Managing Service Demands – Infertility Services

Infertility Services at Hospital Authority – its Scope and Limits

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Outline

- Fertility trend and fertility problems in Hong Kong
- An overview of infertility and assisted reproductive technology (ART) services in Hong Kong
- An overview of infertility and assisted reproductive technology (ART) services provided by Hospital Authority (HA), its obstacles and challenges ahead, and to explore potential solutions
The Fertility Trend in Hong Kong

Total Fertility Rate in HK among the lowest in developed economics and well below the replacement levels

Age Specific Fertility Rate (AFR) in HK
- Year 1990, 2000 and 2010
AFR declined in the young age group
Women’s postponing marriage & parenthood
Ageing Population threatens Hong Kong

Please send us your views on population policy by 23 February 2014

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Facebook: www.facebook.com/groups/Thoughts4HK
Address: Secretariat of the Steering Committee on Population Policy, 26/F, Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong

Fostering a Supportive Environment for our People to Form and Raise Families

What measures would be effective in helping people form and raise families? How should the cost of such measures be met among taxpayers, employers and employees?

How to help young couples overcome the major hurdles of affordable housing, education and childcare?

Direct subsidy?
Improved childcare? Parental leave?
Assisted reproductive technology?
Flexible working hours?
Fertility Problems in Hong Kong

YWCA Perception Study on Infertility in Hong Kong carried out in 2002:

• Telephone survey: random selection households
• 16% (1173/7208) polled claimed to be infertile
• only 50% know the reason for their infertility
• only 22% have received or under treatment
• half of them are associated with psychological and social disturbances
Infertility Services in Hong Kong

• Common misconception: Infertility = IVF
• In reality, Infertility ≠ IVF, and there are different levels of Infertility services:

![Different Levels of Infertility Services]

- Level 1 - infertility investigation & management provided within a primary care setting.
- Level 2 - infertility investigation & management provided by gynaecologists in a setting which has services of endocrine consultation, ultrasound investigation and laparoscopic surgery.
- Level 3 - infertility investigation & management provided by gynaecologists with expertise in ART. There should be a special unit equipped with a Human Embryology Laboratory with facilities for in-vitro fertilization (IVF), intracytoplasmic sperm injection (ICSI) and cryopreservation of gametes and embryos is implied.

Different levels of infertility treatment:

<table>
<thead>
<tr>
<th>Infertility causes</th>
<th>Level 1 services</th>
<th>Level 2 services</th>
<th>Level 3 services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual Dysfunction</td>
<td></td>
<td>IUI</td>
<td>IVF (for patients with repeated IUI failure)</td>
</tr>
<tr>
<td>Ovulatory Problem</td>
<td>Medical</td>
<td>OI</td>
<td>IVF (for patients with repeated OI failure)</td>
</tr>
<tr>
<td>Tubo-peritoneal factor</td>
<td></td>
<td>Therapeutic Surgery (for PCOS)</td>
<td>IVF</td>
</tr>
<tr>
<td>Endometriosis or ovarian endometrioma</td>
<td></td>
<td>Stimulated IUI (for mild disease)</td>
<td>IVF</td>
</tr>
<tr>
<td>Uterine Factor</td>
<td>Therapeutic Surgery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Factor</td>
<td></td>
<td>IUI (for mild male factor)</td>
<td>IVF + ICSI (for severe male factor)</td>
</tr>
<tr>
<td>Unexplained Infertility</td>
<td></td>
<td>Stimulated IUI (at doctor discretion)</td>
<td>IVF (at doctor discretion or when failure in other treatment)</td>
</tr>
</tbody>
</table>

Examples of infertility treatments: medical, surgical, different kinds of assisted conception procedures e.g. IUI, IVF or other related procedures.

Infertility service providers: private, public, Family Planning Association.

