Alberta Health Services

Outcomes Improvement From the Ground Up!

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Today's Objectives

1. How to use data/analytics to inform an outcomes improvement initiative.

2. Share experiences in implementing a best practice pathway at an acute care site. *(Using RGH Heart Failure work as our example)*

3. Share early experiences of establishing a zone-wide Outcomes Improvement initiative on COPD and heart failure that crosses the continuum.

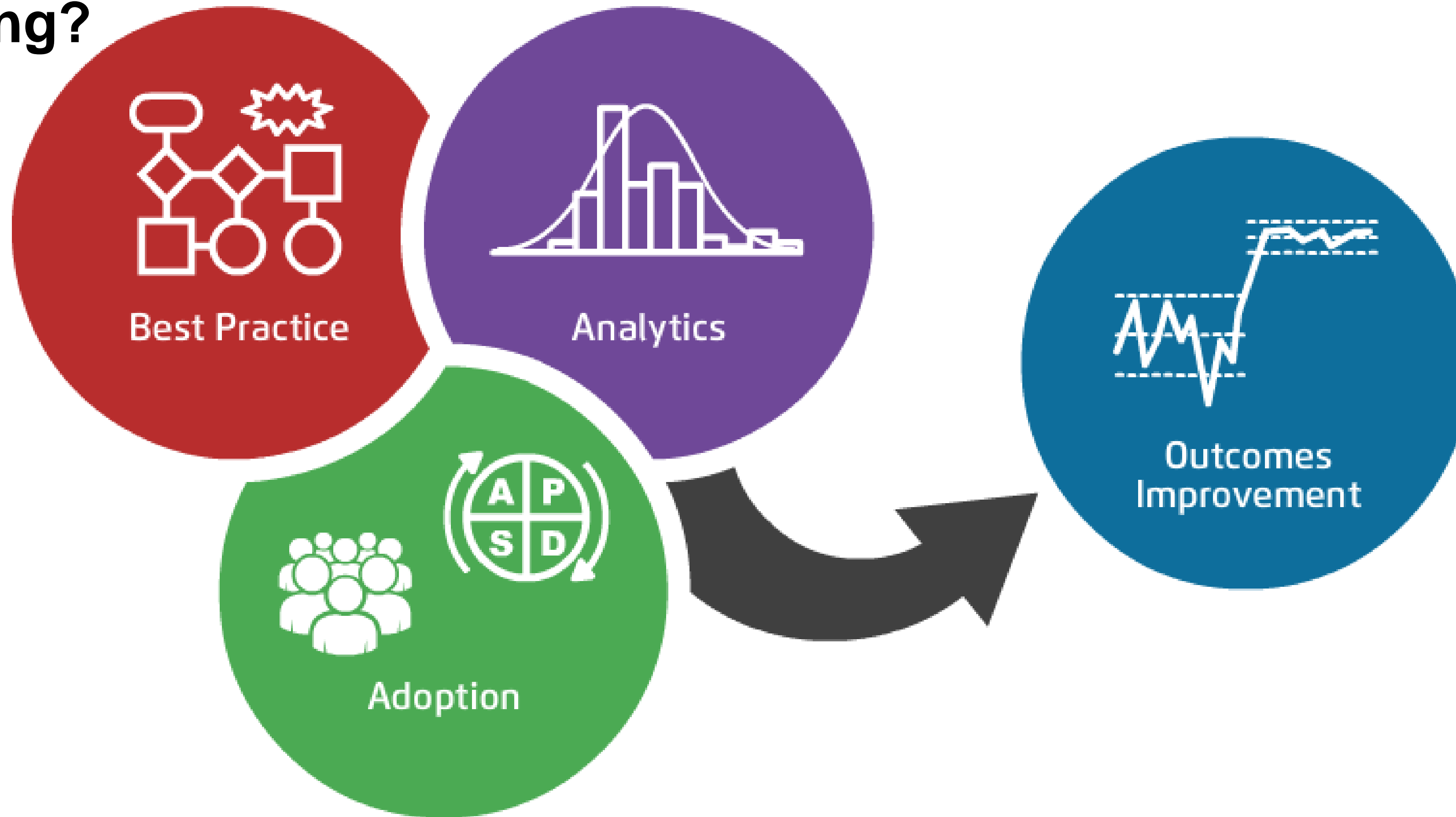
Background – Why HF?

- **High Cost:** over $100M annually in Alberta (ranks 4th after births, COPD and rehab procedures)
- **High Volume:** 5th largest inpatient population in Alberta with over 6,300 hospital discharges in FY 2017/18 (>2,200 in Calgary Zone)
- **High Readmissions:** 1 in 5 HF patients is readmitted to hospital within 30 days of discharge
- Standardizing care across hospitals and services (cardiology, hospitalists, etc.) will reduce unnecessary variation and help improve outcomes for patients and the health system
- Strategic allocation of resources (operations staff, QI, analytics…)

Outcomes Improvement – Three Questions to Answer

What should we be doing?

How are we doing?



How do we transform?

From Health Catalyst (www.healthcatalyst.com)

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Best Practice – "What Should we be Doing?"

- Started with a 2009 clinical optimization initiative at FMC which identified several interventions:
  - Admission order set
  - Documenting daily weights
  - Patient education
  - Patient makes appointment with family doctor before discharge
  - Standardized criteria for Cardiac Function Clinic referral
  - Post-discharge surveillance via HF Liaison Nurse (FMC only)
- Foundation for the SCN-authored provincial order set that exists today

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Analytics:
“How are we Doing?”

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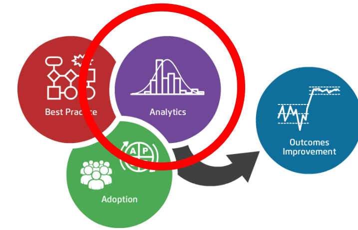

Where should we focus?

Visit Cohort
- CHF
- COPD

Facility
- (All)
- Foothills Medical Centre
- Peter Lougheed Centre
- Rockyview General Hospital
- South Health Campus

Admit Day
3/31/2017 – 3/31/2018

How many CHF Patients are Admitted/ Discharged?

How often is the ED CHF Order Set used?

ED Visits / Order Set Usage

	# of Visits	ED Order Se..
Admitted & Transferred	579	49.57%
Discharged	115	40.00%

Order Set: ED Congestive Heart Failure

# of non-cohorted visits with ED COPD or ED CHF Order Set Usage

Code	Diagnosis	Visits
R060	Dyspnoea	60
J189	Pneumonia, unspeci..	55
J111	Influenza with other..	38
I4890	Atrial fibrillation, u..	35
R090	Asphyxia, unspecified	35
A419	Sepsis, unspecified	20
R074	Chest pain, unspecif..	19

CHF Patients are Admitted under which Services?

