Canterbury
District Health Board
Te Poari Hauora ō Waitaha

CORPORATE OFFICE

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CHRISTCHURCH 8011

17 August 2021

RE Official Information Act request CDHB 10670

I refer to your email dated 12 July 2021 to the Ministry of Health which they subsequently transferred to us on 23 July 2021 requesting the following information under the Official Information Act from Canterbury DHB. Specifically:

All original communications including briefings, reports, memos, aides memoirs, cabinet papers and texts regarding the following information:
- **Around the eight DHBs who reported HIMSS maturity levels.**

Please note: We have interpreted your request as relating to the Canterbury DHB Hospital HIMSS Maturity report. The reports covering the Primary, Residential and Community sector were completed by other health providers.

We therefore attach as **Appendix 1:**

- HIMSS Continuity of Care Maturity Model Assessment - Power Point Presentation
- HIMSS Continuity of Care Maturity Model – Hospital Report

We have redacted information pursuant to section 9(2)(a) of the Official Information Act i.e. *"…to protect the privacy of natural persons, including those deceased"*.

I trust that this satisfies your interest in this matter.

You may, under section 28(3) of the Official Information Act, seek a review of our decision to withhold information by the Ombudsman. Information about how to make a complaint is available at www.ombudsman.parliament.nz; or Freephone 0800 802 602.

Please note that this response, or an edited version of this response, may be published on the Canterbury DHB website after your receipt of this response.

Yours sincerely

Tracey Maisey
Executive Director
Planning, Funding & Decision Support

Subject:	Canterbury DHB CCMM Assessment findings
Attachments:	CCMM Assessment Report - Canterbury DHB DRAFT 12-9-2019.pptx; [Out of Scope]

[Out of Scope]

[Out of Scope] CCMM NZ Canterbury DHB - Gap Report - Hospital 12-9-2019.pdf

Sent By: [9(2)(a)] on 10/12/2019 1:35:12 pm
To: "Brenda.Hynes@health.govt.nz" , [9(2)(a)] , "Rebekah.Scott@cdhb.health.nz" , "Debra.Parker@cdhb.health.nz"
Copy To: [9(2)(a)]
Subject: Canterbury DHB CCMM Assessment findings

Please find attached the HIMSS CCMM Assessment DRAFT results for **Canterbury DHB**. Due to size I had to break these DHB reporting e-mails apart, while the group collectively participated in this process. These include a high level summary report (PowerPoint) covering the broad performance of the Care Community as well as detailed CCMM Gap Assessments for each care setting (attached PDF's). The high level CCMM summary helps you look at the care community/DHB as whole and the Gap Assessments give detailed guidance for each of the four care settings.

If you have any suggestions or changes to these reports please respond back to Brenda and Stella Ward by December 20th, 2019.

Please let me know if you have any questions.

[9(2)(a)]

Senior Director, Healthcare Advisory Services Group
HIMSS Analytics

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Continuity of Care Maturity Model

Assessment 2019, *for the*

in cooperation with

Mihi whakatau

Te aroha	Love
Te whakapono	Hope
Me te rangimarie	Peace
Hauora	Wellness
Tatou, tatou e	For Us All

HIMSS Vision
A world where everyone, everywhere, has access to a health and wellness ecosystem that works - one with the human at its heart.

HIMSS Mission
To reform the global health ecosystem by leveraging the power of information and technology. By creating an informed and empowered community of providers, innovators and individuals, we will enable an ever-improving state of health and wellness throughout the world.
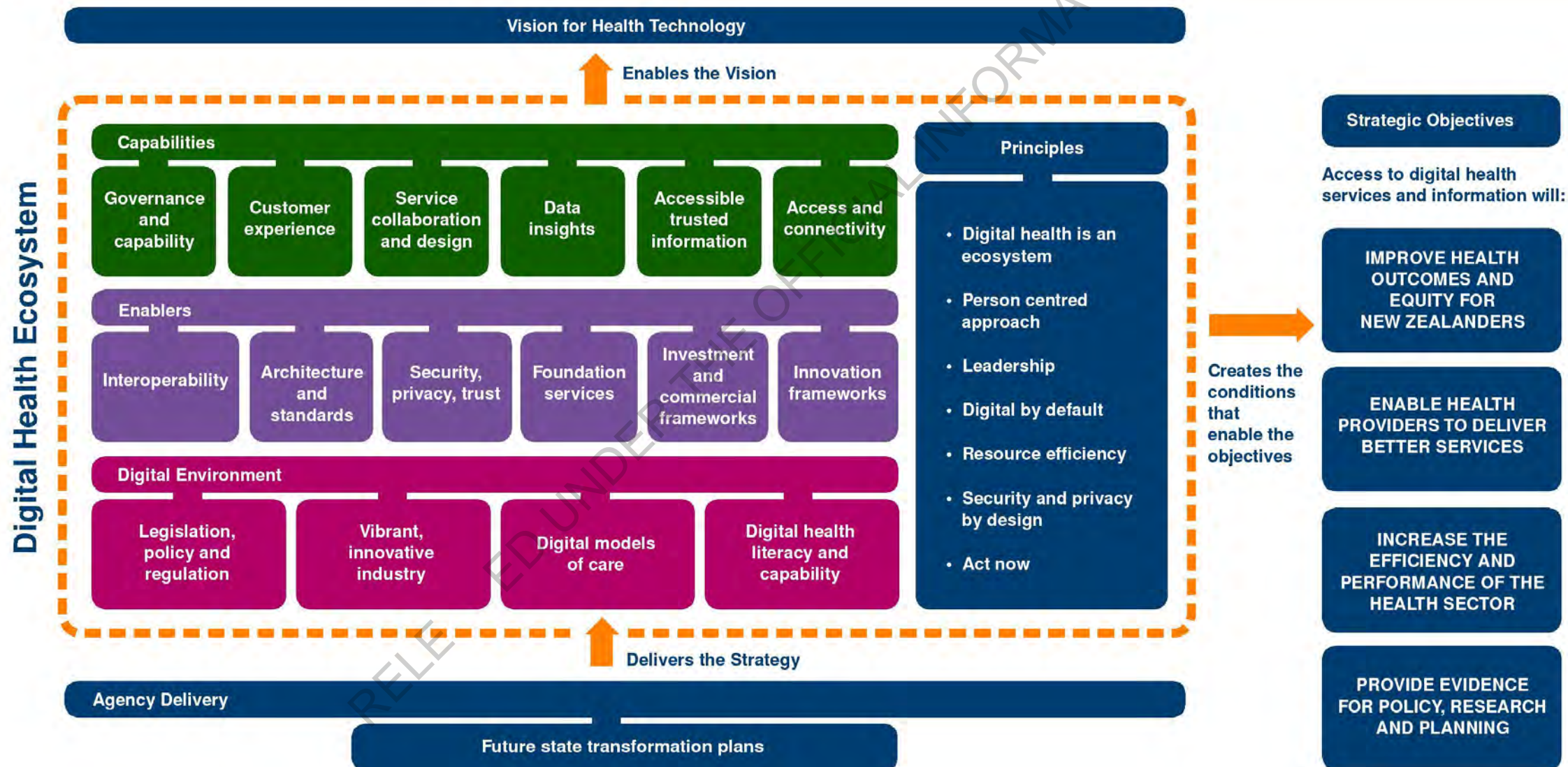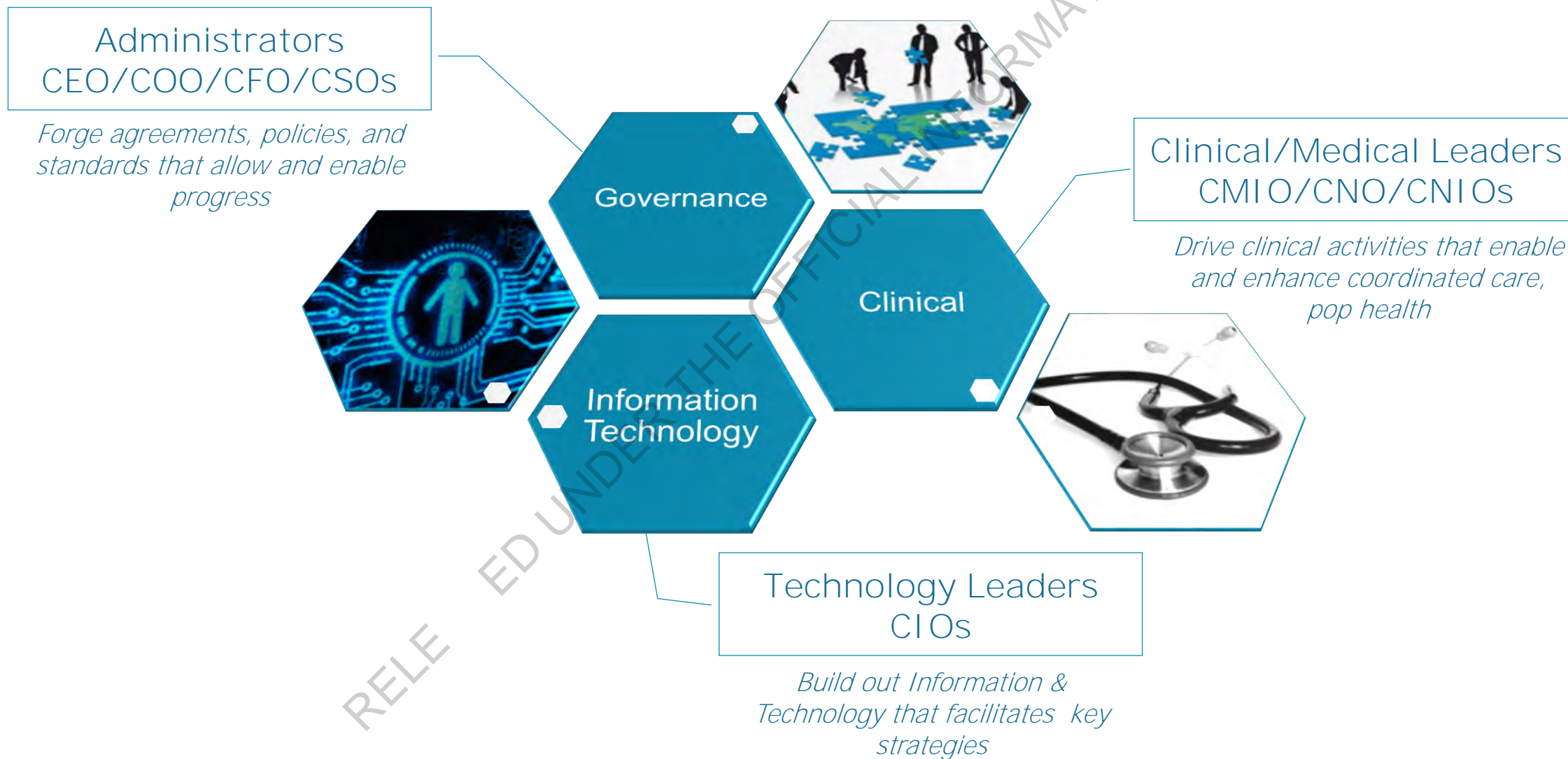
New Zealand's Digital Health Strategy

"The Ministry of Health is developing a Digital Health Strategy to guide the use of digital technologies in New Zealand.

The Strategy will not be a detailed plan, nor a document to sit on a bookshelf; rather it consists of aspirational goals and enabling constraints, priorities, frameworks, guidelines and resources that will evolve over time in response to the changing digital world that New Zealanders live in."

PEOPLE POWERED	VALUE & HIGH PERFORMANCE	ONE TEAM
Life centred	Sustained change & innovation	Collaborative care
PEOPLE POWERED	VALUE & HIGH PERFORMANCE	CLOSER TO HOME
Informed choice	Value for NZ	Closer to me
SMART SYSTEM	SMART SYSTEM	SMART SYSTEM
Responsive, predictive, personalised	Actionable insights	Accessible, trusted information

Digital Health Strategy

Stakeholder Perspectives

HiMSS *Analytics*®

Administrators
CEO/COO/CFO/CSOs

Forge agreements, policies, and standards that allow and enable progress

Clinical/Medical Leaders
CMIO/CNO/CNIOs

Drive clinical activities that enable and enhance coordinated care, pop health

Governance

Clinical

Information Technology

Technology Leaders
CIOs

Build out Information & Technology that facilitates key strategies

Continuity of Care Maturity Model

STAGE	**HIMSS** *Analytics* **CCMM** **Continuity of Care Maturity Model Cumulative Capabilities**
7	Knowledge driven engagement for a dynamic, multi-vendor, multi-organizational interconnected healthcare delivery model
6	Closed loop care coordination across care team members
5	Community wide patient record using applied information with patient engagement focus
4	Care coordination based on actionable data using a semantic interoperable patient record
3	Normalized patient record using structural interoperability
2	Patient centered clinical data using basic system-to-system exchange
1	Basic peer-to-peer data exchange
0	Limited or no e-communication

Organizational Strategy

Policy Level Initiatives

Governance

Health Information Exchange

Patient Care Coordination

Patient Engagement

Analytics

Clinical

IT Systems Capabilities

Standards / Interoperability

Security & Privacy

Information Technology

HIMSS *Analytics*®

Continuity of Care Maturity Model

Organisational Strategy

- ✓ ICT system-, HIE-, and interoperability-related
- ✓ Processes for analytics, organisational development and performance measurement

Policy Level Initiatives

- ✓ Local / regional / national policies aiming on healthcare sector optimisation through defined goals, priorities and parameters for action

Health Information Exchange

- ✓ electronically move clinical information among disparate healthcare information systems
- ✓ Provider-to-provider / provider-to-health authority data exchange

Patient Care Coordination

- ✓ Shared care plans and coordinated treatment
- ✓ Capabilities supporting care plan activities during or in response to care transitions
- ✓ Reduced errors and care team alerts

Patient Engagement

- ✓ Access to medical information, mobile access
- ✓ Engagement in care delivery and health maintenance
- ✓ Personalised alerts and goals

Analytics

- ✓ Infrastructure and technical capabilities
- ✓ Decision support driven clinical activities and patient specific CDS
- ✓ Benefit realisation measurement and improvement

IT Systems Capabilities

- ✓ Internal and external data source integration
- ✓ Scope of data repository
- ✓ Data processing
- ✓ Access and mobility

Standards / Interoperability

- ✓ Compliance with frameworks in the use of operating systems, data formats, and communication protocols
- ✓ Data exchange with patients
- ✓ Technical support of care standards & processes

