

Community Referred Radiology Hub Design

May 2025

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1. Context

The community-referred radiology programme includes four key aspects, to be fully implemented by July 2026:

- I. Moving to a consistent clinically appropriate access approach for community radiology across New Zealand.
- II. **Establishment of triage hubs with GP Liaison triaging referrals as part of a multi-disciplinary team against clinical criteria and providing ongoing education and feedback to primary care referrers.**
- III. Addressing pricing pressures, moving towards a single national contract, and removing copayments where they exist.
- IV. Funding patient support programmes to access community radiology.

This paper provides the detailed design for triage hubs (bullet II).

Engagement with a range of primary and secondary care stakeholders across NZ was undertaken to support the detailed CRR Hub Design. The approach has been to consider what ‘good looks like’ from current existing triage approaches from across the motu. Interviews were documented and the feedback themed to identify current issues, as well as concerns and perceived benefits for the new CRR Service.

Stakeholder engagement identified that many of the key issues and concerns are shared by multiple Districts across all Regions and tend to arise from existing local referral criteria and processes. Five Key Themes for “what good looks like” were identified:

- Strengthening communication and relationships between community referrers and District Radiology Services
- Balancing the aims of the CRR Hubs with existing Radiology Service Capacity
- Optimising community referral criteria and processes
- Addressing unmet need and inequitable variation in existing community referred radiology
- Ensuring collaboration and consistency between Regional CRR Hubs

The following stakeholder feedback has also directly shaped the final Hub Design (Appendix 1):

- Safeguarding existing community radiology processes that work and “not breaking what works”, especially for rural areas
- The need for a Regional CRR Hub approach, while also ensuring national consistency and collaboration.
- Embedding continuous quality improvement within the CRR Hubs
- Ensuring Hubs support wider radiology needs, such as wait list recovery

This document sets out the common functions and consistent aspects of CRR hubs expected to be put in place in each region; and allocates funding based on these requirements. The intent is to provide a level of national consistency, whilst allowing flexibility for regions to establish what works for them.

1.1. Current state

Current community radiology referral criteria and processes throughout New Zealand (NZ) vary greatly, with a range of different funding and service delivery models having grown organically, as need arose. This has created inequitable access within and between the four Health NZ Regions (refer Appendix 2).

Local PHOs and/or Private Radiology providers have been contracted in some districts to provide HNZ funded Direct to Private (D2P)¹ imaging, while in others all community referrals are managed ‘in house’, but may be outsourced ad hoc, as required. Clinical auditing between 2018 and 2024 undertaken by existing Radiology GPLs and Triagers, across a number of modalities, referral types and processes have consistently shown that between 10 – 50% of D2P or Direct to Radiology (D2R) referrals were inappropriate and did not meet current local District referral criteria.

Further, aspects such as how the patient is referred, or whether their GP practice is located in the same District they live in, may impact patient pathways and wait times for the same clinical presentation.

Each of these referral processes and services incorporate varying levels and combinations of quality improvement activities such as triaging, auditing, regular reporting and referrer education. Triageing of community radiology referrals is undertaken by a range of radiology roles across the country, including Radiologists, MIT and Sonographers.

Figure 1. Overview of current CRR triage capability by region

Northern:	Two Districts - Waitematā, Te Toka Tumai Auckland, have introduced Radiology specific GP Liaison (GPL) or Triager roles to support community referred imaging. Dedicated triage roles triage in the RIS and undertake all the steps taken from when a referral is looked at to when it is ready to be booked i.e. triaging, prioritisation and protocolling. Medical Imaging Technologist (MIT) triage x-ray.
Te Manawa Taki:	No triage hub – some audit. Use of BPAC referral form. Some local triage in HNZ district departments. No triage of D2P.
Central:	No Triage hub – some PHO audit. Use of BPAC referral form. Some local triage in HNZ district departments. No triage of D2P.
Te Waipounamu:	Waitaha Canterbury and Southern - have introduced Radiology specific GP Liaison (GPL) or Triager roles to support community referred imaging.) Dedicated triage roles triage in ERMS then Radiology Service undertakes prioritisation and protocolling once sent to RIS. PCRL triage of x-ray.

It is expected that those regions that have existing CRR triage will build upon the systems they already have to ensure all of region coverage and meet the core hub requirements set out here-in.

¹ D2P referrals are public health system funded referrals where the referral is sent straight to a private provider and do not go via Radiology first. They do not include outsourced public imaging, or privately funded imaging.

2. Intended outcomes

2.1. Benefits of CRR triage

Direct access to imaging for community clinicians can enable early community-based diagnosis and treatment of a number of conditions, preventing unnecessary admissions and outpatient referrals. If a First Specialist Assessment (FSA) is subsequently required, the diagnosis is more likely to be known, facilitating initiation of appropriate treatment at the FSA - reducing the burden on secondary care and improving patient care and outcomes.^A

The benefits of freeing up existing radiology staff who triage community referrals also need to be considered in the current setting where many District Radiology Services are short of MIT, Sonographers and Radiologists.

Building relationships with community referrers,^B triaging of radiology referrals,^{A,C} quality assurance, and quality improvement programmes have huge potential for optimisation of radiology services - creating long-term, system wide benefits^{A,D} which can best be considered in the context of the NZ Triple Aim Framework^E - 'Improved quality, safety and experience of care for individuals', 'Improved health and equity for all populations' and the 'Best value for public health system resource' – and which still hold true today.

The implementation of CRR hubs with triage, advice, audit, and education functions will support more consistent access, and help moderate new demand from new national pathways (such as the National Abnormal Uterine Bleeding (AUB) pathway) and new primary care clinical access criteria.

Declined rates at Waitematā were around 2% prior to introducing a dedicated GPL to triage all community US and CT referrals. These rates were 17% with the commencement of GPL triaging and subsequently reduced by 1% (to 16%) per annum thereafter; likely a result of a thorough GPL triaging process which included written advice around alternative management, directing the referrer back to the appropriate HealthPathway when declining referrals.

Appendix 2 provides current CRR volumes and intervention rates, and estimates the impact from the new national access criteria and emerging national pathways.

2.2. Measure of success

The Community Referred Radiology (CRR) programme is to create an optimal model for community referred radiology and a nationally consistent approach to provide for direct referral for imaging.

The implementation of community led, peer-based CRR hubs with triage, audit, and education functions will ensure:

- appropriate use of CRR based on the national CRR criteria, ensuring patients are following local/national pathways,
- consistent access and prioritisation of referrals,
- the provision of timely advice back to primary care,
- patients, communities and funders realise the greatest benefit from investment in the CRR program.

Key outcomes of the CRR Programme are:

- Patients receive appropriate imaging that will enable early community-based diagnosis and treatment
- Timely access to triage, diagnosis and specialist care by patients being imaged earlier in the patient journey
- Support radiology service sustainability in a financially challenging environment
- Ensure consistent access at both a regional and national level
- Balance consistency with a need for local District knowledge, relationships and flexibility of service provision.

The Health Data Platform (HDP) being established for HNZ will include a CRR dashboard that will enable regular monitoring and evaluation. This platform, coupled with regular stakeholder surveys and hub audit will enable robust outcomes data to be collected and evaluated. Key measures will include:

- Percentage of outpatient events that are Community Referred.
- Direct referrals for community imaging indications available, based on the agreed national criteria.
- Number of referrals declined by triager over time.
- Waitlist reporting by prioritisation category

The implementation of the CRR programme and CRR hubs will not solve HNZ capacity issues or funding constraints for outsourcing.