HA Infertility management guideline 2013
Different levels of services centres at HA:

- **Most HA hospitals** with gynecology specialty (total 9) can offer level 1-2 services
- **Only 3 HA Hospitals** can offer level 3 services (advanced assisted reproductive technology services)

### Annex I – Infertility Treatment Services Provided in HA

<table>
<thead>
<tr>
<th>Service</th>
<th>PWH</th>
<th>QMH</th>
<th>KWH</th>
<th>PMH</th>
<th>PYH</th>
<th>QEH</th>
<th>TMH</th>
<th>UCH/TKOH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapeutic Surgery</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>OI</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>IUI</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>IVF-ET</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>IVF-ICSI</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Frozen thawed ET</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>MESA</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>TESE</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

**Referral**

**Assessment & Work-up** → **Level 1-2 Treatment** → **Level 3 Treatment**

*Ovarian aging as main limiting factor.*
Assisted Reproductive Technology (ART) Services in Hong Kong

Definition of ART:

- All treatments or procedures that include the \textit{in vitro} handling of human gametes or embryos for the purpose of establishing a pregnancy, e.g. in-vitro fertilization (IVF), intracytoplasmic sperm injection (ICSI).
- In HK, intrauterine insemination (IUI) is also considered as a variant of ART under regulation of the Council of Human Reproductive Technology in HK.

Financing of ART Services in Hong Kong:

- Private self-financing treatment
- Public subsidized treatment

Service rationalization at Hospital Authority:

1) defined as \textbf{non-core services}
2) \textbf{partially subsidized services} to only \textbf{eligible couple} but long waiting list due to out-of-proportion demand

Different service providers:

\textbf{Provision of Assisted Reproductive Technology (ART) in Hong Kong}

\textbf{Public sector}

At present, the Hospital Authority provides infertility treatment services at nine public hospitals to legally married couples aged under 40, mainly Artificial Insemination by Husband (AIH) and In-vitro fertilization (IVF). IVF treatment is available in three ART centres, namely Kwong Wah Hospital, Prince of Wales Hospital (PWH) and Queen Mary Hospital (QMH). The current subsidised charges for each IVF cycle range from $4,000 to $12,000. Self-financing patients can receive services offered by the two Universities at PWH and QMH, with shorter waiting times but at higher charges.

\textbf{Private sector}

Of the existing 41 private licensed ART centres, 30 provide AIH treatment and 11 offer services such as sperm washing, IVF and embryo transfers. The estimated charges for one cycle of AIH range from $8,000 to $16,000 and packages for IVF procedures cost from $65,000 to $100,000.

\textbf{Hong Kong Family Planning Association (FPAHK)}

FPAHK provides clinical assessment, investigation and appropriate treatment for infertile couples. In early 2013, FPAHK started to offer AIH treatment to couples on a self-financing basis.
ART Statistics in HK and HA
(based on the information collected by the Council of Human Reproductive Technology in HK)

There were round 5000 cycles of IVF + ICSI carried out in all HK centres, most of these cycles were from the private ART centres.

Lately HA Hospitals contributed approx. 1/4 of IVF + ICSI cycles (including ~700 public + ~800 private cycles) among all HK centres.
Provision of ART Services at Hospital Authority

**Extent of publicly subsidized infertility services at the HA hospitals**

- **Level 1 and level 2 infertility services** will be provided with full subsidy in public hospitals. However, OI (gonadotropins) + IUI cycles will only be offered to patients who are considered suitable for this treatment and the number of publicly-funded cycles will be limited to 3 within all HA hospitals.

- **Level 3 infertility services** will be partially subsidized in eligible patients. Each eligible couple will only be entitled to a maximum of 3 partially subsidized public IVF + ICSI cycles within all HA hospitals.

**Patient eligibility for publicly-funded OI / IUI in Hospital Authority**

The following guidelines regarding the eligibility for publicly-funded OI + IUI cycles within Hospital Authority are endorsed by COC (O&G) in March 06:

1. The couples must be adequately investigated and OI + IUI should be considered as an effective and appropriate treatment before it is offered.
2. The female client must not be more than 40 years of age at the time of the procedure is initiated.
3. The couples must be *legally married. Priority will be given to couples who can demonstrate preparedness, including whether there is any living children within the current marriage.

**Patient eligibility for partially subsidized public IVF in Hospital Authority**

The following guidelines regarding the eligibility for publicly subsidized IVF cycles, within Hospital Authority are issued by HAHO in January 2001:

1. The female client must not be more than 40 years of age at the time of the procedure is initiated.
2. The couples must be *legally married. Priority will be given to couples who can demonstrate preparedness, including whether there is any living children within the current marriage.
3. Clients with decreased ovarian reserve as indicated by screening test(s) will be excluded.
4. The couples must not have contraindications for pregnancy in terms of medical, physical and mental conditions.
5. The couples must be adequately investigated and IVF is the most appropriate treatment.
6. On top of the above, the individual professional team will consider other relevant factors where appropriate e.g. the underlying cause of infertility, the duration of infertility and the pregnancy history.