Admitted Visits (via ED)

Admissions by *First Unit*

Unit	%
RGH-71	33.39%
RGH-72	14.78%
RGH-94	9.57%
RGH-74	8.35%
RGH-93	7.48%
RGH-73	6.96%
RGH-CCU	6.78%
RGH-47	6.26%
RGH-81	2.09%
RGH-84	1.57%
RGH-82	1.39%
Unknown	0.35%
RGH-83	0.35%
RGH-Complex Care Hub	0.35%
RGH-ICU	0.35%

Number of Visits (axis: 0, 50, 100, 150, 200, 250)

Admissions by *Attending Group*

Attending Group	%
RGH Hospitalist Group	51.48%
RGH Div of Cardiology Gro..	28.70%
RGH GIM Purple Team	7.48%
RGH Gim Amber Team	6.09%
RGH GIM GMU	5.74%
RGH Respiratory Group	0.35%
RGH GIM CCH Hospital at ..	0.17%

Number of Visits (axis: 0, 100, 200, 300)

To which Units are CHF Patients Admitted?

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HF Outcomes Improvement at RGH

- **Outcome goals: reduce LOS & readmissions, improve patient QoL**
- RGH outcomes improvement team:
  - Co-chairs: site Cardiology MD Lead (N. Sharma) and Exec Dir (V. Meyer)
  - Others: Hospitalist physician, Hospitalist QI nurse, IM physician, Patient Rep, Unit Managers, QI Consultant, Analyst, Project Manager, SCN rep
- Aligned with the SCN (sponsors J. Howlett, S. Aggarwal)
- Planning began Spring 2017
- Implementation January 2018 (U71/72), spread May 2018 to U93/94
- Analytics developed to monitor outcomes, clinical processes, patient feedback

Poll Question

What audience(s) need data to support and sustain outcomes improvement work? [can select more than one]

- Frontline staff
- Unit Managers
- Site and Zone leaders
- Executive leaders

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CHF Visit List: Site-level view

Diagnosis Cohort
HF Keyword - Any Position ▾

Facility
- ☐ (All)
- ☐ Foothills Medical Centre
- ☐ Peter Lougheed Centre
- ☑ Rockyview General Hospital
- ☐ South Health Campus

Unit
(All) ▾

Attending Group
(All) ▾

Attending Physician
(All) ▾

Exclude Visits Admitted >
(Days)
99

Sort By
General HF Risk ▾

Exclude Visits with C1 or C2 Goals of Care Designation
Yes ▾

Demonstration Mode
(mask names/ID's)
On ▾

RHRN	Patient Name	# Days Admi..	Age	GOC	Unit	Attending Group	Admit Dx	Risk Points	30-Day Readmit Prob..
<Hidden>	<Hidden>	7	77	R1	RGH-71	RGH Dermatology	AHF/DCMP,Persistant A.Fib.AR.	12	16%
<Hidden>	<Hidden>	8	87	M1	RGH-72	RGH Hospitalist Group	Congestive Heart Failure, AKI	11	39%
<Hidden>	<Hidden>	62	57	R1	RGH-56	RGH Sub Acute Family Med Unit	heart failure	10	22%
<Hidden>	<Hidden>	2	81	R1	RGH-CCU	RGH Dermatology	New AHF + New A.Fib,RVR + AKI +/- Pneumonia.	10	14%
<Hidden>	<Hidden>	22	81	R1	RGH-57	RGH GARP Group	CHF, pleural effusion, pelvic fracture	9	35%
<Hidden>	<Hidden>	1	70	M1	RGH-71	RGH Dermatology	CHF, ?COPD, ? pulm HTN	9	34%
<Hidden>	<Hidden>	0	82	M1	RGH-71	RGH Hospitalist Group	AECHF	9	22%
<Hidden>	<Hidden>	2	50	R1	RGH-71	RGH Dermatology	Post-op heart failure, wound infection	9	17%
<Hidden>	<Hidden>	5	62	R1	RGH-71	RGH Dermatology	Heart Failure	9	16%
<Hidden>	<Hidden>	17	80	M1	RGH-72	RGH Hospitalist Group	Recurrent GLF; Hypoxia-Pneumonia; Hx of CHFpEF	8	56%
<Hidden>	<Hidden>	8	95	M1	RGH-72	RGH Hospitalist Group	GLF with insufficiency fractures, CHF	8	40%
<Hidden>	<Hidden>	42	88	M1	RGH-57	RGH GARP Group	Worsening Heart Failure,ICMP,Recent A.Flutter,..	8	38%
<Hidden>	<Hidden>	16	91	R1	RGH-71	RGH Hospitalist Group	CHF	8	36%
<Hidden>	<Hidden>	16	89	M1	RGH-72	RGH Hospitalist Group	Congestive heart failure	8	29%
<Hidden>	<Hidden>	10	88	R3	RGH-71	RGH Hospitalist Group	Heart Failure	8	22%
<Hidden>	<Hidden>	8	90	M1	RGH-71	RGH Hospitalist Group	Pneumonia, dCHF	8	21%

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CHF Visit List: Patient-level view

Heart Failure Risk Points	30 Day Readmission Probability
11 (of 17 possible points)	**39%**

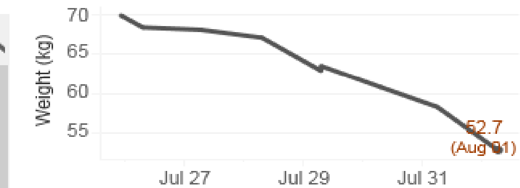
Heart Failure Risk Factors

This table shows risk factors used to generate this patient's scores. See the Documentation page for more details.

