

“PHARM-2-PHARM” HEALTH CARE INNOVATION AWARD

A COLLABORATION COORDINATED THROUGH THE CENTER
FOR RURAL HEALTH SCIENCE



Operating Partners:

Hawaii Pacific Health
Hawaii Health Systems Corporation
Hawaii Community Pharmacist Association

Support Partners:

Hawaii Health Information Exchange
Hawaii Health Information Corporation
Altarum Institute

Reece K. Uyeno, Pharm.D.

Hospital Consulting Pharmacist Manager, Pharm2Pharm

Martha Harkey, PhD

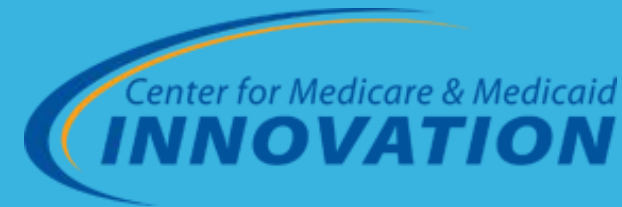
Community Consulting Pharmacist, North Shore Pharmacy

THE VISION OF PHARM-2-PHARM

Leverage underutilized pharmacist expertise across the continuum of care to achieve the three-part aim of the CMS Innovation Center:

- Better care
- Better health
- Lower total costs

“Pharm2Pharm” = “Hospital Pharmacist to Community Pharmacist” care transition and coordination model focused on medications



BEFORE THERE WAS PHARM-2-PHARM, THERE WAS THE MINNESOTA EXPERIENCE...

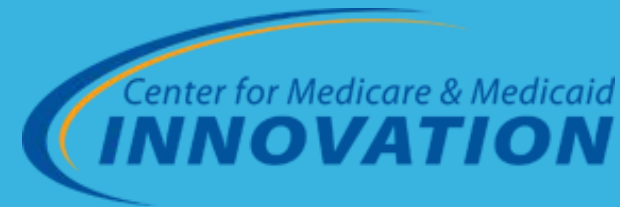
- * “Beginning in 1999, Fairview Health Services of Minneapolis/St. Paul implemented the ‘Collaborative Practice of Pharmaceutical Care’ at 6 of 15 primary care clinics, where pharmacists now play an integral role in the delivery of care”
- *RESULTS:
 - Improvements in clinical outcomes
 - Reductions in cost



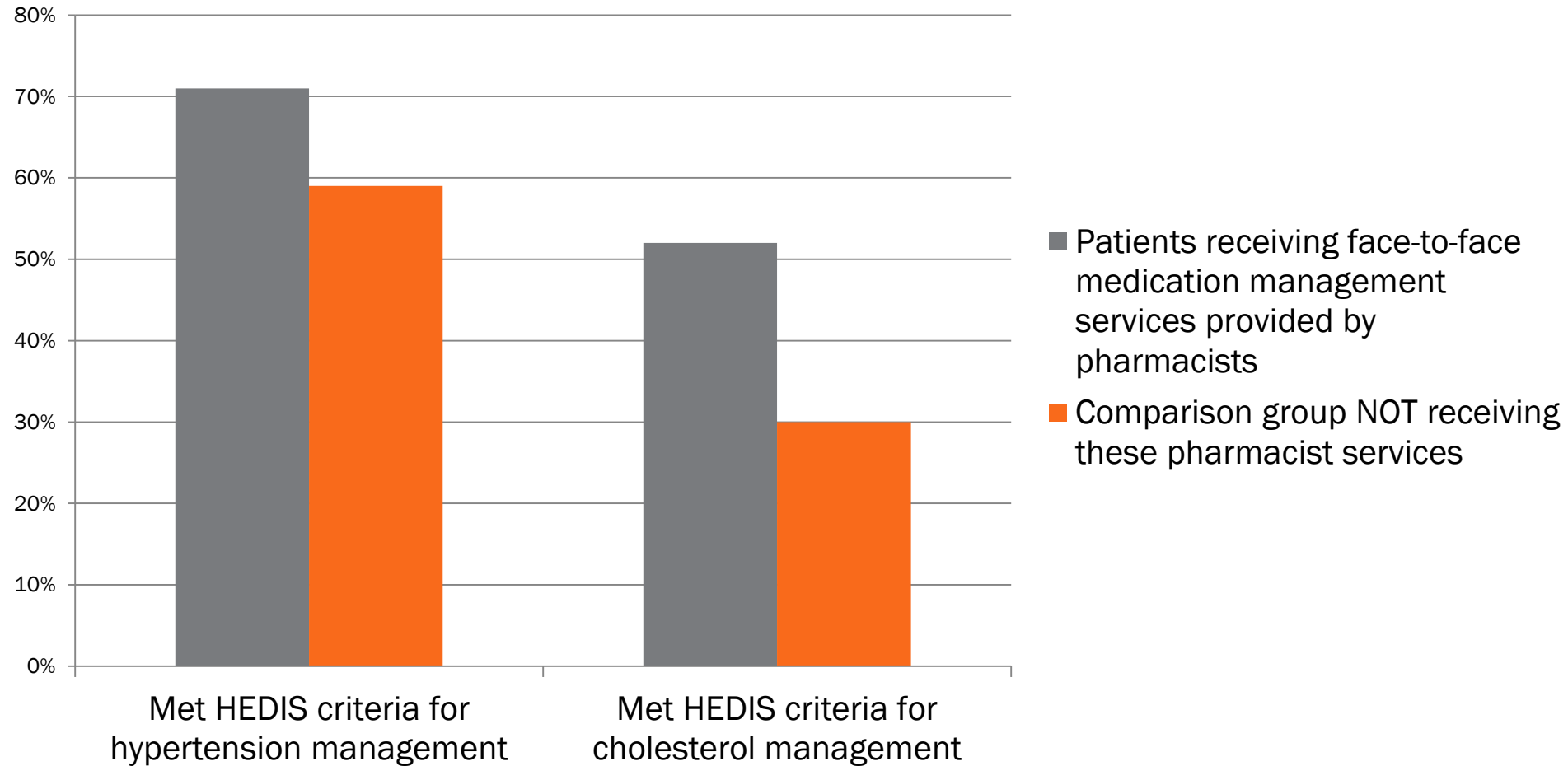
*Isetts et al., Clinical and economic outcomes of medication therapy management services: The Minnesota experience.

