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Advancing Interoperability Across Care Settings

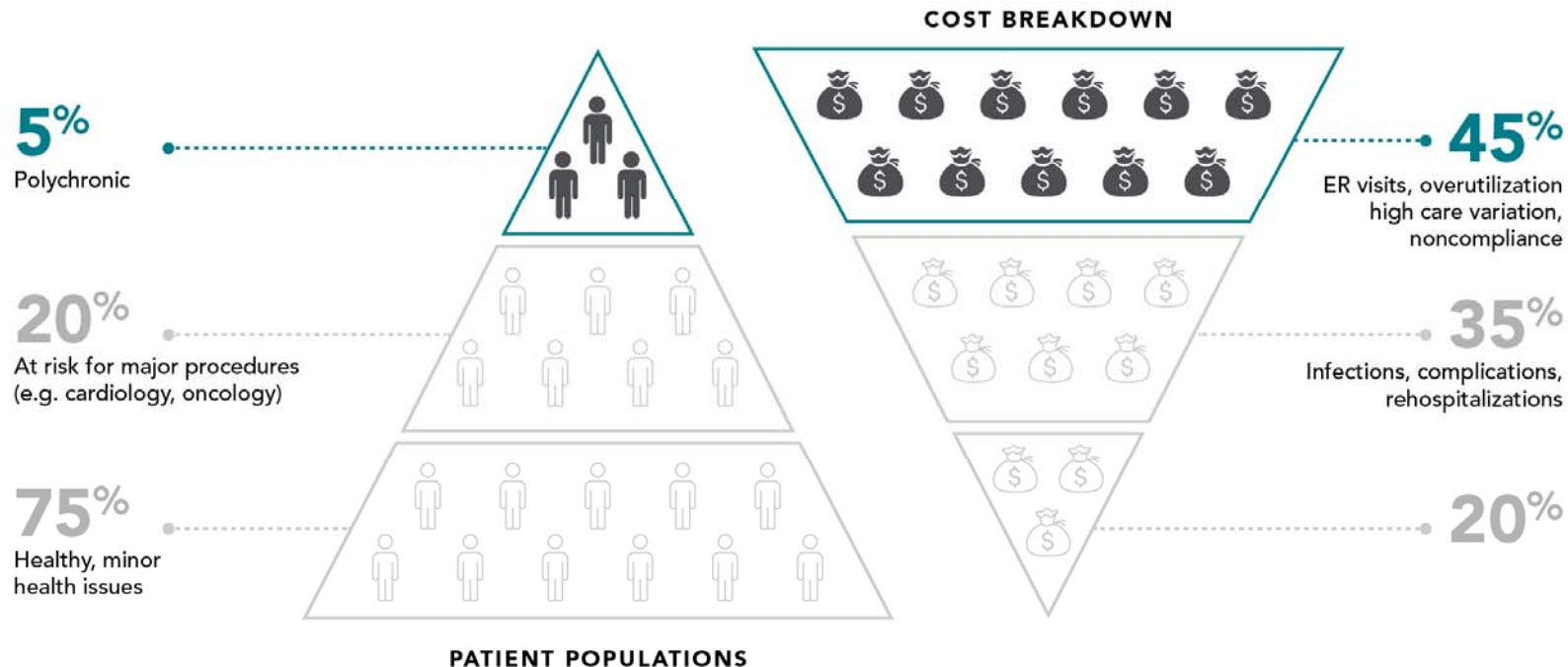
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Advancing Interoperability Across Care Settings: A Strategic Imperative