Category	Risk	Value Date	Risk Value	Risk Points
Demographics	Age	25-Jul-18 22:14	87	1
	Gender	25-Jul-18 22:14	Male	1
Visit	Admit Diagnosis	25-Jul-18 22:14	HF Term in Primary/Secondary Posit..	1
	Goals of Care	02-Aug-18 14:05	M1	n/a
	Cardiology Service	02-Aug-18 14:05	Not specialist service	n/a
	Heart Failure Unit	02-Aug-18 14:05	Not on heart failure unit	n/a
Visit History	1 Yr ED Admission Count	25-Jul-18 22:14	2 ED Admissions	0
	1 Yr I/P Admission Count	25-Jul-18 22:14	2 I/P Admissions	1
Social	Marital Status	25-Jul-18 22:14	Married	0
	Postal Code Deprivation	25-Jul-18 13:31	5th quintile (5/5)	1
Lab	BNP	25-Jul-18 15:26	31381 (Critical)	2
	GFR	30-Jul-18 07:05	55 (Abnormal)	1
	Sodium	01-Aug-18 07:31	128 (Abnormal)	1
	Potassium	01-Aug-18 07:31	2.9 (Abnormal)	1
	Creatinine	30-Jul-18 07:05	105	n/a
	HbA1c	Null	None available	n/a
Other	Ejection Fraction	01-Feb-18 12:57	40-50 (Mild)	0
	Cardiac Function Clinic	25-Jul-18 13:31	None	1
	Clinical Risk Grouper	01-Apr-17 00:00	Hypertension Level - 4 (51924)	n/a
	# of I/P Medication Types	02-Aug-18 14:05	9	n/a

Daily Weights

This view shows all charted weights for this visit and highlights days in which no weight was charted.



Admit Days with Weight
7 of 7 days (100.0%)
excluding day of admission

Last Discharge Weight
50.8 (23 April, 2018)

		Weight
Wed, Aug 01	6:34 AM	52.7
Tue, Jul 31	5:56 AM	58.2
Mon, Jul 30	7:10 AM	60.7
Sun, Jul 29	7:04 AM	62.8
	7:07 AM	63.4
Sat, Jul 28	7:14 AM	67.0
Fri, Jul 27	6:23 AM	68.0
Thu, Jul 26	7:06 AM	68.3
Wed, Jul 25	10:19 PM	69.8

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Process Snapshot – CHF Patients in Hospital

Global Parameters:

- Site: RGH
- Unit: (Multiple values)
- Diagnosis Cohort: HF Keyword - 1st Posi...
- Exclude Palliative GCD: Yes
- Exclude Pediatrics (<19): No

Care Providers:

- Admitting Discipline: All Disciplines
- Admitting Physician: (All)
- Attending Group: (All)
- Attending Physician: (All)

Legend

- Completed
- Partially Completed
- Not Completed
- Not Applicable

Demonstration Mode (No Patient ID): No

Instructions:
1) Use the Red Global Parameters Box to select the characteristics of visits you wish to display.
2) To view the definition for the indicators, hover your mouse over the question mark.
3) To view Ejection Fraction and Medical Therapy, hover your mouse over any of the green or grey boxes associated with that visit.
4) While the patient list is updated hourly, the majority of the indicators are updated daily (see timestamp below) with the exception of BNP Ordered.

Patient Name	Admitting Diagnosis	Inpatient Unit	GCD Code	# Days in Hospital	Bluedot Pathway	HF = 1st Admit Dx	CHF Order Set Used	HF Teaching in flowsheet	HF Teaching in MPR	BNP Ordered	Up to Date EF Data	Sodium Restrict Diet Order	Weigh Daily Order	HF Weigh Daily Order	Meeting % days with Daily Weights
	Recurrent GLF; Hyp..	RGH 72	M1	17											
	GLF with insufficie..	RGH 72	M1	8											
	Heart Failure	RGH 71	M1	6											
	1. CHF ..	RGH 72	R1	21											
	CHF, UTI	RGH 72	M2	7											
	Heart Failure	RGH 71	R3	10											
	dCHF, abdo pain NYD	RGH 72	R3	4											
	Heart Failure	RGH 71	R1	5											
	CHF	RGH 71	M1	16											
	osteomyelitis, DM2..	RGH 93	R1	6											
	NSTEMI	RGH 71	M1	13											
	vesicorectal fistula ..	RGH 71	M1	4											
	Rt thigh Neuropath..	RGH 94	R1	2											
	sepsis	RGH 93	R2	27											
	Congestive heart fa..	RGH 72	M1	16											
	SOB NYD, mod R pl..	RGH 94	M1	2											
	AHF/DCMP,Persist..	RGH 71	R1	7											
	Heart Failure	RGH 94	R1	32											
	Congestive Heart F..	RGH 72	M1	8											
	CHF- New onset	RGH 72	R1	6											
	Pneumonia, dCHF	RGH 71	M1	8											
	Post-op heart failur..	RGH 71	R1	2											
	retention and BPH, ..	RGH 72	R2	20											
	Nause, vomiting	RGH 71	M1	4											
	Bilateral lower limb..	RGH 72	Null	3											
	1 - AKI ..	RGH 71	M1	15											

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Process Trends

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Aggregate Performance Measures - Process Indicators
HF Teaching in Flowsheet

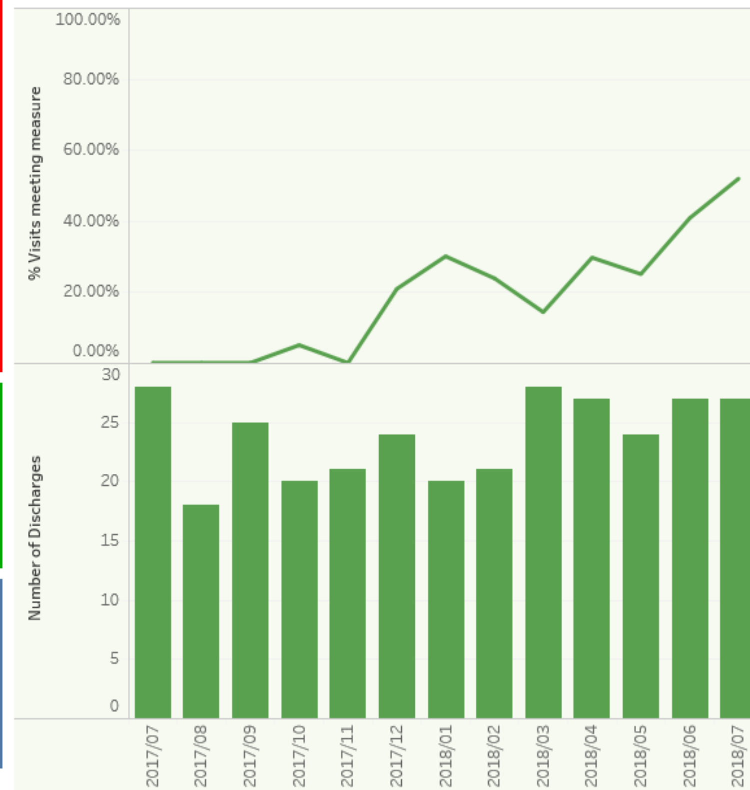
Global Parameters:

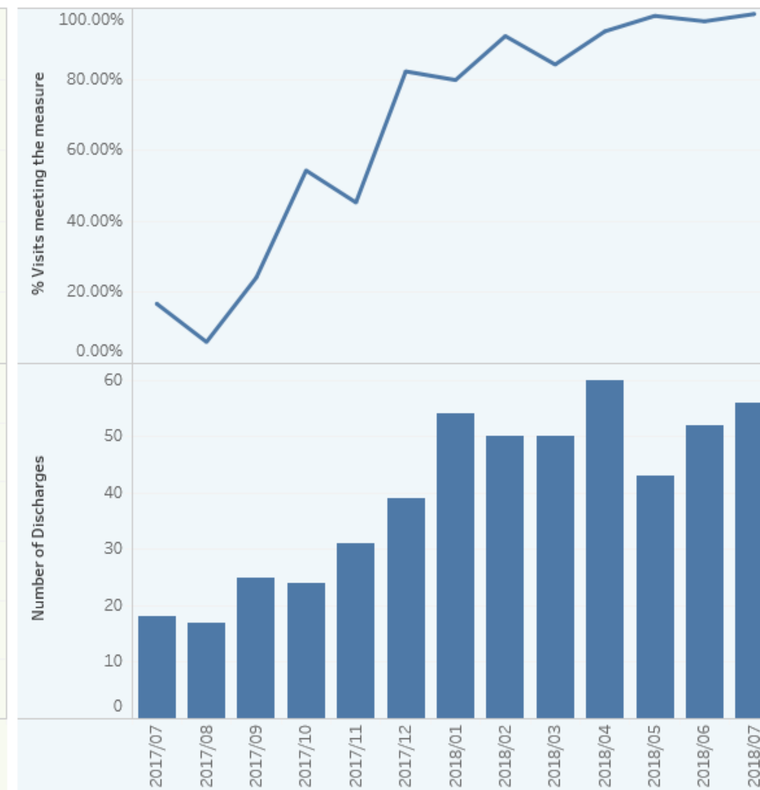
Discharges from
7/1/2017
to
8/2/2018
grouped by
Month
Exclude Patients with Palliative Goals of Care
Yes
Exclude Pediatric Patients (<=18 years)
No
Process Indicator Name
HF Teaching in Flowshe...

Set Parameters for Green Line
Site
RGH
Unit(s)
(Multiple values)

Set Parameters for Blue Line
Site
RGH
Unit(s)
(Multiple values)

Instructions:
1) Use the Red Global Parameters Box to select the Time Period, Reporting Interval and Process Indicator.
2) Use the Green and Blue Boxes to select the characteristics of the visits to be displayed.
3) Hover your mouse over the line chart view the Indicator Definition, Numerator, Denominator, and acutal Performance. The bar chart shows the number of discharges.
4) This view contains patients with either HF as the first item on the admitting diagnosis list OR a Bluedot entry in the MPR.





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Monitoring HF Outcomes

Introduction Page | Individual Level Measures | Process Trends | Outcome Trends | HRQoL | Patient Survey

Aggregate Performance Trends - Outcome Indicators

Global Parameters:

Discharges from
1/1/2017
to
7/30/2018

grouped by
Month

Exclude Patients with Palliative Goals of Care
Yes

Exclude Pediatric Patients (<=18 years)
Yes

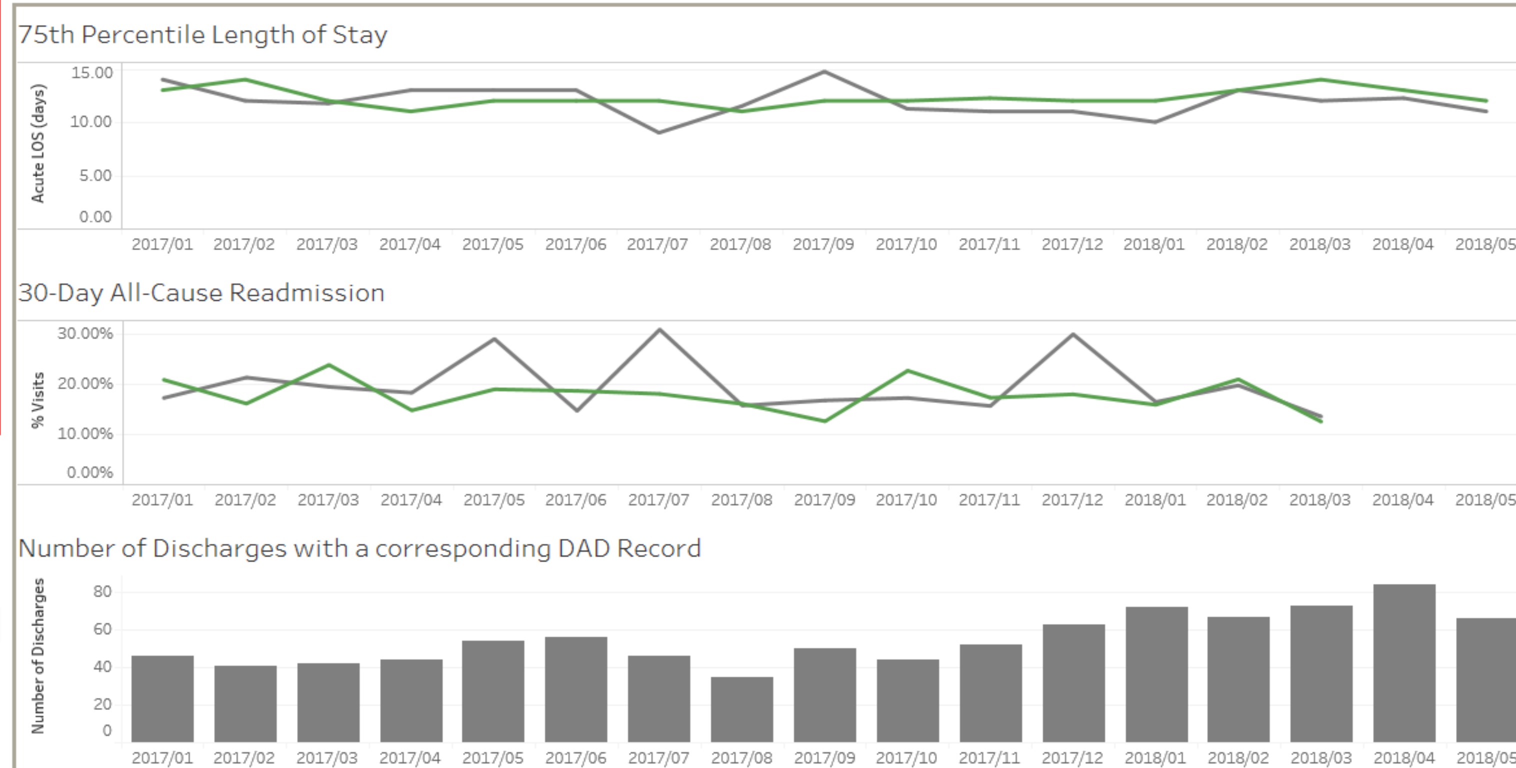
Select Site(s)
- [ ] (All)
- [ ] FMC
- [ ] PLC
- [x] RGH
- [ ] SHC