3. CRR Hub Design

The CRR Hub Design documented here will support longer term community radiology service delivery, while providing a tactical approach to flexible, regional provision of community referred radiology in both the short and medium term.

A number of system related limitations on Hub Design and activities were identified during the design process which impact the short to medium term design and in particular, the FTE required for the Hubs. These include:

- Existing referral processes impacting the ability to triage vs audit referrals
- Existing IT systems used for referral, triaging and communicating with referrers
- Health system constraints, including existing radiology service capacity and the need to ensure resources are used wisely

Longer term changes planned for radiology service provision and IT capabilities will directly impact community radiology. Regular review of CRR Hub activities, processes, outcomes and FTE will be required as these programmes of work progress.

3.1. CRR hub core functions

The **four core functions** of CRR hubs are:

1. **Prospective triage** including primary care clinicians (GPs or NPs) working alongside radiology services ensuring radiology meets the national CRR criteria and follows national/local health pathways. CRR hubs will:
 - Triage all routine CT and US referrals against the national CRR clinical access criteria.
 - Triage other modalities (for example selected x-ray) within the resource they are allocated, based on local need.
2. **Advice and liaison** with primary care and secondary care:
 - Liaise with referrers, providing feedback when further information is required, a different imaging modality is recommended, or referrals are being declined. Feedback will include the use of nationally consistent wording directing referrers to the appropriate HealthPathway.
 - Provide support and liaison for Radiology staff who provide a triage role and require advice.
3. **Retrospective Audit**, in particular:
 - Of new tests and criteria and areas where there are concerns about under or over referral.
 - Acute Demand referrals to ensure there is appropriate direct to private referral.
4. **Education** to primary care.

When other referral types are included in the CRR programme (for example DEXA scans), regions will determine the appropriate clinicians to triage these.

Refer Appendix 3. For a detailed list of core day-to-day hub activities.

3.2. CRR hub components

There will be Four Regional CRR Hubs aligned to HNZ Region boundaries - Northern Region, Te Manawa Taki, Central, Te Waipounamu

There will be a Regional GP Radiology Liaison (GPRL) Lead in each region

Supported by Primary Care Radiology Liaisons (PCRL) to undertake the majority of the CRR Hub key activities. These roles will be the primary care interface, working with other members of the regional/district radiology services including MITs, sonographers and radiologists.

Collectively and with other 'triage' professions within radiology services, these form virtual regional CRR hubs with PC liaison (and other radiology 'triagers' within Radiology Services) mainly working online in RIS or ERMS depending on the digital platform.

PCRL will:

- Work collaboratively with District Radiology Services (DRS) and primary care referrers
- Undertake clinical auditing of local D2P² referrals.
- Be the 'face' and local point of contact for the Regional CRR Hubs and community radiology.
- Build strong relationships with local primary care referrers and key stakeholders including other specialists.

Collectively, they form the Regional CRR Hubs and will:

- Work collaboratively across their Region to ensure smooth community imaging service delivery. This includes:
 - The provision of timely advice back to referrers (there are a number of electronic and telephone ways this could be done).
 - Daily triage of referrals.
 - Quality Assurance and Improvement activities including cross auditing each other's triaging decisions, within and between regions and informal peer review.
 - Cross covering PCRL leave:
 - ensuring that urgent referrals are triaged at least every 2nd day in all Districts;
 - ensuring advice is always accessible by referrers.

Nationally, GPRL regional leads / CRR hubs will work collectively to:

- Develop standardised responses for declined referrals.
- Create a change control process to identify changes to existing criteria and criteria development for new national pathways.
- Undertake a national clinical audit function and determine how this is allocated between GPRL using a consistent audit tool.
- Develop suitable metrics to monitor CRR hub performance (e.g. triage turnaround time) in addition to those routinely collected on the Health Data Platform.
- Collectively develop education programmes based on audit learning.
- Ensure National Health Pathways (as these are developed and implemented) align with the CRR criteria.

3.3. Regional Flexibility to meet local need

While Regional CRR Hubs have common core functions and outcomes (and will develop common performance expectations), a degree of regional flexibility will be required. This is primarily due to significant variation in what radiology services look like and the challenges they face across the motu, with significant rural populations and large variations in waiting lists and time to service. Regions will determine where to focus their CRR triage resource to help best manage their demand / constraints (including where they are located, if they are GPs or other practitioners, how each district is covered).

² D2P referrals are public health system funded referrals where the referral is sent straight to a private provider and do not go via Radiology first. They do not include outsourced public imaging, or privately funded imaging.

A regional GPRL lead is a common requirement, supported by PCRL working together to undertake the key quality improvement, education and quality assurance activities and to deliver on the intended outcomes set out in section 2.

All CRR hubs must:

- ✓ Have a Regional GP Radiology Liaison (GPRL) Lead role.
- ✓ Create a national network of GPRL to mitigate against any significant regional divergence in approach.
- ✓ Have PCRL employed by HNZ radiology or commissioning workforce and connected into each district they are covering.
- ✓ Undertake timely triage to ensure referrals are triaged within specified turnaround times from receiving the referral (standard to be determined collectively by regional GPRL leads).
- ✓ Be part of the broader regional radiology governance structures been established.
- ✓ Undertake the core hub functions set out in section 3.2.

Regions will determine:

- ✓ How to use their allocated resource to deliver the core hub requirements.
- ✓ The right mix of FTE to deliver the core hub requirements.
- ✓ Scope of triage role (triage +/- prioritisation).

The balance of some activities may initially be different in each region, in particular clinical auditing of Direct to Private referrals vs triaging of Direct to Radiology triaging, due to existing variations in referral processes and service landscapes.

3.3.1. Upfront Triage vs Clinical Auditing

The CRR Hub Design has been developed for the future, when existing Direct to Private (D2P) referrals flow through HNZ RIS and are triaged. GPRL FTE has therefore been based on the triaging of all CRR US and CT referrals.

In a number of Districts D2P referrals do not go via HNZ RIS and therefore regular clinical auditing will be required to review referrals and identify outliers (both referrers and scan types) to support targeted education until planned digital interfacing solutions in these districts enable upfront triaging. There may be an opportunity to collaborate with PHOs and private providers to develop prospective triage and approval for some procedures.

Clinical Auditing, reviewing referrals and checking them against referral criteria, is as time intensive as triaging. Where D2P referrals are in place, it is expected that the PCRL time allocated for triaging, will instead initially be spent on clinical auditing and education.

4. Linkages with Radiology Services

CRR hubs will work in a highly collaborative way with the regional radiology services they are associated with. District Radiology Services are an integral part the CRR community led multi-disciplinary hub. Developing good relationships between PCRL, Radiology Services and key specialities is paramount.

District Radiology Services (DRS):

PCRL will work closely with all DRS team members, in particular:

- DRS Radiologists, for clinical support and escalation of any clinical concerns
- Admin/Booking teams, to ensure timely triaging and booking
- MIT, to ensure timely triaging and booking and to provide clinical support relating to MIT CRR x-ray triaging, when required
- Service Manager, to escalate any service-specific issues
- Clinical Leadership, with DRS Radiologist support to escalate any clinical concerns identified that cannot be resolved easily and/or may impact the entire Region

As such, there are benefits in PCRL being colocated with a DRS they are covering but this is not a mandatory requirement given geographical spread and mixed FTE model proposed.