J Am Pharm Assoc. 2008;48:203-214

<http://japha.org/article.aspx?articleid=1043431#Methods>



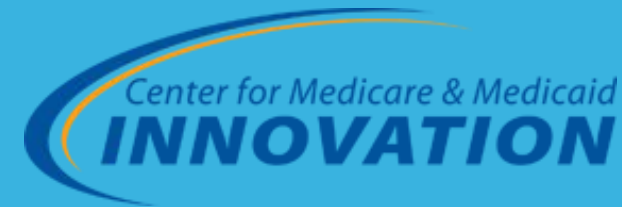
IMPROVED PATIENT OUTCOMES



*Isetts et al., Clinical and economic outcomes of medication therapy management services: The Minnesota experience.
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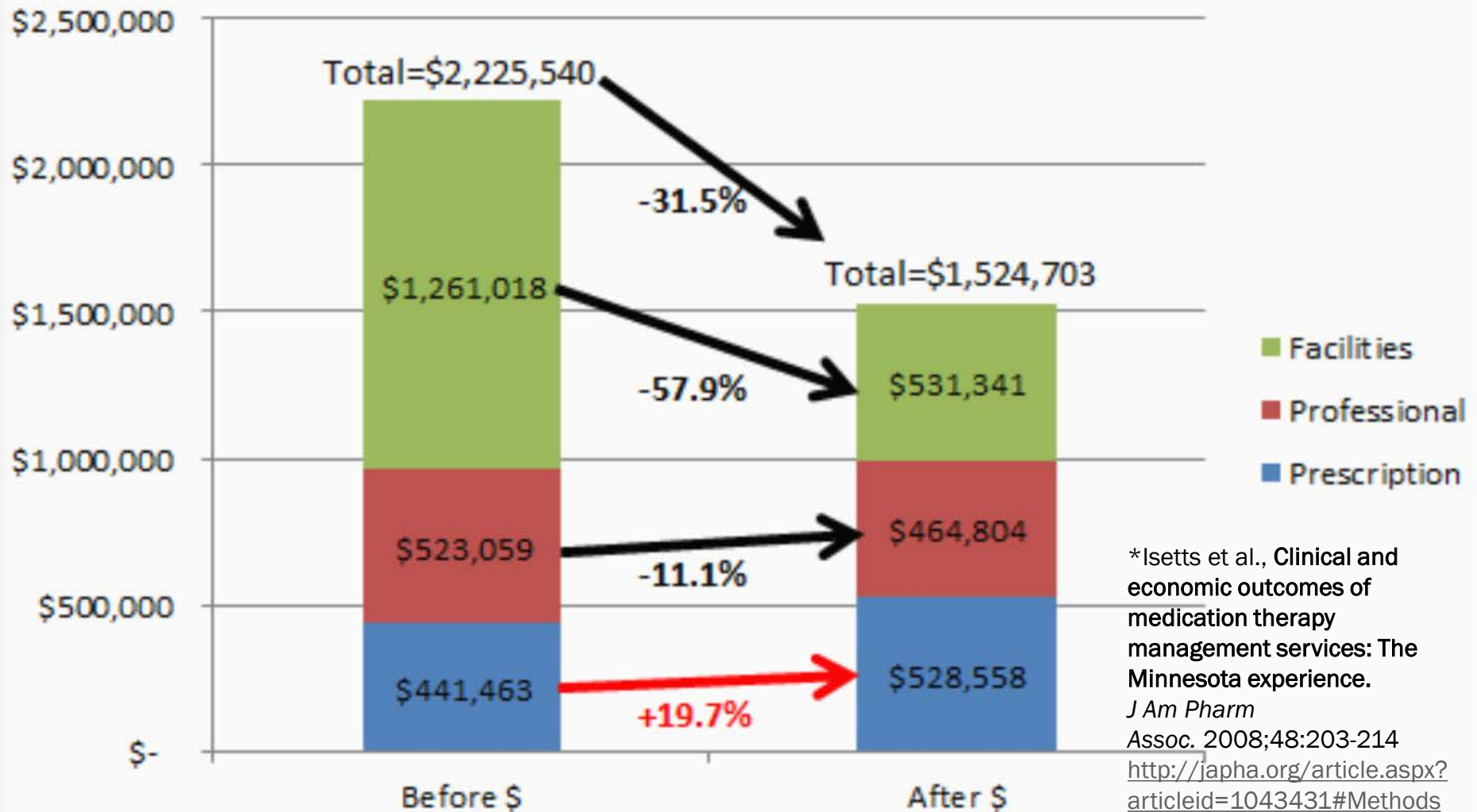
J Am Pharm Assoc. 2008;48:203-214

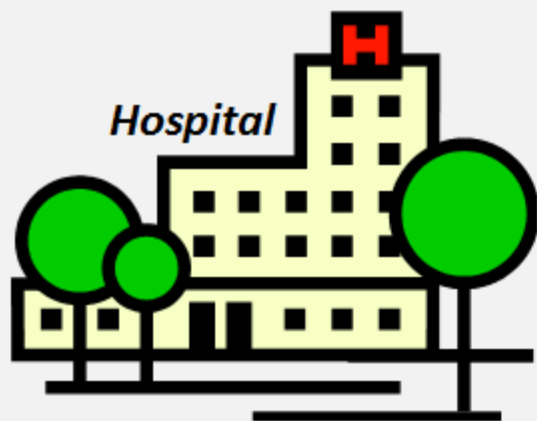
<http://japha.org/article.aspx?articleid=1043431#Methods>



REDUCED TOTAL COST OF CARE (EVEN WITH INCREASE IN DRUG COSTS)

Claimed annual health expenditures before and after pharmacist medication management (n = 186)





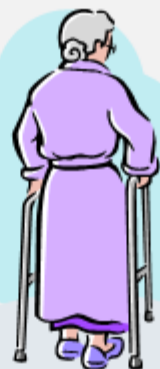
Hospital

PHARMACIST ROLE:

- Dispense medications
- Answer clinician questions
- Manage formulary

DISCHARGED TO
HOME

Patient



*RISK/GAP: Medication
discrepancies?*

*RISK/GAP: Adequate
medication instructions?*

PCPs &
Specialists



*RISK/GAP: Patient has timely
access to follow up care?*

*RISK/GAP: Patient picks up
meds?*

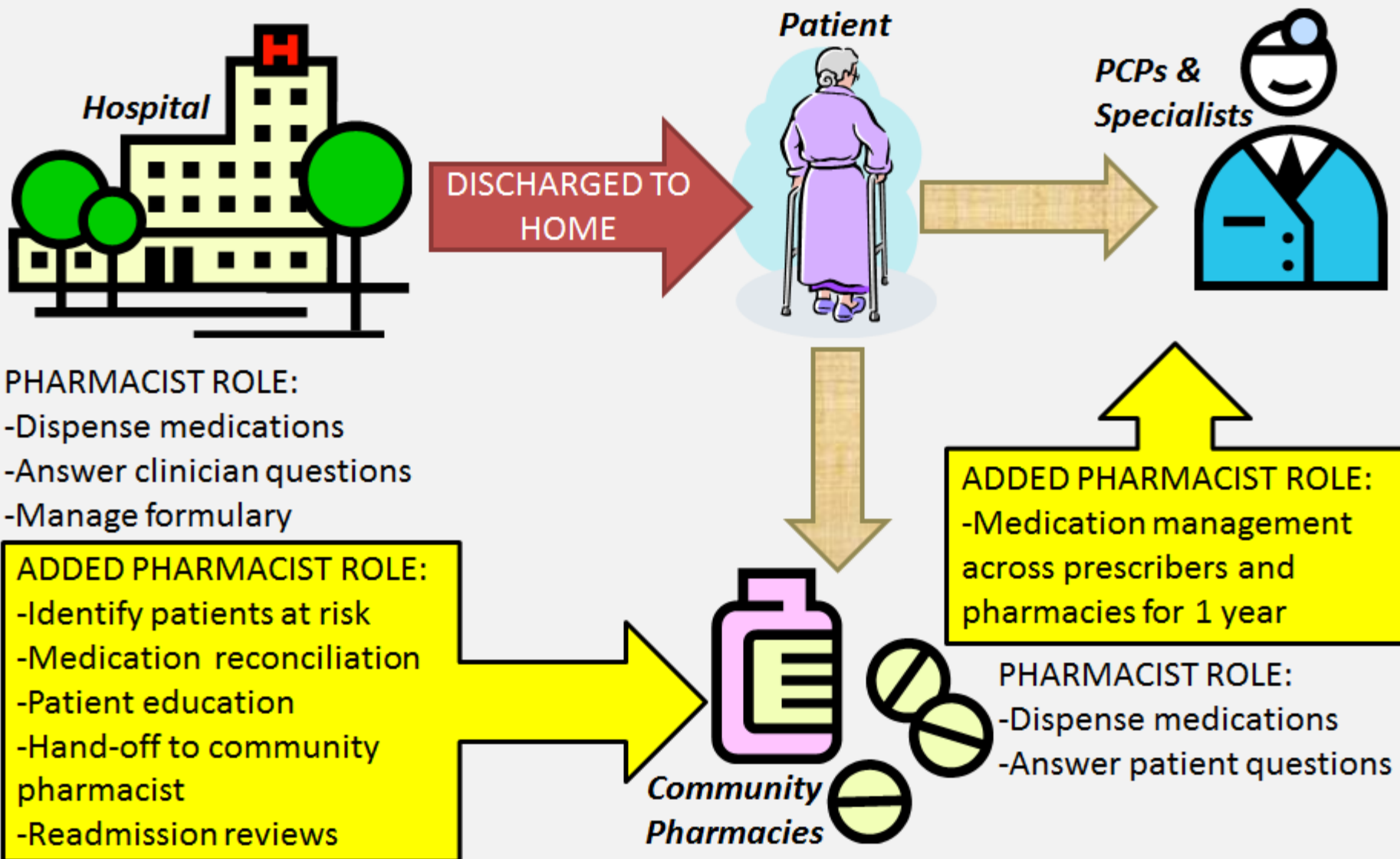


Community
Pharmacies

PHARMACIST ROLE:

