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Clinical Genetics Medical Workforce in Ireland 2024-2038

An expert stakeholder informed review



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Executive Summary

Aim

The primary aim of this report is to outline a roadmap for specialist training in Clinical Genetics (CG) to meet estimated future demand for consultants in this specialty. This expert-led exercise was informed through a consultative process with the National Genetics and Genomics Office (NGGO) and follows the standard methodology for specialty reviews carried out by National Doctors Training & Planning (NDTP). [1, 2] This document builds on a previous review of the workforce in the specialty of CG carried out by NDTP which was published in 2019. [3] It is expected that this document will be updated again in the next 3-5 years to reflect changes to the management and staffing structures in delivery of clinical genomic services which are anticipated in the coming years.

Current Workforce and Future Demand

Data on the current medical workforce in CG was sourced from the NDTP Doctors Integrated Management E-System (DIME) correct for July 31st, 2024. [4] This record was accessed on August 21st, 2024. Further validation was performed through consultation with the NGGO and the Royal College of Physicians of Ireland (RCPI), the relevant postgraduate training body for CG.

There are currently 8 consultants employed within the HSE as “Consultants in Clinical Genetics”. These 8 consultants (7 female, 1 male) all work full time with 4 expected to reach retirement age in the next 10 years. The majority of this workforce is principally located in the Department of Clinical Genetics in Children’s Health Ireland (CHI) hospitals in Dublin. There is 1 consultant based in the Mater Hospital and 1 consultant providing perinatal services from the National Maternity Hospital (NMH). There are also cancer genetics services provided from St James Hospital by Consultant Medical Oncologists who have expertise in the area of genetics. Those employed in posts as Medical Oncologists are not considered in this report.

The current workforce equates to approximately 0.15 consultants per 100,000 population, in Whole Time Equivalent (WTE). Current international guidelines set out a minimum ratio of 0.3/100k. At current (2024) population levels, this equates to a demand for a total workforce of consultants in CG of 16 WTE, building to a requirement for 18 WTE in 2038.

Key Recommendations

Although the Higher Specialist Training (HST) programme for CG is one of the smallest programmes within the Irish Health System, it has steadily increased in capacity in recent years with at least one projected completion forecast every year from 2025 on. Two trainees started HST in 2024 and this level should be maintained going forward to ensure a sustainable supply of Irish-trained specialists into the CG consultant workforce in the long term. In the immediate future, two consultants will need to be appointed from outside of the training pipeline to replace projected anticipated age-related retirements as there will not be Irish-trained graduates available to fill these posts.

- **Key Recommendation 1:** Two trainees to commence HST programme annually.
- **Key Recommendation 2:** Recruit two consultants from outside of the domestic training pipeline to replace anticipated age-related retirements.

Genomics is a rapidly evolving area of healthcare driven by a high rate of technological advancements and increasing number of referrals for genomic testing from across all medical disciplines. The research used to estimate future consultant demand would benefit from being updated to reflect recent changes in technology and service utilisation trends across genomic medicine. Furthermore, the NGGO aims to expand and increase the availability of genomic medicine services across Ireland and is due to publish a model for clinical genomic medicine in the coming year, which will provide a comprehensive overview of staffing requirements including consultants. As such, the recommendations and roadmap presented in this document will be reviewed in the next 3-5 years.

- **Key Recommendation 3:** NDTP expert stakeholder informed review of CG workforce to be repeated in 3-5 years.

Introduction

This report is a collaboration between the NDTP and the NGGO and considers future demand for consultants in CG within the Irish health service. Within its medical workforce planning remit, NDTP is tasked with estimating and recommending the number of postgraduate trainees required annually for each medical specialty. To this end, NDTP works with specialty stakeholders including national clinical programmes, postgraduate training bodies, and others to estimate the demand for consultants across the Irish healthcare system.

This information then feeds into the medical education and training role of NDTP via the commissioning of medical training required to meet workforce needs, ensuring that the training content and delivery is responsive to the changing needs of the Irish healthcare systems, and supporting the retention of doctors upon completion of their training. More recently, NDTP has used workforce planning reports to inform and influence consultant recruitment and retention initiatives across the health service.

The key objective of this report is to outline expert-informed demand projections for consultants in CG and to inform training intake to meet consultant demand by 2038. This document updates the plan previously set out by NDTP in 2019 to reflect the current status of the specialty of CG. [3] Workforce planning is an inexact science and estimated requirements for demand and supply are based on the best available data, expert opinion, as well as policy and other related developments relevant to the health service at the time that the workforce plan document is prepared. Where data is not readily available in this exercise, assumptions have been made and clearly outlined.

Methodology

The approach taken in this workforce plan for CG is broadly based on the methodological framework "NDTP Health Workforce Planning: A stepwise Approach". [2] This forms the basis for all NDTP workforce plans across all specialties. However, as all specialties are unique in delivery of service and quantification of demand, this framework is adjusted accordingly.

