EHR-Based tools for Recruitment
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

Send study recruitment invitations to multiple patients at once; patient responses are sent to study team In Basket for follow up. Can also use MyChart to send REDCap surveys.

Study team selects patients from a report:

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

<table>
<thead>
<tr>
<th>MRN</th>
<th>Patient</th>
<th>DOB/ Age</th>
<th>Sex</th>
<th>Pt. Portal Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>03426418</td>
<td>Abemathy, Haymatch</td>
<td>03/17/2001 17 y.o.</td>
<td>Male</td>
<td>Activated</td>
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<tr>
<td>03500475</td>
<td>Acid, Amino</td>
<td>07/04/1994 24 y.o.</td>
<td>Female</td>
<td>Activated</td>
</tr>
<tr>
<td>03000132</td>
<td>Antoinette, Marie</td>
<td>01/01/1950 68 y.o.</td>
<td>Female</td>
<td>Activated</td>
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<tr>
<td>03440093</td>
<td>Arabian, Sea</td>
<td>06/17/1973 45 y.o.</td>
<td>Male</td>
<td>Activated</td>
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<tr>
<td>0300158</td>
<td>Asap, Ship</td>
<td>04/01/2000 18 y.o.</td>
<td>Male</td>
<td>Activated</td>
</tr>
<tr>
<td>03502671</td>
<td>Asdf, Asdf</td>
<td>01/01/1980 38 y.o.</td>
<td>Female</td>
<td>Activated</td>
</tr>
<tr>
<td>03501062</td>
<td>Bab, Bailey</td>
<td>06/08/1985 33 y.o.</td>
<td>Female</td>
<td>Activated</td>
</tr>
<tr>
<td>03502434</td>
<td>Banja, Luka</td>
<td>01/01/1980 38 y.o.</td>
<td>Female</td>
<td>Activated</td>
</tr>
<tr>
<td>03501174</td>
<td>Barcelona, Isabella</td>
<td>06/15/1986 32 y.o.</td>
<td>Female</td>
<td>Activated</td>
</tr>
<tr>
<td>03427243</td>
<td>Beaker, Otter</td>
<td>04/04/1962 56 y.o.</td>
<td>Male</td>
<td>Activated</td>
</tr>
<tr>
<td>03440010</td>
<td>Bear, Fozzie</td>
<td>05/23/1973 45 y.o.</td>
<td>Male</td>
<td>Activated</td>
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<tr>
<td>03427077</td>
<td>Bear, Papa</td>
<td>01/15/1983 32 y.o.</td>
<td>Male</td>
<td>Activated</td>
</tr>
<tr>
<td>03501672</td>
<td>Beet, Pete</td>
<td>10/01/1987 30 y.o.</td>
<td>Male</td>
<td>Activated</td>
</tr>
<tr>
<td>03501671</td>
<td>Beet, Sasparilla</td>
<td>04/01/1995 23 y.o.</td>
<td>Male</td>
<td>Activated</td>
</tr>
<tr>
<td>03500527</td>
<td>Beet, Sugar</td>
<td>11/23/1983 34 y.o.</td>
<td>Female</td>
<td>Activated</td>
</tr>
<tr>
<td>03502715</td>
<td>Ben, Spanky</td>
<td>08/08/1941 77 y.o.</td>
<td>Male</td>
<td>Activated</td>
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<tr>
<td>03502668</td>
<td>BIRMINGHAM, Robert</td>
<td>06/05/1961 57 y.o.</td>
<td>Male</td>
<td>Activated</td>
</tr>
<tr>
<td>03501879</td>
<td>Blazing, Trail</td>
<td>11/01/1980 37 y.o.</td>
<td>Male</td>
<td>Activated</td>
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<tr>
<td>03500524</td>
<td>Bones, Seymore</td>
<td>02/02/1962 56 y.o.</td>
<td>Male</td>
<td>Activated</td>
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<tr>
<td>03503048</td>
<td>Bos, Shannon</td>
<td>12/08/1960 57 y.o.</td>
<td>Female</td>
<td>Activated</td>
</tr>
<tr>
<td>03503774</td>
<td>Breastling, Anna</td>
<td>08/30/1953 35 y.o.</td>
<td>Female</td>
<td>Activated</td>
</tr>
<tr>
<td>0350554</td>
<td>Brite, Rainbow</td>
<td>12/01/1995 22 y.o.</td>
<td>Female</td>
<td>Activated</td>
</tr>
<tr>
<td>03501885</td>
<td>Bubbles, Bouncy</td>
<td>12/16/2016 21 y.o.</td>
<td>Male</td>
<td>Activated</td>
</tr>
</tbody>
</table>

