The Care Coordination Process: an opportunity to evaluate the impact of structural reform

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An effective care coordination process is integral to high quality and equitable healthcare[1] and should be evaluated. The Pae Ora (Healthy Futures) Bill outlines significant health reforms for Aotearoa New Zealand that prioritises improved health services for "*all of us*". The aims are "*simpler and more coordinated*" care that is "*more equitable, accessible, cohesive and people-centred*".[2] Measurement of care coordination may assist evaluation of how the reforms' aims are being achieved. However, we are unaware of New Zealand-based research that explores care coordination within primary care. Therefore, we present a definition of care coordination that has been mapped to measurement tools.

A systematic review by the Agency for Healthcare Research and Quality (AHRQ)[3] found a paucity of care coordination-specific measures. Their definition of care coordination is the most cited[4] and describes a process that occurs most often during and in response to care transitions, which includes between providers, across settings, between encounters or care episodes and within same-service care teams. Informed by their review, they organised requirements of the care coordination process into nine activities (Table 1) and suggested measures for each.[3,4] Appendix 1 illustrates how these measures map according to the activities. As a process that occurs across settings and providers, the AHRQ framework highlights that all team members involved in a patient's care participate in these activities.

To consider the AHRQ's evidence-based and measurable description of care coordination within New Zealand, we considered a rural primary care setting. Rural New Zealanders have a significant higher mortality rate than those living in urban areas[5] and contend with reduced access to health services while experiencing higher costs for services that are available,[6] and these inequities are compounded for Māori.[5] Such factors contribute to complex and chronic medical conditions that require care to be frequently transferred between providers and across settings,[7] which is when the care coordination process occurs.[3] Therefore, rural primary care is an appropriate setting from which to consider care coordination.

We applied the nine activities of the AHRQ framework to hypothetical clinical scenarios. We drew on our experiences as primary care providers (e.g., pharmacist and general practitioner (GP)) in a rural community with a significant proportion of Māori residents. No patient information was accessed, and the scenarios combine common clinical encounters.

We imagined the persona of a woman with end-stage renal failure being considered for dialysis who is Māori, in her late 50s, and works in management from her rural residence but frequently travels to urban centres. She lives in a self-contained unit with her supportive whānau, including two mokopuna who are in their final years of school. She is an active member of the community, being the secretary on several land trusts. She regularly initiates contact with her GP, community pharmacist and the hospital-based renal team. The scenarios (Table 2) describe episodes of care, including a transition to and from hospital for anaemia-induced mild heart failure.

Gaps are apparent throughout activities of care coordination in our experience of delivering complex medical care. Responsibility is not clearly established for aspects of care across healthcare settings, which can cause delays, errors, and frustrations (e.g., medicine changes; outpatient appointments scheduling coordination). Communication exchange between health providers can default to patients-as-messengers, who are surprised to learn that their GP or pharmacist is unaware of changes. When care transitions across settings, information transfer often requires manual updates to patient files and/or contacting another provider to ensure appropriate follow-up. Determination of patient goals, and what supports are required to achieve these, often require patients to volunteer this informa-

Table 1: AHRQ care coordination activity definitions.[3]

Care coordination activities	Description summary
Establish accountability or negotiate responsibility	It is made clear to the patient and all participants in the patient's care who is responsible for aspects of that care, and that accountability exists for failures. The person(s) primarily responsible for key care activities, and the extent and duration of that responsibility, is known.
Communicate (interpersonal; information transfer)	Knowledge and information are shared so that everyone has the information they need. Two key modes for this communication are through personal direct interactions (e.g., in-person, phone/video calls, instant messages, emails, letters) and information transfer (e.g., medical records, test results, medication lists, radiology images).
Facilitate transitions	Activities are designed to ensure timely and complete transmission of information or accountability when some aspect of care is transferred between two or more providers. Transitions include across settings (e.g., to and from hospital) and when care needs change (e.g., from paediatric to adult care).
Assess needs and goals	Determination of patient's goals to take care of their health and what they need to achieve this.
Create a proactive plan of care	One or more providers jointly create a plan with a patient and/or family that covers patient needs and goals, routine tasks, and anticipate the progression of medical needs.
Monitor, follow-up, and respond to change	Proactive enquiry on identified health concerns, the impact of health or treatment on daily life, and where gaps need addressing to achieve goals. Care plans are refined to accommodate new information or circumstances and to address gaps.
Support self-management goals	Education and support are tailored to patient capacity and preferences about involvement in their own care, so that patients manage their health in their preferred residence.
Link to community resources	Provide information about available resources, refer as required, and assist with connecting to the resources (e.g., timing of, and transport to, appointments).
Align resources with patient and population needs	Health care resources are allocated according to the needs of patients and populations.

Table 2: Hypothetical scenarios to demonstrate the care coordination process in a rural primary care setting in New Zealand, according to AHRQ activities.