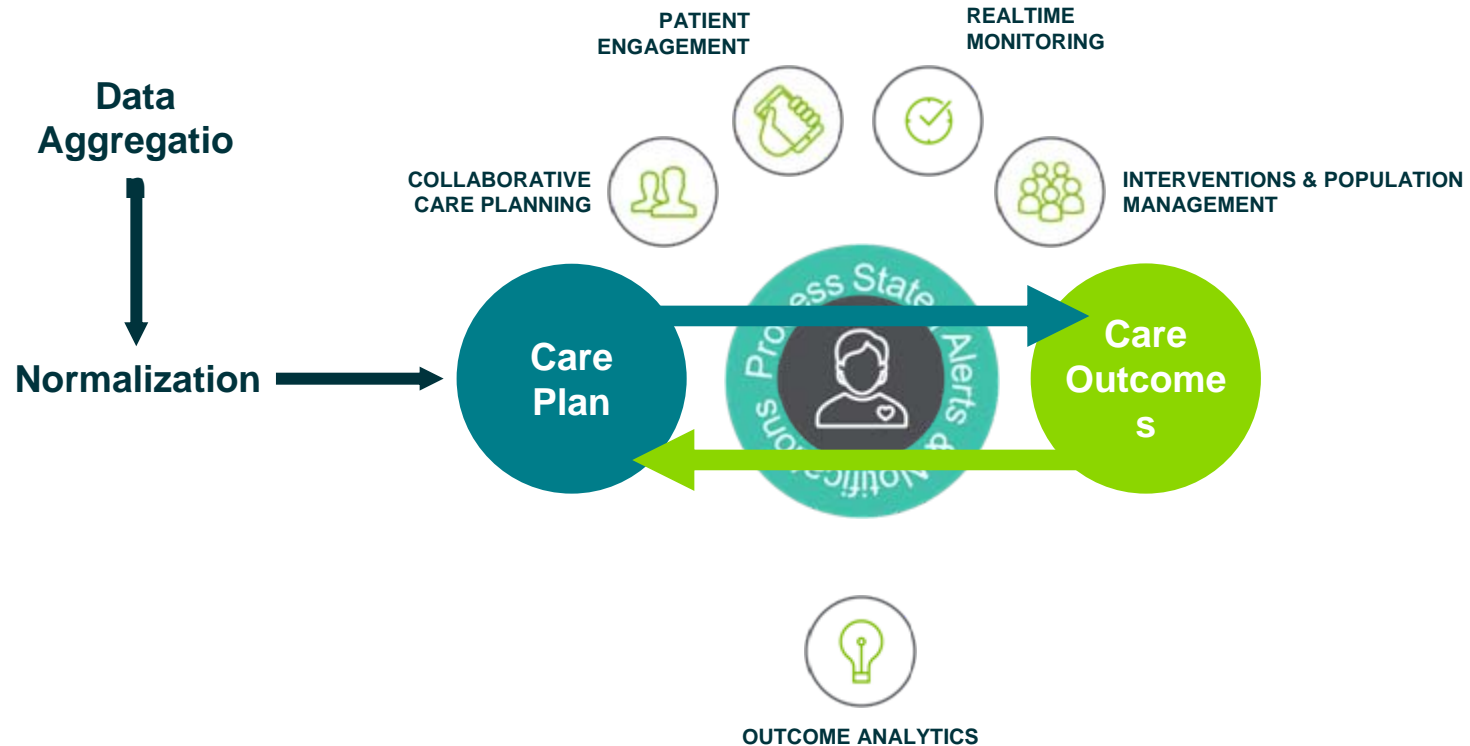
Strategic Imperative for Health Care

Shift from reactive care to proactively and predictably managing populations

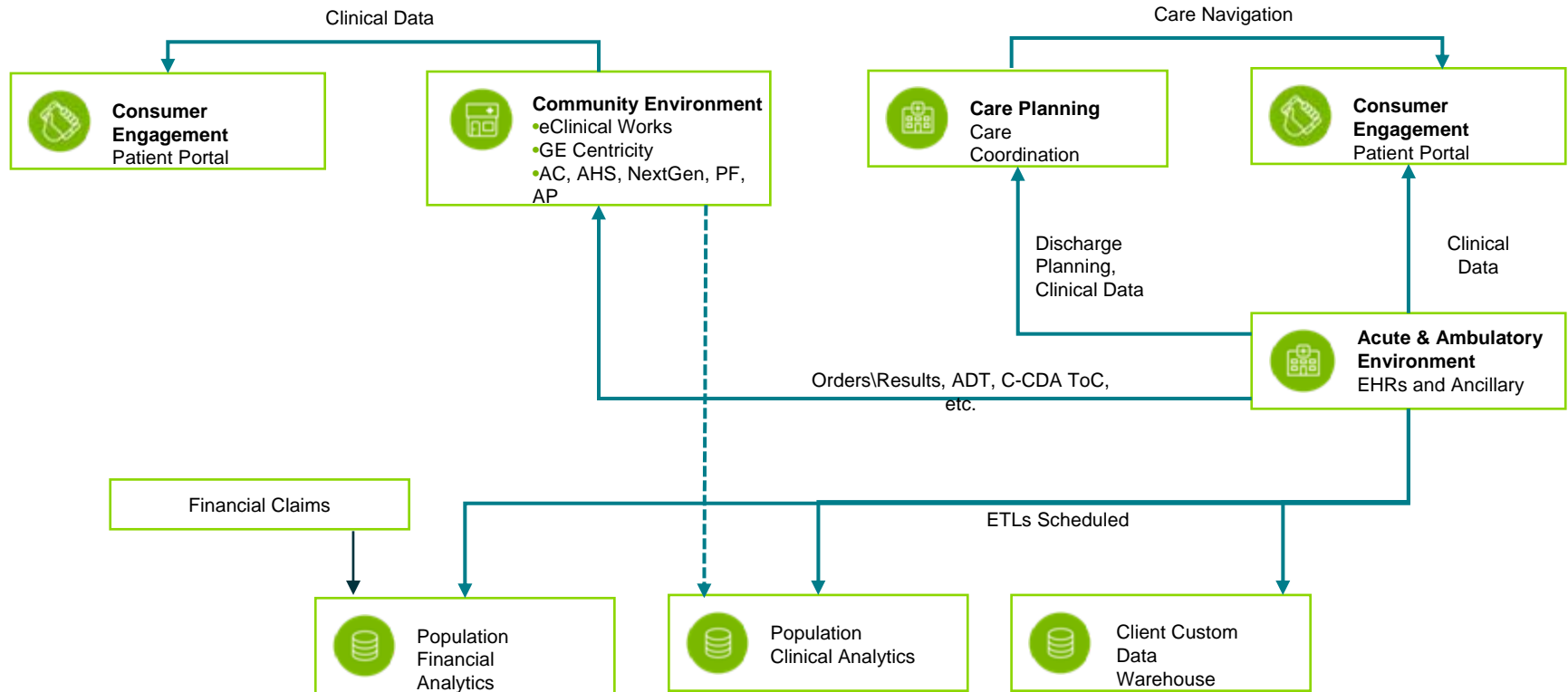


Note: Data excludes the uninsured and VA populations, year = 2012. | Source: Oliver Wyman analysis, Kaiser, CMS, Census Bureau, CDC.