Security & Privacy

- ✓ Data security
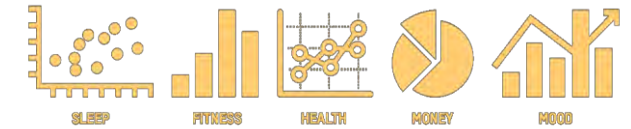- ✓ Access control
- ✓ Appropriate use of patient data

HiMSS *Analytics*®

HIMSS *Analytics*® Critical Capabilities of Continuity of Care

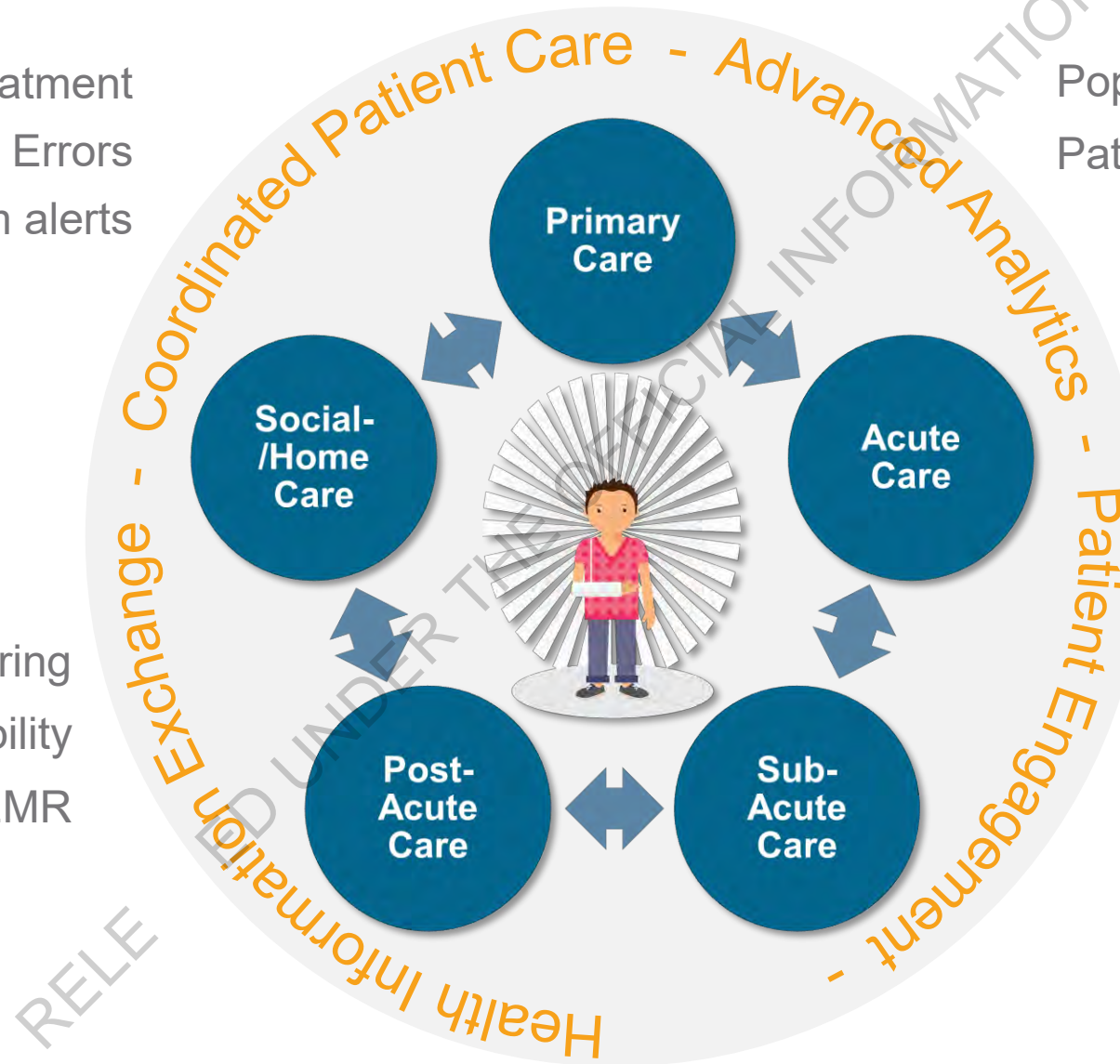Coordinated treatment

Reduced Errors

Care team alerts

Population health

Patient specific CDS

Health information sharing

Semantic interoperability

Consolidated EMR

Personalized alerts, goals

EMR access, input

Mobile access

Coordinated Patient Care - Advanced Analytics - Patient Engagement - Health Information Exchange -

Primary Care

Social-/Home Care

Acute Care

Post-Acute Care

Sub-Acute Care

Continuity of Care Maturity Model

Scoring Tutorial Example

Stage Achievement	1	Highest Stage achieved
% Accomplishment	44%	% accomplishment against entire CCMM

Stage 7	13%	
Stage 6	21%	
Stage 5	29%	% accomplishment by Stage
Stage 4	50%	70%+ to achieve a Stage
Stage 3	65%	
Stage 2	60%	
Stage 1	70%	

HiMSS *Analytics*®
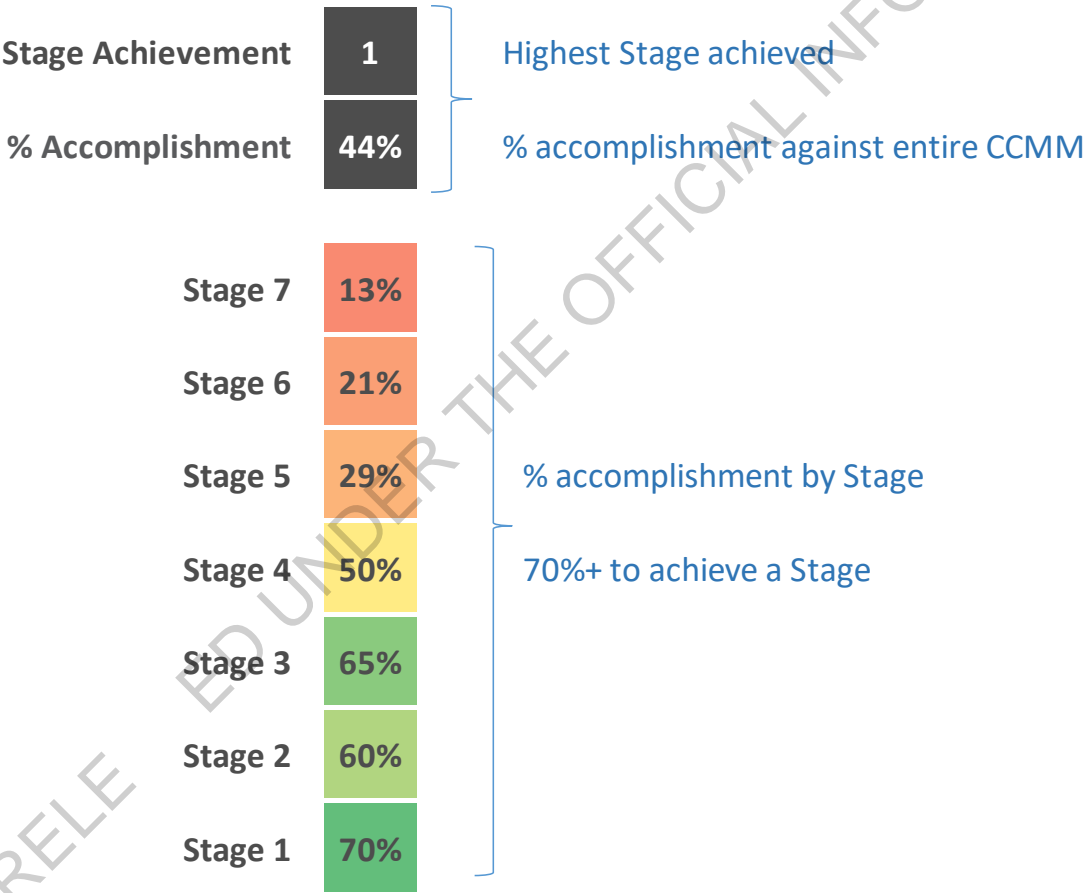
Engagement Overview

Care Community Considerations

Canterbury DHB covers an area of the East Coast of the South Island from Kaikoura District in the north, to Ashburton District in the south, as well as the Chatham Islands. *It is responsible for the health of an estimated 558,830 people*.

Roughly *80 percent of this population lives in the Greater Christchurch area*, with the rest dispersed over a large geographical area. Canterbury DHB is the second largest DHB in terms of population and area. The DHB has *the largest population aged over 75*.

Canterbury DHB *owns and operates five major hospital facilities in Christchurch* and Ashburton, and *almost 30 smaller rural hospitals and community bases around the region*.

Canterbury DHB *provides many specialised services to people referred from other DHBs* where these services are not available.

Care Settings *profiled within the Care Community*

1. **Hospital**
   Includes major facilities that provide acute and secondary care including Outpatients. This will include hospitals based in rural towns run by the DHBs.

2. **Primary Care**
   Covers GP practices, PHO's delivered / contracted service, and including DHB contracted GP services.

3. **Community Services**
   Services provided in the community or at the person's home. This could be DHB services such as Community Nurses/Home Care Teams, or it could be other providers such as hospice care (community/inpatient), ambulance services, maternity care, community mental health services, rehabilitation services or disability services. The providers could be DHB, NGO's, Iwi Services or Private Providers – excluding GP services which are covered in Primary Care

4. **Residential Care**
   the provision of long term care in a health facility. This would include rest home care, continuing care hospitals, dementia care and specialized hospital care (psychogeriatric care).

HIMSS *Analytics*® Methodology

Education sessions were held via teleconference based from NZ in November of 2019

- Online presentations and discussions with key stakeholders about the Continuity of Care Maturity Model, Methodology and Outcomes

Definition Phase (November 2019)

- The Care Community for this engagement are the patients served by the Canterbury District Health Board
- Based on the requirements and objectives of the Ministry of Health and Canterbury DHB the survey was conducted for specific and collectively represented organisations, which are assigned to four health care settings
- Key stakeholders from different areas of responsibility (Governance, Clinical, Information Technology) participated in the assessment

Assessment Phase (November 2019)

- Subsequent to the kick-off meeting survey participants completed a standardised survey with compliance statements for each Care Setting against the nine CCMM focus area. Each compliance statement was rated on a 6-point Likert scale (from **"not enabled" to** "fully enabled**", plus "not applicable")**
- All responses have been checked for logical consistency, plausibility, and missing information by trained HIMSS staff members. Data capturing and quality assurance was completed. A draft findings report will be shared with the client December, 2019
- In an on-site workshops with teleconference setting initial responses were discussed between HIMSS subject matter experts and stakeholders from represented organizations and care settings

Reports Generation & Results Presentation (December 2019)

- The data were analysed using the HIMSS Analytics CCMM algorithm. Final achievements (scores) have been calculated and detailed reports with findings for each health care organisation assessed have been prepared
- Aggregated results with actionable recommendations that can be used to facilitate a strategic roadmap focused on delivering improved and integrated care to the target population have been provided in a power point and Adobe PDF formats. 9(2)(a)
  9(2)(a)

  presented and discussed on-site the findings of the CCMM assessment with relevant stakeholders (December, 2019). Deliverables will be finalized and presented in December of 2019.
- Overall timeframe: The project was carried out **between November 2019 (**"kick-**off meeting") and December 2019 (**"delivery of findings**")**
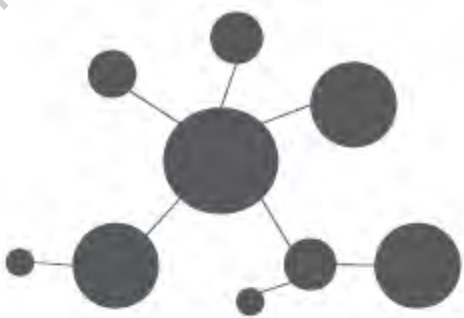
High Level Observations and Findings

HiMSS Analytics®

Overall Achievement

Stage Achievement | 0

% Accomplishment | 45%

| Stage	Description	%
Stage 7	Knowledge driven engagement for a dynamic, multi-vendor, multi-organisational interconnected healthcare delivery model	28%
Stage 6	Closed loop care coordination across care team members	28%
Stage 5	Community wide patient record using applied information with patient engagement focus	33%
Stage 4	Care coordination based on actionable data using a semantic interoperable patient record	41%
Stage 3	Normalized patient record using structural interoperability	47%
Stage 2	Patient centered clinical data using basic system-to-system exchange	55%
Stage 1	Basic peer-to-peer data exchange	68%

Responses

Not Enabled	30%
Minimally Enabled	15%
Somewhat Enabled	16%
Mostly Enabled	18%
Fully Enabled	20%
Not Applicable	0%

Care Setting Achievement

	Overall	Primary Care	Hospital	Community Services	Residential Care	
Stage Achievement	0	0	1	1	0	Highest Stage achieved
% Accomplishment	45%	57%	58%	38%	28%	% accomplishment against CCMM
Stage 7	28%	39%	43%	18%	12%	
Stage 6	28%	42%	45%	14%	13%	
Stage 5	33%	40%	50%	21%	21%	% accomplishment by Stage
Stage 4	41%	62%	44%	32%	27%	70%+ to achieve a Stage
Stage 3	47%	63%	65%	39%	22%	
Stage 2	55%	68%	67%	49%	35%	
Stage 1	68%	67%	78%	75%	50%	