Regional Radiology Services (RRS):

Regional GPRL Leads will work closely with their Regional Radiology Network and other Radiology Leadership roles, for any issues that need to be addressed at a Regional Level and/or escalated Nationally.

Regional Radiology Services may want to consider a regional approach to provide Radiologist clinical support for PCRL, by using a shared regional roster for the 'support Radiologist' for all the PCRL, rather than providing these locally. This would ensure that a support Radiologist is available every day, enabling decisions around triaging to be made in a timely manner, but would mean that the 'support Radiologist' may receive calls from multiple PCRL throughout the day as questions arise across the sub-region.

5. CRR Hub resource

5.1. Primary Care Radiology Liaison (PCRL) roles

Primary Care Radiology Liaisons will undertake the majority of key CRR Hub activities, supporting both community referrers and District / Regional Radiology Service team members. PCRL may or may not undertake prioritisation of referrals. These roles can be GPs or other disciplines (such as NPs), who meet the requirements outlined in the Job Description. There are advantages to employ medically trained primary care clinicians, in particular GPs, in the clinical triaging and quality improvement CRR Hub roles due to their primary care specific and extensive clinical training and expertise. It will be at the discretion of regions as to the mixed FTE model employed.

5.2. Regional GPRL Lead roles

Regional leads are required to be General Practitioners. The role is intended to provide regional oversight of PCRL and work collaboratively and closely with their own Regional Radiology Networks.

Regional leads are required to work closely with other region lead roles to form a sophisticated national network of GPRL to:

- ensure consistent and smooth service delivery both within and between each of the four Regional CRR Hubs; and
- mitigate against any significant regional divergence in approach.

Region GPRL leads will also support recruitment and onboarding of PCRL; and have an ongoing role to ensure the team of PCRL work together and consistently, including cross-cover arrangements.

The regional leadership role is likely to be a PCRL with additional leadership functions.

5.3. Clinical governance

Stakeholder engagement identified Clinical Governance as invaluable for ensuring effective CRR Service Delivery. GPRL Lead roles require meaningful Clinical Governance given the nature of their roles, for safe practice and for hubs to function as intended. Consideration needs to be given to the following:

- A key function of the role is liaison with primary care and the provision of advice to Primary Care Practitioners as well as to forge strong relationships with referrers, D2P and PHOs.
- Regional structures are still forming and a truly regionalised radiology governance structure may not be in place when these roles are recruited.

Regional GPRL leads will collectively form a national clinical oversight function.

Further, it is recommended that CRR GPRL Regional Leads sit on their Regional Radiology Network, and the National Radiology Clinical Network - providing primary care and CRR Service specific insight and expertise to these groups.

5.4. CRR Hub FTE allocations

The CRR Hub design includes all the Day-to-Day CRR Hub activities, CRR Service Quality Improvement Activities, and PCRL specific activities roles set out in section 3 and these activities have been used for calculating FTE.

A population-based approach has been used to calculate the required PCRL FTE, as (noting a referrals based calculation isn't appropriate given significant variation in current referrals processes and imminent changes to referrals criteria). Calculation of PCRL FTE by District population is most likely to ensure fair allocation of resources across each Region and also enables population-based funding changes over time.

- A mixed FTE model is envisioned so that, for example, if a District FTE is too small to have a dedicated District specific RL, then FTE can be used to cover multiple districts.
- Each Regional GPRL Lead will undertake PCRL activities as well as their additional Leadership activities.

Figure 3 documents the total FTE (District and Regional Lead PCRL) for all Regions.

Figure 3. Total FTE for ALL Regions, including District and Regional Lead Roles

	District	Projected District 2024/25 Patient Population	FTE per 100,000 pop	Optimal FTE
All of NZ	Northern Region	2,030,920	0.22	4.80
	Te Manawa Taki	1,070,725	0.22	2.70
	Central	1,003,530	0.22	2.50
	Te Wai Pounamu	1,256,685	0.22	3.10
Total All Regions and National Lead FTE				13.10

The GPRL and PCRL FTE is based on SMO salaries and is an indicative operating cost based on the employment of GPs. The programme team will work with regions on the necessary operating expenditure going forward based on workforce requirements. It is recommended that evaluation of the new CRR Hubs is undertaken at one year to confirm resourcing is appropriate.

Refer Appendix 4 for regional baseline FTE calculations.

6. Implementation approach

The National CRR Programme team and Regional Commissioning Teams (with GPRL leads, once recruited), will work collectively and collaboratively to implement CRR hubs.

Regions will undertake all aspects of recruitment of the regional GP Radiology Liaison leads. Under the current structure, GPRL roles would need to sit under a host district radiology service or with regional commissioning teams. This needs to be determined by the regions as part of implementation planning.

Once regional lead GPRL are in place, these roles will then plan collectively to develop their regional CRR hubs and recruit PCRL with the support from the national team.

Key regional considerations when planning implementation include:

- Careful review of existing “metro” and “rural” schemes and how they should adapt/transform as part of the regional hub development.
- Interim arrangements for direct to private schemes need some careful thought. Options may be pre-approval for some tests and engagement with private providers in addition to clinical audit.

CRR hubs should be operational for an initial period of two years to allow for appropriate training and embedding of the CRR Hub and Regional Lead roles and a period of optimal service delivery before evaluating outcomes. A formal evaluation at 2 years will look at changes to referrer behaviour and overall impact on District and Regional radiology service delivery and patient outcomes.

7. Next steps

Once this CRR Service and Hub Design has been approved by the steering group, the next steps include:

- Agree implementation framework and approach
- National CRR referral criteria finalised and documented on the appropriate platforms, in particular District specific HealthPathways, Direct to Radiology and Direct to Private platforms (e.g. ATD / POAC / POADMS / BPAC / ERMS).
- Actions required for Hub Model Stand Up, including:
 - Clinical Governance arrangements and reporting lines determined.
 - Regional GPRL lead roles advertised.
 - Initiate regional conversations to determine what supports will be required for Districts / Regions, as the CRR Hubs are rolled out.
- Communication planning and delivery with primary and secondary care stakeholders.

Appendix 1: Summary of Key Themes from Stakeholder Interviews

Appendix 2: Current CRR volumes and future impact

Appendix 3: Detailed CRR hub activities

Appendix 4. Regional FTE Calculations

8. Glossary of terms

Acute demand imaging: Refers to community-based radiology services provided within 24-48 hours to avoid acute hospital referrals and aiding in timely clinical decision making.

Clinical audit: In this document, refers to the process of reviewing a number of referrals selected for a specific reason and checking them to determine whether they met the accepted referral criteria and /or why not.

Community Referred Radiology (CRR): The provision of access to publicly funded radiology for primary care practitioners to support agreed clinical pathways.

DEXA: Dual-energy x-ray absorptiometry (DEXA) or bone densitometry, is an enhanced form of x-ray technology that is used to measure bone loss.

Direct Access: When a test is done and primary care retain clinical responsibility throughout, including acting on the result (this may include the requirement to seek specialist advice prior to making the referral) (NICE guidelines).

Direct to Private (D2P): D2P referrals are public health system funded referrals where the referral is sent straight to a private provider and do not go via Radiology first. They do not include outsourced public imaging, or privately funded imaging.