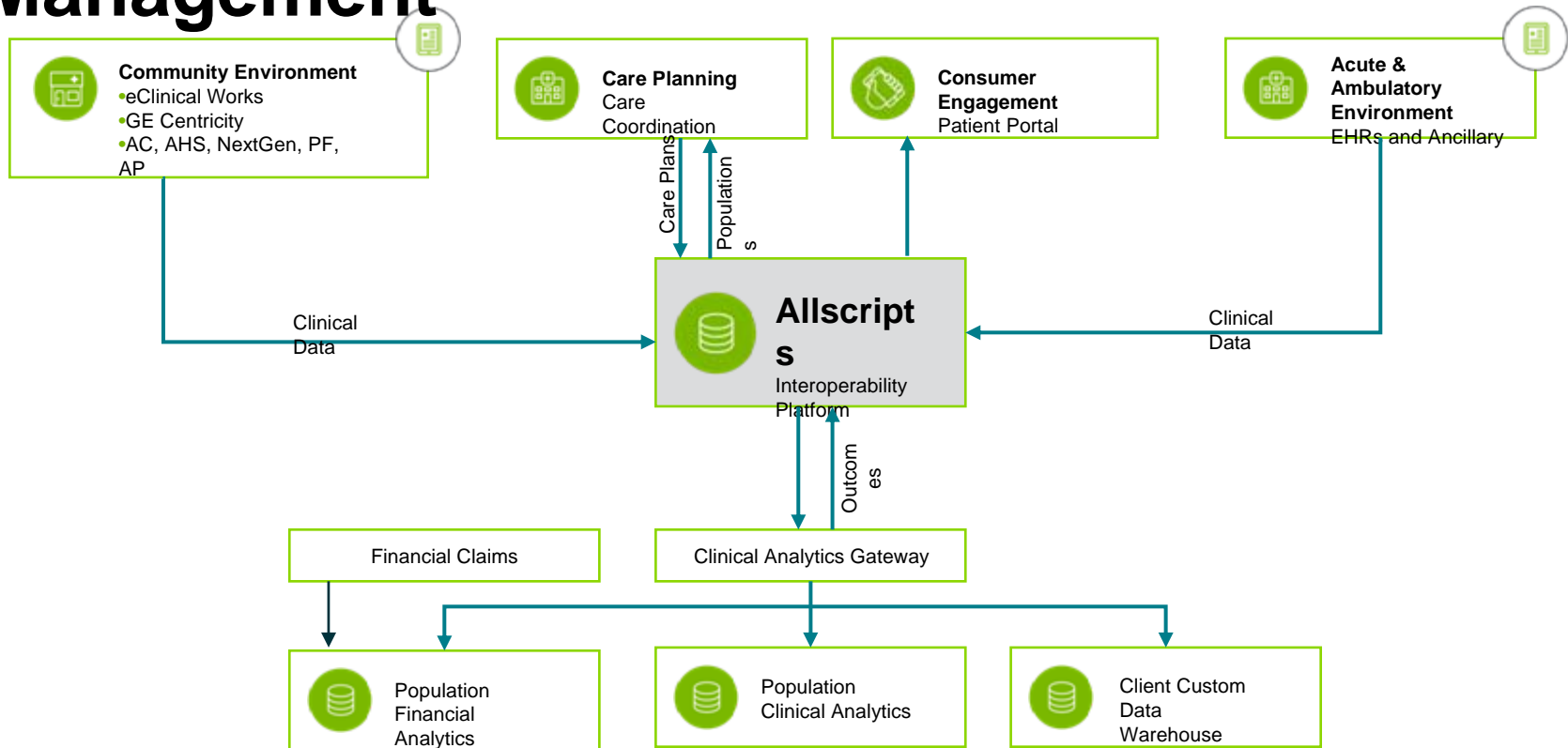
The Vision: A Closed Loop Healthcare Platform



The Reality: Heterogeneous Environments



The Solution: Data Design for Population Management



Point-of-Care Analytics | EHR Agent HUB

Interoperability Case Studies

UPMC Today: Snapshot



\$12 billion integrated
global health
enterprise

60,000 employees

22 academic,
community and
regional hospitals with
more than 4,200
licensed beds

More than 187,000
inpatient admissions
and 165,000 surgeries
performed annually

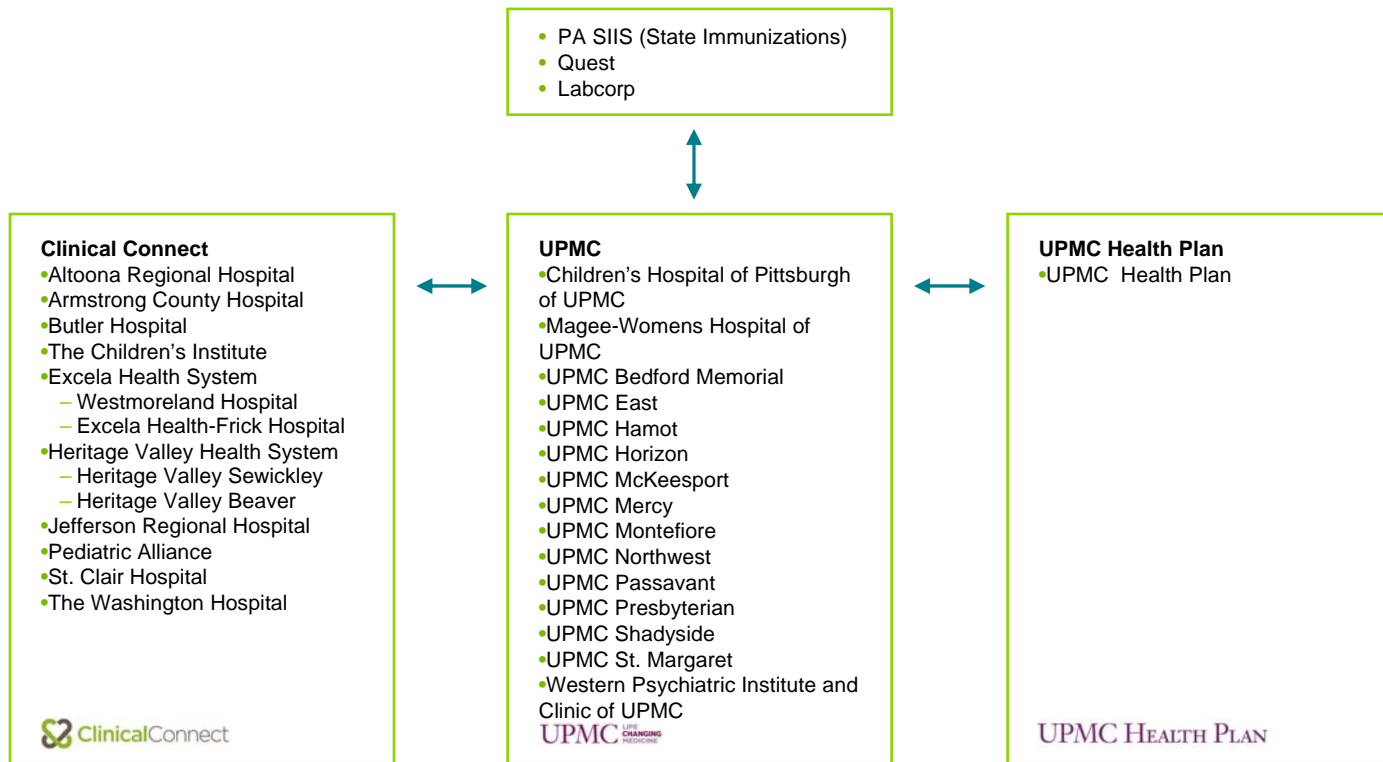
Each year, more than
4.5 million outpatient
visits and 480,000
emergency visits