- Very close to achieving Stage 1
- Highest stage performance in Primary Care setting, highest % accomplishment in Hospital care setting
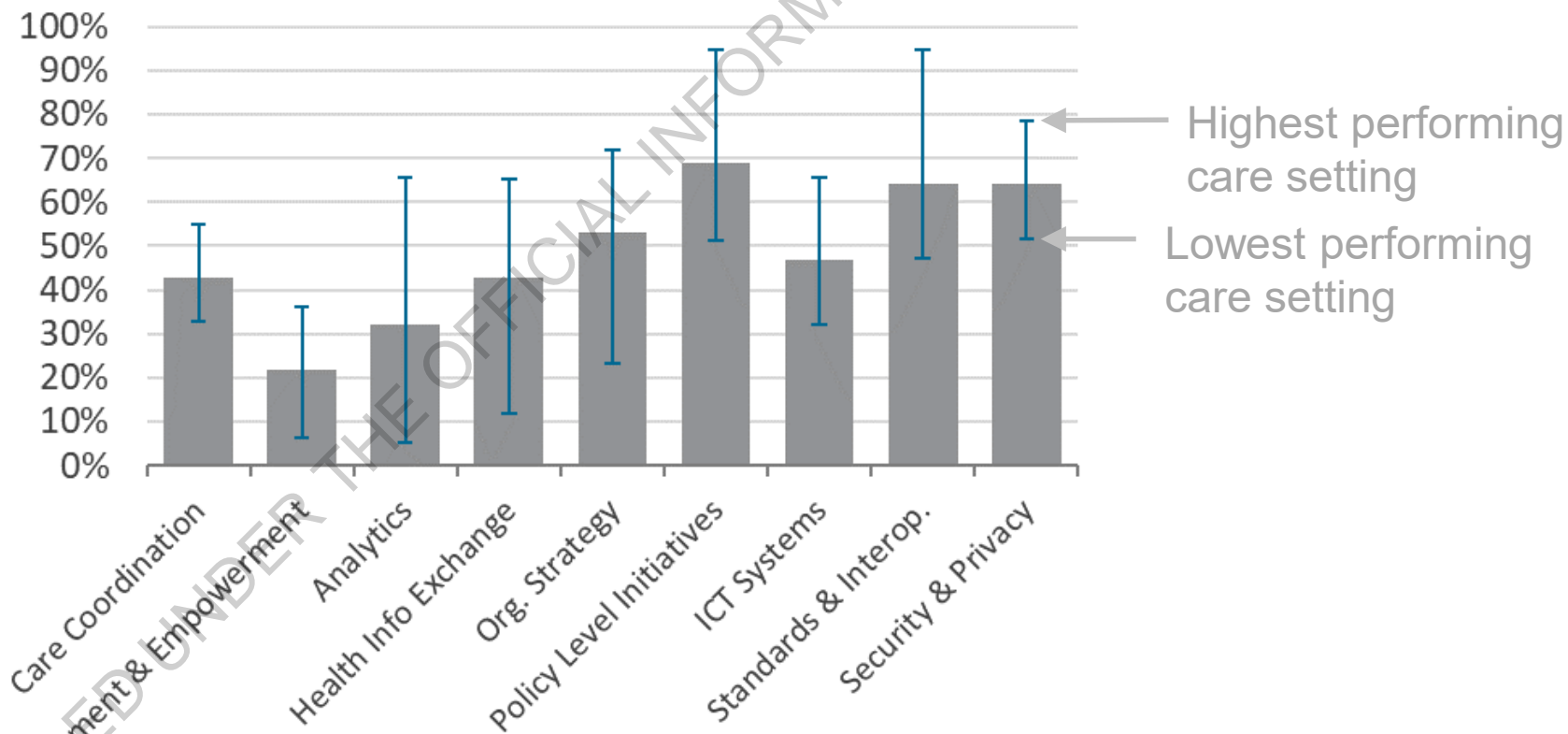- Foundational work is the greatest opportunity

Overall Focus Area Achievement
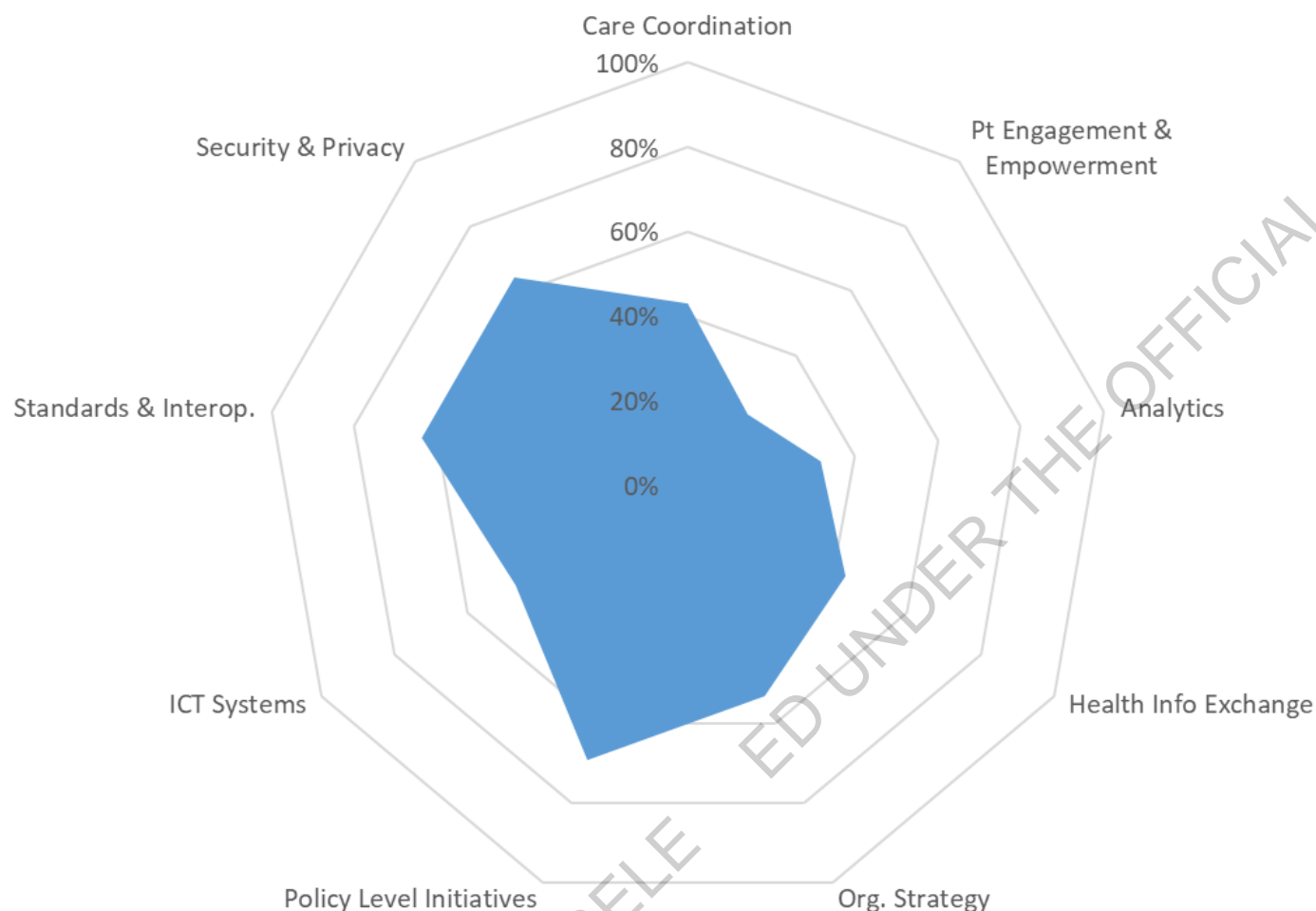
- Standards & Interoperability, Security & Privacy, and Policy Level Initiatives are the strongest focus areas

- Patient Engagement & Empowerment, Patient Care Coordination, Health Information Exchange, and Analytics have the most opportunity

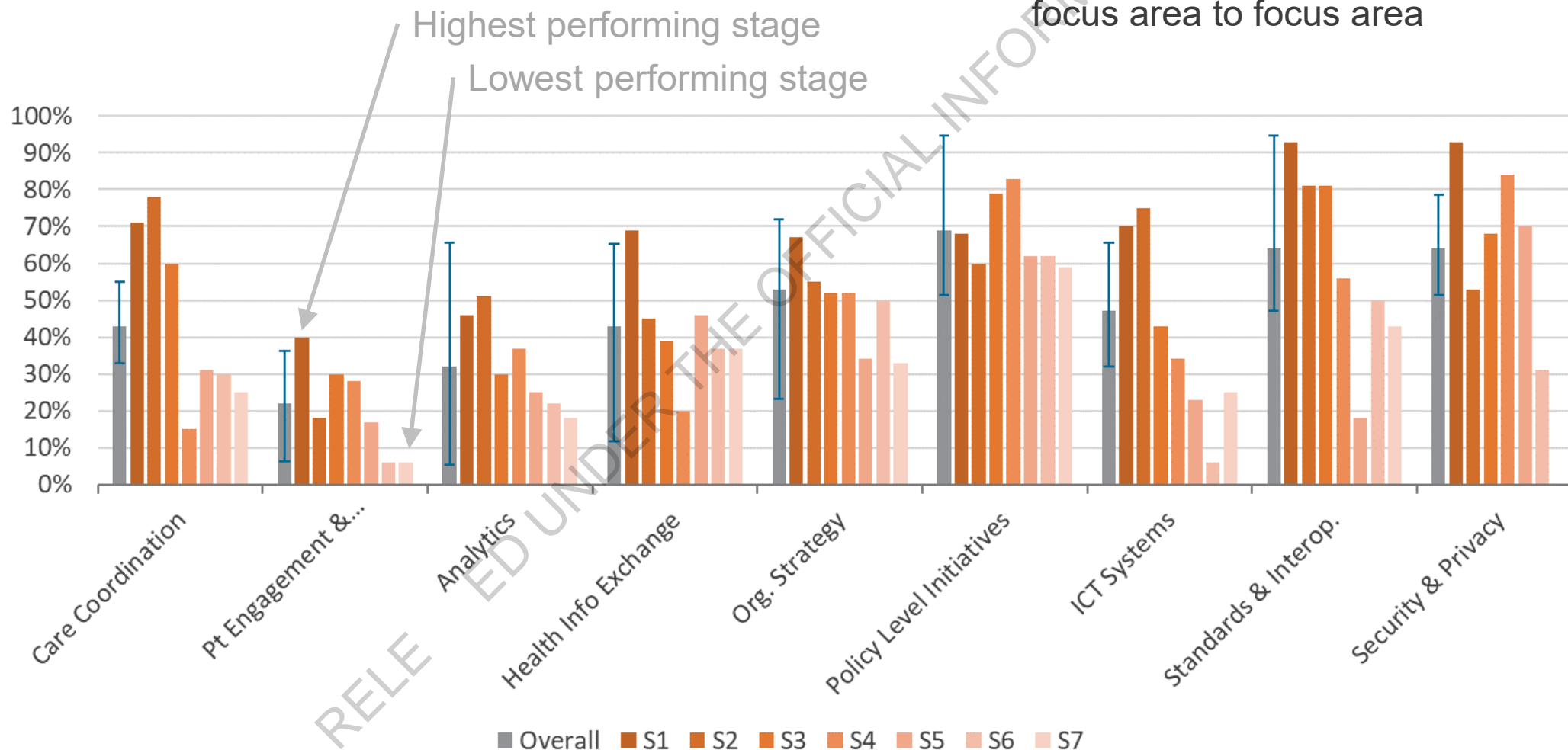- This chart represents progress across all care settings

Focus Area Achievement

- Focus area performance has a wide variation from 20% achievement to 69% achievement
- Care Setting performance consistently has significant variation

Focus Area Achievement

Highest performing stage

Lowest performing stage

- Stage performance varies significantly from focus area to focus area

Legend: Overall, S1, S2, S3, S4, S5, S6, S7

Categories: Care Coordination, Pt Engagement &..., Analytics, Health Info Exchange, Org. Strategy, Policy Level Initiatives, ICT Systems, Standards & Interop., Security & Privacy

Stakeholder Achievement

	Total	Clinical	Governance	Info Tech	
Stage Achievement	**0**	**0**	**0**	**2**	Highest Stage achieved
% Accomplishment	**45%**	**34%**	**61%**	**55%**	% accomplishment against entire CCMM
Stage 7	**28%**	**20%**	**52%**	**22%**	
Stage 6	**28%**	**23%**	**58%**	**29%**	
Stage 5	**33%**	**25%**	**48%**	**40%**	
Stage 4	**41%**	**25%**	**68%**	**52%**	% accomplishment by Stage
Stage 3	**47%**	**37%**	**65%**	**60%**	70%+ to achieve a Stage
Stage 2	**55%**	**46%**	**56%**	**70%**	
Stage 1	**68%**	**61%**	**67%**	**80%**	

- Stakeholder groups are engaged across all stages
- Clinical stakeholder group has the most opportunity to advance

Stakeholder Achievement
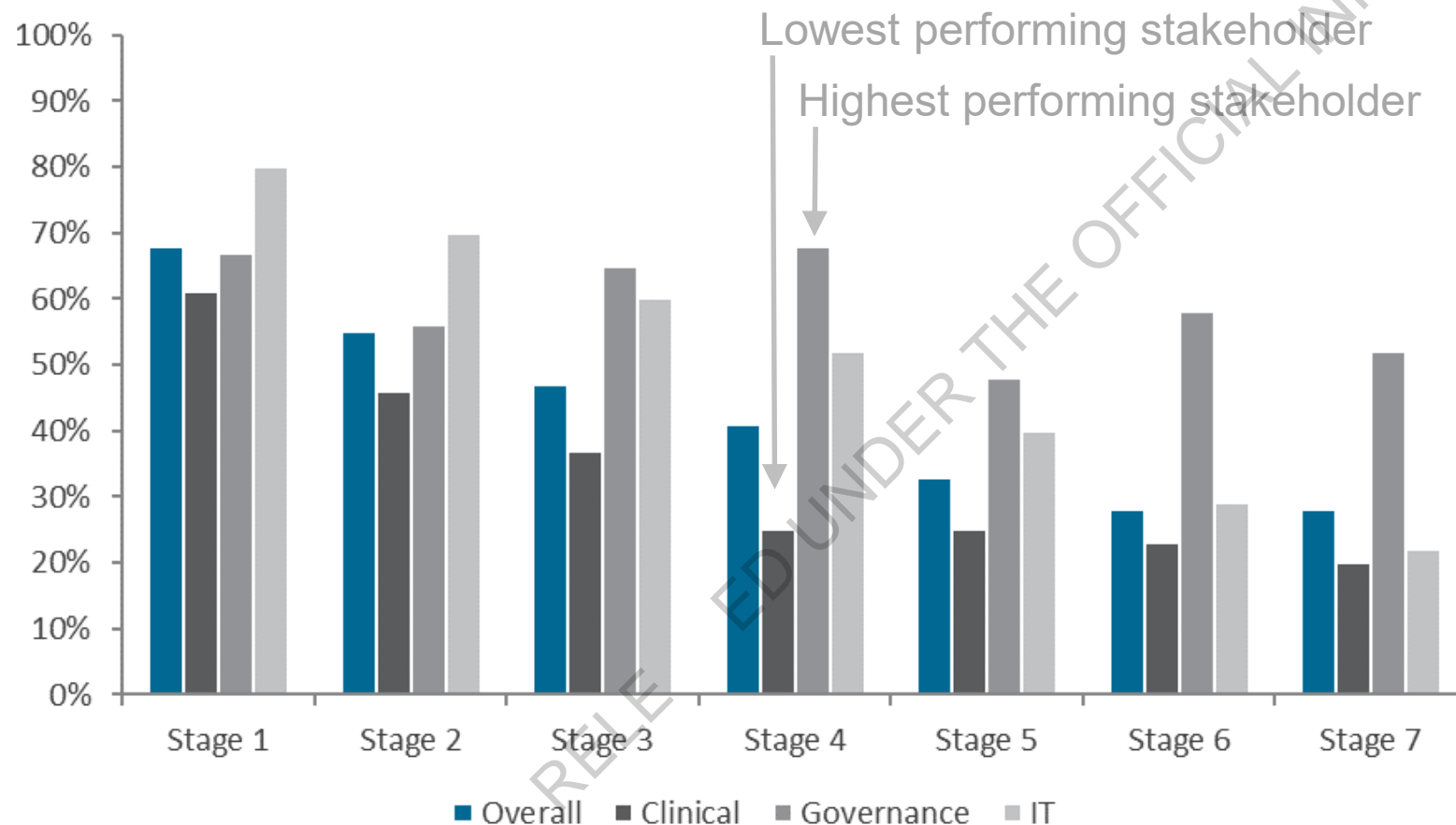
- Governance stakeholders are a consistently strong across all stages
- Information Technology stakeholders are strongest in Stage 1 and taper consistently to Stage 7
- Clinical stakeholders are strongest in Stage 1 and taper consistently into Stage 7

