
Connect Care

Building a Better Health Record in Alberta Health Services

June 25, 2024

Objective

To provide a high-level overview of what is needed to support the best health record

- Digital Health Strategy
- Connect Care Overview
- Health System Overview
- Clinical Informatics
- Connect Care Clinical Content, Standards, Workflows
- Other Considerations

Digital Health Strategy

DRAFT



The Five Pillars of the AHS Digital Health Strategy



Albertans First through Digital Engagement

AHS is putting information and resources at the fingertips of patients, families and caregivers to empower them in being actively involved in their healthcare.



Build a Digitally Connected Community

AHS is connecting patients and their care teams through information to standardize and improve care across the system and improve health outcomes for patients.



Empower our People

By focusing on specific digital health goals, AHS can ensure our teams are doing the work most critical to improving care for Albertans, are empowered to find innovative solutions and experience a vibrant and inspiring work environment which fosters recruitment and retention.



Data-Driven Decisions through a Learning Health System

Understanding our health system through data and analytics will lead AHS to make decisions founded in knowledge, improving both clinical and business outcomes.



Innovate upon our Integrated Digital Foundation

AHS is committed to continually building our capacity and resources which support technological innovation, in order to be sustainable, provide the best care for every tax dollar spent and to find new and better ways to provide care to Albertans.

Principles:

Sustainability

- Solid and regularly renewed technical foundation
- Steward resources responsibly

Minimum number of systems

Most cost-efficient ways to achieve our objectives – tech and process improvement

Standards-based – reduce variation and cost (data, terminology, clinical content, workflows)

Connect Care

Who will we reach?



Population

111,454	AHS
12,674	Covenant
9,300	Physicians
700	Nurse Practitioners
25,655	Students
9,810	Carewest / Capital Care / Alberta Precision Labs (APL)

Beds

9,000	Total Hospital Acute and Sub-Acute Care
28,837	Total Continuing Care
3,077	Total Addiction & Mental Health

Facilities

Community Ambulatory Care

6	Urgent Care Centres
7	Ambulatory Care Centres
139	Public Health Centres

Addiction and Mental Health

39	Addiction
26	Community Mental Health
5	Standalone Psychiatric

Acute Care

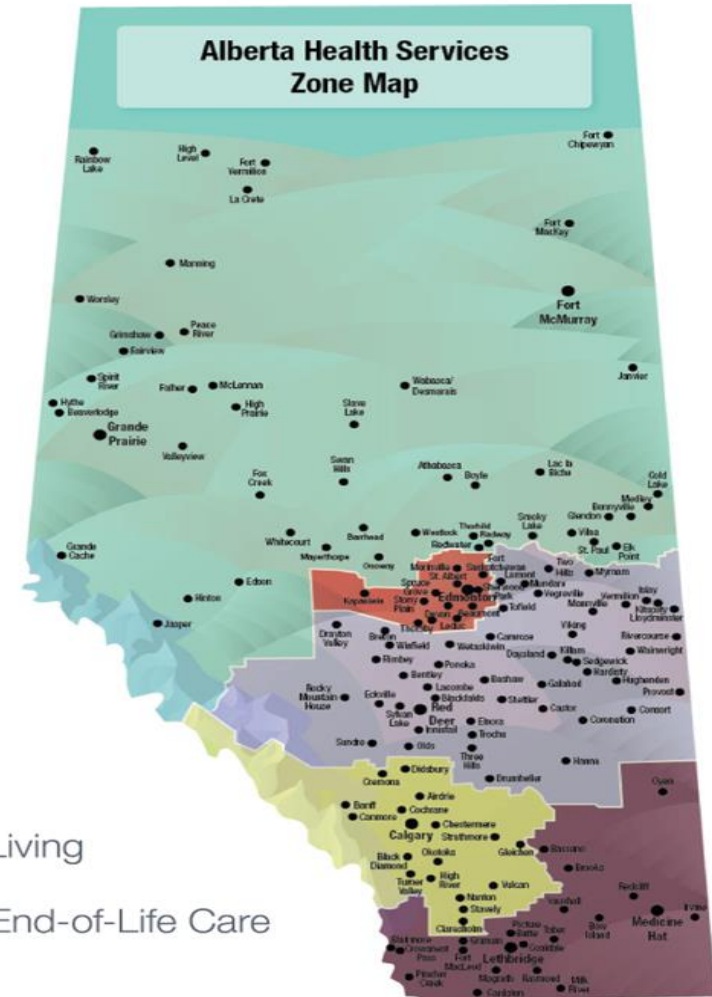
106	Total Designated Hospitals
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Cancer Care

17	Cancer Centres
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Community-Based Care

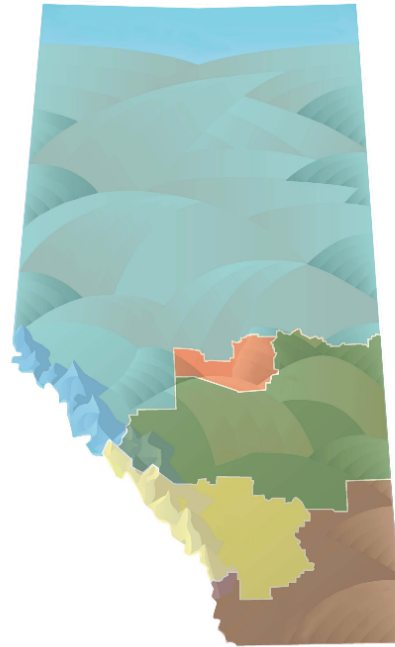
331	Long-Term Care and Supportive Living
108	Additional Contracted Care Sites
20	Community Hospice, Palliative & End-of-Life Care



Connect Care covers the Continuum of Care

Practice Areas

- Acute Care
- Addiction & Mental Health
- Ambulatory Care
- Analytics, Reporting, Research
- Cancer Care
- Clinical Financial Management
- Clinical Specialties
(Cardiac Sciences, Nephrology, Gastroenterology, Critical Care, Women's Health, Anesthesia, Surgery, Pediatrics, Transplant, Orthopedics, Ophthalmology, Rehabilitation, etc.)
- Continuing Care
- Delivery Site Management
- Emergency Care
- Laboratory
- Pharmacy
- Population Public Health, Infection Control
- Primary Health Care (AHS)
- Radiology
- Self & Family Care



Clinical Information Systems



- | | |
|----------------------------|-------------------------------------|
| Blood Bank | Enterprise Content Management |
| Cardiology | Enterprise Imaging (Pacs) |
| Clinical Education Content | Health Records Coding / Abstracting |
| Clinical Trials Management | Radiation Oncology |
| Dictation / Transcription | Registries |
| Drug Databases | Reporting / Analytics |



- | | |
|------------------------------------|--------------------|
| Care at a Distance | Interoperability |
| Clinical Financials | Managed Care |
| Clinical (Inpatient / Outpatient) | Mobility |
| Clinical Specialties | Patient Engagement |
| Community Connect | Population Health |
| Government Regulations & Reporting | |