Activity type[3]	Scenario
Establish accountability or negotiate responsibility	Both the GP and renal team adjust medication treatment frequently, but who has responsibility for ensuring prescriptions align for appropriate dispensing is unclear. Errors or delays in dispensing occur, when two scripts are received with different instructions from different providers within a few days. Chronological dispensing may be an error because the latter prescriber (e.g., GP), when requested to "repeat all long-term medications", has not received communication about a particular medicine change (e.g., renal team). Alternatively, a pharmacist may question this change which causes delay while messages are left by patient and/or pharmacist for prescribers, and workflow is interrupted to find time for a conversation to clarify which prescription to dispense. This scenario is repeated every 3–6 months.
Communicate (interpersonal; information transfer)	The patient's medicines are dispensed in monthly blister packs and the pharmacy requests a repeat of these medicines, from her GP, 2 weeks prior to when a new 3-monthly prescription is required. Neither the pharmacy nor the GP are aware that she has had a recent appointment with the renal team. When the renal team changes a medicine, a hand-written script is either scanned and emailed to the patient's nominated pharmacy or the patient delivers the paper to that pharmacy. The formal letter about this change arrives in the patient's GP file days or weeks later, so when a request to the GP from the pharmacy arrives for the 3-monthly prescription, the recent change by the renal team is not reflected in the new prescription. The patient is used to medicine changes and assumes what is in her pack is what her doctors intend for her to have.
Facilitate transitions	A discharge summary is electronically received by the GP within 12 hours of an acute medical admission with anaemia-induced mild heart failure. Several referrals have been made, with a note asking the GP to follow-up. Medicines have been changed, which require manual entry into the GP health record. The community pharmacy is not automatically informed of the hospitalisation nor of discharge medicine changes. Clarifying the discharge plan is time consuming, as there is no email or phone number to directly communicate with the provider responsible for the hospitalisation and discharge plan.
Assess needs and goals	Balancing work with her whānau's needs is the patient's priority. The patient presents to the GP asking which of the follow-up appointments are required, because she cannot take three days off work to travel for three appointments she's received at different locations on different days (e.g., gynaecology, echocardiogram, renal). The GP supplies the patient with the 0800-referral-centre number and suggests the patient ask for the direct dial number of the 3 relevant schedulers and encourages the patient to liaise with the schedulers so that appointments align. She mentions her frustration to the pharmacist when collecting medicines. She was unable to get through to schedulers and so left voice messages asking for re-schedules because of appointment conflicts with her work. The pharmacist offers to ring the various schedulers.
Create a proactive plan of care	The patient is supplied with a generic Heart Failure Plan booklet, which she finds an interesting read. However, she feels well since the blood transfusion and so is not sure this booklet is relevant, especially as there is mention of restricting how much she drinks which conflicts with the previous advice of drinking plenty to help her kidneys. The hospital pharmacy had also supplied her with a Medication Card which listed her medicines when she left hospital, but changes have happened since then, so she puts the card in a box with all her other medical paperwork. She wonders whether she or anyone will look at it again.

Table 2 (continued): Hypothetical scenarios to demonstrate the care coordination process in a rural primary care setting in New Zealand, according to AHRQ activities.

Activity type[3]	Scenario
Monitor, follow up, and respond to change	The patient is struggling with constipation and thinks this is from the new medicines, so rings the pharmacy. The pharmacist explains the iron supplements are the likely culprit but advises the patient to book an appointment with her GP. During this conversation, the pharmacist notes that a long-term medicine is about to be delisted from the funding schedule so phones the GP clinic and leaves a verbal message with reception. A hand-written note is left for the GP that says "medicine x is being delisted, needs alternative; pt has constipation". This non-urgent task is addressed a day later, with a script for an alternative medicine, and a task sent to the nurse team, requesting the patient be contacted about the constipation.
Support self-management goals	In addition to the existing blood pressure machine the patient bought a few years ago, upon the advice of the renal team, she now has been advised to weigh herself regularly as part of heart failure management. She buys a scale and writes down her weights next to her blood pressure readings, in a notebook, that she will take to her next appointment. Her weight increases, and she attributes this to reduced physical activity due to lots of recent work commitments.
Link to community resources	The patient's mokopuna have started messaging her more frequently when she is away, and she suspects they would benefit from professional support that helps them understand more about her health problems and provide a mechanism for them to express their concerns. When she mentions this to her medical team, the GP suggests asking the renal team, and the renal team suggest she visit the Kidney Health website. However, there is no regional office near her, and after a few clicks of not finding a quick way to connect with someone, she puts this in the too-hard basket.
Align resources with patient and population needs	The GP and pharmacist discuss how many patients have been buying blood pressure machines, upon the advice of doctors, and wonder whether they should create a combined report of this need to seek funding. However, both GP and pharmacy services are at capacity for creating such reports and they worry it would be a waste of time.

tion and self-advocate. Multiple care plans from different health services cause confusion, and follow-up often depends on a patient alerting providers of a change. Education about self-management is not always tailored to support implementation of recommendations (e.g., equipment access; response to self-measurements). Community resources can be difficult to access, and health providers are not routinely empowered to address population needs.