High Level Findings

- Canterbury DHB is a Care Community with broad efforts across both beginning and advanced stage requirements

- A strong foundation is present in Primary Care and Hospital care settings

- Focus Area performance varies

- A good foundation is in place with opportunities around Patient Engagement & Empowerment, Patient Care Coordination, Health Information Exchange, and Analytics driven by Clinical Stakeholders

Stakeholder Group Observations and Findings

Clinical Stakeholders

Clinical Stakeholder – Achievement Overview

Clinical	Total	Primary Care	Hospital	Community Services	Residential Care
Stage Achievement	0	0	1	1	0
% Accomplishment	34%	46%	49%	29%	14%
Stage 7	20%	33%	41%	8%	0%
Stage 6	23%	31%	39%	12%	10%
Stage 5	25%	36%	41%	15%	8%
Stage 4	25%	50%	30%	14%	5%
Stage 3	37%	53%	61%	28%	7%
Stage 2	46%	55%	56%	43%	30%
Stage 1	61%	58%	70%	79%	37%

Clinical Achievements
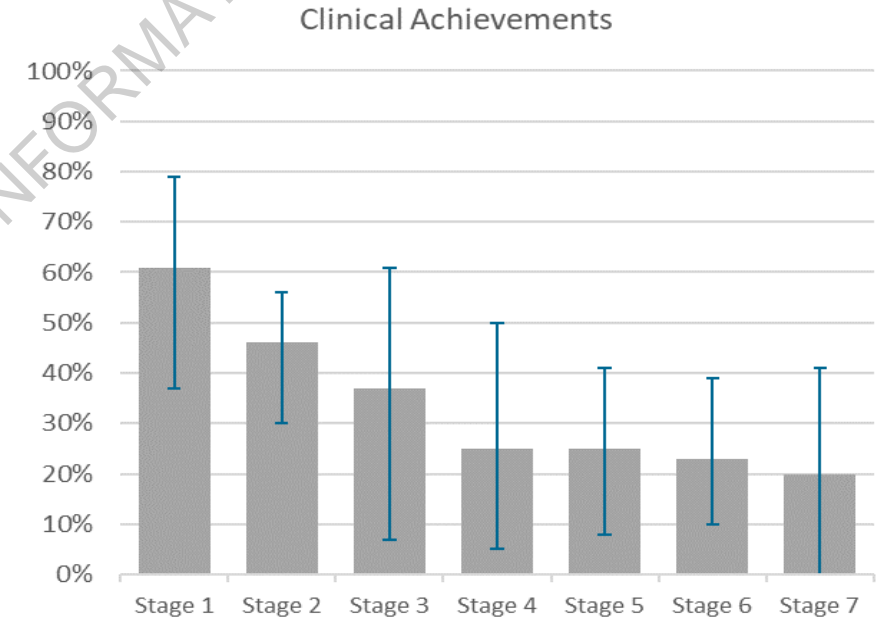
- Strongest accomplishments are in the Hospital setting, followed by Primary Care
- Stage achievement generally tapers as complexity increases
- Variation across Care Settings is significant

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Clinical Stakeholder Achievement

Clinical stakeholders drive the clinical focus and value of the organisation. They identify the most important clinical trends and refinements and drive clinical operations. They are the overall caretakers of the population.
The CCMM focusses on Care Coordination (CCO), Patient and Citizen Engagement (PCE), Advanced Analytics (ANA) and Health Information Exchange (HIE).

Stage Achievement 0

% Accomplishment 34%

		Total	CCO	PCE	ANA	HIE
Stage 7	Comprehensive pop-health. Completely coordinated care across all care settings. Integrated personalized medicine.	20%	25%	6%	18%	37%
Stage 6	Dynamic intelligent patient record tracks closed loop care delivery. Multiple care pathways/protocols. Patient compliance tracking.	23%	30%	6%	22%	37%
Stage 5	Community-wide patient record with integrated care plans, bio-surveillance. Patient data entry, personal targets, alerts.	25%	31%	17%	25%	46%
Stage 4	Shared care plans track, update, task coordination with alerts and reminders. ePrescribing. Pandemic tracking and analytics.	25%	15%	28%	37%	20%
Stage 3	Multiple entity clinical data integration. Regional/national PACS. Electronic referrals, consent. Telemedicine capable.	37%	60%	30%	30%	39%
Stage 2	Patient record available to multi-disciplinary internal and tethered care teams. EMR exchange. Immunization and disease registries.	46%	78%	18%	51%	45%
Stage 1	Limited shared care plans outside the organisation. Leverage 3rd party reference resources. Basic alerts.	61%	71%	40%	46%	69%

Clinical Stakeholder Recommendations

Care Coordination

Patient / Citizen Engagement

1 The care provider uses secure messaging to support clinical communication between clinician and patient.

2 The care provider supplies citizens and patients with online access to general health related, non-personalised information (e.g. educational content, risk assessments, tutorials).

Advanced Analytics

1 The care provider has the capability to electronically send and receive clinical data in structured format in order to compare across providers.

2 The care provider has the capability to apply analytics capabilities to primary source system applications.

Health Information Exchange

1 The care provider is able to electronically exchange clinical orders (e.g. lab tests, imaging, diagnoses and prescriptions) with other providers from the same care setting.

2 The care provider is able to electronically exchange clinical results (e.g. lab tests, imaging, diagnoses and prescriptions) with other providers from the same care setting.

"Very constrained from a resource perspective...we don't have an IT department. Very limited systems that are very expensive"
- Clinical Stakeholder

- Don't have the mechanism to share progress on care plans back to other care settings

- HealthOne does not allow patient access to records

Clinical Challenges

- Access and contribution (WC & CDHB)

- For community/residential care there is funding constraint as they are only funded for the provision of care not infrastructure costs (WC & CDHB)

- Priorities for funding (WC & CDHB)

- **People designing systems that don't understand the work –** particularly residential and community (WC & CDHB)

- Support for workforce to interact with system **–** no training for clinicians (WC & CDHB)

- Designing systems while the models of care continue to change (WC & CDHB)

Clinical Opportunities

- Integration of systems across different settings and DHB boundaries (WC & CDHB)

- Improved integration with RC and community would lead to reduce demand for some services (WC & CDHB)

Governance Stakeholders

Governance Stakeholders

Governance	Total	Primary Care	Hospital	Community Services	Residential Care
Stage Achievement	0	0	7	0	0
% Accomplishment	61%	71%	80%	50%	41%
Stage 7	52%	58%	75%	50%	25%
Stage 6	58%	75%	91%	25%	41%
Stage 5	48%	62%	75%	25%	31%
Stage 4	68%	75%	75%	65%	58%
Stage 3	65%	83%	70%	58%	50%
Stage 2	56%	75%	83%	44%	25%
Stage 1	67%	65%	90%	65%	50%

Governance Achievements
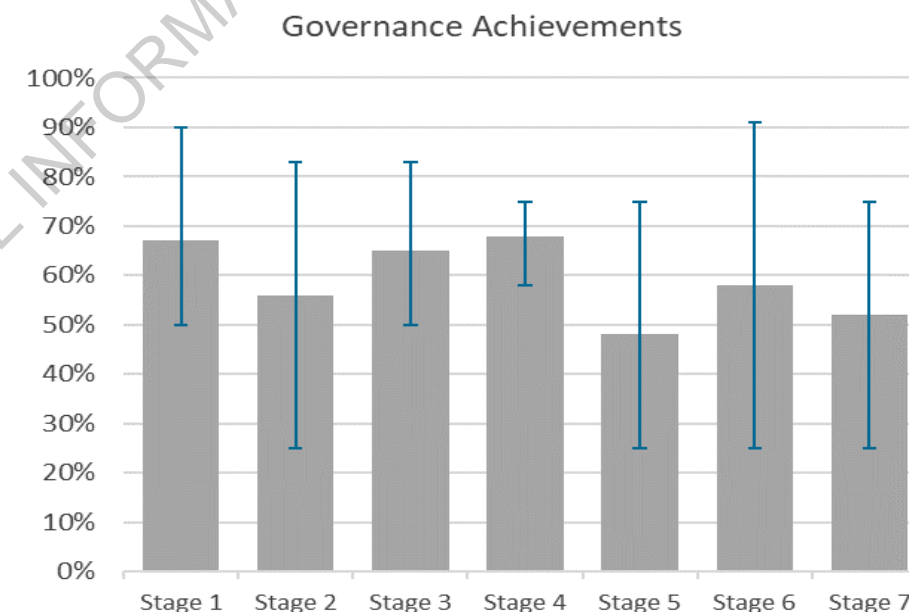
- Opportunity is present in Community Services and Residential Care

- Primary Care and Hospital care settings are strong

- Foundation strengthening is advised

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Governance Stakeholder Achievement

Governance stakeholders drive the focus and strategy of the organisation. They are forward and future thinking, anticipating what needs to be done and how the organisation will evolve.
The CCMM focusses on Organisational Strategy (ORS) and Policy Level Initiatives (POL).

Stage Achievement	0
% Accomplishment	61%

		Total		ORS	POL
Stage 7	National and local policies are aligned.	52%		33%	59%
Stage 6	Policies address non-compliance.	58%		50%	62%
Stage 5	Best clinical practices are derived from care community healthcare data and operationalized across the community.	48%		34%	62%
Stage 4	Policies in place for collaboration, data security, mobile device use, and interconnectivity between healthcare providers and patients.	68%		52%	83%
Stage 3	Data governance across organisations.	65%		52%	79%
Stage 2	Policies drive clinical coordination, semantic interoperability. Change management is documented and standardized.	56%		55%	60%
Stage 1	Policies for Continuity of Care strategy, business continuity, disaster recovery, and security & privacy. Data governance is active.	67%		67%	68%

Governance Stakeholder Recommendations

Organisational Strategy

1 The care provider has a current, documented and active strategy for providing and tracking participation in end user training and education for electronic systems use.

2 The care provider has a current, documented and active strategy for information governance, including ongoing mandates and actions to address data quality.

3 The care provider has a current, documented and active Information and Communications Technology (ICT) strategy.

Policy Level Initiatives

1 The care provider uses national policy to improve administrative processes across care providers or care settings.

2 The care provider uses local / regional policy to improve administrative processes across care providers or care settings.

3 The care provider uses policy level initiatives to encourage the use of e-healthcare software in order to increase the level of EMR adoption.

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"...we are an NGO and bringing everyone together; expecting a great level of integration is challenging"

- Governance Stakeholder

- Disconnect between policy ownership, alignment across care settings, and contractors

- Confusion about governance and leadership of DHB at the Alliance level and how that tracks down to each care setting

- Specific people are not involved as much/well as they should be

- Community and Residential care are generally not involved in strategic discussion

Governance Challenges

- Lack of Data Governance (WC & CDHB)

- On West Coast the DHB owns 75% of the GP practices, but 25% in private ownership which leads to different policies (WC)

- **Different PMS's throughout primary care** (WC & CDHB)

- Joined up services between Canterbury and West Coast is good in some areas but some of the needs are different and not always taken into consideration (WC & CDHB)

- Different languages between different services when planning and examining performance of systems (CDHB)

- Multiple funders who have different requirements that are outside DHB control i.e. ACC (WC & CDHB)

Governance Opportunities

- Defining oversight (WC & CDHB)

- Involvement of all care providers (WC & CDHB)

- Develop risk profile (WC & CDHB)

- West Coast **and Canterbury DHB's working together regarding** ICT

Information & Technology Stakeholders

Info Tech Stakeholders – Scoring Overview

Info Tech	Total	Primary Care	Hospital	Community Services	Residential Care
Stage Achievement	2	4	1	1	1
% Accomplishment	55%	68%	58%	49%	46%
Stage 7	22%	33%	16%	16%	25%
Stage 6	29%	66%	33%	16%	0%
Stage 5	40%	37%	53%	31%	40%
Stage 4	52%	75%	46%	43%	43%
Stage 3	60%	75%	71%	53%	43%
Stage 2	70%	87%	68%	65%	59%
Stage 1	80%	85%	78%	82%	75%

Info Tech Achievements
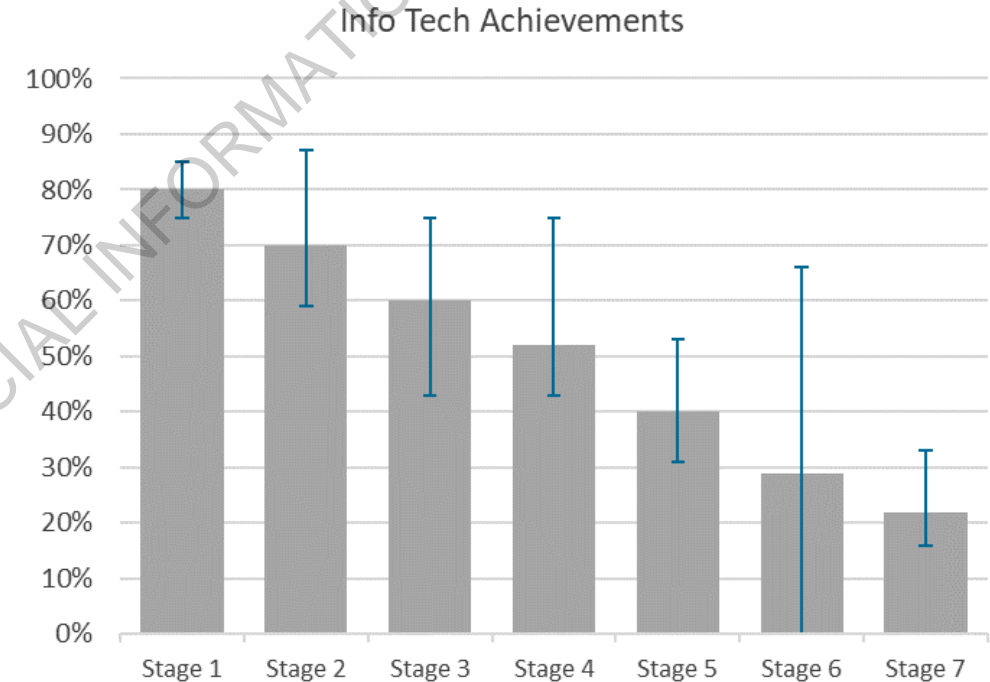
- Strongest progress is demonstrated in Primary Care, achieving 68%
- Progress is in the lower stages tapers moving towards Stage 7
- Variation is most prevalent in Stage 6 capabilities

Information Technology Stakeholder Achievement

IT stakeholders support clinical stakeholder initiatives and implement governance stakeholder policies and strategy, performing a delicate balance between maintaining and optimizing operational systems while extending and modernizing capabilities and technology.