Foundational Technology & Tools

- Clinical Engineering
- Consolidation
- Data Centre Infrastructure
- End User Devices
- Enterprise Mobility Management
- Integration
- Interfaces
- Medical Device Integration
- Portals Conversion
- Provincial Wifi
- Single Sign-On
- Supply Management
- Technical Interoperability
- Telehealth



Clinical Operations & Informatics

- Clinical Guidance Repository
- Clinical Knowledge & Content Management
- Clinical Operations Readiness
- Clinical Simulation
- Clinical Systems Design
- eQuality & eSafety
- Medical Informatics
- Training

LAUNCH 1 - LAUNCHED ON
NOVEMBER 3, 2019

EDMONTON ZONE
WALTER C. MACKENZIE CAMPUS
Aberhart Centre; Clinical Sciences Building; Kaye Edmonton Clinic; Mazankowski Alberta Heart Institute; Stollery Children's Hospital; TB Central Services; University of Alberta Hospital; Zeidler Centre; East Edmonton Health Centre; Addiction & Mental Health Bed Management
eCLINICIAN TRANSITION
Ambulatory clinics
PORTALS
Connect Care Patient Portal; Connect Care Provider Portal
PHARMACY & DI
Sites in: Urban and Suburban Edmonton
ALBERTA PRECISION LABS
Sites in: Edmonton; All Edmonton Pathology; All DynaLIFE in Alberta; Cross Cancer Institute; Lab and Transfusion Medicine

LAUNCH 3 - LAUNCHED ON
APRIL 10, 2021

NORTH ZONE
Acute and combined acute and long term care sites; Continuing Care (intake/transition) encompassing the former Peace Country Health Region; Fort Vermilion; High Level; La Crete
PHARMACY
ALBERTA PRECISION LABS & DI
Sites in: former Peace Country Health Region; Fort Vermilion; High Level; La Crete

LAUNCH 5 - LAUNCHED ON
NOVEMBER 6, 2022

CALGARY ZONE
Foothills Medical Centre (including associated clinics at Richmond Road Diagnostic & Treatment Centre)
CENTRAL ZONE
Acute and combined acute and long term care sites; encompassing the former David Thompson Health Region including the Centennial Centre for Mental Health and Brain Injury and Sylvan Lake Advanced Ambulatory Care Service; AMH ambulatory services in the former David Thompson Health Region; Continuing Care (intake/transition)
NORTH ZONE
AMH ambulatory sites encompassing the former Peace Country Health Region; Fort Vermilion; High Level; La Crete; Paddle Prairie; Rainbow Lake
PROVINCIAL PROGRAMS
CancerCare Alberta North; CancerCare Alberta South; Kidney Care North; Kidney Care South
PHARMACY & DI
Sites in: Calgary; former David Thompson Health Region
ALBERTA PRECISION LABS
Sites in: former David Thompson Health Region

LAUNCH 7 - LAUNCHED ON
NOVEMBER 5, 2023

NORTH ZONE
Acute and combined acute and long term care sites; home care; AMH ambulatory sites encompassing the former Aspen and Northern Lights Health Regions; Continuing Care (intake/transition); Community Palliative; Geriatrics; Supportive Living; Home Care
SOUTH ZONE
Acute and combined acute and long term care sites encompassing the former Chinook and Palliser Health Regions; Continuing Care (intake/transition); Community Palliative; Geriatrics; Supportive Living; AMH ambulatory sites; Home Care
PHARMACY & DI
Sites in: former Aspen; Chinook; Northern Lights; Palliser Health Regions
ALBERTA PRECISION LABS
Sites in: former Aspen; Chinook; Palliser Health Regions

LAUNCH 9 -
NOVEMBER 2, 2024

AMH GROUP HOMES
North and Central Zones
COMMUNITY AMBULATORY
North and Edmonton Zones; Pharmacy
CONTINUING CARE & SENIORS
North, Edmonton and South Zones; Pharmacy
CORRECTIONS
Provincial Correctional Facilities
HOME CARE
North, Edmonton and South Zones; Pharmacy
POPULATION AND PUBLIC HEALTH
Provincial and Zonal: Communicable and Notifiable Diseases, Medical Officers of Health
WORKPLACE HEALTH AND SAFETY
Serology only
AFFILIATES
Covenant Health; Capital Care Group

Launched
November 3, 2019



Launched
October 24, 2020

Launched
April 10, 2021



Launched
May 28, 2022



Launched
November 6, 2022



Launched
May 6, 2023



Launched
November 5, 2023



LAUNCH 2 -
LAUNCHED ON
OCTOBER 24, 2020

EDMONTON ZONE
Suburban acute and combined acute and long term care sites; Continuing Care (intake/transition)
PROVINCIAL PROGRAMS*
Interim Dialysis and Renal Care (Walter C. Mackenzie Campus only)
PHARMACY & DI
Sites in: Suburban Edmonton
ALBERTA PRECISION LABS
Sites in: Suburban Edmonton

LAUNCH 4 - LAUNCHED ON
MAY 28, 2022

CALGARY ZONE
Alberta Children's Hospital; Peter Lougheed Centre; Southern Alberta Forensic Psychiatric Centre (and associated forensic services); Rural acute and combined acute and long term care sites
URGENT CARE
Sheldon M. Chumir Health Centre; South Calgary Health Centre; Airdrie; Okotoks; Cochrane; including AMH Urgent Care sites; AMH rural ambulatory clinics
EDMONTON ZONE
Glenrose Rehabilitation Hospital; Lois Hole Hospital for Women; Royal Alexandra Hospital; AMH Addiction/Residential Programs
PHARMACY & DI
Sites in: Edmonton; Calgary including Central Production Pharmacy
ALBERTA PRECISION LABS
Alberta Children's Hospital Genetics Services South Lab; Edmonton including Glenrose Rehabilitation Hospital; Royal Alexandra Hospital; Grey Nuns Hospital; Misericordia Community Hospital

LAUNCH 6 - LAUNCHED ON
MAY 6, 2023

CALGARY ZONE
Rockyview General Hospital; South Health Campus Hospital; AMH Ambulatory sites
EDMONTON ZONE
Alberta Hospital Edmonton; Grey Nuns Hospital; Misericordia Community Hospital; Villa Caritas
CENTRAL ZONE
Acute and combined acute and long term care sites encompassing the former East Central Health Region, including AMH Ambulatory sites
PHARMACY & DI
Sites in: Edmonton; Calgary including Outpatient MRI At South Calgary Health Centre; former East Central Health Region
ALBERTA PRECISION LABS
Sites in: former East Central Health Region; Provincial Lab; all Calgary Zone