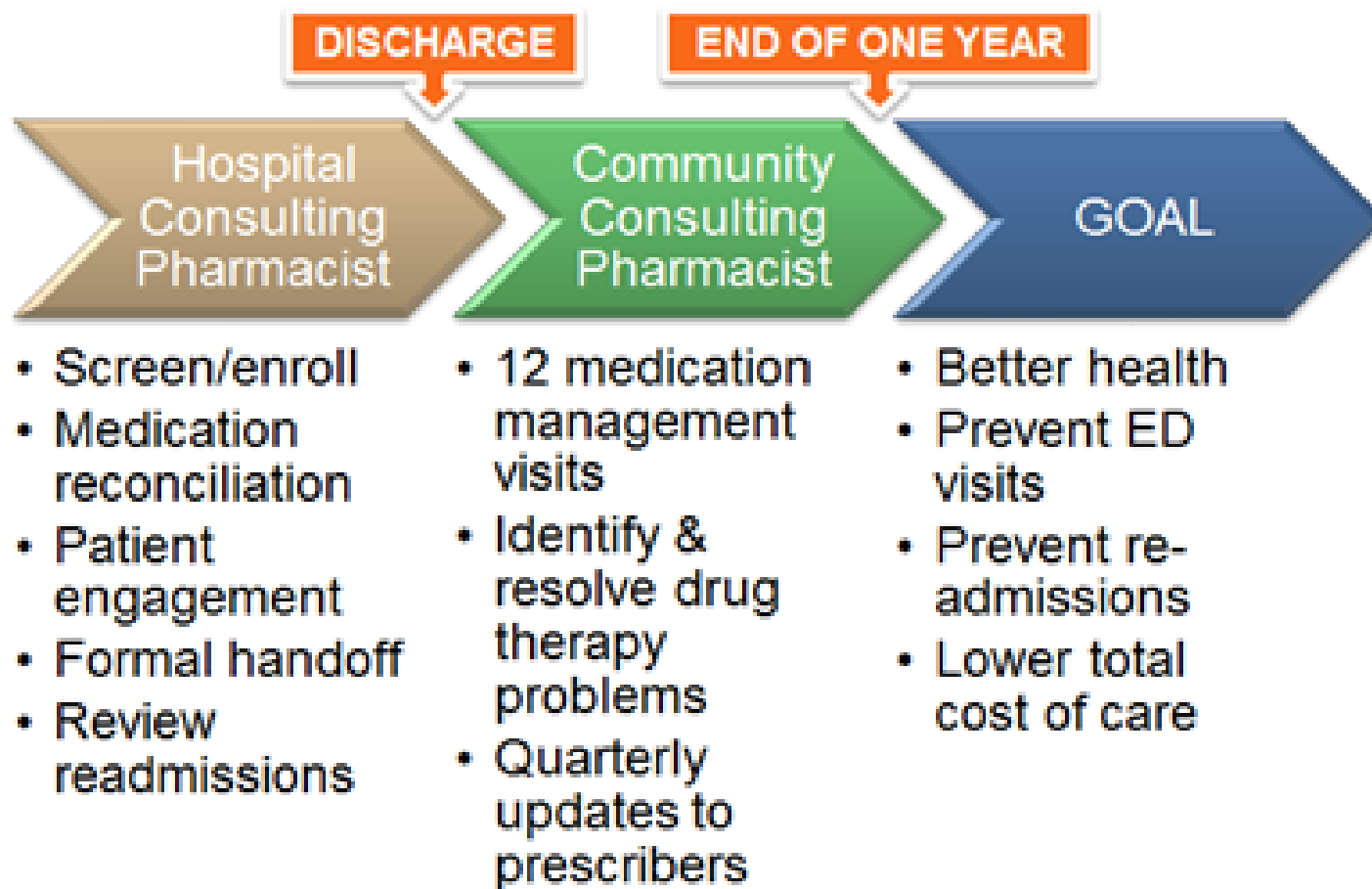
- Dispense medications
- Answer patient questions

TRADITIONAL MODEL

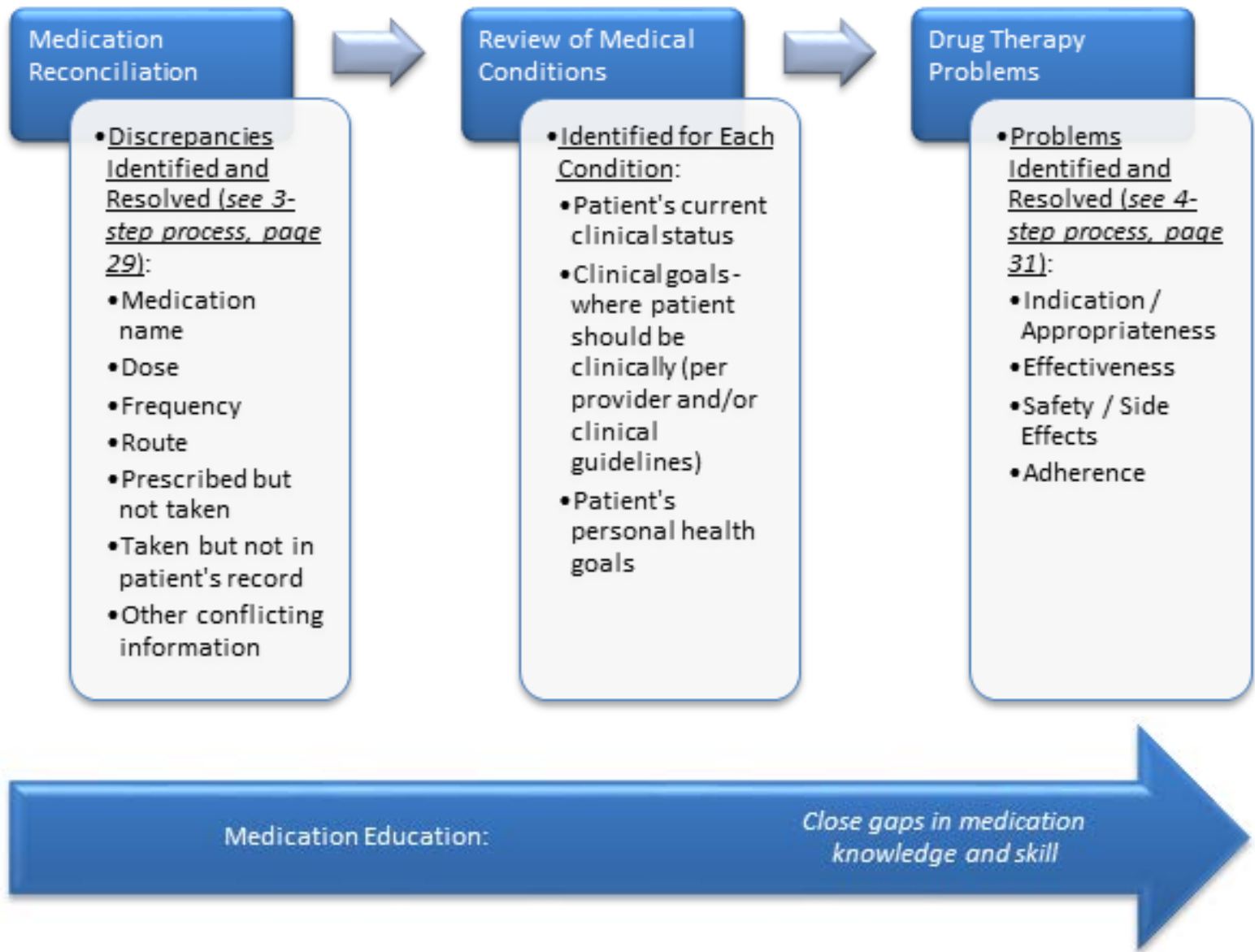


“Pharm2Pharm” MODEL for HIGH RISK PATIENTS

Pharm2Pharm Patient Timeline



PHARM-2-PHARM MEDICATION PROCESSES*



Medicaid
ON

*Adapted from: Pharmaceutical Care Practice – The Patient Centered Approach, Cipolle, Morley, and Strand, 3rd Edition, McGraw Hill, 2012