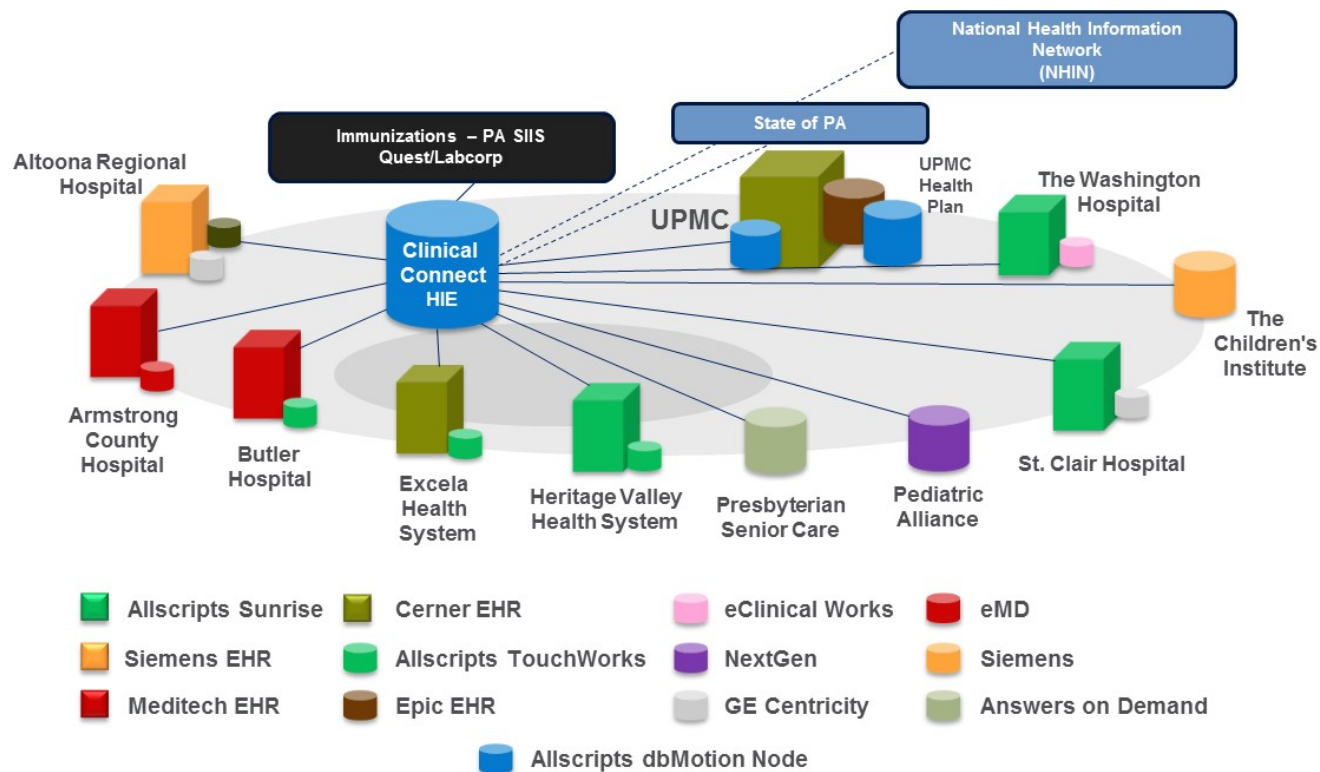
More than 40 UPMC
Cancer Centers with
180 affiliated
oncologists

UPMC Health Plan:
2.4 million total
members, a network of
more than 125
hospitals and other
facilities and more
than 11,500 physicians



UPMC Three-Node Deployment

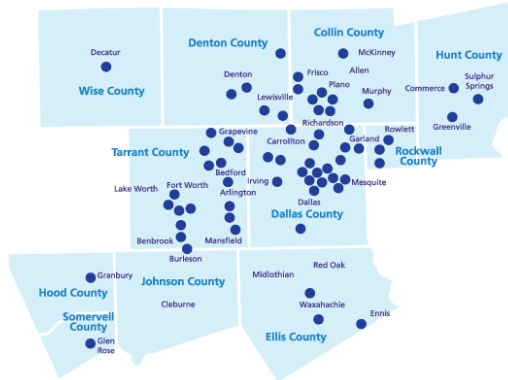




Baylor Scott & White Health

North Texas Locations

[Click to view all locations »](#)