Direct to Radiology (D2R) imaging: D2R referrals are public health system funded referrals where the referral is sent directly to Radiology. The imaging may be provided by Radiology or outsourced.

District Radiology Service (DRS): Departments located in all Hospitals that provide onsite radiology services. Teams typically comprise radiologists, MIT, PACS teams, a Service Manager and are overseen by a Radiology Clinical Director.

First Specialist Assessment (FSA): Refers to a patient's first visit to a specialist for advice about a health condition after referral from a GP or other health professional. Often an FSA is required to access diagnostic imaging.

HealthPathways: An online manual used by primary care clinicians to help make assessment, management, and specialist request decisions for a wide range of conditions.

Medical Imaging Technologist (MIT): Qualified healthcare professionals who use various diagnostic imaging techniques, of which radiology is a subset.

Primary Care Radiology Liaison (PCRL): Newly established roles to support the operation of triage hubs. Similar roles already exist in some districts as GP Liaisons who work with and between general practice and hospital services as a source of advice, and in radiology to triage referrals.

Primary Health Organisations (PHO): Ministry funded entities comprising a number of primary care practices which work together to care for patients and provide subsidised healthcare for their enrolled patients.

Sonographer: Qualified health professionals who specialise in using ultrasound to create images of internal body structures for diagnostic purposes.

Triage: Triage in this document refers to the process of Primary Care Radiology Liaisons undertaking prospective peer-based review of community referred imaging to ensure radiology requests meet the national CRR criteria and follows national health pathways.

9. References

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Appendix 1: Summary of Key Themes from Stakeholder Interviews

Strengthening Communication and Relationships

Current Key Issues	CRR Specific Concerns	CRR Perceived Benefits
Difficulties contacting Radiology for advice In some Districts Radiology Triagers use non-Radiology SMOs as their first port of call for advice if unsure whether a referral is appropriate or not Visibility for primary care of whether referrals have been accepted and waiting list times “GPs are often judged by their one failure, not all the times they successfully manage patients and identify conditions early, or do excellent referrals” (GP, CD PHO)	There will be a need for effective leadership, supportive engagement and change management for both primary care and radiology staff to ensure successful implementation	CRR Hubs and Primary Care Liaisons can take lead on building strong relationships; simple things such as effective engagement, education and being available on the GPL phone can make a big difference. “The more we empower community healthcare providers, the stronger they are” (Charge Sonographer) Building strong relationships between CRR Hubs, PHOs and other community-based clinical groups, will be key to implementing successful change and long-term outcomes

Balancing CRR Programme Aims with Radiology Service Capacity

Current Key Issues	CRR Specific Concerns	CRR perceived Benefits
Impact of long waiting times on: - Both patients and radiology services - Urgent (P2) scans are not being done urgently in the public system - Equity, with a “big disparity in access between the haves and have nots” (Wanaka GP) - Re-referrals due to long waits and lack of visibility of waiting lists / times Concerns from Radiology about inappropriate use of acute demand and walk in services	Increased radiology workload as a result of the new referral criteria incl: - Impact on waiting times, especially where these already exceed expectations - Staffing capacity - Increased incidental findings and subsequent imaging requirements, as a result of increased imaging	By having primary care clinicians working ‘in house’ with Radiology services, issues such as these can be identified early, enabling appropriate discussions and intervention, where appropriate

Concerns around private providers recommending inappropriate follow up imaging	Concerns around future plans and lack of public capacity
Imbalances in service capacity within and between Districts, incl where machines are not being used to full capacity, but there are long waiting lists in other parts of the same District / Region	“Need to balance the impact on Radiology of doing extra community referred scans that are likely to be negative vs taking the load off outpatient clinics FSAs” (Radiology Service Manager)
Questionable radiology requirements prior to FSA, such as repeating ortho knee / hip x-rays within 6 months of referral where previous imaging already showed severe OA	

Optimising Community Radiology Referral Criteria and Processes

Current Key Issues	CRR Specific Concerns	CRR Perceived Benefits
Acute Demand referrals and Direct to Private referrals do not go through the RIS, making it hard to track, with variable reporting and oversight across the country	“There is huge potential for waste in the system if these direct to private referrals are not being audited regularly by the future CRR Hubs” (GP Waikato)	Auditing of Direct to Private referrals, coupled with effective education and regular audit cycles, supported by PHOs should reduce the rates of inappropriate referrals
Direct to Private referrals are “currently quite a permissive system, which is excellent from a GP and patient point of view”, but which is not equitable	Concern that routine Direct to Private referrals may be taken away, reducing access to imaging and increasing waiting times for routine imaging that patients can currently get within a week or less	It would be great if the aim was to move towards a single CRR referral process so all referrals are triaged (either electronically or by a person) in the long term
Intermittent auditing of existing direct to private referral systems (both acute demand and routine P3 referrals) have shown high levels of inappropriate referrals, no routine auditing	Risk to owners of radiology services provided onsite in primary/urgent care practices (e.g. x-ray machines for urgent care contracts) if imaging is brought back ‘in house’ to Radiology	

of any of these services at present

The mental admin and complexity of sending a referral is high because of different funding processes and referral platforms

Limitations on triaging speed include IT systems, referrer knowledge, poor referral quality and the need to then ask for more info, longer waiting lists due to higher numbers of re-referrals

Batch triaging creates difficulties for admin and booking teams

There is a huge risk of variation in triaging and prioritisation across the country

Addressing Unmet Need and Inequitable Variation

Current Key Issues	CRR Specific Concerns	CRR Perceived Benefits
Unmet need within existing community referral criteria, in particular MSK imaging, DEXA, Obstetric	Concerns that some regions will have to stop providing services that other regions don't current have e.g. shoulder imaging and injections	The CRR programme has huge potential to identify and address unmet need and inequitable access across the country
Inequitable access within Districts and between Districts	The need to achieve equity of access across regions, and in particular in rural areas and concerns as to whether this is possible	
No funded Radiology specific patient support is available		Patient support targeted at helping patients attend their appointments, and reducing waste in the system

Ensuring Collaboration and Consistency between Regional CRR Hubs

Current Key Issues	CRR Specific Concerns	CRR Perceived Benefits
A lot of work is being moved from secondary to primary care at the moment and not everyone is comfortable with this, or has the capacity or clinical knowledge/skills to pick up the extra work.	Of note, there were no concerns from primary care stakeholders that increasing direct access to imaging could become another burden on their workload. Need for ongoing effective CRR Hub leadership, not just during implementation, but as ongoing changes occur as part of the wider Transformation Programme, supporting both primary care and Radiology services Need for bespoke designs: - Particularly in rural areas – “don’t break what is working” - Areas with unique patient populations e.g. Hutt Valley and the prison population Recruitment of clinicians for the CRR Hub roles: - concerns around removing people from clinical primary care practice - Ensuring the people hired have the appropriate knowledge, experience and training and will therefore be respected and listened to - GPLs need to be respected by HNZ and one would hope they realise that GPs are the only option for the clinical CRR Hub roles due to their extensive clinical training and primary care expertise - Will the funding be sufficient for everything GPLs can and should be doing	“Key reason to increase diagnostics is to reduce morbidity and mortality. It will always cost dollars upfront, but if primary care can refer directly and get a timely answer it makes a big impact on diagnosis, treatment, survival rates, patient stress etc. it can save lives and save downstream dollars in terms of morbidity, mortality, imaging, FSAs, admissions, and the economy as a whole.” (GP, PHO CD) “GPLs and Community Hubs are where the value is in community radiology. Finding variation in community referrals, supporting balance and making sure we don't waste resources.” (GP, PHO CD) Benefits of recruiting GPs to the CRR Hub roles include: - Likely to keep GPs in clinical practice, rather than leaving completely, by reducing their days and adding non-clinical work to their portfolio - GPs bring extensive clinical and local knowledge, experience and existing relationships within their district /region. - Effective bridge between primary and secondary care, enabling a two-way conversation - GPs are used to thinking on their feet and making things work, they deal with clinical uncertainty every day. Most GPs are also prepared to say when they don't know something and