A multi-method approach to workforce planning for CG was used to include:

1. A review of CG in Ireland.
2. A quantitative review of the Irish CG medical workforce to establish the baseline current workforce and related demographic variables.
3. A review of policy documents to ensure the workforce plan is aligned with policy and strategy for the specialty.
4. Stakeholder consultation to establish expert-informed baseline assumptions and scenarios to be used in modelling exercises.
5. Quantitative simulation modelling of supply and demand statistics to establish the recommended annual increase in the supply of the consultant and trainee workforce numbers to meet the demand for consultants by 2038.

Review of Genomic Medicine and Clinical Genetics in Ireland

Within genomic medicine services the medical speciality CG delivers lifelong, comprehensive clinical and counselling services to individuals and their families who have or are at risk of genetic or genomic conditions. The service directs the diagnosis, risk assessment, and management of service users, and provides support to promote and improve clinical management and quality of life for those affected. In addition to rare genomic disorders, Clinical Geneticists also provide care to individuals and families with common genomic disorders and non-genetic congenital anomalies, including possible teratogenic conditions.

CG services, hosted in Children's Health Ireland (CHI), provide diagnostic, predictive, prenatal, and carrier clinical genomic testing and counselling for children and adults affected by or at risk of a genomic condition. The service is provided in CHI Crumlin with satellite clinics in Cork, Limerick, Galway, and CHI Temple St.

Services offered by a CG department include:

- Genomic risk assessment.
- Clinical review.
- Genomic testing.
- Carrier testing.
- Diagnostic testing to identify a genetic cause for a health condition/family history.
- Predictive testing for a known genomic disorder in a family.
- Prenatal testing.
- Genetic counselling including reproductive information.

Specific indications or services offered by CG in Ireland include:

- Urgent workload
 - Prenatal management.
 - Urgent assessment to plan treatment for certain types of cancers.
- Routine workload
 - >10,000 single gene disorders e.g. Cystic Fibrosis, Duchenne Muscular Dystrophy, Fragile X Syndrome, Spinal Muscular Atrophy.
 - Developmental delay and/or Intellectual disability.
 - Chromosome disorders.
 - Inherited conditions affecting different or multiple parts of the body/organs/systems e.g. cardiovascular, renal, neurology.
 - Complex genomic disorders.
 - Reproductive genomics.

The CG service is staffed by consultants, Non-Consultant Hospital Doctors (NCHDs, training and non-training), and Genetic Counsellors. The latter have a science or nursing degree and a postgraduate Master's in Clinical Genetic Counselling. As Genetic Counsellors are not part of the medical workforce, training and staffing levels are not considered in this report.

The NMH provides a perinatal genetics and genomics service. This service is led by a Consultant Clinical Geneticist. This service assists people in the NMH maternity services who are at risk of having a baby affected by a genetic condition, who have signs of a genetic condition identified on scan, and those who may be at risk of miscarriage recurrence.

Additionally, the National Women and Infants Health Programme (NWIHP) has developed a draft framework for the establishment of a National Perinatal Genomics Service which focuses on the evaluation, diagnosis, management and treatment of anomalies before birth. The NGGO and NWIHP will work to deliver genomics in maternity services through the National Perinatal Framework.

St. James's Hospital provides a Cancer Genetics Service to patients undergoing investigations for hereditary cancer syndromes. This service is led by Consultant Medical Oncologists who have expertise in the area of genetics. The National Cancer Control Programme (NCCP) published the Hereditary Cancer Model of Care which recognises genetics as a growing and integral part of cancer care, with a role across treatment, early detection, and risk reduction. Identification of cancer predisposition will lead to patient benefit. The potential benefit to a patient, and their relatives, can include reducing the risk of cancer developing, identifying cancer at an earlier more treatable stage, informing the optimal choice of targeted therapy if a cancer develops and facilitating reproductive options for the individual. In this model of care services to patients are provided by both Medical Oncologists and Clinical Geneticists. A Medical Oncologist progresses through a different HST programme than a Clinical Geneticist and therefore Medical Oncologists are not considered in this report.

National Genetics and Genomics Office

The NGGO was established by the HSE in 2023 and is charged with implementing the first national strategy for genomics. [1] The 2022 National Strategy for Accelerating Genetic and Genomic Medicine in Ireland looks to build on previous advancements and to develop nationally led genomic medicine services across acute, primary, and community settings in all Health Regions (HRs). [5].

Among the many strategic areas of focus identified within the NGGO's programme of work, the most relevant to this CG workforce plan are encompassed in the National Strategy under the following two themes: *Building the Genetics and Genomics Workforce for the Future* and *Enhancing Genetic and Genomic Clinical Services*. [5] The strategy addresses issues such as shortages of specialist staff, knowledge gaps in the clinical workforce, limited genomic literacy across healthcare professionals and the public, and limited availability of a clinical genomic service. The previous NDTP Review of CG medical workforce, "Review of the Clinical Genetics Medical Workforce in Ireland, 2019", identified the inadequate number training in, and recruitment and retention of doctors working within, CG. [3] The report presented here will serve to update the current status of the CG medical workforce and outline a roadmap to reach the recommended consultant workforce over the next 10-15 years.

