

# ADVANCING INTEROPERABILITY THROUGH FHIR APPLICATIONS

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# THE ROAD TO HEALTHCARE INTEROPERABILITY IS COMPLEX AND CHALLENGING...

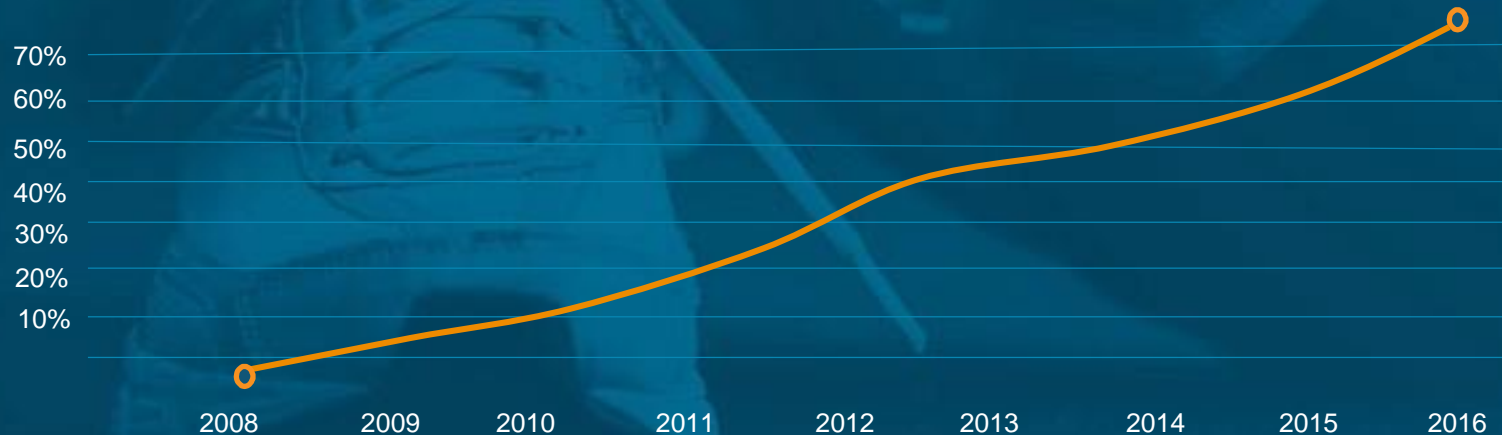


# ...BUT WE'RE SEEING PROGRESS THROUGH E-PRESCRIBING WITH MORE THAN 73% OF PRESCRIPTIONS DIGITIZED

**4.4 million**  
electronic prescriptions  
daily

**1.6 billion**  
electronic prescriptions  
in 2016

**10.9 billion**  
transactions in  
2016



**RATE OF E-PRESCRIBING NATIONWIDE**

CONCISE LIST OF  
PATIENT ISSUES

