



Annual Report

2021

Excellence in the care of Women and Babies

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Definitions, terms and abbreviations

Booking: a woman who has attended an antenatal clinic or a consultant for antenatal care in consulting rooms has booked.

Corrected perinatal mortality rate: the sum of stillbirths and early neonatal deaths excluding those associated with or due to a major congenital anomaly per 1,000 total births.

DOMINO and early transfer home services: the DOMINO (domiciliary care in and out of hospital) and early transfer home services are available to healthy pregnant women attending the CWIUH who live in specified areas. The team of midwives look after a woman from the booking visit, throughout the pregnancy, during the labour and for the first week after the birth of the baby.

Early neonatal death: death within seven days of a liveborn infant who weighed 500 grams or more at birth.

Fourth degree tear: an injury to the perineum that involves the anal sphincter complex and the anorectal mucosa.

Infant feeding: includes breastfeeding and formula feeding.

Late maternal death: death of a woman from direct or indirect obstetric causes, more than 42 days, but less than one year after the end of the pregnancy.

Late neonatal death: death between 7 and 28 days of a liveborn baby who weighed 500 grams or more at birth.

Nulliparous: a woman who has not previously given birth to an infant, either liveborn or stillborn, weighing greater than or equal to 500 grams.

Obstetric anal sphincter injuries: encompass both third and fourth degree perineal tears.

Major obstetric haemorrhage: occurs if one of the following criteria are met; estimated blood loss of at least 2,500ml; transfusion of five or more units of blood; and, receiving treatment for coagulopathy.

Maternal death: death of a woman while pregnant or within 42 days of the end of the pregnancy irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

Parous: a woman who has previously given birth to at least one infant, either liveborn or stillborn, weighing greater than or equal to 500 grams.

Perinatal mortality rate: the sum of stillbirths and early neonatal deaths per 1,000 total births.

Primary postpartum haemorrhage: the loss of 500ml or more of blood from the genital tract within 24 hours of the birth of a baby.

QUIPP app: a clinical decision making tool that can help clinicians determine the risk of preterm birth in women with symptoms of threatened preterm labour as well as in asymptomatic women who are at high risk of preterm birth.

Severe maternal morbidity: a pregnant or recently pregnant woman (up to 42 days following the end of the pregnancy) who experienced any of the following: major obstetric haemorrhage, uterine rupture, eclampsia, renal or liver dysfunction, pulmonary oedema, acute respiratory dysfunction, pulmonary embolism, cardiac arrest, coma, cerebrovascular event, status epilepticus, septic shock, anaesthetic complications and peripartum hysterectomy.

Stillbirth: a baby weighing 500 grams or more, who shows no sign of life at delivery.

Third degree tear: an injury to the perineum that involves the anal sphincter complex.

The following abbreviations are used but not explained in the Annual Report:

Anti-VEGF drug anti-vascular endothelial growth factor drug	PDA patent ductus arteriosus
AVSD atrioventricular septal defect	PPHN persistent pulmonary hypertension of the newborn
BMI body mass index (kg/m ²)	PVL periventricular leukomalacia
CGIN cervical glandular intra-epithelial neoplasia	ROP retinopathy of prematurity
CIN cervical intra-epithelial neoplasia	STABLE sugar, temperature, airway, blood pressure, lab work and emotional support
CPAP continuous positive airway pressure	SWETZ straight wire excision of the transformation zone
ECMO extracorporeal membrane oxygenation	TGA transposition of the great arteries
EMT Executive Management Team	TVT tension free vaginal tape
HDU high dependency unit	TVTO tension free obturator tape
HELLP syndrome haemolysis, elevated liver enzymes and thrombocytopenia syndrome	TOT transobturator tape
IUGR intrauterine growth restriction	VAIN vaginal intra-epithelial neoplasia
IVH intraventricular haemorrhage	VSD ventricular septal defect
LEEP loop electrical excision procedure	WPW Wolff-Parkinson White
MgSO₄ magnesium sulphate	
NEC necrotising enterocolitis	
NPEC National Perinatal Epidemiology Centre	
NCHD non-consultant hospital doctor	

Introduction from the Master



It is a great privilege as the 31st Master of the CWIUH to introduce the 2021 Annual Report. The CWIUH has been offering care to women for the past 195 years and continues with our purpose of providing specialist care for women and newborns putting their needs at the heart of everything we do.

In my role as Master, I am indebted to the Executive Management Team (Anna Deasy, Patrick Donohue, Melissa Lawlor, Ann McIntyre, John Robinson, Professor Martin White and AnneMarie Waldron) for their continued support and wise counsel. I am particularly grateful for the support of the Board as a whole, but in particular the Chair, Mary Donovan.

In 2021, 7,594 women gave birth to babies weighing ≥ 500 grams with a corrected perinatal mortality rate of 2.9 per 1,000 total births. We also performed 5,783 Gynaecology procedures (in theatre) and provided care for 123 babies weighing $< 1,500$ grams at birth. This level of service would simply not be possible without the incredible dedication of all our team who not only offer empathy for all, putting people at the heart of everything we do, whilst always striving to be at our best and treating all with dignity and respect.

The COVID Executive Team comprising of myself, P Donohue, A McIntyre, G Chawke, Dr N O'Sullivan, Professor M J White and M Lawlor continued to meet regularly to discuss the challenges of the pandemic, and ensure the constant provision of excellent care for

women and infants attending the hospital. The COVID-19 assessment unit, a screening desk at the entrance, 'red' and 'green' designated 'zones' and negative pressure rooms remained in place during 2021.

Testing for COVID-19 continued within the hospital, and in conjunction with our colleagues in CHI, Crumlin. The samples were taken from women booked for maternity care, infants and members of staff. In total, 189 samples detected COVID-19 in mothers booked for antenatal care, and 4 positive cases in infants. A cohort of three women were admitted to ICU with complications from COVID-19 infection including acute respiratory dysfunction, COVID-19 pneumonia, and acute chest syndrome. The remaining antenatal women presented with mild symptoms and were predominantly asymptomatic at the time of testing. The infants were asymptomatic, with no complications. In the cohort of antenatal women positive for COVID-19, there were three antepartum intrauterine deaths (IUD), and one early neonatal death. In one of the IUD cases, an acute COVID-19 placentitis was reported on the post mortem report. There were no further findings attributing to infection with COVID-19. All cases of COVID-19 were reported to the National Perinatal Epidemiology Centre.

As in-person educational classes continued to be severely restricted due to COVID-19, a series of antenatal educational videos were launched, aimed at guiding parents through pregnancy, birth and parenting. The suite of 27 videos was developed by our multidisciplinary team and includes information from Physiotherapy, Dietetics, Parent Education, Perioperative Medicine and Perinatal Mental Health teams. Throughout 2021, the videos were viewed 51,575 times with over 9,000 unique viewers. Development on the educational classes is ongoing and continues to provide valuable education to the women and families who attend CWIUH.

In true Coombe tradition, staff across the hospital, with the assistance of our catering department, baked cakes, scones, bhajis, spring rolls, and secured raffle items in record time in order to make a substantial contribution to our colleagues in India who have been suffering hugely during the pandemic.

Our Neonatal Unit on the 2nd floor, after a period of refurbishment over nearly two years, was finally reopened. The reopening was aided significantly by the magnificent work of the Household Department with regard to the significant number of deep cleans they had to undertake, under the auspices of our Infection Prevention and Control Team. A huge thank you goes to the staff in the Neonatal Unit who have provided excellent care despite the suboptimal infrastructure they worked in during the prolonged period of refurbishment.

Construction on the National Cervical Screening Laboratory (NCSL) commenced in January 2021 and progressed on target and on budget over the course of 2021.

During the course of 2021, we submitted a business case for an Acute Care Assessment Unit to centralise all acute care into one single area. This project was submitted to the Dublin Midlands Hospital Group (DMHG) for their support. Planning permission was sought and granted for the project.

Following successful continuation of gynaecology services during COVID-19 in the Women's Health Centre and inline with our gynaecology strategy during 2021, we received a letter of support from the DMHG in support of the expansion of the Women's Health Centre.

HSE Estates confirmed initial funding for the refurbishment of St Patrick's Ward enabling this project to enter the

tendering process. Funding was also confirmed by the HSE for development of isolation rooms in St Gerard's Ward.

In May 2021, the CWIUH was affected by a HSE cyberattack and credit is due to all staff members, but in particular to our ICT department and patient services who worked tirelessly to ensure that no woman's appointment was cancelled and no adverse clinical outcomes resulted. We were happy to provide our sister hospitals with paper charts to ensure continuity of services for them. Whilst it took time for us to recover from this, in December, the CWIUH was specifically targeted with a further cyberattack and in true tradition of the 'Coombe Way', we found opportunity rather than challenge and redeveloped our entire ICT network. I was in London for a family event when the cyberattack occurred and I am particularly grateful to the Executive Management Team who coordinated the hospital response and will forever recall my teleconference with the team whilst viewing London from the dome of St. Paul's Cathedral.

There is no doubt that while there is still work to do at the time of writing, we are currently in a significantly better position from an ICT perspective.

Our Enhanced Endometriosis Clinic led by consultants with expertise in the management of endometriosis and supported by representatives from Nursing, Physiotherapy, Dietetics and Pain Medicine was launched. This clinic runs once a month and is for women with objective evidence of endometriosis whose treatment is managed by our multidisciplinary team. This project was aided by funding for a number of multidisciplinary team posts by the National Women and Infants Health Programme (NWIHP) in line with the National Endometriosis Framework.

We are also grateful to NWHIP for their support with funding of multidisciplinary posts within our general gynaecology service.

In June, we announced the launch of a new public Fertility Hub, the 'Hub'. The initiative is supported by the NWIHP and the DMHG. It aims to maximise the outcome for women and their partners, by offering an assessment and management service on-site to streamline the process and minimise delays in access to fertility services.

After a day-long inspection by European Board and College of Obstetrics and Gynaecology (EBCOG) members, the CWIUH achieved EBCOG accreditation for a four-year period. As part of the accreditation, the CWIUH has been

designated the lead centre for training NCHDs in Obstetrics and Gynaecology in the DMHG. This means that trainees who rotate through the CWIUH will be eligible to take the EBCOG exit exam.

We continued to progress our values, branding and strategy during 2021 and I hope to bring these to fruition in 2022.

In 2021, the CWIUH began facilitating Schwartz Rounds to provide an opportunity for staff from all disciplines to reflect on the emotional aspect of their work. In the course of 2021, following the introduction, there were three successful Schwartz rounds. I am very grateful to the team who organised this initiative, in particular, the perinatal mental health team who led the initiative, and all those who attended and shared their experiences.

Through the Human Resources (HR) Department, we continue to provide a host of staff wellbeing initiatives. Throughout 2021, the CWIUH hosted a National Wellbeing day, a bike repair clinic, 'Steps to Health' and staff health checks. I would like to thank the HR department and in particular, Bridie Horan, Ciara Hussey (Occupational Health Nurse), Mary Holden and Bernie White for their roles in organising and executing these events.

Throughout 2021, Professor Nadine Farah also arranged a tag rugby team. Members included NCHDs and staff from across the CWIUH who took part in an eight-week social league. I would like to congratulate Professor Farah and her team for winning the 2021 Cross Hospital Tag Rugby Competition.

I would also like to acknowledge the achievements of the Coombe Choir who participated in a number of competitions and events throughout the year, winning 3rd place in the IBEC Work Place Choir of the Year Competition.

We continue to celebrate our staff and recognise a number of important days throughout the year including the International Day of the Midwife, International Day of the Nurse, World Social Work Day, Ovarian Cancer Day and World Prematurity Day. We also marked International Women's Day and displayed a banner on the front railings of the main entrance.

During the course of 2021, I continued daily visits to all wards and a monthly Master's round calling into see all in-patients. All babies who were in the hospital on New Year's Day and Christmas Day were presented with a special Coombe badge and the first-born baby of 2021 was presented with a Master's Commemorative medal. It wasn't possible due to COVID-19 to present the medal in person but we plan to do so as soon as COVID-19 allows.

I had hoped to commemorate the 50th anniversary of Dr Jim Clinch assuming the Mastership on the 1st January 2021, but was unable to do so due to COVID-19. We managed to present the Master's Medal to Jim later in the year, commemorating a very special occasion.

I wish to acknowledge the massive contribution of over 20 of our staff who retired in 2021. They contributed more than 400 years combined service to the women and babies who attend for care at the CWIUH. We wish them all a long, happy and healthy retirement.

We keep those of our staff and retirees who passed away in 2021 in our thoughts and prayers. I wish to remember in particular an 'honorary' Coombe Consultant Mr Enda McDermott, who offered an incredible service to our women. Enda is sadly missed.

Thanks to all who contributed to the Annual Report, in particular, Danielle, Emma and Julie.

2021 proved to be a very challenging year for the CWIUH and I wish to offer my sincere thanks to all staff for their contributions and indeed their resilience in continuing to provide excellent specialist care for women and newborns putting their needs at the heart of everything we do.

PROFESSOR MICHAEL O'CONNELL | MASTER

The Master's Office Report

Research Update

PROFESSOR STEPHEN LINDOW

The year 2021 has been challenging for the CWIUH with the effects of the COVID-19 pandemic and successive phases. This, however, has provided research opportunities as the CWIUH responded to a new challenge.

Research into COVID-19 and its effects on the mental health of women at the CWIUH has been published.

Internally, the formation of the Audit and Quality Advisory (AQuA) Group to advise and facilitate audit and quality improvement projects is working efficiently to assist all doctors working at the CWIUH.

Research links have been strengthened with Qatar (Hamad Medical Corporation and Sidra Medicine), India (Banaras Hindu University), South Africa (University Cape Town) and the UK (Hull University Hospitals). CWIUH doctors have collaborated with international colleagues to mutual benefit.

Collaborative output for 2021 has resulted in a total of five publications with present or former CWIUH personnel as the lead author and seven international collaborations with CWIUH personnel or former personnel as co-author (appendix two).

The philosophy about research at the CWIUH remains the same in that it is expected that all junior doctors will contribute to or take the lead on a project during their time at the CWIUH.

Biological Resource Bank

MUIREANN NÍ MHURCHÚ AND RUTH HARLEY

Biological Resource Bank (BRB) blood samples consist of plasma and red blood cells of consented women and babies who attended the CWIUH. All research studies that use BRB samples require both the Master's approval and the approval of the CWIUH Research Ethics Committee. In 2021 the team continued to work alongside research fellows with an aim of using the maternal and fetal bloods stored in the BRB to support scientific knowledge to improve the healthcare of women and babies.

Dr Neil O'Gorman used control bloods from the BRB in a study of women who developed pre-eclampsia before term.

All data of the samples collected and stored in the BRB are anonymised following General Data Protection Regulation guidelines and procedures protecting and respecting patient confidentiality. The freezers where samples are stored are closely monitored by the Rees Monitoring System. They are monitored 24 hours per day to ensure that the samples are kept at the optimum temperature of minus eighty degrees Celsius.



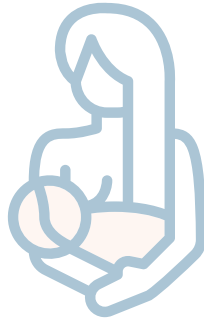
The Master's medal commemorating the first baby born in the CWIUH each year.

Year In Review 2021



7,594

WOMEN GAVE BIRTH



7,716

BABIES WERE BORN



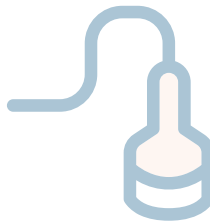
884

BABIES WERE CARED FOR IN
NICU AND SCBU



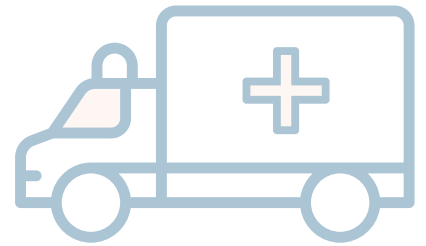
4,383

EARLY PREGNANCY ASSESSMENT
UNIT ATTENDANCES



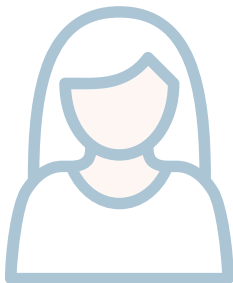
30,975

ULTRASOUND SCANS



9,127

EMERGENCY ROOM ATTENDANCES



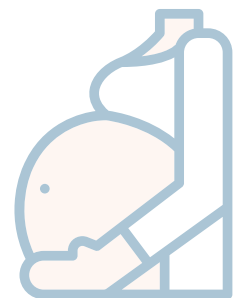
17,282

GYNAECOLOGY OUTPATIENT
ATTENDANCES



6,910

GYNAECOLOGY SURGICAL
PROCEDURES



2,697

CAESAREAN SECTIONS

Director of Midwifery and Nursing - Corporate Report 2021

Overview of 2021

ANN MACINTYRE

The COVID-19 pandemic continued to bring many staffing challenges throughout the year. However, I would like to take this opportunity to offer my sincere thanks to all the midwives, nurses and health care assistants (HCA) who ensured that the women, babies and colleagues were kept safe throughout the hospital. I would also like to thank the assistant directors of midwifery and nursing (ADoMNs), advanced nurse practitioners (ANPs), advanced midwife practitioners (AMPs), clinical midwife managers (CMMs), clinical nurse managers (CNMs), clinical midwife specialists, clinical nurse specialists, clinical skills facilitators (CSFs) and the clinical placement coordinator (CPC) team for their support and dedication throughout this difficult year.

The COVID helpline continued to provide advice and guidance to our women and families through 2021 and was staffed by our cocooning midwives. The triage desk in the front hall, the COVID Assessment Unit and the 'red zone' areas in the Delivery Suite and St Joseph's Ward continued throughout 2021. The 24-hour triage desk was supported by our student midwives and two retired midwives. Experienced midwives and student midwives who were employed as HCAs, staffed and operated the COVID Assessment Unit. COVID swabbing for all women admitted to the CWIUH commenced in January. This was supported by staff in Theatre and St Gerard's Ward also.

The COVID pandemic continued to highlight how flexible, resilient, adaptable, caring and innovative our midwives and nurses are and continue to be.

In March, the neonatal team were delighted to return the NICU and the HDU to the 2nd floor and the SCBU returned to the 3rd floor. The new renovated isolation room in Delivery Suite was completed in April and the pool room extractor fan and scavenger were installed.

Very sincere thanks to our Allocations Officer, Denise Kiernan, and the Practice Development Team for their trojan work to ensure that the student midwives and student nurses returned to clinical practice safely, and were supported and closely supervised by our midwives and nurses. The student midwives were delighted to return to clinical practice and the CPCs ensured that case load allocations, toolkit sessions and group sessions with our perinatal mental health (PMH) psychologist were implemented in their transition to internship. This was especially important this year as COVID was a causative factor for anxiety and stress among the students. Twenty-three HDip student midwives and 24 BSc 1st years commenced in March, while 21 BSc interns commenced in January. Two of our newly qualified HDip midwives were awarded the gold and silver medals in midwifery which was a wonderful achievement.

The care, support and passion given by the midwives, nurses and HCAs is reflected throughout this Annual Report. Their eagerness and enthusiasm was demonstrated throughout 2021 and the achievements listed in the various clinical reports would not have been possible without the dedication and commitment of all the staff. I am indebted to the ADoMNs and the EMT for their leadership and management, and the continued support, help and kindness they gave staff throughout the year.

The CWIUH and our community teams had to address the challenges of two cyberattacks in 2021. The first against the HSE in May and the second against the CWIUH in December 2021. However, these events served to highlight the CWIUH teamwork and support. No patient appointment or theatre procedure was cancelled as a result of these attacks. This was due to the incredible efforts of our ICT team, patient services, midwifery, nursing, medical, health and social care professionals and support service staff.

Our finance and payroll teams worked tirelessly to ensure that staff and suppliers were paid.

Great work continued ensuring that all the women, babies and families were kept safe and cared for by all staff in the CWIUH. Sincere thank you to everyone.

Workforce Planning

Recruitment and retention of midwives and nurses remained a top priority for 2021. However, this was severely impacted by COVID-19. With the support of The Board of Guardians and Directors and the EMT, approval was given for the use of five recruitment agencies to assist with the recruitment of midwives, neonatal, gynaecology and theatre nurses. Recruitment continued via virtual interviews with assistance and help from the HR team, CMM3s and our ADoMNs. A very sincere thank you to everyone. Despite recruitment challenges, 38.82 whole time equivalent (WTE) midwives and nurses and eight WTE adaptation midwives were successfully recruited. During 2021, 28.78 WTE staff resigned and 3.69 WTE retired.

A special word of thanks to the NWIHP who supported and funded 18 posts and equipment to the value of €50,000, for both the CWIUH and community clinics. The equipment enabled monitoring of the mothers and babies in the community and also assisted our mothers and babies on the wards and in the Neonatal Unit with breastfeeding and kangaroo care which is a vital parental support in the Neonatal Unit.

During 2021, two staff members qualified as AMPs - Catherine Manning in AMP Maternal Medicine and Nora Vallejo in AMP Supported Care Pathway and the Community Midwifery Service. Both are caring passionate leaders in advancing Midwifery Care. Congratulations to them both on achieving advanced practice.

Activity Data

Dublin Maternity Hospitals - Combined Clinical Data

The following tables have been agreed to form the common elements of the Three Dublin Maternity Hospitals Report.

1. Women who attended the CWIUH in pregnancy

	n
Women who gave birth to babies weighing \geq 500g	7,594
Women who gave birth to babies < 500g (includes miscarriages)*	437
Gestational trophoblastic disease	14
Ectopic pregnancies	134
Total	8,179

* does not include all spontaneous miscarriages

2. Maternal deaths, n = 0

3. Babies born weighing \geq 500g

	n
Singletons	7,474
Twins*	230
Triplets	12
Quadruplets	0
Total	7,716

* excludes 2 babies weighing < 500g

4. Obstetric outcome

	%
Spontaneous vaginal birth	52.5
Forceps	3.5
Vacuum	8.5
Caesarean section	35.5
Induction of labour	40.8

5. Perinatal deaths \geq 500g*

	n
Antepartum deaths	19
Intrapartum deaths	3
Stillbirths	22
Early neonatal deaths	9
Late neonatal deaths	5
Congenital anomalies	9†

* excludes terminations of pregnancy and outborn babies

† 3 stillbirths, 3 early neonatal deaths, 3 late neonatal deaths

6. Perinatal mortality rates

	Per 1,000 total births
Overall perinatal mortality rate	4.0
Perinatal mortality rate corrected for lethal congenital anomalies	3.2
Perinatal mortality rate including late neonatal deaths	4.7
Perinatal mortality rate excluding those unbooked	3.4
Corrected perinatal mortality rate excluding those unbooked	2.9
Corrected perinatal mortality rate excluding those initially booked elsewhere	3.0

7. Age

Age at delivery (years)	Nulliparous (n)	Parous (n)	Total (n)	Total (%)
< 20	82	12	94	1.2
20 - 24	346	225	571	7.5
25 - 29	572	651	1,223	16.1
30 - 34	1,161	1,530	2,691	35.5
35 - 39	689	1,679	2,368	31.2
\geq 40	141	506	647	8.5
Total	2,991	4,603	7,594	100.0

8. Parity

Parity	Nulliparous (n)	Parous (n)	Total (n)	Total (%)
Para 0	2,991	-	2,991	39.4
Para 1	-	2,766	2,766	36.4
Para 2 - 4	-	1,746	1,746	23.0
Para 5+	-	91	91	1.2
Total	2,991	4,603	7,594	100.0

9. Country of birth and nationality

Country of birth and nationality	n	%
Republic of Ireland	5,412	71.3
Britain	238	3.1
EU	739	9.7
Rest of Europe (including Russia)	151	2.0
Middle East	36	0.5
Rest of Asia	536	7.1
Americas	236	3.1
Africa	224	2.9
Australasia	20	0.3
Uncoded	2	0.0
Total	7,594	100.0

10. Birth weight

Birth weight (grams)	Nulliparous (n)	Parous (n)	Total (n)	Total (%)
500 - 999	25	33	58	0.7
1,000 - 1,499	36	29	65	0.8
1,500 - 1,999	57	38	95	1.2
2,000 - 2,499	130	168	298	3.9
2,500 - 2,999	467	641	1,108	14.4
3,000 - 3,499	1,065	1,563	2,628	34.1
3,500 - 3,999	950	1,603	2,553	33.1
4,000 - 4,499	270	532	802	10.4
4,500 - 4,999	33	70	103	1.3
≥ 5,000	1	5	6	0.1
Total	3,034	4,682	7,716	100.0

11. Gestational age

Gestational age (weeks)	Nulliparous (n)	Parous (n)	Total (n)	Total (%)
< 26	11	15	26	0.3
26 - 29+6 days	31	36	67	0.9
30 - 33+6 days	58	56	114	1.5
34 - 36+6 days	176	257	433	5.6
37 - 41+6 days	2,732	4,302	7,034	91.1
≥ 42	26	16	42	0.5
Total	3,034	4,682	7,716	100.0

12. Perineal injury after spontaneous vaginal birth (SVB)

Perineal injury after SVB	Nulliparous* n (%)	Parous* n (%)	Total* n (%)
Episiotomy	439 (37.3)	188 (6.9)	627 (15.7)
First degree tear	153 (13.0)	588 (20.9)	741 (18.6)
Second degree tear	464 (39.4)	822 (29.2)	12,86 (32.2)
Third degree tear	45 (3.8)	19 (0.7)	64 (1.6)
Fourth degree tear	1 (0.1)	0	1 (0.0)
Lacerations	606 (51.5)	1,278 (45.4)	1,884 (47.2)
Total SVB	1,176	2,813	3,989

* may be recorded in more than one category

13. Third degree tears

Third degree tears	Nulliparous (n)	Parous (n)	Total* (n)	Total* (%)
Spontaneous	45	19	64	59.8
Associated with episiotomy	29	2	31	29.0
Associated with forceps	22	1	23	21.5
Associated with vacuum	16	2	18	16.8
Associated with vacuum and forceps	2	0	2	1.9
Associated with OP position†	9	2	11	10.3
Total third degree tears	85	22	107	-

* percentage of all third degree tears; third degree tears may be recorded in more than one category

† occipito posterior position

14. Perinatal mortality in normally formed stillborn infants

Classification	Nulliparous (n)	Parous (n)	Total (n)
Specific placental conditions	0	4	4
Mechanical	0	1	1
Placental abruption	0	1	1
Infection	2	1	3
Twin to twin transfusion syndrome	0	1	1
Spontaneous preterm labour	1	2	3
Maternal disorder	0	1	1
Unexplained	1	0	1
Post mortem results not available	1	3	4
Total (n)	5	14	19

15. Perinatal deaths in infants with congenital anomalies*

Classification	Nulliparous (n)	Parous (n)	Total (n)
Chromosomal	1	1	2
Genetic syndromes	0	1	1
Cardiac	1	1	2
Gastrointestinal	1	0	1
Total (n)	3	3	6

* 3 stillbirths, 3 early neonatal deaths

16. Early and late neonatal deaths \geq 500g*

Classification	Nulliparous (n)	Parous (n)	Total (n)
Congenital anomaly	3	3	6
Extreme prematurity/sepsis	0	1	1
Prematurity/intraventricular haemorrhage	2	1	3
Prematurity/born before arrival/unbooked	0	1	1
Twin to twin transfusion syndrome	0	1	1
COVID-19 placentitis	0	1	1
Post mortem results not available	1	0	1
Total (n)	6	8	14

* 9 early neonatal deaths, 5 late neonatal deaths

17. Overall perinatal autopsy rate - 71%**18. 18. Hypoxic ischaemic encephalopathy (Grade II and III) inborn infants, n = 6****19. Severe maternal morbidity (n = 37)**

Severe maternal morbidity	Nulliparous (n)	Parous (n)	Total* (n)
Major obstetric haemorrhage	8	13	21
Renal or liver dysfunction	2	0	2
Pulmonary embolism	2	2	4
Septic shock	1	0	1
Uterine rupture	1	1	2
Intensive care unit admission*	1	4	5
Other	0	2	2
Peripartum hysterectomy†	0	2 (2)	2 (2)

* Three women were admitted to ICU because of COVID-19 infection

† numbers followed by a number in brackets indicate that the woman is already included in another category

Obstetrics and Midwifery

General Obstetric Report - Medical Report

PROFESSOR MICHAEL O'CONNELL

The number of women who gave birth at the CWIUH increased from 7,405 in 2020 to 7,594 in 2021 (table 1.1.1). In 2021, 7,716 babies weighing $\geq 500\text{g}$ were born at the CWIUH (appendix one). There was a reduction in the number of women with multiple pregnancies in 2021 (table 1.1.1). This was most likely as a result in the cessation of reproductive medicine services during the first year of the COVID-19 pandemic.

The rate of hypoxic ischaemic encephalopathy (HIE) (grades II and III) in infants was 7.8 per 1,000 livebirths in 2021 (appendix one). Between 2015 and 2021 the lowest rate of HIE occurred in 2016 (7.1 per 1,000 livebirths) and the highest rate occurred in 2019 (12.8 per 1,000 livebirths).

In 2021, the overall perinatal mortality rate (PMR) was 4.0 per 1,000 total births, the lowest rate in the preceding six years (appendix one). The corrected PMR was 3.4 per 1,000 total births. The corrected PMR excluding women initially booked elsewhere was 3.0 per 1,000 total births. The adjusted PMR of normally formed babies ≥ 34 weeks' gestation weighing $\geq 2.5\text{kg}$ was 0.7 per 1,000 (appendix one). This PMR ranged between 0.3 per 1,000 in 2018 and 1.4 per 1,000 in 2019 (appendix one).

Between 2015 and 2018 the perinatal autopsy rate at the CWIUH ranged between 42.0% and 52.5%. This rate increased following the enactment of the Coroners (Amendment) Bill 2018 in July 2019 when the mandatory reporting of any death of a stillborn child, intrapartum or infant death became a requirement. Since then the perinatal autopsy rate at the CWIUH has steadily increased from 48.0% in 2019, to 64% in 2020 and 71% in 2021. Sixteen (72.7%) of the 22 perinatal autopsies performed in 2021 were coronial.

The demographic characteristics of women who attended the CWIUH between 2015 and 2021 have changed. The proportion of women born outside the European Union and Britain increased from 12.6% in 2015 to 20.8% in 2021 (table 1.1.2). The percentage of women greater than or equal to 40 years of age at booking increased from 6.4% in 2015 to 8.4% in 2021 (table 1.1.2). While the percentage of women who were unemployed at booking decreased from a peak of 24.3% in 2015 to a trough of 17.2% in 2020, this increased by 1.0% in 2021 (table 1.1.2).

The proportion of teenage mothers was 1.2% in 2021 (appendix one), from a peak of 2.1% in 2016.

Table 1.1.1 Women who attended the CWIUH in pregnancy

	2015	2016	2017	2018	2019	2020	2021
Women who booked (n)	8,933	8,647	8,653	8,608	8,284	7,916	7,691
Women who gave birth to babies \geq 500g (n)	8,220	8,233	7,975	8,154	7,746	7,405	7,594
Women with multiple pregnancies (n)	187	192	197	188	187	161	120

Table 1.1.2 Women's profile at booking - general demographic factors

	2015	2016	2017	2018	2019	2020	2021	n =7,691
Born in Republic of Ireland (%)	69.5	68.9	70.1	69.1	68.4	70.9	69.4	5,336
Born in rest of EU (%)	14.9	15.4	13.1	12.7	12.4	10.5	9.8	756
Born in Britain (%)	2.9	2.6	2.8	3.0	2.8	2.8	3.1	240
Born outside EU and Britain (%)	12.6	12.9	13.9	15.1	16.3	15.7	20.8	1,597
Country of birth unknown (%)	0.1	0.2	0.1	0.1	0.1	0.1	0.0	2
Resident in Dublin (%)	63.7	63.3	62.6	63.0	62.2	62.4	62.5	4,808
< 18 years (%)	0.5	0.6	0.3	0.3	0.3	0.4	0.3	25
\geq 40 years (%)	6.4	6.9	7.2	7.3	7.5	8.0	8.4	650
Unemployed (%)	24.3	21.5	20.5	19.5	18.4	17.2	18.2	1,403
Communication difficulties reported at booking (%)	6.9	5.7	6.1	5.1	4.8	3.2	3.1	235

Those with a healthy body mass index at booking decreased from 51.6% in 2015 to 44.1% in 2021 (table 1.1.3). Women in the overweight, obese classes 1, 2 and 3 have steadily increased since 2015 (table 1.1.3) and those in obese class 3 increased from 1.7% in 2015 to 2.8% in 2021 (table 1.1.3).

The proportion of nulliparous women at booking peaked at 42.0% in 2019, declined in 2020 and was just under 40% in 2021 (table 1.1.3). The uptake of preconceptual folic acid increased from 45.9% in 2015 to 51.0% in 2021 (table 1.1.3). The proportion of women who reported that they were smokers at the time of booking decreased from 11.1% in 2015 to 7.7% in 2021 (table 1.1.3).

Table 1.1.3 Women's profile at booking - general history

	2015	2016	2017	2018	2019	2020	2021	n = 7,691
BMI underweight: < 18.5 kg/m ² (%)	2.0	1.6	1.7	1.6	1.4	1.4	1.3	103
BMI healthy: 18.5 - 24.9 kg/m ² (%)	51.6	50.7	49.3	48.1	47.1	45.0	44.1	3,389
BMI overweight: 25 - 29.9 kg/m ² (%)	29.2	29.3	29.7	30.3	31.0	29.7	31.7	2,439
BMI obese class 1: 30 - 34.9 kg/m ² (%)	10.8	11.9	12.3	12.7	13.0	13.0	14.2	1,089
BMI obese class 2: 35 - 39.9 kg/m ² (%)	4.2	4.4	4.5	4.9	4.9	4.6	5.5	424
BMI obese class 3: ≥ 40 kg/m ² (%)	1.7	1.8	2.3	2.1	2.4	2.4	2.8	212
Unrecorded (%)	0.4	0.2	0.2	0.3	0.2	3.9	0.5	35
Para 0 (%)	38.9	40.7	41.1	41.8	42.0	40.4	39.3	3,022
Para 1 - 4 (%)	59.9	57.8	57.9	57.0	56.9	58.5	59.4	4,570
Para 5+ (%)	1.2	1.4	1.0	1.2	1.1	1.1	1.3	99
Unplanned pregnancy (%)	28.9	27.6	26.6	26.9	25.7	24.5	25.3	1,944
No preconceptual folic acid (%)	54.1	52.9	49.6	51.4	52.0	50.0	49.0	3,772
Current smoker (%)	11.1	10.0	9.4	9.5	8.9	8.0	7.7	591
Current alcohol consumption (%)	1.1	1.0	0.7	0.7	0.5	0.3	0.4	28
Taking illicit drugs/methadone (%)	0.3	0.2	0.3	0.2	0.2	0.2	0.3	20
Illicit drugs/methadone ever (%)	8.2	8.0	7.5	7.8	7.9	7.6	7.7	596
Giving history of domestic violence (%)	1.0	0.9	0.9	1.1	1.0	1.0	0.9	70
Cervical smear never performed (%)	19.9	19.1	19.2	20.0	19.9	19.4	21.3	1,638
History of psychiatric/ psychological illness/disorder (%)	15.5	16.7	18.5	21.1	21.0	23.4	23.9	1,835
History of postnatal depression (%)	4.5	4.4	4.6	4.1	4.1	4.5	4.0	308
Previous perinatal death (%)	1.6	1.5	1.7	1.5	1.5	1.5	1.6	124
Previous infant < 2500g (%)	5.2	4.7	5.9	4.9	5.4	5.0	5.6	429
Previous infant < 34 weeks (%)	2.4	2.1	2.6	2.1	2.3	2.1	2.6	202
One previous Caesarean section (%)	12.9	12.7	12.7	12.7	13.5	14.1	13.9	1,071
≥ Two previous Caesarean sections (%)	4.0	4.0	4.2	4.6	3.9	4.4	4.4	341

The profile of women who gave birth to babies weighing greater than or equal to 500g remained relatively unchanged between 2015 and 2021 (table 1.1.4). In 2021, 2.0% of women who gave birth to babies weighing greater than or equal to 500g developed pre-eclampsia, the lowest percentage between 2015 and 2021. No women developed eclampsia in 2021 or in the previous four years. The proportion of women with gestational diabetes mellitus peaked at 12.0% in 2019, decreased to 8.7% in 2020 and increased to 11.7% in 2021. The decrease in 2020 was most likely due to a reduction in the number of glucose tolerance tests performed in the first year of the COVID-19 pandemic. The severe maternal morbidity rate decreased from 1.0% in 2019 to 0.5% in 2021 (table 1.1.4).



Table 1.1.4 Women's profile in index pregnancy (women who gave birth to babies ≥ 500g)

	2015	2016	2017	2018	2019	2020	2021	n = 7,594
Pregnancy induced hypertension (%)	6.7	7.3	6.8	6.8	6.2	6.1	7.1	540
Pre-eclampsia (%)	2.9	2.8	2.7	2.3	2.6	2.2	2.0	153
Eclampsia (%)	0.02	0.05	0.0	0.0	0.0	0.0	0.0	0
Type 1 diabetes mellitus (%)	0.35	0.3	0.4	0.4	0.4	0.2	0.4	30
Type 2 diabetes mellitus (%)	0.32	0.2	0.3	0.3	0.2	0.2	0.3	20
Gestational diabetes mellitus (%)	7.8	8.4	9.7	10.4	12.0	8.7	11.7	891
Placenta praevia (%)	0.5	0.4	0.4	0.6	0.4	0.5	0.4	31
Placental abruption (%)	0.4	0.2	0.1	0.4	0.3	0.3	0.3	21
Antepartum haemorrhage (%)	5.3	5.7	5.3	4.8	4.2	4.2	4.0	302
Haemolytic antibodies (%)	0.5	0.6	0.4	0.6	0.4	0.6	0.7	49
Hepatitis C (%)	0.5	0.4	0.3	0.2	0.2	0.1	0.2	15
Hepatitis B (%)	0.5	0.4	0.2	0.3	0.2	0.3	0.2	17
HIV (%)	0.3	0.2	0.2	0.1	0.2	0.1	0.2	14
Sickle cell trait (%)	0.3	0.4	0.2	0.4	0.3	0.3	0.2	15
Sickle cell anaemia (%)	0.02	0.05	0.03	0.05	0.1	0.1	0.06	5
Thalassaemia trait (%)	0.5	0.3	0.4	0.3	0.2	0.3	0.2	15
Delivery < 28 weeks (%)	0.5	0.5	0.5	0.5	0.7	0.5	0.7	55
Delivery < 34 weeks (%)	2.2	2.1	2.2	2.1	2.3	2.1	2.4	179
Delivery < 38 weeks (%)	14.3	13.9	14.5	15.5	16.7	15.4	16.6	1,261
Delivery < 1,500g (%)	1.3	1.3	1.4	1.1	1.4	1.1	1.5	112
Delivery < 2,500g (%)	7.2	6.1	6.6	6.6	6.7	6.2	6.1	466
Unbooked women (%)	0.9	0.7	1.0	1.1	1.1	1.0	1.1	85
Caesarean section (%)	29.3	31.3	31.8	33.8	33.8	32.8	35.5	2,697
Admissions to HDU (%)	2.6	2.0	2.2	2.0	2.2	2.0	1.9	142
Severe maternal morbidity (%)	0.4	0.8	0.7	0.8	1.0	0.6	0.5	37
Uterine rupture (n)	0	0	3	2	0	1	2	2
Maternal deaths (n)	1	0	0	1	0	0	0	0

The increase in the rate of induction of labour from 38.2% in 2019 to 40.8% in 2021 has been attributed to concerns about poor neonatal outcomes associated with maternal infection with COVID-19 (table 1.1.5). The rate of fetal blood sampling in labour decreased from 10.5% in 2016 to 3.3% in 2021 (table 1.1.5).

