-A was also performed in suitable blastocysts following PGT-M (monogenic diseases). Each blastocyst was frozen in one straw after biopsy and patients were allowed to replace one blastocyst each time following PGT.

A total of 61 thaw cycles after PGT were initiated. 64 frozen embryos were thawed and 60 frozen-thawed embryos were replaced. Embryo transfer was not done in 2 cycles because of lysis of frozen embryo(s) during thawing.

There were altogether 33 **pregnancies** (55.9% per transfer) and 22 **ongoing pregnancies** (37.3% per transfer) resulting from transfer of frozen-thawed embryos. The overall **miscarriage rate** was 33.3%. The **multiple pregnancy rate** was 3.0%. The **implantation rate** was 48.3%.

Embryo Cryopreservation and Frozen-thawed Embryo Transfer

The results of embryo cryopreservation are summarized in Table 29. As was our experience from previous years, there were excess embryos suitable for cryopreservation in 467 / 633 (73.8%) of the retrieval cycles in 2017.

Table 29: Results of Embryo Cryopreservation

Method of Treatment	IVF	ICSI	MESA	TESE	Others	PGT	Total
No. of Oocyte Retrieval Cycles	309	214	16	12	12	70	**633**
No. of Cycles with Embryo Cryopreservation	231*	152*	15	10*	9	50	**467***
Total No. of Embryos Cryopreserved	839*	580*	63	71*	37	170	**1760***
Average No. of Embryos Cryopreserved	3.6*	3.8*	4.2	7.1*	4.1	3.4	**3.8***
Range of Embryos Cryopreserved	1 – 14*	1 – 26*	1 - 19	1 – 15*	1 – 8	1 – 26	**1 – 26***

*** with oocyte freezing**

Five hundred and thirteen women planned to have replacement of frozen-thawed embryos (FET). A total of 670 thaw cycles were initiated. Embryo transfer was not done in 11 cycles because of lysis of all frozen embryo(s) during thawing. Four hundred and eighty-two frozen-thawed embryo replacements were performed in natural (spontaneous ovulatory) cycles, 6 were in clomiphene citrate-induced cycles, 170 were in total hormone replacement artificial cycles and one was in stimulated cycles.

The pregnancy rates of these different types of transfer cycles are shown in Table 30.

Table 30: Outcome of FET Cycles

Cycle Type	Number of Cycles		Number of Pregnancies	Pregnant Rate	Ongoing pregnancy rate
Natural	482	**73.1%**	195	**40.5%**	**34.2%**
Clomid	6	**0.9%**	3	**50.0%**	**33.3%**
Artificial	170	**25.8%**	67	**39.4%**	**22.9%**
Stimulated	1	**0.2%**	0	**0%**	**0%**
Total	**659**	**100%**	**265**	**40.2%**	**31.3%**

Table 31: Outcome of Pregnancies in FET

Outcome	No. of Pregnancies	Natural	Clomid	Artificial	Stimulated
Preclinical Miscarriage	21 (7.9%)	10	1	10	0
Clinical Miscarriage	36 (13.6%)	19	0	17	0
Ectopic Pregnancy	2 (0.8%)	1	0	1	0
Molar Pregnancy	0 (0%)	0	0	0	0
Ongoing Pregnancy	206 (77.7%)	165 (84.6%)	2 (66.7%)	39 (58.2%)	0 (-)
Total Pregnancies	**265**	**195**	**3**	**67**	**0**
No. of Fetuses	228	184	2	42	0
No. of Multiple Pregnancies	22 (8.3%) all twins				

The average number of embryos transferred per FET cycles was 1.3. There were altogether 265 pregnancies resulting from transfer of frozen-thawed embryos. The overall **miscarriage rate** was 21.5%. The **multiple pregnancy rate** was 8.3% (Table 31). The **implantation rate** was 31.7%.

