Optimizing Your EHR For Get With the Guidelines – Heart Failure® Data Collection

American Heart Association. life is why™

GET WITH THE GUIDELINES. HEART FAILURE

Heart.org/QualityHF

Reaching over one million patients, Get With The Guidelines®-Heart Failure is an in-hospital quality improvement program for enhancing heart failure care by promoting consistent adherence to the latest scientific treatment guidelines.

Active participation in the program can lead to improved outcomes and lower readmission rates – benefiting patients and hospitals alike.

Why participate in Get With The Guidelines-Heart Failure?

- Heart Failure is the leading cause of 30-day readmissions. Readmissions penalties are a serious financial burden for hospitals. Active participation in Get With The Guidelines-Heart Failure can help your hospital understand strengths and areas to improve, which could lead to reduced 30-day readmissions.
- Get With The Guidelines-Heart Failure can help your hospital with tools to track and benchmark critical aspects of care. Published studies indicate that participating in our program can improve processes of care.
- Hospitals that participate actively in Get With The Guidelines-Heart Failure may be eligible for public recognition by the American Heart Association. It's an opportunity to hone a competitive edge in the marketplace by providing tangible evidence of commitment to quality care.

Find out how GWTG HF can help your hospital.

Visit our website:

Get With The Guidelines®-Heart Failure

And contact your local representative today.

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GWTG and Epic

Optimizing Your EHR for GWTG-Heart Failure Data Collection

GWTG and Epic

- Options for submitting
  - Manual abstraction
  - Interface with a third party
  - Clarity extracts
- If you're new to the program and are looking for ways to submit, you can leverage existing content to get started.
- If you're happy with your system and you want to do more, we have resources available to help you.

Project Planning

- Create build trackers
  - Include each data element you're planning to abstract
  - Determine the workflow your end users are currently using to capture each data element
- Use your build trackers to create reports for each dataset
  - Determine how you will track your patients for each measure for concurrent and retrospective review
  - Use Foundation content as a starting place
- If your goal is to cut down on manual abstraction, use your build tracker as a guide to map your data elements and complete your integration.

On the Horizon

- Epic is continuously working to improve options for submitting to GWTG out of our Foundation System.
- You can use Foundation System content as a starting place for any build related to the GWTG measure sets.
- The build and workflows we recommend for GWTG abstraction line up with the tools you're likely already using for other quality programs.

Next Steps

- If you want to do more with Epic and GWTG, talk to your Technical Coordinator, Implementation Director, or BFF
- For more information, reach out to Kirsten Brauch at kbrauch@epic.com

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Presentation Objectives

- To share the SSM Health team process of reducing manual data abstraction for the AHA Heart Failure (HF) registry, while increasing the volume of uploaded data.

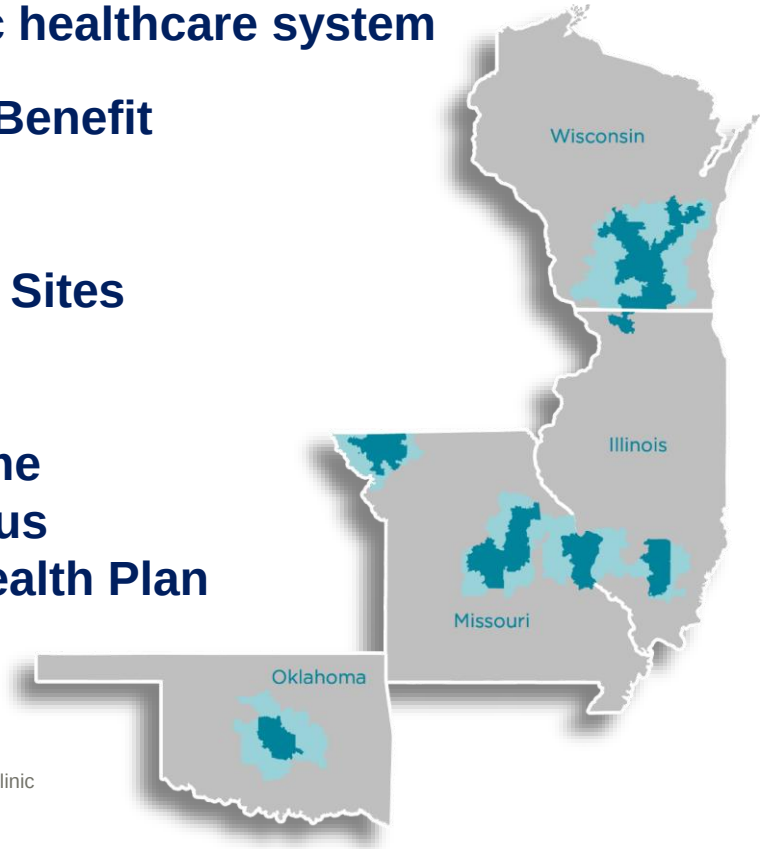
- To describe the process SSM Health used for mapping data elements into a CSV file using discrete fields located within the electronic medical record (Epic) and IQVIA/Quintiles automated CSV uploader.

- To explain the SSM Health data extraction process for the AHA HF registry through an automated upload of patient data from Epic Clarity into the patient management tool.

