



EHR-Based tools for OCTRI Research Forum Recruitment

DATE: February 26, 2019 PRESENTED BY: Robert Schuff, Director, Clinical Research Informatics, OCTRI

Overview

- What tools are available?
- When is a given tool best to use?
- How to access these tools and costs
- Where to go for more help
- Q & A

Available Tools

- Within Epic
 - Reporting Workbench
 - Best Practice Advisories
 - MyChart
- Outside of Epic
 - OCTRI Research Data Warehouse (RDW)
 - OCTRI Cohort Discovery



Recruitment:

Epic tools that can be used for study recruitment are -

- **MyChart:** Invite potentially qualified patients to participate in a study by sending a MyChart message.
- **Best Practice Advisories (BPAs):** Real-time notifications when a patient may be eligible for a study, triggered by specific actions/criteria within a patient encounter.
- **Reporting Workbench:** self-service tool for running simple, real-time queries on patient data.
 - Small subsets of recent data, simple criteria
 - Can replace the tedious task of “schedule scanning” to look for potential subjects.

All options require IRB approvals!



Using MyChart for Recruitment into Clinical Research Studies

- Epic and/or RDW team work with research staff create query based on study-specific criteria
- IRB reviews and approves MyChart message to send directly to potential research subjects identified by query
 - Message indicates that the subject may be eligible for a research study
 - May include a short questionnaire and/or link to an IRB-approved survey or website
 - Subjects may opt out of all future MyChart contact for research studies

Recruitment: MyChart

Temporary report setting [3273225] as of Wed 9/19/2018 12:40 PM

Filters Options Chart Appts Open Encounter Add to List Research Studies Study Association Send Patients Message **Send Recruitment Request** Questionnaire

MRN	Patient	DOB	Age	Sex	Pt. Portal Status
03426418	Abernathy, Haymitch	03/17/2001	17 y.o.	Male	Activated
03500475	Acid, Amino	07/04/1994	24 y.o.	Female	Activated
03000132	Antoinette, Marie	01/01/1950	68 y.o.	Female	Activated
03440093	Arabian, Sea	06/17/1973	45 y.o.	Male	Activated
03500158	Asap, Ship	04/01/2000	18 y.o.	Male	Activated
03502671	Asdf, Asdf	01/01/1980	38 y.o.	Female	Activated
03501062	Bab, Bailey	06/08/1985	33 y.o.	Female	Activated
03502434	Banja, Luka	01/01/1980	38 y.o.	Female	Activated
03501174	Barcelona, Isabella	06/15/1986	32 y.o.	Female	Activated
03427243	Beaker, Otter	04/04/1962	56 y.o.	Male	Activated
03440010	Bear, Fozzie	05/23/1973	45 y.o.	Male	Activated
03427077	Bear, Papa	01/15/1936	82 y.o.	Male	Activated
03501672	Beet, Pete	10/01/1987	30 y.o.	Male	Activated
03501671	Beet, Sasparilla	04/01/1995	23 y.o.	Male	Activated
03500527	Beet, Sugar	11/23/1983	34 y.o.	Female	Activated
03502715	Ben, Spanky	08/08/1941	77 y.o.	Male	Activated
03502668	BIRMINGHAM, Robert	06/05/1961	57 y.o.	Male	Activated
03501879	Blazing, Trail	11/01/1980	37 y.o.	Male	Activated
03500524	Bones, Seymore	02/02/1962	56 y.o.	Male	Activated
03503048	Bos, Shannon	12/08/1960	57 y.o.	Female	Activated
03503774	Breastimg, Anna	08/30/1983	35 y.o.	Female	Activated
03500554	Brite, Rainbow	12/01/1995	22 y.o.	Female	Activated
03501885	Bubbles, Bouncy	12/16/2016	21 m.o.	Male	Activated

Send Recruitment Requests

Research study:

100095159 IRB 16600

A patient-facing study name and description, and In Basket notification settings should be configured prior to sending recruitment requests from this tool.

Patient-facing study name:

A randomized, controlled trial of low-fat diet for fatigue in multiple sclerosis

Patient-facing description:

Brief Summary/Purpose: Dr. Vijayshree Yadav, a neurologist at OHSU, is conducting a study to learn more about the impact of following a low-fat diet on fatigue in people with MS. Half of the participants in the study will learn to follow a low-fat diet and then follow a low-fat diet for three months. The other half of participants will follow their usual diets for four months.