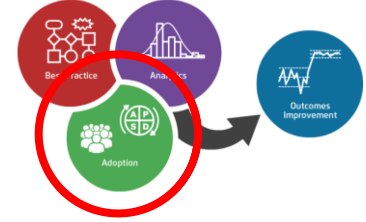
Select Percentile for LOS
0.75

Outcome Indicator Name
30-Day All-Cause Readmi...

Legend
- All Sites
- FMC
- PLC
- RGH
- SHC

Instructions:
1) Use the Red Global Parameters Box to select the Time Period, Reporting Interval and Outcome Indicator.
2) Hover your mouse over the time period of interest to view the Indicator Definition, Numerator, Denominator, and acutal Performance. The bar graph shows the number of discharges.
3) It is important to note that the data comes from Discharge Abstract Database (DAD) and is subject to data delay.
4) This view contains patients with a DAD record that corresponds to the visit AND one of: HF as the first item on the admitting diagnosis list OR a Bluedot entry in the MPR





Adoption:
“How do we Transform?”

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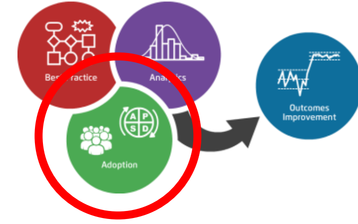

The RGH Experience

1. Background
2. Engagement
3. Implementation
4. Spread

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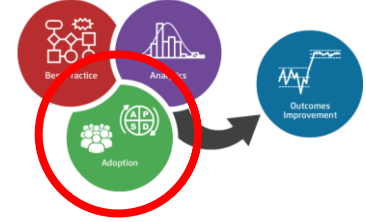

Question to the Audience:

Despite previous efforts in the Calgary to implement standardized processes for the management of Heart Failure, sustainability has been a recurring challenge.

<u>Question</u>:

From your experience, why do QI initiatives fail or have sustainability challenges?

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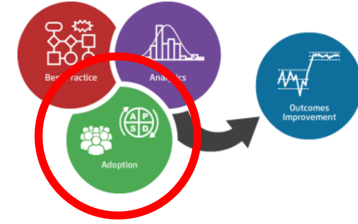

Background

- Earlier HF work on 2 units
- Unit identities & history
- Sustainability challenges
- Commitment from leaders

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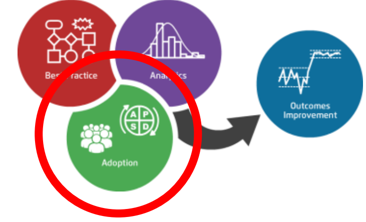

Engagement

- Leadership support
- Comprehensive project structure and support
- Staff Engagement – Emphasis on ‘why’
- Cohorting – Stakeholder engagement
- Clear timelines

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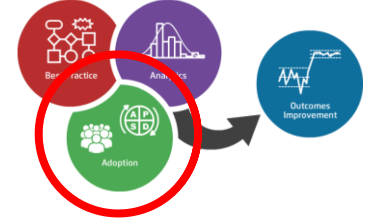

Unit level Working Groups

Unit 71 & 72 Project Oversight Team

Patient Education	Unit Processes	Staff Education
Lead: Unit Manager	Lead: Unit Manager	Leads: Nurse Clinician

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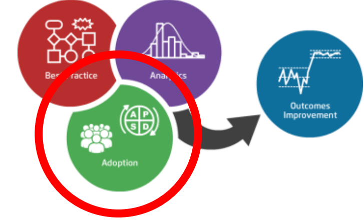
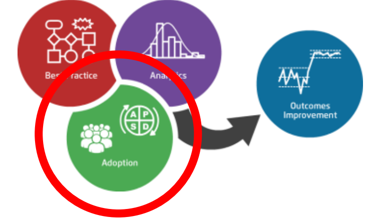


Implementation

- Pre-implementation staff education:
  - – Multi-disciplinary team support
  - – Emphasis on
    - Why – Patient story, patient impact, system impact
    - What – Process changes
    - How – Resources and supports
    - Expectations and accountabilities



Implementation

- Education sessions – 4 sessions, 4 hours, 40 staff (over 80%)
- Excellent buy-in with education and supports provided
- Constant PDSAs
- Close oversight by Managers and Nurse Clinicians
- Consider a temporary dedicated ‘navigator’ or ‘champion’

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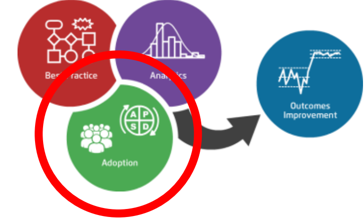
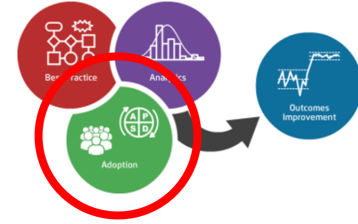


Spread

- Spread to 2 Internal Medicine units next
- Only minor adaptations required (processes, packages)
- Staff education high %
- Built it into everyday care and processes
- Physician perspective: Order sets, Residents
    - Challenges with referrals to Heart Function Clinic
- Still need to improve the discharge: “Transition to Medical Home”



Sustainability

- Plan for sustainability:
  - – Monitoring
    - Use of analytics tools / audit tools
  - – Positive reinforcement
  - – Champion
  - – The journey has not ended!

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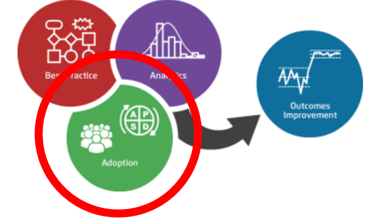

Table Discussion Questions:

"It takes a village" to create culture change and achieve sustainable success with Outcomes Improvement / QI initiatives.