Table 1.1.5 Labour

	2015	2016	2017	2018	2019	2020	2021	n
Induction of labour (%)	31.7	33.9	34.8	37.0	38.2	38.9	40.8	3,096
Epidural analgesia (%)	42.5	37.8	39.7	40.6	40.8	41.7	41.0	3,117
Prolonged labour (%)	3.9	3.4	3.4	2.9	3.5	4.0	3.5	265
Fetal blood sampling (%)	9.5	10.5	8.8	7.2	5.5	4.4	3.3	255

The rate of induction of labour, use of epidural analgesia in labour and prolonged labour according to parity are presented in Table 1.1.6. The rate of induction of labour in nulliparous and parous women increased between 2015 and 2021 with a higher rise in the former. The rate of epidural analgesia has remained relatively stable in both groups of women.

Table 1.1.6 Labour according to parity

	2015	2016	2017	2018	2019	2020	2021	n
Nulliparous								
Induction of labour (%)	38.9	42.8	42.7	45.3	46.3	47.2	51.2	1,531
Epidural analgesia in labour (%)	60.2	55.8	56.8	57.9	58.1	58.9	59.6	1,783
Prolonged labour (%)	8.2	7.3	7.3	4.1	7.0	8.4	8.0	240
Parous								
Induction of labour (%)	27.3	27.9	29.4	30.9	32.4	33.1	34.0	1,565
Epidural analgesia in labour (%)	31.4	25.8	27.8	28.1	28.6	29.7	29.0	1,334
Prolonged labour (%)	1.2	0.9	0.8	1.3	0.8	1.0	0.5	25

The rates of spontaneous vaginal birth and vacuum in nulliparous and parous women decreased in 2021 (table 1.1.7). The total forceps rate was unchanged from 2020 (table 1.1.7). The total Caesarean section (CS) rate increased from 29.3% in 2015 to 35.5% in 2021 (table 1.1.7). The CS rate increased in both nulliparous and parous women in 2021.

Table 1.1.7 Mode of delivery according to parity

	2015	2016	2017	2018	2019	2020	2021
Nulliparous							
Spontaneous vaginal birth (%)	40.8	38.9	37.8	36.9	39.2	40.0	39.3
Forceps (%)	13.0	11.5	11.0	9.7	8.4	7.4	7.6
Vacuum (%)	17.7	16.9	17.6	18.1	14.3	19.4	17.6
Caesarean section (%)	28.4	33.2	34.0	35.7	34.4	33.4	35.5
Parous							
Spontaneous vaginal birth (%)	65.9	64.9	64.3	62.7	63.2	63.0	61.1
Forceps (%)	1.4	1.2	1.4	1.2	1.1	1.0	0.8
Vacuum (%)	3.2	3.9	4.1	3.8	2.6	3.9	2.6
Caesarean section (%)	29.8	30.0	30.3	32.4	33.3	32.4	35.5
Total							
Spontaneous vaginal birth (%)	56.2	54.5	53.4	51.8	54.3	53.6	52.5
Forceps (%)	5.8	5.3	5.3	4.8	4.3	3.5	3.5
Vacuum (%)	9.0	9.1	9.6	9.8	7.8	10.2	8.5
Caesarean section (%)	29.3	31.3	31.8	33.8	33.8	32.8	35.5

The episiotomy rate in nulliparous women increased from 29.6% in 2015 to 37.7% in 2021 (table 1.1.8). The rate in parous women during this time has ranged between 4.0% and 6.9% and was 6.3% in 2021 (table 1.1.8).

Table 1.1.8 Episiotomy (all deliveries)

	2015	2016	2017	2018	2019	2020	2021	n
Nulliparous (%)	29.6	32.0	34.5	33.8	32.2	34.6	37.7	1,128
Parous (%)	4.0	4.4	6.4	6.4	5.2	6.9	6.3	290
Total (%)	13.9	15.5	17.9	17.9	17.2	18.2	18.6	1,418

Obstetric anal sphincter injuries (OASIS) include third degree and fourth degree perineal tears. OASIS rates in all deliveries in 2021, according to parity, are presented in Table 1.1.9. Tables 1.1.10 and 1.1.11 present third degree and fourth degree rates using all deliveries and vaginal deliveries as the denominators respectively. Both rates were lower in 2021 than they were in 2015 and 2016.

Table 1.1.9 Obstetric anal sphincter injuries (all deliveries) according to parity

All deliveries	Nulliparous	Parous	Total
Third degree tears, n (%)	85 (2.8)	22 (0.5)	107 (1.4)
Fourth degree tears, n (%)	2 (0.06)	0	2 (0.03)
Total, n (%)	87 (2.9)	22 (0.5)	109 (1.4)

Table 1.1.10 Obstetric anal sphincter injuries (all deliveries, including CS)

All deliveries	2015	2016	2017	2018	2019	2020	2021
Third degree tears, n (%)	166 (2.0)	147 (1.8)	110 (1.4)	139 (1.7)	92 (1.2)	87 (1.2)	107 (1.4)
Fourth degree tears, n (%)	9 (0.1)	11 (0.1)	3 (0.04)	7 (0.1)	3 (0.04)	5 (0.07)	2 (0.03)
Total, n (%)	175 (2.1)	158 (1.9)	113 (1.4)	146 (1.8)	95 (1.2)	92 (1.2)	109 (1.4)

Table 1.1.11 Obstetric anal sphincter injuries (vaginal deliveries)

Vaginal deliveries	2015	2016	2017	2018	2019	2020	2021
Third degree tears, n (%)	166 (2.9)	147 (2.6)	110 (2.0)	139 (2.6)	92 (1.8)	87 (1.7)	107 (2.2)
Fourth degree tears, n (%)	9 (0.1)	11 (0.2)	3 (0.1)	7 (0.1)	3 (0.1)	5 (0.1)	2 (0.04)
Total, n (%)	175 (3.0)	158 (2.8)	113 (2.1)	146 (2.7)	95 (1.9)	92 (1.9)	109 (2.2)

The rate of shoulder dystocia ranged between 0.6% in 2016 and 1.0% in 2020 but decreased to 0.5% in 2021 (table 1.1.12). The proportion of mothers whose babies weighed less than 4kg and whose delivery was complicated by shoulder dystocia ranged between 0.3% and 0.6% whilst the proportion of mothers whose babies weighed greater than or equal to 4kg and whose delivery was complicated by shoulder dystocia ranged between 1.4% and 3.2% (table 1.1.13). However, it is difficult to draw meaningful conclusions about trends when the number of deliveries complicated by shoulder dystocia was low.

Table 1.1.12 Shoulder dystocia

	2015	2016	2017	2018	2019	2020	2021
Women, n (%)	56 (0.7)	53 (0.6)	51 (0.6)	65 (0.8)	51 (0.7)	73 (1.0)	40 (0.5)

Table 1.1.13 Shoulder dystocia according to parity and birth weight

	2015	2016	2017	2018	2019	2020	2021	n
Nulliparous (%)	0.9	0.8	0.5	0.8	0.8	1.4	0.7	21
Parous (%)	0.6	0.6	0.8	0.8	0.7	0.7	0.4	19
Mothers of babies < 4kg (%)	0.4	0.4	0.3	0.5	0.4	0.6	0.4	27
Mothers of babies ≥ 4kg (%)	2.9	2.0	2.7	2.6	2.6	3.2	1.4	13

The total rate of primary postpartum haemorrhage (1° PPH) decreased from 22.7% in 2020 to 21.9% in 2021 (table 1.1.14). The rate of 1° PPH in parous woman who laboured spontaneously decreased from 10.3% in 2020 to 7.6% in 2021. The 1° PPH in nulliparous women who had a forceps delivery increased from 30.5% in 2020 to 40.1% in 2021. The aetiology is unclear, and is currently the subject of an ongoing audit. The rate of primary PPH in parous women who had a forceps delivery decreased from 32.4% in 2020 to 17.9% in 2021 (table 1.1.14). The total forceps rate was 3.5% in 2020 and 2021 (appendix one). The total rate of 1° PPH in women who had a CS decreased from 45.1% in 2020 to 42.0% in 2021.

Table 1.1.14 Primary postpartum haemorrhage (1° PPH)

	2015	2016	2017	2018	2019	2020	2021	n
Total 1° PPH (%)	13.7	18.0	21.9	21.6	21.8	22.7	21.9	1,660
Spontaneous labour								
Nulliparous (%)	12.0	15.1	18.2	18.2	16.7	18.2	19.4	195
Parous (%)	8.3	8.4	8.8	9.4	9.7	10.3	7.6	122
Total (%)	9.6	11.0	12.6	13.1	12.6	13.5	12.2	317
Induced labour								
Nulliparous (%)	20.1	25.3	30.8	29.9	30.7	29.7	31.6	484
Parous (%)	10.9	10.9	12.1	13.3	12.2	12.4	9.8	154
Total (%)	15.3	18.2	21.5	21.9	21.5	21.0	20.6	638
Spontaneous vaginal birth								
Nulliparous (%)	7.5	10.2	11.5	11.9	12.3	11.6	11.4	134
Parous (%)	6.9	6.3	7.4	7.7	8.0	7.9	5.7	160
Total (%)	7.1	7.4	8.6	9.0	9.4	9.0	7.4	294
Forceps								
Nulliparous (%)	18.2	19.4	29.6	31.2	28.7	30.5	40.1	91
Parous (%)	22.9	21.3	16.4	15.3	16.7	32.4	17.9	7
Total (%)	18.9	19.6	27.5	28.8	26.9	30.8	36.8	98
Vacuum								
Nulliparous (%)	8.3	13.3	16.7	13.4	20.7	21.1	22.1	117
Parous (%)	8.7	8.7	10.4	11.0	5.2	15.2	10.8	13
Total (%)	8.4	12.1	15.2	12.9	17.7	19.8	20.0	130
Caesarean section								
Nulliparous (%)	33.4	43.2	50.0	45.6	48.0	49.8	49.1	521
Parous (%)	23.1	34.1	41.8	38.5	38.0	41.8	37.8	619
Total (%)	26.9	38.0	45.3	42.8	42.2	45.1	42.2	1,140
Caesarean section by priority status								
Elective (%)	19.6	32.7	40.9	36.5	36.9	39.2	36.6	580
Emergency (%)	35.4	43.7	50.1	49.3	48.3	52.7	50.2	560
Total (%)	26.9	38.0	45.3	42.8	42.2	45.1	42.2	1,140
Twin pregnancy								
Nulliparous (%)	46.0	50.6	60.5	58.1	51.8	70.4	75.6	31
Parous (%)	23.5	43.3	39.8	40.2	39.8	41.6	36.8	28
Total (%)	33.1	46.9	48.9	49.1	45.7	54.4	50.4	59

The rate of manual removal of retained placenta (MROP) remained between 1.0 and 1.3% between 2015 and 2021 (table 1.1.15). However, the rate of 1° PPH associated with MROP increased from 53.7% in 2015 to 71.4% in 2021 (table 1.1.15), likely representing a greater emphasis on accurate measurement of blood loss. The rate of maternal blood transfusion ranged between 1.9% and 3.0% between 2015 and 2021 (table 1.1.16). In 2021, two women (0.03%) received a transfusion of five or more units of red cell concentrate (RCC) (table 1.1.16), the lowest rate in the previous six years. However, this must be interpreted with caution because of the small numbers.

Table 1.1.15 Manual removal of retained placenta (MROP) and 1° PPH

	2015	2016	2017	2018	2019	2020	2021	n
MROP (%)	1.3	1.2	1.0	1.1	1.3	1.2	1.1	84
MROP and 1° PPH (%)	53.7	67.4	62.3	70.0	65.0	70.9	71.4	60

Table 1.1.16 Maternal transfusion

	2015	2016	2017	2018	2019	2020	2021	n
Mothers who received a transfusion (%)	1.9	2.4	2.8	3.0	2.1	2.8	2.3	173
Mothers who received ≥ 5 units of RCC (%)	0.05	0.06	0.1	0.1	0.1	0.2	0.03	2

Between 2015 and 2021, the total CS rate in women with a singleton breech presentation ranged from 92.5% and 95.1% (table 1.1.17). The total CS rate in women with a twin pregnancy increased from 59.6% in 2015 to a peak of 72.2% in 2019 (table 1.1.18). It was 65.8% in 2021.

Table 1.1.17 Caesarean section - singleton breech presentation

	2015	2016	2017	2018	2019	2020	2021
Nulliparous (n)	144	180	166	185	184	159	188
CS rate (%)	97.9	93.9	94.6	97.3	94.0	97.5	94.7
Parous (n)	174	167	157	160	175	160	177
CS rate (%)	91.9	91.0	93.0	92.5	92.6	92.5	93.8
Total (n)	318	347	323	345	359	319	365
CS rate (%)	94.6	92.5	93.8	95.1	93.3	95.0	94.2

Table 1.1.18 Caesarean section - twin pregnancies

	2015	2016	2017	2018	2019	2020	2021
Nulliparous (n)	76	87	81	86	85	71	41
CS rate (%)	68.4	69.0	67.9	75.6	84.7	74.6	87.8
Parous (n)	102	90	103	87	88	89	76
CS rate (%)	52.9	62.2	58.2	55.2	60.2	56.2	53.9
Total (n)	178	177	184	173	173	160	117
CS rate (%)	59.6	65.5	62.5	65.3	72.2	64.4	65.8

Analysis of the Robson Ten Group Classification, 2018 to 2021 is presented in the Delivery Suite subsection of this Annual Report and in Appendix One.

Table 1.1.19 Caesarean section - Robson Ten Group Classification

	Groups	CS (n)	Women (n)	Size of group (%)	CS rate (%)
1	Nulliparous, singleton, cephalic, ≥ 37 wks, spont., labour	88	895	11.8	9.8
2	Nulliparous, singleton, cephalic, ≥ 37 wks, induced labour or CS before labour	683	1,705	22.5	40.1
2a	Nulliparous, singleton, cephalic, ≥ 37 wks, induced labour	473	1,494	19.7	31.7
2b	Nulliparous, singleton, cephalic, ≥ 37 wks, CS before labour	211	211	2.8	100.0
3	Parous (excl. prev. CS) singleton, cephalic, ≥ 37 wks, spont. labour	30	1,327	17.5	2.3
4	Parous (excl. prev. CS) singleton, cephalic, ≥ 37 wks, induced labour or CS before labour	221	1,576	20.8	14.0
4a	Parous (excl. prev. CS), singleton, cephalic, ≥ 37 wks, induced labour	64	1,419	18.7	4.5
4b	Parous (excl. prev. CS), singleton, cephalic, ≥ 37 wks, CS before labour	157	157	2.1	100.0
5	Previous CS, singleton, cephalic, ≥ 37 wks	1,066	1,237	16.3	86.2
6	Nulliparous, singleton, breech	178	188	2.5	94.7
7	Parous, singleton, breech (incl. prev. CS)	166	177	2.3	93.8
8	All multiple pregnancies (incl. prev. CS)	80	120	1.6	66.7
9	Abnormal lies, singleton (incl. prev. CS)	7	7	0.1	100.0
10	Singleton, cephalic, < 37 wks (incl. prev. CS)	178	362	4.8	49.2
	Total	n = 2,697	n = 7,594	100.0%	

The proportion of women with one previous CS who underwent an elective CS increased from 69.8% in 2020 to 74.9% in 2021 (table 1.1.20). The total rate of vaginal birth after Caesarean section (VBAC) decreased from 57.3% in 2020 to 55.7% in 2021. The rate of VBAC after one previous CS (all women with one previous CS as the denominator) decreased from 27.7% in 2015 to 17.6% in 2021 (table 1.1.21).

Table 1.1.20 Mode of delivery with one previous lower segment Caesarean section

	Elective CS	VBAC attempted	VBAC achieved	Emergency CS
2020				
Para 1, n (%)	565 (69.8)	245 (30.2)	121 (49.4)	124 (50.6)
Para 1+, n (%)	80 (37.4)	134 (62.6)	96 (71.6)	38 (28.4)
Total, n (%)	645 (63.0)	379 (37.0)	217 (57.3)	162 (42.7)
2021				
Para 1, n (%)	637 (74.9)	214 (25.1)	101 (47.2)	113 (52.8)
Para 1+, n (%)	102 (44.5)	127 (55.5)	89 (70.1)	38 (29.9)
Total, n (%)	739 (68.4)	341 (31.6)	190 (55.7)	151 (44.3)

Table 1.1.21 Vaginal birth with one previous lower segment Caesarean section

	2015	2016	2017	2018	2019	2020	2021	n
Para 1 (%)	19.8	19.7	14.9	15.4	11.8	14.9	11.9	101
Para 1+ (%)	51.5	49.0	51.9	46.7	46.8	44.9	38.9	89
Total (%)	27.7	27.6	25.0	22.7	19.3	21.2	17.6	190

Data on neonatal outcomes are presented in table 1.1.22. The rate of admission of babies greater than or equal to 38 weeks' gestation to SCBU/NICU decreased from a peak of 6.7% in 2016 to 4.2% in 2021. The rates of the other three neonatal outcomes remained stable (table 1.1.22).

Table 1.1.22 Neonatal outcomes

	2015	2016	2017	2018	2019	2020	2021	n
Apgar score < 7 at 5 mins (%)	0.8	0.8	0.9	0.7	0.9	0.8	0.8	63
Arterial cord pH < 7 (%)	0.4	0.5	0.5	0.4	0.4	0.5	0.6	43
Admission to SCBU/NICU ≥ 38 weeks (%)	5.0	6.7	5.1	4.9	4.4	4.8	4.2	327
Born before arrival (%)	0.3	0.3	0.4	0.3	0.4	0.4	0.4	29

Table 1.1.23 Obstetric surgical procedures in theatre

Type of surgical procedure (n)	2015	2016	2017	2018	2019	2020	2021
Lower segment CS (including tubal ligation)	2,400	2,571	2,534	2,746	2,611	2,423	2,692
Classical CS (including tubal ligation)	6	5	6	8	7	9	5
Peripartum hysterectomy	2	5	3	6	5	3	2
Evacuation of retained products of conception (ERPC)	596	544	538	509	510	482	431
ERPC postpartum	23	19	14	26	22	24	16
Laparotomy for ectopic pregnancy	5	2	1	1	1	2	0
Laparoscopy for ectopic pregnancy	78	57	62	44	62	53	66
Cervical cerclage	60	36	41	59	65	52	65
Postpartum perineal repair	215	211	166	165	133	187	146
Manual removal of retained placenta	90	90	68	64	77	74	70
Instrumental vaginal birth	83	91	80	69	73	51	56
Other	32	33	33	22	48	48	66
Total (n)	3,590	3,364	3,546	3,748	3,614	3,358	3,615

Addiction and Infectious Diseases

ORLA CUNNINGHAM AND DEIRDRE CARMODY

ADDICTION SERVICE

In 2021, thirty-eight women linked with the drug liaison midwife (DLM) and attended Team A, Professor O'Connell. This included six women who were still pregnant year ending 31st December, and two women who attended Team A, Professor O'Connell but gave birth in another maternity hospital and one woman who had a mid-trimester loss. Thirty women attended with a history of opiate use disorder (OUD). Twenty-five women were already linked to an opioid substitution treatment (OST) programme and prescribed methadone. Four women started an OST outpatient programme in early pregnancy and one woman who was unbooked commenced OST postnatally.

Forty women were referred to the DLM with a self-reported history of use of non-opiates including cocaine, alcohol, benzodiazepine abuse and cannabis in pregnancy. Of these, 19 women declined follow up with the DLM with 11 reporting they had a history of drug use and had stopped. Eight women chose to attend Team A, Professor O'Connell for their antenatal care and a further five women continued to link in with the DLM throughout their pregnancy whilst attending another obstetric team.

In 2021, twenty-two women with OUD gave birth to 23 liveborn infants. Four of these 22 women gave birth to preterm babies including one set of twins. Eighteen babies (78%) were admitted to NICU/HDU/SCBU with a mean length of stay of 21 days (range 1 to 91 days). Of these, five babies (20%) required pharmacological treatment for Neonatal Abstinence Syndrome (NAS). The mean length of stay for the five babies who received pharmacological treatment for NAS was 26 days (range 10 to 36 days). In the non-OUD cohort, 12 women who continued to link with the DLM gave birth to 12 liveborn babies. Six of these babies were admitted to NICU/HDU/SCBU, with a mean length of stay of 3.5 days (range 1 to 13 days).

Heroin continued to be the primary drug of choice for women with OUD, often accompanied by benzodiazepine use. Cannabis was the most commonly reported drug used in non-OUD women, however, the number of women using cocaine has increased. In 2021, 57% of those with

addiction were referred to the Perinatal Mental Health Service. Homelessness continued to be a problem. A third of women who attended the Addiction Service were linked with homeless services.

INFECTIOUS DISEASES (HEPATITIS B AND C, HIV, GENITAL HSV AND TREPONEMA PALLIDUM)

In 2021, over 200 women attended the Infectious Diseases Service, the majority of whom were provided with full antenatal care and postnatal follow up. In addition, a number of antenatal and gynaecology patients attended for consultation and follow up regarding positive sexually transmitted infection (STI) screening.

Thirteen women who booked for antenatal care tested positive for current hepatitis B infection with a similar number attending the service with a positive hepatitis B core antibody status. Of those HBsAg positive, six were born in Africa, four in Eastern Europe, two in Asia and one in Ireland.

Sixteen antenatal women tested positive for hepatitis C, with one new polymerase chain reaction (PCR) positive diagnosis and one testing PCR positive having previously had resolved infection. Six of the 16 women were PCR positive and the remainder, the majority of whom had been successfully treated, were PCR negative. Five of those who were PCR positive were Irish and currently linked with addiction and hepatology services. Ten women were born in Ireland, three in Pakistan and three in Eastern Europe.

Fourteen antenatal women tested positive for HIV (human immunodeficiency virus), with no new diagnosis. Ten women originated from Africa and four originated from Ireland. Two women were co-infected with previously treated syphilis and four had resolved hepatitis B infection. One woman gave birth to twins. All fifteen babies tested negative on follow up.

Ninety-three antenatal women with a current or past history of genital herpes simplex virus (HSV) were cared for. Thirty-eight women had a positive PCR test or were antibody positive for HSV-1. Thirty-four women had a positive PCR test or were antibody positive for HSV-2. Samples from twenty-one women could not have type specific testing performed.

Twelve women were confirmed positive for treponema pallidum (syphilis). Three of these women required treatment in pregnancy as they were new diagnoses.

The remaining women had been appropriately treated in the past. Ninety-two women required follow up and or repeat testing due to indeterminate serology which was attributed to cross-reactivity in pregnancy.

No mother to child transmission of an infectious disease occurred in 2021.

The diagnosis and management of a woman with an infectious disease in pregnancy challenges the healthcare provider with a myriad of complexities in the provision of antenatal and follow up care. The clinic is specifically designed to ensure individualised education and care-planning, specialised counselling as well as disclosure and support services. Women are provided with a specific pathway into specialist on-going care, ensuring treatment and monitoring thereby often preventing disease progression, mother to child transmission and significantly reduce future healthcare costs in this high-risk patient cohort.

A shared care approach is taken for a number of our high-risk women. Under the managed clinical care network, they can attend the Midland Regional Hospital Portlaoise (MRHP) and GP services for part of their care. Women also attend for shared care with maternity services in the Midland Regional Hospital Mullingar and Wexford General Hospital. Specialist services were also provided for additional women with high-risk pregnancies e.g. loss in pregnancy, serodiscordant couples, current STI and malaria. Couples continued to be seen in our conception clinic, which provides fertility investigations for both seropositive and serodiscordant couples attempting to optimise conception, while safeguarding the risk of transmission of HIV.

Adult Outpatients Department

MARY MCDONALD

The Adult Outpatients Department facilitates public and semi-private antenatal clinics and public gynaecology clinics. It houses the Emergency Room (ER) which cares for pregnant women up to 24 weeks' gestation and those with postnatal and gynaecology complications. The Early Pregnancy Assessment Unit (EPAU) is also located in the adult OPD. The consequences of the ongoing COVID-19

pandemic and the repercussions of the HSE and the CWIUH cyberattacks placed a huge burden on the services and the staff of the adult OPD during 2021. Despite all these difficulties full antenatal and ER services were maintained throughout the year. This is testament to the dedication and resilience of all the staff in the adult OPD. Table 1.3.1 shows the types of clinic appointments and clinic attendances in 2021.

Table 1.3.1 Attendances at clinics in the adult OPD (excluding gynaecology clinics)*

Type of appointment	Attendances (n)
Antenatal booking history appointments (public and semi-private)	5,806
Consultant led antenatal appointments (public and semi-private)	29,779
Specialist consultant led antenatal appointments (including Addiction and Infectious Disease Clinic, Fetal Cardiac Clinic, Multiple Birth Clinic and Preterm Birth Prevention Clinic)	2,890
Hospital based midwife appointments (midwives' antenatal clinics and Anti-D Prophylaxis Clinic as per TRAADP)	4,720
Emergency room (ER)	9,127
Total (n)	52,322

The decrease in adult OPD attendance figures seen in 2020 as a result of the initial phases of the COVID-19 pandemic was reversed in 2021. Attendance figures for all antenatal and ER services increased significantly almost reaching pre-pandemic numbers.

The targeted routine antenatal anti-D prophylaxis programme (TRAADP) commenced in 2021 following the appointment of a dedicated midwife manager (0.5WTE) in April. This service was implemented in order to limit the prophylactic antenatal administration of anti-D to Rhesus negative women with a rhesus negative fetus.



Community Midwife Service

KATE JOHNSON

In 2021, the Community Midwife Service facilitated community antenatal booking and follow up clinics, the Early Transfer Home (ETH) Service and the DOMINO Service. In 2021, the Community Midwife Service continued to provide all antenatal and postnatal services, working within the COVID-19 guidelines throughout the pandemic.

The Combined Midwifery and Obstetric Clinic in Naas was transferred from Naas General Hospital to the CWIUH due to the COVID-19 pandemic. Kildare midwifery clinics were initially provided in the Citywest Convention Centre and then relocated to Newbridge Health Centre.

The activity of the service consisted of:

- › 15 antenatal clinics per week
- › 1,797 women booked in community-based midwife led antenatal clinics
- › 3,764 follow up antenatal appointments in community-based midwifery led clinics
- › 1,960 women availed of the ETH Service
- › 4,331 postnatal visits in total
- › 32% of ETH women were breastfeeding exclusively on day five
- › 50% of ETH women were artificially feeding on day five
- › 18% of ETH women were breastfeeding non-exclusively on day five.

In 2021, 296 women booked for DOMINO care in the CWIUH. This was a reduction on previous years, largely due to COVID-19 guidelines. The community midwives provided 24-hour cover, seven days a week to run the DOMINO Service. The spontaneous vaginal birth rate, the instrumental birth rate and the CS rate for this cohort of women remained stable in line with previous years at 69%, 15% and 15% respectively. The total CS rate for women availing of DOMINO care was 15%. The CS rate for women in Robson Group 1 was 8.0% versus 9.8% overall.

Two community midwives completed the Prescribers course and one midwife completed the Examination of the Newborn course in 2021, which offers further efficiencies to the service. We continue to promote, advertise and expand our community-based services and improve awareness and uptake of the DOMINO Service.

Delivery Suite

ELIZABETH JOHNSON

In 2021, 7,594 women gave birth to 7,716 babies. The spontaneous vaginal birth (SVB) rate was 52.5% in 2021, compared to 56.2% in 2015 and 53.6% in 2020 (table 1.1.7). The SVB rate in nulliparous women was 39.3% in 2021, compared to 40.8% in 2015 and 40.0% in 2020. The total instrumental birth rate in 2021 was 12.0%, compared with 13.7% in 2020. The forceps rate was 3.5% in 2020 and 2021. The induction of labour rate was 40.8% in 2021, compared with 31.7% in 2015 and 38.9% in 2020 (table 1.1.5).

The rate of obstetric anal sphincter injuries (OASIS) in vaginal births was 2.22% in 2021, compared with 1.84% in 2020 and 1.85% in 2019 (table 1.1.11). However, despite the rise in 2021 the rate has been maintained less than the rate of 2.6% in 2018 which reflects on the work of the OASIS Quality Improvement Project team since then.

In 2021, the CS rate was 35.5%, compared with 32.8% in 2020 (table 1.1.7). The Robson Group 1 CS rate remained stable in 2021 at 9.8% maintaining the reduction seen in 2019 and 2020 from 12% in 2018 (appendix one). The rate of elective CS in Robson Group 5 was 68.4% in 2021 (table 1.1.20). It was 74.9% in women with one previous delivery and 44.5% in women with two or more previous deliveries (table 1.1.20). Overall, VBAC was achieved in 55.7% of women who attempted a VBAC in 2021 compared with 57.3% in 2020 (table 1.1.20). It was achieved in 47.2% of women with one previous delivery and in 70.1% of women with two or more previous deliveries (table 1.1.20).

The effects of COVID-19 remained prevalent throughout 2021. The establishment in 2020 of red and green zones allowed women who had or were suspected of having COVID-19 to be cared for in negative pressure rooms. During this period one room underwent remodelling to establish a specific isolation suite. In total, 141 women were cared for in the 'red zone' in 2021.

Early Pregnancy Assessment Unit

DR AMALIYA MORGAN BROWN

There were a total of 4,383 attendances at the Early Pregnancy Assessment Unit (EPAU) in 2021. Over half (56.1%) of these were new attendances (2,460). Attendances included women who had more than one visit to the EPAU. A total of 3,739 women were seen in the EPAU. Diagnoses made in these women are presented in Table 1.6.1.

Table 1.6.1 Diagnoses made in women who attended the EPAU

Diagnosis	n (%)
Ongoing pregnancy	1,037 (27.7)
Pregnancy of uncertain viability	492 (13.1)
Miscarriages	1,480 (39.6)
Pregnancy of unknown location	407 (10.9)
Ectopic pregnancy*	98 (2.6)
Gestational trophoblastic disease†	20 (0.6)
Gynaecology	205 (5.5)
Total	3,739 (100.0)

* excludes women who were admitted directly to theatre from the Emergency Room or women who were diagnosed outside of normal working hours

† includes women who attended because of suspected gestational trophoblastic disease (awaiting silver-enhanced in situ hybridisation)

In 2021, 616 women had a diagnosis of a delayed or incomplete miscarriage. The management of these women (excluding women with a diagnosis of complete miscarriage) is presented in Table 1.6.2. Ninety-eight women with a diagnosis of ectopic pregnancy attended EPAU. The management of these women is presented in Table 1.6.3.

Table 1.6.2. Management of women with delayed or incomplete miscarriage

Type of management	n (%)
Medical	225 (36.6)
Surgical	185 (30.0)
Conservative	206 (33.4)
Total	616 (100.0)

The use of mifepristone in the medical management of women with delayed or incomplete miscarriage was introduced in 2020. In 2021, an audit was undertaken of this change to our medical management of miscarriage protocol. This audit showed that the success rate for primary medical management with misoprostol only was 69.3% compared with a success rate of 89.0% with the combination of mifepristone and misoprostol. The introduction of a home pregnancy test two weeks post medical management reduced the workload of the EPAU and the number of transvaginal ultrasound scans women needed.

Table 1.6.3. Management of women with ectopic pregnancy

Type of management	n (%)
Laparoscopic	22 (22.5)
Medical	16 (16.3)
Conservative	60 (61.2)
Total	98 (100.0)

The unit provided training for NCHDs in transvaginal early pregnancy ultrasound and facilitated training for two midwives completing the UCD EPAU Module and one midwife completing a Masters in Ultrasound. The unit also provided weekly teaching to medical students.

Endocrine Clinic

**AILBHE MCCARTHY, DR NEIL O’GORMAN
AND PROFESSOR BRENDAN KINSLEY**

COMBINED SERVICE FOR DIABETES MELLITUS

In 2021, 12.7% of the antenatal population of the CWIUH attended the Diabetes Service.

The number of women with pre-existing diabetes mellitus (DM) increased from 2020, most notably the number of women with type 1 DM. In 2021, 35 women with type 1 DM booked at the CWIUH, 30 of whom delivered in the CWIUH (table 1.7.1) compared with 25 women and 18 women respectively in 2020. Twenty-two women with type 2 DM booked at the CWIUH, 20 of whom delivered in the CWIUH (table 1.7.1). One woman with type 2 DM gave birth to twins.

Table 1.7.1 presents obstetric, maternal and neonatal outcomes for women with pre-existing DM. Macrosomia was suspected antenatally in 13 women with type 1 DM

and in two women with type 2 DM. Sixty percent of women with type 1 DM and 40% of women with type 2 DM were delivered less than 37 weeks’ gestation. The CS rate in women with type 1 DM was 56.7% (elective CS rate 26.7%). It was 50.0% in women with type 2 DM (elective CS rate 10%). Four women with type 1 DM gave birth to babies weighing greater than or equal to 4.5 kg. All of the women with type 2 DM gave birth to babies (n = 21) weighing less than 4.0kg.

There were no congenital anomalies or intrauterine deaths in women with pre-existing DM. The birth of three babies was complicated by shoulder dystocia. Two of these mothers had type 1 DM (table 1.7.1). Babies of seven mothers with type 1 DM and babies of six mothers with type 2 DM were admitted to NICU or SCBU (table 1.7.1).

Table 1.7.1 Pre-existing diabetes mellitus – demographic and obstetric data

Type of diabetes mellitus	Type 1	Type 2
Obstetric data	n = 35	n = 22
Women booked	35	22
Spontaneous miscarriages	2	0
Women delivered elsewhere	3	2
Women delivered in CWIUH	30	20
Babies born in CWIUH	30	21
Twins	0	1
Maternal data	n = 35	n = 22
Age (years) (mean, sd)	31.6 ± 5.3	34.2 ± 4.1
Duration of DM (years) (mean, sd)	14.8 ± 9.2	4.4 ± 3.1
Complications of diabetes mellitus	n = 35	n = 22
Hypertension	4	7
Retinopathy	5	0
Nephropathy	0	0
Pre-eclampsia	2	4
Polycystic ovarian syndrome	3	3
Gestation at booking (weeks) (mean, sd)	7.2 ± 3.6	9.6 ± 4.4
Booking HbA1c (IFCC) (mean, sd)	53 ± 10	53 ± 25
Delivery HbA1c (IFCC) (mean, sd)	48 ± 10	41 ± 7
Booking fructosamine (mean, sd)	345 ± 37	293 ± 89
Antenatal course	n = 30	n = 20
Macrosomia suspected antenatally	13 (43.3%)	2 (10.0%)
Delivery fructosamine (mean, sd)	301 ± 25	366 ± 47
Intrauterine fetal death	0	0
Delivered < 37 weeks' gestation	18 (60.0%)	9 (45.0%)
Mode of delivery (women)	n = 30	n = 20
Spontaneous vaginal birth	9 (30.0%)	9 (45.0%)
Instrumental delivery	4 (13.3%)	1 (5.0%)
Elective Caesarean section	8 (26.7%)	2 (10.0%)
Emergency Caesarean section	9 (30.0%)	8 (40.0%)
Infant outcomes	n = 30	n = 21
Gestation at delivery (weeks) (mean, sd)	36.9 ± 2.8	37.6 ± 1.8
Birth weight (grams) (mean, sd)	3,489 ± 1,035	3,032 ± 554
< 4,000 grams	23 (76.7%)	21 (100.0%)
4,000 - 4,499 grams	3	0
4,500 - 4,999 grams	2	0
≥ 5,000 grams	2	0
Shoulder dystocia	2	1
Congenital anomalies	0	0
NICU or SCBU admission	7 (23.3%)	6 (28.6%)

The number of women with gestational diabetes mellitus (GDM) who attended the Diabetes Service and gave birth in the CWIUH also significantly increased in 2021 (table 1.7.2) This has been attributed to a decrease in the number of glucose tolerance tests carried out in 2020 during the height of the COVID-19 pandemic and the national lockdown. In 2021, the numbers of women managed with metformin alone and insulin alone increased compared with 2020 (table 1.7.2). In 2021, 46.9% were treated by diet alone compared with 56.4% in 2020 (table 1.7.2).

Table 1.7.2. GDM - treatment type

GDM - treatment type	Women 2020	Women 2021
Diet alone (n)	364 (56.4%)	418 (46.9%)
Metformin alone (n)	234 (19.0%)	265 (29.7%)
Insulin alone (n)	88 (13.6%)	131 (14.7%)
Metformin and insulin (n)	71 (11.0%)	77 (8.6%)
Total (n)	757 (100.0%)	891 (100.0%)

Fifteen women had twin pregnancies (table 1.7.3). Table 1.7.3 presents obstetric and neonatal outcomes by treatment type. One woman treated with diet alone had an intrauterine fetal death.