Medical condition(s): Multiple Sclerosis

Eligibility criteria: You may be eligible to participate if you are between the ages of 18-70, have multiple sclerosis, experience moderate to severe fatigue, and are not currently following a low fat diet

Accept

Cancel

Recruitment: MyChart

MyChart OHSU

Pete

Mailbox Visits **Medical Record** Billing Resources My Account

Welcome! (Pete)

Read your messages. You have 34 new messages.

Schedule appointments for your current health reminders. 2 reminders need your attention.

See research studies for which you may be eligible. You have a study invitation pending. Click here to find out more.

Quick Links

- View test results
- Ask a question
- Schedule an appointment
- Refill medications

Recruitment: MyChart

Available Studies

Based on a computerized search, information in your medical record indicates that you may be a match for a clinical research study. Click "Contact Me" if you would like to be contacted to learn more about the study.

Please direct any questions to the study contact(s) listed below.

Discontinuation of Disease Modifying Therapies (DMTs) in Multiple Sclerosis

[CONTACT ME](#)[NO, THANK YOU](#)

Principal Investigator
DENNIS BOURDETTE,
MD

Description

Brief Summary/Purpose: Dr. Dennis Bourdette, a neurologist at OHSU, is conducting a study to learn more about the safety of stopping disease modifying therapies (DMTs) in people with stable multiple sclerosis (MS).

Study Coordinator
Anna Orban

Medical condition(s): Multiple Sclerosis

In Basket New Msg Patient Msg Refresh Edit Pools Settings Search Manage QuickActions Attach Out

My Messages
Research Recruitment

> Research Recruitment 0 unread, 3 total

Done Chart Research Studies Msg to Pt

Msg Date	Msg Time	Patient	Research Study
09/11/2018	1:40 PM	Study, Eleven	100095159 IRB 16600 [100
01/08/2018	4:15 PM	Beet, Pete	100095705 IRB 16477 [100
10/16/2017	3:08 PM	Study, Ten	100095705 IRB 16477 [100

Study, Eleven

Research Recruitment
This patient's enrollment status has changed as the result of a recruitment workflow.
Interested - 100095159 IRB 16600
via MyChart at 9/11/2018 1:40 PM