PATIENT HISTORY  
INFORMATION

Night  
before patient  
schedules visit

Patient  
appointment  
referral



Prescriber  
selects  
medication  
and pharmacy

PRESCRIPTION  
REVIEW AND  
PROCESSING

Prescription sent  
to pharmacy  
for patient pick-up

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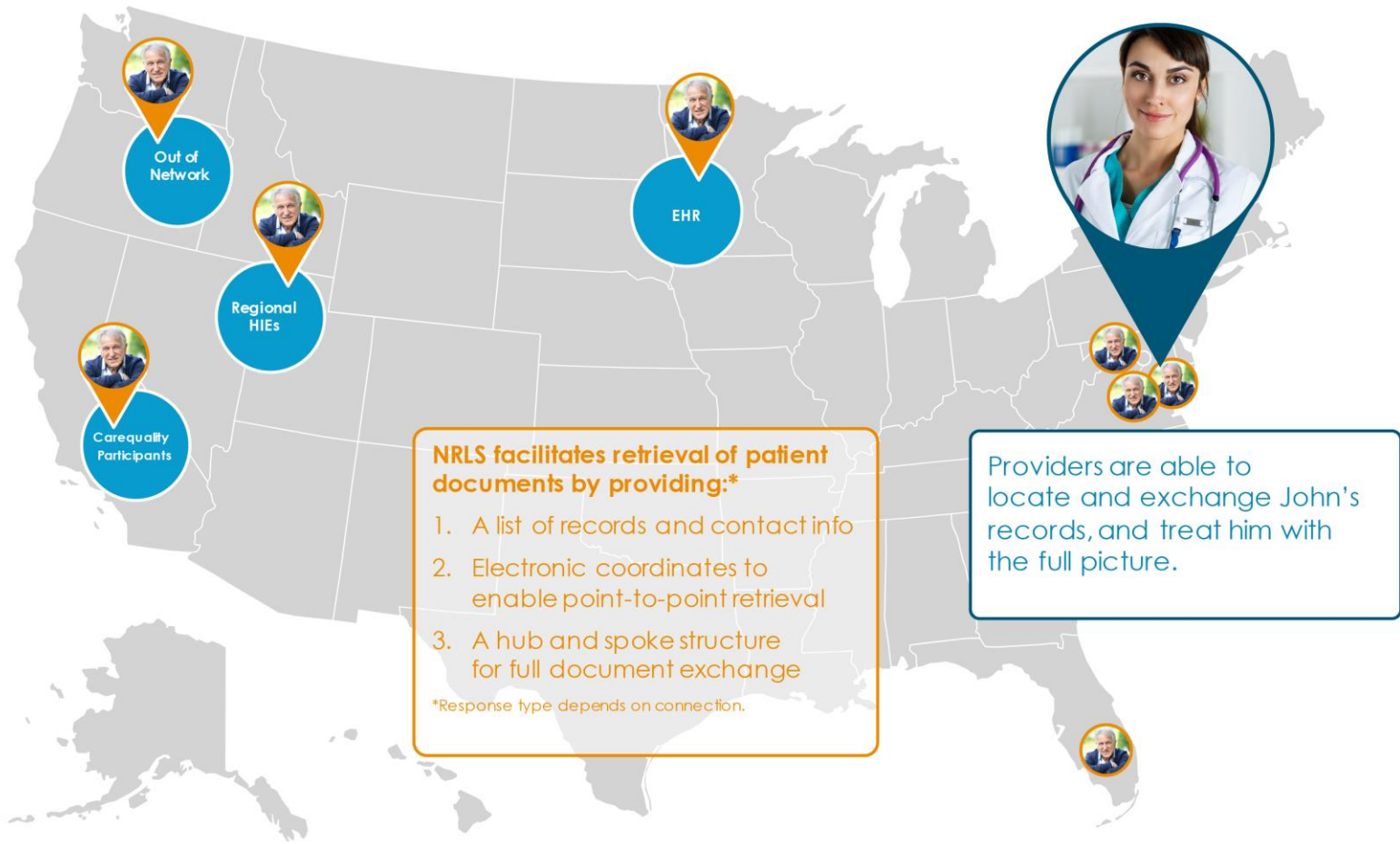
Night  
before patient  
schedules visit

NATIONAL RECORD  
LOCATOR SERVICES

PATIENT HISTORY  
INFORMATION

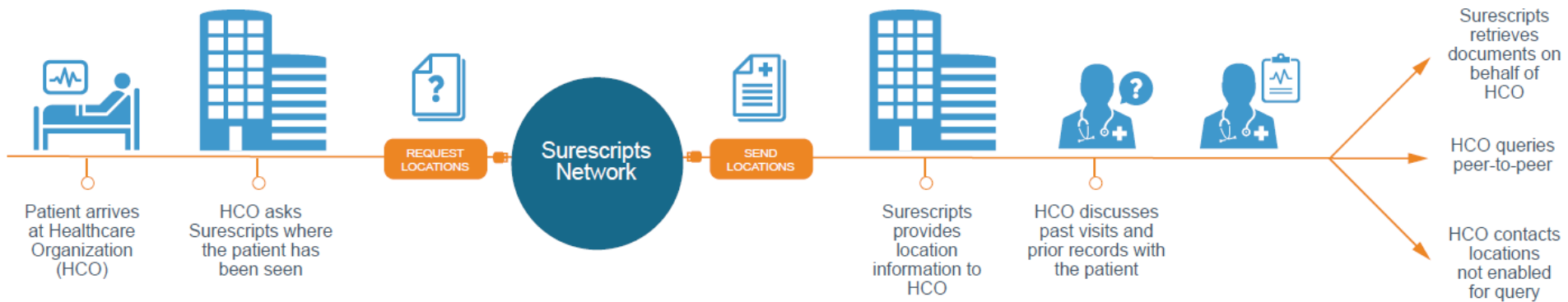
Actionable  
intelligence is  
needed at critical  
points in care.