As level 3 infertility services such as IVF and ICSI are costly and potential risky treatments, they should only be offered to couples who satisfy all of the following criteria:

i. Couples with proven or probable medical cause of infertility

ii. Couples not suitable or with failure of level 1-2 treatments

iii. IVF should not be provided in circumstances where the likely success rate is too low to outweigh its risk
Infertility Services at HA

Existing Service & Service Gap
• High demand in infertility services
• Long waiting time for both infertility assessment and treatment at HA
• Caseload concentration mainly in level 3 service units at HA
• Two bottlenecks of infertility service provision:
  (i) **Long waiting time for infertility clinic referral (levels 1 & 2 services)**
  • Waiting times for the first assessment of infertility patients are very long, ranging from 24 to 94 weeks in the Gynaecology SOPC at hospitals providing level 2 infertility services, and 110 to 156 weeks in the infertility clinics at the level 3 infertility service centres (based on the 90th percentile waiting time as of 30 June 2013)
  (ii) **Long waiting time for public IVF services (level 3 services)**
  • Waiting times for the first public IVF cycle require another 8 to 18 months from booking to treatment
Impact of long waiting time for new infertility clinic referral on GYN SOPD Waiting Time

- Currently patients with fertility problems are referred to:
  - Gynaecology SOPC (in most HA hospitals)
  - Designated infertility clinic (in PWH/NT East & QMH/HK West)
- New case waiting times for infertility clinic assessment are very long in both PWH & QMH and estimated to be ~ 2-3 years
Cross Cluster Infertility Assessment Pilot Program (April 13 – Mar 14)

- Initiative from HAHO with pilot program started from April 2013
- Cross Cluster referral (PWH / NT East → PYNH / HK East) of infertility new cases
- PWH:
  - Screen suitable new cases out from the waiting list of PWH FERT specialty clinic based on referral letters
  - Voluntary participation by patient after briefing in the FERT New Talk by nurse
  - Under this program, patients are reassured that if they are referred back to PWH from PYNH, they will get an appointment in PWH not later than the previous cancelled appointment.
- PYNH:
  - 2 cases special quota per week in PYNH GYN clinic
Performance review of Cross Cluster Infertility Assessment Pilot Program (April 13 – Mar 14)

- Only 20 cases recruited in 1 year
  Analysis:
  (i) inadequate information from referral letters to screen for appropriate level of care
  (ii) voluntary referral
    ‘Patient reluctance- PYNH not the final destination, still may need to refer back to PWH.’

- There are at least 3 spontaneous pregnancies, including one patient with abnormal semen analysis in PYNH judged to need referral back for IVF but then spontaneous pregnancy
  Analysis:
  (i) cases waiting in PWH infertility clinics are heterogeneous not only in terms of the investigations & treatments received but also the prognosis
  (ii) the standard of semen analysis in most if not all non-ART centres is very poor

- PYNH – limited scope of therapeutic surgery (some cases referred back to PWH with only diagnostic but no therapeutic surgery)
  Analysis:
  (i) lack of reproductive surgery expertise
Cross Cluster Infertility Assessment Pilot Program

- Infertility ≠ IVF
- 9 HA hospitals (level 1-2 services) versus 3 HA hospitals (level 3 services)
- Burden more evenly distributed to different service centres based on the services they can provide

BUT

Poor Planning & Performance

Deficiency in some level 2 treatment options e.g. reproductive surgery

Poor Triage System
Reasons for long waiting time for new infertility clinic referral

- **Caseload concentration mainly in level 3 service centres** at HA

- **Lack of a reliable triage system and coordination of referral procedure**
  - Good quality semen analysis (SA) is needed in triaging the level of infertility services required, however, there are variable standards of SA at hospital pathology laboratories which generally perform a small number of SA
  
  - **Unclear delineation of the roles of different infertility service centres** at HA and variable standards of diagnostic tests (particularly semen analysis) resulted in inappropriate referral and work duplication among different centres