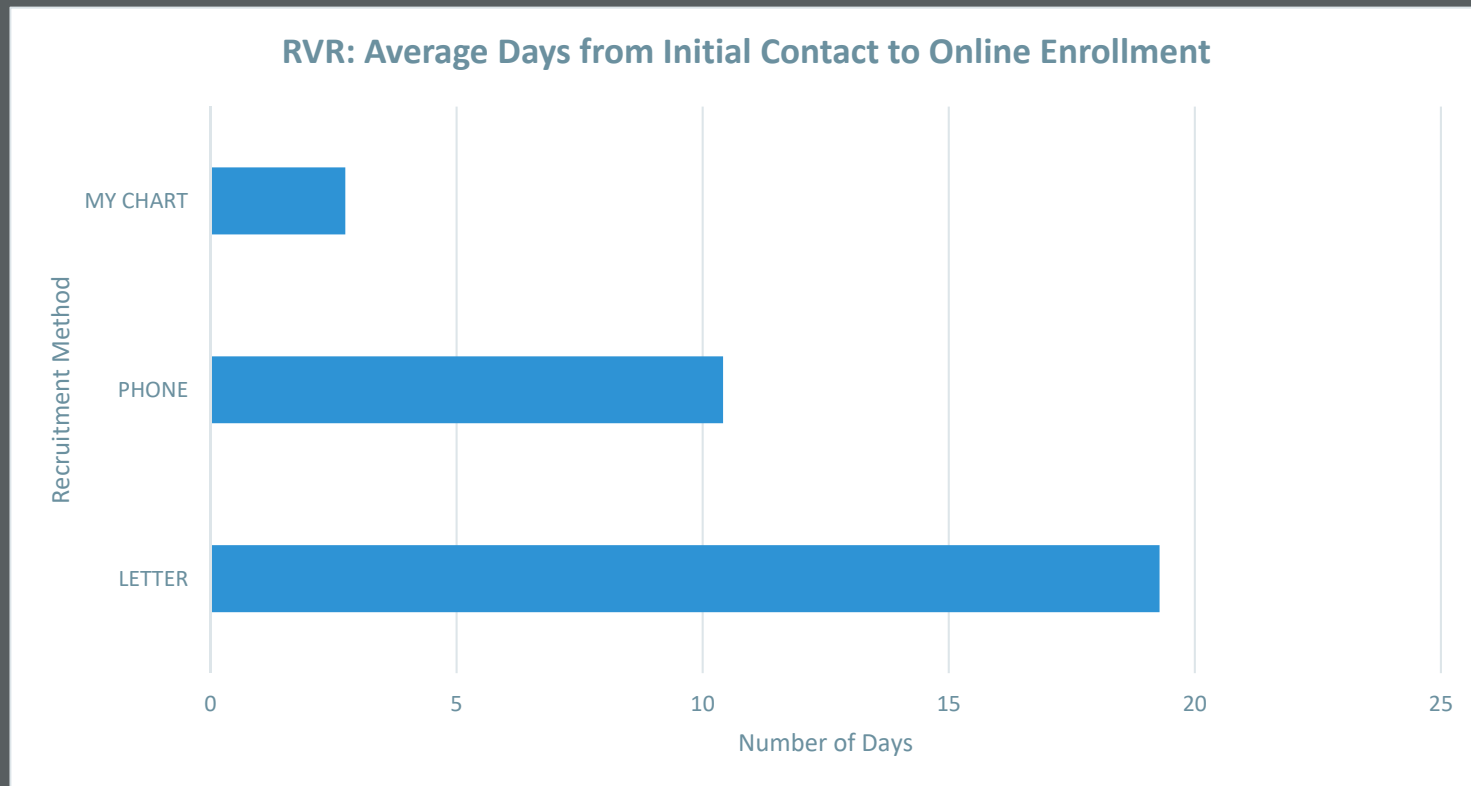


Recruiting Healthy Subjects into Registry using MyChart

- CTRC-based Research Volunteer Registry (RVR) with names, contact information, medical information (n > 400), and biorepository of stored samples (n > 130)
- Randomized trial of traditional methods vs. MyChart message for RVR recruitment
 - 858 OHSU patients identified via Epic with active MyChart accounts who were “healthy” by exclusion of most ICD-10 codes and meds
 - Excluded patients seen in Family Medicine clinics
 - Randomly assigned to receive identical MyChart message, letter, or phone call (4:2:1) (482:237:139)
 - No further contact to MyChart recipients; f/u phone call to patients who did not respond to initial letter (n=227); 2 f/u phone calls to patients who did not respond to initial phone call (n=139 and 117)

Method of contact	# Messages sent	Subjects enrolled into RVR	Subjects donated samples	Subjects opted out of MyChart	Hours of effort per enrolled subject
MyChart	482	23 (4.8%)	7 (1.5%)	10 (2.0%)	3.0
Letter	237	14 (5.9%)	1 (0.04%)	NA	17.3
Phone	139	12 (8.6%)	2 (1.4%)	NA	13.6

- Overall recruitment rates are low
- Recruitment may be higher by phone contact, but much more labor intensive
- Costs of recruitment much higher for letter and phone calls than MyChart