LAUNCH 8 -
MAY 4, 2024

AMH GROUP HOMES
Edmonton Zone
COMMUNITY AMBULATORY
Calgary and Central Zones; Pharmacy
CONTINUING CARE & SENIORS
Calgary and Central Zones; Pharmacy
HOME CARE
Calgary and Central Zones; Pharmacy
KIDNEY CARE ALBERTA
Lloydminster
POPULATION & PUBLIC HEALTH
Provincial and Zonal: Immunizations, Individual & Population Health Screening, Perinatal Child Health, Health Promotion & Harm Reduction, Sexual and Reproductive Health (including STI services), Oral Health
WORKPLACE HEALTH AND SAFETY
Immunizations only
AFFILIATES
Carewest; Covenant Health

Better Health, Powered by Information

Connect Care Overview

Value of Connect Care



Albertans

- Access to their health information
- Better patient experiences
- Better patient information improves health outcomes
- Consistent care across four organizations, no matter where you go in Alberta

Healthcare Providers

- Better information about patients, accessible across the four organizations
- Can tailor information and processes to the way they work
- More efficient and safer processes

Alberta Health Services

- Clinical best practices
- Access to information
- Improved transitions between departments and sites
- Cost management
- State of the art technology
- More secure information

Healthcare System

- Consistent information and care across Alberta's four health care organizations
- Improved health outcomes for Albertans
- Advanced academic and research efforts

Total Value

- Improved quality of care
- Decreased costs

Connect Care: Before and After Implementation



Before Connect Care



Number of users and level of automation

27,000 Users, 3-6 hours at HIMS* level 3
41,000 Users, 1-2 hours at HIMS level 1



Number of devices, in addition to application access

102,000 Computer and other devices
16,500 Citrix sessions at a time



Size of geography & number of sites

10% of AHS sites across Alberta had wireless networking
5,600 Network access points



Standardization

Significant provincial variation in practices and workflows



Training

MediTech basic 2 hours
Sunrise Clinical Manager 2-6 hours

After Connect Care



Level of automation

139,000** Users working at HIMS level 6



Number of devices in addition to application access

150,000 Computer and other devices
40,000 Citrix sessions



Size of geography & number of sites

100% of AHS sites across Alberta have wireless networking
26,000 Network access points



Standardization

5000 Workflows and content decisions to standardize care delivery



Training

Connect Care 16 hours



*Healthcare Information and Management Systems Society

**Includes 10,000 students

Barriers to information sharing



Inconsistent clinical standards



Inconsistent technical standards



Health information legislation



Clinician practices and preferences



The number of independent endpoints



Lack of common registries (patient, provider, location)