Table 32: Number of Embryos Transferred & the Outcome

No. of Embryos	No. of FET Cycles	No. of Pregnancies	Pregnancy Rate#	Ongoing Pregnancy rate#	Multiple Pregnancy Rate+
1	466 (70.7%)	184	39.5%	30.5%	2.2%
2	193 (29.3%)	81	42.0%	33.2%	22.2%
Total	**509 (100%)**	**265**	**40.2%**	**31.3%**	**8.3%**

 # Per transfer cycle
+ Per pregnant cycle

Ovulation Induction and Ovarian Stimulation & Intrauterine Insemination

Ovulation Induction

Twenty-six patients underwent 60 cycles of ovulation induction by gonadotrophin therapy. The mean age of patients was 33.4 years. The cycle characteristics are detailed in Table 33. Four cycles were cancelled because of excessive ovarian response and 1 for other reasons. Seven patients got pregnant and the pregnancy rate was 11.7% per initiated cycle. There were five ongoing singleton pregnancies.

Table 33: Characteristics of Ovulation Induction Cycles

Parameters	Mean ± Standard Deviation
Amount of gonadotrophin used (IU)	1,546 ± 989
Number of follicles ≥ 14mm	1.3 ± 0.6
Number of follicles ≥ 16mm	1.2 ± 0.4
Number of follicles ≥ 18mm	1.1 ± 0.2
Oestradiol on the day of hCG (pmol/l)	1,760 ± 1,289

Ovarian Stimulation & Intrauterine Insemination

Ninety-one patients underwent 189 cycles of ovarian stimulation by gonadotrophin or clomiphene citrate in conjunction with insemination. Six cycles were cancelled: 1 cycle for excessive response, 1 failed to submit semen, 2 for no follicular growth and 2 for other reasons.

The mean age of patients was 33.7 years. The indications and cycle characteristics are shown in Tables 34 and 35 respectively. Nineteen pregnancies were achieved and the **pregnancy rate** was 10.1% per cycle initiated. There were 11 ongoing singleton and 1 twin pregnancies.

Table 34: Indications for Ovarian Stimulation & Intrauterine Insemination

Indications	Number of Cycles
Male factors	53
Unexplained	82
Endometriosis	5
Coital	17
Anovulation	14
Miscellaneous	18

Table 35: Cycle Characteristics of Ovarian Stimulation & Intrauterine Insemination

Parameters	Mean ± Standard Deviation		
	hMG/ FSH	Clomid	Letrozole
Amount of gonadotrophin used (IU)	1,537± 606	-	-
Number of follicles ≥ 12mm	1.0 ± 0.0	1.8 ± 0.9	1.7 ± 0.6
Number of follicles ≥ 14mm	1.0 ± 0.0	1.5 ± 0.6	1.5 ± 0.6
Number of follicles ≥ 16mm	1.0 ± 0.0	1.3 ± 0.5	1.2 ± 0.4
Oestradiol on the day of hCG (pmol/l)	1,295 ± 308	1,789 ± 933	735 ± 389

Natural Cycle Intrauterine Insemination

Eleven patients underwent 22 cycles of intrauterine insemination during natural cycles because of coital problems (n=12), male factor (n=7) or other reasons (n=3).

The mean age of patients was 34.8 years. Three pregnancies were achieved and the **pregnancy rate** was 13.6% per cycle initiated. There were three ongoing singleton pregnancies.

Miscellaneous Statistics

	Number
Diagnostic laparoscopy +/- chromotubation	15
Laparoscopic ovarian cystectomy	6
Laparoscopic salpingostomy	7
Laparoscopic adhesiolysis	22
Laparoscopic salpingectomy	3
Laparoscopic segmental resection	31
Laparoscopic ovarian drilling	0
Laparoscopic ablation of endometriosis	4
Salpingo-oophorectomy	1
Myomectomy	3
Diagnostic hysteroscopy	37
Hysteroscopic polypectomy	53
Hysteroscopic adhesiolysis	16
Hysteroscopic lysis of uterine septum	3
Hysteroscopic myomectomy	5
Hysteroscopic proximal tubal cannulation	0
Tubal reanastomosis	0
Semen cryopreservation for cancer patients	11

Outpatient Clinics

	New	**Follow-up**
Infertility Clinics	429	530
Male infertility Clinics*	8	4
Reproductive Genetic Clinic	31	18
Recurrent Miscarriage Clinic	18	24
Sexual Counselling	1	0
Private Clinic – Reproductive Medicine	329	202

*Only those cases seen under Department of Obstetrics and Gynaecology were counted here (mainly cases requiring counselling or treatment on male endocrine problems). Those requiring assessment and management by urologists were seen in the Department of Surgery and were not counted here.