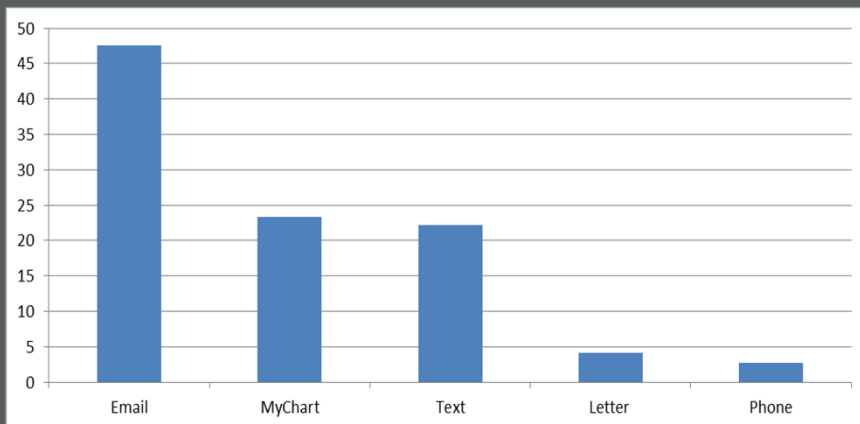


Recruitment rate much faster with MyChart

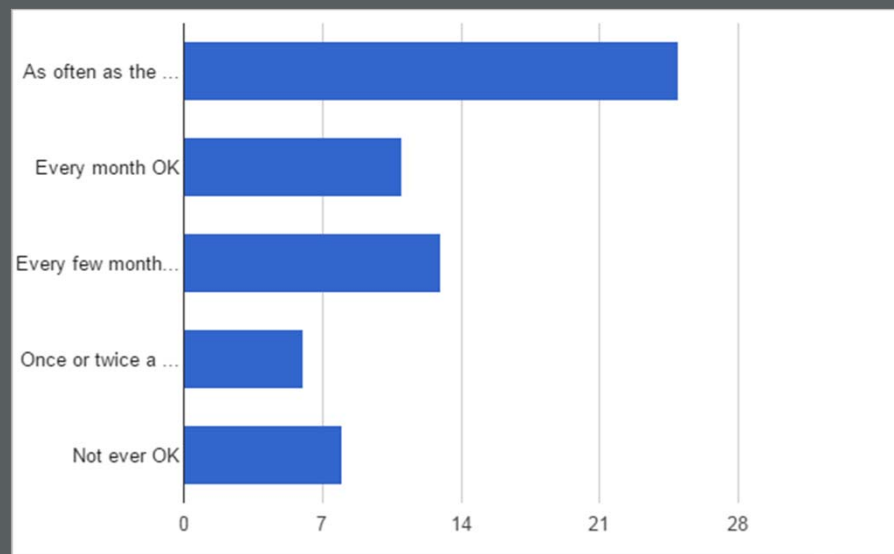
F/u survey 1 month later via same methods asking about acceptance of method for contacting patients:

Original method of contact	Response rate to f/u survey	Acceptable to be contacted via MyChart for research studies	Not acceptable to be contacted via MyChart for research studies	Not sure	Don't use MyChart
MyChart	20 (4%)	86%	0%	9%	5%
Letter or phone call	39 (11%)	57%	17%	7%	19%

Preferred method (top 2 choices):



How often OK to contact:



Study Conclusions

- MyChart is an acceptable method of contact for research studies for almost all patients
- Recruitment rates are low for all methods, especially for intensive or invasive studies
- Lower cost for MyChart recruitment tool compared to traditional recruitment methods
- MyChart recruitment is faster than traditional methods

Recruitment: MyChart

Recent example:

Study: Neurology, MS low fat diet study

Message send date: 9/12/18

Number of patients: 1057

In first 24 hours:

172 patients read the invitation (16%)

107 patients responded (10%):

-41 interested

-66 declined

After one week:

Read – 251 (24%)

Responded – 149 (14%)

Interested - 56

[More Information about MyChart Recruitment](#)

When to use MyChart

- You want to reach a large number potential participants quickly
- Your eligibility criteria are specific and translate well to query specifications
- Eligible patients are not Family Medicine patients
- You have sufficient budget for query development

Recruitment: BPA's

In Basket New Msg Patient Msg Refresh Edit Pools Manage Pools Settings Search Manage QuickActions Attach Out Properties

My Messages

My Open Encounters

Research Recruitment BPA

Research Recruitment BPA 12 unread, 314 total

Done Encounter Complete BPA Review Research Studies Msg to Pt New Enc

Subject	Msg Date	Msg Time	Patient	Visit	Location	Pot
? Facial paralysis diagnosis ...	02/21/2018	4:02 PM	[Patient Name]	02/21/2018	CEIOCU	YES
? Facial paralysis diagnosis ...	02/20/2018	2:58 PM	[Patient Name]	02/20/2018	ED-6B6-6B6	YES
? Facial paralysis diagnosis ...	02/20/2018	12:26 PM	[Patient Name]	02/20/2018	REH PT CHH	YES
? Facial paralysis diagnosis ...	02/14/2018	6:09 PM	[Patient Name]	02/13/2018	14C-14C20-1	YES

Message Patient Info

Facial paralysis diagnosis was entered for this patient which may qualify him/her for IRB 16901. You may need to do further chart review to screen for other inclusion & exclusion criteria.

Date	User	Actions Taken	Triggers	Comment
01/15/18 1928	Bryce L Edwards, MD [EDWARDBR]	Send In Basket Message	Enter diagnosis - Bell's palsy [351.0.ICD-9-CM]	None

Recruitment: BPA's

Images Open Orders Care Teams Benefits Inquiry Calculator Rad DS

Problem List Visit Diagnoses BestPractice **Research Recruitment**

Research Recruitment

Research (Research Recruitment: 1)

This patient met the criteria for the research recruitment BPA for IRB 17011 and may qualify for the study.