- Are there any guarantees for job security - with all the restructuring in the health system, this may put people off applying
- Needs to be fixed hours and not spill over into afterhours / days you are in clinical GP practice

Triaging/Prioritisation:

- How will you ensure consistency of triaging within and between Districts and Regions?
- Need for two-way communication between Radiology and Referrers, which is currently not possible for certain referral types / Districts
- Potential impact on existing Radiology GP Liaisons / Triagers if need to be onsite and working specific days
- It may take a while to get the new clinical triagers up to speed

Radiology Services:

- The need to ensure acute triaging and GPL phone are covered for every District every day
- The need to avoid 'batch' triaging and to cover for leave and how to manage regional FTE to ensure all Districts are supported
- Need to protect Radiologists in areas where FTE is limited and concerns around whether introducing CRR Hubs could negatively impact their time

have the clinical acumen to know who to ask for help

Triaging / Prioritisation:

- Nationally consistent referral criteria and triaging is key for removing inequitable and unwarranted variation.
- Can couple triaging with appropriate education for referrers

GP Liaison phone:

- Was perceived as a good idea and useful for primary care if it were available during work hours, every week day.
- Being able to call a GPL may skip unnecessary referrals at times and can provide opportunistic and effective education

Radiology Services:

- Ability for MIT to hand over triaging of US / CT to new CRR Hub clinicians to free up time for imaging
- Ability for those services where MIT do everything, including admin, booking bloods, triaging etc to have admin and clinical support to free up their time and increase imaging throughput
- Ability to free up Radiologist time in areas where they are a limited resource / FTE

Onboarding/Training for new Radiology GP Liaisons:

- It would be useful to have had some orientation time before I had to start triaging, including time to working through the required onboarding admin, read the orientation manual, meet various team members and have the opportunity to ask questions from MIT/Radiologists about things I was not sure about
- Support from existing Radiology GP Liaisons was insufficient because we worked different days
- IT systems were not fully in place when I started and I didn't have access to everything I needed to do my job
- "It takes a number of months to get up to speed with triaging, as you start to learn the criteria, how to use the IT systems and when you need to ask for more info etc" (Rad GPL)

Onboarding / Training for new CRR Hub roles:

- Need to ensure the new CRR roles 'understand' their District and Region and embed them within their Radiology service
- Will take time to build trust in the new roles and relationships with existing Radiology staff
- Needs to be consistent across the country

Need to ensure CRR Hubs have the chance to succeed, specific concerns incl:

- CRR triage hubs, referral criteria and changes to IT need to have a launch date, so it is not all being done piecemeal
- risk of restructuring, funding being rescinded
- not getting effective triaging in place
- how to approach patient support and ensure it is effective
- need for regional and national leadership within the CRR Hub structure
- who should hold their contracts, and ensuring initial contracts are long enough to support the wider Transformation Programme / implement change
- availability of IT / data analyst support
- "CRR triage hubs, referral criteria and changes to IT need to have a launch date, so it is not all being done piecemeal" (Service Design Manager)

Appendix 2: Current CRR volumes and future impact

Table 1. CRR volume and intervention rate by modality by district (baseline)

	CRR Exams Completed 8 months (Jan-Aug 2024)*								
	CT		US		XR		Total		PopN
	Volume	Int.rate	Volume	Int.rate	Volume	Int.rate	Volume	Int.rate	
Northland	1112	5	1373	7	15960	76	18490	89	209,010
Waitemata	3315	5	8468	13	18991	28	31112	47	667,780
Auckland	1952	4	12341	24	18418	36	32716	65	505,280
Counties Man	3430	5	8255	13	17728	27	30337	47	648,850
Taranaki	689	5	1004	8	7345	56	9038	69	130,850
Waikato	1114	2	15262	32	30586	64	46962	99	476,300
Lakes	646	5	3229	26	5453	44	9328	76	122,610
Bay of Plenty	2556	9	6766	24	11603	40	20925	73	287,420
Tairāwhiti	814	15	1425	27	4203	78	6442	120	53,815
Whanganui	1217	17	1369	19	13119	185	15705	222	70,890
Mid-Central	1140	6	6179	31	13271	67	20590	105	196,710
Hutt Valley	991	6	4048	25	6967	42	12006	73	165,090
Cap-Coast	1819	6	10028	30	16847	51	28694	87	331,720
Wairarapa	1017	20	2202	42	6560	127	9782	189	51,820
Hawkes Bay	985	5	5081	27	15022	80	21088	113	187,300
Nelson-Marl	1136	7	2857	17	10656	63	14658	86	169,840
Canterbury	6099	10	14039	23	19601	31	39739	64	618,990
South Canty	579	9	970	15	4502	70	6056	95	64,085
West Coast	459	14	656	20	5417	164	6532	198	33,020
Southern	2888	8	3651	10	26812	72	33396	90	370,750
* breast and maternity US excluded									

Table 2. Estimated Ultrasound volume increase from New National AUB pathway and CRR criteria, by district

	US Pelvis-US for AUB risk factors as per guideline	US vols	Estimated vol increase assuming pelvis US =25% of vols-
Northland	Large	1373	103
Waitemata	Min	8468	106
Auckland	Min	12341	154
Counties-Manuka	Min	8255	103
Taranaki	Min-Small	1004	38
Waikato	Min-Small	15262	572
Lakes	Min-Small	3229	121
Bay of Plenty	Min-Small	6766	254
Tairāwhiti	Min-Small	1425	53
Whanganui	Min-Small	1369	51
Mid-Central	Moderate	6179	309
Hutt Valley	Moderate	4048	202
Capital-Coast	Moderate	10028	501
Wairarapa	Moderate	6560	328
Hawkes Bay	N/A	5081	N/A
Nelson-Marlboro	Large	2857	214
West Coast	Large	656	49
Canterbury	Large	14039	1053
South Canterbury	Large	970	73
Southern	Large	3651	274
Min-Small	15%		
Moderate	20%		
Large	30%		

Table 3. Estimated CT volume increase from new CRR criteria, by district, by exam