- **Deficiency in some level 2 treatment options:**
  - Reproductive surgery is a treatment option for infertility but is under-developed in many HA hospitals due to deficiency in training and expertise

- **Over-reliance on IVF:**
  - Long waiting time for public IVF resulting from the enormous demand lead to earlier referral to level 3 units for IVF instead of considering viable alternative options.
Proposals to improve the model

An improved two-way model:

1) Concept of **Infertility Service Network** comprising of service centres offering different levels of infertility treatment

2) Strengthen triage system and appropriate referral
   - require better triage system – triage clinic by trained nurses
   - strengthen diagnostic tests for triage: Central Andrology Laboratory to provide **quality semen analysis with improved diagnostic and prognostic accuracy** to all infertility new cases booking in the network hospitals to assist in proper triage

3) **Strengthen Level 2 Service Centres**
   - Training of designated doctor with special interest
   - Designated infertility clinic
   - Enhance **Reproductive Surgery Training**
   - Laboratory support in sperm preparation for **intra-uterine insemination**

4) **Explore the expansion of Level 3 / IVF services**
Strengthen Level 2 Service Centres

Level 2 infertility Services at HA: -

- Therapeutic surgery or/and OI/COH + IUI
- Readily available in most public hospitals:
  - can appropriately be provided by gynaecologists who have trained in endocrine/ultrasound monitoring and laparoscopic/reproductive surgery
- Cost issue not create too much financial difficulty:
  - Concurrent diagnostic and therapeutic surgeries at the same setting
  - Bear in mind that OI/COH + IUI treatment are still expensive treatment but only $\frac{1}{6}$ to $\frac{1}{5}$ of the cost of IVF
- Proper patient selection for appropriate treatment important
  - Reproductive therapeutic surgery can serve as an alternative/complementary infertility treatment option to reduce the public IVF needs if proper patient selection and appropriate skills
  - Offer OI /COH + IUI only to patients who are considered suitable for this treatment, avoid offer inefficient treatment because of inaccessibility of IVF services - false hope and risk to patient and wastage of resources.
Treatment Modality
- Role of Reproductive surgery

Is there any evidence?
<table>
<thead>
<tr>
<th>Therapeutic surgery</th>
<th>Cumulative Pregnancy Rate (12-24 months)</th>
<th>Ectopic pregnancy rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laparoscopic surgery for Tubo-peritoneal problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pelvic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adhesiolysis</td>
<td>Up to 70% (extensive dense adhesion: PR &lt;20%)</td>
<td></td>
</tr>
<tr>
<td>Endometriosis</td>
<td>Mild / minimal: OR 1.66, 95% CI (1.09-2.51) NNT 8 (95% CI 5-32) to have 1 additional ongoing pregnancy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ovarian cystectomy suggested for endometrioma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate / Severe: less data</td>
<td></td>
</tr>
<tr>
<td>Ovarian drilling</td>
<td>CPR 50-60%; Ovulation rate 70-80%</td>
<td></td>
</tr>
<tr>
<td>Tubal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-anastomosis after tubal sterilization</td>
<td>60-80% (depends on women age, type of sterilization, length of tube post-Tx, location of anastomosis)</td>
<td>2-10%</td>
</tr>
<tr>
<td>Proximal tubal cannulation</td>
<td>Up to 60% (some data suggest reduced to 30% if proximal tubal fibrosis)</td>
<td></td>
</tr>
<tr>
<td>Fimbrioplasty</td>
<td>Up to 60%</td>
<td>6%</td>
</tr>
<tr>
<td>Salpingostomy</td>
<td>30% (Mild: 81%; moderate: 31%; severe: 16%)</td>
<td>4-10%</td>
</tr>
<tr>
<td>Salpingectomy / tubal occlusion for hydrosalpinx (Adjuvant of IVF)</td>
<td>NNT: 6 to have 1 additional ongoing pregnancy after IVF</td>
<td></td>
</tr>
</tbody>
</table>