Publications and Conference Reports

Publications

Cameron S.T., Li R.H.W. and Gemzell Danielsson E.K.M., Current controversies with oral emergency contraception, BJOG: An International Journal of Obstetrics & Gynaecology. 2017. http://dx.doi.org/10.1111/1471-0528.14773.

Chan D.Y.L., Lam K.K.W., Lau E.Y.L, Yeung W.S.B., Ng E.H.Y., Human varicella zoster virus is not present in the semen of a man affected by chickenpox during the in vitro fertilisation of his wife. Andrologia. 2017 Jul 3. doi: 10.1111/and.12822.

Chan R.W.S., Lee C.L., Ng E.H.Y. and Yeung W.S.B., Co-culture with macrophages enhances the clonogenic and invasion activity of endometriotic stromal cells, Cell Proliferation. 2017, 50: 1-9.

Chen C.H., Lee C.Y.L., Fong S.W., Wong C.C.Y., Ng E.H.Y. and Yeung W.S.B., Hyperglycemia impedes definitive endoderm differentiation of human embryonic stem cells by modulating histone methylation patterns, Cell and Tissue Research. 2017 Jun; 368(3):563-578.

Cheung V.Y.T., Significance of Uterine Cavity Fibroids and Polyps in Reproductive Medicine, SRL Reprod Med Gynecol. 2017, 3: 4-9.

Fan H.J. and Lee K.F. Bisphenol compounds on human reproduction health. Gynecol Obstet Res Open J. 2017; 4(2):30-35.

Iliodromiti S., Salje B., Dewailly D., Fairburn C., Fanchin R., Fleming R., Li R.H.W., Lukaszuk K., Ng E.H.Y., Pigny P., Tadros T., van Helden J., Weiskirchen R. and Nelson S.M., Non-equivalence of anti-Müllerian hormone automated assays—clinical implications for use as a companion diagnostic for individualised gonadotrophin dosing, Human Reproduction. 2017, 32: 1710-1715.

Ko K.Y.J. and Cheung V.Y.T., Management of acquired uterine arteriovenous malformations following early pregnancy complications, Journal of Pediatrics, Obstetrics and Gynaecology. 2017, 169.

Lee V.C.Y., Li R.H.W., Yeung W.S.B., Ho P.C. and Ng E.H.Y., A randomized double-blinded controlled trial of hCG as luteal phase support in natural cycle frozen embryo transfer, Human Reproduction. 2017, 32: 1130-1137.

Li H.W.R., Li Y.X., Li T.T., Fan H., Ng E.H.Y., Yeung W.S.B., Ho P.C., Lee K.F., Effect of ulipristal acetate and mifepristone at emergency contraception dose on the embryo-endometrial attachment using an in vitro human trophoblastic spheroid and endometrial cell co-culture model. Human Reproduction 2017; 32(12):2414-2422.

Li J., Ng E.H., Stener-Victorin E., Hu Z., Shao X., Wang H., Li M., Lai M., Xie C., Su N., Yu C., Liu J, Wu T, Ma H. (2017) Acupuncture treatment for insulin sensitivity of women with polycystic ovary syndrome and insulin resistance: a study protocol for a randomized controlled trial. Trials. 2017 Mar 9;18(1):115.

Seto M.T.Y., Cheung K.W., Lo T.K., Ng E.H.Y., Pregnancy outcomes of women randomized to receive real versus placebo acupuncture on the day of fresh or frozen-thawed embryo transfer. Eur J Obstet Gynecol Reprod Biol. 2017 Nov;218:119-122.

Wai K.O.J. and Cheung V.Y.T., The Uterine-shaped Intrauterine Device, Journal of Obstetrics and Gynaecology Canada. 2017. http://dx.doi.org/10.1016/j.jogc.2016.11.012.

Wang R., Kim B.V., Wely M.V., Johnson N.P., Costello M.F., Zhang H., Ng E.H.Y., Legro R.S., Bhattacharya S., Norman R.J. and Mol B.W.J., Treatment strategies for women with WHO group II anovulation: systematic review and network meta-analysis, British Medical Journal Open. 2017, 356: j138.