CT Access: Exams/Scenarios Key:GP can refer directly=✓ If required to discuss with specialist first and seek recommendation =*	CT Head for Headache	CT Head for Cognitive Impairment	CT KUB for renal colic	CT Chest with XR abnormality- Radiology report recommen ds CT	CT Chest with persistent symptoms ?cancer and normal CXR	CT Chest with Haemopt ysis and normal CXR	CT Abdo/Pelv is with weight loss ?cancer	CT IVU for haematur ia	CT Sinus	Colonogra phy (CTC) for MoH Direct Access Criteria	CT Vols 8 months Jan-Aug '24	Int. rate	30% increase- CT volume	20% increase- CT volume	15% increase- CT volume
Northland	✓	✓		✓					✓		1112	5	334		
Waitemata	✓	✓	✓	✓					✓	✓	3315	5	995		
Auckland	✓	✓	✓	✓					✓	✓	1952	4	586		
Counties-Manukau	✓	✓	✓	✓					✓	✓	3430	5	1029		
Taranaki	✓	✓	✓	✓	✓*				✓	✓	689	5	207		
Waikato	✓	✓	✓	✓	✓			✓			1114	2	334		
Lakes	✓	✓	✓	✓							646	5		129	
Bay of Plenty	✓	✓	✓	✓				✓*		✓	2556	9			383
Tairāwhiti	✓	✓	✓	✓	✓*		✓	✓	✓	✓	814	15			122
Whanganui	✓	✓	✓	✓	✓*		✓*		✓*		1217	17			183
Mid-Central	✓	✓	✓	✓	✓		✓	✓	✓	✓	1140	6		228	
Hutt Valley	✓	✓	✓	✓	✓		✓				991	6		198	
Capital-Coast	✓	✓	✓	✓	✓		✓				1819	6		364	
Wairarapa	✓	✓	✓	✓	✓*		✓*	✓	✓*	✓*	1017	20			153
Hawkes Bay	✓	✓	✓	✓	✓*		✓*		✓	✓*	985	5	296		
Nelson-Marlborough	✓	✓	✓	✓			✓*	✓		✓	1136	7	341		
West Coast	✓	✓	✓	✓	✓*		✓*	✓	✓	✓	579	9			87
Canterbury	✓	✓	✓	✓	✓*		✓*	✓		✓	6099	10		1220	
South Canterbury	✓	✓	✓	✓	✓*		✓*	✓	✓	✓	459	14			69
Southern	✓		✓					✓			2888	8	866		
✓	Direct primary care practitioner referral access														
✓*	Specialist recommendation /endorsement for referral needed- i.e. case discussion required														

Appendix 3: Detailed CRR Hub Activities

Day to Day CRR Hub Delivery

Specific Activity	Benefits	Risks if Not Undertaken
Triaging: PCRL to triage all Direct to Radiology US, CT against new national CRR referral criteria. Acute Demand referrals will be clinically audited, rather than triaged. Ø PCRL provide direct feedback to referrers when further information is required, or referrals being declined. Feedback will include: - The use of nationally consistent wording directing referrers to the appropriate HealthPathway. - Providing additional clinical advice or guidance regarding referral information that should be included in future referrals - Providing supportive education to the referrer.	Ensures smooth DRS delivery of community radiology, with referrals triaged within 2 days of being received (on average) Inappropriate referrals are declined, supporting DRS capacity and wait list recovery Enables ad hoc education for referrers Enables early identification, action and/or prevention of unexpected issues relating to referral criteria and referrer behaviours Supports increased understanding of unmet need, inequitable	Poor quality referrals may be accepted, or referrals which fall into the 'grey' may be inappropriately declined Disjointed service delivery Potential for a negative impact on waitlist recovery with new national criteria being rolled out, which referrers may not adhere to Referrers do not receive ad hoc education, do not learn and continue to refer inappropriately
PCRL timely advice for referrers: Regional PCRL phone, available Mon to Fri, usual business hours or other mechanism	Enables direct, two-way communication between community and DRS Immediate support for referrers with questions about a specific patient, or who are experiencing issues relating to CRR Enables ad hoc education for referrers Increasing mutual understanding and respect between community referrers and DRS, building strong local and regional relationships Supports increased understanding of unmet need, inequitable variation and bespoke patient and community referrer needs	Has the potential to negatively impact patient care Acute referrals are electronically requested, rather than discussed, with the potential to delay patient access to imaging if not triaged the same day, or delay access to appropriate alternative management if imaging in community is not recommended Issues relating to CRR referrals are not identified or addressed Referrers don't feel supported / engaged with radiology, which can impact their referring behaviours,

		increasing the number of inappropriate referrals
Essential QI Activities: Regular reporting and review of specific referral types, including referral outcomes Retrospective clinical auditing of Direct to Private services including acute demand imaging, where upfront triaging cannot be put in place, both for routine and acute demand referrals	Enables identification of outliers – both referrers and referral types, including decline rates and areas where further information is frequently required from referrers Can identify essential areas for provision of targeted individual and wider referrer education	- If findings are not acted on, i.e. education is not provided, referrers do not learn and continue to refer inappropriately - If feedback is not provided in a collegial manner, referrers won't feel supported / engaged with radiology, which can impact their referring behaviours, increasing the number of inappropriate referrals

CRR Service Quality Improvement Activities

Specific Activity	Benefits	Risks if Not Undertaken
Clinical Auditing: Regular clinical auditing³ of specific referral types, including looking closely referral outcomes	Enables retrospective identification, action and/or prevention of unexpected issues relating to referral criteria and processes, and referrer behaviours Supports increased understanding of unmet need, inequitable variation and bespoke patient and community referrer needs Can identify essential areas for provision of targeted individual and wider referrer education	Issues relating to CRR referrals are not identified or addressed If findings are not acted on, i.e. education is not provided, referrers do not learn and continue to refer inappropriately If feedback is not provided in a collegial manner, referrers won't feel supported / engaged with radiology, which can impact their referring behaviours, increasing the number of inappropriate referrals
Education: Provision of regular formal education for referrers run by PCRL and/or DRS team members	Targeted education and ongoing support for referrer outliers to ensure future referrals are more likely to be	No change to existing inappropriate referrer behaviours

³ Clinical Auditing is the process of reviewing a number of referrals selected for a specific reason and checking them to determine whether they met the accepted referral criteria and /or why not.

	appropriate and prevent negative downstream impacts on patients and DRS waiting lists National, regional and local education can be provided for topics identified by triaging and QI activities	High likelihood of negative downstream impacts on patients and DRS service delivery, including waiting lists
Quality Assurance: PCRL cross auditing of each other's triaging decisions, within and between regions	Ensures long term regional and national consistency of GPRL triaging outcomes Will identify GPRL outliers, enabling appropriate education and behaviour change	Reduces the risk of: • Variation in GPRL decisions long term • inequitable CRR service delivery, • patients not getting the right imaging in the right time frame, • patients getting unnecessary imaging and the downstream impact on waiting lists
Stakeholder Engagement: Regular meetings with relevant community and Health NZ stakeholders	Increasing mutual understanding and respect between community, DRS and other Health NZ stakeholders, building strong local and regional relationships to support successful CRR service delivery Provides opportunities to collaborate with PHOs around education and support for referrers, in particular individual outliers Enables retrospective identification, action and/or prevention of unexpected issues relating to referral criteria and processes, and referrer behaviours Supports increased understanding of unmet need, inequitable variation and bespoke patient and community referrer needs	Community stakeholders don't feel supported / engaged with DRS and vice versa

Day to Day Community Radiology Activities

Regional RL advice:

- PCRL available weekday work hours to respond to GP advice in a timely manner (this may be a dedicated phone or other mechanism)
- Referrers can contact PCRL for generic (non-district specific) advice regarding referrals. Provides excellent opportunity for ad hoc referrer education.

District CRR Hub Email:

- For non-urgent District specific questions or concerns. Will be answered by the local PCRL on their rostered workdays.