The CCMM focusses on ICT System Capabilities (ICT), the Use of Standards (UST) and Security & Privacy (SEC).

Stage Achievement	2
% Accomplishment	55%

		Total	ICT	UST	SEC
Stage 7	Near real-time care community based health record and patient profile.	22%	25%	43%	0%
Stage 6	Organisational, pan-organisational, and community-wide CDS and population health tracking.	29%	6%	50%	31%
Stage 5	Patient data aggregated into a single cohesive record. Mobile tech engages patients. Community wide identity management.	40%	23%	18%	70%
Stage 4	All care team members have access to all data. Semantic data drives actionable CDS and analytics. Comprehensive audit trail.	52%	34%	56%	84%
Stage 3	Aggregated clinical and financial data. Medical classification and vocabulary tools are pervasive. Mobile tech supports point of care.	60%	43%	81%	68%
Stage 2	Patient-centered clinical data presentation. Pervasive electronic automated ID management for patients, providers, and facilities.	70%	75%	81%	53%
Stage 1	Some external data incorporated into patient record.	80%	70%	93%	93%

Information Technology Stakeholder Recommendations

ICT System Capabilities

1 The care provider's system uses an automated electronic medical classification and vocabulary tool.

2 The care provider collects EMR data using mobile interfaces at the point of care.

Use of Standards / Interoperability

Security and Privacy

1 The care provider has data sharing agreements in place between organisations that formally and regularly exchange data in order to ensure privacy and data security.

"Contracted care does not take into consideration the ICT costs"
"Every reasonable member of staff has to have a good mobile phone or laptop."
- Info Tech Stakeholder

- Financial challenges are front and center and weighs into all decisions

- If **"contracted care"** is expected to participate in strategy and ICT interfaces then interoperability and meeting ICT requirements needs to be part of their contract

- Prioritization is a critical aspect of the work given limited budgets and many competing priorities

- Land lines are better, mobile connections are problematic

ICT Challenges

- Financial support **– we identify what is needed but don't have the funding** (WC & CDHB)

- Lack of integration leading to frustrations (WC & CDHB)

- No overhead in contracts for ICT (WC & CDHB)

- Cost of digitalisation of health not fully identifiable (WC & CDHB)

- Internal costs not often considered when costing projects (CDHB), noting that this is changing

- No funding support for replacement of devices (CDHB)

- More demand than capacity due to funding restrictions **–** prioritization (WC & CDHB)

- Connectivity for some areas **–** mobile coverage still problematic (WC)

ICT Opportunities

- Integrations of systems across settings (WC & CDHB)

- Roundtable reviews of standards especially around coding, exchange of information would lead to more aligned across organizations (WC & CDHB)

- All settings being able to contribute across the whole would lead to more meaningful support and understanding (WC & CDHB)

- Working in amalgamation with Canterbury DHB – sharing systems sub-regionally (WC & CDHB)

Summary by Stakeholder Group

Summary Stakeholder Achievement

	Overall	Clinical Focus				Governance Focus		Info Tech Focus		
	Total	Care Coordination	Pt Engagement & Empowerment	Analytics	Health Info Exchange	Org. Strategy	Policy Level Initiatives	ICT Systems	Standards & Interop.	Security & Privacy
Stage Achievement	0	0				0		2		
% Accomplishment	45%	43%	22%	32%	43%	53%	69%	47%	64%	64%
Stage 7	28%	25%	6%	18%	37%	33%	59%	25%	43%	0%
Stage 6	28%	30%	6%	22%	37%	50%	62%	6%	50%	31%
Stage 5	33%	31%	17%	25%	46%	34%	62%	23%	18%	70%
Stage 4	41%	15%	28%	37%	20%	52%	83%	34%	56%	84%
Stage 3	47%	60%	30%	30%	39%	52%	79%	43%	81%	68%
Stage 2	55%	78%	18%	51%	45%	55%	60%	75%	81%	53%
Stage 1	68%	71%	40%	46%	69%	67%	68%	70%	93%	93%

- Overall progress through 45% of model
- Notable: ICT at Stage 2 while Governance achieved 69% on Policy Level Initiatives
- Pt Engagement & Empowerment is the greatest opportunity

Care Setting Observations & Findings

Hospital

	Total	Hospital Clinical	Governance	Info Tech
Stage Achievement	1	1	7	1
% Accomplishment	58%	49%	80%	58%
Stage 7	43%	41%	75%	16%
Stage 6	45%	39%	91%	33%
Stage 5	50%	41%	75%	53%
Stage 4	44%	30%	75%	46%
Stage 3	65%	61%	70%	71%
Stage 2	67%	56%	83%	68%
Stage 1	78%	70%	90%	78%

- Hospital care setting is at 58% compliance across the model and has achieved Stage 1 with good progress into Stage 3

- Combining the opportunities identified in the EMRAM validation along with the separately provided CCMM readiness Report will give stakeholders clear direction on how to improve not only their EMRAM but also CCMM standings
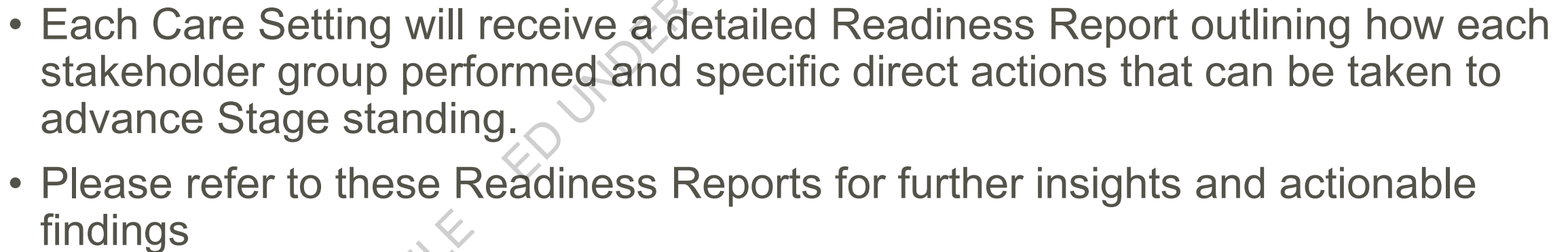
Care Setting Findings

- Each Care Setting will receive a detailed Readiness Report outlining how each stakeholder group performed and specific direct actions that can be taken to advance Stage standing.

- Please refer to these Readiness Reports for further insights and actionable findings

Te aroha
Te whakapono
Me te rangimarie
Hauora
Tatou, tatou e

Love
Hope
Peace
Wellness
For Us All

Contacts

![HIMSS Analytics®]

Asia

9(2)(a)

9(2)(a)

Thank you

CONTINUITY OF CARE MATURITY MODEL

READINESS REPORT

Prepared for

the health care community of **Canterbury District Health Board**

that is served by health care organisation(s) **not applicable**

in health care setting **Hospital**

Prepared by

HIMSS

Healthcare **A**dvisory **S**ervices **G**roup

Table of Content

STAGE	HIMSS *Analytics* CCMM Continuity of Care Maturity Model Cumulative Capabilities
7	Knowledge driven engagement for a dynamic, multi-vendor, multi-organizational interconnected healthcare delivery model
6	Closed loop care coordination across care team members
5	Community wide patient records using applied information with patient engagement focus
4	Care coordination based on actionable data using a semantic interoperable patient record
3	Normalized patient record using structural interoperability
2	Patient centered clinical data using basic system-to-system exchange
1	Basic peer-to-peer data exchange
0	Limited or no e-communication

Continuity of Care Maturity Model

Purpose

HIMSS Analytics created the Continuity of Care Maturity Model™ (CCMM) to guide healthcare organisations implementing seamlessly coordinated patient care across a continuum of care sites and providers. The CCMM is a strategic framework to guide continuity of care implementation. The internationally applicable CCMM helps healthcare providers focus critical capabilities associated with coordinated patient care, health information exchange, patient engagement, and advanced analytics.

Model Description

The CCMM is an 8 stage maturity model classifying a community on its journey from limited to no e-communication at Stage 0 to a multi-organisational, knowledge-driven interconnected healthcare delivery at Stage 7. The CCMM assigns responsibility for critical aspects of coordinated care to 3 main stakeholder groups. These groups include Administrators/Governance, Clinical and IT/Technology leadership.

Understanding how each group contributes to coordinated care and supports the other critical stakeholders is valuable for making effective progress in environments where care is delivered across a variety of settings. There are 9 focus areas that define and focus critical capabilities required for seamless and ideal continuity of care. Stakeholders of each provider need to contribute to the focus area requirements in order to reach a high level of

1. Care Coordination
2. Patient Engagement
3. Analytics
4. Health Information Exchange
5. Organisational Strategy
6. Policy Level Initiatives
7. IT Systems Capabilities
8. Standards / Interoperability
9. Security & Privacy

Methodology

To be assessed against the CCMM a healthcare organisation completes a survey. This survey is composed of a list of requirement statements, taking a few hours to complete. The organisation completes the survey by self-assessing their performance against each requirements statement using the Likert scale noted here:

Not Enabled	The capabilities referenced in the criteria statement are **not typically or rarely available** with this care provider.
Minimally Enabled	The capabilities referenced in the criteria statement are **available in a limited manner** with this care provider.
Somewhat Enabled	The capabilities referenced in the criteria statement are **available roughly half the time** with this care provider.
Mostly Enabled	The capabilities referenced in the criteria statement are **generally available most of the time** with this care provider.
Fully Enabled	The capabilities referenced in the criteria statement are **almost always or always available** with this care provider.
Not Applicable	The capabilities referenced in the criteria statement **do not apply** to the care provider.

Using a proprietary scoring methodology the survey responses are tabulated to derive accomplishment for each stage, each focus area, and against the overall model.

To achieve a given Stage an organisation must score 70% or better for overall accomplishment for that Stage and all previous Stages. This allows flexibility in the model to accommodate different types of organisations, cultures, and approaches to maturity.

Summary

The Continuity of Care Maturity Model score is derived by comparing the accomplishments of the healthcare organisation against the CCMM. The overall score represents the organisations' overall progress towards continuity of care. Stakeholder achievements represent progress in each specific CCMM focus areas.

Care Community Description and Respondent Details

The below results represent this care setting's performance against the Continuity of Care Maturity Model.

Description of health care community	*Canterbury District Health Board*
Size of health care community (citizens)	*558,830*
Type of health care setting	*Hospital*
Name(s) of health care organisation(s)	*not applicable*
Annual citizens served (unique patients)	*n/a*

Key contacts:

Governance Stakeholder
Position within organisation *Organising committee*
Name of respondent *Sue Wood*

Clinical Stakeholder
Position within organisation *Organising committee*
Name of respondent 9(2)(a)

Information Technology Stakeholder
Position within organisation *Organising committee*
Name of respondent 9(2)(a)

Survey Coordinator
Position *DHB Coordinator*
Name 9(2)(a)

CCMM Readiness Report - Combined Achievement

Stage Achievement	1	Highest Stage achieved
% Accomplishment	58%	% accomplishment against entire CCMM

Stage 7	43%	
Stage 6	45%	% accomplishment by Stage
Stage 5	50%	70%+ to achieve a Stage
Stage 4	44%	
Stage 3	65%	
Stage 2	67%	
Stage 1	78%	Achieved

CCMM Readiness Report - Achievement by Stakeholders

	Overall	Governance	Clinical	Info Tech
Stakeholder Stage Achievement	1	7	1	1
% Accomplishment	58%	80%	49%	58%
Stage 7	43%	75%	41%	16%
Stage 6	45%	91%	39%	33%
Stage 5	50%	75%	41%	53%
Stage 4	44%	75%	30%	46%
Stage 3	65%	70%	61%	71%
Stage 2	67%	83%	56%	68%
Stage 1	78%	90%	70%	78%

Stakeholders Achievement Details

Governance Stakeholder Achievement

Governance stakeholders drive the focus and strategy of the organisation. They are forward and future thinking, anticipating what needs to be done and how the organisation will evolve.

Stage Achievement	**7**	
% Accomplishment	**80%**	
Stage 7	75%	National and local policies are aligned.
Stage 6	91%	Policies address non-compliance.
Stage 5	75%	Best clinical practices are derived from care community healthcare data and operationalized across the community.
Stage 4	75%	Policies in place for collaboration, data security, mobile device use, and interconnectivity between healthcare providers and patients.
Stage 3	70%	Data governance across organisations.
Stage 2	83%	Policies drive clinical coordination, semantic interoperability. Change management is documented and standardized.
Stage 1	90%	Policies for Continuity of Care strategy, business continuity, disaster recovery, and security & privacy. Data governance is active.