Table 1.7.3. GDM - demographic and obstetric data

Treatment with diet alone	2020	2021
Women (n)	364	418
Twin pregnancies (n)	7	6
Babies (n)	371	424
Gestation at delivery (weeks) (mean, sd)	38.7 ± 1.53	38.6 ± 1.5
Birth weight (grams) (mean, sd)	3,343 ± 544	3,339 ± 542
Suspected macrosomia (n)	21	22
Caesarean section (n)	112 (30.8%)	180 (43.1%)
Shoulder dystocia (n)	5	1
Intrauterine fetal death (n)	1	1
Treatment with metformin alone		
Women (n)	123	265
Twin pregnancies (n)	4	6
Babies (n)	127	271
Gestation at delivery (weeks) (mean, sd)	36.5 ± 1	38.6 ± 0.9
Birth weight (grams) (mean, sd)	3,248 ± 469	3,363 ± 454
Macrosomia suspected antenatally (n)	9	17
Suspected intrauterine growth restriction (n)	13	7
Caesarean section (n)	24 (19.5%)	113 (42.6%)
Shoulder dystocia (n)	1	1
Treatment with insulin alone		
Women (n)	88	131
Twin pregnancies (n)	2	2
Babies (n)	90	133
Gestation at delivery (weeks) (mean, sd)	38.3 ± 0.9	38.3 ± 5.1
Birth weight (grams) (mean, sd)	3,292 ± 499	3,213 ± 668
Suspected macrosomia (n)	2	4
Caesarean section (n)	13 (14.8%)	12 (9.2%)
Treated with metformin and insulin		
Women (n)	71	77
Twin pregnancies (n)	1	1
Babies (n)	72	78
Gestation at delivery (weeks) (mean, sd)	38.5 ± 1.3	38.5 ± 0.9
Birth weight (grams) (mean, sd)	3,161 ± 862	3,375 ± 490
Macrosomia suspected antenatally (n)	2	4
Caesarean section (n)	13 (18.3%)	34 (44.2%)

The birth weights of babies born to women with GDM in 2021 were similar to those in 2020 (table 1.7.3). In both 2020 and 2021, the delivery of one woman treated with diet alone was complicated by shoulder dystocia. The total CS rate increased from 25.1% (162/646) in 2020 to 38.1% (339/891) in 2021.

ENDOCRINE SERVICE

Under the remit of the endocrinology team, the management of women with thyroid disease in pregnancy is incorporated into the Diabetes Clinic. The average number of patients with thyroid dysfunction is nine per week (primarily hypothyroidism). During the pandemic, remote management of women with hypothyroidism was introduced. This, in conjunction with the Thyroid Management Care Pathway, led to a streamlined process for the management of these patients and reduced the number of inappropriate referrals to the MDT Clinic.

Care was also provided to women with hyperthyroidism, hyperparathyroidism and prolactinomas. The MDT also provided care for a woman with an insulinoma. All women who attend the clinic require the input of the MDT with care planning of both their obstetric and medical care.

Fetal Cardiology National (All-Ireland) Service

DR CAOIMHE LYNCH

The Fetal Cardiology National (All-Ireland) Service was provided by Dr Caoimhe Lynch, Consultant Obstetrician and Fetal Medicine Specialist, Dr Orla Franklin, Consultant Fetal and Paediatric Cardiologist and Felicity Doddy, CMM2 Prenatal Diagnosis Coordinator.

The service continued to provide rapid access, expert opinion to women whose pregnancy was complicated by congenital heart disease. In total, 159 women attended the clinic. Structural cardiac anomalies were detected in 85 cases and an abnormality of cardiac rhythm detected in a further eight pregnancies (table 1.8.1). Twenty-three structural cardiac abnormalities were associated with a chromosomal anomaly that was confirmed antenatally. As in previous years the service continued to attract referrals from 13 sites across Ireland with further expansions of the cross-border referral group from Northern Ireland. Thirty-six cardiac anomalies were detected in babies of women who were originally booked to deliver outside the CWIUH. The team co-ordinated combined antenatal care with their local hospital with planned delivery at the CWIUH. Site of delivery was dictated by the likely need for urgent cardiac surgical or catheter intervention in the immediate postnatal period.

Table 1.8.1. Congenital heart disease

Type of structural cardiac anomaly	n = 85
Hypoplastic left heart disease	6
Hypoplastic right heart disease	5
Complete atrioventricular septal defect	8
Ventricular septal defect	24
Tetralogy of Fallot	11
Double outlet right ventricle	3
Transposition of the great arteries +/- VSD	12
Coarctation of the aorta/arch hypoplasia/interrupted aortic arch	4
Shone complex	1
Tricuspid stenosis and/or pulmonary stenosis	6
Mitral stenosis and/or aortic stenosis	1
Ebstein anomaly	1
Rhabdomyomata	1
Left atrial isomerism	1
Double inlet left ventricle	1
Type of arrhythmia	n = 8
Supraventricular tachycardia (including atrial flutter)	1
Congenital complete heart block	3
Premature atrial contractions	4

The Fetal Cardiology Clinic is a diagnostic clinic that serves to define a diagnosis of congenital heart disease that has typically originally been made in one of our many referring units. As such we would like to acknowledge the contribution of the fetal medicine specialists and obstetric sonographers from all over Ireland who contribute to the ongoing success of this department.

Fetal Medicine and Perinatal Ultrasound

DR CAOIMHE LYNCH

A total of 28,035 ultrasound examinations were performed in 2021 (table 1.9.1).

Table 1.9.1 Indicators for ultrasound scans

Type of ultrasound scan	n
First trimester and dating scans	5,012
Structural survey at 20 - 22 weeks' gestation	7,584
Fetal wellbeing assessments (third trimester and follow up scans)	Growth, amniotic fluid volume and Dopplers (n = 9,242) Cervical length measurement (n = 356) Placental site (n = 727) Single umbilical artery (n = 12) Pyelectasis (n = 40)
Growth, amniotic fluid volume, Dopplers, cervical lengths, placental site, single umbilical artery and pyelectasis	11,799
Subtotal (sonographer scans)	24,395
Fetal medicine	n
Non-invasive prenatal testing (NIPT)	817
Fetal medicine consultant scans	2,135
Fetal Echo	
Screening Echo Service	333
Fetal Cardiac Service	233
Invasive procedures	122
Total	28,035

Table 1.9.2 Invasive procedures

Type of invasive procedure	n
CVS	51
Amniocentesis	69
Amniodrainage	2
Total	122

Table 1.9.3 Chromosomal anomalies detected

Type of chromosomal anomaly	n
Trisomy 21	21
Trisomy 18	13
Trisomy 13	7
Triploidy	2
Other	6
Total	49

Table 1.9.4 Diagnosis of chromosomal anomalies

Chromosomal anomaly	Indication for invasive testing
Trisomy 21 (n = 21)	Cystic hygroma (n = 3) Increased nuchal fold (n = 6) Cardiac anomalies (n = 3) High-risk NIPT (n = 9)
Trisomy 18 (n = 13)	High-risk NIPT (n = 4) Cystic hygroma (n = 6) Multiple structural anomalies (n = 3)
Trisomy 13 (n = 7)	Cystic hygroma (n = 1) Increased nuchal fold (n = 2) High-risk NIPT (n = 3) Multiple structural anomalies (n = 1)

Table 1.9.5 Structural fetal anomalies detected antenatally

Category of fetal anomaly (n)	Type of fetal anomaly (n)
Neural tube defects (n = 10)	Spina bifida (n = 3) Anencephaly (n = 4) Encephalocele (n = 3)
Cystic hygroma (n = 23)	
Facial (n = 5)	Facial clefts (n = 4) Facial tumour (n = 1)
Cardiac (n = 93)	Structural cardiac abnormalities (n = 85) Cardiac arrhythmia (n = 8)
Thorax (n = 8)	Diaphragmatic hernia (n = 6) Cystic lung lesions (n = 2)
Abdominal wall defects (n = 10)	Gastroschisis (n = 4) Exomphalos (n = 5) Retroperitoneal cyst (n = 1)
Renal (n = 41)	Renal agenesis (n = 1)
Skeletal (n = 7)	Skeletal dysplasia (n = 1) Isolated talipes (n = 6)
Neurological (n = 28)	
Total	267

The Ultrasound and Fetal Medicine Service at the CWIUH provided a comprehensive service in the specialist areas of fetal abnormalities, invasive and non-invasive testing, multiple pregnancies, haemolytic disease of fetus and screening for preterm birth.

All women are offered a routine booking and fetal anatomy scan ultrasound assessment. All ultrasound services were maintained throughout 2021 during the COVID-19 pandemic. A dedicated ultrasound room in the COVID-19 assessment unit was set up and staffed by our department to provide fetal assessment when a woman had an acute COVID-19 infection. Subsequently, more third trimester follow up growth scans were required post COVID-19 infection.

The service was severely challenged during both cyberattacks in 2021 and the full service was maintained with the support of all the team. Five Voluson E8 machines were installed from the National HSE Equipment fund.

A high-risk CMS sonographer list was commenced to ensure high-risk cases were cared for with continuity and expertise at this level, liaising closely with the FMS consultants.

One midwife completed an Ultrasound Masters with a further two trainee midwives commencing training during 2021 and one staff midwife commenced a Graduate Certificate in Ultrasound. Staff availed of the multiple webinars provided by The Fetal Medicine Foundation.

Our prenatal diagnosis co-ordinators (Ms Felicity Duddy and Ms Leanne Curtis), continued to provide ongoing support to patients following a diagnosis of a fetal anomaly. As a tertiary referral centre, they also provided support and co-ordinated shared care with maternity units outside Dublin for women whose baby required planned delivery in Dublin in order to facilitate urgent transfer to a paediatric surgical centre or specialised neonatal care. We have a multidisciplinary network neonatology, paediatric subspecialties in CHI, clinical genetics, radiology, medical social work and bereavement support to provide comprehensive care to women and their families following a prenatal diagnosis of a fetal anomaly. Sadly, 31 families received a diagnosis of a fatal fetal anomaly/life limiting condition in 2021 of whom 24 chose termination of pregnancy and seven continued their pregnancy.

Finally, I would like to acknowledge the contribution Professor Sean Daly has made to the development of the ultrasound and fetal medicine services at the CWIUH since his first appointment as Master in 1999. The services provided by the Ultrasound and Fetal Medicine Department have been greatly enhanced over the past 20 years. In 2021, he left the CWIUH and we wish him every success in his new role.

Haemolytic Disease of Fetus and Newborn

DR CARMEN REGAN

This service is provided by Dr Carmen Regan, Consultant in Maternal Fetal Medicine and Ms Catherine Manning, Advanced Midwife Practitioner, Maternal Medicine.

The management of women with red cell antibodies (RCA) which may cause haemolytic disease of the fetus or newborn, involves paternal genotyping and fetal DNA typing, when indicated. At-risk pregnancies are followed with antibody levels, and, when appropriate with ultrasound surveillance using middle cerebral artery (MCA) Doppler measurements.

An isoimmunisation guideline facilitates the management of women with RCA by their team clinicians. Using the guideline algorithm women are referred to the Rhesus Clinic if the threshold antibody levels for ultrasound surveillance is reached. Women with previously affected pregnancies and those with high-risk antibodies are managed in the Rhesus Clinic. At-risk pregnancies are followed using antibody levels and ultrasound surveillance using MCA peak systolic flow velocities to detect fetal anaemia.

Forty-nine pregnant women were referred to the Rhesus Clinic in 2021 (table 1.10.1). Of these, 34 were diagnosed with red cell antibodies for the first time. Three women had multiple RCA. Eighteen neonates were Direct Coombs Test (DCT) positive at birth (table 1.10.1). Nine neonates required admission to the special care baby unit for phototherapy (table 1.10.2). One intrauterine death occurred in a fetus awaiting intrauterine transfusion. The post mortem was consistent with a cord accident which was considered to be unrelated to isoimmunisation.

Table 1.10.1 Red cell antibodies

Red cell antibody	n	DCT positive	DCT negative
Anti D	5	4	1
Anti c	4	3	1
Anti K	2	1	1
Anti Fya	1	1	0
Anti Jka	3	3	0
Anti Cw	5	1	4
Anti S	4	3	1
Anti E	11	1	10
Anti M	11	0	11
Multiple antibodies	3	1	2
Total (n)	49	18	31

Table 1.10.2 Neonatal outcomes

Neonatal outcomes	n
Affected neonates (DCT positive at birth)	18
SCBU admissions	9
Phototherapy only	9
Intrauterine death	1

Infant Feeding

MARY TOOLE

The CWIUH promotes and supports evidence-based practice in infant feeding in line with the HSE National Infant Feeding Policy for Maternity and Neonatal Services, the HSE Policy on the Marketing of Breast Milk Substitutes and the Breastfeeding Policy for staff working in the Public Health Service. Throughout 2021, the team continued to provide one to one consultation for inpatients and outpatients. Additionally, the team worked in conjunction with NICU lactation colleagues to produce patient information videos on breastfeeding to supplement pre-existing breastfeeding information. The videos were launched during National Breastfeeding week in October 2021 with the support of the CWIUH marketing and

communication team. In addition, the team collaborated with the Centre for Midwifery Education to deliver a breastfeeding education programme using a hybrid online and in-person approach. Following the development of colostrum harvesting information packs in 2020, the team continued to safely distribute colostrum harvesting packs.

Following an increase in the number of babies referred to the team for ankyloglossia, the team continued to review, assess and support babies with ankyloglossia referred to the service in collaboration with the Department of Paediatric and Newborn Medicine. The team followed up with babies after frenotomy and continued to support and promote exclusive breastfeeding.

Table 1.11.1 Infant feeding statistics

Babies	2015	2016	2017	2018	2019	2020	2021
Liveborn and eligible for feeding (n)	8,230	8,244	8,156	8,305	7,799	7,372	7,684
Breastfeeding initiated (%)	61.9%	63.7%	65.6%	66.6%	67.0%	65.5%	63.9%
Breastfeeding exclusively at discharge (%)	38.2%	38.9%	36.8%	37.5%	35.7%	32.0%	29.1%
Breastfeeding non-exclusively at discharge (%)	20.7%	21.8%	23.5%	23.9%	25.8%	33.6%	30.1%

Maternity Inpatient

FIDELMA MCSWEENEY

In 2021, the COVID-19 pandemic continued to present challenges within the Maternity Inpatient Service, from a staffing shortage perspective, and illness associated with COVID-19. St. Joseph's ward continued to be the designated 'red zone' for women that were either COVID-19 positive or deemed close contacts who presented to the CWIUH requiring admission and the provision of multidisciplinary team care.

The COVID-19 Assessment Unit (CAU) continued to be staffed by experienced midwifery staff who provided a day service in collaboration with our medical colleagues. Provision of care continued to be modified in accordance with government policy.

All staff continued to be united, working together, demonstrating outstanding teamwork and going that extra mile for the mothers, babies and families in our care. COVID-19 continued to bring change and innovation to our service provision. A small number of staff who were unable to work in a clinical capacity provided a COVID-19 patient helpline and a dedicated telephone triage system. Both of these services proved to be very effective and informative and were of great help to all.

Patient and staff safety were at the core of every decision made. Collaboration with our fellow midwifery colleagues in community services was never so important, with the reintroduction of the early transfer home (ETH) scheme in May 2021. A welcomed return by all.

Whilst working through these challenging times, managers continued to lead by example and recommence quality initiatives. Such an example was the introduction of a breastfeeding assessment education checklist developed as part of a LEAN quality improvement project initiative, which commenced on Our Lady's Ward in March 2021.

Breastfeeding is of paramount importance to the growth, protection and development of babies. The purpose of this initiative was to ensure that breastfeeding mothers were provided with appropriate and consistent information pre-discharge on identifying and managing symptoms; observation of feeds and awareness of the signs of engorgement and how to manage appropriately if developed at home. In essence, this was an initiative to ensure mothers are informed and that readmissions could be avoided where at all possible. This initiative was welcomed by mothers, staff and our CMS lactation specialists working as a collective, to further enhance mothers and babies breastfeeding journey and transition to parenthood.

Retention and recruitment of staff continued to be a primary concern and necessity for inpatient services and indeed the entire hospital. In line with COVID-19 protocols, interviews recommenced primarily over Zoom. To adequately support staff joining the organisation a pilot of additional clinical skills facilitators (CSF) on a four-month rolling programme was introduced. This pilot was received very well by new starters, staff and managers on the wards alike. Furthermore, in order to future plan for midwifery rotation for all departments, along with shared responsibility of the extensive role, an ADoM/N Rotation Committee was established.

I would like to express my sincere appreciation and gratitude for the care, support, dedication and kindness demonstrated by all midwifery, nursing and HCAs in what can be only be described as a very testing and demanding year for all.

Medical Clinic

DR CARMEN REGAN AND DR BRIDGETTE BYRNE

Identification of risk and specialist care are key to improving obstetric outcomes in pregnant women. Those with pre-existing medical conditions are at increased risk of adverse clinical outcomes and are managed by the Maternal Medicine Service. There are a range of medical disorders with varying levels of complexity which necessitate careful monitoring and planning of delivery. Women with more complex conditions have multidisciplinary input and a detailed plan of care. There were 374 new referrals to the Medical Clinic in 2021 (table 1.13.1).

The clinic is the national referral centre for patients with coagulation or bleeding disorders (through the National Centre for Coagulation (NCC), St James's Hospital) and for patients with sickle cell disease (through the Adult Haemoglobinopathy Service at St James's Hospital).

In 2021, Catherine Manning was successful in becoming an Advanced Midwife Practitioner in Maternal Medicine, the first post of its kind in Ireland. Carmel Healy, CMM2, was a welcome addition to the team. Carmel shares her role with Delivery Suite and her appointment has brought an enhanced transition through labour and delivery/HDU for our more complex patients. Both appointments are significant advances and emphasise the importance of advanced midwifery practice within the Maternal Medicine Service.



Table 1.13.1 New referrals to the Medical Clinic by type of medical condition (n = 374)

Medical condition	n
Thromboprophylaxis	49
History of venous thromboembolism (VTE)	38
Pulmonary embolism (current pregnancy)	5
Other (including family history of VTE, DVT in pregnancy)	6
Thrombosis	17
Antiphospholipid syndrome	12
Thrombophilia	3
Factor V Leiden	2
Clotting factor deficiencies	33
Von Willebrand's disease	9
Severe haemophilia carrier	9
Bleeding disorders of unknown aetiology	5
Partner haemophilia	3
Other (other clotting factor deficiencies)	7
Platelet disorders	29
Immune thrombocytopenia	26
Other	3
Red cell disorders	15
Thalassemia	5
Sickle cell disease	5
Other	5
Hypertensive disease	41
Essential hypertension	41
Cardiac disease	38
Arrhythmias/palpitations	17
Mitral valve prolapse	5
Pulmonary valve stenosis	2
Cardiomyopathy	2
Wolf Parkinson White syndrome	2
Other	10
Renal disorders	15
Respiratory	6
Connective tissue disease	27
Rheumatoid arthritis	9
Systemic lupus erythematosus	5
Behcet's disease	3
Psoriatic arthritis	3
Other	7

Table 1.13.1 New referrals to the Medical Clinic by type of medical condition (n = 374) continued

Cerebrovascular disease/neurological	30
History of cerebrovascular accident	7
Multiple sclerosis	5
Arnold Chiari malformation	3
Benign intracranial hypertension	3
Other	12
Liver and gastrointestinal disease	42
Ulcerative colitis	11
Crohn's disease	17
Other	14
Preconceptional care	23
Oncology	4
Immunological	3
Other	2

Multiple Birth Clinic

PROFESSOR AISLING MARTIN

One hundred and twenty-seven women with multiple pregnancies booked at the CWIUH in 2021. Of these, 123 were twins of which 97 were dichorionic diamniotic (DCDA) and 25 were monochorionic diamniotic (MCDA). There was one set of monochorionic monoamniotic (MCMA) twins. There were four sets of triplets. There was loss of one or both babies in five DCDA twin pregnancies and in one MCDA pregnancy.

One woman with a set of DCDA twins relocated to Letterkenny University Hospital at 29 weeks' gestation and was lost to follow up. These twins have been excluded from the figures. Therefore, 116 sets of twins were born at the CWIUH in 2021. Ninety-one sets were DCDA, 24 sets were MCDA and one set were MCMA twins. Two hundred and thirty of the twin babies weighed ≥ 500 g. Details of the gestational age (GA) at delivery and mode of delivery of twins and triplets are presented in Tables 1.14.1 and 1.14.2, respectively. Rates of CS in twin pregnancies from 2018 to 2021 are presented in Appendix One.

Table 1.14.1 Gestational age at delivery of twin and triplet pregnancies

GA at delivery (weeks)	All twins n = 116	DCDA n = 91	MCDA n = 24	MCMA n = 1	Triplets n = 4
≥ 37	29 (25.0%)	27 (29.7%)	2 (8.3%)	0	0
34 - 36+6 days	66 (56.9%)	50 (54.9%)	16 (66.7%)	0	0
32 - 33+6 days	6 (5.2%)	5 (5.5%)	0	1 (100.0%)	3 (75.0%)
28 - 31+6 days	10 (8.6%)	6 (6.6%)	4 (16.7%)	0	1 (25.0%)
23 - 27+6 days	5 (4.3%)	3 (3.3%)	2 (8.3%)	0	0
Total	116 (100.0%)	91 (100.0%)	24 (100.0%)	1 (100.0%)	4 (100.0%)

Table 1.14.2 Mode of delivery of twin and triplet pregnancies ≥ 23 weeks' gestation

Mode of delivery (women)	All twins n = 116	DCDA n = 91	MCDA n = 24	MCMA n = 1	Triplets n = 4
SVB*/SVB	25 (21.6%)	18 (19.8%)	7 (29.2%)	0	0
SVB/assisted vaginal breech	9 (7.8%)	8 (8.8%)	1 (4.2%)	0	0
SVB/instrumental	3 (2.5%)	2 (2.2%)	1 (4.2%)	0	0
Instrumental/ assisted vaginal breech	2 (1.7%)	2 (2.2%)	0	0	0
Instrumental x 2	1 (0.9%)	1 (1.1%)	0	0	0
Elective LSCS†	48 (41.4%)	39 (42.9%)	8 (33.2%)	1 (100.0%)	0
Emergency LSCS	28 (24.1%)	21 (23.0%)	7 (29.2%)	0	4 (100.0%)
Total	116 (100.0%)	91 (100.0%)	24 (100.0%)	1 (100.0%)	4 (100.0%)

*spontaneous vaginal birth

† lower segment Caesarean section

There were four triplet pregnancies in the CWIUH in 2021 all of whom were dichorionic triamniotic. Three women were booked in the CWIUH from the start of the pregnancy. The fourth woman's care was transferred from the National Maternity Hospital to the CWIUH just prior to delivery. All the triplet babies were delivered by CS between 29+5 and 32+5 weeks' gestation.

Options in Pregnancy Clinic

DR AOIFE MULLALLY

Options in Pregnancy Clinic was established in February 2019 to provide abortion care in accordance with the Health (Regulation of Termination of Pregnancy) Act 2018. Women are referred electively to the clinic by their GP or community women's health provider. The majority of women are referred as they are between nine weeks and twelve weeks gestation or because they have a comorbidity which makes them unsuitable for early medical abortion (EMA) in the community. Access for inpatient medical termination is provided seven days a week and surgical termination Monday to Friday. Women with suspected complications of EMA are also seen in this clinic. Women are offered follow up appointments for insertion of long acting reversible contraceptives.

Table 1.15.1 Clinical outcomes

Clinical outcomes	n
Medical termination of pregnancy	79
Surgical termination of pregnancy	36
Management of complication post-community EMA	88
Other (miscarriage, continued with pregnancy, left clinic without decision)	28
Non-attendance	18
Total	249

Attendance at the Options in Pregnancy Clinic continues to increase year on year. It is noteworthy that a significant number of women are referred from the community with possible failed EMA and the majority of these need a second follow up visit. The clinic continued without interruption during the COVID-19 emergency with access to face-to-face consultations and the option of surgical termination were available throughout the year.

Parent Education

MEGAN SHEPPARD

Due to restrictions in face to face classes implemented during the COVID-19 pandemic, the Department of Parent Education continued to facilitate all antenatal interactive classes online. Classes for first time parents were facilitated weekday mornings, evenings and at weekends to enable all parents attend and with unrestricted access to all parents. Parents attend for a comprehensive package of antenatal education inclusive of parent education, 'Birth Dynamics' (toolkit for labour and birth) and breastfeeding. New modules in maternal wellbeing afterbirth were introduced. Class attendance by first time parents has risen by an average of 70% since the introduction of the online classes with an average class attendance of 700 per month.

Courses for second time parents were launched online in spring of 2021 which saw the introduction of an enhanced refresher programme inclusive of parent education, 'Birth Dynamics' and refresher breastfeeding. 'Birth Choices After Caesarean Birth', a new programme of antenatal education for women who have had a previous caesarean birth was also launched. This course is inclusive of a birth choices class, 'Birth Dynamics' and refresher breastfeeding.

Interactive online classes are complimented by a suite of antenatal education videos housed on the CWIUH website. This suite of videos produced by the MDT was a finalist in the HSE Excellence Awards 2021.

One-to-one programmes were also facilitated weekly, both face to face and online, for women in need of additional support.

In Autumn 2021, a full day practical skills 'Birth Dynamics' workshop was developed and facilitated for 2nd and 4th year BSc midwifery students attending TCD.

Preterm Birth Prevention Clinic

DR NEIL O'GORMAN

One hundred and sixty-four women attended the Preterm Birth Prevention Clinic and delivered in 2021. This is a similar figure to the previous years. Women are referred to the clinic via strict referral criteria and are reviewed with cervical length monitoring. Treatment options for women at high-risk of preterm birth include progesterone and/or a cervical cerclage. From July 2021, all women who attended the clinic were assessed using the QUIPP algorithm and their management was guided by their risk of delivery. The QUIPP application considers the past obstetric and medical history of a woman and combines this with the cervical length and quantitative fetal fibronectin levels to generate a percentage risk of delivery before 37 weeks, 34 weeks and 30 weeks. The application also predicts the likelihood of delivering within the next week, two weeks and four weeks. Use of this approach decreases prolonged antenatal admissions and also allows for timely administration of corticosteroids just prior to delivery.

Four women with twin pregnancies attended the clinic, two of whom were delivered preterm by emergency CS because of fetal distress. The other two women were delivered by elective CS at 37 weeks' gestation. One hundred and thirty-one (79.8%) women gave birth at greater than or equal to 37 weeks' gestation. Twelve women (7.3%) delivered prior to 34 weeks' gestation. A further 21 women (12.8%) delivered between 34 and 36+6 weeks' gestation. These figures are stable and are similar to outcomes in previous years.

Spontaneous labour occurred in 62 (37.8%) women. It occurred at less than 34 weeks' gestation in 18 (10%) women. Fifty-six (34.1%) women had an induction of labour. Fifty-eight (35.3%) women were delivered by CS, 32 of whom were delivered by elective CS.

There were no late miscarriages in 2021. There was one intrauterine death at 40+3 weeks' gestation.

Severe Maternal Morbidity and High Dependency Unit Report

DR BRIDGETTE BYRNE

Thirty-seven of the 7,594 women (5.0 per 1,000) who delivered a baby/babies \geq 500g in the CWIUH fulfilled the criteria for the diagnosis of severe maternal morbidity (SMM). The number of cases and criteria met are outlined below (table 1.18.1).

Table 1.18.1 Number of cases and causes of severe maternal morbidity in 2021

Organ dysfunction categories	n
Major obstetric haemorrhage	21
<i>RCC \geq 5 units</i>	2
<i>EBL \geq 2.5 litres</i>	21
Renal or liver dysfunction	2
Pulmonary embolism	4
Septic shock	1
Uterine rupture	2
Other - intraparenchymal cerebral bleed	1
Other - acute nephrotic syndrome	1
Management based categories	n
ICU admission*	5
Peripartum hysterectomy	2 (2)†
Total	37

* Three women were admitted to ICU admissions because of COVID-19 infection; (1) COVID-19 pneumonia, (2) acute chest syndrome, and (3) acute respiratory dysfunction.

† numbers followed by numbers in brackets indicate that the woman is already included in another category

Table 1.18.1 outlines the main causes of severe maternal morbidity. When numbers are followed by another number in brackets, this means that the case is already included in another category.

HIGH DEPENDENCY UNIT (HDU)

One-hundred and sixty-two women who delivered in the CWIUH in 2021 required higher level care. They were cared for in the Delivery Suite but not always in the HDU area because of reorganisation of clinical space during the COVID-19 pandemic.

Table 1.18.2 Obstetric related HDU admissions

Indication for HDU admission	n
Major obstetric haemorrhage	21
Postpartum haemorrhage	40
Antepartum haemorrhage	6
Pre-eclampsia \pm HELLP	50
Hypertension	1
Threatened preterm labour	4
MgSO ₄ (fetal neuroprotection)	13
Sepsis	3
Liver or renal dysfunction	2
Septic shock	1
Anaesthetic problem	1
Sickle cell disease	4
Seizure activity	3
Miscellaneous	12
Total	161

Five women required transfer to St James's Hospital for ICU care. Detailed data for major obstetric haemorrhage cases were collated and submitted to the National Perinatal Epidemiology Centre.

Specialist Perinatal Mental Health Service

DR JOANNE FENTON

2021 saw an increase in the number of new referrals to the Perinatal Mental Health Service (PMHS) from 620 in 2020 to 917 in 2021 with a total of 4,020 patient contacts in 2021. Clinics were held both remotely and in person.

The MDT continued to expand with the addition of a second perinatal mental health midwife. More psychotherapy groups were made available to women including hypnobirthing, the 'Me to Mum' group as well as anxiety management groups. A support group for parents attending NICU also continued throughout the year. The service is the first hub site to provide video interactive guidance therapy for patients and continue with cognitive behavioural and supportive psychotherapy. Educational seminars were provided to public health nurses as well as midwives. The teaching of medical students continued throughout the year. Schwartz Rounds were launched in the CWIUH in May 2021 and are held monthly which provides a space for all CWIUH staff to attend and receive support and acknowledge the work they are involved in.



Gynaecology Report

Overview

PROFESSOR MICHAEL O'CONNELL

As in previous years, the CWIUH continued to provide the largest benign gynaecology service in Ireland. This service expanded in 2021 with the appointment of three consultant obstetricians and gynaecologists with a special interest in benign gynaecology and minimally invasive surgery. The gynaecology service is evolving to an ambulatory service with a greater emphasis on minimally invasive surgery. In 2021, there were 17,282 gynaecology outpatient attendances (including phone and virtual consultations), an increase of 4,526 attendances compared with 2020 and an increase of 62 attendances compared with 2019 which had the highest number of clinic attendances on record (table 2.1.1).

Table 2.1.1 Gynaecology outpatient clinic attendances

Type of outpatient clinic	2015	2016	2017	2018	2019	2020	2021
General gynaecology clinics (n)	4,469	4,981	6,155	5,798	7,547	5,186	7,128
Colposcopy Clinic (n)	6,473	6,029	5,938	6,011	6,603	5,226	5,778
Urogynaecology Clinic (n)	1,565	1,564	1,736	1,648	1,561	584	1,057
Endocrine Clinic* (n)	504	449	483	494	530	420	100
Enhanced Endometriosis Clinic (n)	-	-	-	-	-	-	100
Fertility hub (the 'Hub') (n)	-	-	-	-	-	-	816
Miscarriage Clinic (LEAF) (n)	-	-	-	-	-	-	229
Options in Pregnancy Clinic (n)	-	-	-	-	174	248	312
Outpatient hysteroscopy (n)	-	-	-	857	805	1,092	1,473
Colposcopy/Gynaecology Clinic† (n)	-	-	-	-	-	-	289
Total (n)	13,181	13,226	14,312	14,808	17,220	12,756	17,282

* prior to 2021 the Subfertility Clinic was combined with the Endocrine Clinic

† this clinic commenced in September 2021

The Enhanced Endometriosis Clinic in the CWIUH was launched in March 2021 (see page 64).

Consultant gynaecologists who work in the Gynaecological Cancer Care Centre in St James's Hospital also provide the Colposcopy Service (table 2.1.2) at the CWIUH. They, in conjunction with the gynaecology oncology liaison nurse, provide an integrated and streamlined service to women across both hospitals.

The new Public Fertility Hub (the 'Hub') was launched in the CWIUH in June 2021. There were 816 attendances at the 'Hub' between 22nd June 2021 and 31st December 2021 (table 2.1.1) (see page 65).

The Women's Health Centre at the CWIUH was established in 2018. Since then, services available in the Women's Health Centre have expanded and now include the Colposcopy

Clinic (CervicalCheck), ambulatory gynaecology (outpatient hysteroscopy, endometrial ablation) the Options in Pregnancy Clinic, and a GP led Long Acting Reversible Contraception Clinic. In 2021, work commenced on the transformation of the gynaecology service from one comprised of general gynaecology clinics to a streamlined and woman-centred service so that each woman can be seen at the right time, by the right person in the right place. In June 2021, a Colposcopy/ Gynaecology Clinic was established to provide care for symptomatic women who tested negative for human papilloma virus (HPV) on cervical screening. This clinic commenced in September 2021. There was a total of 289 attendances (146 in person and 143 phone consultations).

In 2021, 5,783 gynaecological surgical procedures were performed (table 2.1.2). Tables 2.1.2 to 2.1.6 present the numbers of surgical procedures by category of gynaecology surgery (excluding urogynaecology), from 2015 to 2021.

Table 2.1.2 Category of gynaecology surgery

Category of surgery	2015	2016	2017	2018	2019	2020	2021
Cervical (n)	752	828	844	872	902	620	1,001
Uterine (n)	2,704	2,761	2,543	2,564	2,656	3,152	3,108
Tubal and ovarian (n)	844	847	812	775	769	952	1,010
Vulval and vaginal (n)	361	423	360	427	405	361	373
Urogynaecology (n)	329	365	410	377	363	282	243
Other (n)	38	31	43	56	40	57	48
Total (n)	5,028	5,255	5,012	5,071	5,135	5,424	5,783

The temporary cessation of CervicalCheck screening services in 2020 impacted on the number of cervical surgical procedures performed in 2020. However, in 2021, 1,001 cervical surgical procedures were performed, the highest number between 2015 and 2021.

Table 2.1.3 Cervical surgery

Type of cervical surgery (n)	2015	2016	2017	2018	2019	2020	2021
LLETZ/NETZ/SWETZ/LEEP (inpatient)	86	87	82	101	110	82	76
LLETZ/NETZ/SWETZ/LEEP (outpatient)	531	563	604	563	614	373	735
Cone biopsy	8	5	2	6	1	5	1
Punch and wedge biopsy of cervix	16	17	14	11	16	4	2
Cervical polypectomy	21	56	36	32	30	17	30
Diathermy to cervix	3	4	3	2	2	1	4
Other	87	96	103	157	129	138	153
Total (n)	752	828	844	872	902	620	1,001

Sixty-eight (57.5%) of the 119 abdominal hysterectomies performed in 2021 were laparoscopic (table 2.1.4). This is less than the rate of 59.5% in 2020 but higher than the rate of 51.3% in 2019. The cancellation of elective surgery due to the COVID-19 pandemic meant that it was only possible to perform 11 laparoscopically assisted vaginal hysterectomies in 2021.

Table 2.1.4 Uterine surgery

Type of uterine surgery	2015	2016	2017	2018	2019	2020	2021
Hysteroscopy (n)							
Diagnostic inpatient	885	939	856	853	864	841	833
Diagnostic outpatient	-	-	-	-	-	430	457
Operative							
- Myomectomy	4	10	6	11	8	8	5
- Resection of uterine septum	2	3	7	7	7	7	6
- Resection of uterine adhesions	2	1	3	1	0	2	1
- Removal of endometrial polyp	88	49	59	104	111	92	69
- Other	5	5	0	5	3	27	20
Subtotal (n)	986	1,007	931	981	993	1,407	1,391
Laparoscopy (n)							
Laparoscopic assisted vaginal hysterectomy	44	45	34	28	19	27	11
Total abdominal hysterectomy	73	60	52	40	75	68	68
Subtotal abdominal hysterectomy	13	7	5	1	0	1	0
Radical hysterectomy	0	0	1	0	2	0	0
Myomectomy	27	8	8	8	11	18	10
Subtotal (n)	157	120	100	77	107	114	89
Laparotomy (n)							
Total abdominal hysterectomy	12	29	34	39	59	43	47
Subtotal hysterectomy	1	1	3	0	1	4	4
Radical hysterectomy	0	0	0	1	0	0	0
Omentectomy	7	2	4	2	7	4	3
Myomectomy	21	16	10	15	22	15	17
Subtotal (n)	41	48	51	57	89	66	71
Vaginal hysterectomy							
Subtotal (n)	44	47	70	56	44	46	40
Other (n)							
Dilatation and curettage	779	827	737	708	729	681	684
Transcervical resection of endometrium	13	24	26	28	24	9	5
Endometrial ablation (inpatient)	47	71	69	76	84	86	73
Endometrial ablation (outpatient)	-	-	-	-	-	77	88
Mirena coil insertion	335	317	279	290	302	297	303
Mirena coil removal	155	148	121	156	128	123	109
Examination under anaesthesia	91	97	114	79	103	147	125
Other	56	55	45	56	53	99	130
Subtotal (n)	1,476	1,539	1,391	1,393	1,423	1,519	1,517
Total (n)	2,704	2,761	2,543	2,564	2,656	3,152	3,108

A total of 1,010 tubal and ovarian surgical procedures were performed in 2021 (table 2.1.5) compared with 952 in 2020. This increase may in part be due to the establishment of the Public Fertility Hub, the 'Hub'. There was an increase in the number of dye tests, laparoscopic bilateral salpingectomies and laparoscopic adhesiolysis performed in 2021 compared with 2020 (table 2.1.5). The number of bilateral salpingectomies performed at open surgery increased from a trough of three in 2016 to a peak of 107 in 2021 (table 2.1.5).

Table 2.1.5 Tubal and ovarian surgery

Type of tubal and ovarian surgery (n)	2015	2016	2017	2018	2019	2020	2021
Laparoscopy (n)							
Diagnostic	235	234	249	247	267	236	243
Sterilisation	40	44	58	28	28	17	14
Dye test	78	101	85	91	53	83	125
Tubal reconstructive surgery	1	0	0	0	0	1	0
Unilateral salpingectomy	17	20	12	14	9	10	8
Bilateral salpingectomy	42	42	26	39	45	59	76
Unilateral oophorectomy	7	12	4	12	7	9	4
Bilateral oophorectomy	2	4	1	4	1	3	0
Unilateral salpingo-oophorectomy	30	19	17	8	14	15	15
Bilateral salpingo-oophorectomy	69	74	75	46	66	81	47
Unilateral ovarian cystectomy	70	51	75	77	60	50	70
Bilateral ovarian cystectomy	5	8	7	6	2	10	5
Aspiration of ovarian cyst(s)	9	15	6	3	3	4	10
Adhesiolysis	77	74	58	50	58	74	85
Ablation/diathermy	121	110	98	95	75	110	92
Other	11	15	14	7	9	35	33
Subtotal (n)	814	823	785	727	697	797	827
Laparotomy (n)							
Sterilisation	3	1	0	0	0	13	26
Tubal reconstructive surgery	0	0	0	0	0	0	0
Unilateral salpingectomy	1	1	1	3	2	3	3
Bilateral salpingectomy	4	3	4	11	14	92	107
Unilateral oophorectomy	2	0	0	2	6	2	0
Bilateral oophorectomy	1	0	0	1	0	0	0
Unilateral salpingo-oophorectomy	4	7	5	0	5	5	7
Bilateral salpingo-oophorectomy	0	0	5	23	35	24	23
Unilateral ovarian cystectomy	11	10	6	4	2	6	8
Bilateral ovarian cystectomy	2	1	1	1	0	2	4
Adhesiolysis	2	0	2	0	1	5	2
Ablation/diathermy	0	1	0	1	2	2	3
Other	0	0	3	2	5	1	0
Subtotal (n)	30	24	27	48	72	155	183
Total (n)	844	847	812	775	769	952	1,010

Table 2.1.6 Vulval and vaginal surgery*

Type of vulval and vaginal surgery (n)	2015	2016	2017	2018	2019	2020	2021
Simple vulvectomy	1	4	0	2	1	0	1
Vaginal repair for dyspareunia/vaginoplasty	2	0	0	5	0	0	1
Posterior repair	67	87	76	90	63	52	57
Anterior repair	85	87	105	95	88	69	72
Suturing of vaginal vault	1	0	0	0	0	3	1
Hymenectomy/hymenotomy	2	3	5	1	2	1	1
Excision of vulval/vaginal cysts/biopsy	86	93	55	94	95	72	82
Bartholin's cyst/abscess	30	42	24	16	19	18	17
Labial reduction	9	5	4	3	2	1	0
Fenton's procedure	4	4	7	9	8	3	5
Other cyst/abscess/lesions	14	12	14	14	11	11	5
Other	60	86	70	98	116	131	131
Total (n)	361	423	360	427	405	361	373

* excludes urogynaecology surgery and surgery for vault prolapse

Table 2.1.7 Miscellaneous surgery*

	2015	2016	2017	2018	2019	2020	2021
Total (n)	38	31	43	56	40	57	48

* includes appendicectomy, abdominal wound repair and laparotomy for other reasons etc.