This patient may qualify for IRB 17011, a study to evaluate whether a treatment strategy that is shown to be beneficial for non-pregnant adults to achieve target BP (140/90 mmHg) is a safe and effective treatment during pregnancy.

Please indicate if the patient is interested in participating AND page Monica Rincon 1-6328 for more information.

<u>Inclusion terms:</u>	<u>Exclusion terms:</u>
Hypertension (any)	Twins
SBP > 140	Chronic kidney disease
DBP > 90	Major fetal anomaly
Gestational age < 23 0/7 weeks	PPROM
	Type 1 Diabetes

Respond to Study Do Not Respond 100095448 IRB 17011

☐ Interested
☐ Declined
☐ Ineligible

[More Information about Recruitment BPAs](#)

When to use BPAs

- Your protocol has narrow windows of opportunity. For example:
 - Enroll before any treatment for a condition has commenced
 - You need to collect a placenta specimen
- You have very specific eligibility criteria
- For passive alerts, you have provider buy in
- You have sufficient budget for Epic system programming

Recruitment: Reporting Workbench

- Specify date range and search criteria
- “Save As” for a custom report that can be run anytime and shared with other users

Temporary report setting [6748844]

Criteria Display Appearance Summary Print Layout General

Search Appointments

From date: 9/26/2018 (W+1) To: 10/3/2018 (W+2)

Filter criteria + Add

Filter criteria	Enter Search Values
<input checked="" type="checkbox"/> Appt Status	Appt Status
<input checked="" type="checkbox"/> Appt Dept Specialty	1 Scheduled [1]
<input checked="" type="checkbox"/> Patient Age (in years)	2
<input checked="" type="checkbox"/> Problem List Diagnosis grouper	
<input type="checkbox"/> Research Study	
<input type="checkbox"/> Provider investigator	

And Or Custom

Find Appointments between 9/26/2018 (W+1) and 10/3/2018 (W+2)

From ①

Appt Dept Specialty:
Dermatology

Where ①

Appt Status:
Scheduled [1]

AND Patient Age (in years):
Greater than or equal to 35 OR
Less than or equal to 65

AND Problem List Diagnosis grouper:
LQH MED HX ECZEMA [88110085]

☐ Notify Run Save Save As Restore Close

Recruitment: Reporting Workbench

Temporary report setting [5228791] as of Wed 9/19/2018 4:19 PM

Filters Options Expand Appts Notes Encounter Chart Research Studies Link to Research Study + Add

Date	Appt Time	Department	Prov/Res	Appt Stat	Type
10/03/2018	2:30 PM	DRM CONTACT CHH	SCHWARZENBERGER, KATHRYN	Sch	DRM NEW CONTACT
09/27/2018	11:30 AM	DRM MED 5 CHH	SEID, CARRIE L	Sch	DRM NEW OFFICE VISIT
09/28/2018	9:20 AM	DRM MED CHH	PARKER, FRANKLIN	Sch	DRM NEW OFFICE VISIT
10/01/2018	10:00 AM	DRM PEDS DCH	LEITENBERGER, SABRA	Sch	DRM NEW OFFICE VISIT
10/03/2018	3:30 PM	DRM MED 5 CHH	LEITENBERGER, JUSTIN J	Sch	DRM NEW OFFICE VISIT
09/27/2018		DRM MED CHH	HANIFIN, JON	Sch	DRM NEW OFFICE VISIT
09/28/2018	1:15 PM	DRM PEDS CHH	FUNK, TRACY	Sch	DRM NEW OFFICE VISIT
10/03/2018	5:45 PM	DRM PEDS CHH	FUNK, TRACY	Sch	DRM NEW OFFICE VISIT
	3:00 PM	DRM CONTACT CHH	SCHWARZENBERGER, KATHRYN	Sch	DRM NEW CONTACT
09/27/2018	2:45 PM	DRM PEDS DCH	SMALL, ALISON M	Sch	DRM NEW OFFICE VISIT
10/01/2018	9:45 AM	DRM PEDS DCH, INT...	LEITENBERGER, SABRA	Sch	DRM NEW OFFICE VISIT

[More Information about Reporting Workbench](#)

When to use Reporting Workbench

- You have straightforward eligibility criteria that can be searched.
 - e.g. “show me all patients in my clinic that...”
- and ... you need to manually review chart in Epic

Research Data Warehouse (RDW)



What is the RDW?