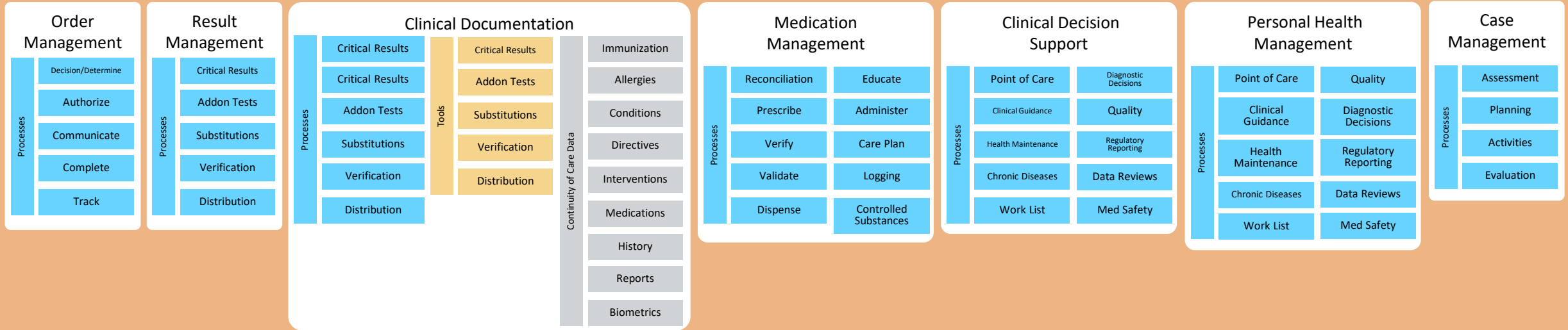


Interprovincial sharing agreements

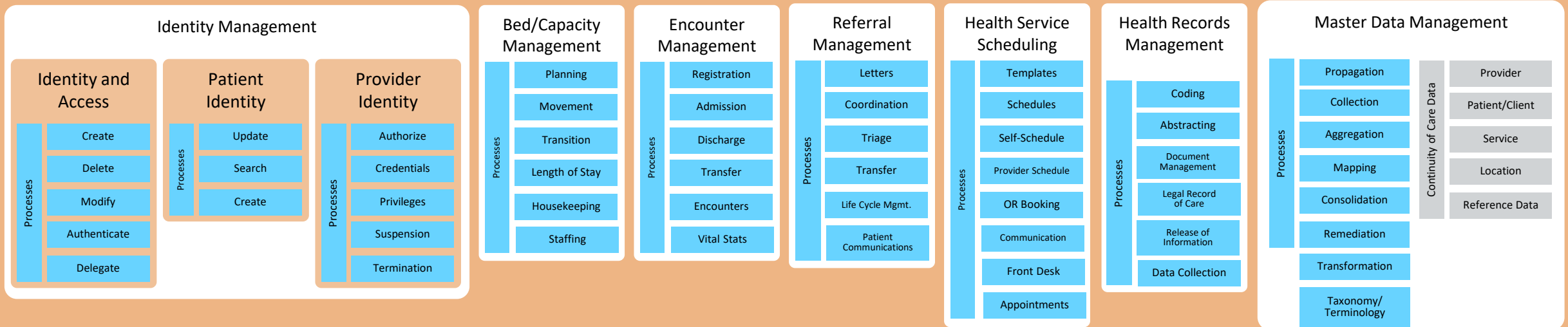
Health System Overview

Health System Capabilities

Clinical Services



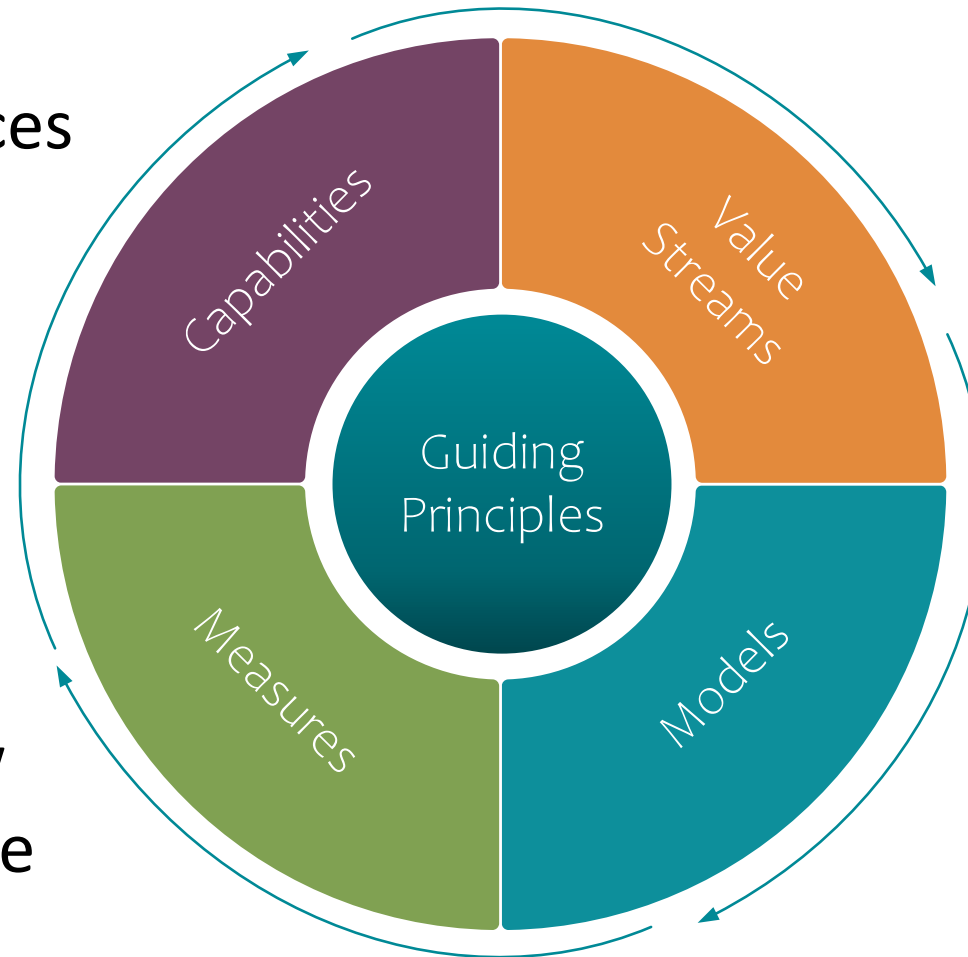
Clinical Operations



Capability Planning Framework

What are the key things health services need the ability to provide services?

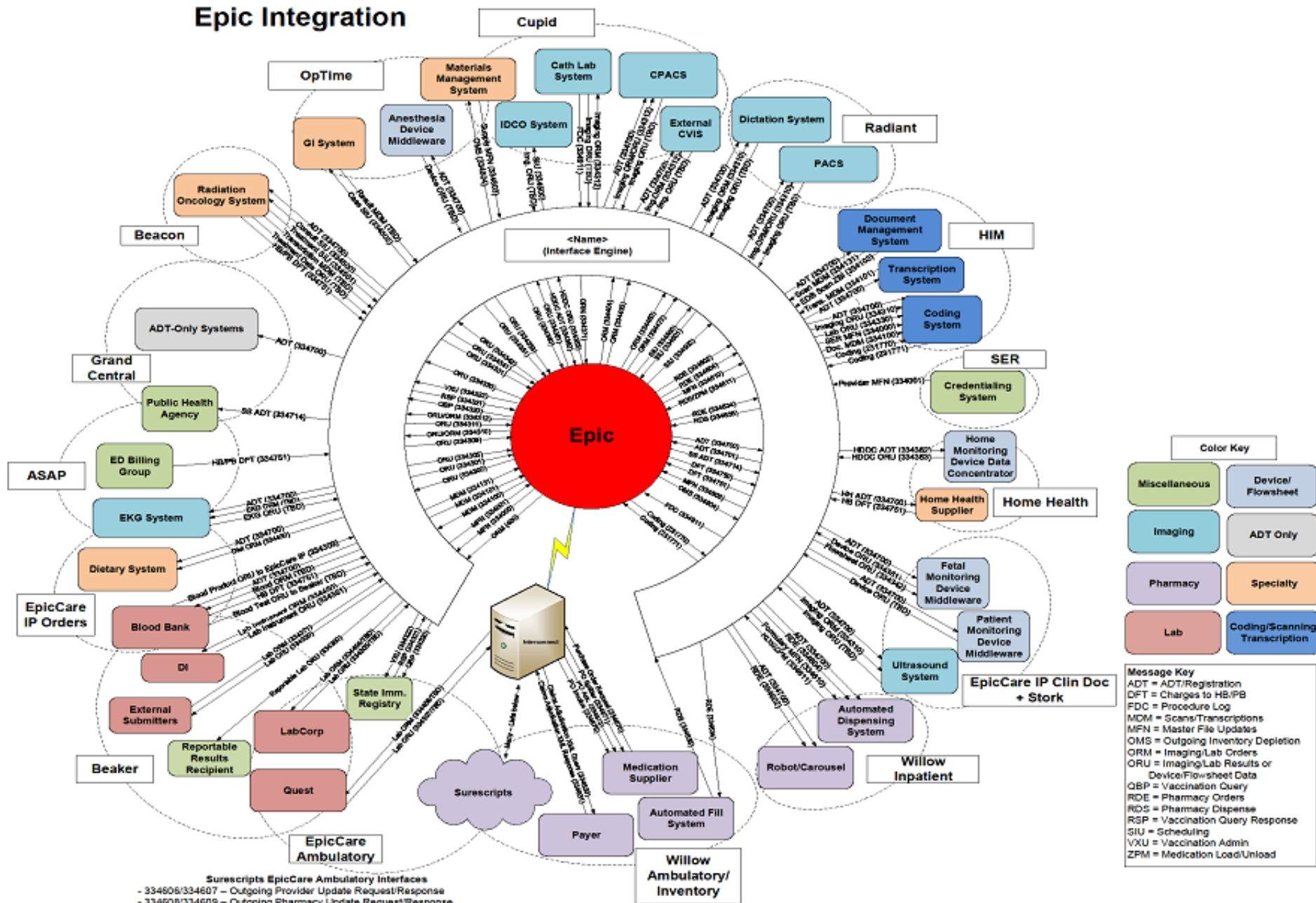
What are our objectives and how will we know we are being successful?



How do health services organize services and capabilities to create patient value?