- Kodaman et al., Evidence-based diagnosis and management of tubal factor infertility. Curr Opin O&G 2004
- Geoggrey DA et al., The modern role of reproductive surgery. Clinical Obs and Gynae, Vol 54, No. 4, 2011
- Togas Tulandi et al., Role of reproductive surgery in the era of ART. Best practice & research clinical obs and Gynae 2012
<table>
<thead>
<tr>
<th>Therapeutic Surgery</th>
<th>Cumulative Pregnancy Rate (12-24 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hysteroscopic Surgery for Uterine Pathology</strong></td>
<td></td>
</tr>
<tr>
<td>IUI after Polypectomy Vs IUI (n=215)</td>
<td>63% vs 28% (RR: 2.3; 95% CI 1.6-3.2)</td>
</tr>
<tr>
<td>(Perez-Medina et al. Hum Reprod 2005)</td>
<td>NNT: 3 (irrespective polyp size; mean 1.6 cm)</td>
</tr>
<tr>
<td>Hysteroscopic myomectomy Vs control (n=215)</td>
<td>63% vs 28% (RR 2.1; 95% CI 1.5-2.9, RCT)</td>
</tr>
<tr>
<td>(Shokeir T et al. Fertil Steril 2010)</td>
<td></td>
</tr>
<tr>
<td>Hysteroscopic Adhesiolysis</td>
<td>LBR: 33% (severe adhesion) ; 58% (mild adhesion)</td>
</tr>
<tr>
<td>No RCT; Observational studies only (N= 89)</td>
<td>(Mean conception time after OT: 12.8 months)</td>
</tr>
<tr>
<td>(Roy K et al. Arch Gynecol Obstet 2010)</td>
<td></td>
</tr>
<tr>
<td>Septum resection</td>
<td>More data for treatment of recurrent miscarriage</td>
</tr>
<tr>
<td></td>
<td>Less data for treatment of infertility</td>
</tr>
</tbody>
</table>
Reproductive surgery, especially operative laparoscopy, is clearly indicated for Dx and Tx in selected infertile patients.

All available methods of evaluation of tubal factor have technical limitations so complementary tests are frequently needed, with laparoscopy being the gold standard.

Laparoscopy is indicated if:

- evidence or strong suspicion of endometriosis, pelvic/adnexal adhesions, or significant tubal disease
- should be seriously considered before applying aggressive empirical treatments involving significant cost and/or potential risks

Bear in mind that reproductive surgery can also be an interim treatment while waiting for public IVF in Hong Kong which has very long waiting list.
Treatment Modality
- Role of Intrauterine Insemination (IUI)

Is there any evidence?
Summary of Evidence

• IUI with or without ovarian stimulation in couple with:
  
  – Coital Problem (+ve evidence)
  
  – Male infertility (less severe case) (evidence still limited since no large trial)
  
  – Minimal / Mild Endometriosis (+ve evidence for stimulated IUI)
  
  – Unexplained infertility (+ve evidence for stimulated IUI in poor prognostic group)
<table>
<thead>
<tr>
<th>Infertility causes</th>
<th>Level 1 services</th>
<th>Level 2 services</th>
<th>Level 3 services</th>
</tr>
</thead>
</table>
| Male factor                            | --               | **IUI +/- ovarian stimulation**  
(if total motile sperm: ? >1 M and N form >4%)                                      | **IVF+/-ICSI**  
(if N form <4%)                                                                     |
| Ovulatory problem                      | WHO II:          | WHO I & II:  
- Clomid                                                                | **IVF**  
(only if repeated OI failure)                                                    |
|                                        | Clomid           | PCOS:  
- Clomid  
- Metformin                                                        |                                                                                  |
|                                        |                  | PCOS:  
- Clomid + Metformin (if clomid resistance / metabolic risks)  
- Lap ovarian drilling  
- OI (Gonadotrophin)                         |                                                                                  |
| Tubo-peritoneal factor                 | --               | Therapeutic surgery (for mild disease)                                           | **IVF**                                                                          |
| Endometriosis or ovarian endometrioma  | --               | **Stimulated IUI for minimal/mild endometriosis**                                | **IVF**                                                                        |
|                                        |                  |                                                                                  |                                                                                  |
| Uterine factor                         |                  | Therapeutic surgery                                                            |                                                                                  |
| Unexplained infertility                | --               | **IUI with ovarian stimulation offer in poor prognostic group**  
(*Some controversies on the cost effectiveness and some authors advocated direct IVF*) | **IVF** (with doctor discretion or if repeated failure in other treatment)       |
| (conservative treatment in good prognostic group) |                  |                                                                                  |                                                                                  |
| Coital problem                         | Sexual rehabilitation | IUI alone                                                                 | **IVF** (only if repeated IUI failure)                                          |
Unexplained or Mild Male Subfertility – INeS Trial