Clinical Genetics Specialist Training Programme

Specialist training for CG takes place at HST level. Following completion of Basic Specialist Training (BST) in General Internal Medicine, candidates can complete a four-year HST course in CG. Upon completion of HST, candidates are awarded the Certificate of Successful Completion of Specialty Training (CSCST) and are eligible for consultant posts in CG. Some individuals will spend time in overseas fellowships at post-CSCST stage in order to gain further expertise prior to taking up consultant posts. To this end, NDTP assumes that, on average, two years will elapse between an individual achieving CSCST and taking up a public consultant post in Ireland. Consequently, an individual starting HST in 2026 is assumed to enter the consultant workforce in 2032. CG training in Ireland is delivered in accordance with the Royal College of Physicians of Ireland (RCPI) HST curriculum.

As of July 2024, the CG HST program has an approved intake of 3 trainees per annum, with 1-2 trainees per year currently (see Table 2 for a detailed breakdown). Internal NDTP analysis indicates that only two individuals were awarded CSCST in CG in Ireland in the period 2005-2023. Of these, only one is currently working in Ireland, and is employed in a different specialty to CG. This is indicative of the fact that the CG training programme is very small in scale and has not yet expanded to reach a steady output of qualified specialists each year. However, the training programme has a continued commitment to match the supply of consultants to meet demand for services in a sustainable manner through Irish-trained specialists.

As the training program increases in capacity and the CG consultant workforce expands over the next 10-15 years, and the availability of consultant posts should act as a driver to retain qualified CG specialists in the coming years. Additionally, the competitive nature of the Public Only Consultant Contract 2023 (POCC 23) for consultant employment contracts is expected to act as a secondary driver in retaining Irish qualified specialists in Ireland going forward.

Review of the Clinical Genetics Workforce in Ireland

A quantitative review of the consultant, trainee, and non-training scheme doctor workforce was carried out using data from the following sources:

- NDTP Doctors Integrated Management E-system (DIME). [4,6]
A database of all doctors employed in the public health system in Ireland, receiving data from the postgraduate medical training bodies, the Irish Medical Council (IMC), and all clinical sites.
- NGGO.
The office charged with implementation of the National Genomics Strategy.
- IMC Annual Retention Application Form (ARAF). [7]
Captures information on registration of specialist doctors such as where they obtained their primary medical degree, as well as high level data on the private sector.
- RCPI.
The postgraduate training body which delivers the CG HST programme.

Accuracy of DIME is dependent on clinical sites regularly updating details of their medical workforce. As this is a live system where data can be updated retrospectively, variances can exist between publicly available figures depending on the date for which the workforce report is run and the date on which it was accessed. All DIME data used in this report is correct to 31st July 2024 and was accessed on 21st August 2024 to allow retrospective corrections and updates to have been made prior to this. Further engagement was carried out with the NGGO to validate the workforce numbers.

Data on trainees is for the training year commencing July 2024 and was validated with the NGGO and RCPI to ensure accuracy. Private sector data was established through the IMC and consultation with the NGGO. No private sector consultants were modelled in this report following this process.

This section of the report outlines the demographic breakdown of the CG workforce as of 31/07/2024 in both headcount (HC) and Whole Time Equivalent (WTE), as indicated. WTE is the preferred means of quantifying the consultant workforce as it accounts for those who work less than full time (in clinical practise) and accurately captures those who have commitments across several roles or clinical sites, giving an accurate metric of the capacity of the health system.

Demographics of the Clinical Genetics Workforce

Table 1 below details the demographics of the consultant and Non-Consultant Hospital Doctor (NCHD) workforces in CG. These parameters are used as the inputs for the statistical supply model which underpins all projections in this report. It should be noted that there are currently 8 consultants employed as "Consultants in Clinical Genetics".

Table 1: Workforce data underpinning input parameters for modelling supply of CG consultants to 2038.

Variable	Value	Source
Consultant HSE funded services (HC)	8	DIME, July 2024
Consultant HSE funded services (WTE)	8	DIME, July 2024
WTE rate HSE funded services	100%	DIME, July 2024
Gender balance HSE funded services	12.5% male, 88.5% female	DIME, July 2024
Expected retirements by 2038 (HC)	5 (retirement age 62) 4 (retirement age 65)	DIME, July 2024
Exclusive private sector consultants	0	IMC, 2023
HST Years 1-4 (HC)	5	RCPI, July 2024
Gender balance trainees (HST)	40% male, 60% female	RCPI, July 2024
NTSDs	2	DIME, July 2024

Table 2: Distribution of CG HSTs by year.