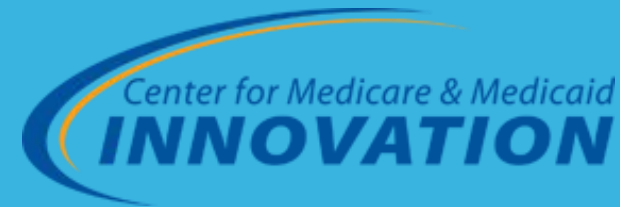
MODEL IMPLEMENTATION TO DATE

Launched in 4 counties: Maui, Kauai, Hawaii, Honolulu

Over 1,500 patients enrolled and handed off to Community Consulting Pharmacists

Through intensive CQI efforts, implemented and revised

- Standard Operating Procedures
- “Toolkit”
- Training



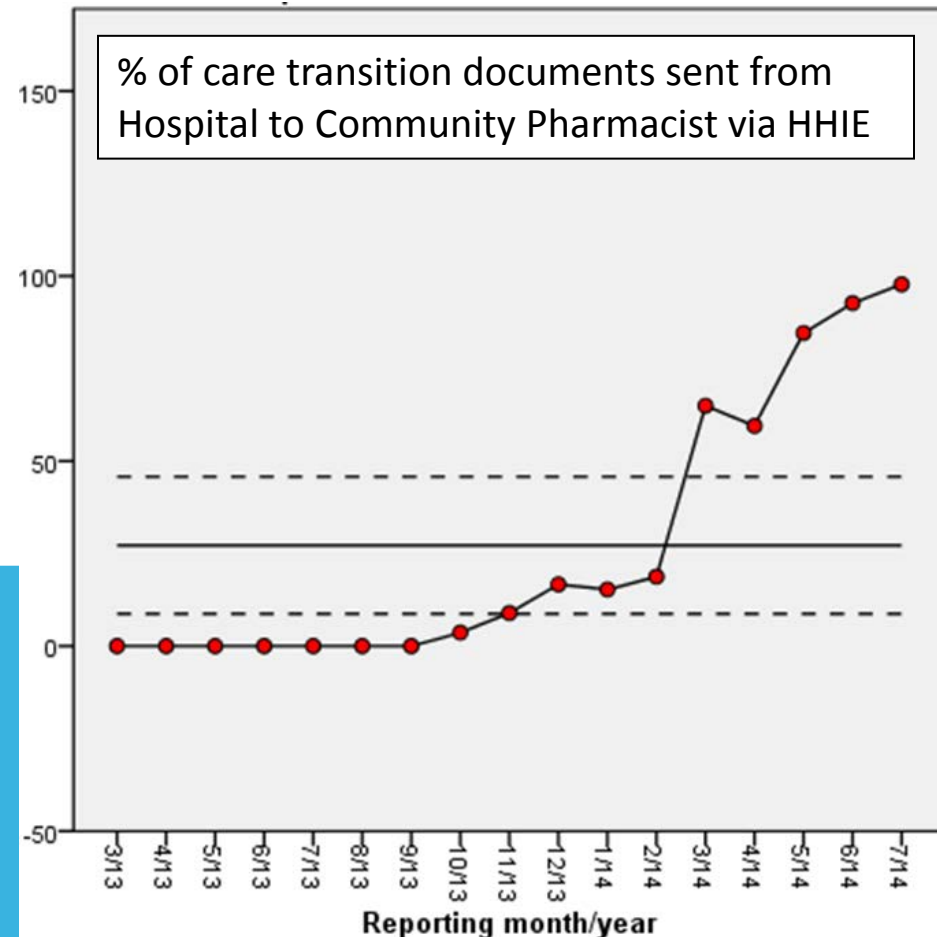
HEALTH INFORMATION TECHNOLOGY PROGRESS

Lab access: Majority of physicians have authorized the Consulting Pharmacists to have access to their enrolled patients' labs via HHIE

HCS Med 360: Consulting Pharmacists are now using this to conduct preliminary medication reconciliation and maintain accurate medication list.

Virtual translation service: Now available to Community Consulting Pharmacists, allowing non-English speaking patients to be enrolled

Secure messaging: All care transition documents are now being sent by the Hospital Consulting Pharmacist to the Community Consulting Pharmacist via HHIE's secure messaging system



HCS MED 360

14+ Robust data sources including but not limited to:

PBM's

- MedCo, Caremark, Catamaran, ExpressScripts, Argus

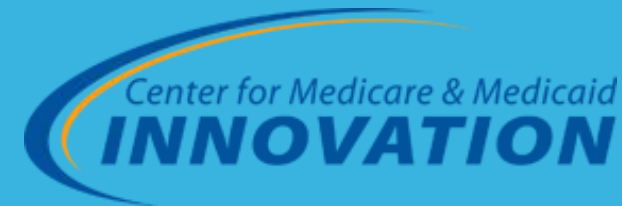
Pharmacies

- CVS, Walgreens, Safeway

Insurance

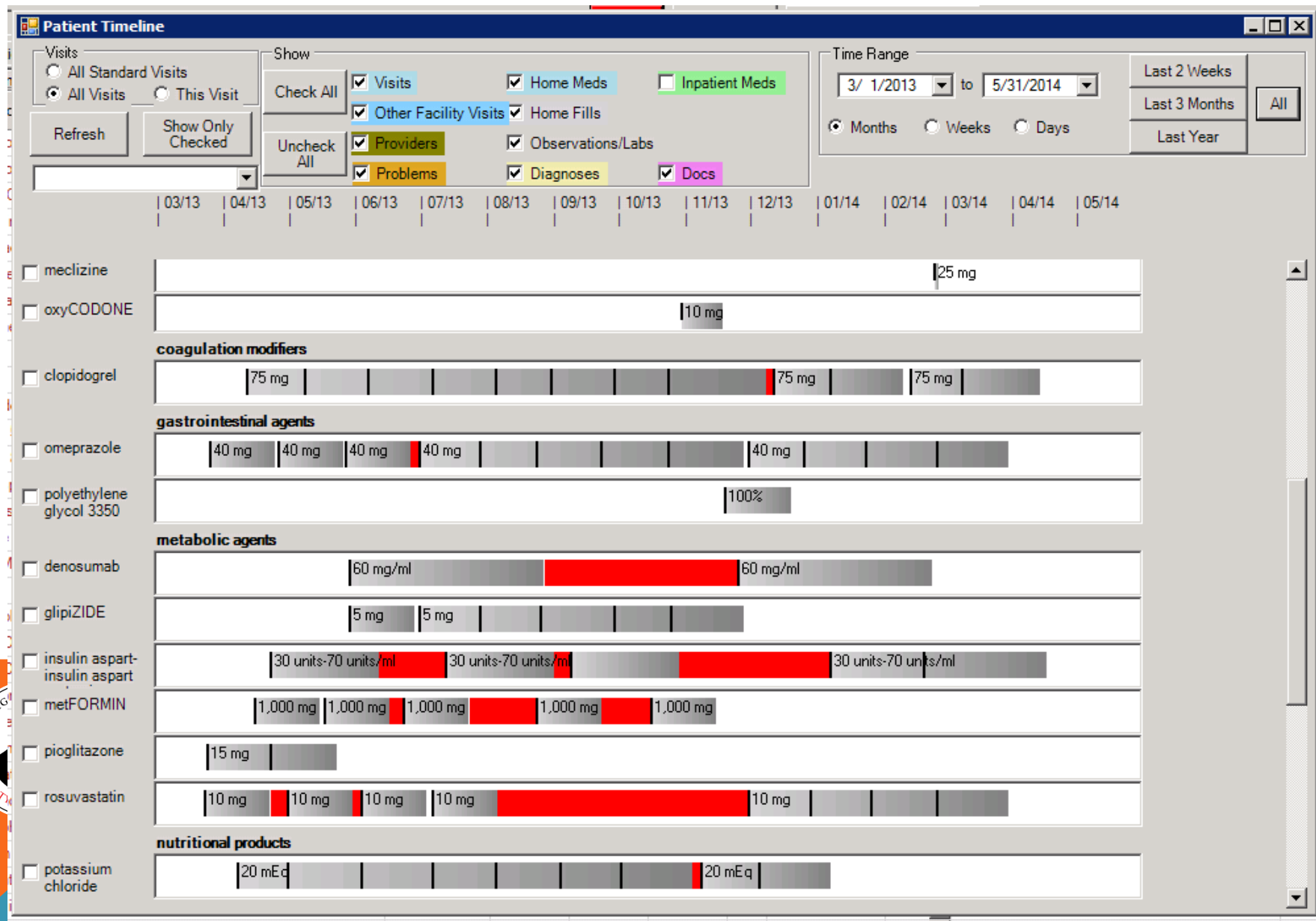
- HMSA, Wellpoint, Aetna, Humana, Humana