- Multicentre RCT involving 605 infertile couples with female age 18-38
- Unexplained or mild male subfertility
- Unfavorable prognosis
- Randomized to:
  - IVF (single embryo transfer) x 3 fresh cycles + cryo-cycles
  - IVF (modified natural cycle or MNC) x 6 cycles
  - IUI with Controlled Ovarian Hyperstimulation x 6 cycles
- Time frame: 12 months

*Bensdorp et al, 2013 ESHRE abstract*
# Cost Effectiveness of IVF-SET, MNC & IUI

<table>
<thead>
<tr>
<th></th>
<th>IVF-SET (n= 203)</th>
<th>IVF-MNC (n= 195)</th>
<th>IUI-COH (n= 207)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ongoing pregnancy</td>
<td>57%</td>
<td>49%</td>
<td>54%</td>
</tr>
<tr>
<td>Mean direct cost per women</td>
<td>€3,270</td>
<td>€4,787</td>
<td>€2,108</td>
</tr>
<tr>
<td>Mean direct cost for ongoing pregnancy</td>
<td>€5,723</td>
<td>€9,838</td>
<td>€3,925</td>
</tr>
</tbody>
</table>

Mean direct cost for ongoing pregnancy lowest in the IUI-COH group - the most cost-effective group.

*Tjon-Kon-FAT et al, 2013 ESHRE abstract*
Level 3 infertility Services at HA

• Level 3 ART procedures such as IVF, ICSI, MESA/TESE, frozen-thawed embryo replacement
• An effective, or sometimes the only method, by which a couple can successfully conceive
• But potential risky and ovarian aging as main limiting factor
• Expansive procedures involving specialized expertise and sophisticated laboratory facilities
• Enormous demand, long waiting list
• A long waiting list will undesirably reduce the treatment success as success rates decrease with female age.
• Under supply of public IVF services at HA due to the limited service capacity and lack of funding
  - Limited skill personnel and manpower drainage to private market
  - Expansive running and maintenance cost (the continued technology advancement will further increase the costs)
  - Lack of recurrent funding and threats of financial sustainability
Are we overusing IVF?

The indications for IVF have expanded from tubal disorders to many causes of subfertility, including unexplained. But with limited evidence underpinning its extended remit, Esme Kamphuis and colleagues explain how the risks could outweigh the benefits.

Esme I Kamphuis PhD student1,2, S Bhattacharya professor2, F Van der Veen professor1, B W J Moi professor1, A Tamplin professor1,3, for the Evidence Based IVF Group

1Centre for Reproductive Medicine, Department of Obstetrics and Gynaecology, Academic Medical Centre, University of Amsterdam, Amsterdam, Netherlands. 2Institute for Reproductive Medicine, University of Amsterdam, Amsterdam, Netherlands. 3Department of Obstetrics and Gynaecology, University of Malibar, Australia.

Since the birth of the first baby by in vitro fertilisation (IVF) in 1978, the technique has earned its place as an important medical breakthrough of the 20th century. IVF is developed for women with tubal disease. Yet widespread concern in the 1990s about how many oocytes are collected at one time resulted in a new, more progressive technique which took into account women’s individual needs. This technique, known as conventional IVF, has been applied to other types of subfertility such as male factor, endometriosis, and unexplained infertility. The birth of healthy babies has enhanced provider and patient confidence in the safety of IVF. But does applying IVF to wider forms of infertility result in over-treatment of couples who have a reasonable chance of conceiving naturally? Is it equally effective in these conditions? And, more is understood about the adverse health outcomes in IVF children, are the risks of IVF justified for these liberal applications?

Rising rates of IVF

One million babies were born in the first 25 years of IVF, between 1978 and 2003. It took only one more year for the tally to reach two million in 2004, with over two million estimated to have been born by the end of 2013. In developed countries with public health systems, 2.2% of the births each year are through IVF, rising as high as 5% in Denmark and Singapore. This is despite the fact that an observational study showed that 95% of couples planning a first pregnancy conceived within 24 months.