Continence Promotion Clinic

EVA FITZSIMONS

Table 2.2.1 presents the types and numbers of urogynaecology surgery performed in the CWIUH from 2015 to 2021. In 2018, the Department of Health placed a pause on the use of mid-urethral polypropylene tapes for stress incontinence and vaginal polypropylene mesh for

pelvic organ prolapse. Although the use of polypropylene mesh in abdominal reconstructive surgery for pelvic organ prolapse was not included in the terms of reference of this pause, this and other major surgical procedures for stress incontinence have discontinued at the CWIUH.

Table 2.2.1 Urogynaecology surgery*

	2015	2016	2017	2018	2019	2020	2021
Laparoscopic Burch/paravaginal repair	2	0	1	0	0	0	0
TVT/TOT/TVTO	84	71	85	28	0	0	2
Bulking injection	10	16	16	25	7	3	1
Botox injection	22	39	30	38	44	39	32
Vault suspension							
- Sacrospinous ligament suspension	15	17	22	39	35	40	33
- Laparoscopic sacrocolpopexy	26	24	16	4	0	0	0
- Other	4	12	18	2	8	4	4
Cystoscopy	147	147	200	215	240	169	137
Other	19	39	22	26	29	27	34
Total (n)	329	365	410	377	363	282	243

* includes prolapse surgery only for vault prolapse

Professor Chris Fitzpatrick retired in 2021. We would like to thank Chris for all his guidance and support over the years. We wish him a happy and healthy retirement.

Colposcopy Service

PROFESSOR TOM D'ARCY AND OLIVIA MCCARTHY

CWIUH Colposcopy Service is a consultant-led service that is supported by three nurse colposcopists. Clinical sessions are both nurse-led (two per week) and consultant-led (four per week).

Following the impact of the COVID-19 pandemic on the Colposcopy Service, normal service resumed in 2021. Unfortunately, the HSE cyberattack in May 2021 impacted many CWIUH services. However, for many of the clinics held within the Women's Health Centre, services were maintained using a separate software system which

allowed access to patient records and files. The impact of the CWIUH cyberattack in December 2021 had less of an impact on services due to the Christmas break.

There was a 62% increase in referrals to the Colposcopy Service, a significant increase on 2020 figures (table 2.3.1). In 2021, 795 more patients were seen compared to 2020 and this was only slightly up on 2019 pre-pandemic figures.

There were 554 more total visits in 2021 than there were in 2020 (table 2.3.1). The downward trend in non-attendance seen since 2016 continued in 2021 (11.9%).

Table 2.3.1 Type of visits and attendances

	2016	2017	2018	2019	2020	2021
Appointments						
Referrals (n)	2,071	1,915	2,094	2,330	1,492	2,411
Visits						
First visits (n)	2,064	1,863	1,986	2,152	1,376	2,171
Follow up visits (n)	3,942	4,046	4,007	4,454	3,850	3,609
Total visits (n)	6,006	5,909	5,993	6,606	5,226	5,780
Non - attendance (n)	1,137	871	904	920	721	687
Non - attendance (% of total visits)	18.9	17.5	15.0	13.9	13.8	11.9

In 2021, 810 excisional treatments were undertaken in either the clinic or the operating theatre. The histology results of large loop excisions of the transformation zone (LLETZ) are shown in Table 2.3.2. The cyberattacks affected some data storage on Mediscan which may account for the uncoded data (table 2.3.2).

Table 2.3.2 Histology results of LLETZ, 2021

Histology result	Clinic (n)	Theatre (n)	Uncoded (n)	Total (n)
Adenocarcinoma in-situ/CGIN	16	5	3	24
Cancer (including micro-invasive)	2	0	1	3
CIN uncertain grade	5	0	1	6
CIN1	291	5	18	314
CIN2	201	10	17	228
CIN3	163	13	17	193
HPV/cervicitis only	9	0	0	9
Inadequate/unsatisfactory	0	0	0	0
No CIN/no HPV (normal)	16	4	1	21
VAIN1	1	0	0	1
VAIN2	0	0	0	0
VAIN3	0	0	0	0
Unknown	10	0	1	11
Total (n)	714	37	59	810

Enhanced Endometriosis Clinic

PROFESSOR MICHAEL O'CONNELL

The Enhanced Endometriosis Clinic in the CWIUH was launched in March 2021. Endometriosis affects approximately 10% of women in Ireland. A multidisciplinary team (MDT) approach to the care and management of women with endometriosis is taken in this clinic. This consultant gynaecologist-led MDT includes women's health physiotherapists, dietitians and pain management specialists, all of whom have expertise in the care and management of women with endometriosis. A tailored approach is taken to the care and management of each individual woman. Women with objective evidence of endometriosis are eligible to be referred to the Enhanced Endometriosis Clinic. Early diagnosis and treatment are essential in order to improve symptoms and to preserve fertility. Pain management options include lifestyle

modifications, psychological therapies, acupuncture and specific medications. In 2021, there were 100 attendances at the clinic, which was held once a month.

In June 2021, the Minister for Health announced the expansion of the Endometriosis Service at Tallaght University Hospital (TUH) to deliver a specialist endometriosis centre for the management and treatment of women with all forms of endometriosis, with particular focus on women with advanced and complex disease. Consultant gynaecologists with joint appointments in the CWIUH and TUH provide an integrated and streamlined service to women across both hospitals (table 2.1.1).



Fertility Hub

PROFESSOR NADINE FARAH AND RACHEL CORMACK

The new Public Fertility Hub (the 'Hub') was launched in the CWIUH in June 2021. Approximately one in six couples in Ireland experience fertility issues. Fertility is complex and can be a difficult journey for many, so the launch of this new, public clinic as part of the Fertility Hub within the DMHG was an important step in making fertility services more accessible to all. The 'Hub' has strengthened the services previously provided to individuals and couples both in the CWIUH and across the DMHG. This initiative was supported by the NWIHP and the DMHG who provided funding for clinical (nursing and medical), andrology and administration staff to develop this service. The 'Hub' offers a formalised, comprehensive and multidisciplinary service to individuals and couples experiencing fertility issues. The 'Hub' aims to maximise the outcome for individuals and couples by offering an assessment and management service within the CWIUH. This streamlined approach also minimises the delay, some experienced in the past, in

accessing fertility services. The 'Hub' offers a service that treats individuals, as well as treating couples together where appropriate, to improve the chance of pregnancy. Those who have been unable to achieve a pregnancy after six months or more of trying can ask their GP to refer them to the 'Hub'. Once referred, they have an initial consultation with the clinical nurse specialist, who organises investigations, including blood tests, tubal patency tests and semen analysis. When the results of these tests are available, the MDT devises a tailored treatment plan for the individual or couple this may include ovulation induction and follicle tracking scanning. As each individual's experience with fertility can vary greatly, a tailored MDT approach is needed to achieve the best outcome for all those who attend the 'Hub'. There were 816 attendances at the 'Hub' between 22nd June 2021 and 31st December 2021 (table 2.1.1).

In September 2021, a second clinical nurse specialist was appointed allowing for service expansion. Referral pathways to our Dietetics Department and Mental Health Service are provided as required.



Table 2.5.1 Attendances

	Attendances (n)	Non-attendances (n)
New first visits	330	26
Return visits	486	80
Total	816	106

Table 2.5.2 Management

	Procedures (n)
Follicle tracking scans	518
HyCoSy*	329
Tubal patency demonstrated	309
Referred to hysterosalpingogram	16
Total	1,172

* *hysterosalpingo-contrast-sonography*

GP Led Long-Acting Reversible Contraception Clinic

CLARE SMART

A new GP Led Long-Acting Reversible Contraception Clinic (LARC) was established in May 2021.

Two hundred and twenty-eight women successfully had their intrauterine contraceptive device inserted, removed or exchanged. It was not possible to complete the procedure in the outpatient setting in thirty seven cases.

LEAF Clinic

DR MARK HEHIR

The LEAF Clinic was established in 2019 to replace what was previously known as the Miscarriage Clinic. The clinic is structured in repeated four-week blocks throughout the year, where two weeks are spent caring for patients with recurrent miscarriage, one where those who have suffered a mid-trimester loss are seen and the final week is a purely virtual clinic for the feedback of results generated from in-person appointments. Women are offered investigation of their loss as recommended by the Royal College of Obstetricians and Gynaecologists. They also receive psychological support from our bereavement midwives in the clinic. Women are given a plan for future pregnancies and offered support in the early gestational period of subsequent pregnancies through counselling or early pregnancy ultrasound.

In 2021, 147 women with recurrent miscarriage and 44 women who suffered a mid-trimester loss were seen in the LEAF Clinic. Virtual consultations in order to feedback results were offered to 172 women.

Significant numbers of women attended for counselling, reassurance and early pregnancy scanning in subsequent pregnancies.

Outpatient Hysteroscopy Service

DR WORKINEH TADESSE

The Outpatient Hysteroscopy Service was established in July 2017 to improve access and waiting times for assessment and/or treatment, for women over the age of 40 referred with post-menopausal bleeding or abnormal uterine bleeding. The service runs four sessions per week seeing five to six new patients and six return patients, both in person and via phone consultation.

Patients are assessed using a 'one-stop' appointment model of care utilising transvaginal ultrasound, hysteroscopy (if indicated following ultrasound) and endometrial biopsy. In 2021 there was a slight increase in the number of women who attended the clinic (3%, 35 women) for assessment and/or treatment (table 2.6.1). There was an increase in the overall non-attendance rate from 9.6% to 14.8 % but given the ongoing attendance issues due to COVID-19 restrictions, this was not unexpected (table 2.6.1).

Table 2.6.1 Outpatient Hysteroscopy Service, 2018 to 2021

Appointments	2018*	2019	2020	2021
Total (n)	857	805	1,092	1,127
Non-attendance (n)	119	118	105	167
Non-attendance (%)	13.0	14.0	9.6	14.8
Histology results	2018*	2019	2020	2021
Complex hyperplasia (n)	5	8	14	8
Cancers (n)	13	10	18	16†

* includes attendances from mid July 2017

† includes two ovarian cancers diagnosed incidentally

In 2021, 74 endometrial polypectomies were performed in the outpatient hysteroscopy clinic using a Myosure device compared to 77 in 2020. The majority were undertaken as 'see and treat' procedures on the first visit.



Paediatrics and Newborn Medicine

Medical Report

DR JOHN KELLEHER

ADMISSIONS TO CWIUH NEONATAL UNIT

Table 3.1.1 Admissions to CWIUH Neonatal Unit

	n*
Total admissions to Neonatal Unit	884
Admissions > 1.5 kg birth weight	718
Admissions ≥ 35 weeks' gestation	562

* not including readmissions

The postnatal ward liaison nurse performed a total of 2,058 clinical reviews. Of these, 1,030 reviews lasted under 30 minutes. There were 357 reviews in the Special Care Baby Unit (SCBU) that involved a short-term admission of duration between 30 to 60 minutes. There were 566 short term admissions of duration between one to twelve hours in SCBU.

VERY LOW BIRTH WEIGHT (VLBW) INFANTS (VERMONT OXFORD NETWORK) OUTCOME DATA

Table 3.2.1 Number of cases reported to the VON in 2021 (n = 127) *

	All cases (n)	Cases excluding congenital anomalies (n)	Survival to discharge† n (%)	Survival without morbidities† n (%)
n, (%)	Survival without morbidities†	0	0	0
n, (%)	9	9	0	0
Infants < 401g but ≥ 22 weeks' gestation	0	0	0	0
Infants 401 – 500g	3	3	1	0
Infants 501 – 1,500g	120	114	102	73
Infants > 1,500g but ≤ 29+6 weeks' gestation	4	4	4	4
Total	127	121	107 (84%)	77 (61%)

* n = 127 represents total number of VON infants managed by the CWIUH. This reflects both inborn and outborn VON infants. There was a total of six newborns with VON defined major congenital anomalies, three of whom survived to discharge. Four of these six newborns were inborn and two were outborn. The number 127 includes all newborns with any sign of life following delivery.

† excluding major congenital anomalies

Figure 3.2.1 Number of infants 501 – 1,500g admitted to NICU in CWIUH (inborn and outborn)

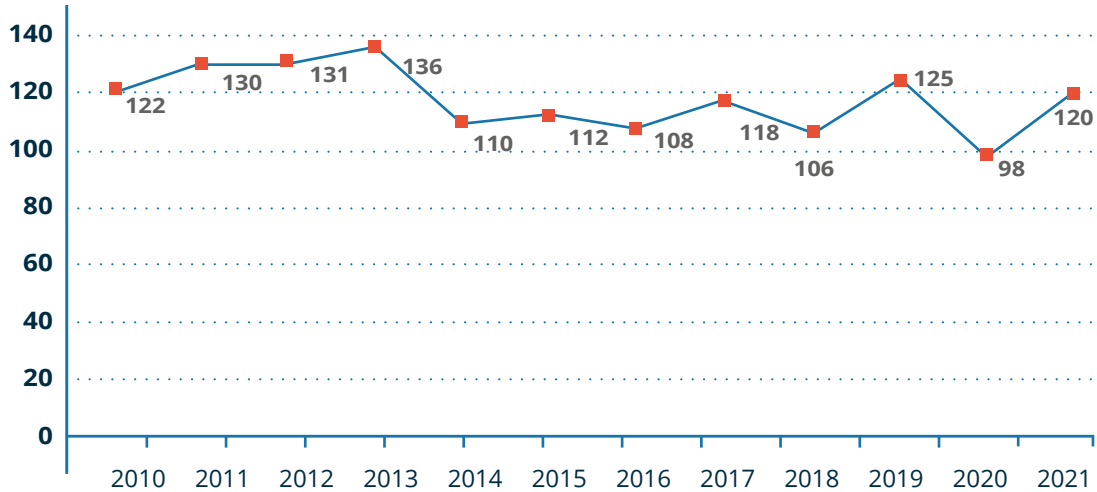


Figure 3.2.2 Total number of VON eligible infants (inborn and outborn) including congenital anomalies in CWIUH

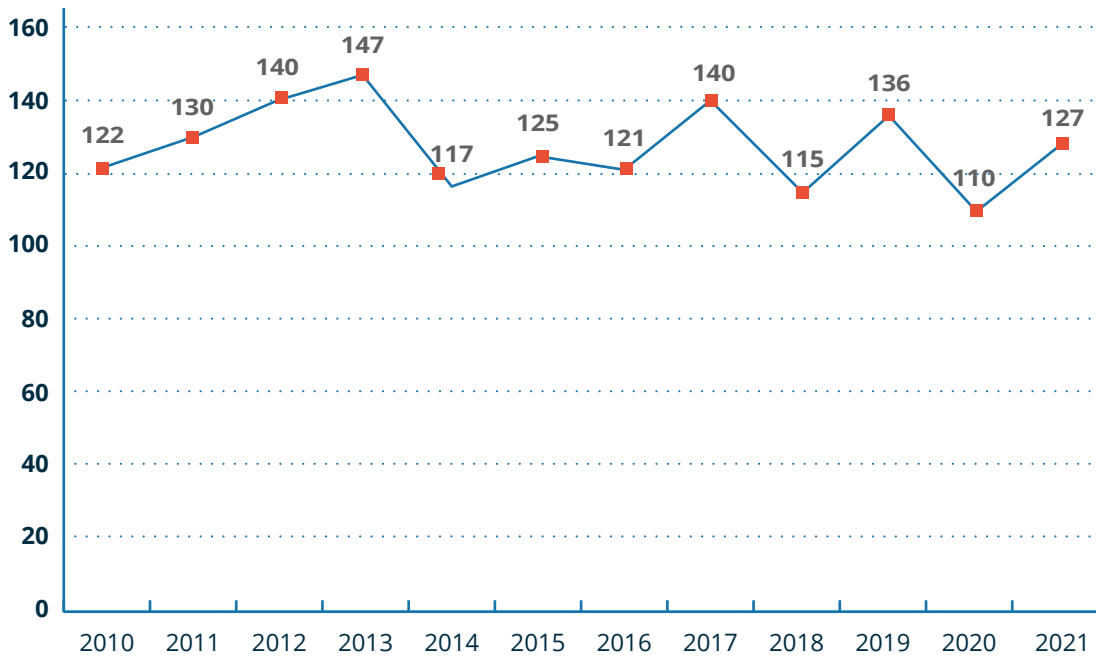


Figure 3.2.3 Survival of VLBW infants in CWIUH who were admitted to NICU (including congenital anomalies)

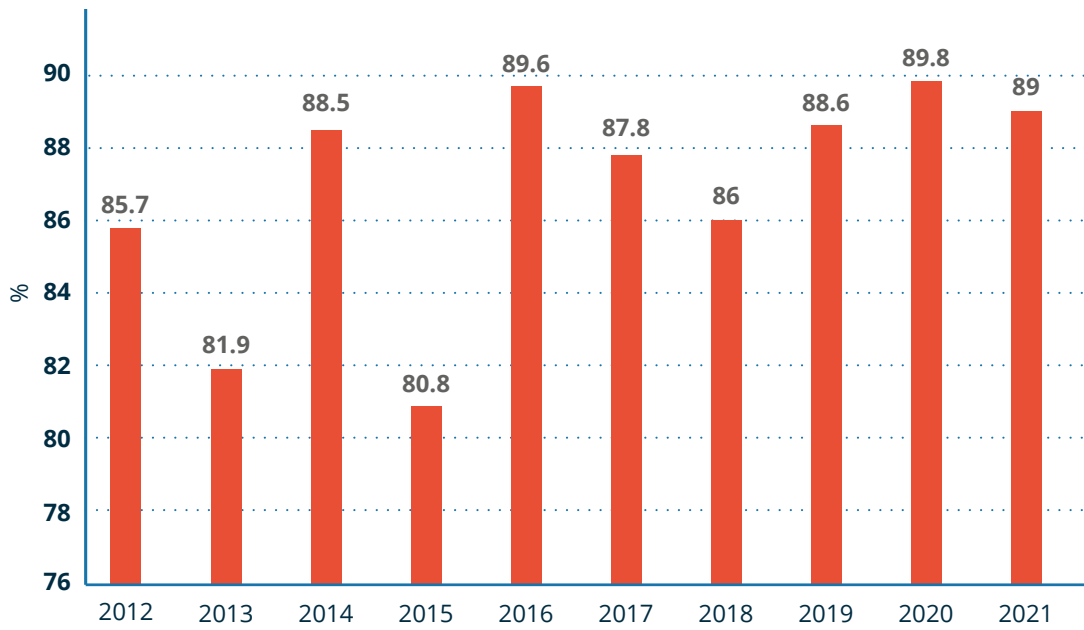


Figure 3.2.4 Survival to discharge without major pre-defined morbidity of VLBW infants in CWIUH (VON data including congenital anomalies) over 10 years

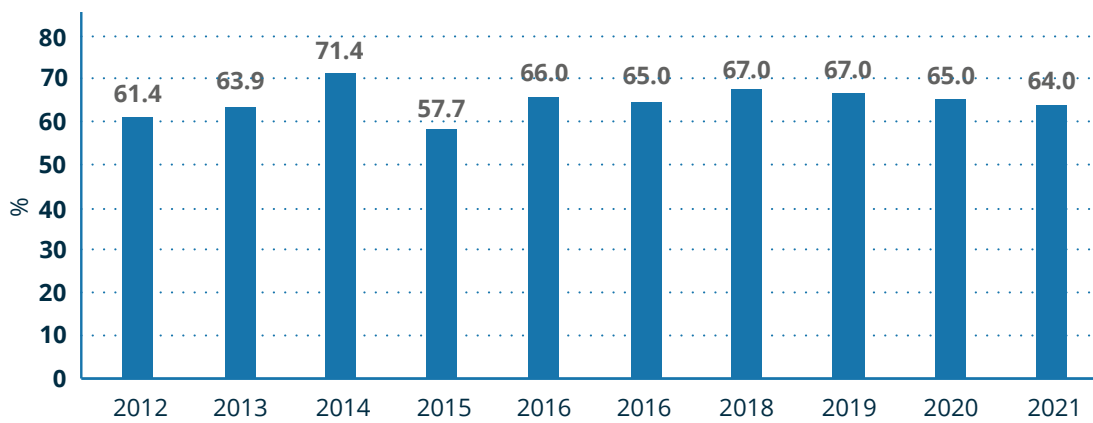


Table 3.2.2 Gestational age breakdown and survival to discharge of all infants reported to the VON (including congenital anomalies) who were resuscitated/stabilised in delivery room (DR) in 2021, (n = 127) *

Gestational age (weeks)	Total (n)	Died in DR (n)	Survival to discharge, n (%)	Survival to discharge without major morbidity, n (%)
< 24	6	0	4 (67%)	0
24 - 26	39	0	26 (67%)	11 (28%)
27 - 29	48	0	46 (96%)	39 (81%)
30 - 32	30	0	30 (100%)	26 (87%)
> 32	4	0	4 (100%)	4 (100%)
Total	127	0	110 (87%)	80 (63%)

* Includes both inborn and outborn newborns and major congenital anomalies. There were six newborns with major congenital anomalies and three of these survived to discharge.

Table 3.2.3 Survival to discharge of all infants born at gestational age less than 24 weeks who were reported to the VON in 2021 (including those with congenital anomalies) (i.e. ≥ 22 weeks and/or ≥ 400 g) (n = 6)

Gestational age (weeks)	Birth weight (g)	DR stabilisation (yes/no)	Death in DR (yes/no)	Survival to discharge (yes/no)	Day of life if death
23+0	560	Yes	No	No	1
23+2	515	Yes	No	Yes	
23+3 (outborn)	740	Yes	No	Yes	
23+4	530	Yes	No	Yes	
23+4(outborn)	460	Yes	No	Yes	
23+6	400	Yes	No	No	5

Table 3.2.4 Outcome to discharge of all newborns < 24 weeks gestational age reported to the VON (≥ 22 weeks and/or ≥ 400g) including congenital anomalies, 2012 to 2021 (n = 89) *

Year	Infants n	DR stabilisation n	Death in DR n	Survival to discharge, n (%)	Survival to discharge without morbidity, n (%)
2012	9	4	6	0 (0%)	0 (0%)
2013	15	5	12	2 (13%)	0 (0%)
2014	4	1	3	1 (25%)	0 (0%)
2015	11	6	5	5 (45%)	1 (9%)
2016	8	3	5	0 (0%)	0 (0%)
2017	10	3	7	1 (10%)	0 (0%)
2018	5	2	3	1 (20%)	0 (0%)
2019	13	7	6	4 (31%)	0 (0%)
2020	8	4	4	0 (0%)	0 (0%)
2021	6	6	0	4 (66%)	0 (0%)
Total	89	41 (46%)	51 (57%)	18 (20%)	1

* includes both inborn and outborn infants

VON DEFINITIONS

Nosocomial infection: defined as any late bacterial infection or coagulase negative staphylococcus infection.

Any late Infection: defined as any late bacterial infection, coagulase negative staphylococcus infection or fungal infection after day three.

Mortality: defined as death at any time prior to discharge home or first birthday. It is applicable to all infants for whom survival status is known. In this table, it only includes infants 501 – 1,500g and it includes infants with major congenital anomalies.

Mortality excluding early deaths: excludes infants who die within the first 12 hours of birth.

Survival: indicates whether the infant survived to discharge home or first birthday.

Survival without specified morbidities: indicates whether the infant survived with none of the following key morbidities: severe IVH, CLD, NEC, pneumothorax, any late infection or PVL.

Source: Vermont Oxford Network Annual Report and Nightingale, the Vermont Oxford Network Internet Reporting Tool.

Table 3.2.5 depicts the morbidity and mortality data for infants with birth weight 501 – 1,500g admitted to the Neonatal Intensive Care Unit (NICU) in the CWIUH (congenital anomalies included), compared to the Vermont Oxford Network and Republic of Ireland in 2021, (n = 120). These are the relevant key performance indicators (KPIs) pertaining to preterm newborns as part of the VON. ROI and VON outcome data are expressed as percentage values. The ROI data available at the time of publication of this Annual Report was unfortunately only available for the preceding year 2020. In contrast the VON Network data pertains to the year 2021. It is briefly noteworthy to acknowledge that our rates for 'early sepsis' (2%), 'late sepsis' (8%), coagulate-negative staphylococci (CoNS) sepsis (6%), pneumothorax (3%), and 'steroid usage for chronic lung disease' (13%) are either quite low and/or within expected range for the VON. I hesitate at this point in time to acknowledge too much importance to our low NEC rate of 0.8% (compared to 5% and 6% for VON and Ireland) as the CWIUH NEC surgery is 6%. It appears for the year 2021 that all our infants with NEC and/or intestinal perforation (n = 7) required some type of surgical intervention (peritoneal drain and/or laparotomy).

Table 3.2.5 Morbidity and mortality data for infants with birth weight 501 – 1,500g admitted to NICU in CWIUH (congenital anomalies included), compared to the Vermont Oxford Network and Republic of Ireland in 2021, (n = 120)

Outcome measure	CWIUH 2021 n, (%), (denominator)	*VON 2021 %	*ROI 2020 %
Inborn	100, (83%), (120)	87%	86%
Antenatal steroids (partial or complete)	112, (93%), (120)	85%	91%
Caesarean section	92, (77%), (120)	76%	75%
Antenatal magnesium sulphate	96, (80%), (120)	65%	76%
Multiple gestation	36, (30%), (120)	25%	31%
Any major congenital anomaly	6, (5%), (120)	6%	6%
Surfactant in delivery room	31, (26%), (120)	18%	23%
Surfactant at any time	68, (57%), (120)	56%	56%
Conventional ventilation after initial resuscitation	62, (52%), (120)	50%	51%
High frequency ventilation after initial resuscitation	18, (15%), (120)	21%	9%
Ventilation after early CPAP	32, (37%), (120)	36%	35%
Inhaled nitric oxide	19, (16%), (120)	6%	8%
Pneumothorax	4, (3%), (120)	4%	6%
Chronic lung disease (at 36 weeks)	17, (17%), (97)	26%	26%
Steroids for CLD	16, (13%), (120)	13%	10%
Early bacterial sepsis	2, (2%), (120)	1%	1%
Late bacterial sepsis	9, (8%), (116)	7%	6%
CONS infection	6, (5%), (116)	4%	3%
Nosocomial bacterial infection	15, (13%), (116)	11%	9%
Fungal infection	2, (2%), (116)	1%	0.2%
Any late infection (bacterial or fungal)	15, (13%), (116)	11%	9%
NEC (medical)	1, (0.8%), (120)	5%	6%
Focal intestinal perforation	6, (5.0%), (120)	1%	2%
Surgery for NEC and/or intestinal perforation	7, (6%), (120)	3%	3%
Severe ROP (≥ Stage 3)	7, (8%), (91)	6%	3%
Anti-VEGF Drug	4, (3%), (120)	2%	3%
Surgery for ROP	3, (2%), (120)	2%	2%
Severe IVH (Grade III-IV)	9, (7%), (120)	8%	7%
Cystic PVL	2, (2%), (120)	3%	1%
Paracetamol for PDA	7, (6%), (120)	9%	10%
Ibuprofen for PDA	0	5%	8%
PDA Surgery	2, (2%), (120)	3%	2%
Any human milk enteral feeds at discharge	84, (70%), (120)	55%	56%
Human milk only enteral feeds at discharge	58, (48%), (120)	12%	17%
Mortality	13, (11%), (118)	12%	14%
Mortality excluding early deaths	13, (11%), (118)	10%	9%
Survival	105, (89%), (118)	88%	86%
Survival without specified morbidities	76, (64%), (118)	58%	59%

* ROI and VON outcome data are expressed as percentage values. The ROI data available at the time of publication of this report was for the year 2020. In contrast the VON Network data pertains to the year 2021.

Table 3.2.6 Shrunken standardised mortality and morbidity (SMR) rates

	SMR (95% confidence interval)	SMR (95% confidence interval)
Year	2021	2019 - 2021
Mortality	1	0.7 - 1.3
Death or morbidity	0.8	0.7 - 1
Chronic lung disease (at 36 weeks)	0.8	0.6 - 1
NEC	0.7	0.4 - 1.1
Late bacterial infection	1	0.7 - 1.4
Coagulase negative infection	0.6	0.3 - 1
Nosocomial infection	0.9	0.6 - 1.2
Fungal infection	1.2	0.3 - 2.4
Any late infection	0.9	0.7 - 1.2
Severe IVH	1	0.7 - 1.4
Pneumothorax	1.2	0.8 - 1.7
Cystic PVL	0.6	0.2 - 1.1
Severe ROP	1.1	0.6 - 1.6

HYPOXIC ISCHAEMIC ENCEPHALOPATHY AND MORTALITY TABLES

The CWIUH NICU is a national referral centre for total body hypothermia therapy for infants with defined criteria (TOBY trial criteria), where this therapy is commenced within six hours of birth. In 2021, six inborn infants had hypoxic ischaemic encephalopathy (HIE) and were managed with therapeutic hypothermia (table 3.3.1). In 2021, two outborn infants with HIE were referred to the CWIUH NICU for therapeutic hypothermia. These eight infants, who received therapeutic hypothermia, survived to discharge from hospital.

Table 3.3.1 Hypoxic ischaemic encephalopathy (HIE), 2021

HIE	Inborn (n = 6)	Outborn (n= 2)
HIE Moderate Stage 2	6	2
HIE Severe Stage 3	0	0
Therapeutic hypothermia	Inborn (n = 6)	Outborn (n = 2))
Outcomes for hypothermia		
Death	0	0
Alive and normal to date	3	2
Motor delay	2	0
Alive but outcome unknown*	1	0

* Alive but unknown status is due to discharge with developmental follow up status not yet ascertained

Table 3.3.2 Mortality - inborn infants with congenital anomalies (n = 7, includes 1 infant death)

Group classification (n)	Anomaly (leading to death)
Prematurity and congenital heart disease	n = 2 neonatal deaths
	Pulmonary atresia, AVSD
	Tetralogy of Fallot, 22q11 deletion
Term and congenital heart disease	n = 5 (4 neonatal deaths and 1 infant death)
	Hypoplastic left heart syndrome, AVSD, n = 1
	Complex cardiac, cleft lip/palate, n = 1
	VSD, absent corpus callosum, n = 1
	Shoan complex, n = 1
	Tetralogy of Fallot, I-cell disease, n = 1 infant death

Table 3.3.3 Mortality - inborn infants normally formed \leq 1,500g, 2021 (n = 10, includes 2 infant deaths)

Group classification	Anomaly (leading to death)
Extreme prematurity, NEC +/- bowel perforation +/- spontaneous intestinal perforation	n = 2 neonatal deaths
	NEC with perforation, n = 1
	Spontaneous intestinal perforation, n = 1
Extreme prematurity and aetiology of death otherwise specified	n = 8 (6 neonatal deaths and 2 infant deaths)
	Pneumothorax, n = 2
	PPHN, n = 1
	Suspected pulmonary embolism, n = 1
	GBS meningitis, IVH grade III and seizures, n = 1
	Refractory systemic hypotension and persistent severe metabolic acidosis, n = 1
	Ventilator dependency, prolonged hypoxia and respiratory failure, n = 1 infant death
	Meningitis, n = 1 infant death

Table 3.3.4 Mortality - outborn infants normally formed \leq 1500g (n = 6, includes 1 infant death)

Group classification	Abnormality (leading to death)
Extreme prematurity, NEC and IVH	NEC/intestinal perforation, Grade IV IVH, n = 3
Extreme prematurity and sepsis	Candida sepsis refractory to treatment, n = 1
Extreme prematurity and IVH	Grade IV IVH, n = 1
Extreme prematurity and NEC/intestinal perforation	NEC/Intestinal perforation, Klebsiella sepsis, n = 1 infant death

SELECTED CONGENITAL ANOMALIES AND MORBIDITIES IN INFANTS BORN IN THE CWIUH

Table 3.4.1 Selected major congenital anomalies (all liveborn)

Type of major congenital anomaly	n
Cleft palate +/- lip	6
Bowel atresia/obstruction	5
Exomphalos	5
Gastroschisis	4
Duodenal atresia	3
Meningomyelocele +/- ventriculomegaly	3
Oesophageal atresia +/- fistula	1
Congenital diaphragmatic hernia	2
Congenital pulmonary airway malformation	6
Anorectal malformation	2
Multicystic dysplastic kidney	3
Trisomy 21	18
22q11 deletion	1
Facial tumour	1
Bladder exstrophy	1
Rubenstein Taybi Syndrome	1
Mosaic trisomy 16	1
Achondroplasia	1
Septo-optic dysplasia	1

Table 3.4.2 Musculoskeletal anomalies (all liveborn)

Type of musculoskeletal anomalies	n
Developmental dysplasia of the hip (requiring treatment)	58
<i>Pavlik harness</i>	58
<i>Abduction brace only</i>	0

The diagnosis of fetal and neonatal cardiac anomalies is detailed in the Obstetrics and Midwifery Report entitled 'Fetal Cardiology National (All-Ireland) Service'. Table 3.4.3 documents the numbers of liveborn newborns with major congenital cardiac disease. There were 43 such liveborn infants in 2021. Six of these newborns were jointly managed antenatally with Northern Ireland Obstetrics Services, delivered at the CWIUH and transferred postnatally to CHI Crumlin, Paediatric Cardiology Service.

Table 3.4.3 Major congenital heart disease (all liveborn) (n = 43)

Type of major congenital heart disease	n	Booked in Northern Ireland (n)
Pulmonary atresia (PA)	2	
PA with AVSD	1	
PA with tricuspid atresia	1	
Coarctation of aorta with VSD	1	
Tetralogy of Fallot	4	
TOF with 22q11 deletion	1	
TOF with pulmonary stenosis	3	
TOF with pulmonary stenosis and trisomy 21	1	
TOF/double outlet right ventricle/VSD/exomphalos	1	
Transposition of great arteries	4	3
TGA with coarctation of aorta	1	1
TGA with VSD	3	
TGA with double outlet right ventricle (DORV) with cleft palate	1	
Interrupted aortic arch with Rubenstein Taybi Syndrome	1	
Interrupted aortic arch with anorectal malformation with VSD	1	
Hypoplastic left heart syndrome (HLHS)	4	1
HLHS with AVSD	1	
HLHS/Shone complex	1	
Congenital heart block	2	1
AVSD with trisomy 21	1	
AVSD/hypoplastic RV/cleft lip/1p36 deletion	1	
Hypoplastic aortic arch	1	
DORV	1	
Pulmonary stenosis	1	
Epstein's anomaly	1	
Total anomalous pulmonary venous drainage	1	
Cardiac rhabdomyomas	1	
Double inlet left ventricle/hypoplastic RV	1	
Total (n)	43	6

COMPARISON WITH PREVIOUS REPORTS

For the year 2021, the CWIUH cared for 127 premature infants whose birth weights were between 401 – 1,500g and/or whose gestational ages were between 22+0 weeks until 29+6 weeks. This included a few infants with major congenital anomalies. They included both inborn and a minority of outborn infants who were transferred to the CWIUH at some point during the first 28 days of their lives. These infants and aspects of their care were all prospectively reported into an international collaborative network known as the Vermont Oxford Network (VON). This number is increased from the year 2020 when the CWIUH cared for 110 such infants. Figures 3.2.1 and 3.2.2 depict historical trends concerning overall VON infant numbers at the CWIUH. Complete survival/mortality data for 120 of these 127 premature VON infants who were admitted to the NICU is known at the point of death/discharge. These 120 newborns include both inborn and outborn babies and are defined as those liveborn newborns admitted to the CWIUH NICU with birth weights 500 – 1,500g and are inclusive of newborns with major congenital anomalies. Of these 120 premature VON infants, 100 were inborn at the CWIUH and 20 were outborn. The total survival to discharge in 2021 was 89%, similar to 2020 and previous years.

In 2021, the survival to discharge of such premature infants without specified major morbidities was 64% which was similar to previous years. Figures 3.2.3 and 3.2.4 present an analysis of infant survival trends for the CWIUH between 2012 and 2021.

Concerning the VON Shrunken Standardised Morbidity Rate (SMR) for various key performance parameters over the three years 2019 - 2021, the CWIUH remains within the acceptable normative ranges for the VON Network. See Table 3.2.6. for the SMR for the CWIUH over the last three years. This table provides a comparison to the 95% Confidence Intervals for SMR concerning the entire VON Network.

The year 2021 demonstrated overall a stabilisation in Neonatal Unit admissions, with unit admissions stable at 884 which was similar to 888 in the year 2020 (938 in the year 2019). There was an increase in the total number of Vermont Oxford Extreme Preterm newborns to 127 newborns in 2021 compared to 110 in 2020.

There continued to be an important role for the Neonatal Unit liaison nurse in attempting to facilitate the care of certain newborns on the postnatal ward alongside their mothers. For the year 2021 the liaison nurse performed a total of 2,058 clinical reviews and managed 566 short term SCBU admissions (duration one to twelve hours).

There was a continued high usage of any breast and/or a diet of exclusive breast milk for Vermont Oxford Extreme Preterm babies at discharge from the NICU. For the year 2021 the use of 'any human milk on discharge' was high at 70% up from 67% in 2020. The percentage for the entire VON Network was 55% for the year 2021. The use of 'human milk' only diet at discharge from the CWIUH in 2021 was high at 48%. This is a sustained improvement in the care of critically sick extreme preterm newborns concerning the use of breast milk at the CWIUH seen for the last three years.