Year of HST	Year 1	Year 2	Year 3	Year 4
Headcount	2	1	1	1

Detailed characteristics of the CG consultant workforce is shown in Table 4. This indicates that the workforce work 100% WTE rate with only one consultant on a temporary contract.

Table 3: Detailed characteristics of HSE consultant workforce in CG. [4]

Variable	HC	WTE	WTE Rate	% Over 55 Years	% Fulltime	% Permanent	% Temporary	% Locum	% Agency	% General Register
Total	8	8	100%	50%	100%	87.5%	0%	12.5%	0%	0%

The age profile of the public CG workforce is summarised in Table 4.

Table 4: Summary age statistics for CG medical workforce.

Role	Mean Age	Median Age
Consultants	50.4	51
NTSDs	33.5	33.5
Trainees	31.8	30

Location of Consultants in Clinical Genetics

The principal clinical sites where the CG consultant workforce are based in shown in Table 5. While the workforce is principally based in Dublin, CHI provides satellite clinics in Cork, Limerick, and Galway. There are currently no permanent clinics in the Southwest, Midwest, or West-Northwest HRs. Table 6 breaks the consultant workforce down by hospital type and HR.

Table 5: Principal clinical site of consultants in CG. [4]

Clinical Site	Headcount
CHI	6
Mater Misericordiae University Hospital	1
National Maternity Hospital	1

Table 6: Regional distribution of consultants in CG (WTE) by hospital acuity level. [4]

Health Region	Model 4	Specialist Paediatric	Specialist Maternity	Total
Dublin & Northeast	1			1
Dublin & Midlands				
Dublin & Southeast			1	1
Southwest				Clinics
Midwest				Clinics
West-Northwest				Clinics
CHI*		6		6
Total	1	6	1	8

*Note: CHI provides genomic services to both adult and paediatric patients.

There are newly created but as of yet unfilled consultant posts in CG (as of Q4, 2024); one based in CHI, and two consultant posts in CG have been approved as part of the National Perinatal Framework through the NWIHP. No specific provision is made for the further new consultant posts in the projections which follow, as the expansion of the workforce is implicitly factored into the modelling.

International Peer Comparison

An international comparison of the ratio of CG consultants per 100k population was carried out to provide further context to the composition of the CG consultant workforce. This is summarised below in Table 7 with data sources included. This indicates that, with the exception of New Zealand which has a comparable consultant/population ratio to Ireland, the other nations analysed have an average ratio of approx. 0.3 consultants per 100k population. Note that some countries publish medical workforce statistics in WTE, while others report in HC, as indicated in Table 7.

Table 7: International peer comparison of the CG workforce per 100k population. WTE or HC as indicated.

Role	Ireland [4, 8]	England [9, 10]	Scotland [11, 12]	Wales [10, 11]	Australia [13]	New Zealand [14, 15]
	WTE				HC	
Consultants	0.15	0.26	0.36	0.28	0.28	0.17
Trainees	0.09	0.17	0.02	0.11		
NTSDs	0.04	0.01	0.12	0.06		

Modelling Supply

Statistical modelling of the consultant workforce was performed using a stock-flow model to project the supply of consultants to 2038. Input parameters were derived from workforce statistics correct to July 31st, 2024 (Table 1), while various assumptions were derived from internal NDTP research and consultation with the relevant stakeholders (Table 8). A schematic of the supply model is outlined in Figure 1 below.

IMC annual registration data for 2023 indicates no consultants practicing CG in the private sector. While private genomics services are available in Ireland, without IMC data to confirm, the number of private consultants in CG practicing in Ireland is assumed to be zero. It is further assumed that this will remain the case for the duration of the projection period.