Surescripts



HCS MED 360 VIA HHIE

Longitudinal fill history screen shot: shows gaps in med use



HCS MED 360 VIA HHIE

Pill Identifier

Side 1 Markings Side 2 Markings

Shape Color



Dilacor XR - 180 mg



Completed Med Rec Screen Shot: shows “inactivated med’s” (previous doses and regimens), clinician-added OTC’s and herbals

Items: 500 Items All WQs Longest Time: On Demand Query View Home Med List Vital Signs Add Weight Refresh

HCS MED 360 VIA HHIE

Interaction checker

	Type	Medication	Severity	Rec. Action	Override Reason
1	Allergy	mupirocin topical ordered with mupirocin topical allergy			Overridden
2	Interaction	chlorpheniramine and topiramate	Major Drug Interaction	Monitor Closely	Accepted
3	Interaction	meclizine and topiramate	Major Drug Interaction	Monitor Closely	Reviewed
4	Interaction	clopidogrel and rivaroxaban	Major Drug Interaction	Monitor Closely	Reviewed
5	Interaction	albuterol and carvedilol	Major Drug Interaction	Generally Avoid	Reviewed
6	Interaction	carvedilol and levalbuterol	Major Drug Interaction	Generally Avoid	Reviewed

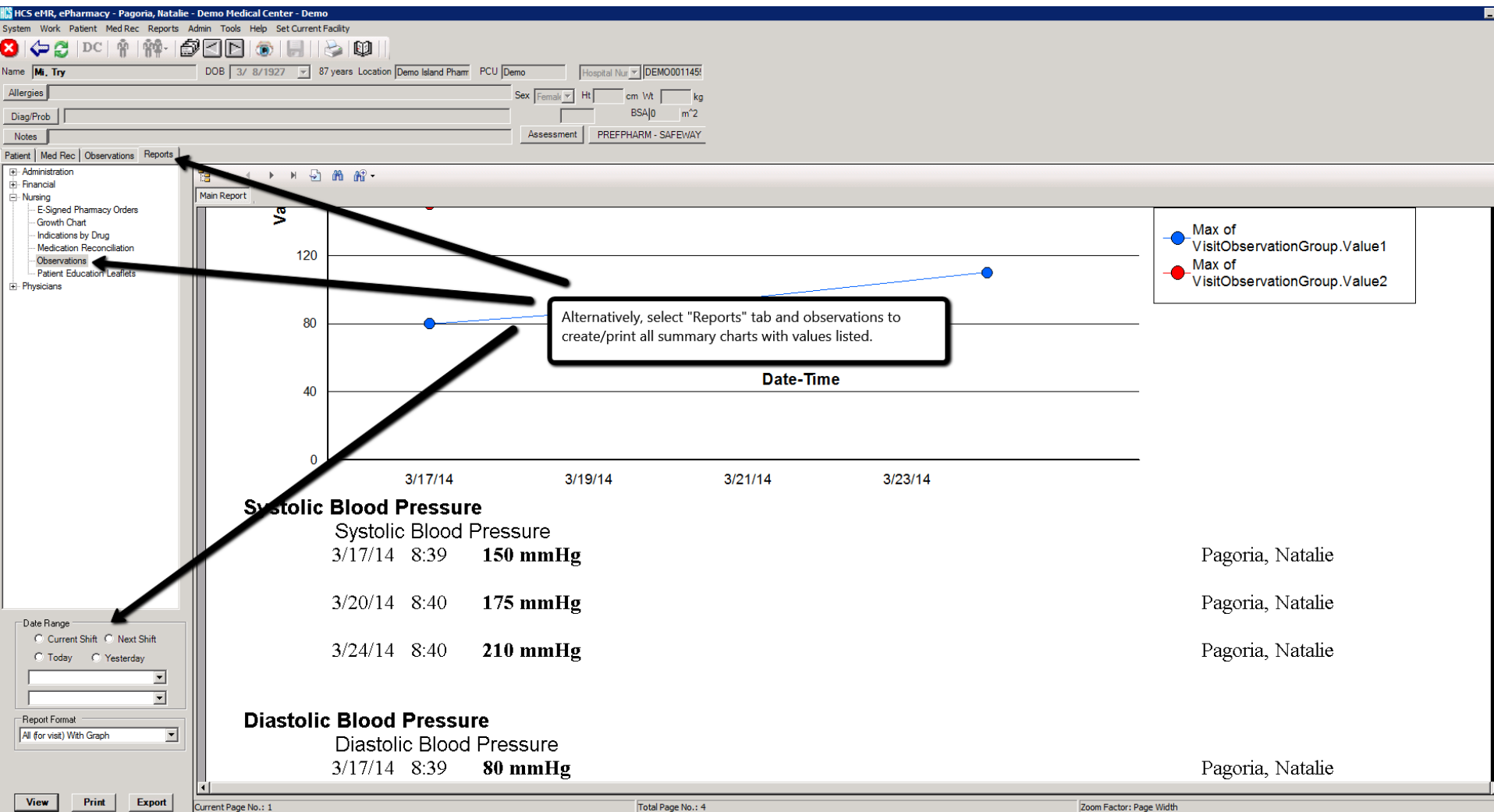
Details

GENERALLY AVOID: Beta-blockers may antagonize the effects of beta-2 adrenergic bronchodilators and precipitate acute, life-threatening bronchospasm in patients with asthma or other obstructive airway diseases. The mechanism involves increased airway resistance and reduced bronchodilation due to blockade of beta-2 adrenergic receptors. The interaction may also occur with ophthalmically applied beta-blockers, which are systemically absorbed and can produce clinically significant systemic effects even at low or undetectable plasma levels. Due to opposing effects on beta-2 adrenergic receptors, propranolol has been used in the treatment of salbutamol overdose. **MANAGEMENT:** The use of beta-2 adrenergic bronchodilators in combination with beta-blockers, including ophthalmic formulations, should generally be avoided. If concomitant use is required, a cardioselective beta-blocker (e.g., acebutolol, atenolol, betaxolol, bisoprolol, metoprolol, nebivolol) is usually preferred. Nevertheless, caution is advised and respiratory status should be closely monitored, as cardioselectivity is not absolute and larger doses of beta-1 selective agents may pose some of the same risks as nonselective agents. In general, nonselective beta-blockers are considered contraindicated in patients with obstructive airways disease.



HCS MED 360 VIA HHIE

Longitudinal charting of clinical info screen shot: to correlate with med use



HCS MED 360 VIA HHIE

Printable Completed Med List: shows confirmed meds, who confirmed, etc.