Survival to discharge from NICU has significantly improved in newborns born at 23 completed weeks gestation. Historically at the CWIUH, mortality in such extremely preterm newborns was such that most if not all newborns at such a gestation would die prior to discharge. Many such newborns would historically have died in delivery room having received comfort care only as opposed to resuscitation/stabilisation efforts. In 2021, the highest survival rate for such an extremely low gestational age with four of six (66%) newborns surviving to discharge home was recorded.

RESEARCH IN THE DEPARTMENT OF PAEDIATRICS AND NEWBORN MEDICINE

The CWIUH Neonatology Department continues to be very active in research. We run numerous research projects ourselves and participate in other multi-centre and international studies. Three research fellows in neonatology worked with us in 2021; Drs Meredith Kinoshita, Aoife Branagan and Niamh Ó Catháin. The main research projects, in the form of publications and grants, conducted in the Neonatology Department in 2021 are listed in Appendix Two. The main research projects conducted in the Neonatology Department are listed below.

As per NICE guideline and The Model of Care for Neonatal Services in Ireland (2015), developmental follow-up for extremely preterm and low weight babies at 24 months corrected is recommended for early identification,

assessment and intervention of infants with developmental concerns. The Bayley Scales of Infant and Toddler Development III (BSID-III) is the recommended instrument to measure developmental outcomes of preterm and term infants. The BSID-III is a standardised, norm-referenced developmental battery that provides information regarding children's developmental skills across cognitive, language and motor domains (Bayley, 2006). Unfortunately, for most of 2021 the COVID-19 pandemic and absence of a clinical psychologist resulted in very few BSID assessments performed. Whilst BSID assessments have now recommenced with Dr J Kelleher and PhD students in psychology from Trinity College Dublin, there is a lack of follow-up data, thus rendering it impossible to present any meaningful two year follow up outcomes concerning babies born in 2019 (who ought to have had BSID assessments in 2021).

The COVID-19 pandemic continued to provide ongoing challenges for both medical and nursing care of newborns in a Neonatal Unit with only one isolation room with laminar air flow. The HSE cyberattack on the 14th May 2021 provided significant operational difficulties for the department, and in particular the Baby Clinic. A second cyberattack occurred at the CWIUH in December 2021. The absence of the Maternity Newborn Clinical Management System (MN-CMS) as an electronic medical record perhaps reduced the level of discomfort suffered by the department in contrast to the other level III neonatal units in Ireland.

I would like to thank all the nursing, midwifery, medical, orthopaedic, physiotherapy, chaplaincy, dietetic, medical social work, laboratory, pharmacy, information technology, radiology, infection control and bioengineering personnel, as well as the human resources staff and our obstetric colleagues for their continued support and dedication in providing care for infants born at the CWIUH. I would also like to thank a number of our colleagues from Children's Health Ireland at Crumlin and Temple Street, who continue to consult both antenatally and postnatally and visit the Neonatal Unit, often in the late hours.

In particular, we are grateful to Dr Orla Franklin, Consultant Paediatric Cardiologist who continues to provide an excellent onsite Fetal Cardiology and Postnatal Cardiology Consultation Service to the Neonatal Unit. Dr Franklin and her CHI Crumlin consultant cardiology colleagues

provide out of hours consultation advice to the NICU in a 24/7 manner. We are grateful to them for this continued service. A further note of gratitude to paediatric consultant radiologists Drs Eoghan Laffan, Clare Brenner and on occasion David Rea who continue to provide excellent on-site paediatric radiology services in addition to the excellent team of radiographers. We are extremely grateful to our two excellent consultant paediatric ophthalmologists, Mr Donal Brosnahan and Dr Kathryn McCreery who provide for regular retinal screening in addition to retinal surgical therapies as required.

A thank you to all staff members and my colleagues in the Neonatal Unit for their hard work throughout 2021. In particular, I wish to thank Ms Julie Sloan (research midwife) for her dedication and hard work in assisting me with this report. Julie also maintains the Vermont Oxford database at the hospital. I am also grateful to Ms Catherine Barnes and Ms Ciara Carroll (administrative assistants) and Ms Emma McNamee (Information Technology) for their respective roles with this report. I wish to acknowledge the efforts of my consultant neonatology colleagues Professor Jan Miletin, Professor Martin White, Dr Anne Doolan, Dr Pamela O'Connor, Dr Jana Semberova, Dr Hana Fucikova, Dr Jan Franta, Professor Eleanor Molloy and Dr Francisco Meza for their excellent care of sick infants and their support to the staff and families of the CWIUH. In addition, a debt of gratitude to the Vermont Oxford Database Co-Ordinator at the CWIUH, Ms Julie Sloan, and Baby Clinic staff. Jean Cousins, Clinical Midwifery Manager, and the other nurses, midwives and administrative staff of the Baby Clinic.

In relation to development of guidelines, Ms Anne O'Sullivan (ANNP) and Peter Duddy, Neonatal Pharmacist, with the help of the Paediatric Drugs and Therapeutics Committee, reviewed our in-house drug policies and protocols. A massive thank you to the inspirational neonatal nurses, neonatal nurse managers, midwives and health care assistants who provide a high standard of care for the newborns within the Neonatal Unit and subsequently on follow-up visits in the Baby Clinic.

Finally, a sincere thank you to our parents and babies for their patience and goodwill whilst on the rollercoaster journey of life that is the NICU experience for families. Our thoughts and sympathies go out to those newborns and bereaved families who died whilst in the CWIUH NICU. They remain always in our thoughts and prayers.

RESEARCH IN THE DEPARTMENT OF PAEDIATRICS AND NEWBORN MEDICINE

The CWIUH Neonatology Department continues to be very active in research. We run numerous research projects ourselves and participate in other multi-centre and international studies. Three research fellows in neonatology worked with us in 2021; Drs Meredith Kinoshita, Aoife Branagan and Niamh O’Cathain. The main research projects, in the form of publications and grants, conducted in the Neonatology Department in 2021 are listed in Appendix Two. The main research projects conducted in the Neonatology Department are listed below.

POSTGRADUATE RESEARCH DEGREES

PhD students (Supervisor: Prof. Eleanor Molloy, CWIUH and TCD)

Awarded in 2021

1. PhD: Dr John Allen: SERENITY project: TCD 2018-2021: PI Prof Denise McDonald, Co-supervisor EM. Ongoing

Primary supervisor

1. MD: Dr Niamh Lagan: DREAM project: Down syndrome, neurodevelopmental and multiorgan outcomes: TCD PI EM 2017-21
2. MD: Dr Danielle McCollum: POLARIS: TCD 2019-22
3. PhD: Dr Tim Hurley: CRADLE: Circadian Rhythm Alterations and outcome in neonatal Encephalopathy. TCD 2018-2021
4. PhD: Dr Eman Iwesi: FIREFLY: Followup of Inflammatory Responses and multiorgan outcomes following neonatal brain injury PI EM 2019
5. PhD Dr Aoife Brannigan: PUFFIN: Point of care Ultrasound For multiorgan evaluation in Neonatal encephalopathy: TCD
6. MD: Dr Gergana Semova: PLATYPUS: Preterm Inflammatory hyperreactivity and response to Pentoxifylline to Understand necrotising enterocolitis and Sepsis. TCD

Secondary supervisor

1. PhD: Megan Ní Bhroin. BRAIN: Brain Injury in Neonates. TCD. Primary supervisor: Prof. Arun Bokde. Awarded 2022.
2. PhD: Dr Nawal Taher: PHOENIX: PHenotyping Cells in Neonatal brain Injury and followup in childhood. Co-supervisor: Prof. Derek Doherty, TCD: 2016-22: awarded 2022.

3. PhD: Chelo Del Rosario: PANDA: Psychological And Neurodevelopmental assessment of Neonatal Encephalopathy. Co-supervisors: Profs. Elizabeth Nixon and Jean Quigley, TCD.
4. PhD: Fiona Quirke. COHESION Develop a Core outcome set for use in clinical trials and other studies in the prevention and treatment of Neonatal Encephalopathy: Primary supervisor: Prof. Declan Devane. Co-supervisor: Dr Patricia Heal.
5. PhD: Megan Dibble. NEON: Investigate the functional brain changes in Neonatal Encephalopathy and the associated behavioural and cognitive consequences. Primary Supervisor: Prof. Arun Bokde. Co-supervisors: Profs. Elizabeth Nixon and Declan Devane.
6. PhD Desiree Grafton-Clark: DIAMOND project: ‘Dyadic Interaction and Neurodevelopmental outcomes in Down Syndrome’. Supervisors: Profs. Nixon and Quigley.
7. PhD: Dr Graham King: Neonatal functional MRI and early development of cognition: Principal Investigator: Prof. Rhodri Cusack TCD: <https://www.cusacklab.org/research.html>
8. PhD: Sarah Kift: Development of a Complex Occupational Therapy intervention for Neonatal Units in Ireland: INCOT: Irish Neonatal Care Occupation Therapy Study. Principal Investigator: Prof. Michelle Spiritos, TCD.

MD students (Supervisors: Dr Anne Doolan and Professor M White, CWIUH and UCD)

Dr Meredith Kinoshita is currently undertaking her MD project ‘Assessing breastfeed volumes in preterm infants’ as a student of RCSI under the supervision of Prof. Martin White and Dr Anne Doolan.

MD student (Supervisor: Professor J Miletin, CWIUH and UCD)

Dr Niamh O’Cathain is working under the mentorship of Prof. J Miletin as part of the ETAPA study. This is a Randomised Placebo-Controlled Trial of Early Targeted Treatment of Patent Ductus Arteriosus with Paracetamol in Extremely Low Birth Weight Infants (ETAPA).

GRANTS

Professor E Molloy (CWIUH and TCD)

Principal Investigator

Grants active 2021

Health Research Board Collaborative Doctoral Award. Irish Neonatal Brain Injury Consortium. 2018-2023. PI EM: €1.47 million

HRB Irish Network for Children's Clinical Trials (in4kids) CTN-2021-007. Co-leads: Profs. Geraldine Boylan and EM: €995,536.00

Integrated approach to research acceleration and trial activity in CHI at Tallaght. CHI and Children's Health Foundation, Ireland €93,635 2021

PROTECT Ireland, RCSI Health Research Board HRA Grant 2019-22: FIREFLY: Followup of Inflammatory Responses and multiorgan outcomes Following neonatal brain injury. PI EM: €369,891

European Society for Paediatric Research (ESPR) Young Investigator Start-up Grant 2020: CRADLE project: Circadian Rhythm Alterations and outcome in neonatal Encephalopathy. PhD student Dr Tim Hurley. PI EM: €6,000

Health Research Board. 2020 Multiorgan dysfunction in Cerebral Palsy. Medical student fellowship Zainab Aftal: €2,500

National Children's Research Centre: GEMINI: Gender and inflammation in neonatal encephalopathy. Paediatric research Project grant. 2019-2022. PI EM: €282,553

National Children's Research Centre Fund. PhD: Dr John Allen: SERENITY project: SEVeRE Neurological Impairment and children with medical complexity. TCD 2018-2021: PIs Prof. Denise McDonald and EM: €23,500

Professor E Molloy Co-applicant/collaborator

HRB: Analyzing the therapeutic potential of anti-inflammatory drugs in brain development, neuronal activity and long-term outcomes after birth asphyxia ILP-POR-2022-029: PI Dr Eva Jimenez-Matoes. Co-applicant EM: €368,783.40

HRB Paediatric Clinical Research Centre Children's Health Ireland (CHI): Co-applicant EM: €3.5m

The Wesfarmers Centre Seed Grant Application Dr Isabella Anna Joubert, Murdoch Institute 2021. 23,000 AUD

Provosts Award 2019 TCD: PETIT study of developmental followup in Preterm infants. PIs Profs. Nixon and Quigley. Collaborator EM: €69,264

Health Research Board DIFA: Definitive Intervention: Membrane sweeping for induction of labour: The MILO Study: PI Prof. Declan Devane NUIG. Co-applicant EM 2018-2021: €348,666

Enterprise Ireland: Infant Digestion study: Teagasc/UCC/TCD; PI Andre Brodkorb; Local PI: CHI at Crumlin/TCD EM €125,952 (TCD); Overall €433,860 2018-2020

National Children's Research Centre Fellowship. Dr. Lyudmyla Zakharchenko. Post-Operative Myocardial Performance and Pulmonary Hypertension in Infants with Down Syndrome: The Role of Inflammation. PI A EL-Khuffash. Co-investigator EM: 2018-2021

Health Research Board NCHF: Longitudinal Assessment of Cardiac Function in Infants with Downs Syndrome Using Novel Echocardiography Techniques. NCHF-2017-005. PI Prof. Afif El-Khuffash: 2017-2021. Co-investigator EM: €292,648

ERC Advanced Grant: FOUNDCOG: Curiosity and the Development of the Hidden Foundation of Cognition. PI Prof. Rhodri Cusack. Collaborator EM 2018-2023: €3,030,538

National Children's Hospital Foundation Ref: 1716 – BRAIN Injuries in Neonates: MRI Networks: PI Prof. Arun Bokde. Co-investigator EM: €144,487

National Children's Hospital Foundation Ref: 1719; Investigating the immune evasion mechanisms of respiratory syncytial virus in paediatric patients attending NCH: towards the development of novel curative therapeutics. Principal Investigator Dr Nigel Stephenson. Co-investigator EM: €50,000

National Children's Hospital Foundation Comprehensive and Effective Laboratory Test Reference Intervals for Irish Children: the Celtic Ranges Project (Phase 1 study) Ref: 1713: PI Prof, Gerard Boran. Co-investigator E Molloy: €148,311

Professor J Miletin (CWIUH and UCD)

HRB/Definitive Intervention and Feasibility Awards 2020 (DIFA-2020-016). Randomised Placebo-Controlled Trial of Early Targeted Treatment of Patent Ductus Arteriosus with Paracetamol in Extremely Low Birth Weight Infants (ETAPA). On-going (1.10.2021 – 30.9.2024). Principal Investigator Prof. Jan Miletin: €718,576.47

HRB/Definitive Intervention and Feasibility Awards 2020 (DIFA-2020-013). Safeguarding the Brain Of Our Smallest Children – an open-label phase-III randomised trial of cerebral oximetry combined with a treatment guideline versus treatment as usual in premature infants. On-going (1.5.2021 – 30.4.2025). Co-applicant Prof. Jan Miletin: €982,646.88

Friends of the Coombe. Randomised Placebo-Controlled Trial of Early Targeted Treatment of Patent Ductus Arteriosus with Paracetamol in Extremely Low Birth Weight Infants (ETAPA) – a pilot study. 1.7.2020 to 31.12.2021. Successfully completed. Large HRB DIFA grant received. PI Prof Jan Miletin: €11,000

Dr J Kelleher (CWIUH and UCD)

Gel for Early Hypoglycaemia Prevention in Preterm Infants – the GEHPPI study. PI Dr John Kelleher. Co-investigators: Dr Joythsna Purna, Ms Shirley Moore, Dr Johannes B. Letshwiti, Ms Jean James, Dr Jan Janota, Dr Radim Brabec, Dr Margaret Moran, Ms Christine McDermott, Prof Jan Miletin (UCD), Ms Anne O'Sullivan (RANP), Mr Peter Duddy (Chief 2 Pharmacist), Ms Julie Sloan (Research Midwife), and Dr Graham King. Grant from Friends of the Coombe. €10,000. Commenced in 2020 and ongoing pilot multicentre international RCT recruitment.

PUBLICATIONS

See Appendix Two for a list of publications from the Department of Paediatrics and Newborn Medicine.

Neonatal Nursing Report

MARY O'CONNOR

2021 was another challenging year from the ongoing effects of the pandemic to the inconvenience of not one but two cyberattacks, which resulted in some loss of data.

Despite this, the neonatal team remained resilient, achieving a nursing staff retention rate of 98.8%. The NICU and HDU were safely and successfully relocated back to their renovated natural habitat on the 2nd floor following a two and a half-year absence. This resulted in a return to our 40-bed capacity. Great credit is due to all staff across the neonatal department for their continued commitment to excellence in caring for the babies and their parents and all other staff across the CWIUH that support us in achieving this care.

Although COVID-19 continued to have an impact on our whole family centred care philosophy, every effort was made to facilitate parental presence, the duration of which was not restricted but only one parent at a time could be on the unit due to infrastructural limitations and infection control requirements. Obviously, discretion was paramount where results or certain conversations were necessary with the multidisciplinary team. Parental and sibling interactions were promoted using video calls. The 'Reading to your Baby' initiative continues to be very popular, a story book is given to parents together with a parent handbook 'Caring for your Baby in the Neonatal Unit'.

A collaborative quality improvement pilot initiative was introduced to provide psychological support to parents of babies on the neonatal unit less than 32 weeks' gestation, entitled Parents' Time Out (PTO). The collaborators include Dr Sabrina Coyle, Perinatal Psychologist; Ms Denise Shelley, (MSW); Ms Sheena Bolger (CNS Discharge Planning) and Ms Mary O'Connor (CNM3) who provide a professionally facilitated safe place for parents to share experiences of having a premature baby in the Neonatal Unit, to explore bonding and attachment and gain strategies to help cope with the additional stresses.

The dedicated NICU clinical midwife/nurse specialist (CM/NS) in lactation support continues to produce significant improvements; including a discharge breastfeeding rate of all maternal expressed breast milk (EBM) at 78% for babies born less than 32 weeks' gestation, and an any maternal EBM rate of 81%.

Feeding substrate for infants born less than 35 weeks' gestation at discharge was 79% and the rate of all maternal EBM and any maternal EBM was 85%. Lactation support continues post discharge for transitioning to exclusive breastfeeding with phone call follow-ups. The production and launching of breastfeeding education videos entitled 'The NICU Breastfeeding Journey' was positively received.

The expansion of our breast pump bank has significantly contributed to our improvement in the acquisition of colostrum and EBM. The Blood Bikers Service adds another dimension to the improvement in that there is a supply available for the babies.

The NICU Lactation CM/NS team were winners of the Poster Competition, entitled 'Impact of NICU Dedicated Lactation Specialist on Breastfeeding Outcomes of Preterm Infants - An Audit Review' at the Association of Lactation Consultants in Ireland (ALCI) and European Lactation Consultants Alliance (ELACTA) conferences.

Staff education programmes continued despite the pandemic although they were modified. Four staff graduated with postgraduate diplomas in Neonatal Intensive Care Nursing and one was facilitated from Limerick University Hospital. Three staff commenced the programme. Five staff completed the Foundation Programme on Principles of High Dependency and Special Care. Six staff completed Level II, Neonatal Intensive Care. Twelve staff completed the first Family Infant Neurodevelopmental Education (FINE) Level I.

'Project 23', an interdisciplinary quality improvement initiative to optimise care and management of babies born between 23 and 27 weeks' gestation, will help us to meet most of our KPIs. This project was received with continued enthusiasm by all staff.

The postnatal ward liaison nurse (PNWL) continued to support postnatal ward staff in the care of late preterm babies, in particular with feeding issues, hypoglycaemic issues and transient tachypnoea of the newborn, which traditionally required re-admission. But more importantly, this role facilitates bonding and attachment by avoiding separation of mother and baby. Feedback from the PNWL team is that the postnatal team are embracing and collaborating very well and working together, culminating in a higher standard of care and in keeping mother and baby together. There were 2,058 recorded care activities by the PNWL nurse.

The National Neonatal Transport Programme (NNTP) team from the CWIUH conducted 225 transports in total, 45 more transfers than 2020. The CWIUH received 38.7% of the national referrals for neonatal management that were transported by NNTP, an increase of 3.7% on 2020. A CNS, NNTP was also appointed in each of the three Dublin tertiary centres, with a view to expanding the team.

Neonatal Transition Home Service

SHEENA BOLGER

The Neonatal Transition Home Service was provided by Sheena Bolger, CNS. Practical and emotional support to families of premature babies was provided by the service prior to and after discharge home. The service directly supported 75 families (86 babies) who were discharged home from our Neonatal Unit. Phone calls were made and received from parents in the weeks post discharge; topics of calls included general feeding and supplementation progression advice, concerns re reflux, bowel patterns, hernias, haemangiomas, stoma and oxygen care, prescription and follow up queries in regards to referrals and appointments. Home oxygen was organised for one baby and stoma supplies for another. Multidisciplinary liaison including; Baby Clinic, public health nurses, dietician, physiotherapists, medical social workers, stoma nurses, pharmacies, bereavement team, perinatal mental health team and Synagis (palivizumab) community referral team was required for the complex care of these babies.

Parent education was promoted in the Neonatal Unit to empower parents and enhance readiness for discharge. Twice weekly parent education sessions were offered and all parents of babies born less than 34 weeks' gestation are encouraged to attend, staff are also welcome. Topics covered are: choking, resuscitation, safe sleep, car seat safety, immunizations, skin care, management of a sick baby post discharge. Accurate data are unavailable due to two cyberattacks.

The annual Christmas party for premature babies who have been discharged was cancelled again in 2021 due to COVID-19 restrictions.

The respiratory syncytial virus (RSV) prophylaxis programme was managed with palivizumab, with pre-discharge doses being administered to 20 babies and a further 46 babies were referred to *Synacare*®, the home administration service.

Online lectures on Discharge Planning, Immunisations and Synagis for Neonatal Foundation Course students were updated.



Advanced Nurse Practitioner in Neonatology

ANN O'SULLIVAN

The role of the Advanced Neonatal Nurse Practitioner (ANNP) is to enable consistency in standards of health care. This is achieved by having a presence in the clinical area, ensuring care is evidenced based, as well as offering support and guidance to medical and nursing staff at the bedside. The ANNP promotes family centred care, empowering parents to participate in the care of their infant. The ANNP monitors antibiotic use and strategies for the prevention and control of multidrug resistant organisms and also works to minimise healthcare - associated infections, further reduce ventilation days and minimise the incidence of chronic lung disease in our very low birth weight infants. The ANNP promotes breast-feeding and optimises the nutritional management of our infants.

The promotion and facilitation of research activities by participating in research studies as a primary researcher, an investigator or in a support role is another key component of the role.

Further development of the simulation programme took place, acquiring additional simulation equipment to enhance training in resuscitation, stabilisation and clinical procedures for nursing and medical staff.

Throughout the year, presentations on STABLE and Neonatal Resuscitation Programs were delivered, along with the delivery of education programs for neonatal nurses, midwives, public health nurses and NCHDs. A number of research studies and audits were also contributed to and presented to the multidisciplinary team.

Perioperative Medicine

Department of Perioperative Medicine and Anaesthesia

DR STEVE FROESE

In 2021, the Pre-operative Anaesthetic Assessment Clinic (PAAC) continued to provide anaesthetic assessment to obstetric and gynaecological patients scheduled for elective surgical procedures, and to obstetric patients with known medical or surgical conditions.

The virtual assessment pathway, introduced in 2020, continued in 2021 and accounted for 37.9% of all PAAC patients (table 4.1.1). As a result, the capacity for walk in consultations has increased to 26.9% (table 4.1.1), which eliminated the need for return patient appointments. The non-attendance numbers (3) for the virtual pathway were consistently lower than for the in-person assessment appointments (97) (table 4.1.2).

Table 4.1.1 Attendances at virtual and in-person appointments, 2021

Type of pathway	Obstetrics	Gynaecology	Total	%
Virtual (n)	564	750	1,314	37.9
In-person (walk in) (n)	761	171	932	26.9
In-person (appointments) (n)	610	611	1,221	35.2
Total (n)	1,935	1,532	3,467	100.0

Table 4.1.2 Non-attendances at virtual and in-person appointments, 2021

Type of pathway	Obstetrics	Obstetrics	Total
Virtual (n)	2	1	3
In-person (appointments) (n)	40	57	97
Total (n)	42	58	100

The PAAC maintained multidisciplinary collaboration with Obstetrics and Gynaecology, Pharmacy, Physiotherapy, Parent Education and the Information Communications Technology Department.

The PAAC continued to build operational capacity to become a one-stop pre-admission unit. In achieving this goal, future development needs to include digitalisation of the perioperative patient record, implementation of a theatre operating system and the appointment of a clinical nurse specialist in perioperative medicine.

LABOUR AND DELIVERY

In 2021, 1,783 nulliparous women (59.6%) and 1,334 parous women (29.0%) had an epidural sited in labour (table 4.1.3). Epidural rates in labour have remained relatively stable between 2018 and 2021.

Table 4.1.3 Epidural rates in labour*, 2015 to 2021

	2015	2016	2017	2018	2019	2020	2021
Nulliparous	60.2%	55.8%	56.8%	57.9%	58.1%	58.9%	59.6%
Parous	31.3%	25.8%	27.9%	28.1%	28.6%	29.7%	29.0%
Total	42.5%	37.8%	39.7%	40.6%	40.8%	41.7%	40.0%

* denominators – all nulliparous women and all parous women

In 2021, 78.8% of all Caesarean sections (CS) and 98.6% of elective CS were performed under spinal anaesthesia only (table 4.1.4).

Table 4.1.4 Mode of anaesthesia for Caesarean section, 2021

Mode of anaesthesia	Elective CS (n)	Emergency CS (n)	Total CS (n)
General anaesthetic (GA)	14	57	71
GA and other	1	1	2
GA and spinal	2	8	10
GA and epidural	0	10	10
GA and epidural and spinal	0	3	3
Spinal only	1,560	566	2,126
Spinal and epidural	4	30	34
Spinal and epidural and other	1	0	1
Epidural only	0	436	436
Epidural and other	0	4	4
Total (n)	1,582	1,115	2,697

Pathology and Laboratory Medicine

Overview

DR NIAMH O’SULLIVAN AND MARTINA RING

Table 5.1.1 Pathology and Laboratory Medicine workload by test request

Area	2015	2016	2017	2018	2019	2020	2021
Microbiology (n)	42,573	41,639	44,387	44,764	43,781	43,781	51,033
Biochemistry (n)	218,565	216,849	207,686	213,994	216,915	196,526	215,209
Haematology (n)	53,961	55,111	54,298	51,418	52,640	46,098	51,864
Transfusion Medicine (n)	26,537	26,328	29,464	29,099	30,088	29,784	30,650
Cytopathology (n)	24,589	26,161	26,185	31,814	33,200	8,172	42,755*
Histopathology (n)	6,001	6,331	6,380	6,796	7,092	6,337	7,887
Post mortems (n)	35	33	32	32	35	60	60
Phlebotomy (n)	23,641	33,812	37,870	38,287	39,554	35,960	39,980
Total (n)	395,902	372,452	406,302	416,204	339,970	330,758	439,438

* *human papillomavirus (HPV) primary screening*

The Pathology and Laboratory Medicine workload by test request from 2015 to 2021 is presented in Table 5.1.1. The workload was highest in 2021. Routine and on call service provision was maintained during the on-going SARS-CoV-2 global pandemic with a return of normal services in the CWIUH. Accreditation of all Pathology Departments and Point of Care Testing (POCT) within the CWIUH was maintained.

With the appointment of Project Manager Mr Vincent Brennan, by HSE Estates Office, work commenced with the CWIUH staff on the planning and development phase for the National Cervical Screening Laboratory. The CWIUH and pathology staff were recruited on to a number of teams within the CWIUH to ensure the project would provide the necessary footprint for the laboratory requirements of the new National Cervical Screening Laboratory.

The CWIUH hosted building project meetings, architect and design meetings and staffing meetings to bring together the project requirements and to bring the costings back to the HSE.

The Pathology Department continued to provide in-service training to cytopathology third year Technological University Dublin medical laboratory science students. The department also obtained a high level of achievement in research.

2021 saw the retirement of our Pathology Quality/ICT Manager, Stephen Dempsey after over 40 years of exceptional service. We wish him many happy years of retirement.

Clinical Biochemistry, Endocrinology and Point of Care Testing

DR VIVION CROWLEY, DR ANNE KILLALEA
AND ANN O'DONNELL

The Biochemistry Department provides test results for diagnostic, screening, therapeutic and disease monitoring purposes. The department provides a Referral Service for specialised tests to external hospitals (fructosamine, total bile acids and total human chorionic gonadotrophin (hCG)).

Our test repertoire includes 38 biochemistry tests and eight endocrinology tests.

Point of care testing (POCT) throughout the CWIUH includes ten blood gas analysers, 21 glucose meters, two meters for testing threatened preterm labour and rupture of membranes and three Clinitek devices for measuring urinary hCG. Our patients include pregnant women and neonates as well as women attending for gynaecological investigations. The quality of our results is of upmost importance and therefore we take great pride in our accreditation to ISO 15189 and 22870 standards by the Irish National Accreditation Board (INAB). We also participate in research projects with our clinical colleagues around the CWIUH. The types and numbers of tests performed from 2017 to 2021 are shown in Table 5.2.1.

Table 5.2.1 Tests performed

Type of test	2017	2018	2019	2020	2021
All biochemistry tests* (n)	207,686	213,994	216,915	196,526	215,209
Glucose tolerance tests (n)	4,212	4,400	4,458	4,325	4,536
C-reactive protein (n)	5,392	5,465	6,605	5,656	6,191
Thyroid function tests (n)	5,165	5,406	5,601	5,440	6,338
Blood gas requests (n)	17,685	17,438	17,049	16,731	14,145
Total (n)	240,140	246,703	250,628	228,678	246,419

* includes referred tests

The number of tests increased in 2021 (table 5.2.1). The CWIUH cyberattack had an impact on the recording of tests in December 2021. This increase was due to the resumption of normal outpatient services and the development of the new Fertility Hub and the Enhanced Endometriosis Clinic. The highest number of glucose tolerance tests was performed in 2021 (4,536). The number of sepsis monitoring tests (C-reactive protein) increased from 5,656 in 2020 to 6,191 in 2021 (table 5.2.1). Blood gas testing numbers reduced slightly which reflects a trend to less invasive testing in neonates.

POCT was extended with the implementation of its use in the monitoring of women in threatened preterm labour and the implementation of the use of Clinitek POC hCG devices. Lactate analysis for the management of patients suspected of having sepsis was also introduced. The training and re-certification of ward staff in POCT continued.

Despite the challenges of 2021, the Biochemistry Department maintained accreditation by the Irish National Accreditation Board to ISO 15189 and Point of Care Testing (blood gases) maintained accreditation by the Irish National Accreditation Board to ISO 22159. Excellent scores continued to be achieved in our External Quality Assessment Schemes.

Ann O'Donnell is on the Advisory Body of the Academy of Laboratory Medicine and Clinical Science for Point of Care testing. Collaboration with the National Cancer Control Programme in the measurement of serum tumour markers continued in 2021.

Senior staff regularly attended multidisciplinary meetings including the diabetes team meetings, Point of Care Committee meetings and weekly perinatal review meetings. Many of these meetings were delayed or cancelled due to the COVID-19 pandemic.

Cervical Cytology / Cervical Screening

PROFESSOR JOHN O'LEARY

The Cytopathology Department received 42,755 samples in 2021, the highest number between 2015 and 2021 (table 5.1.1). The Cytopathology Laboratory converted to primary human papillomavirus (HPV) screening with reflex cytology in 2021. In 2021, CervicalCheck (programme samples) comprised 95% of the departmental workload. Forty-two percent of these CervicalCheck samples were taken in 11 colposcopy units around the country. The May and December 2021 cyberattacks had a profound impact on the department. Communications between CervicalCheck and the department were severely affected. The department navigated through this time, with incredible effort, ensuring the safety of all patients by relaying results to doctors and CervicalCheck as effectively as possible.

Despite the challenges of 2021, the roll out of primary HPV testing with reflex cytology was successful, the CervicalCheck Quality audit visit in July 2021 was successful and the ISO 15189 accreditation inspection in November 2021 for both Cytology and HPV laboratories was successful, with only one non-conformance.

In 2021, Ita Nolan (Medical Scientist), Joanna Kakolewska (Medical Scientist) and Elaine Hayes (Medical Scientist) continued to participate in a joint Technological University Dublin/CWUHU/CervicalCheck Certificate in Molecular Cytopathology. Elaine Hayes also progressed to the second year of the MSc in Biomedical Science with the University of Ulster. Staff attended various virtual presentations and meetings throughout 2021.

Haematology and Transfusion Medicine

DR CATHERINE FLYNN AND FERGUS GUILFOYLE

There was an increase in Haematology requests and Transfusion Medicine requests in 2021 compared with 2020. The former increased by 12% from 46,098 in 2020 to 51,864 in 2021. The latter increased by 3% from 29,784 in 2020 to 30,650 in 2021. Table 5.1.1 presents the number of Haematology requests and Transfusion Medicine requests between 2015 and 2021. The turnaround times (TATs) for Haematology and Transfusion Medicine are shown in Tables 5.4.1 and 5.4.2.

Table 5.3.1 Specimen throughput

Specimen throughput	2018	2019	2020	2021
Total number of samples (n)	31,814	33,200	8,172	42,755
Programme samples (n)	30,235 (95%)	31,265 (94%)	6,241 (76%)	40,472 (95%)
HPV not detected (n)	-	-	-	36,334
HPV indeterminate and rejected samples (n)	-	-	-	362
Unsatisfactory	5%	6%	9%	4%
Negative	86%	75%	67%	42%
Low-grade	9%	10%	11%	44%
High-grade	2%	3%	4%	10%

Table 5.4.1 Haematology, Turnaround Times (TATs)

Test	Full Blood Count		Coagulation Screen	
	2020	2021	2020	2021
Target max TAT (mins)	60	60	120	120
Average TAT achieved (mins)	28	28	40	40
Within target TAT (%)	95	97	96	97

Table 5.4.2 Transfusion Medicine, Turnaround Times (TATs)

Test	Crossmatch		Inpatient Group and Screen	
	2020	2021	2020	2021
Target max TAT (mins)	240	240	240	240
Average TAT achieved (mins)	90	66	120	150
Within target TAT (%)	96	99	93	90

The impact of the COVID-19 pandemic on Haematology and Transfusion Medicine was successfully managed. Services continued to be provided with minimal disruption to patients during the cyberattacks which affected all departmental ICT infrastructure. Despite these challenges, the quality of the service was maintained throughout 2021 and INAB ISO 15189 accreditation was retained. However, increased scientific and medical personnel at a senior level will be required in order to guarantee the ongoing provision and development of services.

In 2021, the procurement process for a new flow cytometer for fetomaternal haemorrhage (FMH) measurement was completed. In conjunction with outpatient midwifery staff, clerical staff and obstetrics, the routine antenatal anti-D prophylaxis program was optimised with the integration of fetal RHD typing, allowing targeted administration of prophylactic anti-D. A pilot program for routine 28 weeks' gestation testing of full blood count on all antenatal patients was rolled out, with the aim of early identification of nutritional anaemia.

A system was developed to allow comments to be made on transfusion reports, in order to aid clinical interpretation of the potential significance of blood group antibodies.

The department is represented by the Chief Medical Scientist on the following national bodies:

- › Academy of Clinical Science and Laboratory Medicine (ASCLM) Council
- › ACSLM Transfusion and Transplantation Science Advisory Body (Chair)
- › National Transfusion Advisory Group (Scientific Representative)
- › Irish National Accreditation Board (INAB) Medical Scientific Advisory Council (Member).

Haemovigilance

SONIA VARADKAR

Table 5.5.1 Summary data, 2015 to 2021

	2015	2016	2017	2018	2019	2020	2021
Women who received a transfusion (n)	197	247	266	295	219	218	231
Women who received ≥ 5 RCC (n)	5	5	12	6	8	13	4*
Neonates transfused with pedipacks (n)	71	65	78	59	64	62	66
Reports to National Haemovigilance Office (n)	1	2	2	2	2	4	1

* one early pregnancy cases, two postnatal cases and one gynaecology case

In 2021, ISO 15189 accreditation and 100% traceability of blood components and blood products were achieved. Table 5.5.1 presents the workload of the Haemovigilance Service between 2015 and 2021.

The targeted routine antenatal anti-D prophylaxis programme (TRAADP) was successfully rolled out at the CWIUH in 2021.

Non-invasive fetal RHD screening is carried out on all Rhesus D negative women to identify women who require the administration of prophylactic anti-D antenatally.

Histopathology and Morbid Anatomy

PROFESSOR JOHN O'LEARY

The Histopathology Department's workload from 2017 to 2021 is presented in Table 5.6.1. There was a 24.5% increase in the number of specimens between 2020 and 2021. This was preceded by a 10.6% decrease between 2019 and 2020. There was a 71.4% increase in post mortems between 2019 and 2020 with a slight decrease

(3.3%) in 2021. The number of blocks in 2021 was similar to that in 2019. The number of haematoxylin and eosin (H & E) stains peaked at 56,363 in 2017. The number of immunohistochemistry (IHC) stains decreased by 10.2% between 2020 and 2021. The number of specials has almost trebled between 2019 and 2021.

Table 5.6.1 Histopathology workload, 2017 to 2021

	2017	2018	2019	2020	2021
Specimens (n)	6,355	6,798	7,092	6,227	7,887
Post mortems (n)	30	32	35	60	58
Blocks (n)	19,139	18,436	20,409	17,692	20,842
H & E (n)	56,363	53,903	51,946	41,781	48,439
IHC (n)	1,943	2,236	1,883	2,170	1,949
Specials (n)	45	45	66	100	181

TARGET HISTOPATHOLOGY TURNAROUND TIMES (TATS)

According to Royal Faculty of Pathology Guidelines, the TATs should be as follows:

- › Small biopsy TAT: 80% within five working days
- › Non-biopsy and other TAT: 80% within seven working days.

Table 5.6.1 Total TATS, 2017 to 2021

Year	Cases (n)	Day 3 (%)	Day 5 (%)	Day 7 (%)	Day 10 (%)
2017	6,175	40.73	79.60	89.65	94.88
2018	6,602	22.80	54.27	74.01	91.78
2019	6,857	16.00	46.00	59.87	69.30
2020	6,033	50.56	83.72	90.97	96.34
2021	7,887	51.52	84.18	91.20	96.58

Continuous professional development (CPD) is strongly supported in this department as evident from the number of talks and meetings attended by our team (table 5.6.2).

Table 5.6.2 Continuous Professional Development

Month	Course	Scientists attending (n)
Jan - May	Attended a three-day Roche Ventana BenchMark Ultra training course	3
Sept	Staff started/continued Masters Studies	3
Oct	Chaired Academy of Medical Laboratory Scientists President's Prize	1
Nov	Attended 2-day NEQAS training programme	3
Jan - Dec	MDT	5

In 2021, two new microtomes were purchased and validated. These are fully operational within the department.

The Histopathology Department continued to successfully manage the impact of the COVID-19 pandemic by monitoring staff leave and splitting into teams when required to counteract any suspected COVID illnesses within the department.

The HSE cyberattack in May 2021 and the CWIUH cyberattack in December 2021 were also managed successfully.

Despite the challenges of the COVID-19 pandemic and the two cyberattacks, the quality of the service continued throughout 2021 and the INAB ISO 15189 accreditation for Histopathology was retained.