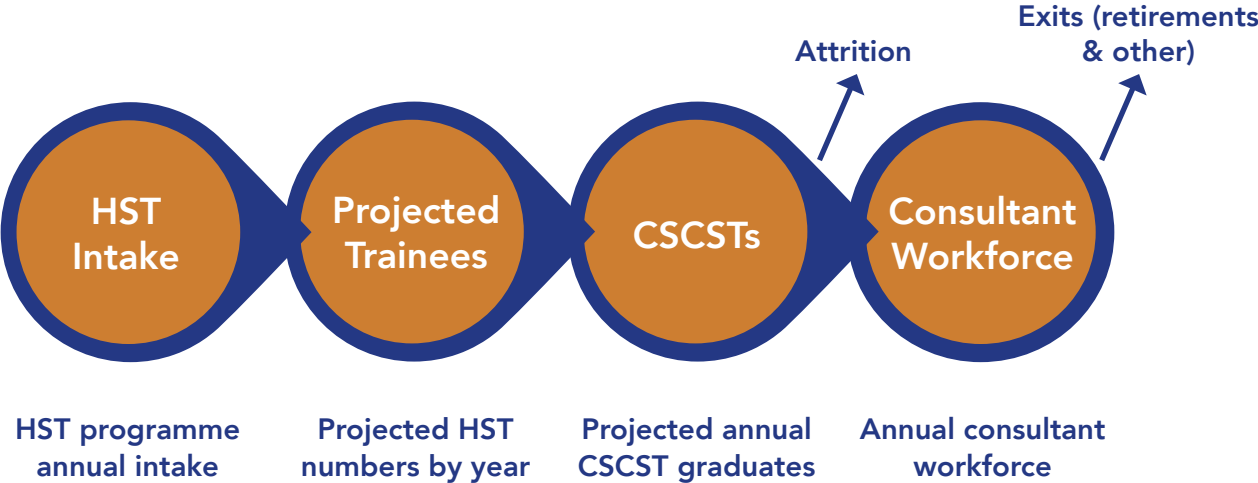
Increased demands for Less Than Full Time (LTFT) working practices are anticipated in the future. Currently all consultants in CG work full time, when accounting for both clinical and administrative functions. In order to account for expected increased LTFT working practices in the future, the male and female WTE rates are both assumed to reduce by 0.5% annually. Internal NDTP analysis indicates that the historic median age of retirement of consultants from permanent posts in the discipline of Medicine in the 10 years up to 2024 is 63 (n=49). [16] Accordingly, this value is assumed to be the age of retirement in this exercise. Entrants to the HST programme and consultants recruited from outside of the domestic training programme are assumed to follow the gender split of 80% female, 20% male.

As outlined already in this report, the CG HST programme is still very much in an early expansion phase and only two individuals have previously completed the programme at time of writing. Of these two, one works abroad and the other, while working within the HSE, works in a different specialty of Medicine than CG. Thus, there is insufficient historic data from which to infer an appropriate post-CSCST attrition rate when modelling supply of consultants. To this end, it was agreed in consultation with the NGGO that an initial attrition rate of 40% would be assumed, with this reducing annually by 1.5% reaching a stable minimum of 25% by 2034, in line with the overall attrition rates of other Irish HST programmes. This reflects the availability of consultant posts in CG in the coming years as the workforce expands acting as a driver to retain Irish-trained specialists within Ireland. Furthermore, as the delivery of genomic medicine services expands and matures within the NGGO, this will further act as a driver for retention.

Table 8: Assumptions underpinning statistical modelling of consultant supply to 2038.

Assumption	Value	Source
Attrition rate post CSCST to consultant post	Initially 40%, decreasing 1.5% per year to 25% by 2034	NPDT internal analysis + assumption
Age of retirement	63	NPDT internal analysis + assumption
Non-retirement exits	0.5% (male) 0.8% (female)	Derived-NDTP
Years between CSCST and consultant post	2	Derived-NDTP
Gender balance trainee intake & consultant recruited outside training pipeline	20/80% - male/female	Assumed
Flexible working	WTE to reduce annually by 0.5%	Derived-NDTP
Private sector assumptions	Private sector capacity remains 0 throughout projection period.	Derived-NDTP

Figure 1: Supply model schematic.



Estimating Future Demand for Consultants in Clinical Genetics

The number of identified genetic and genomic causes for conditions is increasing rapidly with the development of new technologies to analyse the genome and this is likely to increase demand for clinical geneticists. Simultaneously, there has been an increase in the volume and complexity of genomic tests being ordered by doctors from other specialties – this increased rate of testing is expected to increase the number of individuals who (the patient and their family) will require input from the CG team. Ireland also has an endogamous population, Irish Travellers, who have a higher risk of some genetic conditions and therefore a greater need of the service than the general population.

Recommended Consultant/Population Ratios

The Royal College of Physicians in the UK recommends 0.3 consultants in CG per 100k population. [17] In Ireland, as of CSO Population & Labour Force Projections (scenario M2), this equates to a total recommended workforce of approximately 16 WTE consultants for 2024. [8] The actual CG workforce of 2024 (8 WTE) is half this demand. [6, 18] The population of Ireland is expected to reach approximately 6 million by 2038, equating to a demand for consultants in CG of 18 WTE.

The previous assessment of the CG consultant workforce in 2019 indicated a consultant workforce of 4 WTE, with a corresponding population ratio of 0.1/100k. At the time, the required workforce was identified as 15 WTE to satisfy the projected population of 2028. As shown in Table 9 below, the consultant numbers (and corresponding population ratio) have increased since then but are still well below the recommended levels.

Table 9: Historic and recommended population ratios and corresponding consultant workforce (WTE) for CG consultants in Ireland.

	2019	2024	2024	2038
	Actual Values		Recommended Values	
Consultants/100k population (WTE)	0.1	0.15	0.3	
Consultant workforce (WTE)	4	8	16	18

Referring to the international comparisons in Table 7, it is apparent that the UK nations and Australia are broadly in line with the recommended consultant levels, emphasising that Ireland is significantly below the required workforce.