Workflow, business, project, and system models to support effective and concise communication driven by data

Epic Integration



- Surescripts EpicCare Ambulatory Interfaces**
- 334606/334607 - Outgoing Provider Update Request/Response
 - 334608/334609 - Outgoing Pharmacy Update Request/Response
 - 334624/334625 - Outgoing Pharmacy Benefit Eligibility Query/Response
 - 334628 - Outgoing Formulary Update
 - 334642/334643 - Outgoing Medication Dispense History Query/Response
 - 334650 - Outgoing Medication Orders
 - 334651 - Incoming Refill Requests

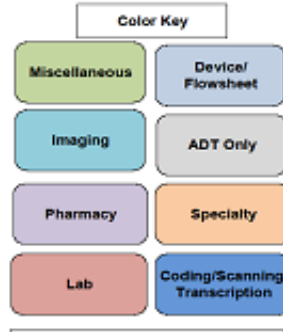
- Surescripts Willow Ambulatory Interfaces**
- 334660 - Outgoing Refill Requests
 - 334661 - Incoming Medication Orders
 - 334666/334667 - Outgoing Provider Query/Response
 - 334668/334669 - Outgoing Pharmacy Updates/Response

Systems

119 non Epic systems
236 interfaces in production today

Daily Volumes Results

Total: 5,445,097 (average)
Vitals: 2,381,173
ADT: 258,000 messages
Lab Results: 400,000 messages
Lab Orders: 290,427
Med Orders: 203,861



Message Key

ADT = ADT/Registration
DFT = Charges to HB/PB
FDC = Procedure Log
MDM = Scans/Transcriptions
MFN = Master File Updates
OMS = Outgoing Inventory Depletion
ORM = Imaging/Lab Orders
ORU = Imaging/Lab Results or Device/Flowsheet Data
QBP = Vaccination Query
RDE = Pharmacy Orders
RDS = Pharmacy Dispense
RSP = Vaccination Query Response
SIU = Scheduling
VXU = Vaccination Admin
ZPM = Medication Load/Unload

Other APIs

Dragon Medical: 17,000,000
Imprivata: 685,000

Better Health, Powered by Information

Clinical Informatics

Delivering Best Outcomes for Patients and Clinicians

Clinical Informatics Profile

CMIO: Chief Medical Information Officer and team:

- Oversees prescribers, including physicians, nurse practitioners, physician assistants, clinical assistants, PhD scientists, dentists, medical learners, residents, fellows, and nurse practitioner students
- Supports over 13,000 prescribers across the province
- Over 3,000 medical learners and 600 new staff trained every year

COIO: Clinical Operations Informatics Officer and team:

- Oversees nurses, allied health professionals, clerical, management (e.g. PT, OT, social work, SLP, dietitians, healthcare aides)
- Connect Care by end of launch nine will have approximately 30,698 RNs, 905 RPNs, 9,132 LPNs, 7,740 HCAs, 505 NPs, 7000 allied health professionals
- Offer training for ~ ~ 10000 students from 247 post secondary institutions every year

Who are Clinical Informaticians?

- Clinical Informaticians are clinically experienced staff who deeply understand healthcare processes and technology
- They work directly with clinicians and IT analysts to translate clinical needs into digital workflows and system content that facilitates safe, efficient and evidence-informed care, resulting in the best health outcomes for Albertans



Clinical Informatics Functions



User Experience:
Training, Support, Communications, Best Practice



Clinical Content and Workflows:
Documentation, Orders (Sets), Decision Support



Clinical Information System Clinical Standards
Safety, Usability and Efficiency Optimization

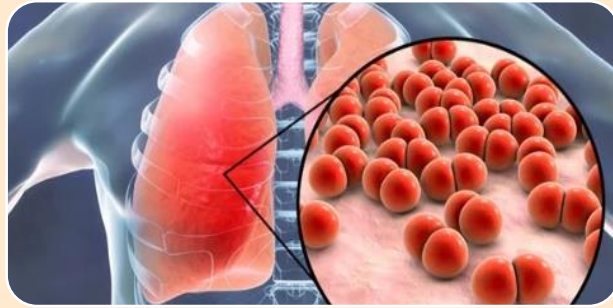


In-System Reporting and Analytics:
Design and Workflow

Examples of Clinical Informatics work and Downstream Benefits



Emergency Department wait times are long. Clinical Informatics team members engage with clinical staff across specialties to provide ongoing education in system use, analyze workflows, and design improvements, reports, and dashboards that enable better clinical efficiency and tools for staff to track key metrics.



Research identifies a new treatment for pneumonia that saves lives.

Clinical Informatics works with clinicians to design and build new standardized treatment orders and decision aids in Connect Care, along with a new workflow that is intuitive and easily adopted by clinicians. Reports are designed to ensure improved patient outcomes are achieved.



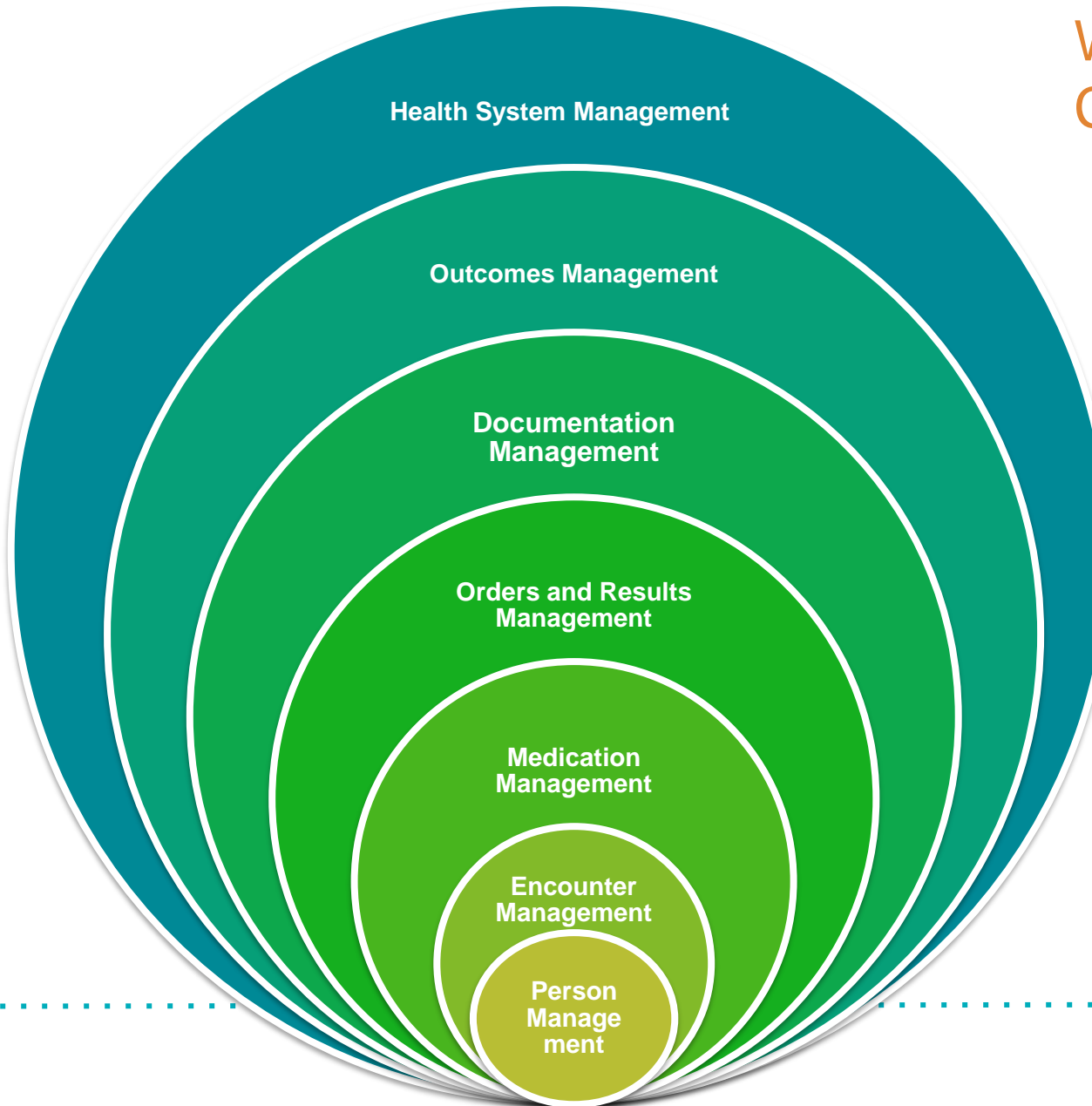
New accreditation requirements are issued for preventing pressure ulcers. Clinical Informatics works with Nursing to develop new documentation flowsheets, automated reminders, and management reports to meet the accreditation standard.

