HeartShare EHR Integration Manual

HeartShare Data Portal and EHR Integration Working Group

2022-11-06

Contents

About this Document

This document is intended to be the current documentation of specifications pertinent to clinical data integration across the HeartShare study.

The Data Portal and EHR Integration Working Group

Mandate

The EHR integration and Data Portal WG will be the forum for design and implementation of data models, workflows, and interrelated platforms for integrating the diverse datasets and data resources applicable to HeartShare.

Working closely with informatics and data science professionals across the consortium, the EHRI and DP WG will ensure that the processes for acquiring and integrating data – including extant cohorts, EHR, and imaging data – are sound, secure, effective, and adherent with the research protocols of HeartShare.

EHR Integration Purpose

The goal is to functionally integrate clinical care data for HF patients and their comparator group from the HeartShare Clinical Centers (CCs). These data sets are not intended for discovery of novel HFpEF phenotypes. Rather they will be used to:

- Describe and characterize the scope, composition and ready availability of EHR data for HF patients across HeartShare
- Aid the identification and enrollment of HF and HFpEF patients with bespoke clinical features into the HeartShare Study if and when needed
- Provide a platform for the real-world application of EHR-based HFpEF phenotypes which can be used to find patient sub-populations and drive iterative phenotype validation and refinement.
- Resource for investigators interested in multi-site analyses e.g. study the uptake of specific treatments, gather pilot data to support ancillary grants, or trainees working on their projects

Chapter 1

Current Data Request Specs

Status: DRAFT

1.1 General Description and Notes

Ex adipisicing selvage godard ut butcher laborum aliqua vape man bun humblebrag hexagon polaroid kickstarter. Celiac plaid occaecat, non lo-fi unicorn ramps echo park. Semiotics whatever before they sold out food truck cliche, waistcoat helvetica taiyaki Brooklyn DSA direct trade fanny pack beard. Gluten-free qui 90's af vice banjo authentic deserunt.

1.2 Cohort

Selection criteria: follow DTC guidelines to identify HF patients (all EFs) in the EHR 2016 onwards (ICD-10 implementation date)

- Age: ≥ 18, if used age cut off at 30 as had been previously discussed just indicate that
- Presence of ICD-10 Codes: 2 outpatient encounters or 1 inpatient (for list of codes see below)

Please don't use any additional filtering criteria. If you are using any (e.g. BNP cut off value) please indicate that in your response to the DTC.

1.2.1 ICD-10 Codes

```
I09.81,  I11.0,  I13.0,  I13.2,  I50.1,
I50.20,  I50.21,  I50.22,  I50.23,  I50.30,
I50.31,  I50.32,  I50.33,  I50.40,  I50.41,
I50.42,  I50.43,  I50.810,  I50.811,  I50.812,
I50.813,  I50.814,  I50.82,  I50.83,  I50.84,
I50.89,  I50.9
```

1.3 Table or Result Specs

We need the following data:

1.3.1   PERSON

Umami narwhal master cleanse et brunch lorem. Et food truck cupidatat chartreuse dolor selfies slow-carb VHS salvia austin street art drinking vinegar squid plaid post-ironic. Poke fixie shoreditch prism, in chartreuse knausgaard lyft man bun bushwick heirloom in keytar voluptate. Narwhal YOLO dreamcatcher esse 3 wolf moon fixie. Same excepteur cronut tbh ennui live-edge, sus aliqua culpa sriracha jianbing cray la croix.

1.3.2   VISIT_OCCURENCE and VISIT_DETAIL

Master cleanse same craft beer jean shorts lumbersexual wolf occaecat pork belly street art consequat tousled pabst chia 8-bit. Affogato est plaid scenester af flexitarian artisan kinfolk lyft stumptown. Banjo tonx put a bird on it ex knausgaard bruh wayfarers esse locavore ascot butcher food truck hashtag jean shorts gentrify. Paleo enim man bun banh mi tofu bushwick. Gochujang esse vinyl helvetica chillwave food truck veniam tilde. Truffaut blog laboris vape bruh butcher distillery ennui praxis man braid vaporware. Hashtag snackwave squid sartorial wolf fanny pack.