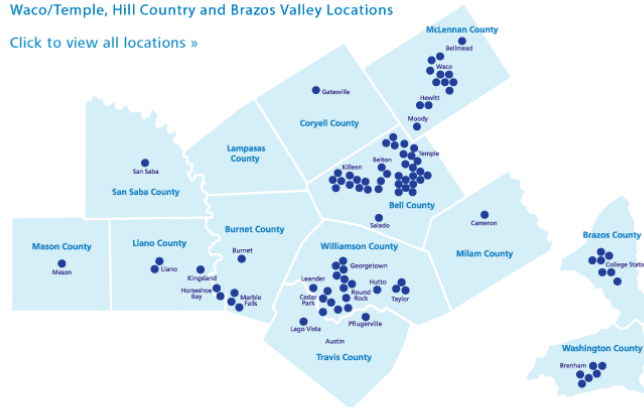


SCOTT & WHITE
Healthcare



Waco/Temple, Hill Country and Brazos Valley Locations

[Click to view all locations »](#)



Baylor Scott & White Health

- Baylor Scott & White Health includes 46 hospitals and 6,000 affiliated physicians
- Baylor Scott & White Quality Alliance ACO covering over 100,000 Patient Lives across Central and Northern Texas
- Workflow Integration across 250 care sites in the North Texas area comprising over 74 distinct vendor systems.
- Value on the Day One:
 - 2,603 unique users using Agent and Clinical Viewer
 - 956 patients viewed in the system and
 - 3,447 views distributed across different clinical domains
 - Risk Stratification delivered to point of care

Thank You!

Jennifer Bolduc, MD
Principal Clinical Advisor, Office of Strategy Management and
Marketing, Allscripts, Burlington, VT

Advancing Interoperability Across Care Settings: A Clinician's Perspective

Faces of Interoperability

Technical definition:

In healthcare, interoperability is the ability of different information technology systems and software applications to communicate, exchange data, and use the information that has been exchanged (HIMSS)

Clinical definition:

For clinicians, interoperability is the ability to immediately access, view and utilize relevant patient information that is new to them and that exists in other systems from within their own EHR. (Dr. Jen)

A Day in the Life of Dr. Jen

- 5:00 AM** Call the baby line to check for newborns to see in the hospital
- 5:30 AM** Coffee and preload patients for the day, kids and dogs are up
- 7:00 AM** Turn on pager and leave for the hospital
- 8:00 AM** Interrupted for a C-section- twins!
- 9:00 AM** Late for clinic, 12 patients scheduled, 2 already arrived
- 11:45 AM** Called to the ED for infant with respiratory distress who requires hospitalization
- 1:30 PM** Late for clinic, 15 patients scheduled, 3 already arrived, reception extending my day
- 4:00 PM** Interrupted for question about infant with respiratory distress and did I see the labs/x-rays?
- 6:00 PM**
- 8:00 PM** 7 patients added to evening clinic, another new baby to see but at the other hospital
- 10:00 PM** Clinic patients seen, but documentation nowhere near complete, did I eat today?
- Inpatients tucked in at both hospitals, possible C-section later and still on call

Why do clinicians resist interoperability?

Pain in Limb

Right knee sprain

Need for flu vaccine

DERMATOPHYTOSIS OF FOOT

Carpal tunnel syndrome

Polyneuropathy in diabetes

Right ankle pain

Acute otitis externa

Chronic back pain

HIV counseling

Hoarse voice quality

LACK OF ADEQ SLEEP

HYPERSMN W/SLEEP APN UNS

DM neuro manif type II

Plantar fasciitis

JOINT PAIN-L/LEG

Arthritis, rheumatoid

Extreme obesity with respirator

Obstructive sleep apnea syndrome

Astigmatism

HYPERMETROPIA

PRESBYOPIA

Allergic conjunctivitis

Dry eyes

Lumbar radiculopathy

Keratoderma, acquired

Xerosis cutis

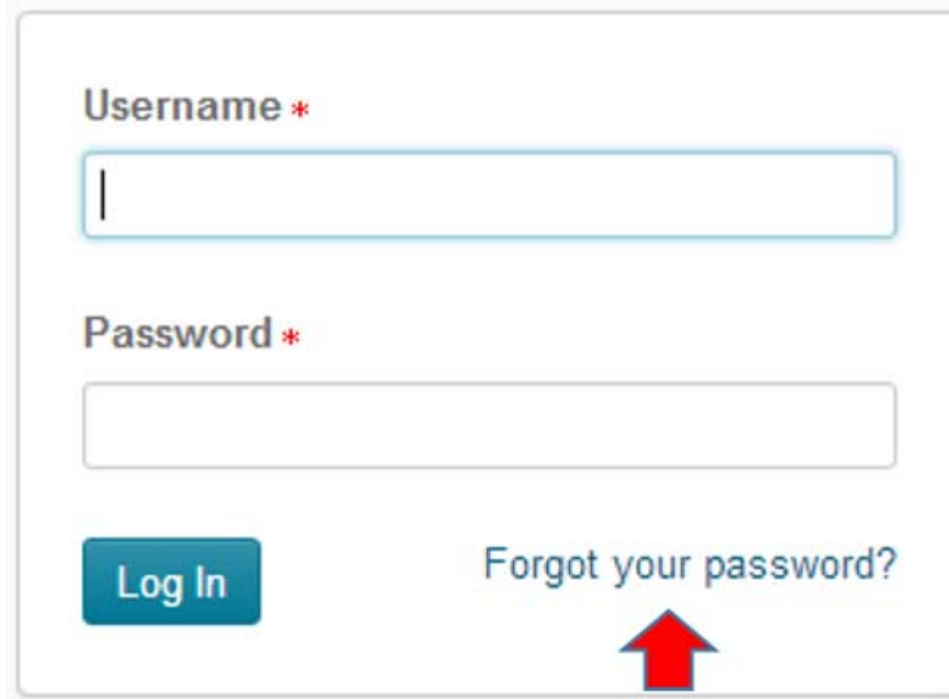
OM (onychomycosis)

Type II Diabetes Mellitus

Numbness

**AND THIS
IS JUST
THE FIRST
HALF**

Why do clinicians resist interoperability?