Wang S., Cheung H.P., Tong Y., Lu J., Ng T.B., Zhang Y., Zhang Z., Lee C.K.F., Lam J.K.W. and Sze C.W.S., Steroidogenic effect of Erxian decoction for relieving menopause via the p-Akt/PKB pathway in vitro and in vivo, Journal of Ethnopharmacology. 2017, 195: 188-195.

Wong C.W., Lam K.W., Lee C.L., Yeung W.S.B., Zhao W.E., Ho P.C., Oue J.P. and Chiu C.N., The roles of protein disulphide isomerase family A, member 3 (ERp57) and surface thiol/disulphide exchange in human spermatozoa-zona pellucida binding, Human Reproduction. 2017, 32: 733-742.

Wong Y.M., Li R., Lee K.F., Wan H.T., Wong C.K.C. The measurement of bisphenol A and its analogues, perfluorinated compounds in twenty species of freshwater and marine fishes, a time-trend comparison and human health based assessment. Mar Pollut Bull. 2017 May 25. pii: S0025-326X(17)30432-0. doi: 10.1016/j.marpolbul.2017.05.046.

Wu X.K., Stener-Victorin E., Kuang H.Y., Ma H.L., Gao J.S., Xie L.Z., Hou L.H., Hu Z.X., Shao X.G., Ge J., Zhang J.F., Xue H.Y., Xu X.F., Liang R.N., Ma H.X., Yang H.W., Li W.L., Huang D.M., Sun Y., Hao C.F., Du S.M., Yang Z.W., Wang X., Yan Y., Chen X.H., Fu P., Ding C.F., Gao Y.Q., Zhou Z.M., Wang C.C., Wu T.X., Liu J.P., Ng E.H.Y., Legro R.S., Zhang H.; PCOSAct Study Group., Effect of Acupuncture and Clomiphene in Chinese Women With Polycystic Ovary Syndrome: A Randomized Clinical Trial. JAMA. 2017 Jun 27;317(24):2502-2514.

Xu S., Chan R.W.S., Ng E.H.Y. and Yeung W.S.B., Spatial and temporal characterization of endometrial mesenchymal stem-like cells activity during the menstrual cycle, Experimental Cell Research. 2017, 350(1): 184-189.

Ye D., Li M., Zhang Y., Wang X., Liu H., Wu W., Ma W., Quan K., Ng E.H., Wu X., Lai M., Ma H., Cryptotanshinone Regulates Androgen Synthesis through the ERK/c-Fos/CYP17 Pathway in Porcine Granulosa Cells. Evid Based Complement Alternat Med. 2017;2017:5985703.

Conference papers

Chan C.H.Y., Lau H.P., Tam M.Y.J., Wong S. and Ng E.H.Y., Intrapersonal and interpersonal predictors of fertility-related distress - constructing holistic interventions for women undergoing ART treatments, 33rd Annual Meeting of European Society of Human Reproduction and Embryology, Geneva, Switzerland. 2017.

Chen C.H., Lee C.Y.L., Fong S.W. and Yeung W.S.B., Hyperglycemia impaired early pancreatic differentiation of human embryonic stem cells through aberration of DNA methylation patterns, Society for the Study of Reproduction Annual Meeting 2017.

Cheng H.C., Chan R.W.S., Cao M., Ng E.H.Y. and Yeung W.S.B., An investigation of matrix metalloproteinase 3 derived from myometrial cells on endometrial mesenchymal stem-like cells maintenance, 50th Society for the Study of Reproduction. 2017, P.63.

Cheung V.Y.T., Laparoscopic myomectomy and risk of uterine rupture, 3rd Congress of the Society of Endometriosis and Uterine Disorders, Singapore, April 2017.

Lee C.L., Yeung W.S.B. and Chiu C.N., Glycodelin-A interacts with L-selectin on CD16-CD56bright natural killer cells to induce endothelial cell angiogenesis and trophoblast invasion, 33rd Annual Meeting of European Society of Human Reproduction and Embryology. 2017.

Lee K.F., Choriocarcinoma spheroid model for Eutopic and Ectopic pregnancy. Workshop on in vitro implantation models'-Hong Kong University-ShenZhen Hospital and College of Veterinary Medicine, South China Agricultural University. 2-3 Dec 2017, ShenZhen.