Demand Due to Demographic Ageing

Projected national demographic changes to 2038 are summarised in Table 10 clearly highlighting the expected substantial changes across demographic bands. [8]

Table 10: Projected demographic changes in Ireland 2022-2038. [8]

Demographic Group	2022 Value	2038 Value	Average Annual Growth Rate
0-15	1,084,577	889,281	-1.23%
16-30	943,146	1,107,636	1.01%
31-45	1,147,588	1,157,372	0.05%
46-60	1,010,442	1,259,042	1.38%
61-75	698,167	1,006,719	2.31%
76-85	230,174	399,674	3.51%
Over 85	69,872	161,426	5.37%
Total	5,183,966	5,981,150	0.90%
Births	57,450	50,771	-0.78%
Deaths	35,477	46,527	1.71%

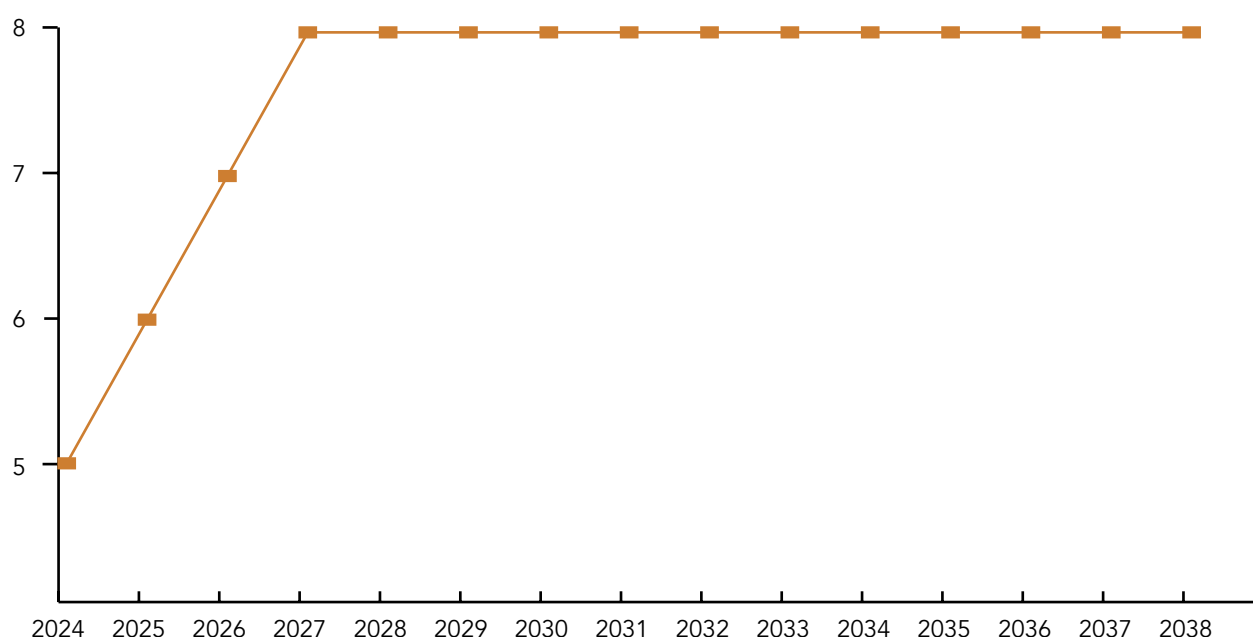
Supply of Clinical Genetics Consultants

Current training numbers in CG are approximately 1 trainee per year of HST, with 2 starting in Year 1 in July 2024. To meet the required workforce targets, it will be necessary to maintain HST intake at an average of 2 trainees annually. This will allow the training programme to establish as a sustainable model whereby consistent numbers of trainees exist in the system in any given training cycle, spread across all HST years. As this value is an average, it can be expected that there may be yearly fluctuations depending on availability of suitable candidates and free training posts. The CG HST programme has an approved intake of 3 per annum, so it is assumed that intake will never exceed this.

The total number of trainees in the system annually is illustrated in Figure 2. This highlights the initial increase in total trainee numbers from the current 5, eventually levelling off at a total of 8 by 2027 and remaining at this level thereafter. Some year-to-year variation can be expected depending on the availability of suitable candidates or trainees working LTFT and taking more than 4 years to complete the programme. Nonetheless, over the course of the projection period, these effects will smooth out, and the final workforce will be met.

Given that CG has a very small medical workforce, there are few NTSD posts available which could be immediately converted to training posts. As such, NDTP will work closely with the training programme to ensure that sufficient training posts are identified within the system to ensure that capacity exists to sustain the proposed trainee numbers.

Figure 2: Total projected total HST numbers for December of each year.



Short Term Recruitments of Consultants

The training programme roadmap outlined above will ensure that the future demand for consultants will be sustainably met through domestic training. However, in the immediate term, it will be necessary to recruit from outside of the Irish training system to offset a number of expected retirements from the current workforce in the next few years. Ideally, it would not be necessary to source consultants from outside of the Irish training system, but there are a number of consultants expected to retire in the next 3-5 years and no domestic CSCSTs expected to be available from

which to recruit. Beyond this time period, all recruitments related to service expansion and replacement of retirements will be supplied from Irish-trained specialists. Table 11 outlines the projected annual workforce according to the training intake and recruitment proposed above.