Demo Medical Center

Patient Name: **New, Enrollee**
 Date of Birth: **03/09/1940** Gender: F
 MRN: DEMO00187990 Account Number: DEMO00187990
 Unit: Demo Admit Date: 3/20/14 22:56
 Height: 0 cm Weight: 210 kg

Patient HOME Meds

Attending MD: WILLIS, SAM

Allergies: penicillin (anaphylaxis), shellfish (rash), sulfa drug (rash)

Confirmed by Pagoria, Natalie

Current Home Medications (Including OTC Herbals - Sorted by Class) ^{***Pharmacy does not dispense herbal supplements***}

Medication - Brand Name	Dose	Prescriber	Last Fill
ANTINEOPLASTICS			
Cisplatin 1 mg/ml SOLN - Platinol-AQ	Unknown		
ANTINEOPLASTICS			
CARDIOVASCULAR AGENTS			
amlodipine-benzazepril 10 mg-40 mg CAP - Amlodipine Besylate-Benzazepril	1 cap	KADOOKA, CRAIG	12/26/13 12:00 am
CARDIOVASCULAR AGENTS			
TAKE 1 CAPSULE DAILY.			
isosorbide mononitrate 30 mg ERT - Imdur	30 mg	KRIEGER, ELIZABETH	10/28/13 12:00 am
CARDIOVASCULAR AGENTS			
TAKE 1 TABLET BY MOUTH AT BEDTIME			
lisinopril 40 mg TAB - Prinivil	10 mg	KRIEGER, ELIZABETH	10/28/13 12:00 am
CARDIOVASCULAR AGENTS			
TAKE 1 TABLET EVERY DAY			
CENTRAL NERVOUS SYSTEM AGENTS			
acetaminophen-aspirin-caffeine 250 mg-250 mg-65 mg TAB - Excedrin	Unknown		
CENTRAL NERVOUS SYSTEM AGENTS			
ibuprofen 600 mg TAB - Motrin	600 mg	FUJIMOTO, PATSY	9/12/13 12:00 am
CENTRAL NERVOUS SYSTEM AGENTS			
TAKE 1 TABLET BY MOUTH EVERY 6 TO 12 HOURS AS NEEDED FOR PAIN			
COAGULATION MODIFIERS			
clopidogrel 75 mg TAB - Plavix	75 mg	KADOOKA, CRAIG	12/26/13 12:00 am
COAGULATION MODIFIERS			
TAKE 1 TABLET DAILY.			
warfarin 1 mg TAB - Jantoven	1 mg		
COAGULATION MODIFIERS			





Demo, Tres
Attending MD:

DEMO00129608

Demo Island Pharmacy

clopidogrel

Pronunciation: kloe PID oh grel

Brands: Plavix

What is the most important information I should know about clopidogrel?

Your doctor will perform blood tests to make sure you do not have certain genetic conditions that would prevent you from safely using clopidogrel.



- You should not use this medicine if you have any active bleeding such as a stomach ulcer or bleeding in the brain (such as from a head injury).

Some medicines can interact with clopidogrel and should not be used at the same time. Your doctor may need to change your treatment plan if you also take other medicines, especially certain stomach acid reducers (esomeprazole, omeprazole, Nexium, Prilosec).

What is clopidogrel?

Clopidogrel keeps the platelets in your blood from coagulating (clotting) to prevent unwanted blood clots that can occur with certain heart or blood vessel conditions.

Clopidogrel is used to prevent blood clots after a recent heart attack or stroke, and in people with certain disorders of the heart or blood vessels.

Clopidogrel may also be used for purposes not listed in this medication guide.

What should I discuss with my healthcare provider before taking clopidogrel?



- You should not use this medicine if you are allergic to clopidogrel, or if you have any active bleeding such as a stomach ulcer or bleeding in the brain (such as from a head injury).

Some medicines can interact with clopidogrel and should not be used at the same time. Your doctor may need to change your treatment plan if you also take other medicines, especially certain stomach acid reducers (esomeprazole, omeprazole, Nexium, Prilosec).

To make sure clopidogrel is safe for you, tell your doctor if you have:

- a bleeding or blood clotting disorder, such as TTP (thrombotic thrombocytopenic purpura) or hemophilia;
- a history of stroke, including TIA ("mini-stroke");
- a stomach ulcer or ulcerative colitis;
- kidney disease; or
- if you are allergic to medicines like clopidogrel, such as prasugrel, ticagrelor, or ticlopidine.

FDA pregnancy category B. This medication is not expected to be harmful to an unborn baby. Tell your doctor if you are pregnant or plan to become pregnant during treatment.



- It is not known whether clopidogrel passes into breast milk or if it could harm a nursing baby. You should not breast-feed while using this medicine.

How should I take clopidogrel?

Follow all directions on your prescription label. Do not take this medicine in larger or smaller amounts or for longer than recommended.

Clopidogrel can be taken with or without food.



- Because clopidogrel keeps your blood from clotting, it can also make it easier for you to bleed, even from a minor injury. Contact your doctor or seek emergency medical attention if you have bleeding that will not stop.

If you need surgery or dental work, tell the surgeon or dentist ahead of time that you are using clopidogrel. You may need to stop using the medicine for at least 5 days before having surgery, to prevent excessive bleeding. Follow your doctor's instructions and start taking clopidogrel again as soon as possible.



- You should not stop using this medicine suddenly. Use clopidogrel regularly even if you feel fine or have no symptoms. Get your prescription refilled before you run out of medicine completely.



- Store at room temperature away from moisture and heat.

HHIE PATIENT REGISTRY

The screenshot shows a web application interface for the HHIE Patient Registry. A modal window titled "Enroll Patient in Pharm-2-Pharm" is open, displaying a form for patient enrollment. The form includes sections for "Additional Demographics" (Address, City, State, Ethnicity, Home Phone, Work Phone, Mobile Phone, Alternate Contact Name, Alternate Contact Phone, Region), "Allergies", and "Associated Providers". The "Associated Providers" section shows a table with one provider, Paul Brown, MD, in the Cardiology specialty. The background shows a sidebar with navigation links like "Enroll", "Program Status", "Hospital Pharmacy Discharge", "Associated Providers", and "Patient Activity History". The footer contains copyright information for Hawaii's Health Information Exchange 2014 and contact details for the University of Hawaii.

Health eNet

Lamby M

Enroll >

Program Status
Is Active
Hospital Pharmacy Discharge

▼ Associated Providers

Paul Brown, MD

▼ Patient Activity History

◀ Patient List

Enroll Patient in Pharm-2-Pharm

Additional Demographics

* Address * City * State Ethnicity

Select Ethnicity...

* Home Phone Work Phone Mobile Phone

Alternate Contact Name Alternate Contact Phone Region

Kona

Allergies

Associated Providers

Select Provider... + Create New Provider...

Actions	Name	Specialty
Remove	Paul Brown, MD	Cardiology

Cancel Enroll

© Hawaii's Health Information Exchange 2014 900 Fort Street Mail #1305 Honolulu, HI 96813 | Phone: (808) 441-1346 | Fax: (808) 441-1472

- Simplified workflow walks pharmacists through the patient management process
- Attempts to reduce pharmacist workflow redundancy to improve efficiency.



HHIE PATIENT REGISTRY



Health eNet

View ▾

Adam Adamsonson Jr

◀ Undo Hand-Off

Assign To Pharmacist ▶

⊕ Re-Admit Patient

✕ Exit Patient

Program Status: Handed Off
Is Active: Yes
Hospital Pharmacist: Colonel Mustard
Enroll Date: 07-21-2014
Discharge Date: 07-21-2014
Handoff Date: 07-21-2014
Community Pharmacy: Kona Community Hospital

Hospital MRN: 234243
Gender: Male
Date of Birth: 05-29-1945
Ethnicity: American White/Caucasian
Address: 100
Honolulu, HI
Zip Code: 96814
Home Phone: 808-555-1209
Region: Hilo

- Maintains patient demographics, program status, provider associations and more
- Records patient program activity for reporting and potential analytics

▼ Associated Providers

Name	Specialty	Office	Fax	Address
Bill Nye, MD	Science	N/A	N/A	N/A

▼ Patient Activity History

Event	Date	By	Created
✓ Enrolled	07-21-2014	Colonel Mustard	07-22-2014 00:02
★ Discharged from hospital	07-21-2014	Colonel Mustard	07-22-2014 00:02
⊕ Handed Off to Kona Community Hospital	07-21-2014	Colonel Mustard	07-22-2014 00:02



Medicaid
ION

HHIE PATIENT REGISTRY

Health eNet View

Pharm2Pharm Patients for Colonel Mustard - Hilo

+ New Patient... Search Patients...