Username *

Password *

[Log In](#)

[Forgot your password?](#)



Why do clinicians resist interoperability?



Why do clinicians resist interoperabilit y?



The Good Really Old Days





The Good Old Days

Interoperability Tools of the Past



Making interoperability work for clinicians

- ✓ Immediate access from within the EHR to avoid login and password overload
- ✓ View the most relevant clinical data with option to view details to decrease the noise
- ✓ View care across care settings
- ✓ Add selected community clinical data to the EHR to utilize it as if you entered it yourself

Example of Interoperability

Access within the EHR

Patient Information:

- Name:** Watson, Jerry
- MRN:** 1507100EL345800
- Age:** 69 Years
- Sex:** M
- DOB:** 02-Dec-1947
- PCP:** Grandey, Teri
- Allergies:** Med Only
- Security:** No Restricted Data
- Dashboard:** [Open]

Active Medical History:

CD-10	Managed By	Last Assessed
H10.10	Grandey, Teri (Internal...)	
J30.9	Grandey, Teri (Internal...)	
I50.9	Grandey, Teri (Internal...)	12/Jan/2017 Grandey, Teri
I10	Grandey, Teri (Internal...)	12/Jan/2017 Meckler, Teri
E55.9	Grandey, Teri (Internal...)	

Past Medical History:

CD-10	Managed By	Last Assessed
S42.305A		
N40.0		
J87.05		
Z87.440		
J32.9		

Past Surgical History:

CD-10	Managed By	Last Assessed

Family History:

CD-10	Managed By	Last Assessed
Z81.8		
Z82.45		
Z83.3		

Social History:

CD-10	Managed By	Last Assessed
Z87.851	Grandey, Teri (Internal...)	

Current Medications:

- Fluticasone Propionate 50 MCG/ACT Nasal Suspension:** USE 1 SPRAY IN EACH NOSTRIL ONCE DAILY; Therapy: 12/Jan/2017 to (Last Rx: 12/Jan/2017) Ordered
- Kerolifen Fumate 0.025 % Ophthalmic Solution:** INSTILL 1 DROP IN THE AFFECTED EYE(S) EVERY 12 HOURS AS NEEDED; Therapy: 12/Jan/2017 to (Last Rx: 12/Jan/2017) Ordered
- Lasix 20 MG Oral Tablet (Furosemide):** TAKE 1 TABLET TWICE DAILY; Therapy: 12/Jan/2017 to (Evaluate: 12/Jan/2017); Last Rx: 12/Jan/2017 Ordered
- Lisinopril 20 MG Oral Tablet:** TAKE 1 TABLET DAILY AS DIRECTED; Therapy: 12/Jan/2017 to (Evaluate: 12/Jan/2017); Last Rx: 12/Jan/2017 Ordered
- Tylenol CAPS:** Take as needed for pain or fever; Therapy: (Recorded: 12/Jan/2017) to Recorded
- Vitamin D 1000 UNIT Oral Tablet:** TAKE AS DIRECTED; Therapy: 12/Jan/2017 to (Evaluate: 12/Jan/2017); Last Rx: 12/Jan/2017 Ordered
- Unathorized - Noquires Signature**
- Carvedilol 25 MG Oral Tablet:** TAKE 1 TABLET TWICE DAILY; Therapy: 12/Jan/2017 to (Evaluate: 12/Jan/2017); Last Rx: 12/Jan/2017 Ordered

Alerts:

- LDL-C result: 121 N/A (High)**
- Hgb1c overdue: 13 months overdue**
- Health Risk Assessment: 12 months overdue**
- Influenza Vaccine: 4 months overdue**

View other clinician's notes

The screenshot displays the Allscripts clinical interface for a patient named Jerry Watson. The top header shows the patient's name, MRN (150716881343880), Age (69 Years), Sex (M), PCP (Grandey, Teri), and Security (No Restricted Data). The interface is divided into several sections:

- Demographics:** Includes fields for Name, MRN, Age, Sex, PCP, and Security.
- Medications:** A list of current medications with details on dosage and frequency. The list includes:
 - Candesartan 25 MG Oral Tablet, TAKE 1 TABLET TWICE DAILY; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
 - Fluticasone Propionate 50 MCG/ACT Nasal Suspension; USE 1 SPRAY IN EACH NOSTRIL ONCE DAILY; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
 - Furazolidone 20 MG Oral Tablet, TAKE 1 TABLET TWICE DAILY; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
 - Lisinopril 20 MG Oral Tablet, TAKE 1 TABLET 4 TIMES DAILY; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
 - Losartan Potassium 50 MG Oral Tablet, 1 tab(s) orally 4 times a day; Status: ACTIVE Recorded
 - Tylenol Extra Strength 500 MG Oral Tablet, TAKE 1 TABLET EVERY 4 TO 6 HOURS AS NEEDED; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
 - Vitamin D (Ergocalciferol) 50000 UNIT Oral Capsule, TAKE 1 CAPSULE Daily; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
 - Zodter 0.025 % Ophthalmic Solution; INSTILL 1 DROP IN THE AFFECTED EYE(S) EVERY 12 HOURS AS NEEDED; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
- Health Management Plan:** A section for managing the patient's health, including a list of conditions and a section for monitoring.
- Right Sidebar:** A navigation pane with a tree view showing various clinical information categories such as Encounters, Problems, Diagnoses, Allergies, Medications, Measurements, Labs, Immunizations, Imaging, Procedures, Documents, and Health Management. A mouse cursor is pointing at the 'Documents' category.

View care across care settings

The screenshot displays the Allscripts Watson patient care interface. The top navigation bar includes tabs for Chart, Daily, Clinical Overview, History, Task List, Messages, Documents, Encounter Form, Playbooks, Visit Changes, Procedure Changes, Patient Data, Learn, Tracking Board, Tracking Board Config, and Workflow Search. The patient profile for Jerry Watson (DOB: 03/03/1968) is shown at the top right.