Lee K.F., Endocrine disruptors on embryo implantation and offspring fertility in mice. MME. Soong Ching Ling Forum-Medical symposium 2017 and 65th Anniversary academic celebration. 15-17 Sep 2017, Shanghai, China.

Li R.H.W. Clinical application of anti-Mullerian hormone measurement: an update. Royal Australian and New Zealand College of Obstetricians and Gynaecologists 2017 Annual Scientific Meeting, Auckland, New Zealand, October 29 – November 1, 2017. (Invited lecture)

Li R.H.W., Cheung T.M., Yeung W.S.B. and Ng E.H.Y., Relative importance of the different components of the Bologna criteria for predicting poor ovarian response in assisted reproduction. 11th European Congress on Menopause and Andropause, 2017.

Li R.H.W., Lam K.S.L., Tam S., Wong E., Lee V.C.Y., Cheung P.T., Ho P.C. and Ng E.H.Y., Prediction Of Metabolically Unhealthy Phenotype By The Visceral Accumulation Index, Lipid Accumulation Index And Triglyceride-glucose Index In Chinese Women With Polycystic Ovary Syndrome, European Society of Human Reproduction and Embryology Annual Meeting, 2-5 Jul 2017, Geneva, Switzerland

Li R.H.W., Long-acting reversible contraception, 25th Asian and Oceanic Congress of Obstetrics and Gynaecology. 2017.

Li R.H.W., Myths and updates in emergency contraception. 25th Asian and Oceanic Congress of Obstetrics and Gynaecology. 2017.

Lui M.W.E. and Cheung V.Y.T., Three-dimensional versus two-dimensional laparoscopy for ovarian cystectomies: a prospective randomized study, 25th Asian and Oceanic Congress of Obstetrics and Gynaecology. 2017.

Sze C.W.S., Wang S., NG T.B., Lee C.K.F. and Lam J.K.W., Steroidogenic effect of Erxian decoction for relieving menopause via the p-Akt/PKB pathway in vitro and in vivo, 11th European Congress on Menopause and Andropause.. The Netherland (EMAS 2017), 2017.

Wang X., NG T.B., Lee C.K.F. and Sze C.W.S., Use of rodent models in the study of menopausal symptoms: A review of experimental studies. 1th European Congress on Menopause and Andropause. Netherland (EMAS 2017) 2017.

Wang Z.Y., Kottawatta K.S.A., Kodithuwakku S.P., Lee K.F., The effect of Mancozeb on spheroid attachment in vitro co-culture model and gene expression profiling of Ishikawa cells. P5.09. The

University of Hong Kong, Li Ka Shing Faculty of Medicine 22nd Research Postgraduate Symposium.6-7 Dec 2017, Hong Kong, China.

Wang Z.Y., Kottawatta K.S.A., Kodithuwakku S.P., Lee K.F., Effect of Fungicide Mancozeb and its metabolite Ethylenethiourea (ETU) on spheroid attachment and transcriptomic changes in Ishikawa cells. Oral presentation. O3. The Hong Kong Society of Endocrinology, Metabolism and Reproduction 34rd Annual Scientific Meeting, 12 Nov 2017, Hong Kong.

Wang Z.Y., Kottawatta K.S.A, Kodithuwakku S.P., Lee K.F., Exposure to Mancozeb impairs embryo implantation via disrupting embryo- epithelium interaction in vitro trophoblast/endometrial cells co-culture model. P-442. European Society of Human reproduction and embryology, 33rd Annual Meeting.2-5 July 2017, Geneva, Switzerland.

Yao H., Chan C.H.Y., Tam M.Y.J., Lau H.P. and Ng E.H.Y., Mental health profile of infertile women seeking ART in China., 33rd Annual Meeting of European Society of Human Reproduction and Embryology, Geneva, Switzerland. 2017.

Yung S.F.S., Chan K.W., Lee C.K.F., Ng E.H.Y. and Yeung W.S.B., Gene expression profiling of human peri-implantation endometria before and after hysteroscopic polypectomy in subfertile patients with endometrial polyps, 33rd Annual Meeting of the European Society of Human Reproduction and Embryology (Human Reproduction). Oxford University Press, 2017, 32, Issue suppl_1: i331-2.