# NATIONAL RECORD LOCATOR SERVICES DELIVERS VISIT HISTORIES NO MATTER WHERE PATIENTS RECEIVE CARE





# NATIONAL RECORD LOCATOR SERVICES PROCESS FLOW



# HOW FHIR HELPS NATIONAL RECORD LOCATOR SERVICES DELIVERS KEY BENEFITS



## INCREASED LOCATIONS

By adding FHIR as a way to exchange patient data, Surescripts increases the pool of health systems that can exchange data.



## EXPAND BEYOND CAREQUALITY

By adding FHIR Surescripts makes it easier to connect Carequality members to non-Carequality systems.



## EASE FOR IMPLEMENTERS

By adding FHIR, EHRs with modest development budgets can implement and integrate National Record Locator Services in a shorter timeframe.



# NATIONAL RECORD LOCATOR SERVICES USES FHIR

## Bridge IHE and FHIR Interactions

- Both IHE to FHIR and FHIR to IHE supported
- National Record Locator Services abstracts the differences between the standards

## Patient Resource

- Search using Patient-Match Operation
- Return a patient resource if a match is found

## DocumentReference Resource

- Find all available documents for a patient at any location across the country

## Documents

- Currently returned as CDAs for maximum interoperability
- Future enhancements to return discrete resources

```
{
  "resourceType": "Parameters",
  "id": "example",
  "parameter": [
    {
      "name": "resource",
      "resource": {
        "resourceType": "Patient",
        "id": "0e017798-d465-4f19-ae8a-21bdfa743aac",
        "identifier": [
          {
            "active": true,
            "name": [
              {
                "use": "official",
                "family": "Harper",
                "given": [
                  "Emily"
                ],
                "prefix": "Dr"
              }
            ],
            "gender": "female",
            "birthDate": "1987-05-03",
            "telecom": [
              {
                "value": "+16122223333",
                "use": "mobile",
                "system": [
                  "phone"
                ]
              }
            ],
            "address": [
              {
                "use": "home",
                "line": [
                  "235 A Marshall Cir"
                ],
                "city": "",
                "state": "WA",
                "postalCode": "58623"
              }
            ]
          }
        ],
        "entry": [
          {
            "resource": {
              "resourceType": "Patient",
              "identifier": [
                {
                  "use": "usual",
                  "type": {
                    "system": "2.16.840.1.113883.3.2054.2.1",
                    "value": "140712031"
                  }
                }
              ],
              "name": [
                {
                  "family": "Harper",
                  "given": [
                    "Emily",
                    "Ann"
                  ]
                }
              ],
              "gender": "female",
              "birthDate": "1987-05-03",
              "address": [
                {
                  "line": [
                    "235 Marshall Circle"
                  ],
                  "city": "Alberton",
                  "state": "WA",
                  "postalCode": "58623"
                }
              ]
            }
          ]
        ]
      }
    ]
  ]
}
```

**CONCISE LIST OF  
PATIENT ISSUES**

**MEDICATION  
MANAGEMENT  
FOR ADHERENCE**

**PATIENT HISTORY  
INFORMATION**

Night  
before patient  
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**TRACK  
MEDICATION  
ADHERENCE**

Prescription sent  
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*Actionable  
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**PRESCRIPTION  
REVIEW AND  
PROCESSING**