Patients Per Page: 10 1 **2** 3

View Patient Filters | Patient States Shown: **Enrolled** **Handed Off** **Assigned** | Handoff Date Range: All Dates

State	Name ↑	Age Gender	Hospital Pharmacist	Discharge Date	Handoff Date	Community Pharmacy	Community Pharmacist
Enrolled	Doe, Jane	0F	N/A	N/A	N/A	N/A	N/A
Handed Off	Freecs, Gon	24M	Colonel Mustard	06-19-2014	06-20-2014	Responsible Drug Company	N/A
Handed Off	Ghij, Abcde	26F	N/A	N/A	N/A	Hilo Medical Center	N/A
Handed Off	Grangers, Hermione	34F	N/A	N/A	N/A	Mariners Drugs-n-Things	N/A
Enrolled	JacobJingleHeimerSchmidt, John	68M	N/A	N/A	N/A	N/A	N/A
Assigned	Jane, Mary	0M	N/A	N/A	N/A	Angels Dose-n-Go	Albert Pujols
Enrolled	Janet, Abraham	0F	Colonel Mustard	N/A	N/A	N/A	N/A
Handed Off	Kraker, Polly	0F	N/A	N/A	N/A	Mariners Drugs-n-Things	N/A
Enrolled	Leopold, Gennaro	0M	Colonel Mustard	06-26-2014	N/A	N/A	N/A
Enrolled	Martin, Zip	39M	John Silver	N/A	N/A	N/A	N/A

- Pharmacists are provided a personalized list view of patients of interest
- Pharmacists can filter, sort and search for patients based on multiple criteria

HHIE COMMUNITY HEALTH RECORD

File Edit View Favorites Tools Help

Convert Select

HHIE

Welcome, Francis T Chan

Home Log Out Edit Postings Help About

MEDICITY

Pt Info FaceSheet Reports Encounters Tests Documents

Patient Class Admit: 03/30/2014 16:37 HST Disch:

Attending: V... MD Admit Diag: LEFT HIP FRACTURE, HYPERTENSIVE; MALIGNANCY, ANEMIA, LEUKOCYTOSIS

Care Team: View All Problems: View All

PATIENT SEARCH

MRN, Name, SSN or DOB

Search Advanced

Print Break Glass New CCD

Access to Clinical Reports

Real-time Laboratory Results

File Edit View Favorites Tools Help

Convert Select

HHIE

Welcome, Francis T Chan

Home Log Out Edit Postings Help About

MEDICITY

Pt Info FaceSheet Reports Encounters Tests Documents

Patient Class Admit: 03/30/2014 16:37 HST Disch:

Attending: V... MD Admit Diag: LEFT HIP FRACTURE, HYPERTENSIVE; MALIGNANCY, ANEMIA, LEUKOCYTOSIS

Care Team: View All Problems: View All

PATIENT SEARCH

MRN, Name, SSN or DOB

Search Advanced

Tue. 04/01/14 Clinical Inbox (0)

Print Maintain Preferences

Type All Date Range Last 3 Months Provider All

By Date By Test

ABORh 3/30/2014

ABSC 2

BMP

CBC

Chest 1/1/14

BMP Status: Auth (Verified) Result Rpt/Status Chng: 03/30/2014 14:18 HST

Priority: Stat Perf: Specimen Source: Blood

TEST	RESULT	OUT OF RANGE	REFERENCE	UNITS
Sodium Level	137		136-145	mmol/L
Potassium Level	4.5		3.5-5.1	mmol/L
Chloride Level	102		98-107	mmol/L
CO2/Carbon Dioxide	27		21-32	mmol/L
Anion Gap	12		4-16	mmol/L
Glucose, Random	118	High	70-108	mg/dL
Result Comments: Reference ranges are based on a fasting specimen.				
BUN	33	High	7-20	mg/dL
Creatinine	1.4	High	0.6-1.1	mg/dL
BUN/Creat Ratio	23.6			

HHIE DIRECT SECURE MESSAGING

The screenshot displays the HHIE Direct Secure Messaging web interface. At the top, the user's email address **michael.fuoyama@hawaiihiie.medicity.net** and a **Contacts** link are visible. The interface is divided into three main sections: a left sidebar, a central message list, and a right message content area.

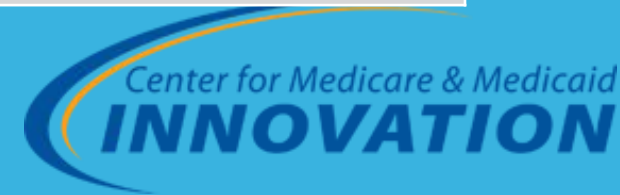
Left Sidebar: Contains navigation links for **New Message**, **Inbox**, **Sent Items**, **Drafts**, and **Trash (8)**. A **Manage Folders** link is located at the bottom.

Central Message List: Features a toolbar with **Check Mail**, **Mark As Read**, **Move To Folder**, and **Delete** buttons. Below the toolbar, a search bar and a dropdown menu set to "Arranged by: Date, Descending" are present. A single email entry is listed: "Important Patient Information" from **natalie.pagoria@hawaiihiie.medicity.net**, dated **07:00 PM** with a size of **5KB**.

Right Message Content Area: Displays the details of the selected email. It includes a **Reply** and **Forward** button bar. The subject is **Important Patient Information**, and the header shows it is from **natalie.pagoria@hawaiihiie.medicity.net** to ... (07:00 PM), with a **Show details** link. The body text identifies the sender as **Natalie Pagoria, M.D.**, a **Business Analyst II, Clinical Workflow** at the **Hawai'i Health Information Exchange**, specifically for the *Grantee for the State HIE Plan and the Hawai'i Pacific Regional Extension Center*. Contact information provided includes a **Direct Phone: 808-441-1383 | Fax: 808-441-1472**, an **Email: npagoria@hawaiihiie.org**, and a **Website: www.hawaiihiie.org**. A **NOTICE TO RECIPIENT** states that the email is for the intended recipient and may contain confidential information, advising the user to notify the sender in case of an error and to destroy copies without reading or saving them. At the bottom of this section is a **Quick Reply** text input field. The footer of the content area contains **Send** and **Save** buttons, along with a **Switch To Full Form** link.