- IRB-approved repository of clinical and research data created and maintained by OCTRI *specifically for research purposes*
- Contains Epic data as primary data source
 - Also includes Pathology, Cancer Registry
 - Integrates eIRB and opt-out data to facilitate compliance
- Organized to allow aggregation across millions of patient records quickly

RDW -Research Activities Supported

- **Preparatory to Research**
 - Feasibility (counts and aggregates)
 - Cohort identification
- **Conduct of Research Protocol**
 - Patient lists for recruitment
 - Data extracts chart review, safety monitoring, registries etc.
 - Large dataset extraction (e.g. epidemiology, notes for NLP projects)

What types of data are available?

- Demographic information
 - gender, race, ethnicity, preferred language, employment status
- Provider, insurance coverage
- Birth history
 - date of birth, gestation, birth weight
- Vitals
 - blood pressure, weight, height, pain ratings
- Contact and census information
 - Addresses, phone, census information
- Lab orders and results
- Diagnoses, problem lists, medical history (ICD-9, ICD-10)
- Hospital encounter information
- Medication lists and orders
- Ambulatory encounter information
 - clinic date, provider, department/clinic, PCP, chief complaint, cancel reason
- Procedures
- Surgeries
- Insurance coverage for patient encounter
 - benefit plan, insurance class, co-pay

Accessing the RDW

- Data released to investigators in three ways
 - Counts - no IRB required.
 - De-identified - IRB determination of “non-human subjects research”
 - Fully identifiable - requires IRB approved study

Accessing the RDW

Self-service
with Cohort
Discovery

- Data released to investigator in three ways
 - Counts - no IRB required.
 - De-identified - IRB determination of “non-human subjects research”
 - Fully identifiable - requires IRB approved study

Accessing the RDW

Through
RDW
Analysts

- Data released to investigators in three ways
 - Counts - no IRB required.
 - De-identified - IRB determination of “non-human subjects research”
 - Fully identifiable - requires IRB approved study

Cohort Discovery

Self-service RDW queries for patient counts



Cohort Discovery - Purpose

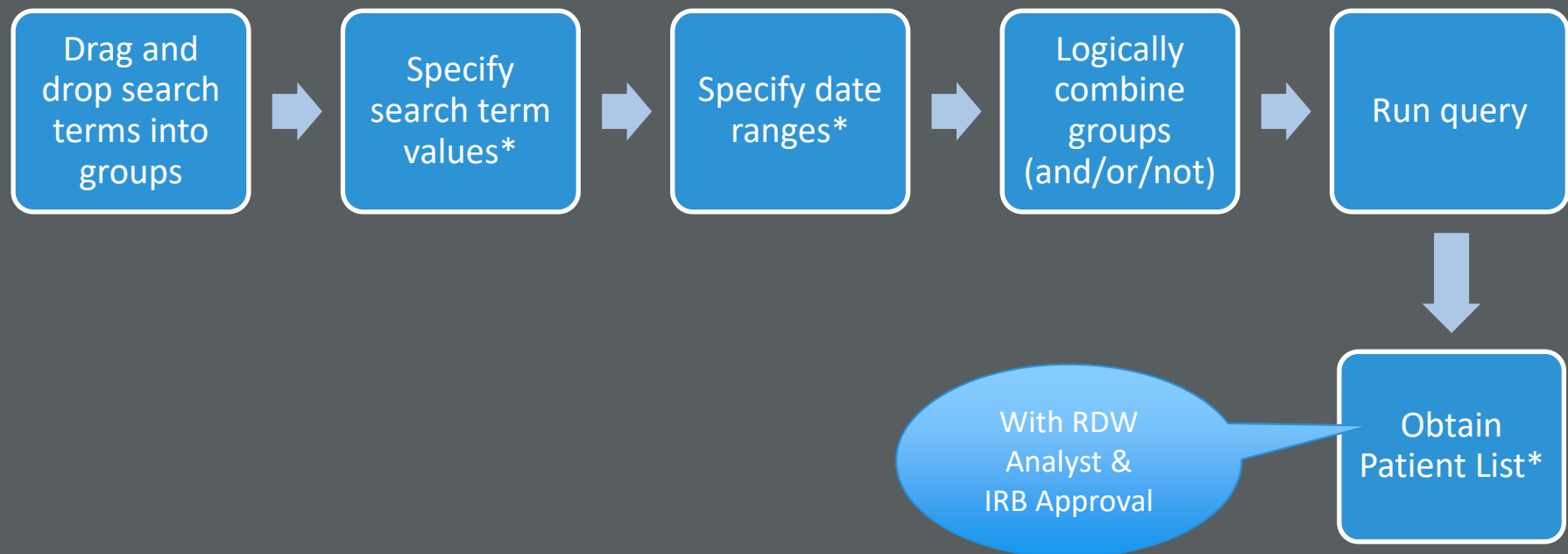
Provide researchers with a self-service web-based tool to determine study feasibility or discover patient cohorts during the “preparatory to research” phase by obtaining counts of patients based upon specified inclusion and/or exclusion criteria