Triaging CRR US and CT:

- All Triaging of CRR US and CT referrals will be done initially by PCRL.
 - This will ensure that the referrals are being triaged against the new national referral criteria.
 - Over time this may change as the Radiology Transformation and Data & Digital Programmes of work progress, or where auditing identifies areas of low triaging risk.
- PCRL will always triage their allocated District referrals on the days they are rostered.
- To ensure that all Urgent (P2) referrals are triaged in a timely manner, if there is going to be a 2 day or longer period where a District does not have a PCRL triaging (e.g. due to leave or their rostered workdays), that District's urgent referrals will be triaged by one of the other PCRL.
 - This 'cross cover' allocation will be managed by the Regional RGPL Lead and will require remote access for all PCRL to all the District's RIS.
- Radiologists will provide clinical support to the PCRL, as needed.
 - Further consideration can be given by each region as to whether this support is provided 'in house' in each District, or via a Regional SMO roster. It is important that support Radiologist leave is covered by another SMO, so that same day escalation of any clinical issues is always available.

Triaging CRR X-ray:

- All triaging of CRR X-ray referrals within each District will continue to be done as they are now, as they are deemed lower risk for inappropriate referrals than US and CT.
 - Note – if Districts / Regions would like PCRL to triage x-rays, this will need to be accommodated under the FTE allocation for the region.
- In districts where triage of X-ray is being undertaken by the DRS, the triager can engage the PCRL, who can provide advice and support.
- If any repeated concerns are noted for certain types of x-rays, this can be escalated to the Regional GPRL for consideration of regional education and/or changes to the national referral criteria.

Patient Appointment Bookings:

- All direct to radiology (D2R) and direct to private (D2P) CRR referrals (where they currently exist) will continue to be managed and booked as they are now.

CRR Hub Quality Assurance & Improvement Related Activities

Quality Improvement – Clinical Auditing of Referrals:

- Quality Improvement (QI) refers to the proactive identification of areas for improvement across all aspects of a radiology service.
- In the CRR setting QI will primarily be focused on referrer behaviour – identifying inappropriate referrals and implementing change through education (at both an individual and group level).
- Two types of QI Auditing will be required, depending on existing and future District CRR referral processes:
 - Auditing of Direct to Private (D2P) referrals where upfront triaging is not possible
 - Auditing of all referral types (D2P and D2R, all modalities and scan types, declined rates etc) for QI purposes
- Regular audit cycles will be aligned with regular referrer education.

- Additional ad hoc auditing and education may also be required, as new significant issues are identified by the GPRL, DRS and/or community stakeholders such as PHOs.
- QI work will be led by the four Regional GPRL Leads, undertaken by PCRL and supported by District Radiology services, Regional Networks and PACS / IT, as required.

Quality Assurance Clinical Auditing of GPRL Triaging Decisions:

- Quality Assurance (QA) measures compliance against specific standards.
- Existing Waitematā Radiology GPL have noticed a 'drift' in how they prioritise referrals over the last 12 months. While this should not be an issue as the new national referral criteria include specific prioritisation time frames, there are always 'grey areas' in medicine and it is essential for equitable and appropriate patient access that triaging is consistent across the country.
- In the CRR setting QA will be focused on ensuring consistency of triaging, with regular cycles where PCRL 'cross audit' each other's work both within and between Regions.
- QA work will be led by Regional GPRL Leads, who will work collaboratively to address any 'drift' that may occur.

Education for Referrers:

- Education for referrers will come in several forms – ad hoc via the PCRL phone and email; and formal education – targeted at both individuals (as identified by auditing, or day to day triaging) and District / Regional referrer groups.
- An initial National Webinar, followed by local Regional or District Meetings is recommended as being key to a successful CRR Hub go live, with regular 3 monthly large group education (online or in person) after that.
- Education will be led by Regional GPRL Leads, supported and implemented by the Regional GPRL Leads and supported by District and Regional Radiology Service team members and Networks.

Education for CRR Hub and DRS Team Members:

- Education for CRR Hub and DRS team members will come in several forms – ad hoc as issues arise and via regular formal education, including at local District Service monthly meetings.
- Further consideration needs to be given as to what this looks like for each group once the CRR Hubs are in place.

Regular CRR Related Meetings

The following regular meetings are recommended to ensure CRR Hubs remain effective.

Role (total # of hours per month)	District Radiology Team Meetings (M, 2h)*	Regional CRR RL team (M, 1.5h)	Regional GPRL Leads (F, 1h)	Regional CRR Monthly Meeting with Key Community Stakeholders (M, 1h)	Misc. Other Meetings e.g. Regional Radiology Network, District CDs / Ops Managers, PCRL, as needed (M, 4h)
PCRL (3.5h/M)	✓	✓			
Regional CRR GPRL Leads (12.5h/M incl additional prep time)		Leads, so + prep time	✓	✓	✓

*Based on Waitemata District meeting length

Once CRR Hubs are in place, further consideration will need to be given to other, regular engagement opportunities that would benefit CRR Hub services.

Appendix 4: Regional baseline FTE Calculations

Baseline FTE calculations are based on the Canterbury Model for calculating Radiologist FTE. Allocated expected time for each core hub activity (and QI activity) was based on:

- current Waitemata Radiology GPL time spent and average number of US and CT referrals triaged per hour.
 - Used known # of US and CT referrals triaged over months by WD GPLs at a rate of 10 US and 15 CT per hour to calculate the # of hours total
- Estimated amount of QI per region – 4 Audits per region per year
- Linked QI to Education – twice yearly national webinars, plus 3x regional education (as local issues identified, or referral processes change etc)
- QA cross auditing of GPRL triaging decisions to ensure consistency

District FTE Calculations are derived by:

- Started with the Waitemata Baseline FTE calculation
- Changed this into a FTE per 100,000 patient population = 0.22
- Used the 0.22 FTE per 100,000 population to calculate FTE for all Districts.
- Worked out optimal Leadership FTE for Regional Leads (Spreadsheet 2) = .03
- Added District plus Regional Lead FTE = Total Regional FTE

Figure 4. Total Northern Region - PCRL and Regional RGPL Lead

Region	District	Projected District 2024/25 Patient Population	FTE per 100,000 pop	Optimal FTE
Northern Region (pop 2,030,920)	Northland	209,010	0.22	0.50
	Waitemata	667,780	0.22	1.50
	Auckland	505,280	0.22	1.10
	Counties Manukau	648,850	0.22	1.40
Total Northern Region FTE (district PCRLs)				4.50
Plus Regional Lead FTE				0.30
Total Northern Region FTE				4.80

Figure 5. Te Manawa Taki Region - District RGPL and Regional RGPL Lead

Region	District	Projected District 2024/25 Patient Population	FTE per 100,000 pop	Optimal FTE
Te Manawa Taki (pop 1,070,725)	Waikato	476,300	0.22	1.10
	Lakes	122,610	0.22	0.30
	Bay of Plenty	287,420	0.22	0.60
	Tairāwhiti	53,815	0.22	0.10
	Taranaki	130,580	0.22	0.30
Total Te Manawa Taki Region FTE				2.40
Plus Regional Lead FTE				0.30
Total Te Manawa Taki FTE				2.70