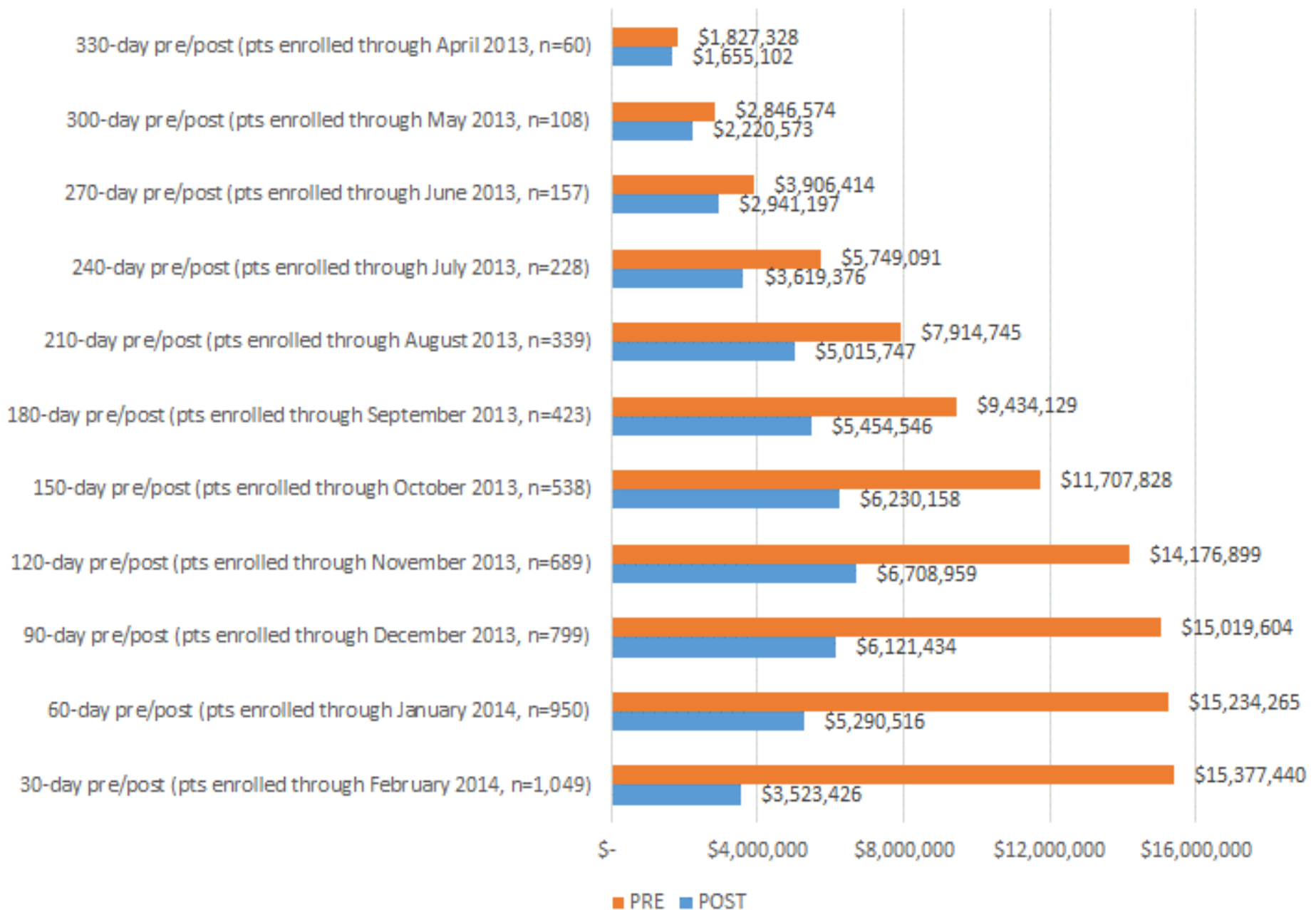
SUMMARY: HIT USE VIA HHIE FOR PHARM2PHARM PATIENTS

HIT	CURRENT	POTENTIAL
Secure messaging	Pharmacist to pharmacist	Pharmacist to <u>physician</u>
HCS med rec, med list	Pharmacist: access/update at enrollment, readmission, each visit	<u>Nurse/physician</u> : access/update at ER, admission, office visit
Patient registry	Pharmacist: enrollment list, active patient list	<u>Physician</u> : high risk patient list
LAN translation	Pharmacist: across the continuum	<u>Physician</u> : office/follow-up visits
Community health record	PLANNED: Pharmacist access to support medication monitoring	<u>Nurse/physician</u> : access info updated by pharmacist

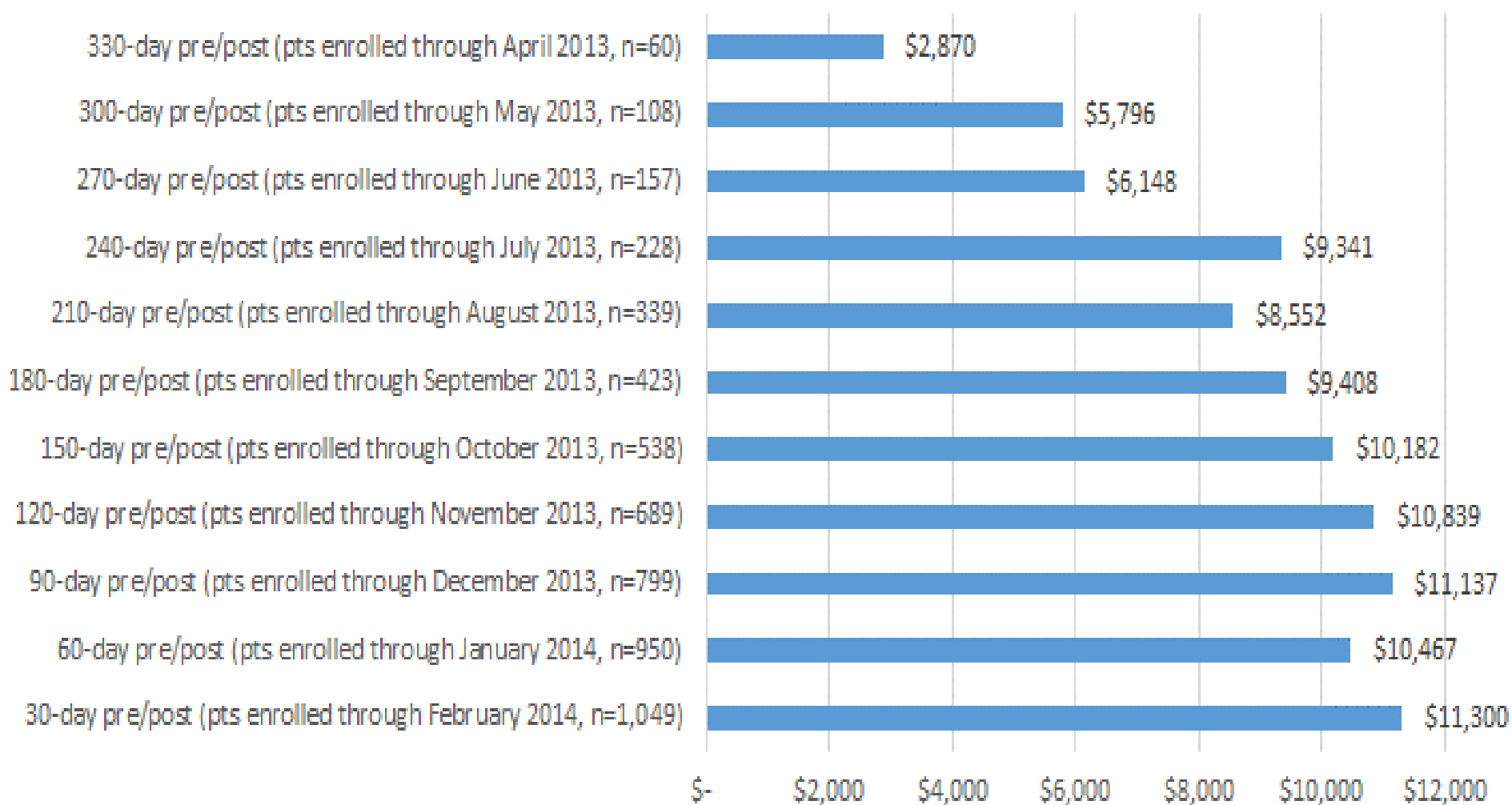


Total patients enrolled and handed off through March 2014	1,157
Average per patient acute care utilization 365 days prior to their Pharm2Pharm enrollment/hand-off	3.1
Total cost of acute care for these patients 365 days prior to their Pharm2Pharm enrollment/hand-off	\$30.6M
Average per patient acute care cost 365 days prior to their Pharm2Pharm enrollment/hand-off	\$26,441
% of patients by race/ethnicity	38% White/Caucasian 26% Hawaiian 14% Filipino 13% Japanese 3% Other Pacific Islander 2% Hispanic/Latino 0.7% Black 0.7% Chinese 0.4% American Indian 2% Other/unknown
% of patients by age	5% 18-44 11% 45-54 20% 55-64 32% 65-74 23% 75-84 10% 85+

TOTAL acute care costs pre/post Pharm2Pharm enrollment/handoff



PER PATIENT acute care cost decrease pre/post Pharm2Pharm enrollment/handoff



THREE-YEAR FOCUS

LAUNCH

Year 1

- Staff
- Contracts
- SOPs & tools
- Training
- Evaluation Plan
- Enrollment

IMPROVE

Year 2

- CQI
- HIT
- Provider collaborations

SUSTAIN

Year 3

- Payment models
- Partnerships



ACKNOWLEDGEMENT OF FEDERAL FUNDING

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Its contents are solely the responsibility of the authors and do not necessarily represent the official views of HHS or any of its agencies.