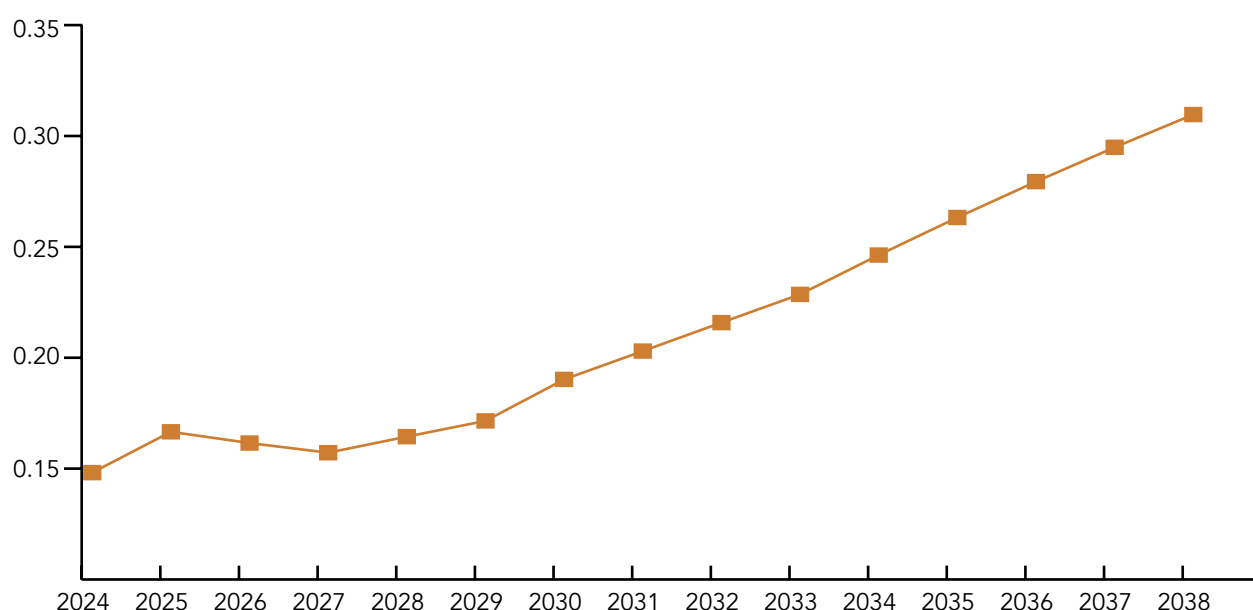
Table 11: Outline of proposed HST intake and short-term consultant recruitment.

Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
HST intake (July)	2	2	2	2	2	2	2	2	2						
Immediate recruitment trained overseas		2													
Supply (WTE) (Year-end)	8.0	9.0	8.9	8.7	9.2	9.7	10.8	11.6	12.4	13.3	14.4	15.5	16.5	17.5	18.5

Consultant/Population Ratio

The year-on-year consultant/population ratio in this scenario is presented in Figure 3 below. This shows that by the end of the projection period, the ratio of CG consultants per 100k total population will increase to the target value of 0.3/100k.

Figure 3: Projected annual consultant/population ratios.



Trainees per Consultant

The trainee intake profile above will result in the ratio of trainees per consultant increasing to approximately 0.9 up to 2028 as both the HST and consultant workforces increase in number. Beyond this, the ratio will decrease towards 0.4 as the HST programme stabilises in annual capacity while the consultant workforce continues to expand.

Detailed Supply Summary

A detailed summary of the supply model for this scenario is shown in Table 12, below. This summary breaks down projected total recruitment by replacement and expansion demand, entrants to the workforce, as well as providing annual metrics around decreasing average WTE rate, gender balance, and estimated headcount. Note that slight variations may arise if, for example, there are fluctuations in the gender balance of the trainee intake compared to the profile presented here. The final workforce will be met, regardless of slight variations on an annual basis. Broadly speaking, recruitment into the consultant workforce up to 2027-2028 will principally offset expected retirements. The workforce is projected to increase thereafter as more Irish CSCSTs become available to fill new posts in the expanded service.

Table 12: Detailed supply summary.