Cohort Discovery - Query Workflow



* Optional

Cohort Discovery - Query Workflow



* Optional

Cohort Discovery - Screen

1. **Navigate/Find Terms** used to find and select concepts to include in query
2. **Query Tool** area where queries are built and specified
3. **Query Status** query results displayed
4. **Workplace** used to save queries to your private or a shared area for collaborative development
5. **Previous Queries**

The screenshot displays the Cohort Discovery Web Client interface. The browser address bar shows the URL <https://octriinternal.ohsu.edu/cohorts/>. The interface includes a top navigation bar with various application links and a user profile section for Robert Schuff. The main content area is divided into several panels:

- Panel 1 (Top Left):** A box titled "Navigate Terms" containing a list of search terms with their respective patient counts, such as "Demographics [n=3,316,785]" and "Diagnoses [n=1,290,227]".
- Panel 2 (Top Right):** A large "Query Tool" area for building queries. It includes a "Query Name" field, a "Temporal Constraint" dropdown set to "Treat all groups independently", and three columns for defining groups (Group 1, Group 2, Group 3) with options for "Dates", "Occurs > Dx", and "Exclude".
- Panel 3 (Bottom Right):** A "Query Status" panel with tabs for "Show Query Status", "Graph Results", and "Query Report".
- Panel 4 (Middle Left):** A "Workplace" panel showing a file tree with "SHARED" and "schuffr" folders.
- Panel 5 (Bottom Left):** A "Previous Queries" panel listing recent queries, including "Pityria@09:21:35 [10-4-2018] [schuffr]" and "Age in -Potassi@12:33:23 [5-18-2018] [schuffr]".

Cohort Discovery Screen

The screenshot shows the Cohort Discovery Web Client interface. The browser address bar displays <https://octriinternal.ohsu.edu/cohorts/>. The page header includes the title "Cohort Discovery", the project name "Project: cohorts", the user "User: Robert Schuff", and navigation links: "Find Patients", "OCTRI Training Doc.", "Analysis Tools", "Help", and "Logout".

The main interface is divided into two primary sections: "Navigate Terms" and "Query Tool".

Navigate Terms: This section contains a "Find" button and a list of search terms. The list is titled "Search Terms [3,316,789 pats. 1,815,031,929 obs.] - loaded 01/31/2019". The terms are categorized with folder icons and include the following counts:

- Demographics [n~3,316,785]
- Diagnoses [n~1,290,227]
- ICD-Oncology (Morphology) [n~1,248]
- Labs [n~957,465]
- LOINC Labs [n~889,135]
- Meds [n~993,213]
- OB/GYN-Neonatal-Pediatrics [n~3,316,785]
- Omics [n~522,806]
- Procedures [n~986,627]
- Surgeries [n~212,253]
- Visit [n~1,861,176]
- Vitals [n~1,861,178]

Query Tool: This section is used for building queries. It includes a "Query Name:" field, a "Temporal Constraint:" dropdown menu set to "Treat all groups independently", and three columns for defining groups (Group 1, Group 2, and Group 3). Each column has sub-columns for "Dates", "Occurs > 0x", and "Exclude". Below these columns are large text areas for defining the query logic, with a yellow box in the first group area containing the text "drop a term on here". At the bottom of the Query Tool section are buttons for "Run Query", "Clear", and "New Group", along with a status indicator showing "0 Groups".