# WE DELIVER MEDICATION INSIGHTS FROM PAYERS DIRECTLY INTO THE PROVIDER'S EHR

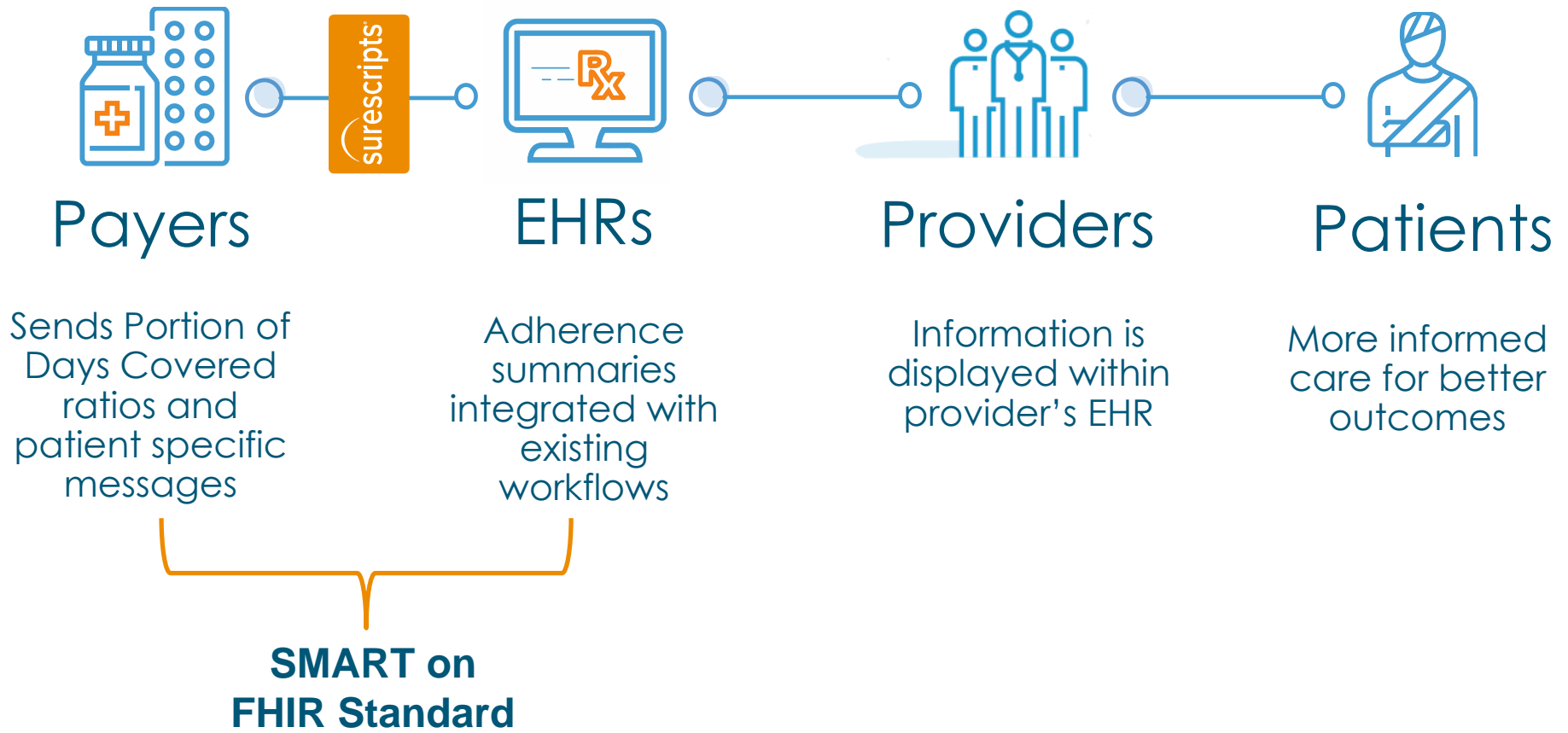
## MEDICATION MANAGEMENT FOR ADHERENCE

Gaps in Care  
and adherence  
summaries  
(using Portion of  
Days Covered  
by disease class)

## RESULTS

Over **4%**  
increase in  
medication  
adherence in  
first 3 months<sup>1</sup>

# FHIR STANDARDIZES LOCAL AND NETWORK DATA TO IMPACT DECISION-MAKING AT THE POINT OF CARE



# MEDICATION MANAGEMENT FOR ADHERENCE FHIR RESOURCES

## Adherence summaries



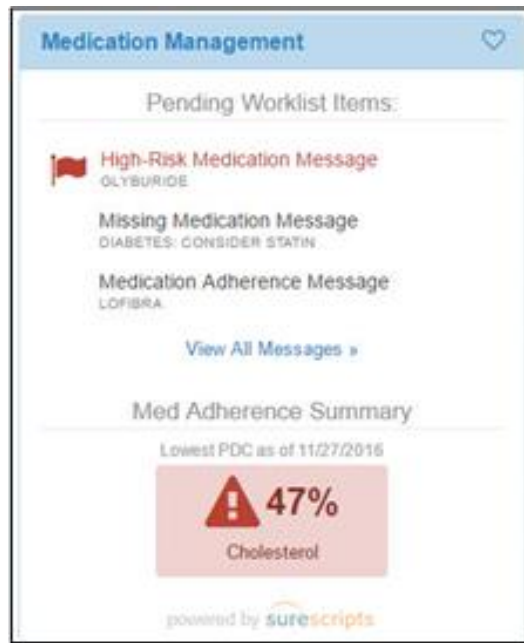
## Medication Adherence



## Missing Medications



## High Risk Medications



### Med Adherence, Missing Med and High Risk Messages:

- Message Header
- Communication Request
- Contraindication
  - Text
  - Medication Prescription
  - Medication
  - Severity
- Patient
- Practitioner
- Organization