The reasons for the rise in IVF are complex. Women may plan to have children later and are encouraged through the belief in ‘performance egg’. A lack of patients among both infertile couples and their doctors, that conception will eventually occur, can lead to access to IVF within two to three years of trying to conceive, and the fear of new technology and access to more patient-orientated IVF programmes make it more appealing.

IVF as indispensable treatment for infertility but should not be overused

The chart shows falling success rates of IVF with increasing female age starting at early 30's

The decline is more substantial in the late 30's and early 40's

Using own eggs over age 44 with IVF the chance to have a baby is only about 1% per try
Recognize the Myths & Risks of IVF

Portugal

Human Assisted Reproduction Fertility NICU Burst

Portuguese Fertility: Four Kept in NICU

[Article content]

【明報專訊】根據香港輔助生殖技術發展多年，但相關技術仍有不少問題。根據內地婦女作出的技術，有四成懷胎產婦人工受孕。由於多胞胎產婦有更髖機率要進入初生嬰兒深切治療部（NICU），大大增加大產醫院產婦及NICU的壓力。屯門醫院NICU內11張病床，就曾被分隔兩組共6個三胞胎嬰兒，佔用10張病床，1名早產嬰兒，佔用10張病床，1名早產

屯門醫院今年內已有3宗3胞胎，其中一組來自人工受孕，全部整體及足月，嬰兒體重介乎12至24公斤，需要進入NICU觀察，新界西醫院承德婦產科門診主任歐陽嘉全醫生說，其中兩宗同時在6月出世， NICU內11張病床，被5名早產

回顧2007年，屯門醫院產科只有7對雙胞胎，但至2011年已增至共88對雙胞胎和三胞胎，產科於是在今年向懷有雙胞胎的孕婦做調查，截至本月12日，47名雙胞胎中，發現有21宗透過人工受孕成孕，佔總數44.6%。

婦產科門診主任梁永昌醫生表示，該院回顧2006至09年的資料並撰寫文獻，發現近3年內共有207名懷有雙胞胎的孕婦，當中84人為人工受孕，佔總數40.6%，文獻將於香港婦產科雜誌發表。

醫管局的數據亦顯示雙胞胎個案有上升趨勢，2005年每千個孕婦有11.7宗雙胞胎，但2009年升至每千個孕婦有17.5宗，增幅達50%。

雙胞胎4年有3次

歐陽嘉全及梁永昌均表示，自然雙胞胎的機會很低，平均每100人只有1人懷有雙胞胎，相信今年婦女求助於人工輔助生殖科技增多，是導致多胞胎增加之主要原因。歐陽嘉全說，多胞胎對孕婦有高風險，不值得高興，多胞胎孕婦易引高血壓、糖尿
Summary – Public Infertility Services at HA

• Common misconception: Infertility = IVF

• Different levels of Infertility service: 1-3 (primary, secondary, territory)

• Two bottlenecks of infertility service provision at HA:
  1) long waiting time for infertility clinic referral (levels 1 & 2 services), and
  2) long waiting time for public IVF services (level 3 services)

• Infertility services are low focus among the many gynaecological services at HA and the running costs of public infertility / ART services are subsumed under individual O&G Department budget with no extra funding.
Summary - Potential Solutions

Medical assessment

- Infertility Service Network
- Strengthen triage system & appropriate referral
  - Nurse Triage Clinic
  - Strengthen diagnostic tests for triage (sperm analysis)

Level 1 – 2 treatment

- Strengthen level 2 service center
  - Training of designated doctor
  - Enhance Reproductive Surgery
  - Laboratory support in sperm washing for intra-uterine insemination

Level 3 treatment

- Capacity expansion of IVF service
### IVF - Potential for Capacity Expansion?

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**CLINICAL**

**LABORATORY**

Besides all these, the need for consistent financial resources and recurrent funding.
HA public IVF cycles contribute ~15% of total IVF cycles in HK (only tip of the iceberg)

Expanding private market – attracting trained doctors & embryologists to leave HA
Public Infertility Services at Hospital Authority

Should have an overall objective to improve the **effectiveness** and **equity** of services within the **available resources**!!