Patients: Shorter wait times, Better access to information, healthcare team

Prescribers and Clinicians: More efficient and informed care processes, better satisfaction

Organization: Information to drive quality, safety and continuous improvement

Connect Care Clinical Content, Standards, Workflows



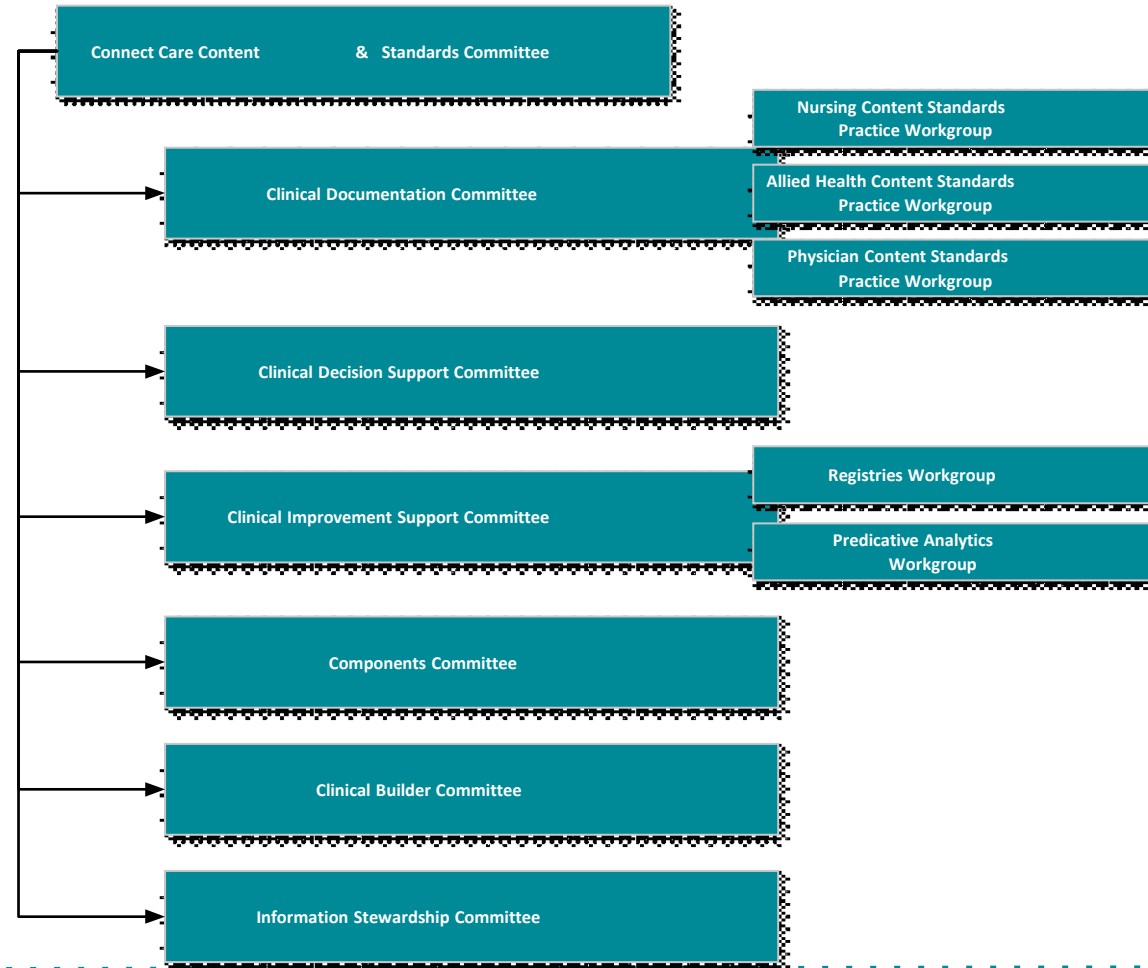
What is & Where are Content / Standards?

- Allergies / Problem List
- PIEM – SOGI standards
- Lab workflows, results management
- MedRec, eMAR
- Orders, Protocols
- Assessments / Progress Notes, etc.
- Standardized data sets for outcomes measurement
- Standardized content across the health system

Goals

- Reduce the burden; eliminate duplication
- Evidence Informed Best Practice
- Adheres to professional and regulatory requirements
- Incorporates decision supports – what an opportunity!!!!
- Standardized documentation vocabulary across all care settings / continuum
- Standardized “Scales, Scores and Tools” across all providers / care settings / continuum
- Standardized “Core” set of standards (used by all) and layer on “Specialty” standards
- Supports AHS’s Collaborative Care program and Patient and Family Centered Care

Core Content – Committees



NCSPWG / AHCSPWG / PCSPWG

- Nursing Content Standards Practice Workgroup (NCSPWG)
- Allied Health Content Standards Practice Workgroup (AHCSPWG)
- Physicians Content Standards Practice Workgroup (PCSPWG)
- Meetings since 2018 onwards
- Approximately 50+ members in each group
- Many partners – eSafety, Human Factors, IT, Professional Associations, Professional Practice, Clinical Content

- Governance for enterprise content, workflows and standards for the different disciplines

Specialty Content – Area Councils

Addictions and Mental Health	Ambulatory	Anesthesiology	Capital Management	Cancer	Cardiovascular Services
Child Health	Continuing Care & Seniors	Critical Care	Dental Health	Diagnostic Imaging	Emergency Medicine (including EMS)
Financing and Case Costing	Lab / Microbiology / Pathology	Medicine	Neurosciences	Ophthalmology	Pharmacy
Population & Public Health	Primary Care	Rehabilitation	Renal	Surgery	Transplant & Donor Care
Womens Health	Others as required				

Clinical Content Standardization

- Paperless! (no more binders on the units or in clinics!)
- Standardized integrated ordering tools, decision supports, documentation and associated workflows
- Documentation spans the continuum of care – primary care, inpatient, ambulatory, continuing care & seniors, homecare, corrections (adult, peds, neonate, geriatric)
- AHS wide policy and procedure where needed (i.e. Clinical Documentation)
- Documentation norms published for the different health professionals