### Adherence Summary:

- Message Header
- Communication Request
- Observation
  - Medication Dispense
  - Medication Prescription
  - Medication
  - Extension (disease category)
  - Value (PDC score)
- Patient
- Practitioner
- Organization

# EXAMPLE DISPLAY OF MESSAGE DETAIL FOR A PATIENT

Sollors, Harry

MRN766879 08/24/1952 (65) (293) 768-2217



MEDICATION ADHERENCE MESSAGE  
SOLLORS, HARRY 08/24/1952

Received: 09/13/2017

Payor ABC records indicate this patient may have discontinued taking niacin as instructed. Please discuss adherence with your patient.



PLEASE RESPOND:

Is adherence a confirmed issue?

Yes

No

## List of relevant Medication Adherence summaries by disease classification



MEDICATION ADHERENCE PROFILE

▲ 58%

**Cholesterol**

09/07/2017

Medication	Filled	Supply
niacin, 1000mg NDC: 0093-7394-98	07/29/2017	90 days

🔔 64%

**Diabetes**

09/04/2017

Medication	Filled	Supply
No medication details received.		

✓ 96%

**Hypertension**

09/08/2017

Medication	Filled	Supply
propranolol, 60mg NDC: 54868-5564-0	08/08/2017	60 days

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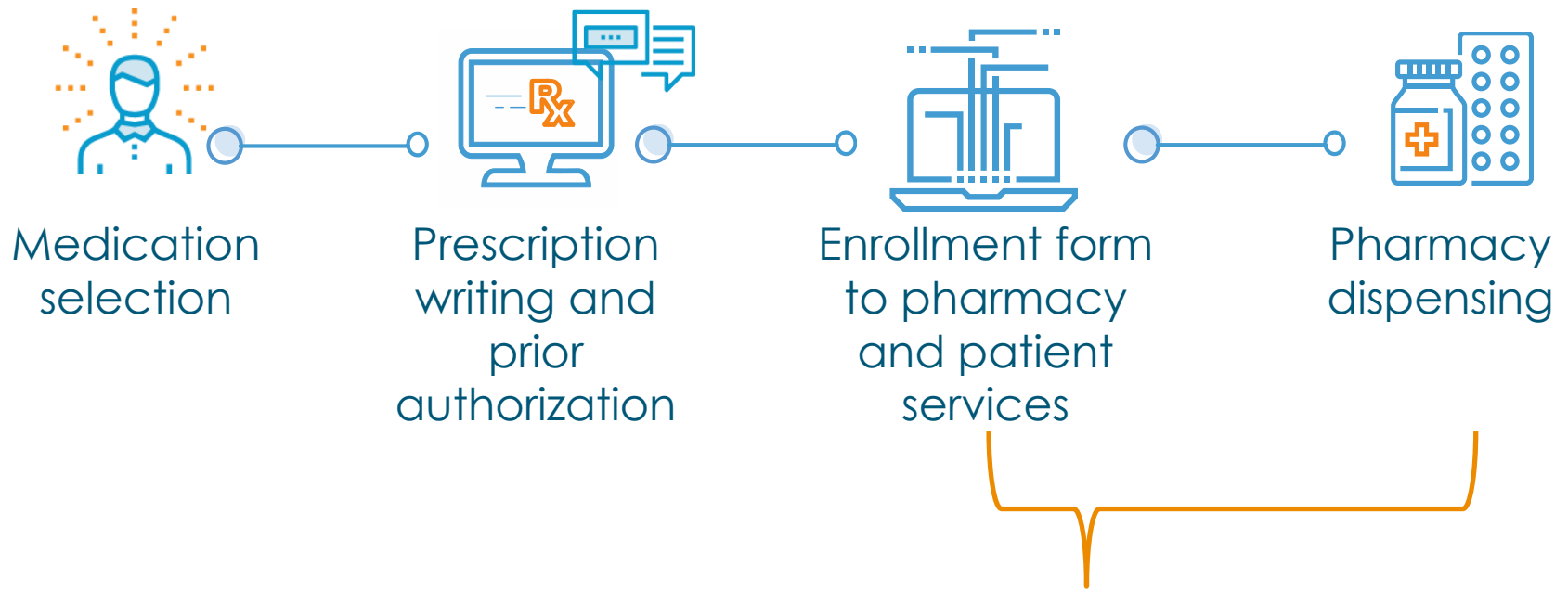
PRESCRIPTION  
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SPECIALTY PATIENT ENROLLMENT