Research study: 100095159 IRB 16600

Patient-facing study name:
A randomized, controlled trial of low-fat diet for fatigue in multiple sclerosis

Patient-facing description:
Brief Summary/Purpose: Dr. Vijaysheer 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.
Recruitment: MyChart

The patient receives a message via MyChart:

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.
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

Principal Investigator
DENNIS BOURDETT, 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
Ana Obarska, MD
Medical condition: Multiple Sclerosis

In Basket
My Messages
Research Recruitment

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

- 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:

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

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 of 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

BPA’s (Best Practice Advisories) can identify potential subjects in real-time when criteria is met during a visit. Limitations based on criteria that are available in Epic.

Silent BPA - In Basket notification to the study team for follow up:

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.
Recruitment: BPA’s

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
Recruitment: Reporting Workbench

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

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  • **Counts** - no IRB required.
  • **De-identified** - IRB determination of “non-human subjects research”
  • **Fully identifiable** - requires IRB approved study
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
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

1. Drag and drop search terms into groups
2. Specify search term values*
3. Specify date ranges*
4. Logically combine groups (and/or/not)
5. Run query

* Optional
Cohort Discovery - Query Workflow

1. Drag and drop search terms into groups
2. Specify search term values*
3. Specify date ranges*
4. Logically combine groups (and/or/not)
5. Run query

* Optional

With RDW Analyst & IRB Approval

Obtain Patient List*
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**
Cohort Discovery Screen

The Cohort Discovery screen displays a list of search terms, categories such as Demographics, Diagnoses, ICD-Oncology, Labs, LOINC Labs, Meds, OB/GYN-Neonatal-Pediatrics, Omics, Procedures, Surgeries, Visit, and Vitals. The screen also shows a query tool with options for temporal constraints and group comparisons.
**Cohort Discovery Screen**

**Query Tool**
- **Query Name**: TIN-CINEMA
- **Temporal Constraint**: Treat Independently

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dates</td>
<td>Exclude</td>
<td>Dates</td>
</tr>
<tr>
<td>(411.1) Intermediate Coronary Syndrome [n=2,222] = (&quot;Any&quot;) [10/01/2016 to 10/01/2017]</td>
<td>(113.0) Angina Duodenum [n=63] = (&quot;Any&quot;) [10/01/2016 to 10/01/2017]</td>
<td>(413.9) Other And Unspecified Angina Pectoris [n=6,976] = (&quot;Any&quot;) [10/01/2017 to 10/01/2017]</td>
</tr>
<tr>
<td>(413.1) Prinzmetal Angina [n=232] = (&quot;Any&quot;) [10/01/2016 to 10/01/2017]</td>
<td>(120) Angina pectoris [n=7,381] = (&quot;Any&quot;) [10/01/2017]</td>
<td>NOT Age in Years (Current) [n=3,087,498] &lt; 18 years</td>
</tr>
</tbody>
</table>

**Run Query**
- **Groups**: 4 Groups

**Previous Queries**
- TIN-CINEMA [2-13-2018] [sc]
- Results of TIN-CINEMA [r]
- Fem-Whi-Age-BMI@13:44:50
- Fem-Age-Whi-BMI@25@16:5
- Ma-Ag-Li-E-Me-He@14:43:4
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
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

• “OCTRI Recruitment”
  – octrirecruitment@ohsu.edu

• “OCTRI Informatics Research Support”
  – octrihlp@ohsu.edu

• “Epic Research Team”
  – EpicResearchTeam@ohsu.edu
Thank You!