<u>Questions:</u>

1. **Who is ultimately accountable for the success of a QI initiative like this?**
2. **How do we compel physicians to support the work?**

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Best Practice
Analytics
Adoption
Outcomes Improvement

Patient Feedback

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Patient Survey (Self Reported Disease Severity and Resources) - Preliminary Results

Global Parameters:

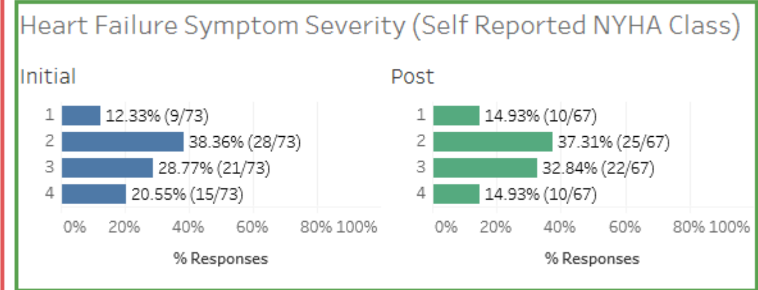
Site
RGH

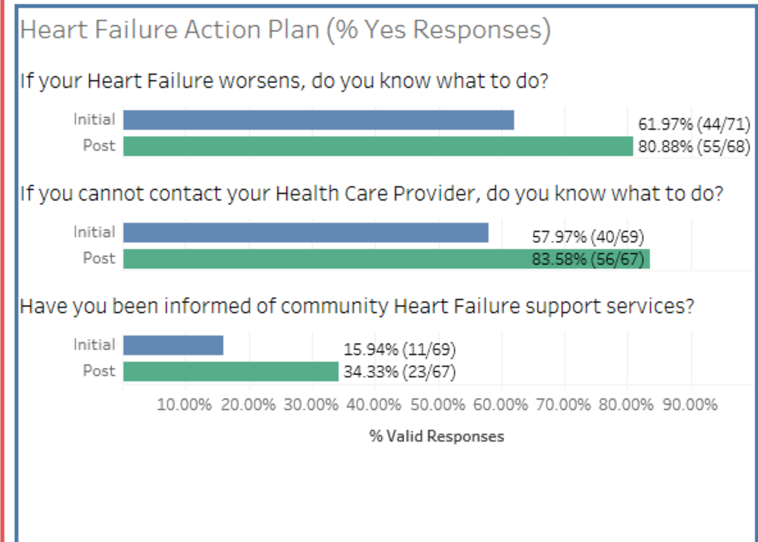
Unit wher... was Complet (All)

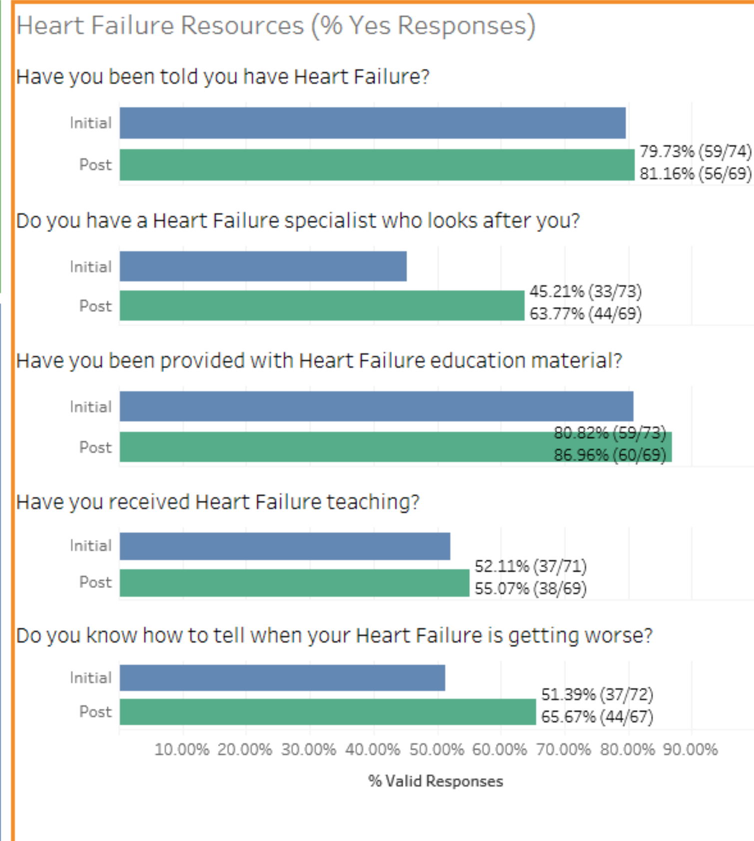
Legend
Initial
Post

Instructions:
1) Use the Red Global Parameters Box to select the characteristics of visits you wish to display.
2) To view information about each measure, hover your mouse over the measure.
3) There is a 3 to 4-month data lag from the time the initial survey was collected as the post survey is completed 3 months after the patient is discharged.

Patients Included
74







Impact on Outcomes

- Hospital readmission rates largely unchanged → influence post-discharge
- Shorter Length of Stay:

	Units 71 & 72	Other Units	Improvement
2016/17	10.0	12.9	22%
2017/18	9.5	11.8	20%
2018/19 YTD	9.2	12.9	29%

Average hospital days with Heart Failure as first item in admitting diagnosis (excludes ALC days)

What Have We Learned?