Below the Query Tool section are three tabs: "Show Query Status", "Graph Results", and "Query Report". The "Show Query Status" tab is currently selected, showing a large empty area for the query status.

Cohort Discovery Screen

Cohort Discovery Project: cohorts User: Robert Schuff Find Patients | OCTRI Training Doc. | Analysis Tools | Help | Logout

Navigate Terms Find

- Search Terms [3,316,789 pats. 1,815,031,929 obs.] - loaded 01/31/2019
 - Demographics [n~3,316,785]
 - Diagnoses [n~1,290,227]
 - ICD-Oncology (Morphology) [n~1,248]
 - Labs [n~957,465]
 - LOINC Labs [n~889,135]
 - Meds [n~993,213]

Workplace

- SHARED
- schuffr

Previous Queries Find

- TIN-CINEMA [2-13-2018] [schuffr]
- Results of TIN-CINEMA [2-13-2018] [schuffr]
- Fem-Whi-Age-BMI@13:44:59 [schuffr]
- Fem-Age-Whi-BMI-(25@16:5 [schuffr]
- Ma-Ag-Li-(E-Me-He@14:43:4 [schuffr]

Query Tool

Query Name: TIN-CINEMA

Temporal Constraint: Treat Independently

Group 1			Group 2			Group 3		
Dates	Occurs > 0x	Exclude	Dates	Occurs > 0x	Exclude	Dates	Occurs > 0x	Exclude
Treat Independently			Treat Independently			Treat Independently		
(411.1) Intermediate Coronary Syndrome [n~2,222] = ("Any") [10/01/2016 to 10/01/2017] (413.0) Angina Decubitus [n~63] = ("Any") [10/01/2016 to 10/01/2017] (413.9) Other And Unspecified Angina Pectoris [n~6,975] = ("Any") [10/01/2016 to 10/01/2017] (413.1) Prinzmetal Angina [n~232] = ("Any") [10/01/2016 to 10/01/2017] (I20) Angina pectoris [n~7,381] = ("Any") [10/01/2016 to 10/01/2017]			NOT Deceased			NOT Age in Years (Current) [n~3,087,498] < 18 years		
one or more of these			AND			none of these		
			AND			none of these		

Run Query Clear 4 Groups New Group

Show Query Status Graph Results Query Report

Protecting Patient Privacy

- Data are de-identified before being loaded
 - Surrogate patient identifiers
 - All dates associated with a given patient are shifted by a random amount at least ± 15 days
 - Patients older than 89 are all recorded as 90 yo
- True patient counts are obfuscated
 - Returned count is perturbed by up to ± 3 each time the query is invoked
 - If the true count is less than 10 the returned result is “Less than 10”
- Accounts locked if activity is suspicious

When to use RDW & Cohort Discovery

- **Before you begin your project to assess study feasibility**
- **To start your recruitment planning process**
 - Do we potentially have enough patients?
 - How many patients like this do we have each year?
- **You may benefit from an RDW analyst's expertise when:**
 - You have eligibility rules that include temporally related criteria/events
 - There are only markers for eligibility criteria in Epic
 - e.g. chronic medication use
 - You need a more efficient way to perform review of notes or unstructured data (e.g. path reports)

How much do these recruitment tools cost?

- Cohort Discovery
 - Usage is free of charge, self-service
 - Patients lists *generally* free of charge
- RDW query
 - Fee for service at OCTRI Informatics hourly rate
- Reporting workbench
 - Self-service, free of charge
- BPAs
 - Fee for service at ITG Epic Research Team rates
- MyChart
 - Fee for service at ITG Epic Research Team rates and OCTRI Informatics hourly rate

OCTRI Recruitment Services

Through OCTRI Recruitment Services, we aim to equip and support the research community at OHSU with the tools they need for successful study recruitment and retention:

- Recruitment Consultations
- Recruitment Navigation
- Recruitment Toolkit – *Epic document releasing in March!*

For more information, additional resources, or to request a recruitment consultation, please email octrirecruitment@ohsu.edu or visit our website at <https://www.ohsu.edu/octri>

Have more questions?

- “OCTRI Research Navigator”

- octri@ohsu.edu



One-stop
shopping

- “OCTRI Recruitment”

- octrirecruitment@ohsu.edu

- “OCTRI Informatics Research Support”

- octrihelp@ohsu.edu

- “Epic Research Team”

- EpicResearchTeam@ohsu.edu



Thank You!