The main content area is divided into two panes. The left pane shows the patient's medical history, categorized into Active, Past Medical History, Past Surgical History, Family History, and Social History. The right pane shows the Care Coordination Agent view, which includes Care Team Notes, Tasks, and Care Plans.

Medical History Data:

Category	Condition	ICD 10	Managed By	Last Accessed
Active	Allergic conjunctivitis	H10.10	Grandey, Teri (Internal...)	
	Allergic rhinitis	J30.0	Grandey, Teri (Internal...)	
	Congestive heart failure (CHF)	I50.9	Grandey, Teri (Internal...)	12/Jan/2017 Grandey, Teri
	Hypertension	I10	Grandey, Teri (Internal...)	12/Jan/2017 McClure, Teri
	Vitamin D deficiency	E55.9	Grandey, Teri (Internal...)	
Past Medical History	Health Maintenance			11/Jan/2017 Grandey, Teri
	History of Arm fracture, left	S12.002A		
	History of Benign prostatic hyperplasia	N40.0		
	History of bronchitis	J30.0		
	History of recurrent urinary tract infection	591.40		
Past Surgical History	History of Benign prostatic hyperplasia	J30.0		
	History of Appendectomy			
	History of Tonsillectomy With Adenoidectomy			
	History of Transurethral Resection Of Prostate (TURP)			
	Family History			
Family History	Family history of depression - Mother	231.8		
	Family history of hypertension - Mother	250.49		
	Family history of type 2 diabetes mellitus - Father	250.0		
	Social History			
	Former smoker	282.80	Grandey, Teri (Internal...)	
Married				
Retired				

Care Coordination Agent View:

- Care Team Notes (1 Notes):** MILLER, Susan 01-Feb-2016 at 03:20 AM - acted. Jerry is a 70 year old white male with a history of CHF and HTN who was identified as a high risk patient due to his chronic conditions and positive markers for pre-diabetes. He is overdue for his medication refills, lipid panel, HbA1c, flu shot and depression screening.
- Tasks (1 Total):**
 - Overdue Tasks (1 Within Last 3 Months):**

Task Name	Status	Due Date	Assigned By	Notes
Venly Care Plan	Complete	29-Jan-2017 at 05:42 AM (Yesterday)	MILLER, Susan (Wednesday, 1/25/2017 4:22 AM)	N/A
 - Upcoming Tasks (0 Within Next Month):** No Upcoming Tasks To Display
- Care Plans (1 Active Care Plans):**

Care Plan Name	Created On	Created By	Modified On	Modified By
MCG Heart Failure	29-Jan-2017 at 07:51 AM	MILLER, Susan	29-Jan-2017 at 07:51 AM	MILLER, Susan

Add clinical data to the EHR

The screenshot displays the Allscripts Clinical Desktop interface for a patient named Watson, Jerry. The top navigation bar includes a 'Provider' dropdown, 'Break Link', and 'Hide YTS'. The patient's information is shown in a header section: MRN: 150716081345880, Age: 69 Years, Allergies: Med Only, Dash: Open, Pri Ins: Cigna, Sex: M, FVE: 1, DOB: 02-Dec-1947, PCP: Grandey, Teri, Security: No Restricted Data. The left sidebar contains a 'Clinical Desktop' menu with options like Chart, User Options, Stimulus, Pat. Financials, Pat. Registration, and Pat. Scheduling. The main content area is titled 'Demo View' and includes a 'Select Patient' dropdown, a 'Show Community Data' checkbox, and a 'Commit' button. Below this, the 'Current Medications' section is displayed, showing a list of medications with their dosages and frequencies. The medications listed are: Canadial 25 MG Oral Tablet, TAKE 1 TABLET TWICE DAILY; Fluticasone Propionate 50 MCG/ACT Nasal Suspension; Furosemide 20 MG Oral Tablet, TAKE 1 TABLET TWICE DAILY; Lisinopril 20 MG Oral Tablet, TAKE 1 TABLET 4 TIMES DAILY; Losartan Potassium 50 MG Oral Tablet, 1 tab(s) orally 4 times a day; Tylenol Extra Strength 500 MG Oral Tablet, TAKE 1 TABLET EVERY 4 TO 6 HOURS AS NEEDED; Vitamin D (Ergocalciferol) 50000 UNIT Oral Capsule, TAKE 1 CAPSULE Daily; and Zaditor 0.025 % Ophthalmic Solution, INSTILL 1 DROP IN THE AFFECTED EYE(S) EVERY 12 HOURS AS NEEDED. A 'Potential Duplicates' section is also visible, listing Lasix 40 MG Oral Tablet. On the right side, there are tabs for 'Allergies', 'Patient Worklist', and 'Health Ma', and a 'Non-urgent' section with a list of allergies: Lisinopril : Cough; and Penicillins : Rash.