Actionable  
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# A NEW ENROLLMENT SOLUTION WILL ENABLE THE SPECIALTY PRESCRIBING PROCESS TO GO ELECTRONIC



- Enrollment forms are FHIR (STU 3) Questionnaire resources
- Argonaut has guidelines for exchanging clinical information using FHIR resources
- Condition-specific information required for all specialty enrollment (e.g., CRP & ESR for RA, and LFTs for Hepatitis C)

# THE PATIENT ENROLLMENT SOLUTION INTEGRATES INTO THE PROVIDER'S EHR WORKFLOW

HealthMax EHR

Patients Admin Schedule Reports Collection Billing Worklist

SPECIALTY PHARMACY ENROLLMENT  
Humira (adalimumab) 40mg/0.8 mL prefilled syringe  
Standback, Aaron

Return to Worklist

SELECT CONDITION:  
Rheumatoid Arthritis Start enrollment

PATIENT  
Standback, Aaron  
Date of birth: 11/07/1970  
Gender: M

PROVIDER  
Michael Turnbuckle MD  
Practice: Central Family Care

PHARMACY  
Specialty Pharmacy  
Date of birth: 11/07/1970  
Fax: (370) 828-1351

Standardized forms across  
Specialty Pharmacies by  
disease state/drug for  
prescriber to select from.

Prepopulates enrollment form  
with patient information,  
including demographic,  
insurance, clinical and lab data.

HealthMax EHR

Schedule Reports Collection Billing Worklist

SPECIALTY PHARMACY ENROLLMENT - Rheumatoid Arthritis  
Humira (adalimumab) 40mg/0.8 mL prefilled syringe  
Standback, Aaron

Options Save

STANDBACK, AARON  
Date of birth: 08/27/1951  
Gender: M

ACTIVE MEDICATIONS

Calcium with Vitamin D4
Multivitamin
Aspirin 5mg
Pepcid AC 20mg
Effexor 112mg
Lynx 100mg
Tylenol 200mg
Ultram 100mg
Mucinex (1-2 tabs)