Achievement by Focus Area

The governance perspective of CCMM refers to two focus areas - Organisational Strategy and Policy Level

Organisational Strategy focuses on the governance perspective of care providers aiming on current and documented strategies and processes related to Information and Communication Technology Systems, Health Information Exchange and interoperability, data processing and analytics as well as organisational development and performance.

This includes but is not limited to:
- Active business continuity plan and disaster recovery programme
- Strategy to introduce telemedicine
- Strategy to include patients and family members in care programmes
- Strategy to use predictive analytic tools and to measure clinical and financial benefits

Policy Level Initiatives aims on healthcare sector optimisation through defined goals, priorities and parameters for action related to administrative and clinical process improvements, full involvement of patients, caregivers and any other stakeholders based on local / regional / national policies.

This includes but is not limited to:
- Policies describing citizen empowerment
- Outcomes measurement across care settings
- Cost sharing for common infrastructure
- Policies related to telemedicine and connectivity standards
- Initiatives to support national healthcare goals
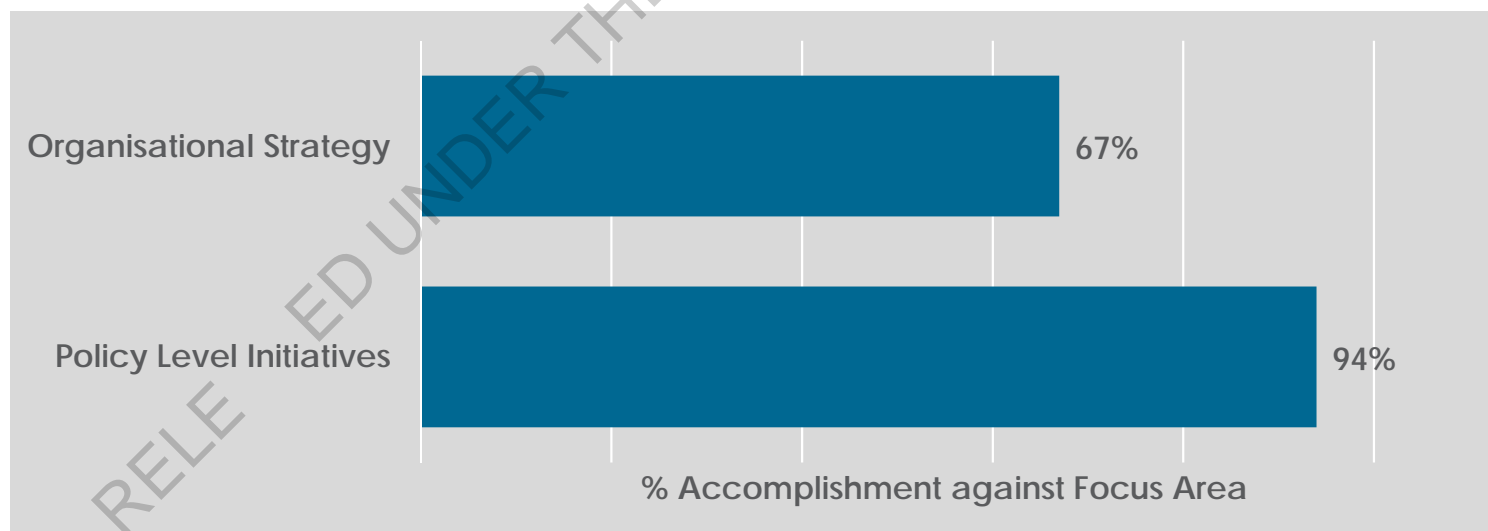
Organisational Strategy: 67%

Policy Level Initiatives: 94%

% Accomplishment against Focus Area

Observations

In order to make further progress on higher CCMM Stages, we recommend working with priority on capabilities with low accomplishment levels, especially those highlighted in red and yellow colour.

Criteria statements identified by yellow highlighting are those that represent the next logical step on the continuity of care journey.

Criteria statements highlighted in red represent areas to strengthen the continuity of care foundation.

Focus Area – Organisation Strategy	Accomplishment Level	
Information and Communication Technology (ICT) System-related		
The care provider has a current, documented and active Information and Communications Technology (ICT) strategy.	Mostly Enabled	◗
The care provider has a current, documented and active business continuity plan that is annually tested.	Mostly Enabled	◗
The care provider has a current, documented and active disaster recovery plan (including data centre, network, end-user devices) that is reviewed and updated.	Somewhat Enabled	◑
The care provider is involved in a community-wide disaster recovery programme that is current, documented, reviewed and updated.	Mostly Enabled	◗
Health Information Exchange & Interoperability-related		
The care provider has a current, documented and active strategy to index patients, doctors and facilities to support the sharing of data across care settings.	Fully Enabled	●
The care provider has a process to ensure that all application programming interfaces (APIs), internal and third-party, are documented and owned.	Somewhat Enabled	◑
The care provider has a current, documented and active strategy to effectively integrate data from other care providers/care settings into the patient's electronic	Mostly Enabled	◗
The care provider has a current, documented and active strategy to use telehealth for patient surveillance, consultation and treatment.	Mostly Enabled	◗
The care provider has a current, documented and active strategy to include patients and family members in chronic disease management programmes.	Minimally Enabled	◔
The care provider has a current, documented and active strategy to participate in community-wide chronic disease management programmes to enable health professionals to access, share and use best practice.	Mostly Enabled	◗
Data processing and Analytics-related		
The care provider has a current, documented and active strategy for information governance, including ongoing mandates and actions to address data quality.	Somewhat Enabled	◑
The care provider has a current, documented and active strategy for data normalization and standardization in order to share it with other organisations in the right semantic context.	Mostly Enabled	◗
The care provider has a current, documented and active strategy to ensure that shared information is actionable and can trigger Clinical Decision Support in a consistent way across care settings.	Minimally Enabled	◔
The care provider has a current, documented and active strategy to use predictive analytic tools on the information within the community-wide record and other data sources.	Somewhat Enabled	◑

Organisational development & performance-related		
The care provider has a current, documented and active strategy for providing and tracking participation in end user training and education for electronic systems use.	Fully Enabled	●
The care provider has a current, documented and active strategy, based on a recognised and agreed approach, for managing organisational change.	Mostly Enabled	◕
The care provider has a current, documented and active strategy to work with external stakeholders (e.g. other care providers, insurance etc.) to approve decisions in order to develop/maintain a community-wide patient record.	Fully Enabled	●
The care provider has a current, documented and active strategy to measure and realise clinical and financial benefits following the implementation of a community-wide patient record and data exchange across multiple care settings.	Mostly Enabled	◕
The care provider has a current, documented and active strategy to participate in a community-wide digital innovation and transformation programme.	Mostly Enabled	◕
The care provider has a current, documented and active strategy for community-wide sharing of performance indicators, risk assessments, and incidents reports with an associated improvement plan to continuously optimise quality of care.	Somewhat Enabled	◑

Focus Area – Policy level initiatives	Accomplishment Level	
General position / objective of policy level		
The care provider uses local / regional policy to improve administrative processes across care providers or care settings.	Fully Enabled	●
The care provider uses national policy to improve administrative processes across care providers or care settings.	Fully Enabled	●
The care provider designs, shares and implements local / regional policy to improve administrative processes across care providers or care settings.	Fully Enabled	●
The care provider uses policy to measure and improve patient flow and clinical processes across care settings.	Fully Enabled	●
The care provider has a policy in place that describes patient engagement and citizen empowerment.	Mostly Enabled	◕
The care provider is able to measure and monitor multiple clinical / financial outcomes that result from pan-organisational policy initiatives being in place.	Mostly Enabled	◕

Specific policy level initiatives

The care provider uses policy level initiatives to encourage the use of e-healthcare software in order to increase the level of EMR adoption.	Fully Enabled	●
The care provider encourages the use of dedicated computer networks to ensure that information can be shared across organisations.	Fully Enabled	●
The care provider has a policy in place ensuring the costs of common infrastructure are shared.	Fully Enabled	●
The care provider has a process to monitor and manage compliance against national initiatives, quality standards and legal requirements.	Fully Enabled	●
The care provider ensures that the local implementation of national security and privacy policy facilitates and supports the continuity of care across care settings.	Mostly Enabled	◑
The care provider has successfully accessed national initiatives to fund local / regional programmes of continuity of care.	Fully Enabled	●
The care provider ensures that national policies relating to mobile device, telehealth and connectivity standards are implemented.	Fully Enabled	●
The care provider is actively involved in pan-organisational initiatives to measure and optimise the benefit and value of providing continuity of care.	Fully Enabled	●
The care provider has agreed and implemented a pan-organisational policy to regulate access to patient identifiable data to those who pay, insure and commission.	Fully Enabled	●
The care provider has agreed and implemented a pan-organisational initiative to support national healthcare goals, targets and initiatives.	Fully Enabled	●
The care provider has agreed and implemented a pan-organisational initiative to embrace innovation, work with internal and external stakeholders, support open procurement and the sharing of good practice.	Fully Enabled	●
The care provider has implemented a pan-organisational agreement to systematically measure progress, evaluate outcomes and publish results from their continuity of care activities.	Mostly Enabled	◑
The care provider makes ongoing contributions (financial, people, facilities etc.) to a multi-year community-wide investment plan to support the delivery of integrated care in line with the community-wide policy.	Fully Enabled	●

Clinical Stakeholder Achievement

Clinical stakeholders drive the clinical focus and value of the organisation. They identify the most important clinical trends and refinements and drive clinical operations. They are the overall caretakers of the population.

Stage Achievement	**1**	
% Accomplishment	**49%**	
Stage 7	**41%**	Comprehensive pop-health. Completely coordinated care across all care settings. Integrated personalized medicine.
Stage 6	**39%**	Dynamic intelligent patient record tracks closed loop care delivery. Multiple care pathways/protocols. Patient compliance tracking.
Stage 5	**41%**	Community-wide patient record with integrated care plans, bio-surveillance. Patient data entry, personal targets, alerts.
Stage 4	**30%**	Shared care plans track, update, task coordination with alerts and reminders. ePrescribing. Pandemic tracking and analytics.
Stage 3	**61%**	Multiple entity clinical data integration. Regional/national PACS. Electronic referrals, consent. Telemedicine capable.
Stage 2	**56%**	Patient record available to multi-disciplinary internal and tethered care teams. EMR exchange. Immunization and disease registries.
Stage 1	**70%**	Limited shared care plans outside the organisation. Leverage 3rd party reference resources. Basic alerts.

Achievement by Focus Area

The clinical perspective of CCMM refers to four focus areas - Coordinated Care, Patient Engagement, Analytics and Health Information Exchange.

Care Coordination is a critical process to ensure appropriately provided patient care activities during or in response to care transitions. This could be transitions across care settings, within care teams, between patient encounters and episodes, as patient needs change etc. Coordinating care involves the orchestration of personnel and other resources and typically relies on the exchange of information among participants that are responsible for different care aspects.

This includes but is not limited to:
- Sharing of pathways/protocols for multiple conditions
- Telemedicine
- Definition of personalized targets for patients based on their individual needs and abilities
- Shared care plans with integrated alerts accessible by all care team members
- Tracking of patient compliance and reasons for non-compliance
- Automated clinical decision support based on documentation facilitates care coordination through intelligent dynamic workflows, alerts, reminders as well as patient- and disease-specific predictive modelling

Patient Engagement describes a process to strengthen skills and knowledge about health and illness, provokes participation of individuals in decision-making processes regarding their own care, and extends control over decisions and actions of health care providers affecting patient's life. It describes how providers and patients are working together to improve health. A patient's greater engagement in healthcare contributes to improved health outcomes, and information technologies can support engagement. Patients want to be engaged in their healthcare decision-making process, and those who are engaged as decision-makers in their care tend to be healthier and have better outcomes.

This includes but is not limited to:
- Making demographic, insurance and clinical data available to patients through Personal Health Records
- Use of telemonitoring devices
- Setting of personal health targets and tracking of achievements
- Participation in community-wide health improvement initiatives
- Support of patients with reminders and notifications about care plan activities
- Enabling of patients to manage access privileges to their electronic medical records

Analytics is the discovery and communication of meaningful patterns in data. Using Analytics in healthcare has the objective to determine how clinical care can be improved while limiting excessive spending. If leveraged appropriately, a successful analytics program will help to improve care coordination, enhance patient care outcomes reduce administrative costs, drive better clinical decision support, minimize fraud and abuse etc. Within the CCMM the use of advanced analytics focuses on the availability of an analytics strategy, the provision of an appropriate infrastructure and capabilities to drive clinical activities, decision support as well as benefit realisation measurement and improvement. This should be available and used at the level of the single care provider as well as the community level (i.e. across different providers and care settings).

This includes but is not limited to:

- Use of internal and external, patient-specific & de-identified longitudinal clinical, financial and other data (e.g. non-personalised data)
- Driving and improving of patient and provider satisfaction
- Informing about treatment processes
- Enabling the use of evidence-based medicine in real-time
- Use of predictive alerting at patient or population level based on a series of clinical/environmental indicators
- Enabling and enhancing population health management
- Personalising patient education
- Enabling data-driven decisions across multiple care providers and settings

Health Information Exchange provides the capability to electronically move clinical information among disparate healthcare information systems (between any two or more organisations), and maintain the meaning of the information being exchanged. The goal of HIE is to facilitate access to and retrieval of clinical data to provide safer, more timely, efficient, effective, equitable, patient-centred care. The CCMM investigates provider-to-provider and provider-to-health authority data exchange capabilities and the level of HIE sophistication that allows a comprehensive presentation of patient's health data and interaction with clinical decision support tools using information from a community-wide patient record.