The Spectrum *of* Algorithmic Intelligence



**Robotic
Processing
Automation**

1st step



**Rule-Based
Logic**

*Expert-defined and
explicitly coded*



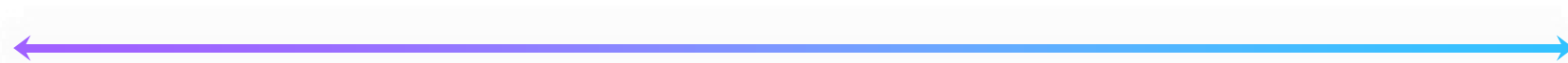
**Predictive
Analytics**

*Statistically derived to
predict a pre-defined event*



Generative AI
(Large Language Models)

*Generally trained to
generate novel content*



Deterministic
Targeted

Probabilistic
More generalized

Create end-to-end experiences, assign leads over each

Patient Experience



Attract patients



Provide access



Streamline arrival



Inform care pre, post, and during



Collect money; provide estimates and payment plans

Nursing Experience



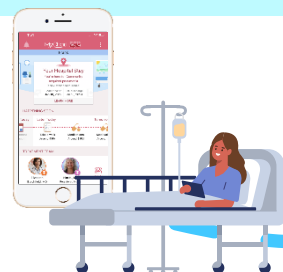
Learn from a peer and mentor



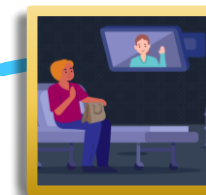
Document on the go



Message with care team members

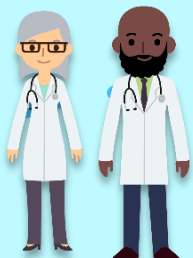


Patients' complete education; proxies can see clinical info



Get virtual support

Provider Experience



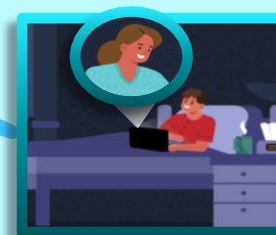
Learn from a provider in the same specialty



Document on the go



Message with care team members



Hold some visits virtually



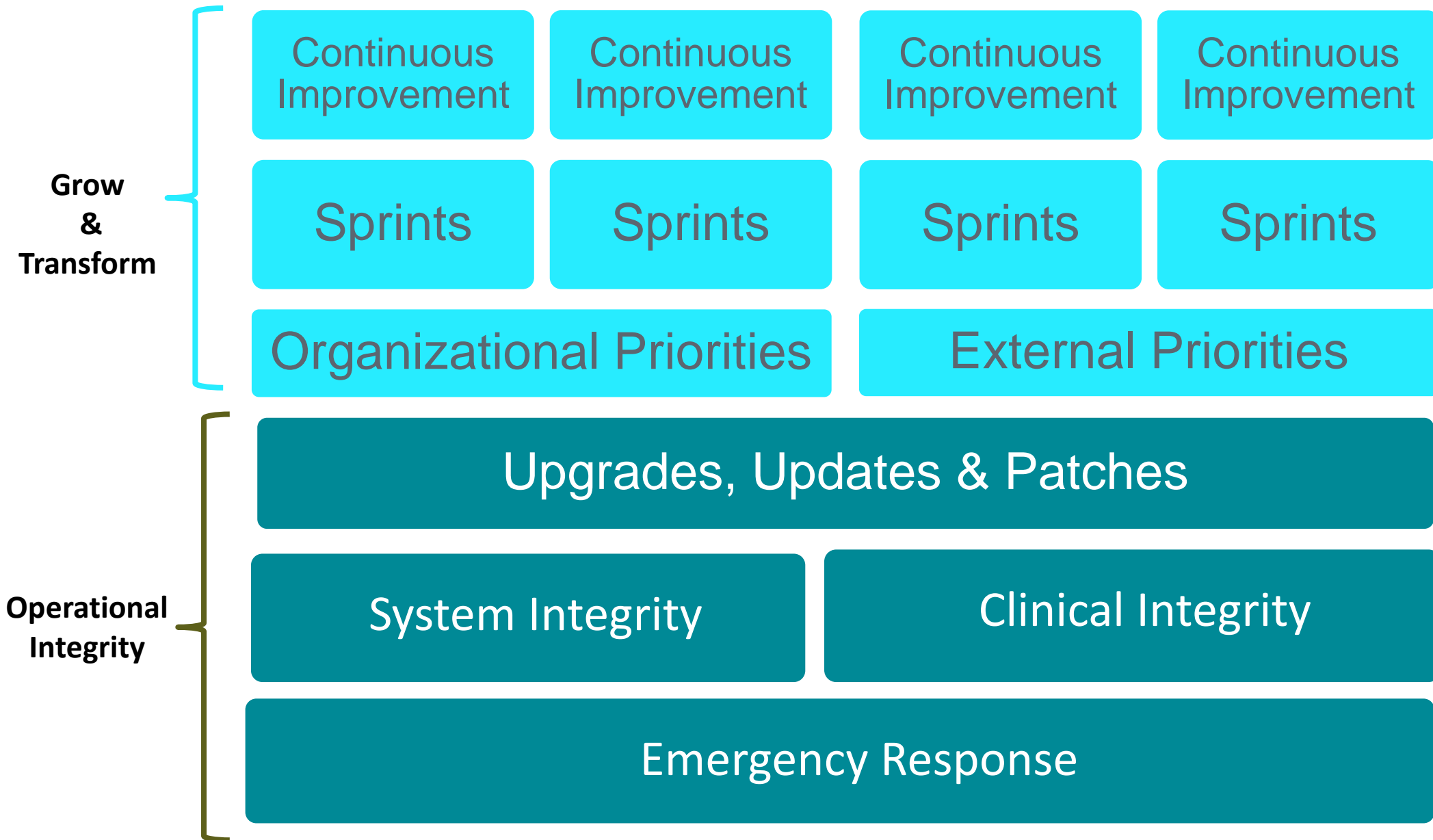
Know your EHR liaison – for suggestions and support

Successes

- Incorporated Evidence Informed Best Practice into connect care
- Reduced Burden; if anything, we have organized the burden
- Avoided duplication and aligned data collection with workflow
- Less narrative and more data driven – supports outcomes measurement
- Moved clinicians to accept standardized measures & incorporated acceptable variance where needed
- Reinforced patient safety – standardized clinical information at the point of care to make decisions (falls, pressure ulcers, etc.)
- Created standardized data sets to support self reflection of practice and provides management with information for health system planning and evaluation of patient outcomes

Other Considerations

Layers of digital health work – Evolving support model



Understanding Continuous Improvement & Break Fix

Connect Care Clinical Systems Continuous Improvement – Understanding Key Terms & Definitions



Break Fix System failure, system not working as intended or approved build component was missed so requirements are not met. Example: Server failure, user profile issue, vitals not appearing correctly, order not populating the MAR, wrong dosage. Break fix requests are critical pieces of work that fall outside the scope of clinical operational continuous improvements.