Yung S.F.S., Cheng M.C.M., Ma W.S.P. and Ho P.C., Candida glabrata chorioamnionitis and fungaemia complicating pregnancy following intrauterine insemination: Case report and review of the literature, 25th Asian & Oceanic Congress of Obstetrics and Gynaecology (AOCOG) 2017 (The Journal of Obstetrics and Gynaecology Research). Wiley, 2017, 43, Issue Supplement S1: 140.

Cumulative Statistics

Table 36: Comparative Results of Conventional IVF-ET

	2017	2016	2015	2014	2013
Number of Patients	304	266	357	400	446
Number of Cycles Initiated	326	284	390	432	495
Number of Cycles Cancelled	17	12	21	15	28
Number of Cycles with Oocyte Retrieval	309	272	369	417	467
Number of Oocyte Retrieved	3142	2454	3401	3912	4452
Mean No. of Oocytes / Oocyte Retrieval	10.2	9.0	9.2	9.4	9.5
Number of Oocyte Fertilized	2317	1701	2395	2814	2991
Fertilization Rate	73.7%	69.3%	70.4%	71.9%	67.2%
Number of Cleaving Embryos	2231	1622	2306	2705	2896
Mean No. of Cleaving Embryos/ Retrieval	7.2	6.0	6.2	6.5	6.2
Number of Cycles with Transfer	201	196	279	308	358
Number of Embryos Transferred	277	298	466	505	629
Mean No. of Embryos / Transfer	1.4	1.5	1.7	1.6	1.8
Range	1-2	1-2	1-2	1-2	1-2
Number of Pregnancies	74	88	114	133	152
Pregnancy Rate / Transfer	36.8%	44.8%	40.9%	43.2%	42.5%
Ongoing Pregnancy Rate / Transfer	33.3%	35.2%	31.2%	33.8%	31.8%
Number of Embryos Frozen	839	615	963	1226	1254

Table 37: Comparative Results of ICSI (Ejaculated sperm), excluding PGT

	2017	2016	2015	2014	2013
Number of Patients	197	240	272	250	199
Number of Cycles Initiated	214	214	297	268	243
Number of Cycles Cancelled	0	0	1	2	0
Number of Cycles with Oocyte Retrieval	214	214	296	266	243
Number of Oocytes Retrieved	2094	2164	3180	2432	2341
Mean No. of Oocytes / Retrieval	9.8	10.1	10.7	9.1	9.6
Number of Oocyte Fertilized	1268	1316	2004	1501	1423
Fertilization Rate	74.4%	73.1%	76.1%	61.7	74.3%
Number of Cleaving Embryos	1268	1298	1966	1457	1380
Mean No. of Cleaving embryos/ Retrieval	5.9	6.1	6.6	5.5	5.7
Number of Cycles with Transfer	147	149	216	202	188
Number of Embryos Transferred	200	243	349	324	319
Mean No. of Embryos / Transfer	1.4	1.6	1.6	1.6	1.7
Number of Pregnancies	61	58	86	87	70
Pregnancy Rate / Transfer	41.5%	39.8%	39.8%	43.1	37.2%
Ongoing Pregnancy Rate / Transfer	32.0%	28.2%	29.2%	35.6	31.4%
Number of Embryos Frozen	580	567	837	698	675

Table 38: Comparative Results of Frozen-thawed Embryo Transfer (FET)

	2017	2016	2015	2014	2013
Number of Patients	513	420	532	511	436
Number of Thaw Cycles	670	520	671	640	554
Number of Transfer Cycles	659	509	660	634	538
Total Number of Embryos Thawed	1000	852	1187	1196	1068
Number of Embryos Replaced	852	753	1025	1037	930
Mean Number Replaced	1.3	1.5	1.6	1.6	1.7
Type of Transfer Cycle:					
Natural	482	342	484	458	390
Clomid-Induced	6	30	115	116	69
Hormone Replacement	170	135	59	57	77
Stimulated	1	2	2	3	2
Number of Pregnancies	265	208	271	243	210
Pregnancy Rate / Transfer	40.2%	30.7%	41.1%	38.3%	39.0%
Ongoing Pregnancy Rate / Transfer	31.3%	22.4%	32.0%	30.6%	30.1%

Assisted Reproduction Annual Report 2017