This includes but is not limited to:
- Electronically exchange of clinical orders (e.g. lab tests, imaging), results (e.g. diagnoses, prescriptions) and documents (e.g. discharge letters, medical summaries, clinical/operational/financial datasets) within and across care settings and multi-disciplinary teams or health authorities
- Patient monitoring including telemedicine tools
- Population health reporting
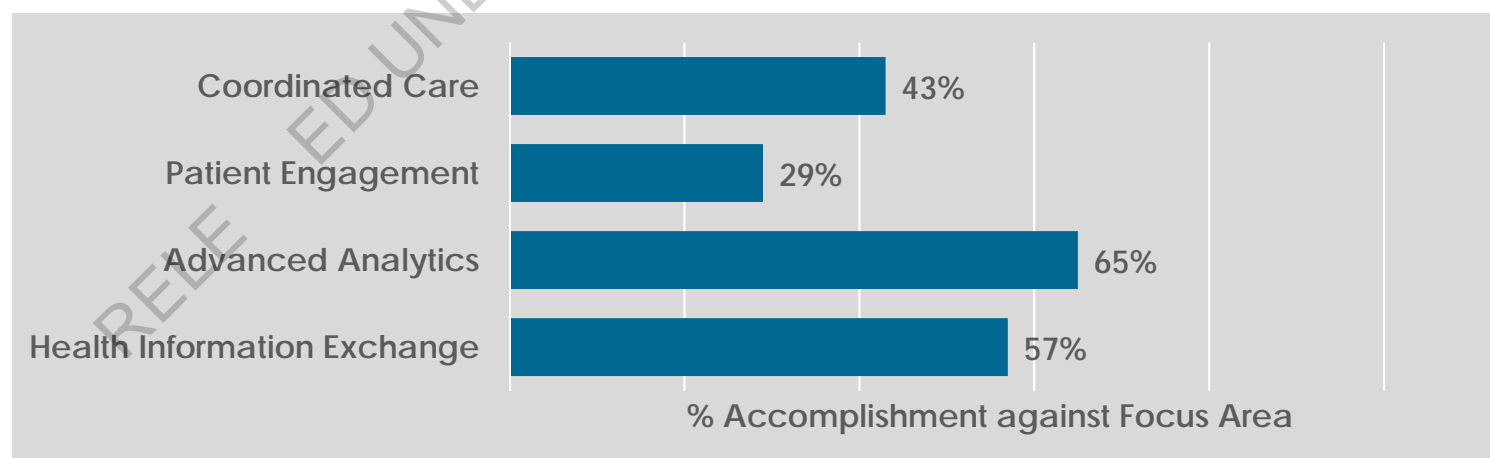
% Accomplishment against Focus Area

- Coordinated Care: 43%
- Patient Engagement: 29%
- Advanced Analytics: 65%
- Health Information Exchange: 57%

Observations

In order to make further progress on higher CCMM Stages, we recommend working with priority on capabilities with low accomplishment levels, especially those highlighted in red and yellow colour.

Criteria statements identified by yellow highlighting are those that represent the next logical step on the continuity of care journey.

Criteria statements highlighted in red represent areas to strengthen the continuity of care foundation.

Focus Area – Care Coordination	Accomplishment Level	
Shared Care Plans and Level of Care Coordination		
The care provider uses electronic care plans.	Minimally Enabled	◕
The care provider shares electronic care plans within multi-disciplinary teams.	Minimally Enabled	◕
The care provider shares electronic care plans within and across care settings.	Somewhat Enabled	◑
The care provider uses alerts and warnings to track and coordinate the completion of tasks in shared care plans across multiple care settings.	Not Enabled	○
The care provider uses shared care plans to support the agreement on and definition of personal targets for patients based on their individual needs and abilities.	Somewhat Enabled	◑
The care provider uses shared care plans that are able to include multiple care pathways/protocols for multiple chronic conditions.	Mostly Enabled	◕
The care provider can detect conflicts, duplicates and dependencies between multiple pathways/protocols for patients with multiple chronic conditions.	Not Enabled	○
The care provider drives and tracks care delivery across all care settings.	Minimally Enabled	◕
The care provider supports population health programmes by working closely with other care providers and patients. Information is exchanged electronically to increase self-management, health promotion and disease prevention.	Somewhat Enabled	◑
Specific capabilities supporting care coordination		
The care provider uses online generic evidence-based clinical guidelines and protocols (i.e. not patient-specific; not integrated into the patient record).	Mostly Enabled	◕
The care provider has online access to electronic patient records within multi-disciplinary teams.	Mostly Enabled	◕
The care provider has online access to electronic patient records within and across care settings.	Mostly Enabled	◕
The care provider can electronically manage referrals across providers from different care settings.	Mostly Enabled	◕
The care provider uses electronic clinical orders that trigger Clinical Decision Support (CDS) across care settings.	Minimally Enabled	◕
The care provider routinely uses telehealth services that are integrated into care plans (e.g. e-visits, e-consults, telemonitoring).	Minimally Enabled	◕
The care provider uses evidence-based coordinated care plans that are personalised for the patient.	Somewhat Enabled	◑
The care provider uses documented results to trigger Clinical Decision Support (CDS) driving dynamic workflows to support coordinated care across settings.	Minimally Enabled	◕
The care provider uses personalised care plans with integrated alerts accessible by care team members from different care settings.	Somewhat Enabled	◑

Focus Area – Patient Engagement	Accomplishment Level	
Citizen / Patient empowerment by access to medical information		
The care provider supplies citizens and patients with online access to general health related, non-personalised information (e.g. educational content, risk assessments,	Fully Enabled	●
The care provider enables citizens and patients to have online access to check their demographics, key diagnoses, long term conditions, allergies, etc.	Minimally Enabled	◐
The care provider enables citizens and patients to have online access to their clinical information (e.g. lab results, medical images, medication, medical summaries).	Not Enabled	○
The care provider allows citizens and patients to manage access privileges to medical records.	Minimally Enabled	
The care provider enables citizens and patients to receive alerts, reminders and notifications about care plan activities.	Minimally Enabled	◐
The care provider supports citizens and patients with online access to individual health planning goals, personal targets and required self-care/-monitoring activities.	Not Enabled	○
The care provider contributes to a pan-organisational Personal Health Record (PHR) to which citizens and patients have online access.	Not Enabled	○
The care provider supports the ability of the patient to manage access privileges to the pan-organisational Personal Health Record (PHR).	Minimally Enabled	◐
The care provider supports the ability of citizens and patients to review who has accessed their pan-organisational Personal Health Record (PHR) and when that access took place ("audit tools").	Not Enabled	○

Citizen / Patient engagement in care delivery and health maintenance		
The care provider uses secure messaging to support clinical communication between clinician and patient.	Not Enabled	○
The care provider enables citizens and patients to have online access to administrative functions, such as scheduling appointments, billing, payment, etc.	Not Enabled	○
The care provider enables and monitors the use of patient self-management tools including disease-specific telemonitoring devices (e.g. ECG, blood glucose, scales, etc.).	Minimally Enabled	◔
The care provider enables the patient to update their personal health data online (e.g. medication compliance, self risk assessment).	Not Enabled	○
The care provider enables the patient to manage online access for family and friends to update their record.	Not Enabled	○
The care provider authorizes and enables the use of patient selected self-management tools (e.g.: can either be commercial or developed by the care provider; lifestyle or wellness management tools, exercise tracking, consumption tracking, etc.).	Somewhat Enabled	◑
The care provider enables patients to receive health maintenance reminders using automated notifications and alerts (e.g.: patients are reminded of preventative actions such as vaccinations, routine screenings, and therapeutic appointments or medications).	Somewhat Enabled	◑
The care provider enables patients to track compliance with therapies and to document progress (e.g.: patients can document that they performed the prescribed or recommended action or provide reasons for non-compliance).	Not Enabled	○
The care provider enables patients at risk / patients with chronic diseases to be enrolled in programmes whereby they receive personalised and automatically adjusted targets in relation to their high risk status (e.g.: patients with unstable diabetes would receive e-consultation, telemonitoring devices and automated recall).	Minimally Enabled	◔
The care provider participates in programmes that enable citizens to enrol in community-wide health improvement initiatives, which encompass: (1) electronic registration (2) patient-provider attribution (i.e.: determination of care team) (3) monitoring and measurement of clinical and cost metrics, adherence to clinical practice guidelines, risk-management outreach, acquisition of patient-provided data, tracking of specific outcomes, secure electronic communication with the patient, patient education and engagement, as well as effective care coordination between	Not Enabled	○
The care provider enables real-time collection of patient-specific biometric data from wearable, implantable or ingestible devices obtained from the healthcare provider or from other reputable sources 24/7.	Minimally Enabled	◔
Level of integration between care provider organisations EMR/EPR, the community EHR and citizen / patients PHR		
The care provider is capable of transferring basic patient data to the Personal Health Record (PHR) such as demographics, allergies, key diagnoses and chronic diseases.	Not Enabled	○
The care provider is capable of transferring basic patient data to the community-wide / regional health record such as demographics, allergies, key diagnoses and chronic diseases.	Fully Enabled	●
The care provider is capable of transferring clinical information to the Personal Health Record (PHR) such as lab results, medical images, medication and medical summaries.	Fully Enabled	●
The care provider is capable of transferring clinical information to the community-wide / regional health record such as lab results, medical images, medication and medical summaries.	Fully Enabled	●
The care provider is capable of enabling patient-specific alerts and warnings through the Personal Health Record (PHR).	Somewhat Enabled	◑
The care provider's EMR (main clinical system) is capable of receiving and integrating data from the Personal Health Record (PHR).	Mostly Enabled	◕

Focus Area – Advanced Analytics	Accomplishment Level	
Analytics Strategy		
The care provider has implemented a formal information governance programme.	Mostly Enabled	◑
The care provider has introduced an analytics strategy that allows clinical and financial/business administrative data to be analysed and used across care settings (e.g. organisational policies, procedures, tools and data models).	Fully Enabled	●
The care provider is actively involved in a community-wide information governance programme.	Mostly Enabled	◑
The care provider is actively involved in a community-wide analytics strategy for clinical and financial/business administrative data (e.g. community-wide organisational policies, procedures, tools and data models).	Somewhat Enabled	◐
Analytics Infrastructure / Technical Capabilities		
The care provider has the capability to apply analytics capabilities to primary source system applications.	Fully Enabled	●
The care provider has analytics infrastructure to capture, store, normalize, transfer and also ingest external data.	Fully Enabled	●
The care provider has analytics infrastructure which offers the capability to search & retrieve longitudinal patient information from medical records.	Fully Enabled	●
The care provider has the analytical capability that enables automatic identification and reporting of gaps in case data (patient episodes) across all care providers.	Mostly Enabled	◑
The care provider uses external data from different sources (clinical, financial, operational), which can be extracted, analysed and displayed in real-time to benchmark their own performance against others.	Not Enabled	○
Analytics Driving Clinical Activities & Decision Support		
The care provider has the capability to electronically send and receive clinical data in structured format in order to compare across providers.	Fully Enabled	●
The care provider has the capability to send and receive clinical data in structured format, directly from source systems, in order to compare across providers.	Fully Enabled	●
The care provider, through an interoperable system, can compare non-personalised clinical data with other providers and receive alerts, notifications, warnings on target adherence (e.g. immunization targets, waiting time/list targets, screening targets).	Fully Enabled	●
The care provider is able to automatically identify and make timely contact with citizens and patients in order to reduce clinical risk. (Citizens already identified and contacted by other care providers should be automatically highlighted.)	Somewhat Enabled	◐
The care provider is able to receive notification from care team members that automatically allocates patients into risk categories or registries. This process is supported by Population Health Management data or system algorithms that associate a diagnosis or a risk factor with a specific category or registry.	Minimally Enabled	◕
(Predictive analytics) The care provider has developed and deployed predictive alerting at patient or population level based on a series of clinical/environmental indicators (early sepsis detection, variation in acute admission rates etc.).	Mostly Enabled	◑
(Prescriptive analytics) The care provider has developed and deployed tools that can predict clinical events and also generate recommendations for appropriate actions.	Somewhat Enabled	◐
(Prescriptive analytics) The care provider has developed and deployed tools that can predict clinical and economic events and also generate recommendations for appropriate actions using data from a number of care settings.	Minimally Enabled	◕

Analytics Driving Benefit Realization Measurement & Improvement		
The care provider is able to create management reports combining administrative, financial and clinical data in order to understand the current status.	Mostly Enabled	◕
The care provider is using clinical and financial data for business planning, forecasting and modelling and for the prevention of future adverse events.	Mostly Enabled	◕
The care provider is able to automatically submit clinical and financial data to external third party partners (e.g.: health authority, insurance) in order to provide a comparison against the evidence-based care pathways and outcomes. The care provider receives and uses feedback from those external partners in order to take appropriate action.	Fully Enabled	●
The care provider is able to demonstrate realized benefits in all of following areas: patient satisfaction, quality of care, data sharing, patient engagement and financial efficiency. All these areas are defined in the HIMSS STEPS framework.	Somewhat Enabled	◑
Other Capabilities Supported by Analytics		
The care provider uses analytics functions to support clinical trials (identifying relevant patient cohorts, patient selection and monitoring).	Mostly Enabled	◕
The care provider uses alerts and notifications and can demonstrate their active involvement in gathering, integrating, interpreting, communicating and acting upon information relating to disease activity and threats to health at community, regional or	Somewhat Enabled	◑
The care provider uses analytics functions to support medical device recall activities including patients (e.g.: implants).	Mostly Enabled	◕
The care provider uses analytics functions/monitoring tools to ensure that all algorithms supporting clinical decision making are effective, used and up to date.	Somewhat Enabled	◑
The care provider is contributing to a community-wide personalised medicine programme in order to optimise treatments.	Not Enabled	○
The care provider uses Artificial Intelligence (AI) tools across care settings to analyse the relationship between prevention / treatment programmes and clinical outcomes.	Minimally Enabled	◔

Focus Area – Health Information Exchange (provider-to-provider)	Accomplishment Level	
Level of HIE sophistication		
The care provider is able to electronically exchange data (e.g. PDF, Word, unstructured text) with other providers across care settings.	Mostly Enabled	◕
The care provider uses secure electronic messaging in order to exchange data with other providers across care settings.	Mostly Enabled	◕
The care provider is able to share patient related information with other providers across care settings (system-to-system) in a standardized and secure way.	Mostly Enabled	◕
The care provider has secure access to a network portal or registry in order to query patient related information.	Not Enabled	○
The care provider's health information exchange is compliant with internationally recognised interoperability standards and facilitates bi-directional system-to-system data flows.	Somewhat Enabled	◑
The care provider uses standardized medical coding solutions (e.g. ICD, SNOMED, LOINC) that supports the exchange of structured and normalised data.	Fully Enabled	●
The care provider is able to send and receive real-time, event-based notifications and alerts.	Minimally Enabled	◔
The care provider is able to contribute to multi-directional data flows between provider EMRs, the pan-organisational health record (EHR) and patient health records (PHRs).	Mostly Enabled	◕
The care provider's electronic record is fully integrated with pan-organisational health records (EHR) and patient health records (PHR) so that data can be exchanged seamlessly and in near real-time.	Mostly Enabled	◕