- Frontline operations & physician leaders must own the work
- Hospitalists are a critical stakeholder
- Adopting clinical best practice and reducing variation is not easy
- Progress is slow where no formal accountability exists
- Clinicians need to see data on pathway/order set variations <u>and</u> outcomes to understand where the gaps are and focus improvement efforts

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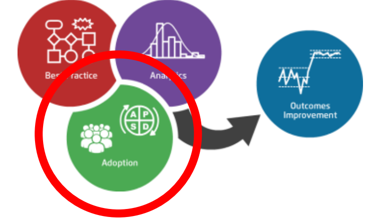


Establishing a Zone-wide Outcomes Improvement Initiative

CZ HF & COPD Initiative - Goals & Objectives

- **Goal:** To maximize the number of days (alive) at home for patients with HF & COPD
- **Objectives** (*high-level outcome measures):*
  - Reduce acute care length of stay (median, 75th percentile)
  - Reduce hospital readmissions (30, 60, and 90 day rates)
  - Reduce return visits to the emergency department (ED)
  - Improve patient experience and quality of life

Phase I Governance

Quality, Safety & Outcomes Improvement Executive Committee (QSO)

Calgary Zone Quality Council

Steering committee

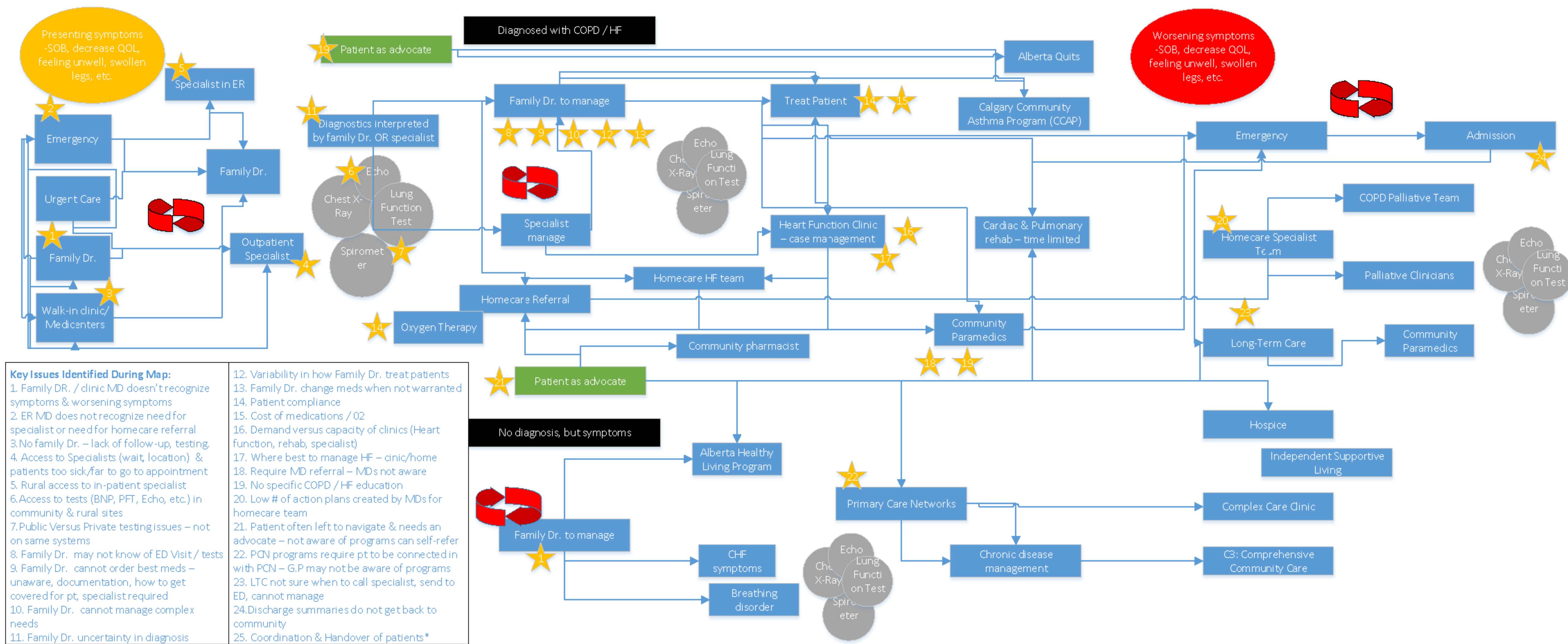
COPD/HF OI Coalition Team

Clinical Best Practice Working Group (CKCM & SCN)

Adoption Working Groups

Analytics Working Group

Four Urban Acute-Care Sites (PLC, RGH, FMC, SHC)



Presenting symptoms -SOB, decrease QOL, feeling unwell, swollen legs, etc.
Specialist in ER
Emergency
Urgent Care
Family Dr.
Walk-in clinic/ Medicenters
Family Dr.
Outpatient Specialist
Patient as advocate
Diagnosed with COPD / HF
Diagnostics interpreted by family Dr. OR specialist
Echo
Chest X-Ray
Lung Function Test
Spirometer
Family Dr. to manage
Specialist manage
Treat Patient
Alberta Quits
Calgary Community Asthma Program (CCAP)
Worsening symptoms -SOB, decrease QOL, feeling unwell, swollen legs, etc.
Emergency
Admission
Heart Function Clinic – case management
Cardiac & Pulmonary rehab – time limited
COPD Palliative Team
Homecare Specialist Team
Palliative Clinicians
Homecare HF team
Homecare Referral
Oxygen Therapy
Community Paramedics
Community pharmacist
Long-Term Care
Community Paramedics
Patient as advocate
Hospice
Independent Supportive Living
No diagnosis, but symptoms
Alberta Healthy Living Program
Primary Care Networks
Complex Care Clinic
Family Dr. to manage
CHF symptoms
Breathing disorder
Chronic disease management
C3: Comprehensive Community Care
Key Issues Identified During Map:
1. Family DR. / clinic MD doesn't recognize symptoms & worsening symptoms
2. ER MD does not recognize need for specialist or need for homecare referral
3. No family Dr. – lack of follow-up, testing.
4. Access to Specialists (wait, location) & patients too sick/far to go to appointment
5. Rural access to in-patient specialist
6. Access to tests (BNP, PFT, Echo, etc.) in community & rural sites
7. Public Versus Private testing issues – not on same systems
8. Family Dr. may not know of ED Visit / tests
9. Family Dr. cannot order best meds – unaware, documentation, how to get covered for pt, specialist required
10. Family Dr. cannot manage complex needs
11. Family Dr. uncertainty in diagnosis
12. Variability in how Family Dr. treat patients
13. Family Dr. change meds when not warranted
14. Patient compliance
15. Cost of medications / 02
16. Demand versus capacity of clinics (Heart function, rehab, specialist)
17. Where best to manage HF – cinic/home
18. Require MD referral – MDs not aware
19. No specific COPD / HF education
20. Low # of action plans created by MDs for homecare team
21. Patient often left to navigate & needs an advocate – not aware of programs can self-refer
22. PCN programs require pt to be connected in with PCN – G.P may not be aware of programs
23. LTC not sure when to call specialist, send to ED, cannot manage
24. Discharge summaries do not get back to community
25. Coordination & Handover of patients*