Figure 6. Central Region - District RGPL and Regional RGPL Lead

Region	District	Projected District 2024/25 Patient Population	FTE per 100,000 pop	Optimal FTE
Central (pop 1,003,530)	MidCentral	196,710	0.22	0.40
	Whanganui	70,890	0.22	0.20
	Capital & Coast	331,720	0.22	0.70
	Hutt Valley	165,090	0.22	0.40
	Hawke's Bay	187,300	0.22	0.40
	Wairarapa	51,820	0.22	0.10
Total Central FTE				2.20
Plus Regional Lead FTE				0.30
Total Central FTE				2.50

Figure 7. Te Waipounamu Region - District RGPL and Regional RGPL Lead

Region	District	Projected District 2024/25 Patient Population	FTE per 100,000 pop	Optimal FTE
Te Waipounamu (pop 1,256,685)	Canterbury Region	618,990	0.22	1.40
	West Coast Region	33,020	0.22	0.10
	Nelson Marlborough	169,840	0.22	0.40
	Southern	370,750	0.22	0.80
	South Canterbury	64,085	0.22	0.10
Total Te Waipounamu FTE				2.80
Plus Regional Lead FTE				0.30
Total Te Wai Pounamu FTE				3.10

The baseline Optimal CRR GPRL FTE has been calculated by the following process:

PCRL FTE Calculations – Day to Day Activities

The expected time frames for each specific day to day activity have been modelled from the current Waitematā RGPL roles, as they are the region with full time PCRL undertaking almost all of the future day to day CRR Hub activities on a full time basis, including holding the GPL phone and answering emails, working closely with the booking team and other radiology team members, and triaging all community referred US and CT referrals (at an estimated average rate of 10 US or 15 CT per hour).

PCRL FTE Calculations – Quality Improvement Activities

Reporting and education needs will be required at District, Regional and National levels.

Quality Improvement (QI) activity hours have been calculated with the underlying assumption that IT / Analyst support will be available to support clinical auditing by providing regular reporting that will identify areas for targeted clinical auditing. Clinical auditing will, in turn, determine what formal education should be provided to referrers to improve referral quality, in turn reducing inappropriate referrals (decline rates) and the need to ask for further information from the referrer (which delays patient access to appropriate imaging).

Each clinical audit requires a PCRL to essentially ‘triage’ a number of referrals of the scan or referral type identified as being a concern. This process is likely to take between 4 – 8 hours per clinical audit, depending on the topic and detail required. An additional 1 – 2 hours have been allocated to Regional GPRL Leads for analysis, formal documentation of the audit outcomes and implementation of any changes that might be required. This adds up to a total of 10h max per audit.

Regional FTE of 40 hours per year has therefore been allocated to support 4 clinical audits within each region per year. The expectation is that these may be undertaken at a regional level, or used to target specific District issues, including referrer outliers. An additional hour per month has been allocated to the Regional GPRL Leads for review and oversight of the regular reporting.

Twice yearly formal education for referrers will be provided at a national level, with additional local District or Regional sessions as specific clinical issues are identified. Twelve hours per year (2 – 4h per session) has therefore been allocated per Region to support the development, administration and provision of formal education.

It is important that all PCRL have the opportunity to participate in quality improvement and education activities, as purely triaging can become monotonous and these are the activities that ensure roles remain interesting and/or will attract high quality clinicians.

Additional Education sessions are recommended as part of the CRR Hub ‘roll out’ (see Next Steps), including a national webinar introducing the new CRR Service and Hubs and local Districts ‘meet and greet’ education sessions to support the development of local relationships. These hours have not been included in the FTE allocations as they are ‘once off’ events.

PCRL FTE Calculations – Quality Assurance Activities

Additional clinical auditing hours have been allocated for every PCRL to undertake quality assurance activities, in order to retain consistency of triaging within and between Regions. Sixteen hours per year (4h per quarter) have been allocated to each PCRL to review their own, or a colleague’s triaging decisions. This work will be overseen by the Regional GPRL Leads, who have been allocated an additional 2 hours per quarter to review all of the findings and implement any required actions.

PCRL FTE Calculations – Regular meetings for consistency and collaboration

Refer [Appendix 4](#) for proposed regular meetings to ensure effective CRR service delivery.

Spreadsheet 1 - Calculations for a Baseline PCRL FTE.

District RGPL Activity	Unit of measure / Outcome	Reasonable Expectancy (units per hour where applicable)	Number of times per week	Hours assigned a week (where tasks is not measured)	Explanation	Total Hours per Week			
RGPL phone	phone calls	10	25	2.5		02:30			
Triaging CRR US	# of US referrals triaged (based on WD data from May/June 2023)	10	312	31.2	Triaging average of 10 per hour	31:12			
Triaging CRR CT	# of CT referrals triaged (based on WD data from May/June 2023)	15	78	5.2	Triaging average of 15 per hour	05:12			
Health NZ and District Comms	emails			1.7	20 min per day	01:40			
CRR Hub Specific Emails or questions (incl from GPs, admin / clerks, handing over or discussions with QI and clinical Auditing	emails / in person questions			3.3	40 min per day	03:20			
QA Activities	Hours spent auditing per week			0.1	32 hours per year per region	00:08			
				0.3	4 hours per quarter district	00:17			
Provides Formal Education for Referrers	1 webinar or in person meeting per quarter			0.1	12 hours per year per region	00:03			
Attending CRR Regional RGPL Meeting	Attending 1 meeting per month			0.3	1.5 hours per month	00:20			
Attending District Whole Dept meetings (full dept meetings)	Attending 1 meeting per month			0.4	2 hours per month	00:26			
					Sub Total	45:10			
Allow for 6 weeks annual leave, 12 days statutory leave, 2 weeks sick leave (as an average, though SMOs have unlimited sick leave) and 10 days professional leave. 40 working weeks in a 52 week year.						30%	13:33		
					Total Hours Require per week	58:43	FTE (for a 40h week)		1.47
Note: 4.5 weeks per month, 13.5 weeks per quarter									
FTE	1.47								
Pop	667780								
FTE per 100000	0.220								

Spreadsheet 2 - calculations for the Optimal Regional GPRL Lead FTE (per Region).

Regional PCRL Lead Activity	Unit of measure / Outcome	Reasonable Expectancy (units per hour where applicable)	Number of times per week	Hours assigned a week (where tasks is not measured)	Explanation	Total Hours per Week			
CRR Hub Regional Leadership Specific calls	phone calls			1.7	new role, assuming 20m min per day	01:40			
Managing direct reports the team	personal interactions and development			2.5	30min per direct report FTE per week (avg 5 Districts per Region)	02:30			
CRR Hub Regional Leadership Specific Emails or questions	emails / in person questions			1.7	new role, assuming 20m min per day	01:40			
QI				0.1	2 hours per quarter	00:08			
QA	Oversight of auditing per week, conversation about outcomes and formally documenting / escalation to national PCRL			0.1	2 hours per quarter	00:08			
Attending and Prep for CRR Regional Meeting	As per Appendix Three			2.8	12.5 hours per month	02:46			
					Sub Total	08:54			
Allow for 6 weeks annual leave, 12 days statutory leave, 2 weeks sick leave (as an average, though SMOs have unlimited sick leave) and 10 days professional leave. 40 working weeks in a 52 week year.						30%	02:40		
					Total Hours Require per week	11:34	(for a 40h week)		0.29
Note: 4.5 weeks per month, 13.5 weeks per quarter									
					for 4x Regional Roles	46:19	(for a 40h week)		1.16