Clinical Use Cases		
The care provider is able to electronically exchange clinical orders (e.g. lab tests, imaging, diagnoses and prescriptions) with other providers from the same care setting.	Somewhat Enabled	◑
The care provider is able to electronically exchange clinical results (e.g. lab tests, imaging, diagnoses and prescriptions) with other providers from the same care setting.	Mostly Enabled	◕
The care provider is able to electronically exchange clinical documents (e.g. discharge letters, medical summaries) with other providers from the same care setting.	Mostly Enabled	◕
The care provider is able to electronically exchange clinical images (e.g. x-rays, MRI's, CT's) with other providers from the same care setting.	Fully Enabled	●
The care provider uses system-to-system exchange of clinical orders (e.g. lab tests, imaging, diagnoses and prescriptions) with other providers from the same care setting.	Somewhat Enabled	◑
The care provider uses system-to-system exchange of clinical results (e.g. lab tests, imaging, diagnoses and prescriptions) with other providers from the same care setting.	Mostly Enabled	◕
The care provider uses system-to-system exchange of clinical documents (e.g. discharge letters, medical summaries) with other providers from the same care setting.	Mostly Enabled	◕
The care provider is able to make clinical images (e.g. x-rays, MRI's, CT's) available online to external care professionals.	Fully Enabled	●
The care provider allows internal and external clinicians / care givers / care coordinators to execute clinical and administrative queries on a patient record.	Somewhat Enabled	◑
The care provider exchanges electronic prescriptions with a community-wide patient medication record in order to perform medicines reconciliation.	Not Enabled	○
The care provider exchanges clinical problem lists with a community-wide record in order to perform problem reconciliation.	Somewhat Enabled	◑
The care provider uses telehealth tools for remote patient monitoring (e.g. electronic weight scale, glucometer; teleconference, e-consultation).	Minimally Enabled	◔
The care provider enables and supports electronic order sets available within shared care plans across care settings.	Minimally Enabled	◔
The care provider's medication orders will interact with Clinical Decision Support tools (e.g.: drug-drug, drug-allergy, drug-lab, drug-dose/range) using information from a community-wide patient medication record.	Not Enabled	○
The care provider's laboratory and imaging orders will interact with Clinical Decision Support tools using information from a community-wide patient record.	Not Enabled	○
The care provider is able to automatically identify patients who may have received treatments, drugs, products that were later found to be harmful.	Not Enabled	○
Focus Area – Health Information Exchange (provider-to-health authority)	**Accomplishment Level**	
The care provider is able to use automated processes in order to electronically submit datasets to local/regional/national health authorities for items such as immunization, public health, tumour, infection surveillance.	Fully Enabled	●
The care provider is able to use automated processes in order to electronically exchange patient data with registries held by local/regional/national health authorities for population health reporting (notifiable diseases).	Fully Enabled	●
The care provider is able to use automated processes in order to electronically submit complete clinical, operational and financial datasets in accordance with current local/regional/national health authority requirements.	Fully Enabled	●

Information Technology Achievement

IT stakeholders support clinical stakeholder initiatives and implement governance stakeholder policies and strategy, performing a delicate balance between maintaining and optimizing operational systems while extending and modernizing capabilities and technology.

Stage Achievement	**1**	
% Accomplishment	**58%**	
Stage 7	**16%**	Near real-time care community based health record and patient profile.
Stage 6	**33%**	Organisational, pan-organisational, and community-wide CDS and population health tracking.
Stage 5	**53%**	Patient data aggregated into a single cohesive record. Mobile tech engages patients. Community wide identity management.
Stage 4	**46%**	All care team members have access to all data. Semantic data drives actionable CDS and analytics. Comprehensive audit trail.
Stage 3	**71%**	Aggregated clinical and financial data. Medical classification and vocabulary tools are pervasive. Mobile tech supports point of care.
Stage 2	**68%**	Patient-centred clinical data presentation. Pervasive electronic automated ID management for patients, providers, and facilities.
Stage 1	**78%**	Some external data incorporated into patient record.

Achievement by Focus Area

The information technology perspective of CCMM refers to three focus areas - Information and Communication Technology System Capabilities, Use of Standards, and Security and Privacy.

Information and Communication Technology System Capabilities play a significant role in enhancing the effectiveness and efficiency of health care. This CCMM focus area relates to the development of a structured clinical and business data repository that allows organisations to collect, store, access, and report on clinical, administrative, and financial information, collected from various applications within or across the healthcare organisation. Furthermore, CCMM aims on the enrichment of the integrated patient record with discrete aggregated data, and the development and enhancement of data exchange across care settings and with 3rd party data sources.

This includes but is not limited to:
- a patient-centred view of clinical and financial data from internal and external sources
- Patient and provider identification
- Access rights management
- Automated electronic medical classification tools
- Multi-level clinical decision support systems across all care settings
- Mobile interfaces to support point of care activities for all members of the multidisciplinary team

Use of Standards refers to compliance with standards and frameworks in the use of operating systems, data formats, and communication protocols used by the care provider and patients (e.g. for self-care management) to ensure full technically support of care standards and processes as outlined in clinical practice guidelines and care protocols.

This includes but is not limited to:
- Standardised templates and messaging protocols
- Data exchange with patients
- Health information exchange standards with external care providers and across care settings

Security and Privacy refers to measures and controls that ensure confidentiality, integrity, availability, and accountability of the information processed and stored as well as an individual's right to have all records and information pertaining to healthcare treated as confidential.

This includes but is not limited to:
- Capabilities of a care provider to ensure data security
- Access control including automated alerts
- Appropriate use of patient data
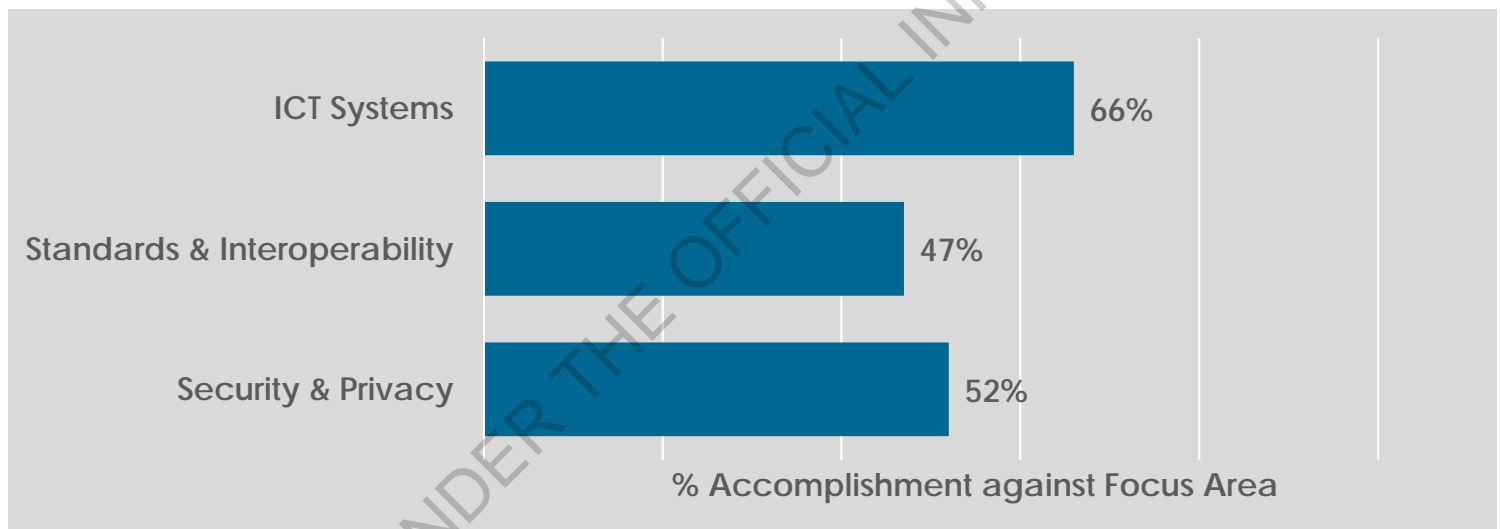
Observations

In order to make further progress on higher CCMM Stages, we recommend working with priority on capabilities with low accomplishment levels, especially those highlighted in red and yellow colour.

Criteria statements identified by yellow highlighting are those that represent the next logical step on the continuity of care journey.

Criteria statements highlighted in red represent areas to strengthen the continuity of care foundation.

Focus Area – ICT System Capabilities	Accomplishment Level	
Data source integration and scope of data repository		
The care provider creates and stores clinical data electronically.	Somewhat Enabled	◑
The care provider uses a patient-centred electronic repository for clinical data.	Somewhat Enabled	◑
The care provider is able to aggregate and access clinical and financial patient data from other care providers (e.g. to see a history of lab results or clinical documentation from multiple encounters & providers).	Mostly Enabled	◕
The care provider offers a patient-centred view of clinical and financial data obtained from internal and external sources.	Mostly Enabled	◕
The care provider offers a logical patient-centred view of clinical and financial data obtained from all data sources across all care settings.	Mostly Enabled	◕
The care provider offers a full spectrum of near real-time patient data (clinical, financial, demographic, etc.) obtained from all data sources across all care settings.	Minimally Enabled	◔
External data incorporation		
The care provider's system is able to load clinical or financial data from at least one external source.	Fully Enabled	●
The care provider's system is able to automatically transform and load clinical or financial data from at least one external source.	Fully Enabled	●
The care provider's system is able to automatically transform and load clinical and financial data from several external sources.	Fully Enabled	●
The care provider's system is highly flexible to enable the transformation and loading of data from any source.	Fully Enabled	●
Patient and provider identification		
The care provider uses patient and care provider identifiers (e.g. IDs, name, address etc.) to distinctly identify which other care providers have delivered care to a certain patient.	Fully Enabled	●
The care provider's system is able to electronically and automatically match patient & care provider identifiers (e.g. IDs, name, address etc.) to distinctly identify which care providers have delivered what type of services to a certain patient. This would typically be achieved by using Master Patient Indices and/or Identity and Access Management Systems.	Fully Enabled	●
The care provider's system is able to manage access rights using at least one form of personal identification.	Mostly Enabled	◕

Data processing		
The care provider's system allows at least 50% of the clinical data to be captured in a structured format.	Fully Enabled	●
The care provider's system uses an automated electronic medical classification and vocabulary tool.	Somewhat Enabled	◐
The care provider's system is able to share unambiguous data across care settings in order to drive clinical decision support and advanced analytics.	Minimally Enabled	◔
The care provider's system uses integrated Natural Language Processing (NLP) in order to create a discrete, structured output.	Minimally Enabled	◔
The care provider's system is able to use semantic data from multiple care settings and sources (including the patients) to drive population health management.	Mostly Enabled	◕
The care provider's system is able to regularly use semantic data to refine best practice standards across care settings.	Minimally Enabled	◔
The care provider's system has bi-directional data flows in order to feed multi-level clinical decision support systems (CDSS) across all care settings in the community.	Minimally Enabled	◔
Access and Mobility		
The care provider uses mobile interfaces (Wi-Fi) to support point of care activities.	Mostly Enabled	◕
The care provider collects EMR data using mobile interfaces at the point of care.	Somewhat Enabled	◐
The care provider supports mobile interfaces for all members of the multidisciplinary team across all care settings.	Somewhat Enabled	◐
Focus Area – Use of Standards	**Accomplishment Level**	
Data Standards		
The care provider uses policies to ensure that recognised health information exchange (HIE) standards are applied to system procurements or in-house programming.	Mostly Enabled	◕
The care provider uses standardized templates and messaging protocols to support internal (i.e. within the organisation) system-to-system/data field-to-data-field exchange of discrete data.	Minimally Enabled	◔
The care provider uses recognized HIE standards and protocols to exchange data with external care providers.	Mostly Enabled	◕
The care provider uses standardized templates and messaging protocols to support external (i.e. across care settings) system-to-system/data field-to-data-field exchange of discrete data.	Mostly Enabled	◕
The care provider is compliant with interoperability standards that control access to regional/national systems and infrastructure.	Mostly Enabled	◕
The care provider has a process to ensure that all application programming interfaces (APIs), internal and third-party, are systematically and annually reviewed.	Not Enabled	○
The care provider has a process to ensure that all HIE standards are systematically and annually risk-assessed and updated accordingly.	Somewhat Enabled	◐
The care provider ensures that data exchange with patients - to assist with self-care management, lifestyle and wellness control - are compliant with recognised and secure standards.	Minimally Enabled	◔
The care provider has embraced standards for all types of clinical and financial data exchange, i.e. within all ICT systems across all care settings.	Somewhat Enabled	◐
The care provider reviews and documents its compliance with all types of clinical and financial data exchange standards within all ICT systems across all care settings.	Minimally Enabled	◔

Focus Area – Security and Privacy	Accomplishment Level	
The care provider has a documented and up-to-date policy that outlines standards for data security (e.g. virus protection, encryption, access security).	Mostly Enabled	◑
The care provider has a documented policy to control access to ICT systems.	Mostly Enabled	◑
The care provider uses dedicated control models to manage access to the ICT systems (e.g. RBAC, ABAC).	Minimally Enabled	◔
The care provider requires two-factor authentication (or a higher standard) for external or remote system users.	Mostly Enabled	◑
The care provider has data sharing agreements in place between organisations that formally and regularly exchange data in order to ensure privacy and data security.	Mostly Enabled	◑
The care provider can provide a comprehensive and up-to-date audit trail to measure and monitor appropriate access and use of patient data.	Somewhat Enabled	◐
The care provider has an active privacy breach response policy which is reviewed every 12 months.	Somewhat Enabled	◐
The care provider receives automated alerts if patient data is inappropriately accessed.	Somewhat Enabled	◐
The care provider uses a centralised authority to manage access control and user identification in order to standardise access to patient data across the care community.	Mostly Enabled	◑
The care provider has a process in place to deal with healthcare record access requests from individuals (patients, family members, police etc.) and can provide a comprehensive event history if required.	Somewhat Enabled	◐
The care provider has the timely ability to manage requests from patients who wish to control access to their own clinical records.	Minimally Enabled	◔
The care provider uses an electronic process through which a patient or citizen is regularly reminded to review and update their access controls.	Not Enabled	○

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About HIMSS

HIMSS is a global advisor and thought leader supporting the transformation of the health ecosystem through information and technology.

As a mission-driven non-profit, HIMSS offers a unique depth and breadth of expertise in health innovation, public policy, workforce development, research and analytics to advise global leaders, stakeholders and influencers on best practices in health information and technology.

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