Workflows improved in order to reduce TATs but this remained challenging due to consultant staffing issues. New antibodies were optimised with the department and covered under INAB accreditation post the November inspection. Silver in situ hybridisation staining (SISH) is fully operational on the BenchMark Ultra. A leaner approach to stock management within the department continued and work to reduce departmental costs is ongoing.

A histological dissection course was completed by staff. Training in audit was commenced by one staff member. Eibhlin Gallagher continued within the second year of the MSc in Biomedical Science with the University of Ulster. Rosana Alves progressed to the second year of the MSc in Biomedical Science with the University of Ulster. Ellen O'Reilly commenced the MSc in Biomedical Science with the University of Ulster in September 2021.

Microbiology and Infection Prevention and Control

DR NIAMH O’SULLIVAN AND GER CHAWKE

The Microbiology Department is accredited by the Irish National Accreditation Board to ISO 15189: 2012 Standard.

In 2021, the microbiology specimen throughput was as follows:

- > Specimens, n = 32,719
- > Susceptibilities, n = 2,437
- > Referral tests, n = 18,314.

Figure 5.7.1 Microbiology workload, 2015 to 2021

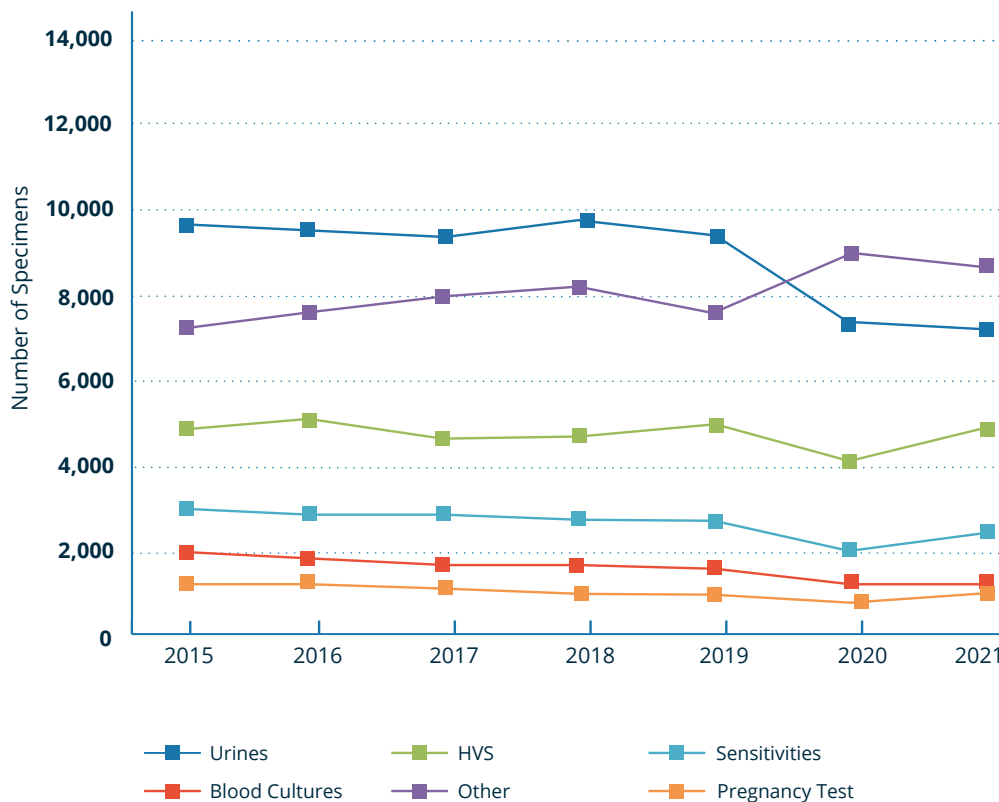
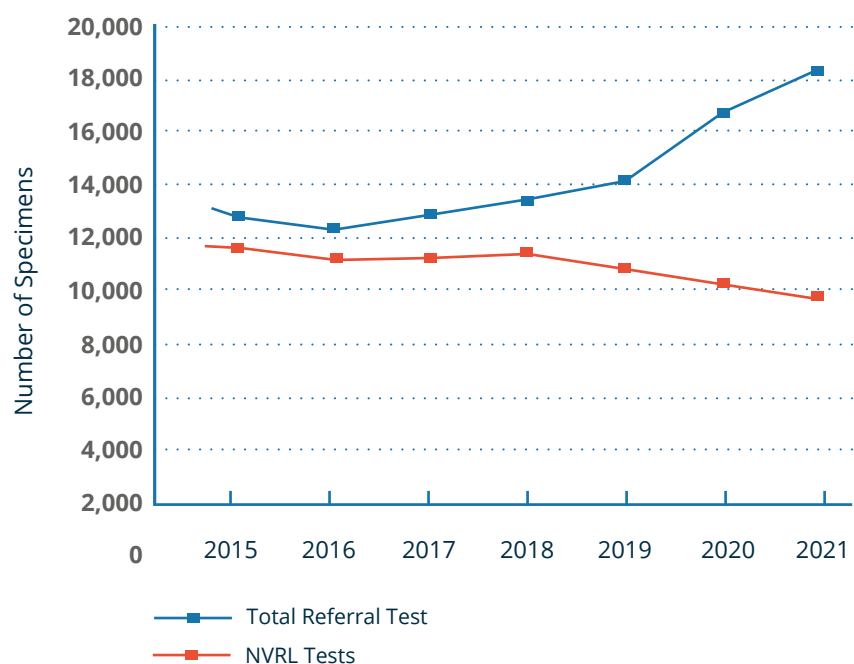


Figure 5.7.2 Send out workload, 2015 to 2021



SARS-CoV-2 testing was introduced in the Microbiology Department in May 2020. Table 5.7.3 shows the numbers of tests performed in the CWIUH and the laboratories that provided a SARS-CoV-2 testing service to the CWIUH.

Table 5.7.3 SARS-CoV-2 testing by laboratory

	2020	2021
Testing laboratory	n	n
CWIUH	1,680	4,271
CHI Crumlin	1,400	6,192
National Virus Reference Laboratory	54	0
Total	3,134	10,463

- › Environmental Screening:
 - Required after building work is completed prior to opening
 - Essential to allow equipment to be reused post cleaning.
- › Target Turnaround Times TATS: were analysed on 24 occasions in 2021:
 - This included blood cultures, urines, microbiology specimens both simple and complex, semen samples, pregnancy tests, external tests, SARS-CoV-2 and cerebrospinal fluid (CSF) microscopy and Gram stains
 - Twenty of these 24 occasions were within the TATS.
- › External Quality Assurance:
 - Sixty-two distributions were analysed in 2021
- Schemes: pregnancy testing, antifungal ID and susceptibility, general bacteriology, antimicrobial susceptibility testing, genital pathogens, methicillin-resistant *Staphylococcus aureus* (MRSA) screening, andrology, urinalysis cell count, blood culture Gram stains and SARS-CoV-2.
- › Internal Quality Assurance:
 - Ongoing tests/kits/reagents validation
 - Batch acceptance of all products
 - Daily, weekly, monthly and quarterly quality control was performed covering all microbiology methods, reagents, media and susceptibility testing.
- › All microbiology staff attend training in manual handling, chemical safety, fire safety and hand hygiene training.



INFECTION PREVENTION AND CONTROL

Effective Infection Prevention and Control (IPC) is essential to providing clean, safe and high-quality healthcare to patients and staff. IPC is everyone's responsibility. There are many processes involved which include hand hygiene, environmental hygiene, equipment hygiene and management, safe linen and waste management, safe patient placement, safe injection practices and implementation of transmission-based precautions as required. Hand hygiene remains the basis for providing safe care for all. It is the single most effective strategy in preventing healthcare associated infection (World Health Organization 2009). It is cheap, effective and easy to do but is only effective if done at the appropriate times and that is in accordance with 'the 5 Moments for Hand Hygiene'.

A national hand hygiene audit was carried out in 2021 based on 'the 5 Moments for Hand Hygiene'. Clinical staff compliance with hand hygiene training increased from between 44% and 61% in 2020 to between 50% and 60% in 2021. The results of hand hygiene audits in clinical locations with a target of 90%, were 92% in 2020 and 94% in 2021. In 2021, 2,434 litres of alcohol gel were used in the CWIUH.

The IPC team and the IPC Committee actively participate in working toward improving standards to reduce the risk of healthcare associated infection to patients, visitors and staff. This is done through daily communication, either by face to face, phone, text or email, quarterly meetings of the IPC Committee, input into MDT meetings, contribution to the COVID-19 Executive Team and other meetings as required by the service.

2021 remained a challenging time for the IPC Department in response to the COVID-19 pandemic. Throughout the year, we continuously updated and informed staff and patients on COVID-19 IPC guidance documents. All patient contact training for COVID-19 was carried out by the staff of the IPC Department.

SURVEILLANCE

- › Microbiology and Infection Prevention and Control dashboard is maintained to provide ongoing information on the following KPIs:
 - Alert organisms
 - Multi-drug resistant organisms
 - Serious infection rates
 - Notifiable diseases
 - Blood borne viral infections
 - SARS-CoV-2.
- › Adult blood stream infection (BSI) rate per 1,000 bed days used (BDU)
- › Adult blood culture contamination rate
- › Paediatric late onset primary BSI rate in NICU per 1,000 patient days
- › Paediatric laboratory confirmed early onset BSI rate per 1,000 live births
- › HCAI *Staphylococcus aureus* and *Clostridium difficile* rates per 10,000 BDU reported to Business Information Unit, HSE (table 5.7.4)
- › Resistance patterns of specific organisms reported to the European Antimicrobial Resistance Surveillance Network (EARS-Net). This allows comparison with similar hospitals in Ireland and national comparison with other European countries
- › Number of carbapenem-resistant *Enterobacteriaceae* (CRE) screens performed. This became a national KPI in October 2017.

Table 5.7.4 Infection rates, 2019 to 2021

Year	Adult BSI rate	Paediatric NICU late onset BSI rate	Paediatric early onset BSI rate	<i>S. aureus</i> HAI rate	<i>C. difficile</i> HAI rate
2019	0.47	6.0	0.18	0.39	0.0
2020	0.44	8.5	0.79	0.94	0.47
2021	0.26	6.0	0.0	0.85	0.0

INAB Accreditation was achieved for Molecular SARS-CoV-2 testing and the following continued:

- › Validation and batch acceptance for accreditation
- › Performance characteristics of examination procedures, including uncertainty of measurement, determined for accreditation purposes
- › Senior staff regularly attended MDT meetings within the CWIUH including Drugs and Therapeutic Committee, Antimicrobial Stewardship Committee, Infection Prevention and Control Committee and POCT
- › Microbiology staff, as members of, contributed to National Committees and Advisory Groups
- › Maintenance of the Infection Prevention and Control Dashboard
- › Alert organism and environmental screening
- › Antibiogram data produced to inform antimicrobial guidelines
- › Annual surveillance and IPC data produced for the EMT.
 - Annual newsletter
 - CWIUH Board Report
- › Additional maternal BSI surveillance submitted to EARS-Net
- › Ongoing data presentations and feedback to MDT obstetric and paediatric meetings
- › Collaboration with research projects within the CWIUH
- › Patients with multi-drug resistant organisms continue to have alerts added to their records on integrated Patient Management System (iPMS)

- › Peripheral vascular catheter care bundle audits continued staff could access results on the medical audit system
- › Training of staff in IPC issues
- › Collaboration with the CME
- › Engagement with users to reduce pre-analytical blood culture non-conformances
- › Use of Q-Pulse for management of Pathology Non-Conformances
- › SARS-CoV-2 information required; CWIUH testing database, HSE Daily Tracker, daily reporting to the DMHG via the EMT, daily submission of all SARS-CoV-2 results to Public Health, notification of SARS-CoV-2 'detected' results via computerised infectious disease reporting (CIDR) and weekly reporting of test consumables to HSE.

Phlebotomy Department

MARTINA RING

Although the SARS-CoV-2 global pandemic remained during 2021 the workload in phlebotomy can be used as a barometer for the return to normal services in the CWIUH. There were 4,020 patient episodes more in 2021 than there were in 2020 (table 5.8.1). The workload in 2021 was higher than that of 2019, while staff continued to work in a global pandemic.

Table 5.8.1 Phlebotomy Service in the adult OPD and Perinatal Centre

	2015	2016	2017	2018	2019	2020	2021
First visits (n)	7,586	7,296	7,237	7,090	6,908	6,342	6,691
Other visits (n)	16,055	17,954	17,369	18,414	18,951	16,033	18,965
Perinatal Centre (blood tests) (n)	-	8,562	13,264	12,793	13,695	13,585	14,324
Total (n)		33,812	37,870	38,287	39,554	35,960	39,980

The numbers presented in Table 5.8.1 are patient episodes and do not reflect actual numbers of blood samples taken from each patient. All three phlebotomists work in the Perinatal Centre and the adult OPD thus providing cross cover for both areas.

The workload within the Perinatal Centre continued to be substantial, with more than 1,000 patient episodes per month. This reflected an increase in the numbers of women meeting the criteria for screening for gestational diabetes mellitus.

Allied Health Services

Bereavement Services

ANITA BOUDERBALA AND FIONA MULLIGAN

The bereavement team provides a number of services to patients and families. The team provides anticipatory bereavement support and ongoing care to parents whose baby is diagnosed with a life limiting condition utilising the perinatal palliative care approach, in close liaison with the Perinatal Co-ordinator CMM2, the neonatology team and specialist palliative care team. A holistic approach is taken in bereavement care in line with evidence-based practice (NICE, 2014 and HSE National Standards of Bereavement, 2016).

Bereavement support is available for parents who experience early pregnancy loss and perinatal death. This may be at the time of loss, in the weeks and months that follow, and may include care in relation to subsequent pregnancy anxiety. The team also provides bereavement support and ongoing care for families who receive a diagnosis of life limiting condition and who choose to end their pregnancy early in line with the new legislation and care services.

The team manages the co-ordination of the formal structured follow-up care of bereaved parents who have experienced a perinatal death, after MDT discussion at the monthly perinatal mortality meeting and plays an advocacy role of the needs of bereaved parents, and development of service provision in response to identified needs of bereaved families.

Furthermore, the team has worked to forge links with the voluntary support agencies that provide care to bereaved families in the community, with recognition of their invaluable support of families.

Additionally, staff who may be impacted in their care of bereaved families are provided with support and resources.

The team provided bereavement training and education by inputting on programmes in the CME for staff midwives, the undergraduate programmes in TCD, the post graduate neonatal nurse programme, staff induction sessions, as well as informal education in the clinical setting.

The team also contributed to the ongoing work of the End of Life Care Committee.

The CMS in bereavement provided weekly bereavement support in the LEAF Clinic to couples who experienced recurrent miscarriage and/or mid-trimester miscarriage. Carol in EPAU is kindly acknowledged for her clerical support.

Chaplaincy - Pastoral Care Department

JOSETTE DEVITT VASSALLO

The Pastoral Care Department was staffed by two full time chaplains; Renée Dilworth, from the beginning of the year and by Josette Devitt Vassallo who joined her from the 1st July 2021.

The Pastoral Care Department provides a supporting ministry to all families in times of joy and in their times of sadness. Pastoral care is available to all patients, families, as well as to all the CWIUH staff and students.

The pastoral care team understands that everyone they meet in their ministry is spiritual in some form or another since the spirituality of an individual is expressed through their psycho-social-cultural experiences within the context they operate in.

When families prefer to be supported pastorally by Ministers of their own traditions we invite the representative of their preferred tradition to attend to them pastorally.

The Oratory is located on the fourth floor of the CWIUH and is open 24 hours a day. It is well frequented by patients, their families, students and staff members. In the Oratory, besides the Blessed Sacrament, the reading of the day, bibles in English and Urdu can be found and a weekly wisdom quote is displayed on the TV screen there for reflection.

In 2021, the pastoral care team visited 589 women at their bedside before and after the birth of their baby and provided bereavement support to 186 families. The team conducted 158 funeral services either in the Mortuary Chapel or at the graveside. The team also conducted naming or blessing services of babies and celebrated the Sacrament of Baptism for babies at parents' requests.

There was a notable increase in the demand for staff pastoral support for staff members of the CWIUH with 219 appointments and meetings taking place. The new Family Room adjoining the Mortuary Chapel was used extensively during 2021, to facilitate family members.

In 2021, an increasing number of families linked in with chaplaincy for continuing support and the chaplains visited the wards and the NICU daily.

The Book of Remembrance can be found in the Oratory and is regularly updated with the names of the babies that pass away in the CWIUH. In 2021, a photo of the insert was sent via WhatsApp to families because of the COVID-19 restrictions. Similarly, the Service of Remembrance for bereaved parents and their families was provided as an online event.

Clinical Nutrition and Dietetics

FIONA DUNLEVY

In 2021, the Clinical Nutrition and Dietetics Department expanded services to meet patients' needs as identified through the patient experience survey and national maternity strategy. In particular, there was an increase in service provision to pregnant women with hyperemesis gravidarum (100% increase) and to women with a history of gastric bypass (increase of more than ten times the number seen previously). The department also introduced new services within our gynaecology department as part of the enhanced endometriosis team, a service for women attending the Fertility Hub was also introduced in 2021. The service to neonatology also expanded and the department contributed to ward rounds in addition to individualised care as required. A virtual clinic service to meet service users' preferences was maintained, with 84% of our outpatient consultations remaining virtual.

The number of patient contacts in all clinical areas increased between 2017 and 2021 (table 6.3.1).

The department had a total of 616 patient contacts with obstetrics (507) and gynaecology (109) in 2021 (table 6.3.1). There were 869 individual neonatal contacts in 2021, the highest between 2017 and 2021 (table 6.3.1). In 2021, there were 1,104 patient contacts on MDT neonatal ward rounds.

Table 6.3.1 Patient contacts with Clinical Nutrition and Dietetics

Clinical area	2017	2018	2019	2020	2021
Diabetes mellitus (n)	1,292	1,471	1,217	1,138	1,641
Obstetrics and Gynaecology (n)	618	571	469	275	616
Neonatal - individual (n)	125	102	254	503	869
Total* (n)	2,035	2,144	1,940	1,916	3,126

* excluding neonatal contacts on MDT ward rounds

Medical Social Work

TANYA FRANCIOSA

In 2021, 1,106 new referrals were received by the Medical Social Work (MSW) Department. In total, 1,226 women received MSW intervention in 2021 (120 of these women were referred in 2020). There was a 5% increase in the number of new referrals received in the department in 2021 compared to 2020. Over 62% of referrals were allocated to a specialist medical social worker with advanced knowledge and skills in the specific area of need. Approximately 40% of new referrals received in 2021 required immediate MSW intervention, including patient safety and child protection referrals. A waiting list remained necessary in 2021 for non-urgent referrals, however, efforts were made to ensure efficient prioritisation led by patient need and complexity. The waiting list averaged at 24 patients (range 9 - 45 patients). This represents a slight improvement on 2020 figures despite an increase in the number of referrals received.

The MSW Department also provided professional support to other independently run services. Support was provided to the MSW Service in the Midland Regional Hospital Portlaoise (133 referrals – there was a service gap of approximately three months due to staff shortages) and to the Specialist Perinatal Mental Health Service (95 referrals).

The MSW Department provides psychosocial, emotional and practical assessment and support to patients, their partners and families. Safe provision of all face-to-face MSW services continued throughout 2021 despite the ongoing COVID-19 pandemic.

The department provides support for a wide range of issues but the majority of our referrals are covered under eight specialist areas; addiction, bereavement and antenatal diagnosis of fetal anomalies, domestic violence, homelessness/inclusion health, mental health, options in pregnancy, paediatric and underage pregnancies. Each speciality has a dedicated medical social worker who participates in ongoing training ensuring a high quality of care to our patients. Continuity of care is considered important by staff and patients so the attachment of the medical social workers to the obstetric teams continued, where possible, for all other referrals. Unfortunately, it was not possible to allocate a medical social worker to the specialist antenatal clinics and the MSW Service was provided to patients attending these clinics on a rota basis.

The department also operated a duty system ensuring a responsive service at all times.

During 2021, child protection and patient safety referrals, including domestic violence and abuse continued to take priority. These cases represent a high percentage of the referrals that required an immediate MSW intervention. Early identification by multidisciplinary colleagues is essential. Medical social workers continued to promote the importance of the Children First Act, 2015, supporting other mandated reporters within the CWIUH.

Domestic violence and abuse remain an issue for many women attending the CWIUH. The COVID-19 pandemic saw an increased prevalence of pregnant women who were experiencing abuse in their homes. In response, the MSW Department undertook a number of awareness raising initiatives throughout the year. The department also took on the leading role for the CWIUH in joining a three-year collaborative maternity project between Women's Aid, The Rotunda Hospital, The National Maternity Hospital and Cork University Hospital for which the work remains ongoing.

Homelessness and related situations remained a significant issue for many of our patients in 2021. The number of patients who reported uncertainty in their living arrangements continued to increase. During 2021, the implications of homelessness for our patients became even more challenging as the COVID-19 pandemic continued to be a complicating factor. School and office closures created difficulties for families, many of whom were living in emergency or family hub accommodation, developing an even wider socio-economic gap for these families. In response to this ever-growing crisis, the HSE Inclusion Health Office provided funding for a dedicated senior inclusion health medical social worker to support homeless patients and their families in; accessing medical care, availing of community and social supports, and to provide psychosocial support during pregnancy and in the immediate postnatal period through an inclusion health model of care.

Throughout 2021, the staff in the MSW Department demonstrated an ongoing commitment to their own CPD to the direct benefit of our patients. The department also continued to maintain strong working relationships with third level education providers, with Gretchen McGuirk, Senior Medical Social Worker and Kerri O'Brien, Medical Social Worker, providing practice placements to postgraduate and undergraduate social work students.

Gretchen McGuirk and Tanya Franciosa, Principal Medical Social Worker also provided third level training at both undergraduate and postgraduate levels. The following were achieved by the staff in the MSW Department:

- › Anna Breen, Senior Medical Social Work Practitioner and Kerri O'Brien completed a multidisciplinary research project entitled 'Child Protection Pathways for Newborn Infants: A Multi-Disciplinary Retrospective Review of an Irish Maternity Hospital Records'
- › Denise Shelly, Senior Medical Social Worker participated in a quality improvement initiative and was involved in the development and implementation of a Parent Time-out Group for parent's with babies in the Neonatal Unit.
- › Gretchen McGuirk and Kerri O'Brien both achieved a Distinction in a Level 8 Postgraduate Certificate in Understanding the Fundamentals and Responding to Domestic Abuse through Dundalk, IT
- › Funding secured from the HSE Social Inclusion Office to develop an Inclusion Health Medical Social Work Service. Gretchen McGuirk initiated the development and implementation of the service towards the end of 2021.
- › Eleanor Hale, Medical Social Work Student undertook a successful awareness raising campaign in celebration of World Social Work Day. Eleanor aligned the theme of Ubuntu: Social Solidary and Global Connectedness to the HSE Intercultural Health Strategy, highlighting how healthcare providers can ensure inclusivity for minority groups
- › Successfully ran a collaborative maternity-focused '16 Days of Action' campaign in collaboration with Women's Aid, and the MSW Departments in The Rotunda Hospital, The National Maternity Hospital and Cork University Maternity Hospital to raise awareness of the issue of domestic violence and abuse in pregnancy.

My sincerest thanks to those who work in the MSW Department including the medical social workers and the receptionists. I especially wish to express my gratitude to all staff in the department for their support and hard work throughout 2021. Despite the challenging impacts of COVID-19 and two cyberattacks, the level of professionalism and maintaining standards of best practice throughout the year demanded a major commitment which is much appreciated.

The support of our colleagues in other departments within the CWIUH was also essential, as was the support of our colleagues, both social work and non-social work, within the community.

Given the socio-economic deprivation experienced by many of our patients, many of those who engaged with the MSW Department required practical support and assistance. We continue to be indebted to the members of Coombe Care who provide support to patients by way of necessary practical help during pregnancy, at the time of a baby's birth, or in the immediate postnatal period. Furthermore, accommodation for parents who live outside of Dublin and whose babies are admitted to the Neonatal Units remains an ongoing issue for families. Medical social workers along with staff in the Neonatal Units work tirelessly to facilitate support plans for families. The support from Friends of the Coombe and from Hugh's House is invaluable in this regard and the MSW Department remains grateful for the support provided to parents by these charity organisations.

Finally, during 2021, support from the principal medical social workers in the other maternity hospitals was invaluable. This good relationship between the MSW Departments contributes to best practice in social work.

Pharmacy

MAIREAD MCGUIRE

The COVID-19 pandemic which continued in 2021 provided numerous challenges to the Pharmacy Department. The Pharmacy Department continued to provide a comprehensive pharmacy service despite staff shortages, stock availability issues and changes in day to day work practices. Staff adapted continued strategies to prevent the forced self-isolation of the entire department in the event of a possible infection or exposure. The Pharmacy Department played a key role in the roll-out and administration of COVID-19 vaccines to in-patients, staff and community workers.

Clinical obstetric neonatal and gynaecological service provision:

- › Daily review of prioritised patient drug charts on adult wards, medicines reconciliation at admission and review of medication charts for potential interactions and safety in pregnancy
- › Daily clinical service in NICU (including attendance at ward rounds when permissible), review of all neonatal drug charts; and continued facilitation and support around prescribing of individualised and standard concentration parenteral nutrition

- › Multidisciplinary acute pain round/team- patient education regarding appropriate analgesia use and review of medication charts
- › High-risk Pregnancy Medical Clinic - providing medicines information and advice regarding safety of medicines pre-conception, during pregnancy and breastfeeding and safe prescribing for patients with complex medical conditions
- › The department expanded its role in the facilitation of clinical trials in the CWIUH with the GEHPPI and IRELAND trials continuing, and the commencement of the pilot phase of the ETAPA trial examining the use of paracetamol for closure of PDA in premature infants
- › Twice monthly Antenatal GUIDE Clinic
- › Intermittent multidisciplinary nausea and vomiting (PUQE) rounds
- › Daily Antimicrobial Stewardship rounds
- › Reviewing and updating of 154 NICU drug guidelines. Six were removed and three were added
- › Medication Reconciliation for Pre-operative Anaesthetic Clinic.

MEDICATION SAFETY

The CWIUH's prescribing app was updated to include new sections on management of major obstetric haemorrhage and pre-eclampsia and eclampsia. These were developed in collaboration with the Department of Perioperative Medicine.

The provision of individualised parenteral nutrition remained a significant medication safety challenge for the pharmacy department and the CWIUH in general. The department worked collaboratively with colleagues from the Department of Paediatrics and Newborn Medicine, Clinical Risk and the CWIUH EMT, the NWIHP as well as colleagues in other hospitals, in the HSE and the DMHG to protect vulnerable patients from new challenges in this arena throughout 2021.

ANTIMICROBIAL STEWARDSHIP

The antimicrobial pharmacist continued to be an active member of the Infection Prevention and Control Team (IPCT) and various CWIUH committees as well as carrying out regular clinical ward rounds alongside the IPCT and consultant microbiologist.

The antimicrobial pharmacist participated in the development of guidelines in the management of COVID-19 and circulated these to the COVID-19 Committee as necessary.

They also participated in the National Antimicrobial Point Prevalence Survey in September 2021 and also continued to submit data on a monthly basis to the HPSC regarding antibiotic consumption.

The results available from the HPSC 2021 showed a 1% increase in antimicrobial consumption from 2020 to 2021. The costs reported by the HPSC to reflect this have remained stable.

PRESCRIBING AND MICROBIOLOGY GUIDELINES

Monitoring of compliance with the CWIUH's Prescribing and Microbiology Guidelines for Obstetrics and Gynaecology continued in 2021, with documentation of interventions relating to antimicrobial prescribing and clinical ward rounds.

Each year the Pharmacy Department carry out a comprehensive review of the Adult Prescribing Guidelines and both of the CWIUH's prescribing apps. In 2021, this involved the review and update of analgesia, penicillin allergy, influenza, nausea and vomiting in pregnancy, thromboprophylaxis, constipation and threadworms sections.

The department completed a comprehensive review of antimicrobial treatment regimens with the addition of sickle cell patients and those with gonorrhoea and completed an update of antibiograms, with information obtained from the surveillance scientist.

The Pharmacy Department issued stock to wards, outpatients, staff and babies discharged from SCBU on 33,250 occasions. This equated to approximately 132 dispensing transactions per day. There was a significant increase in workload around the management of drug shortages and supply issues and risk mitigation associated with this. The Pharmacy Technician-led Medication Top-up Service continued to all clinical areas in the CWIUH. The Pharmacy Department continued to support and to promote the use of new standard concentration parenteral nutrition solutions for NICU. These new solutions will provide a better source of nutrition for our most vulnerable infants compared to previous products.

Peter Duddy continued his teaching collaborations with the School of Pharmacy in University College Cork. The Pharmacy Department continued to provide educational support to the Centre for Midwifery Education with the development of online podcasts on HSeLanD produced by Leanne Flynn.

Physiotherapy

CLARE DALY AND ANNE GRAHAM

Clinical activity in the Physiotherapy Department continued with a hybrid model of face to face and virtual appointments in 2021 due to the pandemic. With the resumption of face to face outpatient clinics the physiotherapy team provided 2,591 outpatient appointments in 2021. A 143% increase in face to face contacts compared to the previous year was achieved. Our Paediatric Department offered 1,706 appointments for babies. A total of 1,425 women received physiotherapy during their inpatient stay in the CWIUH. All women who sustained an obstetric anal sphincter injury were seen on the ward whilst inpatients and at two and six weeks postnatally as per the HSE national guideline.

Classes remained online due to the COVID-19 pandemic. Due to a high volume of referrals for pelvic girdle pain, patients were offered an online class to provide them with information and advice for managing their low back and pelvic pain in pregnancy. In 2021, 766 women attended the online class with an opt in rate of 57%. A 'drop in' clinic for collection of lumbo-sacral support belts was established.

The physiotherapy online postnatal class was attended by 374 women (a 322% increase compared to 2020). Women referred with antenatal urinary incontinence antenatally were offered the opportunity to attend the 'Antenatal Bladder Class'. In 2021, 80 women were referred to this class, a 242% increase on 2020. In 2021, the booking visit included questions concerning pelvic floor symptoms which led to referral to physiotherapy as appropriate. The MAMMI (Maternal health And Maternal Morbidity in Ireland) study highlighted the importance of early intervention.

Antenatal education plays an important role in preparing women for delivery and the postnatal phase. In 2021,

39 women attended the online Antenatal Physiotherapy Class. The 'Fit for Surgery class' was established in December and patients booked for major gynaecological surgery are invited to attend this class. A multidisciplinary team booklet was produced and is available for download on the physiotherapy website.

Finally, the Physiotherapy Department recruited a new 1.0 WTE senior post for urogynaecology and 0.5 WTE senior post for the Endometriosis Service. These posts have allowed for additional one to one appointments and has been reflected in the increase in patients treated.

Anne Graham is the ISCP representative for the National Clinical Programme for Diabetes. Clare Daly is the ISCP representative for the Expert Advisory Group for the National Guideline Development for Maternity and Gynaecology. The Physiotherapy managers took on the role as the HSCP representative on the AQuA committee. The National Healthcare Communication Programme was rolled out by clinical leads within the CWIUH. Clare Daly was a lead for Module One and ran workshops in the Rita Kelly Room for all staff. Amanda Drummond Martins is on the CPWHC ISCP committee. Alyson Walker and Roisin Phipps Considine both completed the Precht's General Movement course.

Psychosexual Therapy

DONAL GAYNOR

The number and types of consultations between 2015 and 2021 are presented in Table 6.7.1. In 2021, return visits comprised 93.9% of all consultations and 97.5% of consultations were public consultations.

Four months of psychosexual therapy were provided despite the COVID-19 restrictions during this time.

Table 6.7.1 Consultations

Type of consultation	2015	2016	2017	2018	2019	2020	2021
New (n)	26	21	25	23	16	19	12
Return (n)	313	235	235	172	220	167	185
Total (n)	339	256	260	195	236	186	197

The principal dysfunctions treated were:

- > vaginismus (23%)
- > dyspareunia (18%)
- > female inhibited sexual desire (25%)
- > female anorgasmia (24%)
- > premature ejaculation (5%)
- > male inhibited sexual desire (5%).

Dyspareunia with anorgasmia and inhibited sexual desire of both partners were treated successfully.

Radiology

PROFESSOR MARY KEOGHAN

In 2021, 2,940 adult ultrasound examination were carried out in the Adult Radiology Department. The service for all urgent and emergency patients was maintained during the COVID-19 pandemic. There was continued in-house access and GP-access to transabdominal and transvaginal pelvic ultrasound examinations.



Quality, Risk and Patient Safety

Department of Quality, Risk and Patient Safety

ANNA DEASY

The Department of Quality, Risk and Patient Safety's structures and processes continued to improve throughout 2021 across all areas of responsibility including clinical risk management, incident review, medicolegal claims, patient complaints and advocacy and clinical audit.

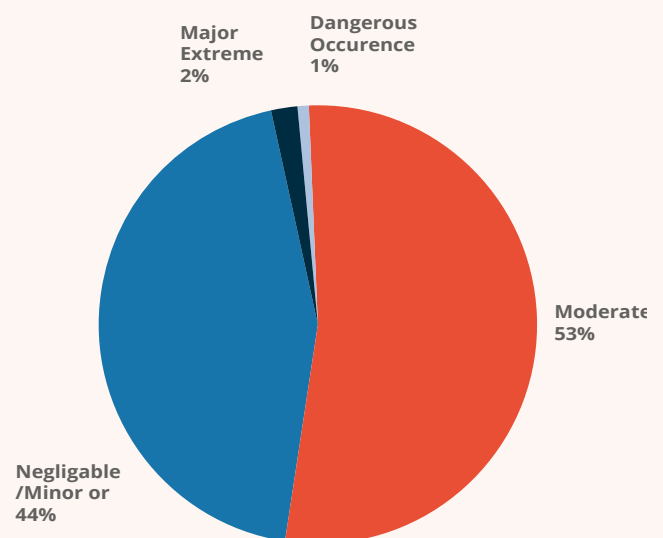
CLINICAL INCIDENT REPORTING AND REVIEW

The clinical risk managers continued to work in collaboration with staff across all departments within the hospital to enhance clinical risk management within the CWIUH. This includes risk identification and incident prevention, incident identification, timely reporting and investigations or reviews to extrapolate any causal factors or findings and ensure the implementation of any subsequent recommendations. All of this is performed and guided by the HSE Incident Management Framework (2020) and the CWIUH Incident Management Policy.

All clinical incidents reported are triaged, undergo a level of review and investigation according to the level of severity and are uploaded onto the National Incident Management System (NIMS). The levels of severity are categorised as (Figure 7.1.1):

- › Dangerous occurrence: incidents related to failure of equipment, security, resources
- › Negligible: incident where no intervention was required e.g. medication error
- › Minor: delay in treatment with no impact on care
- › Moderate: intervention was required e.g. medication for management of PPH
- › Major/extreme: intrauterine death/stillbirth with birth weight > 500g (including those with congenital or chromosomal anomaly).

Table 7.1.1 Clinical incidents reported in 2021



Clinical reviews were undertaken in the vast majority of all incidents reported. For the minor/negligible and some of the moderate incidents this usually involved a chart review and liaison with the appropriate clinician or departmental managers.

For the moderate, major and extreme incidents the Clinical Risk Managers prepared a concise desktop review report including an in-depth chronology of each case and any subsequent investigation undertaken at the time of the event. These case reports are then presented at the various level of multidisciplinary review teams in the CWIUH in line with the predefined inclusion criteria for each team.

The Concise Review Team chaired by Dr Mark Hehir met fortnightly, and included members of the multidisciplinary team including obstetric, paediatrics, anaesthetics, midwifery and nursing, hemovigilance and other specialities as required depending on the cases under review. A total of 98 moderate and major/extreme cases were reviewed by this team in 2021.

As per the HSE Incident Management Framework (2020) the major/extreme incidents and any concerns that were identified were then presented to the CWIUH Senior Incident Management Team and the DMHG Women and Infants Senior Incident Management Forum. Both of these committees continued to meet monthly throughout 2021. Due to the timely identification, preparation, presentation and review of these incidents at the various levels of MDT committee, 99% of all incident reviews were closed within the 125 KPI as set by the HSE. Learnings sessions were held in March and September 2021 for all clinical staff within the CWIUH where the key findings and recommendations from the incident reviews were shared for discussion and educational purposes.

MEDICO-LEGAL

The management of medico-legal cases and coronial inquests remained very busy throughout 2021 with a substantial number of claims progressed to various levels of mediation or settlement and closure. There was one Coroner's Inquest held in 2021 due to court closures with the ongoing COVID-19 pandemic.

AUDIT AND QUALITY ADVISORY GROUP

The work of the Audit and Quality Advisory (AQuA) Group continued in 2021. The group is designed to provide structure, governance and assistance to those pursuing audits and quality improvement programmes (QIPs) projects at the CWIUH. During 2021 the AQuA group assessed and approved, 41 audits and 11 QIPs.

PATIENT ADVOCACY

In 2021, 4,530 compliments and 273 new complaints were received (59.7% of new complaints were written). Feedback from women and families was positive 94% of the time. The most frequent subjects of our complaints in 2020 were; communication and information, access and safe and effective care. In 2021, 100% of all written complaints were acknowledged within five working days and 91% of all written complaints were resolved within 30 working days of acknowledgement of the complaint. While there is no national target, most hospitals and hospital groups have a target of 70 - 75%. As a direct result of the patient liaison manager's completion of patient complaints advocacy service training, the number of patient advocacy support interventions continue to increase. These doubled from 174 support interventions in 2020 to 356 in 2021. The roll out of the National Healthcare Communication Programme commenced in 2020 but it had to be suspended due the COVID-19 pandemic. It had been reinstated at the time of writing.

Administration

Human Resources Department

ANNEMARIE WALDRON

In 2021 the Human Resources (HR) Department continued to work in split teams for a large section of the year due to COVID-19.

The staff of the HR Department provide a service to all of the staff and managers working within the CWIUH. The staff provide a recruitment and selection service to all departments for all staff categories within the CWIUH. They liaise with payroll for all new employees and for employees whose contract hours change. In addition, they process leave for staff and deal with queries ranging from bike to work scheme, parental leave, maternity leave to contracts and verification of service. They also roll out training and development initiatives.

It was not possible to calculate the following rates over a 12-month period due to the cyberattack. The average (over a 10-month period) absence rate due to sick leave was 3.47% and due to COVID-19 leave was 2.07%. The average (over an 11-month period) rate of staff turnover was 19.83%. The average (over a 10-month period) rate of compliance with the European Working Time Directive (48 hours working week) was 94.3%.