Patients who contend with complex chronic medical conditions need high-quality care for improved health,[8] and the process of care coordination is a cornerstone of high-quality primary care.[1] A systemic review[9] of care coordination measures found the activities most evaluated are communication and information transfer, how needs and goals are assessed and self-management support. Few studies measured how monitoring and follow-up responds to change in care needs and creation of proactive plans of care. The review highlighted the importance of understanding care coordination from multiple perspectives including patient/family, healthcare provider and the system representative. Patient experiences of care coordination are influenced by severity of health conditions, age and ethnicity,[10] which may explain the lack of generalised descriptions of patient-level care coordination experience despite multiple survey tools.[9] Healthcare providers focus on information transfer, with digital technology being both an enabler and barrier to improving coordination,[11] and system-level representatives highly ranked data sharing, multiple healthcare providers taking charge of aspects of care, and patient needs.[12]

Our anecdotal experience highlights the need to prioritise the measurement and evaluation of care coordination in New Zealand. "Care coordination" is only mentioned once in the latest *Budget 2022 Initiatives by Vote – Health* as part of the $1 million "Comprehensive Primary Care Teams" initia-

tive that "*will combine traditional primary care services (GPs and registered nurses) with physiotherapists, practice-based pharmacists, care coordinators, and registered social workers/kaiāwhina*".[13] Care coordination must be understood, acted upon and structurally supported to enable a team process, rather than exist as an individual's role. This process consists of nine measurable activities[9] that all providers who are involved in an individual's care should perform. Mention of "care coordination" in policies and job descriptions should align with evidenced-based definitions, so that collaboration is prioritised; all team members are resourced to understand, and participate in, the activities of care coordination; and evaluation can occur.

The "Comprehensive Primary Care Teams" establishment investment should be evidenced-based and focussed on the process of high-quality care coordination that occurs most often during care transitions between providers and across settings. Research and evaluation are important approaches to ensure investment in care coordination will improve health.

COMPETING INTERESTS
Nil.

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Appendix 1: Number of activities & approaches measured by Individual Measures as listed in 'Care Coordination Master Measure Mapping Table, Health Care Professional(s) Perspective.' pg. 56 AHRQ 2014 Care Coordination Measures Atlas.[3]

		Measures as referenced in AHRQ Atlas																								
Coordination activities		**5**	**7a**	**7b**	**8**	**11b**	**12a**	**12b**	**17d**	**18**	**20**	**22b**	**23**	**27**	**28**	**38c**	**38d**	**38e**	**38f**	**43**	**46**	**62**	**63**	**72**	**74**	**75**	**77**
Establish accountability or negotiate responsibility		1	1	1		**1**				1	1	1				1	1	1		1	1	1			1		
Communicate	All communication	1	1	1		**1**	1	1	**1**			1	1					1	1	1	1	1			1		1
	Interpersonal communication		1	1	1	**1**	1	1	**1**			1	1		1					1					1	1	1
	Information transfer	1	1	1	1	**1**	1	1	**1**	1	1	1	1	1		1	1	1	1			1		1		1	1
Facilitate transitions	Across settings	1							**1**			1		1		1	1	1	1	1					1	1	1
	As coordination needs change					**1**						1															
Access needs and goals		1				**1**	1	1	**1**		1		1	1			1	1	1	1	1				1		
Create a proactive plan of care		1		1	1	**1**	1					1	1	1				1	1			1					
Monitor, follow-up and respond to change		1				**1**	1	1	**1**		1	1	1												1	1	1
Support self-management goals		1			1	**1**			**1**		1	1					1	1	1						1		
Link to community resources		1				**1**			**1**			1		1				1							1		

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Appendix 1 (continued): Number of activities & approaches measured by Individual Measures as listed in 'Care Coordination Master Measure Mapping Table, Health Care Professional(s) Perspective.' pg. 56 AHRQ 2014 Care Coordination Measures Atlas.[3]

	Measures as referenced in AHRQ Atlas																									
Coordination activities	**5**	**7a**	**7b**	**8**	**11b**	**12a**	**12b**	**17d**	**18**	**20**	**22b**	**23**	**27**	**28**	**38c**	**38d**	**38e**	**38f**	**43**	**46**	**62**	**63**	**72**	**74**	**75**	**77**
Establish accountability or negotiate responsibility	1	1	1		**1**				1	1	1				1	1	1		1	1	1			1		
Align resources with patient and population needs	1			1	**1**			**1**		1						1	1							1		
Broad approaches																										
Teamwork focussed on coordination		1	1		**1**	1	1		1			1	1	1					1	1	1			1		
Healthcare home								**1**																1		
Care management	1				**1**						1		1													
Medication management								**1**	1	1					1		1	1				1				
Health IT-enabled coordination								**1**																	1	
Number of items measured	**11**	**5**	**6**	**5**	**13**	**8**	**6**	**12**	**5**	**7**	**11**	**6**	**7**	**2**	**4**	**6**	**10**	**7**	**6**	**4**	**5**	**1**	**1**	**11**	**5**	**5**

Notes: 11b – Family-Centred Care Self-Assessment Tool – Provider version.
17d – Primary Care Assessment Tool – Facility Expanded Edition (PCAT - FE), John Hopkins.
Red cells – activity NOT measured.