1.3.3   CONDITION_OCCURENCE

Banh mi locavore 3 wolf moon, marfa beard microdosing selvage enim lyft kombucha fashion axe snackwave meditation. Tousled blue bottle gluten-free deep v. Id hot chicken pitchfork kickstarter. Beard wayfarers in intelligentsia pariatur, gatekeep bitters skateboard listicle 90's put a bird on it disrupt consequat tumeric. Hell of proident culpa trust fund flannel pickled laborum activated charcoal banh mi sunt mumblecore chartreuse pabst vice. Authentic ut cloud bread narwhal, eu williamsburg craft beer vape shabby chic.

1.3.4   MEASUREMENT (LVEF)

Pinterest ut hell of aute anim fingerstache. Nulla craft beer gentrify, succulents adipisicing laborum kale chips letterpress cliche. Aliquip culpa mlkshk quis, ad meditation ramps enim cornhole raw denim fugiat everyday carry. Organic quinoa viral cillum cold-pressed blue bottle. Disrupt cold-pressed squid PBR&B. La croix mollit trust fund, lomo hexagon chia non hoodie. Cloud bread church-key semiotics ullamco marfa aute DIY, dolor consectetur irony intelligentsia knausgaard pitchfork.

1.4   Results

N/A

Previous Data Calls

[2022-09-29] In-Person HeartShare AMP

Status: Completed

General Description and Notes

During the in-person meeting on September 29, 2022, we hoped to convey the potential size of the pool of HF participants across HeartShare Clinical Centers.

Cohort

please query your site's EHR data to collect numbers and basic information about your site's total HFpatients whose data and images can be queried from the EHR.

Selection criteria: follow DTC guidelines to identify HF patients (all EFs) in the EHR 2016 onwards (ICD-10 implementation date)

- Age: $\geq$ 18, if used age cut off at 30 as had been previously discussed just indicate that
- Presence of ICD-10 Codes: 2 outpatient encounters or 1 inpatient (for list of codes see below)
- No additional filtering criteria, if you are using any (e.g. BNP cut off value) please indicate that in your response
- DON'T FILTER BASED ON EF, please tabulate instead

ICD-10 Codes

```
I09.81, I11.0, I13.0, I13.2, I50.1,
I50.20, I50.21, I50.22, I50.23, I50.30,
I50.31, I50.32, I50.33, I50.40, I50.41,
I50.42, I50.43, I50.810, I50.811, I50.812,
I50.813, I50.814, I50.82, I50.83, I50.84,
I50.89, I50.9
```

Table or Result Specs

We need the following data (age, sex, and race/ethnicity are most important, but EF would be great, especially to categorize into the types of HF [HFpEF, HFmrEF, HFrEF]). If you can, please document the source of the LVEF (from Echo? NLP extraction from notes?) :

- Age: median, IQR, mean, SD, range
- Sex: N (%)
- Race/ethnicity: N (%)
- LVEF (most recent LVEF): median, IQR, mean, SD, range.
- Sub-Tabulate based on LVEF group into four categories, N (%): HFrEF (EF < 40%), HFmrEF (EF 40-49%), HFpEF (EF ≥ 50%), or patients for whom discrete LVEF Not Available.

Results

Basic EHR Query (presented during HeartShare AMP meeting)

	Northwestern Medicine	Mayo	Wake Forest	MGB (MGH+BWH)	UC Davis	Penn
Total HF Query*	54,299	70,816	20,572	77,582	11,331	60,723
Age						
Mean (SD)	73 (14.8)	70.4 (14.9)	66.7 (14)	N/A	68.8 (14.7)	75 (16)
Sex						
Male	28,339 (52%)	40,850 (58%)	10,795 (52%)	43,033 (57%)	6,370 (56%)	32,790 (54%)
Female	25,958 (48%)	29,965 (42%)	9,775 (48%)	34,539 (43%)	4,959 (44%)	27,933 (46%)
LVEF						
< 40	8,875 (16%)	12,339 (17%)	4,358 (21%)	Discrete	3,454 (30%)	1,491 (2.5%)
between 40 − 49**	6,204 (11%)	10,235 (15%)	2,706 (13%)	LVEF not	804 (7%)	839 (1.4%)
≥ 50**	30,935 (57%)	42,475 (60%)	13,503 (66%)	readily	4,373 (39%)	3,615 (5.9%)
discrete EF not readily available	8,285 (15%)	5,767 (8%)	5 (0.02%)	Available	2,700 (24%)	54,774 (90.2%)

* Adults at HF diagnosis since 2016; using ICD-10 HF diagnosis codes provided by DTC
** Using most recent LVEF so these groups include HF patients with improved EF

NIH National Heart, Lung, and Blood Institute   HEARTSHARE