STAFF RECRUITMENT

The HR Department ran 124 competitions for posts within the CWIUH and 255 staff were recruited in the following categories:

- > 87 midwifery and nursing (including Bachelor of Science and Higher Diploma Students)
- > 91 NCHDs (on rotation)
- > 6 consultants
- > 19 health and social care professionals.
- > 36 support
- > 16 administration.

In 2021, 202 staff in the following categories left the CWIUH:

- > 60 midwifery and nursing
- > 90 NCHDs on (rotation)
- > 1 consultant obstetrician and gynaecologist
- > 13 health and social care professionals.
- > 28 support
- > 10 administration.

TRAINING AND DEVELOPMENT

Due to COVID-19 a number of training events were postponed. The following courses were run online or classroom based; Interviewer and Interviewee Skills, Conflict Resolution, Resilience and Positive Mental Health, Quality Conversations, Customer Care and Retirement Planning.

Quality and Qualifications Ireland (QQI) Level 6 Course courses facilitated by Our Lady's Hospice and Care Services in conjunction with Tallaght Training Centre were co-ordinated by the HR team. A multidisciplinary group of staff had the opportunity to attend courses in leadership and project management.

OCCUPATIONAL HEALTH SERVICE

The CWIUH received an excellent Occupational Health Service on a part-time basis from Dr Alex Reid, Occupational Health Physician and Sarah Creedon, CNS Occupational Health via Tallaght University Hospital from 2010 to 2021.

Cognate Health Ltd commenced providing occupational health services to the CWIUH on 8th March 2021. This service is provided on a part-time basis by Dr Shirley Wong, Occupational Health Physician and Ciara Hussey, Occupational Health Nurse. The HR team, led by Helena McGinley, successfully rolled out the upgrade of the time and attendance project in November 2021.

HEALTH AND WELLBEING

National Health and Wellbeing Day took place on 30th April 2021, organised and lead by Bridie Horan and supported by the HR team and Health and Wellbeing Committee members. A number of events for staff took place on site such as blood pressure checks by Ciara Hussey and Dr Wong (Occupational Health Department) as well as relaxation classes. The Catering Department provided an Italian Theme Lunch with a focus on healthy options. A Nutrition Quiz for day and night staff was facilitated by the Catering and Nutrition Department. Arts and crafts featured as part of the event and were well received. The Coombe Staff Work Place Choir also gave virtual recitals throughout the day.

Our workplace choir took 3rd place in the International Work Place Choir Event in 2021. This was a fantastic achievement!

Quit - Tobacco Cessation Programmes were run for the Staff.

Steps to Health Challenge took place between 31st May and 4th July 2021. An ice cream event took place on 21st July 2021 where 266 staff received ice creams at work! Outdoor spaces were enhanced via funding received from Healthy Ireland. This commenced in 2021 as this was a project identified by one of the teams who participated in the Leadership programme. This project is managed by a multidisciplinary team.



Support Services

Central Services Sterilisation Department

VIVIENNE GILLEN

The Central Services Sterilisation Department CCSD continued to operate successfully as a Class 8 facility. The newly appointed manager has brought excellent initiatives to the department and greatly improved efficiencies.

These include the development of a service level agreement with Naas General Hospital and the Rotunda Hospital as a contingency plan and the introduction of a communications and quality board.

The team created 'red zones', traffic control, increased awareness of both restricted and semi-restricted zones which added another layer of contamination control in CSSD. Additionally, a new automated entry door has been installed for access to the department. New washing techniques for cannulated instruments have been implemented and all instruments are put on instruments clips which prevents damage to instruments moving around trays, stops piercing and tearing of wrapping and limits sharps injuries to scrub nurses. This also makes set up easier and safer for midwives in emergency cases.

Audits continued to be carried out twice monthly. Non-conformances with key performance indications are recorded and followed up in order to rectify these.

Hygiene Services

VIVIENNE GILLEN

Hygiene Audits were carried out by ward managers, household supervisors and the EMT.

Table 9.2.1 presents the waste generated at the CWIUH from 2015 to 2021. The total waste generated by the CWIUH in 2021 was 490 tonnes, an increase of 37 tonnes compared with 2020. The rate of recycling in the CWIUH increased from 31% in 2010 (2010 Annual Clinical Report) to 70% in 2015. This rate has remained between 70% and 76% since then.

The amount of healthcare risk waste generated in 2021 increased by 16 tonnes compared with that in 2020 (table 9.2.1). This cost €176,108 which was an increase of €3,220 compared with 2020. The increase in the amount of healthcare risk waste generated can be explained by the quantity of healthcare risk waste classified as infectious due to COVID-19.

Cleaning services were provided throughout the CWIUH despite the high rate of staff absent due to COVID-19. An evening cleaner continued to service departments after working hours.

Staff training continued in 2021. The upgrading of hand hygiene sinks continued during the refurbishment programmes. An electronic auditing system was embedded throughout the CWIUH in 2021.

Table 9.2.1 Waste generated at the CWIUH

Type of waste (tonnes)	2015	2016	2017	2018	2019	2020	2021
Healthcare risk waste	-	-	-	-	-	105.09	121.26
Total waste	450.80	491.57	489.97	455.94	489.72	452.62	490.15

Information Communications Technology Department

BRYAN SMYTH

In May of 2021, the HSE was the victim of the largest cyberattack ever perpetrated in Ireland. Many hospitals and their systems were directly impacted through a designed dispersion of a ransomware encryption process. Although the CWIUH was protected from the spread of this virus, our site was impacted by the loss of access to national systems. In May and throughout the month of June, the ICT Department were engaged in a process called 'going to green'. This process involved low level auditing of all site resources to determine if there were any trace of the ransomware program and if that site had the correct security protocols to be considered safe to access central applications, such as the integrated Patient Management System (iPMS) and the National Integrated Medical Imaging System (NIMIS), which are critical to the clinical and administrative operations of the CWIUH. In this case, the CWIUH was the first hospital in the country to be declared green, through the efforts of the ICT staff to complete requests and comply with all HSE guidelines and work with Mandiant, the HSE security partner. There was still a significant delay in restoration of services as systems were being restored within the HSE and services started to become available again towards the end of July 2021.

On the back of this, having conducted our own security review, we sought and got approval for funding to improve security for our own site but due to global circumstances outside of our control, resources and services could not be mobilised to implement all the changes in a timely fashion. Most of the required changes were scheduled to happen in 2022.

On Thursday 16th December 2021, the CWIUH experienced its own malicious attack, directly targeted at the CWIUH ICT systems. In the immediate days following the attack the team was tasked with bringing critical services back in order to reduce clinical risk and facilitate a workable administrative environment.

Seventy emergency laptops devices were sought from the HSE and mobile internet routers to facilitate access to iPMS, all of which were deployed by the CWIUH ICT Department.

The ICT Department also worked around the clock to restore access to the internal maternity system K2. Both systems were available in critical areas within days of the incident. Access to LABCentre was also prioritised and access was provided and maintained for critical areas.

Through the attack, the majority of Windows based servers had been encrypted, meaning data was inaccessible, and attempts to restore from local backups were thwarted as these were also affected by the attack. On 20th December 2021, the ICT manager made the decision to call in the offsite tapes, in order to restore servers and data from this medium.

Critical administrative systems such as Megapay were restored before the 21st December 2021 and through huge efforts of both the ICT and Finance departments, all staff were paid before Christmas. Due to the time of year, access to support staff from HSE and partners were extremely limited and the bulk of work was completed by internal ICT staff. ICT staff remained onsite throughout the Christmas period to ensure access remained to critical systems. The next business critical application to restore was email services for which we needed to migrate all mailboxes to Office365 and implement a completely new service for the campus. This was completed and email services restored in the week starting the 10th January and the ICT Department began the process of onboarding over 1,000 email users into the new system including cursory training and the deployment of 2FA for secure access.

The HSE's security partner Mandiant were engaged by the HSE to work with the CWIUH in order to restore normal access to national systems such as iPMS and NIMIS. This was a painful and time-consuming process where each restored server required low level scanning and analysis before being declared 'green', similar to the process used after the previous HSE attack. CWIUH ICT complied in every way with HSE teams and partners and with help of application teams all services were restored. In order to facilitate a separation between compromised servers and green servers and new network design had to be employed and again this was delivered mostly by the CWIUH ICT team with the assistance of IPOptions, HSE's network partner.

Mandiant also recommended to the HSE that all CWIUH user devices should be wiped before access could be granted again to national systems and so all 800 devices

in use on the campus had to be wiped and reimaged and applications reinstalled granularly. This again was a huge undertaking for our small department and the process took several weeks to complete. These 800 devices had to be collected, re-imaged, software installed and then returned to users. The network aspect meant that each network port had to be individually configured to avoid any contamination from compromised machines. This was completed in tandem with the migration of circa 400 printers to the new green network.

Although this has been a challenging year, it has highlighted some of the best aspects of the CWIUH staff and I cannot praise the efforts of the ICT staff enough for their attitude, diligence and relentless efforts in restoring services for patients and staff. The support and trust received from the EMT has also been instrumental in the recovery process and this is hugely appreciated.

The works listed above are only some of the challenges met during this difficult period and the overall benefits of the changes made and services employed are difficult to quantify, however, the CWIUH will continue to benefit and there is a more modern ICT infrastructure now in place which allows us to securely implement future improvements, solutions and systems.

We continue to work on supporting issues as they arise, to facilitate projects and new services as well as improving what is in place already. While there is still a lot of work to do in order to complete the goals set we are confident that they will be achieved.

Postgraduate Education and Training

Centre for Midwifery Education (CME)

TRIONA COWMAN

The hub of the Centre for Midwifery Education (CME) is located at the CWIUH with satellite centres in the National Maternity Hospital and the Rotunda Hospital.

The CME supports excellence and the building of capacity in midwifery and nursing and allied healthcare workers by coordinating and delivering education and training for the purpose of continuing professional development.

The remit of the CME is to provide education across the three Dublin maternity hospitals and the Greater Dublin Area. However, the CME responds to regional and national demands for education and training and it has become the nationally recognised hub for neonatal education.

The first six months of 2021 was yet again another challenging time for the CME, as the COVID-19 pandemic continued. Two CME team members once again adapted their roles to support the CWIUH by assisting with the COVID-19 telephone helpline. With COVID-19 restrictions still in place, the CME continuously strives to use innovative approaches.

Despite these challenges, the CME has had a very successful year, thanks to the commitment, dedication and innovation of all team members and the enthusiasm and adaptability of our learners.

In 2021, the CME provided 126 education and training events. These included face to face classroom teaching, live virtual events, blended and eLearning. Programmes duration ranged from one hour to nine months.

The total recorded attendance at classroom/live virtual events and completion of eLearning for the year was 2,066. This was an increase of 77% on 2020 and a significant achievement was an increase of 10% on 2019 (pre-pandemic).

Sixty-one percent of total attendance in 2021 was at live virtual events or completion of asynchronous programmes. This demonstrates the rapid integration of technology into teaching and learning in continuing professional development for midwives and nurses.

In response to service needs, eight of our existing programmes were moved to a combination of synchronous and/or asynchronous learning and six new programmes of education and training were developed/delivered.

CME team members continue to contribute to local regional and national groups.

The CME is actively engaged in research projects focusing on supports required by newly qualified midwives in their first year of clinical practice and evaluating an educational programme for midwives and nurses on termination of pregnancy.

Hazel Cazzini and Antoinette Fletcher completed the Graduate Certificate in Health Professionals Education in UCD enabling them to register as tutors with the NMBI.

Finally, the CME would like to pay tribute to Judith Fleming, former midwifery specialist coordinator in the CME and wish Judith a happy and healthy retirement. Her invaluable experience will be missed.

Practice Development Department - Midwifery and Nursing

HELEN CASTELINO AND PAULA BARRY

The Practice Development Department (PDD) facilitates the development and maintenance of the clinical learning environment for all midwifery and nursing students who attend the CWIUH for clinical placements.

The department also liaises with the Centre of Midwifery Education (CME) and affiliated Health Education Institutes such as TCD and RCSI in relation to midwifery, nursing and student education and learning needs. In addition, it supports and develops midwives, in particular new midwives, working at the CWIUH.

Despite entering into the second year of the COVID-19 pandemic, the PDD team still managed to provide a high-quality service, keeping students, hospital staff/colleagues and service users very much to the forefront of their minds. Examples of same were:

- › Continued facilitation of midwifery and nursing students, balancing safety with their learning needs.
- › Continued support and guidance of clinical staff in order to provide an optimal learning environment for midwifery and nursing students.
- › Successful recruitment, induction and continued support of midwives and nurses from Ireland and abroad.
- › Continued to encourage staff to embrace quality initiatives and evidence-based care, supporting the ethos of research throughout the CWIUH.

The Practice Development Department assisted Coombe and TCD midwifery colleagues to secure research funding (€12,000) for COVID-19 related research at the CWIUH.

Three staff members either continued or embarked on further study for Masters degrees.

PUBLICATIONS

See Appendix Two for a list of publications from the Practice Development Department.

Advanced Midwife Practitioner for the Supported Care Pathway and the Community Midwifery Service

NORA VALLEJO

In 2021 Nora Vallejo successfully registered as advanced midwife practitioner (AMP) with a remit to enhance and develop the Supported Model of Care pathway, as outlined in 'Creating a Better Future Together, National Maternity Strategy 2016-2026'.

Whilst achieving the prerequisites for registration, the role was modified to support the development of a COVID-19 Pregnancy Assessment Unit and a COVID-19 screening service for both women and staff.

Whilst maintaining skills of advanced midwifery practice, the role intends to provide clinical input, leadership and management, education and research. The intention will be to support and strengthen The DOMINO Service; the Coombe's own Supported Care Pathway for women considered 'normal risk'. Whilst committed to developing a service that facilitates choice for women within a multidisciplinary framework, the AMP role endeavours to optimise women and infant's health outcomes, in tandem with nurturing and supporting midwifery.

Midwifery and Nursing Education

ANN MACINTYRE

Despite COVID-19, education and training continued throughout the year under strict adherence to social distancing, hand hygiene, and the use of personal protective equipment. This is a testament to the team of passionate, supportive and dedicated midwives and nurses that deliver the diverse education programmes, both mandatory and inclusive of skills and drills.

Dedicated structured rolling teaching sessions were held weekly. Thanks to our CSFs, CMM3 and AMPs. Toolkit sessions and insulin education commenced on the wards with the support of the CSFs and the diabetic midwifery team. The education toolboxes continued in Delivery Suite and the maternity wards with a focus on maternal and neonatal emergencies with support from the MDT.

We were fortunate to receive approval and funding from the Nursing and Midwifery Planning Development Unit (NMPDU) to the value of €151,364. This permitted 34 midwives and nurses to continue and /or commence study at diploma/postgraduate diploma/ MSc level and High Dependency Maternity Care module. This financial support is vital for the continued education enabling evidenced based care to be given to all the women and babies in the CWIUH.

Two theatre staff completed the HDU course and two CNMs completed the 12-week leadership course with the Office of the Nursing and Midwifery Services Director (ONMSD). The CSF continues to orientate new staff and supports the education requirements in theatre.

One staff nurse commenced the HDip in Midwifery. While three staff midwives in the Adult Outpatient Department and the Emergency Room completed the EPAU scanning module.

In gynaecology, a CNM2 has commenced the smear test course, while another CNM2 completed the smear test course. One staff nurse is nearing completion of her hysteroscopy training.

In neonates; four nursing staff commenced the Postgraduate Diploma in Neonatal Intensive Care while six staff commenced Level 1 Principles and a further six nurses progressed to Level 2 Principles. Eighteen neonatal staff have been trained in 'Project 23'.

The Parent Education Midwives have completed Active Birth Teacher Training and the Biomechanics of Birth Training Course in January.

The perinatal mental health (PMH) team had a PMH Study Day for PHNs and community midwives via Zoom in December which was a great success.

The Practice Development Co-coordinator led out on a mentorship programme developed by the National Clinical Leadership Centre for Midwifery and Nursing with support from our CSFs. The aim of this programme was to support newly qualified midwives.

In June the Practice Development Team and DoMN met with the BSc interns to address their fear and anxiety about the transition from internship to qualifying as a midwife in September/October.

This was primarily due to the interns moving to a situation where they would have clinical exposure to COVID-19 on the wards. This anxiety was heightened due to COVID leave among staff on the wards. An action plan and supports were put in place. These included case load allocations, toolkit sessions, CPC links and group sessions with our PMH psychologist. The BSc interns had reflective sessions on empathy fatigue on 3rd and 10th August, which they found very beneficial.

Four research papers, involving Coombe midwives and Coombe midwifery research were presented at the TCD Research Conference on the 9th and 10th March.

This ongoing research is a testament to the midwives in the CWIUH who continue to strive for excellence in the care of women and babies.

Congratulations and well done to your continued passion for improving and supporting women experiences with maternity care.

The titles of the research papers were as follows:

Emma Feeley, Staff Midwife. *'Women's experiences of having preterm babies'*. MSc research.

Maria Pia, Staff Midwife. *'Women's experiences of using the Coombe birthing pool'*. MSc research.

Deirdre O Malley (TCD). *'Women's Experience of a Maternity Care during COVID-19 - a qualitative descriptive study'*. Assisted by Nora Vallejo (AMP) and P Barry (ADoMN).

Sunita Panda (TCD). *'Women's suggestions on how to make things better during a pandemic'*. Assisted by Nora Vallejo (AMP) and P Barry (ADoMN).

The parent education team launched a new postnatal support consisting of a five-week programme entitled: *'Mothers Talking - A Gathering of Women for Women'*. This programme incorporates modules on maternal wellbeing and understanding baby's behaviors, including bonding and attachment. It also focuses on relaxation techniques and self-care.

The 'Birth Dynamics' programme has proved very successful with extremely positive feedback from both parents and staff. The first student midwife workshop took place in September. As a result of positive feedback from students, TCD invited the parent education team to give a workshop as part of the physiological module.

Parent education alongside the wider MDT was selected as a finalist in the HSE Excellence Awards for the production of the hospital's suite of antenatal education videos.

Quality improvement was at the heart of many initiatives throughout the year. The delivery suite team completed a White Belt Healthcare Programme entitled the 'Involvement and Participation of Healthcare Assistants within the Delivery Suite'.

As a result, a training tool was developed. A training and education programme for HCAs was organised in supporting and assisting women postnatally in the Delivery Suite. This had a very positive impact on the HCAs, the midwives and the women.

Going forward into 2022, let our values that are the foundations of the CWIUH continue to guide and support us to deliver caring, evidence-based quality safe care to every woman, baby and family and that we care for and support each other.

Laparoscopic Simulation

DR HUGH D O'CONNOR

With the adoption of European Working Time Directive compliant rotas, it is becoming increasingly more challenging for trainees to acquire good surgical skills.

In 2021, the CWIUH commenced a laparoscopic simulation training programme for gynaecology trainees. Generous funding from the Friends of The Coombe facilitated the purchase of four Laparo Analytic simulators.

This system allows trainees to objectively assess their ability when performing standard laparoscopic tasks. Furthermore, trainees have the ability to track and record their progress.

It is envisaged that a structured curriculum will be implemented for all gynaecology trainees at the CWIUH. This will allow trainees to demonstrate a minimum level of skill in a simulation environment in order to enhance their performance and engagement in operative teaching.

Obstetrics and Gynaecology

PROFESSOR NADINE FARAH

Dr Marie Rochford coordinated the rosters from January to July 2021 and Dr Niamh Murphy coordinated them from July to December 2021.

All doctors in training are assigned to a team and a named trainer. From January to July, nine specialist registrars, four registrars, four junior registrars and ten senior house officers rotated through obstetrics and gynaecology. From July to December six specialist registrars, five registrars, four junior registrars and ten senior house officers rotated through obstetrics and gynaecology.

The NCHD staff complement included:

- > The Bernard Stuart Research Fellow
- > UCD Lecturer
- > TCD Lecturer
- > RCSI Lecturer
- > Clinical Fellow in Early Pregnancy Scanning
- > International Fellow in Gynaecology Surgery.

All doctors training in the CWIUH hub are prospectively allocated to a three-year Basic Specialist Training (BST) scheme. They spend at least one of the first two years, training in the CWIUH. They spend at least eight months of the third year in the CWIUH.

Paediatric Medicine

DR JOHN KELLEHER

Five or six specialist registrars in paediatrics (varied over each six-month period) rotated through the Department of Paediatrics and Newborn Medicine in 2021 in addition to higher specialist trainee registrars in neonatology. Each specialist registrar completed six months of a 12-month rotation, posts are July to July.

The specialist registrars are encouraged to undertake specific research projects and participate in audits. Senior house officers on the Basic Specialty Training Scheme also rotate through the department.

The Department of Paediatrics and Newborn Medicine is a tertiary level neonatology centre offering experience in intensive care as well as neonatal transport. Neonatal training is a core component of the Specialist Registrar Programme in General Paediatrics. In 2021, the CWIUH Department of Paediatrics featured three Higher Specialist Trainee Registrars in Neonatology, Drs Robert McGrath, Sean Tamgumus and Aisling Smith.

The Neonatal Resuscitation Programme (NRP) coordinated by Advanced Neonatal Nurse Practitioner, Ms Anne Sullivan, with large numbers of candidates completing the NRP programme. The CWIUH was also closely involved in the STABLE Neonatal Transport Training Programme under the guidance of Consultant Neonatologist in Transport Medicine Dr H Fucikova.

Pathology

PROFESSOR JOHN O'LEARY

SPECIALIST REGISTRAR IN HISTOPATHOLOGY

The CWIUH hosts one specialist registrar (SpR) every six months in histopathology, cytopathology, morbid anatomy and molecular pathology. Trainees gain wide experience in all the above areas of pathology and are encouraged to carry out basic scientific research and audit.

TRAINING IN PATHOLOGY (IN ASSOCIATION WITH THE FACULTY OF PATHOLOGY AND CERVICALCHECK)

The Cellular and Molecular Cytopathology Training School (CMCTS) is led by Professor John O'Leary and Dr Helen Keegan in collaboration with the Department

of Cytology/Cervical Screening, the Department of Histopathology and the TCD CERVIVA Molecular Pathology Research Laboratory.

Each year, the CMCTS provides a variety of cytopathology, histopathology and molecular pathology training courses, events and research supervision to healthcare professionals (specialist registrars in pathology, biomedical scientists, colposcopy specialist registrars, colposcopy specialist nurses and pathologists), undergraduate students (TU Dublin, TCD) and postgraduate students (TU Dublin, UU Coleraine, TCD) in the areas of cervical cancer and cervical screening.

From April 2017 to December 2021, the CMCTS at the CWIUH has trained in excess of 115 individuals (excluding large lectures and attendance at multiple events) including colposcopy SpRs, specialist colposcopy nurses, biomedical scientists, consultant level biomedical scientists, consultant pathologists, SpRs in pathology, laboratory aides, research fellows, undergraduate students, transition year students and students on placement. The events included basic cytology training, update cytology training, histopathology workshops, molecular cytopathology and HPV testing in cervical screening, NHS National Gynaecological Cytopathology External Quality Assessment Scheme, Cytology Slide Exchange Schemes for competency, training and competency in HPV testing, QQI Level 9 CPD Certificate in Molecular Cytopathology in collaboration with TU Dublin and CervicalCheck and Education and Outreach Laboratory tours. PhD, MSc, MD and BSc research projects in cervical screening and cervical cancer are also conducted.

The CMCTS launched the CPD Certificate Programme in Molecular Cervical Cytopathology (Level 9, 15 ECTS) in co-operation with Technological University Dublin (TU Dublin) and in partnership with CervicalCheck for the up-skilling of medical scientists in molecular cervical cytopathology.

Competencies were maintained in five core areas for HPV testing. Online learning formats were adopted in response to the COVID-19 pandemic. A digital pathology teaching resource for cervical histopathology training using the Zeiss Axio Scanner was created. The education and research activity of the CMCTS was disseminated at multiple national and international conferences.

Perioperative Medicine

DR STEPHEN SMITH

The Department of Perioperative Medicine was successful in advancing and further developing our approaches to teaching and training despite the many challenges posed over the past few years. Education and training methods continued to evolve and adapt to ensure high quality medical education for our trainees provided in a safe and COVID-19 compliant learning environment.

Dr Stephen Smith continued in the role of college tutor and all consultants participated in department education and training initiatives.

Twelve specialist anaesthesiology trainees from the College of Anaesthesiologists of Ireland (CAI) rotated through the department, successfully fulfilling their training requirements and competencies in obstetric anaesthesia.

2021 saw our strong record continue, with a high proportion of our 'beginners to anaesthesia' programme successfully progressing on to the very competitive six-year structured national anaesthetic training scheme. This is a novel programme which was introduced at the CWIUH and has proven very successful both for our department and for the trainees alike.

The department also provided a fellowship programme for one post Certificate of Completion of Specialist Training (CCST) fellow in obstetric anaesthesia in 2021.

A number of trainees achieved obstetric modular sign off as part of accreditation for CCST in 2021.

Our academic programme consisted of both in person and remote lectures and tutorials to ensure compliance with distancing, and thus maintaining a vibrant teaching programme for our trainees.

A number of workshops in airway management, transthoracic echocardiography, and ultrasound scanning were conducted.

In addition, focused tutorials were organised and attended by those trainees preparing for membership (MCAI) and final (FCAI) postgraduate examinations.

The anaesthetic led high fidelity multidisciplinary simulation programme continued, with participation from obstetrics, anaesthesia and our theatre nursing staff. This emphasises both the technical and non-technical aspects of managing emergent scenarios and the importance of teamwork in order to achieve positive patient outcomes and further demonstrating our commitment to patient care and safety.

Our departmental bi-monthly clinical risk and governance meetings enable presentation and analysis of KPIs and creates a beneficial case-based learning environment. All significant quality improvement (QI) indicators relevant to the Department of Perioperative Medicine continue to be well within international best practice range.

Our strong record in academia and QI was again evident with trainees being encouraged and supported to carry out a research, audit or QI project during their rotation.

Many of the departmental projects were published and presented throughout the year at national and international meetings.

A number of prestigious college awards and distinctions were awarded to CWIUH trainees in 2021.

Dr Mai O'Sullivan was awarded the 2021 KP Moore medal for her project 'Simulating high-fidelity emergency front of neck access training in an obstetric setting'.

Dr Oscar Duffy was awarded the 2021 Delaney medal for his work entitled 'A National Audit of CO2 equivalent emissions from inhalational anaesthetic gases'.

Dr Sarah Gaffney was awarded the medal for 1st place nationally in the primary membership examination (MCAI).



Academic Departments

Trinity College Dublin, Department of Molecular Pathology and Molecular Research

PROFESSOR JOHN O'LEARY

HEAD OF DEPARTMENT

Professor John O'Leary

ACADEMICS

Professor Cara Martin, Assistant Professor in Molecular Pathology (Trinity College, Dublin)

MOLECULAR PATHOLOGY MANAGER

Professor Cara Martin (TCD and CWIUH)

Research Scientists

Dr Prerna Tewari

Dr Mark Ward

Dr Mark Bates

Dr Tanya Kelly

Dr Ola Ibrahim

Dr Bashir Mohammed

Dr David Joyce

Dr Sharon O'Toole (shared with Obstetrics and Gynaecology, TCD)

Dr Lucy Norris (Discipline of Obstetrics and Gynaecology, TCD)

RESEARCH STUDENTS

PhD or MD: Tanya Kelly, Laura Edgerton, Padma Naik, Dr Colm Kerr, Dr Roisin O'Connor

ADJUNCT PROFESSORS

Prof. Doug Brooks

Associate Prof. Stavros Selemidis

AFFILIATED RESEARCHERS

Dr Robert Brooks (UniSA)

Dr Helen Keegan (CWIUH)

Dr Christine White (CWIUH)

Dr Mairead O'Connor (UCC)

Dr James O'Mahony (TCD)

POSTGRADUATE RESEARCH DEGREES

In 2021 the department had five internal and four external post graduate students pursuing either a PhD or MD.

GRANTS HELD IN 2021

Title: Advancing ovarian cancer Diagnostics And PrognosTics; ADAPT (Amendment to Cancer Trials Ireland Study)

Awarding Body: Royal City of Dublin Hospital Trust 2021-2023

Value: €63,333

Title: Delivering Tomorrows Diagnostics Today

Awarding Body: Eurofins Biomnis Ireland Ltd Bridging Funds for Innovation Partnership Award 2022

Value: €50,446

Title: Precision Molecular Diagnostic Testing in Solid Tumours (Principal investigator)

Awarding Body: Eurofins-Biomnis (2020-2021)

Value: €133,203

Title: Equivalency Study of Clinician and Self Collected Samples for Cervical Cancer Screening Protocol No. MULTI HPV 463 (Principal investigator)

Awarding Body: Roche Molecular Diagnostics (2019-2021)

Value: €1,200,000

Title: Advancing ovarian cancer Diagnostics And PrognosTics; ADAPT (Amendment to Cancer Trials Ireland Study) (Principal Investigator)

Awarding Body: Royal City of Dublin Hospital Trust Fund
Duration: 2019-2021

Value: €63,333

Title: Interrogation of the cancer cell metabolome in ovarian cancer, assessment of omentin and resistin as biomarkers of response (Principal Investigator)

Awarding Body: Royal City of Dublin Hospital Trust Fund
Duration: 2019-2021

Value: €38,058

Title: HPV associated disease: shaping the future prevention and management pathway
ARPP-A-2018-018 (2018-2022)

Awarding Body: Health Research Board, Ireland.

Total Value: €236,000

Title: Characterising the proteogenome of Circulating Tumour Cells [CTCs]

Awarding Body: SFI Industry Fellowship in conjunction with Becton Dickinson (2019-2021)

Value: €79,965

Title: Enhancing the Evidence Base for Cost-Effectiveness Analysis in Ireland: Building Improvements from the Intervention-Specific to System-Wide Levels

Awarding Body: Health Research Board. Emerging Investigator Awards (EIA) (2018-2022)

Total Value: €632,058

Title: CERVIVA-Vax: Monitoring the impact of HPV vaccination in Ireland

Awarding Body: Merck Investigator Projects (2021-2023)

Value: €200,000

Title: CERVIVA-Vax: Monitoring the impact of HPV vaccination in Ireland

Awarding Body: Health Research Board. Investigator Led Projects (2021-2023)

Value: €370,000

Title: What influences cervical screening uptake in older women and how can screening programmes translate this knowledge into behaviour changing strategies?

A CERVIVA-CervicalCheck co-production project

Awarding Body: Health Research Board. Applied Partnership Award (APA) Awards (2017-2022)

Total Value: €119,973

Title: Targeting endosomal NOX-2 oxidase in viral disease [2017-2019]

Awarding Body: NHMRC

Total value: €549,858.00

Title: Endosomal reactive oxygen species in tumour angiogenesis [2017-2019]

Awarding Body: NHMRC

Total value: €440,096.0

Grants applied for in late 2021: total value €4.65 million

PUBLICATIONS

In 2021, the Molecular Pathology Group at the CWIUH and St James's Hospital published 26 peer reviewed journal articles and 19 published conference abstracts and proceedings. See Appendix Two for a list of these publications.

Royal College of Surgeons in Ireland, Department of Obstetrics and Gynaecology

DR BRIDGETTE BYRNE AND DR CARMEN REGAN

HEADS OF DEPARTMENT

Dr Bridgette Byrne - Senior Lecturer, Consultant in Obstetrics and Gynaecology

Dr Carmen Regan - Senior Lecturer, Consultant in Obstetrics and Gynaecology

LECTURER

Dr Alex Dakin

SECRETARIAL SUPPORT

Ms Laura Bowes

CONSULTANTS PROVIDING CLINICAL TEACHING

Dr Mark Hehir

Dr Tara Rigney

Professor Tom D'Arcy

Professor Nadine Farah

Dr Workineh Tadesse

Dr Hugh O' Connor

Dr Clare O'Connor
Dr Neil O'Gorman
Dr Anabela Serranito

TEACHING

In 2020/2021 we welcomed the return of RCSI medical students to the CWIUH. The inaugural year was highly successful with the teaching experience described as 'excellent' (77%) or 'very good' (23%) by students following completion of their teaching programme. The components of the course that were most likely to be described as excellent were the morning lecture series (92%); on-line delivered teaching (85%); bedside tutorials (85%) and case-based tutorials (77%).

Dr Carmen Regan was awarded the RCSI Excellence in Clinical Teaching Award for 2021 as voted by RCSI students. The recipients are chosen by RCSI students through the anonymous annual student survey, administered by the Quality Enhancement Office.

Dr Alex Dakin and Dr Bridgette Byrne led a project upgrading the Moodle obstetrics and gynaecology portal resulting in significant improvements in access to key content, for both students and staff.

Trinity College Dublin, Academic Department of Obstetrics and Gynaecology

PROFESSOR DEIRDRE J MURPHY

HEAD OF DEPARTMENT

Professor Deirdre J Murphy

SECRETARIAL SUPPORT

Ms Aisling Moloney, Senior Executive Officer

ACADEMIC STAFF

Deirdre J Murphy, Professor, Head of Department, Consultant in Obstetrics

Richard Deane, Associate Professor, Consultant in Obstetrics and Gynaecology

James Beirne, Locum Associate Professor, Consultant in Gynaecology

Yulia Shahabuddin, Lecturer/Assistant Professor, Obstetrics and Gynaecology

Niamh Haughey, Lecturer/Assistant Professor, Obstetrics and Gynaecology

Clare Dunney, Midwifery Tutor

Paula Barry, Midwifery Occasional Lecturer

Tom D'Arcy, Clinical Senior Lecturer, Consultant in Obstetrics and Gynaecology

Gunther von Bunau, Clinical Senior Lecturer, Consultant in Obstetrics and Gynaecology

Mary Anglim, Clinical Senior Lecturer, Consultant in Obstetrics and Gynaecology

Cliona Murphy, Clinical Senior Lecturer, Consultant in Obstetrics and Gynaecology

Michael Carey, Hon Senior Lecturer, Consultant in Perioperative Medicine

Joanne Fenton, Clinical Senior Lecturer, Consultant in Perinatal Psychiatry

The COVID-19 pandemic posed significant challenges for research and education. We are indebted to the hospital for facilitating the early return of undergraduate students to in person clinical placements, particularly the labour ward midwives and theatre staff who work under considerable pressure. Recruitment to clinical studies had to be curtailed. This has been reinstated, and we hope this will be reflected in increased research outputs for 2022.

Professor Richard Deane, chair of St James's Hospital / Tallaght Hospital Joint Research Ethics Committee, implemented state of the art infrastructure and updated procedures during his tenure.

GRANT

HRB Definitive Intervention Award. The FIRSST multi-centre randomised controlled trial. PI Professor DJ Murphy: €1.1 million

PUBLICATIONS

See Appendix Two for a list of publications from the Academic Department of Obstetrics and Gynaecology, Trinity College Dublin.

University College Dublin Centre for Human Reproduction

PROFESSOR MAIREAD KENNELLY

HEAD OF DEPARTMENT

Professor Michael Turner, Professor of Obstetrics and Gynaecology

STAFF MEMBERS

Ms Laura Bowes, Administrator

Dr Emma Tuthill, Clinical Lecturer (From July 2020 - Jan 2021)

Dr Sadhbh Lee, Clinical Lecturer (From July 2021 - Jan 2022)

Professor Mairead Kennelly, Consultant in Obstetrics and Gynaecology

Professor Jan Miletin, Consultant Neonatologist

Professor Chris Fitzpatrick, Consultant in Obstetrics and Gynaecology

Professor Aisling Martin, Consultant in Obstetrics and Gynaecology

Professor Michael Carey, Consultant Anaesthetist

Professor Nadine Farah, Consultant in Obstetrics and Gynaecology

Professor Tom D'Arcy, Consultant in Obstetrics and Gynaecology

Dr Anne Doolan, Consultant Neonatologist

Professor Sharon Sheehan, Consultant in Obstetrics and Gynaecology

Professor Anthony Dempsey, Visiting Consultant

Dr Neil O'Gorman, Consultant in Obstetrics and Gynaecology

Dr Terry Tan, Consultant Anaesthesiologist

Dr Ali Raba, Research Fellow in Neonatology

Dr Niamh Ó Catháin, Research Fellow in Neonatology

Established in 2007, the UCD Centre for Human Reproduction at the CWIUH was recognised in 2015 by the Academic Council as one of the university's designated research centres.

In 2018, the Academic Council in UCD renewed its approval for the UCD Centre for Human Reproduction to continue as one of the University's designated research centres.

The director is Professor Michael Turner and the Centre's Advisory Board include: Professor Brendan Egan, Professor Chris Fitzpatrick, Professor Mairead Kennelly, Professor Richard Layte, Professor Aisling Martin, Professor Jan Miletin, Professor Ann Molloy and Professor Carel le Roux.

The main research focus of the centre has been on modifiable pregnancy risk factors including maternal obesity, gestational diabetes mellitus, aberrant fetal growth, inadequate maternal diet, inadequate folic acid supplementation, cigarette smoking, infection and physical inactivity.

In the decade 2010-20, Prof. Turner served as the National Director for the HSE Clinical Programme in Obstetrics and Gynaecology and, as a result, the centre also provided leadership on maternity services implementation projects and an audit.

In 2021, the department maintained research outputs for modifiable risk factors in pregnancy and maternity services quality improvement projects. Research output was translated into national healthcare policies and guidelines. The department delivered a flexible undergraduate teaching programme in response to the COVID-19 pandemic.

RESEARCH

1. Dr Karen Power and Professor Turner continued their collaboration with colleagues in other disciplines in developing NCEC Guidelines for the maternity services. The 2016 National Maternity Strategy Report recommended that pregnant women presenting for antenatal care should be stratified into low, moderate and high-risk. This guideline was published by the Department of Health in 2020 and its implementation is ongoing.

2. Dr Lean McMahon, Project Manager for the Irish Maternity Indicators System (IMIS) and Professor Turner continued their collaboration on this report for the CWIUH performance measurements. This report is produced for individual hospitals, the six networks and nationally and allows each hospital to benchmark themselves nationally and against their own performance in the previous year. This work continues to evolve and improve in association with the HSE NWIHP. Particular thanks are due to the individuals from different hospitals nationally who participate actively in the regular workshops.
3. Dr Emma Tuthill completed an observational study to describe the transition of the undergraduate obstetrics and gynaecology programme from a traditional face-to-face approach to a blended learning programme in response to the COVID-19 pandemic. Dr Tuthill also published her study on the important epidemiological association between maternal obesity and depression.
4. Professor Turner continued to serve as member of the HSE National Guideline on smoking cessation which has been commissioned by the National Clinical Effectiveness Committee.