Continuous Improvement – Request Types

Enhancements Consists of adding a functionality not currently in place. Increasing value for the user. Example: new flowsheet such as a clinical scale, score and tool (CSST).

Process Improvement The proactive task of identifying, analyzing and improving upon existing business processes within an organization for optimization. Example: Phases of care.

Optimization Responds to requests from clinical partners for updates to existing functionality, workflow, processes, training. Example: flowsheet – making more efficient and easy for the user to use.



Single Intake The mechanism to capture all work within work streams and processes.

Prioritization Governance and decision making directed sequencing of activities aligned to strategic direction

Prioritization Classification - Critical Patient Safety Issues, Critical system issues, No functionality, etc.

High Patient Care Implications, Functionality Restrictions, etc.

Medium & Low Workarounds available, etc.

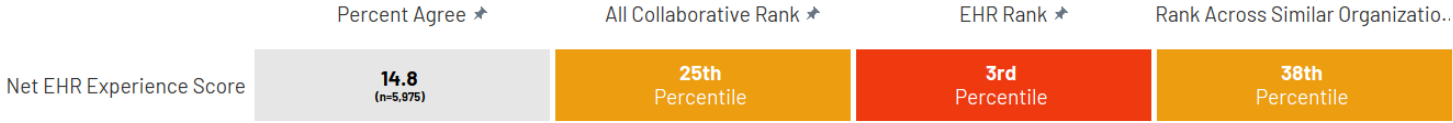


Components Building blocks for decisions, documentation and inquiry content and method by which continuous improvement requests (such as clinical content) are defined, normalized, categorized and how their properties affect things like results routing, referrals and exchange with other systems

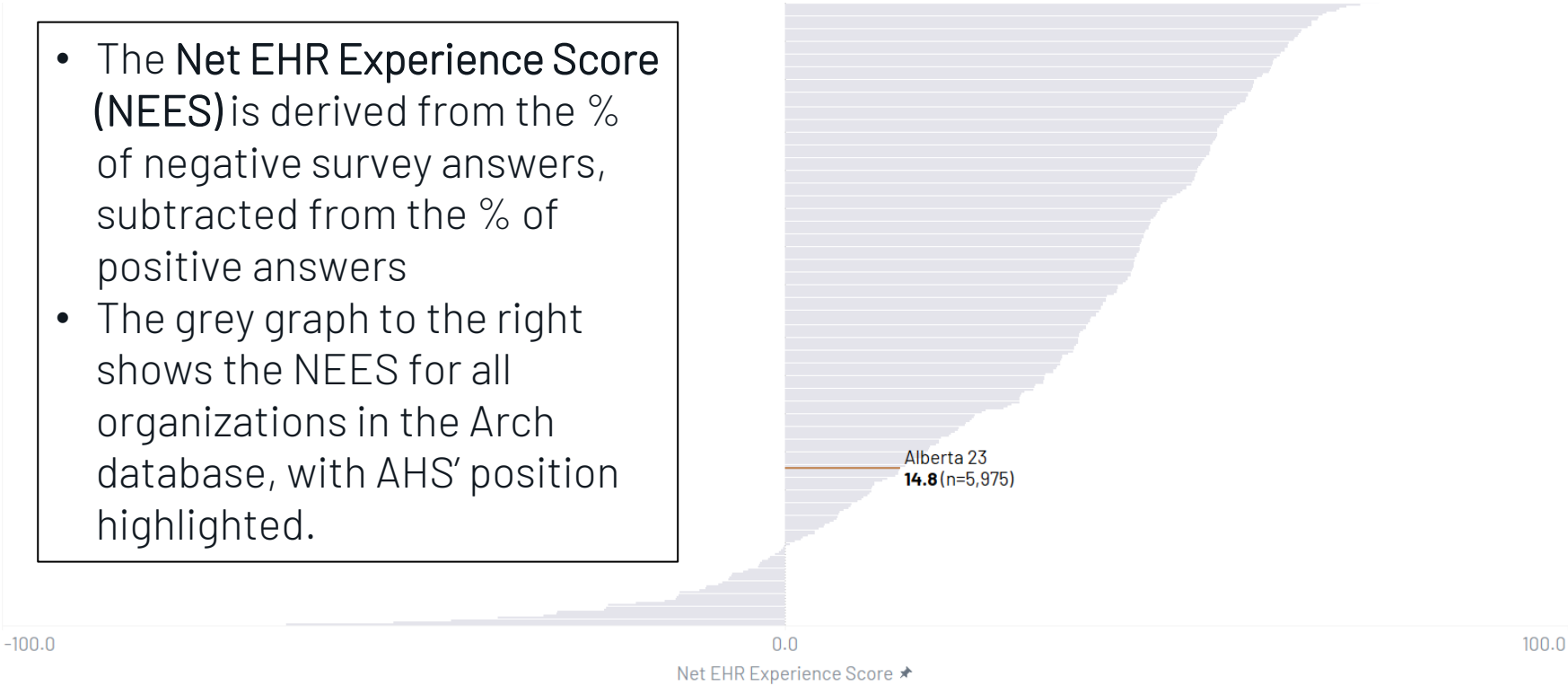
Partnerships: Arch Collaborative

AHS Net EHR Experience Score - 2023

Overall Benchmark Net EHR Experience Score Alberta 23
Included Clinical Backgrounds: **All respondents at 297 Organizations**
EHR Benchmark: **186 Epic Organizations**
Similar Organizations: **25 Non-US Health Systems**



- The **Net EHR Experience Score (NEES)** is derived from the % of negative survey answers, subtracted from the % of positive answers
- The grey graph to the right shows the NEES for all organizations in the Arch database, with AHS' position highlighted.



Connect Care Clinical Optimization Priorities



Data Accessibility

- Improve results delivery to reduce physician burden
- In-system results review to align with Netcare



Flowsheets and Orders for Nursing / Allied Health

- Streamline document flowsheets and orders to reduce documentation burden
- Introduce productivity tools



Training and Clinical Support

- Enhance continuing education options to improve clinician efficiency
- Integrate support areas to best serve clinician needs



Enhancing Clinical Voice in System Governance

- Introduce rounding and improvement sprints to focus on clinical needs
- Introduce a clinical informatics program to enhance efficiency and satisfaction

Downtime

- Health care systems require extremely high availability of health record applications
- Unplanned downtime costs the health system approximately 500K / hour for clinical recovery to backload information
- All downtimes are tightly coordinated with clinical leadership to understand impact to patient care and ability to perform surgeries / clinics etc.
- Any changes to applications, operating systems, infrastructure, networks and integration need to be fully tested by all impacted teams
- Need sophisticated business processes to support unplanned downtime – disaster

Questions

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AHS

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