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Replacement Posts (WTE)	0.0	0.7	0.7	0.7	0.1	0.1	0.1	0.4	0.4	0.4	0.1	0.1	0.1	0.1	0.1
New Posts (WTE)	0.0	1.2	0.0	0.0	0.6	0.6	1.2	0.9	0.9	0.9	1.2	1.2	1.2	1.2	1.2
Total Recruitment (WTE)	0.0	2.0	0.6	0.6	0.6	0.6	1.3	1.3	1.3	1.3	1.4	1.3	1.3	1.3	1.3
Entrants from domestic training (WTE)	0.0	0.0	0.6	0.6	0.6	0.6	1.3	1.3	1.3	1.3	1.4	1.3	1.3	1.3	1.3
Immediate overseas recruitment (WTE)	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consultant Supply (@ year-end) (WTE)	8.0	9.0	8.9	8.7	9.2	9.7	10.8	11.6	12.4	13.3	14.4	15.5	16.5	17.5	18.5
Average WTE rate	100.0%	98.2%	97.3%	96.6%	95.7%	94.8%	94.0%	93.1%	92.3%	91.4%	90.5%	89.6%	88.7%	87.8%	86.9%
Percent female	88%	85%	78%	70%	72%	74%	71%	71%	71%	71%	72%	72%	73%	73%	73%
Estimated Headcount	8	9	9	9	10	10	11	12	13	15	16	17	19	20	21

The various elements of Table 12 should be read as per the following definitions:

- **Replacement Posts:** Sum of annual exits from the workforce based on a retirement age of 63 plus a percentage of the workforce expected to leave for reasons other than retirement. Here, 0.5% of males and 0.8% of females are assumed to leave annually before retirement. In projections, retirements are modelled as taking place over a 3-year period. i.e. if a consultant is due to retire in a given year, this is modelled as 0.33 WTE over the three years either side of the year they reach age 63. This is done both for GDPR reasons and to account for individual deviations from the expected retirement age of 63.
- **New Posts:** Projected new consultant posts reflecting service expansion.
- **Total Recruitment:** Sum of new consultant posts and replacement posts.
- **Entrants From Domestic Training:** Portion of Total Recruitment which is filled with Irish-trained specialists.
- **Immediate Overseas Recruitment:** Portion of Total Recruitment which is filled through recruitment of specialists who have completed training outside of the domestic programme.
- **Consultant Supply (year-end):** Workforce at start of year minus Exits (retirements and other replacements) plus Total Recruitment.
- **Average WTE Rate:** Projected average annual WTE rate based on assumptions outlined above.
- **Percent Female:** Projected female percentage of the workforce.
- **Estimated Headcount:** Approximate annual workforce in HC.

Geographic Distribution of Consultants in 2038

The projected geographic distribution of demand for genomic medicine services as provided by Clinical Geneticists in 2038 is shown by HR in Table 13 below. This is presented in terms of WTE required by region according to the population ratio of 0.3 WTE per 100,000k population. The NGGO is in the process of developing a clinical genomic medicine model that will provide a clinical genomic service in each HR. In the development of this model the NGGO is cognisant of the consultant requirements detailed below. Work on the development of the clinical genomic medicine model is due for completion in 2025.

Table 13: Consultant requirements by HR in 2038 according to 0.3 consultants per 100,000k population. [8, 19]

Health Region	Projected Population 2038	Consultant Requirement 2038 (WTE)
Dublin & Northeast	1,543,188	4.6
Dublin & Midlands	1,223,605	3.7
Dublin & Southeast	792,159	2.4
South-Southwest	1,130,329	3.4
Midwest	419,561	1.3
West-Northwest	872,309	2.6
Total population	5,981,150	18

Conclusions and Recommendations

- The supply and demand estimates in this report are informed through engagement with the NGGO and the training arm of the specialty of Clinical Genetics, in addition to consideration of population projections and anticipated developments within the Irish health service.
- The principal drivers of change to the future of service delivery in CG are the implementation of the National Genomics Strategy, expansion of the workforce to reach recommended population ratios and satisfy current unmet demand, further expansion to keep abreast of the predicted increasing national population, and expansion of precision medicine involving genomic investigations as standards of health care. In addition to these factors, there are secondary drivers which will impact on the delivery of care within CG, such as LTFT working patterns, demographic aging, potential for a changing national genetic profile driven by international migration, and the rapidly changing and evolving landscape of genomic testing and its implications for precision medicine.
- Ireland currently has a ratio of 0.15 consultants per 100k population. This is a significant improvement on the previously ratio of 0.1 reported in 2019, but still substantially short of the 0.3 recommended by the Royal College of Physicians, UK, and those ratios observed in comparable international jurisdictions.
- If Ireland is to reach this ratio by 2038, HST intake will need to be maintained at 2 per annum, with two consultants appointed to post from outside of the training pipeline in the short term.
- With the model for clinical genomic medicine due to be published by the NGGO in 2025 and aforementioned evolving drivers for change and service demand, appropriate staffing levels will be reviewed in the next 3-5 years to ensure that target consultant levels are appropriate for delivery the of clinical genomic medicine model.
- Expansion of the CG medical workforce is a key component of the workforce element of the NGGO's programme of work, which aims to ensure that appropriate resources and networks exist to deliver appropriate levels of care by genomics services. In addition to the consultant workforce, other staff grades involved in the delivery of CG care will be reviewed by the NGGO.

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