PHASE 0

Planning

Sponsorship

Committee structure

PM & QI resources

Leadership accountability

Metrics

PHASE 1

Acute, urban Admission Bundle

PHASE 2

Primary care

Community/outpatient

Specialists

LTC, SLF, home care

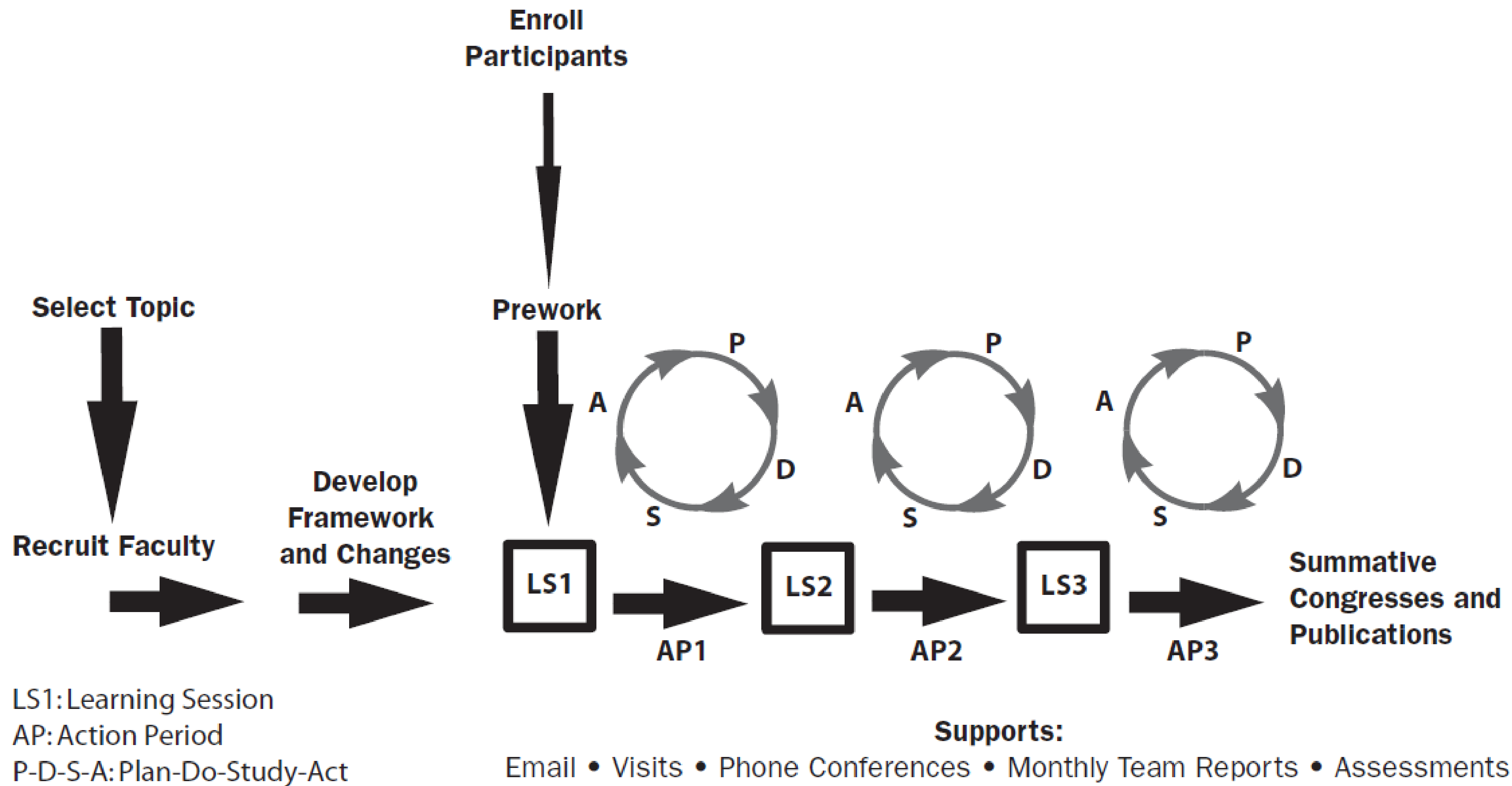
Palliative

Emergency Department

Rural

Alberta Health Services

IHI Collaborative Approach (For Implementation)



Alberta Health Services

Admission Bundles

	Meds	
M	• anti-inflammatory	➢ Prednisone 30 - 50 mg/day x 5 days
	• antibiotic	➢ Levofloxacin 500 mg /day x 5 days or ➢ Azithro 500 mg day 1; 250 mg x 4 days or ➢ Doxycycline 100 mgm bid x 5 days
	• bronchodilation	Ipratropium & Ventolin q4h and Salbutamol (MDI) q2h prn then LABA / LAMA ± ICS (for COPD+)
A	Ambulate early	➢ In chair for meals ➢ Up to bathroom ➢ Nursing or Physio to walk patient tid progressive distance
P	Planning early	➢ Transition services consult (home care) – family support ➢ Physiotherapy / Occ Therapy to assess for discharge ➢ Dyspnea assessment and management
E	Educate	➢ Medication review and inhaler technique (family included) ➢ Breathing techniques ➢ Smoking Cessation ➢ Early intervention for exacerbations ➢ Caregivers (how to support patient)

	Meds	
M	Diuretics	- Furosemide ± other agents* - Mineralocorticoid receptor antagonistic* - Spironolactone OR Eplerenone
	Afterload reduction	- Angiotensin Converting Enzyme Inhibitor (ACEI) - Perindopril OR Ramipril - Angiotensin Receptor Blocker (ARB) – for patients who are intolerant of ACEI - Candesartan OR Valsartan
	Beta blocker	- bisoPROLol OR carVEDilol 3.125
A	Ambulate early	➢ In chair for meals ➢ Up to bathroom ➢ Nursing or Physio to walk patient tid progressive distance
P	Plan early	➢ Transition services consult (home care) – family support ➢ Physiotherapy / Occ Therapy to assess for discharge ➢ Primary care FU ± (Heart Failure clinic FU and/or Specialist FU)
E	Educate	➢ Medication review (family included) ➢ Fluid / weight management ➢ Smoking Cessation ➢ Early intervention plan for exacerbations ➢ Caregivers (how to support patient)
M	Manage	- Daily creatinine, BUN, electrolytes - BNP or NT-proBNP on admission (if not already done in Emerg) and 48 hours prior to discharge - Diet (2000 mg sodium / day restriction) - Daily Weights - Fluids (< 2000 mls / day total intake)

Alberta Health Services

Purpose of the initiative

Improve outcomes for patients with COPD and HF