The guideline is due to be published by the Department of Health in 2022. It is particularly gratifying to see that a number of papers from Dr Ciara Reynolds' recent PhD have been cited in the guideline. This is a good example of translational research in action. Prof. Turner also continued to serve as member of the HIQA Special Purpose Maternity Advisory Group.
5. Dr Sadhbh Lee undertook an observational study to investigate medical students' knowledge of the healthcare needs of transgender patients before and after a newly implemented teaching session on transgender healthcare. This is an example of the implementation of UCD's policy on Diversity, Inclusion and Equality. The study has been accepted for publication. In addition, a second study was conducted by Dr Lee on air pollution levels to examine levels of fine particulate matter (an air pollutant of major concern) outside the three maternity hospitals in Dublin between June and December 2021.
6. Professor Jan Miletin continues to lead an active neonatology research programme which has resulted in numerous publications in international journals. In 2021, he was awarded an HRB grant under HRB/ Definitive Intervention and Feasibility Awards 2020 as a principal investigator (total funding €718,576.47) for the randomised placebo-controlled trial of Early Targeted Treatment of Patent Ductus Arteriosus with Paracetamol in Extremely Low Birth Weight Infants (ETAPA trial).
7. Dr Anne Doolan continues to provide strong leadership in promoting breastfeeding and is undertaking a research programme with a medical device company that will measure the volume and flow rate of milk in women who are breastfeeding postpartum.
8. Dr Ali Raba was awarded his MD in 2021 for a thesis on The Value of Transcutaneous Bilirubinometry in Prediction of the Need for Phototherapy and Accuracy before and During Phototherapy in Preterm Infants.
9. Dr Niamh Ó Catháin continues to conduct research for her MD which is a randomised placebo-controlled trial of Early Targeted Treatment of Patent Ductus Arteriosus with Paracetamol in Extremely Low birth Weight Patients.

Finally, we thank the Master and the EMT for their continuing support of the UCD Centre's research and teaching activities. We thank our colleagues in the other healthcare disciplines for their support with our research and, in particular, our midwifery colleagues Muireann Ní Mhurchú and Ruth Harley who supervise the organisation of the CWIUH Biological Resource Bank. We also thank our consultant colleagues for their ongoing support with our undergraduate teaching and examinations.

PUBLICATIONS AND PUBLISHED ABSTRACTS

See Appendix Two for a list of publications and published abstracts from the UCD Centre for Human Reproduction.

Friends of the Coombe

LIZ BURKE

This was the second year that COVID-19 restricted our ability and that of our supporters – to hold in-person fundraising events resulting, once again, in us having to adapt our plans so that, where possible, events and initiatives could be held online.

We were delighted to partner for a second year with colour consultant Adele Roche to co-produce the InsideOut Homeshow. Following on from the success of the 2020 event, this year's event took place online during the month of October. It comprised a series of masterclasses and talks from specialists in watercolour painting, furniture upcycling, macramé, air-dry clay, fashion, colour psychology, food and nutrition, and sleep and wellness; an online art auction featuring more than forty original artworks and limited-edition prints donated by Irish artists; design consultations with architects, interior designers, and garden designers; as well as pay-per view fireside chats with Hugh Wallace, Diarmuid Gavin, Dermot Bannon and Jackie Tyrrell. Once again, we are extremely grateful for the considerable time and energy committed to the event by Adele Roche and the generosity of the artists, architects, interior designers, and garden designers all of whom donated their time to help raise funds for Friends of the Coombe.

This year saw us hold the second of a series of seven Coombe Camino Challenges which saw our CWIUH colleagues, their friends and family members join us to walk a 5km looped walk beginning and ending at the CWIUH which marks the history of the CWIUH and the local area. Sadly, COVID-19 once again prevented us from commencing our 780km journey along the Camino Francés from St. Jean Pied de Port to Santiago de Compostela. However, we look forward to starting this journey in 2022 and have revised our plans so that we are able to complete the route over five years instead of seven.

During the festive season the Friends of the Coombe Family Christmas Tree took pride of place in the CWIUH entrance lobby. Decorated with hand-knitted mini baby hats sponsored by supporters, the tree honoured all the children who have come into our lives.

During 2021, thanks to the generosity of our supporters, we were able to purchase a new transport ventilator for the Neonatal Intensive Care Unit, continue to provide accommodation support for parents whose babies are being cared for in the Neonatal Unit having been transferred from other hospitals in Ireland, and provide ongoing support for the Palliative Care and Bereavement Services.



Appendices

Appendix One Clinical Summaries

	2015	2016	2017	2018	2019	2020	2021
Women attending (n)							
Women who gave birth to babies \geq 500 grams	8,220	8,233	7,975	8,154	7,746	7,405	7,594
Women who gave birth to babies < 500 grams (including miscarriages*)	649	589	586	578	559	504	437
Gestational trophoblastic disease	8	6	24	16	15	7	14
Ectopic pregnancies	124	113	104	79	114	104	134
Total (n)	9,001	8,941	8,689	8,827	8,434	8,020	8,179
Maternal deaths† (n)	1	0	0	1	0	0	0
Births \geq 500g (n)							
Singletons	8,042	8,048	7,786	7,978	7,568	7,244	7,474
Twins‡	353	350	365	344	345	318	230
Triplets	9	23	15	8	12	0	12
Quadruplets	0	0	0	0	4	4	0
Total (n)	8,404	8,421	8,166	8,330	7,929	7,566	7,716
Obstetric outcomes (%)							
Induction of labour	31.7	33.9	34.8	37.0	38.2	38.9	40.8
Episiotomy	13.9	15.5	17.9	17.9	17.2	18.2	18.7
Forceps	5.8	5.3	5.3	4.8	4.3	3.5	3.5
Vacuum	9.0	9.1	9.6	9.8	7.8	10.2	8.5
Caesarean section	29.3	31.3	31.8	33.8	33.8	32.8	35.5
Perinatal deaths (n)							
Stillbirths	29	21	27	20	33	22	22
Early neonatal deaths	19	18	22	16	11	13	9
Late neonatal deaths	7	6	11	5	8	12	5
Total (n)	55	45	60	41	52	47	36

* does not include all spontaneous miscarriages

† deaths of women while pregnant or within 42 days of the end of the pregnancy

‡ excludes 2 babies weighing < 500g

Robson Ten Group Classification System - Caesarean section rates, 2018 to 2021

Group	2018	2019	2020	2021
1	156/1295 (12.0%)	118/1121 (9.6%)	101/1049 (9.6%)	88/895 (9.8%)
2	751/1698 (44.2%)	673/1644 (40.9%)	633/1601 (39.5%)	683/1705 (40.1%)
2a	551/1498 (36.8%)	468/1439 (32.5%)	419/1387 (30.2%)	473/1494 (31.7%)
2b	200/200 (100.0%)	205/205 (100.0%)	214/214 (100.0%)	211/211 (100.0%)
3	29/1618 (1.8%)	31/1449 (2.1%)	10/1376 (0.7%)	30/1327 (2.3%)
4	211/1443 (14.6%)	198/1476 (13.4%)	167/1427 (19.3%)	221/1576 (20.8%)
4a	76/1308 (5.8%)	65/1343 (4.8%)	41/1301 (3.2%)	64/1419 (4.5%)
4b	135/135 (100.0%)	133/133 (100.0%)	126/126 (100.0%)	157/157 (100.0%)
5	980/1201 (81.6%)	960/1141 (84.1%)	947/1144 (82.8%)	1066/1237 (86.2%)
6	181/186 (97.3%)	173/184 (94.0%)	155/159 (97.5%)	178/188 (94.7%)
7	148/160 (92.5%)	162/175 (92.6%)	148/160 (92.5%)	166/177 (93.8%)
8	115/175 (65.7%)	130/178 (73.0%)	104/161 (64.4%)	80/120 (66.7%)
9	12/12 (100.0%)	8/8 (100.0%)	14/14 (100.0%)	7/7 (100.0%)
10	171/363 (47.1%)	175/363 (48.2%)	153/309 (49.6%)	178/362 (49.2%)
Gestation uncoded	0/3	0/7	0/5	-
CS rate (total)	2754/8154 (33.8%)	2618/7746 (33.8%)	2432/7405 (32.8%)	2697/7594 (35.5%)

Robson Ten Group Classification System - size of groups, 2018 to 2021

Group	2018	2019	2020	2021
1	1295 (15.9%)	1121 (14.5%)	1049 (14.2%)	895 (11.8%)
2	1698 (20.8%)	1644 (21.2%)	1601 (21.6%)	1705 (22.5%)
2a	1498 (18.4%)	1439 (18.6%)	1387 (18.7%)	1494 (19.7%)
2b	200 (2.5%)	205 (2.6%)	214 (2.9%)	211 (2.8%)
3	1618 (19.8%)	1449 (18.7%)	1376 (18.6%)	1327 (17.5%)
4	1443 (17.7%)	1476 (19.0%)	1427 (19.3%)	1576 (20.8%)
4a	1308 (16.0%)	1343 (17.3%)	1301 (17.6%)	1419 (18.7%)
4b	135 (1.7%)	133 (1.7%)	126 (1.7%)	157 (2.1%)
5	1201 (14.7%)	1141 (14.7%)	1144 (15.4%)	1237 (16.3%)
6	186 (2.3%)	184 (2.4%)	159 (2.1%)	188 (2.5%)
7	160 (2.0%)	175 (2.3%)	160 (2.2%)	177 (2.3%)
8	175 (2.1%)	187 (2.3%)	161 (2.2%)	120 (1.6%)
9	12 (0.1%)	8 (0.1%)	14 (0.2%)	7 (0.1%)
10	363 (4.5%)	363 (4.7%)	309 (4.2%)	362 (4.8%)
Gestation uncoded	3 (0.04%)	7 (0.09%)	5 (0.07%)	-
Total, n (%)	8,154 (100.0%)	7,746 (100.0%)	7,405 (100.0%)	7,594 (100.0%)

Hypoxic ischaemic encephalopathy (inborn), 2015 to 2021

Grades II and III	2015	2016	2017	2018	2019	2020	2021
n	7	6	10	8	10	8	6
Livebirths (n)	8,375	8,400	8,139	8,310	7,796	7,544	7,694
Per 1,000 livebirths	8.4	7.1	12.2	9.6	12.8	10.6	7.8

Perinatal mortality rates (PMR), 2015 to 2021

PMR per 1,000 total births	2015	2016	2017	2018	2019	2020	2021
Overall PMR	5.7	4.5	6.0	4.3	5.5	4.6	4.0
PMR corrected for lethal congenital anomalies	3.2	2.6	3.0	2.7	3.9	3.0	3.2
PMR including late neonatal deaths	6.5	5.2	7.2	4.9	6.6	6.2	4.7
PMR excluding women unbooked in CWIUH	4.8	3.9	4.5	4.2	5.2	4.4	3.4
Corrected PMR excluding women unbooked in CWIUH	3.1	2.0	2.6	2.5	3.5	2.8	2.9
Corrected PMR excluding women initially booked elsewhere	-	-	-	1.6	3.3	2.8	3.0

Adjusted perinatal mortality rates of normally formed babies \geq 34 weeks' gestation and \geq 2.5kg, 2015 to 2021

	2015	2016	2017	2018	2019	2020	2021
Perinatal deaths (normally formed babies \geq 34 weeks' and \geq 2.5kg) (n)	9	8	6	2	10	9	5
All babies \geq 34 weeks and \geq 2.5kg (n)	7,800	7,790	7,559	7,704	7,322	7,035	7,189
Adjusted PMR per 1,000	1.2	1.0	0.8	0.3	1.4	1.3	0.7

Perinatal mortality rates per 1,000 total babies weighing ≥ 500 grams, 2015 to 2021

	2015	2016	2017	2018	2019	2020	2021		PMR
Total births (n)	8,404	8,421	8,166	8,330	7,929	7,566		7,716	
Total perinatal deaths (n)	48	39	49	36	44	35	31		
PMR by parity									
Para 0	2.5	5.3	7.7	4.8	4.9	3.2	10	3,036	3.3
Para 1	6.3	4.1	4.0	2.1	3.6	6.2	7	2,815	2.5
Para 2 - 4	9.3	4.0	5.9	6.5	9.1	3.0	13	1,771	7.3
Para 5+	27.5	0.0	19.0	9.8	24.1	38.9	1	94	10.6
PMR by age at delivery (years)									
< 20	6.4	5.7	22.7	17.5	15.4	9.2	0	95	0.0
20 - 24	4.3	7.0	16.0	1.4	8.1	0.0	3	575	5.2
25 - 29	5.4	2.6	4.1	2.7	3.7	3.2	1	1,234	0.8
30 - 34	3.6	4.2	5.2	5.9	5.5	5.7	17	2,738	6.2
35 - 39	6.5	5.0	5.4	3.5	5.3	5.9	9	2,410	3.7
≥ 40	19.2	5.3	3.7	5.0	6.2	1.7	1	664	1.5
PMR by birth weight (grams)									
500 - 999	200.0	240.0	203.7	300.0	298.2	166.7	15	58	258.6
1,000 - 1,499	74.1	74.1	162.5	187.5	82.2	72.7	5	65	76.9
1,500 - 1,999	79.4	32.0	86.2	44.6	39.6	86.5	2	95	21.0
2,000 - 2,499	19.8	11.8	14.2	7.6	16.6	15.5	2	298	6.7
2,500 - 2,999	4.5	1.7	4.8	0.0	5.3	5.1	2	1,108	1.8
3,000 - 3,499	2.1	3.2	0.0	0.4	1.2	0.8	4	2,628	1.5
3,500 - 3,999	1.4	0.7	1.8	0.7	0.4	1.2	0	2,553	0.0
4,000 - 4,499	1.1	1.1	0.0	0.0	1.2	0.0	0	802	0.0
4,500 - 4,999	8.0	0.0	0.0	0.0	0.0	0.0	1	103	9.7
≥ 5,000	0.0	0.0	0.0	0.0	0.0	0.0	0	6	0.0
PMR by gestational age (weeks)									
< 26	200.0	416.7	360.0	388.9	483.9	238.1	7	26	269.2
26 - 29+ 6 days	76.9	66.7	160.0	176.5	73.5	137.9	13	67	194.0
30 - 33+ 6 days	80.3	38.1	94.4	57.1	43.5	57.7	1	114	8.8
34 - 36+ 6 days	24.4	19.4	31.5	14.7	8.2	9.4	2	433	4.6
37 - 41+ 6 days	2.1	1.8	1.4	0.5	2.0	1.6	8	7,034	1.1
≥ 42	28.6	0.0	0.0	0.0	0.0	21.7	0	42	0.0
Uncoded				*	*	*			

* PMR by gestational age not calculated as gestation was uncoded

Maternal demographics, 2015 to 2021

	2015	2016	2017	2018	2019	2020	2021
Category - nulliparous (%)							
Public	77.2	78.3	77.5	78.9	77.9	78.5	76.0
Semi-private	10.3	9.4	9.8	8.7	8.9	9.1	9.8
Private	12.5	12.3	12.7	12.4	13.2	12.4	14.2
Category - parous (%)							
Public	76.9	76.8	78.1	78.8	79.3	78.3	78.6
Semi-private	9.5	9.4	7.9	7.8	7.9	7.8	7.3
Private	13.6	13.8	14.0	13.4	12.8	13.9	14.1
Country of birth (%)							
Republic of Ireland	70.3	70.3	70.4	70.2	70.3	70.3	71.3
EU	17.9	17.0	16.3	15.6	14.6	11.4	12.9
Britain	-	-	-	-	-	2.7	3.1
Non-EU	11.7	12.6	13.2	14.0	15.1	15.6	12.7
Uncoded	0.1	0.1	0.1	0.2	0.0	0.0	0.04
Age at delivery in years (%)							
< 20	1.9	2.1	1.7	1.4	1.7	1.5	1.2
20 - 24	8.5	8.6	8.6	8.5	7.8	7.3	7.5
25 - 29	19.9	18.5	18.5	18.1	17.1	16.9	16.1
30 - 34	36.3	36.4	34.0	34.3	34.4	35.2	35.4
35 - 39	27.3	27.8	30.4	30.7	31.0	31.3	31.2
≥ 40	6.1	6.6	6.8	7.0	8.0	7.8	8.5
Parity (%)							
P 0	38.5	40.0	40.9	42.1	41.4	40.8	39.4
P 1 - 3	58.6	57.0	56.3	55.2	55.9	56.5	58.1
P 4+	2.9	3.0	2.8	2.7	2.7	2.7	2.5

Infant characteristics, 2015 to 2021

	2015	2016	2017	2018	2019	2020	2021
n	8,404	8,421	8,166	8,330	7,929	7,566	7,716
Birth weight in grams (%)							
500 - 999	0.6	0.6	0.7	0.6	0.7	0.6	0.8
1,000 - 1,499	0.6	0.6	1.0	0.6	0.9	0.7	0.8
1,500 - 1,999	1.5	1.5	1.4	1.5	1.3	1.4	1.2
2,000 - 2,499	4.2	4.0	4.3	4.8	4.6	4.3	3.9
2,500 - 2,999	13.4	13.9	12.8	13.5	14.4	12.9	14.4
3,000 - 3,499	34.3	33.9	33.5	32.9	32.6	33.6	34.1
3,500 - 3,999	33.1	33.0	34.0	33.1	33.9	33.3	33.1
4,000 - 4,499	10.7	10.8	10.7	11.7	10.4	11.6	10.4
≥ 4,500	1.6	1.5	1.5	1.3	1.2	1.6	1.3
Uncoded	0.0	0.2	0.1	0.0	0.1	0.0	-
Gestation in weeks (%)							
< 28	0.5	0.5	0.5	0.5	0.7	0.5	0.7
28 - 36+ 6 days	6.2	6.0	6.5	6.4	6.7	6.2	6.5
37 - 41+ 6 days	92.8	92.9	92.2	92.4	91.9	92.6	92.2
≥ 42	0.4	0.6	0.7	0.6	0.6	0.6	0.6
Uncoded	0.1	0.0	0.1	0.0	0.1	0.1	-

Attendances, 2015 to 2021

	2015	2016	2017	2018	2019	2020	2021
Outpatient attendances (n)							
Obstetrics*	102,493	98,324	103,700	103,271	99,919	100,168	104,780
Gynaecology†	13,181	13,226	14,312	14,808	17,220	13,005	17,282
Neonatal	6,829	6,572	5,545	6,393	4,845	4,428	4,026
Total (n)	122,503	118,122	123,557	124,472	121,984	117,601	126,088
Other attendances (n)							
Adult Emergency Room	9,573	9,026	9,351	9,163	9,606	7,663	8,269
Early pregnancy assessment unit	5,106	4,460	4,213	4,178	5,063	4,481	4,383
Perinatal Ultrasound Department ‡	28,161	28,913	28,858	29,620	29,658	27,783	25,490
Total (n)	42,840	42,399	42,422	42,961	44,327	39,927	38,142

* excludes perinatal day centre

† includes Colposcopy Clinic

‡ refers only to scans performed in the Perinatal Ultrasound Department

Admissions, 2015 to 2021

Type of admission (n)	2015	2016	2017	2018	2019	2020	2021
Day case							
Obstetrics	12,453	12,841	13,160	13,540	12,476	9,332	10,344
Gynaecology	8,510	8,495	8,185	7,885	8,313	6,685	7,449
Total (n)	20,963	21,336	21,345	21,425	20,789	16,017	17,793
Inpatient*							
Obstetrics	16,398	17,006	16,514	16,709	16,479	14,615	15,117
Gynaecology	966	943	812	737	759	605	588
Neonatal	1,052	1,424	1,105	1,128	1,040	948	1,007
Total (n)	18,416	19,373	18,431	18,574	18,278	16,168	16,712

* numbers based on discharges

Surgical procedures, 2015 to 2021

Category of surgical procedure	2015	2016	2017	2018	2019	2020	2021
Obstetrics (n)	3,590	3,663	3,544	3,748	3,609	3,358	3,582
Gynaecology (n)	5,028	5,255	5,012	5,071	5,135	5,424	5,783
Total (n)	8,618	8,918	8,556	8,819	8,744	8,782	9,365

Appendix Two Publications and Presentations

PUBLICATIONS: THE MASTER'S OFFICE

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**PUBLISHED ABSTRACTS: UNIVERSITY COLLEGE DUBLIN
CENTRE FOR HUMAN REPRODUCTION**

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Tuthill EH, Reynolds CME, McKeating A, O'Malley EG, Kennelly MM, Turner MJ. Maternal obesity and depression reported at the first antenatal visit. RCOG World Congress, Virtual Conference, London, June 2021.

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Appendix Three Members of the Board of Guardians and Directors (Charity Trustees)

Ms M Donovan Chair
Prof M Carey Deputy Chair
Mr J Gleeson
Ms A M Curran
Prof R Gilligan
Prof M Turner
Dr E Mallon
Ms T Daly
Mr G Prendergast
Ms B Byrne
Ms R Grant
Dr M O'Hare
Ms C Keane (Joined October 2021)

EX-OFFICIO MEMBERS

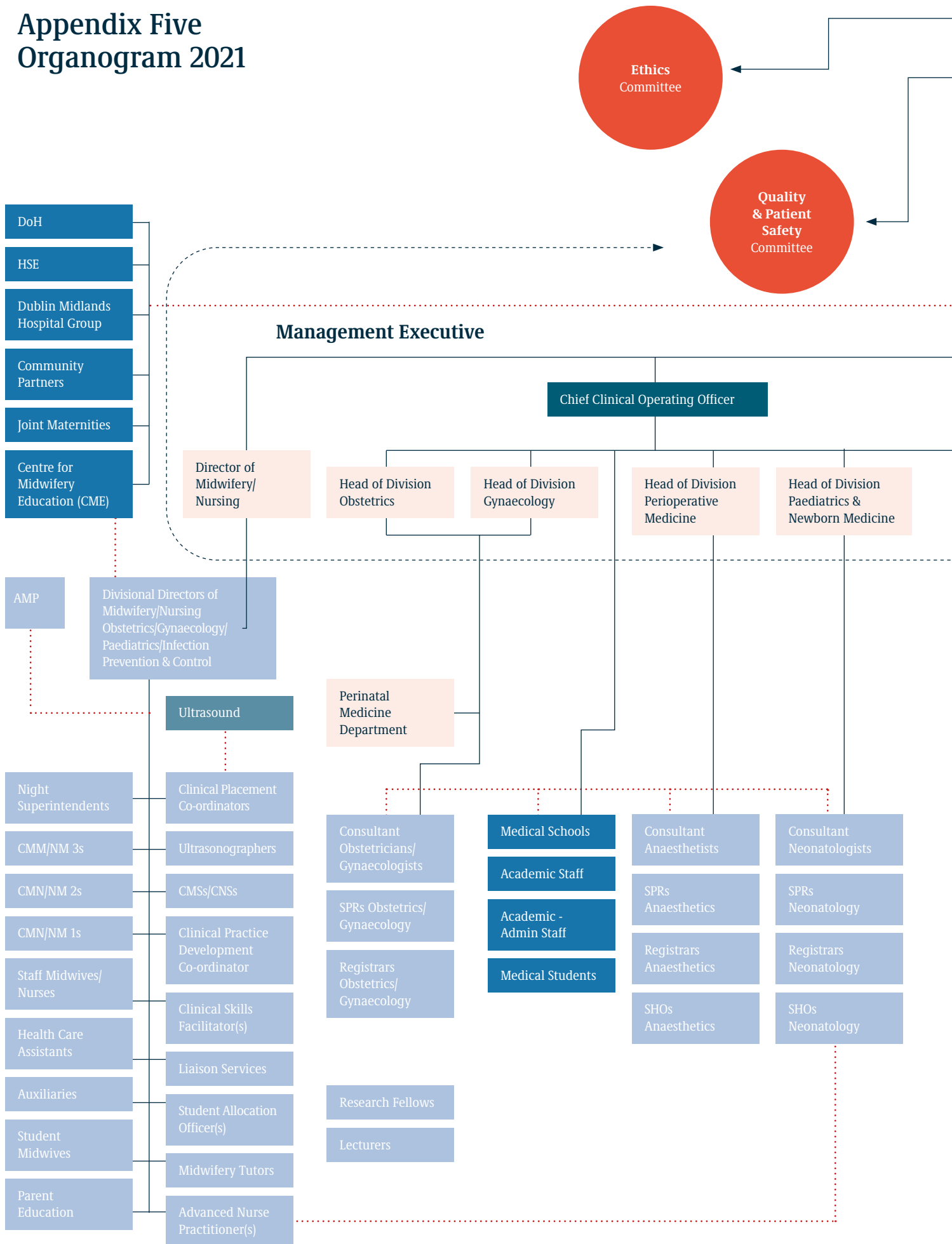
The Lord Mayor of Dublin
 Ms H Chu
 Ms A Gilliland
The Master
 Professor M O'Connell

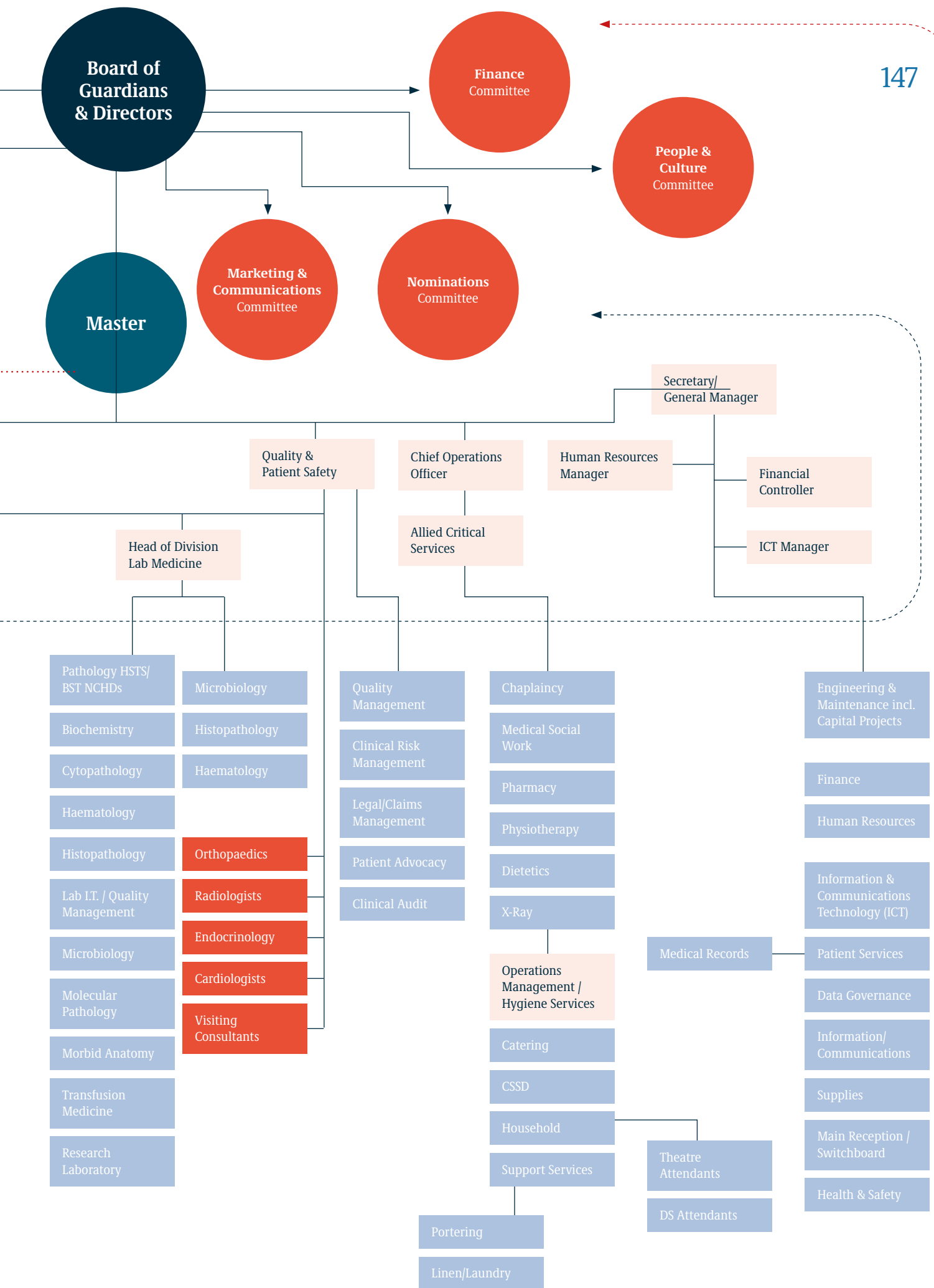
Appendix Four Financial Summary at 31st December 2021*

Income	€,000	€,000
Department of Health Allocation 2021	87,738	
Patient Income	8,544	
Other	4,082	
		100,364
Expenditure	€,000	€,000
Pay		
Medical	14,422	
Nursing	24,804	
Other	37,047	
		76,273
Non-Pay		
Drugs and Medicines	2,474	
Medical and Surgical Appliances	5,400	
Insurances	127	
Laboratory	8,345	
Other	7,575	
		23,921
Net Surplus		170
Taxes paid to Revenue Commissioners (year ending 31st December 2021)		
PAYE and USC		13,906
PRSI EE		2,253
PRSI ER		6,087
Withholding Tax		180

* does not include any deficit balances carried forward from previous years

Appendix Five Organogram 2021





Appendix Six Masters

THE COOMBE LYING-IN HOSPITAL /COOMBE WOMEN'S HOSPITAL/CWIUH

Richard Reed Gregory 1829 - 1831
Thomas McKeever 1832 - 1834
Charles Joseph O'Hara 1835 - 1835
Hugh Richard Carmichael 1835 - 1841
Robert Francis Power 1835 - 1840
William Jameson 1840 - 1841
Michael O'Keeffe 1841 - 1845
John Ringland 1841 - 1876
Henry William Cole 1841 - 1847
James Hewitt Sawyer 1845 - 1875
George Hugh Kidd 1876 - 1883
Samuel Robert Mason 1884 - 1890
John Colclough Hoey 1891 - 1899
Thomas George Stevens 1900 - 1907
Michael Joseph Gibson 1907 - 1914
Robert Ambrose MacLavery 1914 - 1921
Louis Laurence Cassidy 1921 - 1928
Timothy Maurice Healy 1928 - 1935
Robert Mulhall Corbet 1935 - 1942
Edward Aloysius Keelan 1942 - 1949
John Kevin Feeney 1949 - 1956
James Joseph Stuart 1956 - 1963
William Gavin 1964 - 1970
James Clinch 1971 - 1977
Niall Duignan 1978 - 1984
John E. Drumm 1985 - 1991
Michael J. Turner 1992 - 1998
Sean F. Daly 1999 - 2005
Chris Fitzpatrick 2006 - 2012
Sharon R. Sheehan 2013 - 2019
Michael P. O'Connell 2020 - present

Appendix Seven Matrons and DoMNs

THE COOMBE LYING-IN HOSPITAL/COOMBE WOMEN'S HOSPITAL/CWIUH

Over a period of 154 years since the granting of the Royal Charter of Incorporation to the Coombe Lying-In Hospital in 1867, there have been sixteen Matrons or Directors of Midwifery and Nursing (DoMN).

Mrs Watters Matron 1864 - 1874
Kate Wilson Matron 1874 - 1886
Mrs Saul Matron 1886 - 1886
Mrs O'Brien Matron 1886 - 1887
Mrs Allingham Matron 1887 - 1889
Annie Hogan Matron 1889 - 1892
Annie Fearon Matron 1892 - 1893
Hester Egan Matron 1893 - 1909
Eileen Joy Matron 1909 - 1914
Genevieve O'Carroll Matron 1914 - 1951
Nancy Conroy Matron 1952 - 1953
Margaret (Rita) Kelly Matron 1954 - 1982
Ita O'Dwyer DoMN 1982 - 2005
Mary O'Donoghue DoMN - Acting 2005 - 2006
Patricia Hughes DoMN 2007 - 2016
Ann MacIntyre DoMN 2016 - present

Appendix Eight Guinness Lectures

- 1969 The Changing Face of Obstetrics. Prof. T.N.A. Jeffcoate, University of Liverpool
- 1970 British Perinatal Survey. Prof. N. Butler, University of Bristol
- 1971 How Many Children? Sir Dougald Baird, University of Aberdeen
- 1972 The Immunological Relationship between Mother and Fetus. Prof. C.S. Janeway, Boston
- 1973 Not One but Two. Prof. F. Geldenhuys, University of Pretoria
- 1978 The Obstetrician/Gynaecologist and Diseases of the Breast. Prof. Keith P. Russell, University of Southern California School of Medicine
- 1979 Preterm Birth and the Developing Brain. Dr. J. S. Wigglesworth, Institute of Child Health, University of London
- 1980 The Obstetrician a Biologist or a Sociologist? Prof. James Scott, University of Leeds
- 1981 The New Obstetrics or Preventative Paediatrics? Dr. J. K. Brown, Royal Hospital for Sick Children, Edinburgh
- 1982 Ovarian Cancer. Dr. J. A. Jordan, University of Birmingham
- 1983 The Uses and Abuses of Perinatal Mortality Statistics. Prof. G.V.P. Chamberlain, St. George's Hospital Medical School, London
- 1984 Ethics of Assisted Reproduction. Prof. M. C. McNaughton, President, Royal College of Obstetricians and Gynaecologists
- 1985 Magnetic Resonance Imaging in Obstetrics and Gynaecology. Prof. E. M. Symonds, University of Nottingham
- 1986 Why Urodynamics?. Mr. S. L. Stanton, St. George's Hospital Medical School, London
- 1987 Intrapartum Events and Neurological Outcome. Dr. K. B. Nelson, Department of Health and Human Services, National Institute of Health, Maryland
- 1988 Anaesthesia and Maternal Mortality. Dr. Donald D. Moir, Queen Mothers Hospital, Glasgow
- 1989 New approaches to the management of severe intrauterine growth retardation. Prof. Stuart Campbell, Kings College School of Medicine and Dentistry, London
- 1990 Uterine Haemostasis. Prof. Brian Sheppard, Department of Obstetrics and Gynaecology, Trinity College, Dublin
- 1991 Aspects of Caesarean Section and Modern Obstetric Care. Prof. Ingemar Ingemarsson, University of Lund
- 1992 Perinatal Trials and Tribulations. Prof. Richard Lilford, University of Leeds
- 1993 Diabetes Mellitus in Pregnancy. Prof. Richard Beard, St. Mary's Hospital, London
- 1994 Controversies in Multiple Pregnancies. Dr. Mary E D'Alton, New England Medical Center, Boston
- 1995 The New Woman. Prof. James Drife, University of Leeds
- 1996 The Coombe Women's Hospital and the Cochrane Collaboration. Dr. Iain Chalmers, the UK Cochrane Centre, Oxford
- 1997 The Pathogenesis of Endometriosis. Prof. Eric J Thomas, University of Southampton.
- 1998 A Flux of the Reds - Placenta Preval Then and Now. Prof. Thomas Basket, Nova Scotia
- 1999 Lessons Learned from First Trimester Prenatal Diagnosis. Prof. Ronald J Wagner, Jefferson Medical College, Philadelphia
- 2000 The Timing of Fetal Brain Damage: The Role of Fetal Heart Rate Monitoring. Prof. Jeffrey P Phelan, Childbirth Injury Prevention Foundation, Pasadena, California
- 2001 The Decline and Fall of Evidence Based Medicine. Dr. John M Grant, Editor of the British Journal of Obstetrics and Gynaecology

- 2002** Caesarean Section: A Report of the U.K. Audit and its Implications. Prof. JJ Walker, St James's Hospital, Leeds
- 2003** The 20th Century Plague: It's Effect on Obstetric Practice. Prof. Mary-Jo O'Sullivan University of Miami School of Medicine, Florida
- 2004** Connolly, Shaw and Skrabanek - Irish Influences on an English Gynaecologist. Prof. Patrick Walker, Royal Free Hospital, London
- 2005** Careers and Babies: Which Should Come First? Dr. Susan Bewley, Clinical Director for Women's Health, Guys and St Thomas NHS Trust, London
- 2006** Retinopathy of Prematurity from the Intensive Care Nursery to the Laboratory and Back. Prof. Neil McIntosh, Professor of Child Life and Health, Edinburgh, Vice President Science, Research and Clinical Effectiveness, RCPCH, London
- 2007** Schools, Skills and Synapses. Prof. James J. Heckman, Nobel Laureate in Economic Sciences. Henry Schultz Distinguished Service Professor of Economics, University of Chicago, Professor of Science and Society, University College Dublin
- 2008** Cervical Length Screening For Prevention of Preterm Birth Prof. Vincenzo Berghella, MD, Director of Maternal-Fetal Medicine, Thomas Jefferson University, Philadelphia
- 2009** Advanced Laparoscopic Surgery: The Simple Truth. Prof. Harry Reich, Wilkes Barre Hospital, Pennsylvania; Past President of the International Society of Gynaecologic Endoscopy (ISGE)
- 2010** Magnesium – The Once and Future Ion. Prof. Mike James, Prof. and Head of Anaesthesia, The Groote Schuur Hospital, University of Capetown
- 2011** Pre-eclampsia: Pathogenesis of a Complex Disease. Prof. Chris Redman, Emeritus Professor of Obstetric Medicine, Nuffield, Department of Obstetrics and Gynaecology, University of Oxford
- 2012** Non-invasive prenatal diagnosis: from Down syndrome detection to fetal whole genome sequencing Prof. Dennis Lo, Director of the Li Ka Shing Institute of Health Sciences, Department of Chemical Pathology, Prince of Wales Hospital, Hong Kong
- 2013** A procedural approach to perceived inappropriate requests for Medical Treatment. Lessons from the USA. Prof Geoffrey Miller, Professor of Pediatrics and of Neurology; Clinical Director Yale Pediatric Neurology, Co-Director Yale/MDA Pediatric Neuromuscular Clinic Yale Program for Biomedical Ethics
- 2014** 'THE CHANGE', Highlighting the change in diagnosis and management in the past thirty years. Prof C.N. Purandare. Consultant Obstetrician and Gynecologist. President Elect FIGO
- 2015** Why you shouldn't believe what you read in medical journals. Dr. Fiona Godlee, Editor in Chief, British Medical Journal
- 2016** 'We are such stuff as Dreams are made on': Imagination and Revolution – the Epiphany of a Photograph. Prof. Chris Fitzpatrick, Consultant Obstetrician and Gynaecologist CWIUH, Clinical Professor UCD School of Medicine
- 2017** 'Women; the journey is far from over'. Prof. James Dornan. Chair Health and Life Sciences University of Ulster. Emeritus Chair Fetal Medicine Queen's University Belfast
- 2018** 'Domestic Violence and the Obstetrician'. Prof. Stephen Lindow, Division Chief of Obstetrics at Sidra Medical and Research Centre, Qatar
- 2019** 'From Queen Victoria to the Duchess of Cambridge'. Prof. Rob Dyer, University of Cape Town, New Groote Schuur Hospital
- 2020** Deferred due to the COVID-19 pandemic
- 2021** Deferred due to the COVID-19 pandemic