Provider: Break Link Hide YTS

Clinical Desktop

Watson, Jerry

MRN: 150716081345880 Age: 69 Years Allergies: Med Only Dash: Open

Pri Ins: Cigna Sex: M FVE: 1

DOB: 02-Dec-1947 PCP: Grandey, Teri Security: No Restricted Data

Select Patient

Demo View

Commit Pat Loc Status

Mode/Orders Chart Viewer Problem

Current Medications None Alpha Rec: 25Jan2017

- Canadial 25 MG Oral Tablet, TAKE 1 TABLET TWICE DAILY; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
- Fluticasone Propionate 50 MCG/ACT Nasal Suspension; USE 1 SPRAY IN EACH NOSTRIL ONCE DAILY; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
- Furosemide 20 MG Oral Tablet, TAKE 1 TABLET TWICE DAILY; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
- Lisinopril 20 MG Oral Tablet, TAKE 1 TABLET 4 TIMES DAILY; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
- Losartan Potassium 50 MG Oral Tablet, 1 tab(s) orally 4 times a day; Status: ACTIVE Recorded
- Tylenol Extra Strength 500 MG Oral Tablet, TAKE 1 TABLET EVERY 4 TO 6 HOURS AS NEEDED; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
- Vitamin D (Ergocalciferol) 50000 UNIT Oral Capsule, TAKE 1 CAPSULE Daily; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded
- Zaditor 0.025 % Ophthalmic Solution; INSTILL 1 DROP IN THE AFFECTED EYE(S) EVERY 12 HOURS AS NEEDED; Therapy: (Recorded:24Jan2017) to; Status: ACTIVE Recorded

Potential Duplicates

- Lasix 40 MG Oral Tablet, 1 tab(s) orally 2 times a day; Status: ACTIVE Recorded

Allergies Patient Worklist Health Ma

All Urgency

Non-urgent

- Lisinopril : Cough;
- Penicillins : Rash;

What successful interoperability looks like

Triple Aim of Health Care:



**LOWER
COST OF
CARE**

+



**BETTER PATIENT
OUTCOMES**

+

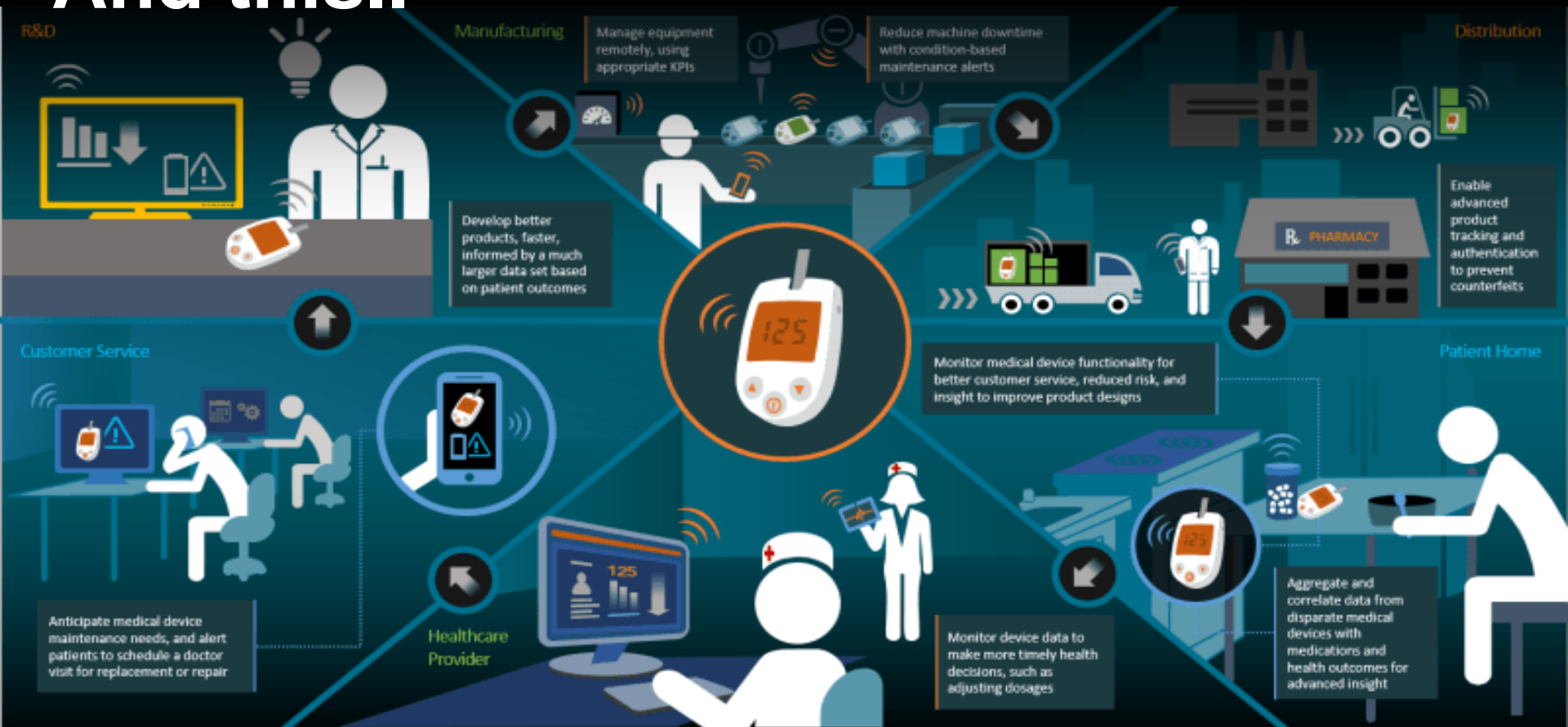


**HIGHER PATIENT
SATISFACTION**

=

**ENHANCED
HEALTHCA
RE**

And this..



And this..



And this!



A closing story

- 75 yo female patient discharged from hospital after new onset CHF exacerbation.
 - Started on an ACE inhibitor and aldosterone blocker.
 - Seen by homecare nurse in follow up and they documented new medications on med list.
 - Patient seen by PCP 7 days after discharge (homecare note was not yet received via paper fax).
 - ACE was not identified by patient as a new medication.
 - Patient found unconscious by homecare nurse 4 days later.
- Outcome:** Admitted with renal failure and life threateningly high potassium secondary to ACE and diuretic therapy.

Preventable failures

- No discharge communication.
- No communication/sharing of med list between hospital and homecare nurse.
- No communication/sharing of med list between homecare nurse and PCP.
- Lack of real time communication between various touch points with patient: hospital, homecare nurse and PCP.

Open Discussion

Thank You!