PROBLEMS

Condition	Diagnosis
C90.0: Multiple myeloma	06/06/2016

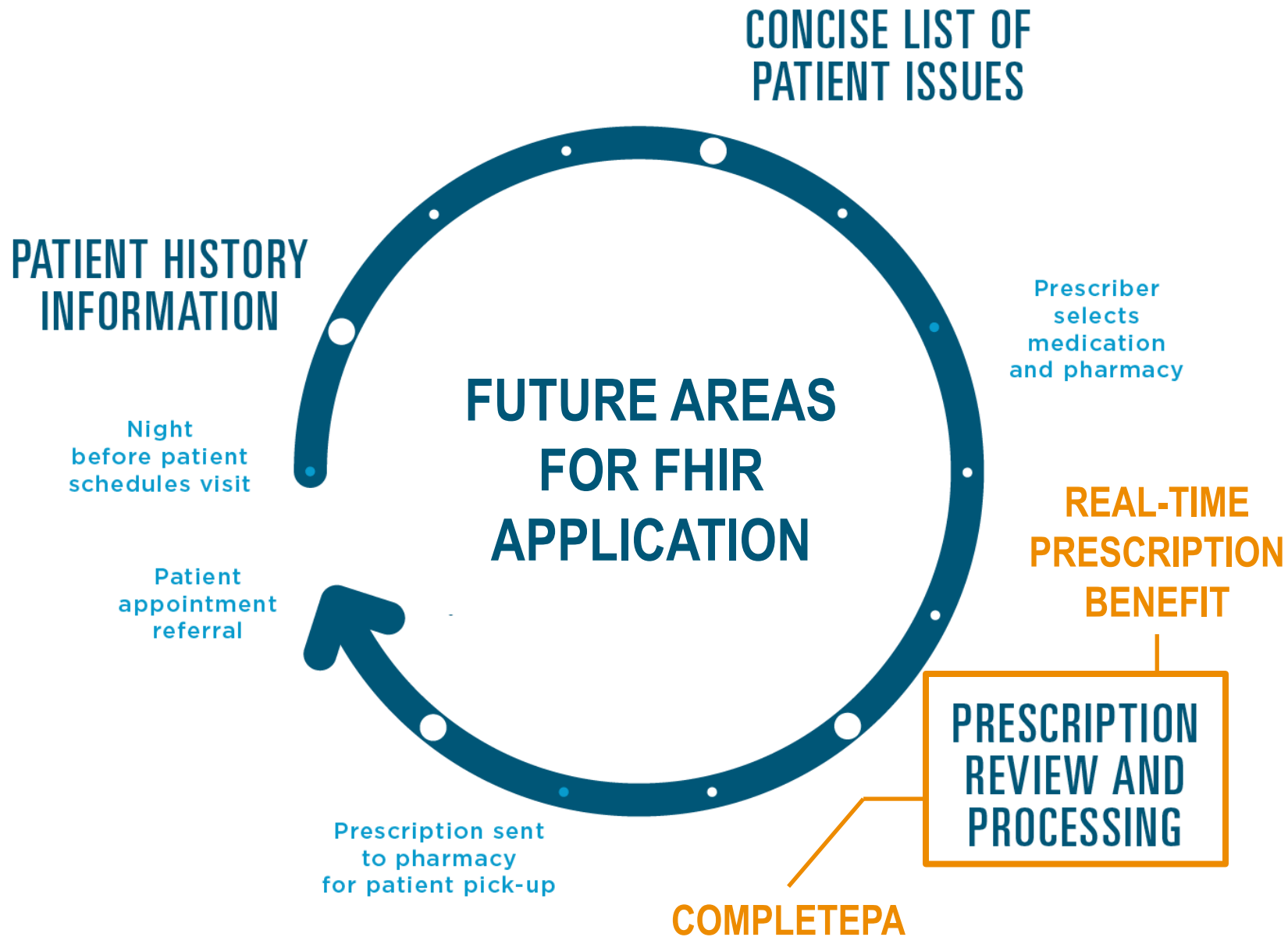
ALLERGIES

Medication	Reaction	Severity
Codeine	Nausea	Mild
Imitrex	Contraindicated due to coronary disease	Mild
Latex	Rash, swollen lips	Moderate
Lisinopril	Dizziness, headache	Moderate
Peanuts	Itching, rash	Moderate
Penicillin	Anaphylaxis	Severe
Sulfa	Stevens Johnsons syndrome	Severe

# EXAMPLE – BODY HEIGHT (QUESTIONNAIRE)

```
"linkId": "PatientBodyHeight", "text": "Body Height",  
  "code": [{  
    "system": "http://loinc.org", "code": "8302-2", "display": "Body height" }],  
  "extension": [{  
    "url": "http://surescripts.com/fhir/StructureDefinition/fhir-callback-query",  
    "valueString": "GET /Observation$lastn" }],  
  "type": "group", ...  
  "item": [{  
    "linkId": "PatientBodyHeight_Value",  
    "text": "Height",  
    "type": "decimal",  
    "extension": [{  
      "url": "http://surescripts.com/StructureDefinition/allowedUnits", "valueCoding":  
        {"system": "http://unitsofmeasure.org", "code": "cm", "display": "cm" } },  
      {"url": "http://surescripts.com/StructureDefinition/allowedUnits", "valueCoding":  
        {"system": "http://unitsofmeasure.org", "code": "[in_i]", "display": "inches" } } ] ],  
    {  
      "linkId": "PatientBodyHeight_Date",  
      "text": "Height date",  
      "type": "date"  
    }  
  ]
```

The screenshot shows a patient record interface. At the top, there's a 'General' section with patient information: 'Yin, James 5:37:51 AM (DOB:4/22/1988)', 'GENOTROPIN, Authorization Wednesday, October 18, 2017 5:37 AM', and a 'Page: 6 of 8' indicator. Below this, the 'Body Height' section is highlighted with an orange border. It contains two fields: 'Height' with a value of '172' and a unit dropdown set to 'cm', and 'Date height was measured' with a date picker showing '10/2017'. A note at the bottom of the section states 'Valid date formats: mm/dd/yyyy, mm/yyyy or yyyy'.





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