SSM Health – System Overview

A $7 Billion* not-for-profit, Catholic healthcare system

- **Over $500 Million in Community Benefit**
- **40,000+ Employees**
- **9,900+ Physicians/Providers**
- **300+ Physician Office/Outpatient Sites**
- **24 Hospitals**
- **10 Post-Acute Facilities**
- **83 Counties – SSM Health at Home**
- **5.4 Million Covered Lives – Navitus**
- **410,000 Covered Lives – Dean Health Plan**
- **40+ Managed Hospitals/Affiliate Relationships**



* Reflects total revenue; includes Agnesian HealthCare and Monroe Clinic

SSM Health Participating Hospitals
AHA Heart Failure Registry

- SSM Health St. Joseph Hospital: St. Charles, Missouri
- SSM Health St. Joseph Hospital: Lake St. Louis, Missouri
- SSM Health St. Mary's Hospital: St. Louis, Missouri
- SSM Health St. Clare Hospital: Fenton, Missouri
- SSM Health DePaul Hospital: St. Louis, Missouri
- SSM Health Saint Louis University Hospital: St. Louis, Missouri
- SSM Health St. Clare Hospital: Baraboo, Wisconsin*

*Optimization process not yet implemented

Team Development: Roles & Responsibilities

- Establishment of a multidisciplinary team that meets routinely is essential to the success of the program.
- Key team members include:

  - **Quality Abstractors/Clinical Data Coordinators**
    - Provide data definitions
    - Assist the informatics analysts with identifying discrete fields in Epic
    - Manually validate the data pull
    - Continuously review automated upload for quality data integrity

  - **Informatics Analysts**
    - Develop the program using database extraction (Clarity) and front-end validation in Epic Hyperspace
    - Collaborate with the abstractors and support technicians

  - **IQVIA/Quintiles Support Technicians**
    - Provide CSV specifications
    - Work with the Informatics Analysts

SSM Process Roadmap

Interpret	• Interpretation of clinical specifications
Identify	• Identification of the data components found in Epic
Collaborate	• Collaboration on the best approaches for each data element extraction (manual vs. automated)
Build	• Build the extraction program
Align	• Alignment of technical build and mapping specifications
Validate	• Validation of extracted data fields
Review	• Extensive review of the final uploaded file

Process Overview: Interpret, Identify & Collaborate

Interpret

- **Interpretation of clinical specifications**
  - IQVIA/Quintiles provided coding instructions that had specific qualifications and criteria for each data element.
  - Quality Abstractors clarified and interpreted the instructions to align with SSM Health processes and documentation.

Identify

- **Identification of the data components found in Epic**
  - The team held several webinar screen-sharing sessions to walk through complete manual abstractions of all data elements.

Collaborate

- **Collaboration on the best approaches for each data element extraction (manual vs. automated)**
  - During and following those sessions, the team determined the best approaches for the extraction of each data element (continued manual abstraction vs. newly automated extraction).

Tracking Documentation

- **Documentation:** The team utilized an Excel file (example on the following slide) to track the:
  - Required data elements
  - Data locations within Epic Hyperspace and corresponding locations in Clarity (where possible)
  - Expanded definitions, assumptions, and key decision points for each element

- The creation of the exhaustive element list and tracking document in Excel took approximately 10% of the total project time.

SSM Tracking Documentation Sample

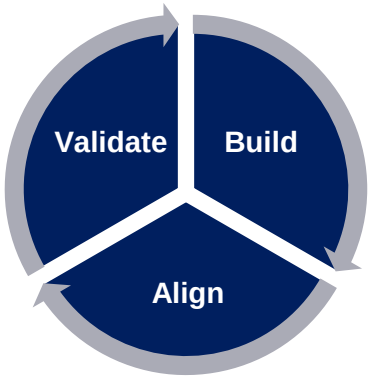
VARIABLE DESCRIPTION	VARIABLE NAME	Status	Notes	Final Notes for Data Pull/Abstraction
Blood pressure: diastolic	aha_diastolic	Completed	OK to assume supine from VS flowsheet	
Sodium Value	oh_sodium	Completed		
Sodium units	oh_sodium_u	Completed		
Serum Creatinine	oh_scr	Completed		
Serum Creatinine Units	oh_scr_u	Completed		
SCr Not Drawn	oh_scr_na	Completed		
EKG QRS Duration (ms)	aha_ekg	Completed		
EKG Not Available	hfs_ekg_na	Completed		
EKG QRS Morphology	aha_ekg_mor	Completed - partial	Extract uses a set of smart elements that are not always populated. This will be pulled in where possible.	Supplemental manual abstraction needed
Ejection Fraction Percentage	oh_ef	Not Extractable	no discreet field in EPIC (smart element possible as a future enhancement)	Complete manual abstraction needed
Ejection Fraction Not Available	oh_ef_na	Not Extractable	no discreet field in EPIC (smart element possible as a future enhancement)	Complete manual abstraction needed
Documented LVSD	jc_lvsd	Not Extractable	no discreet field in EPIC (smart element possible as a future enhancement)	Complete manual abstraction needed
LVF	jc_lvf	Completed - partial	Extract uses a set of smart elements that are not always populated. This will be pulled in where possible.	Supplemental manual abstraction needed
Oral Medications during hospitalization	hfs_oralmeds	Completed		Quality-checking needed
Pt ambulation at end of hospital day 2	aha_ptambulatday2	Completed	Default to No	Confirmation of default value needed

Process Overview: Build

Build

- Build the extraction program

- The technical build (SQL), alignment with expectations, and validation of the output all occurred continuously throughout the development of the process.
- When one section or group of elements was thought to be complete, the output was shared with the Quality Abstractor.



Process Overview: Align & Validate

Align
- **Alignment of technical build and mapping specifications**

Validate
- **Validation of extracted data fields**

Two methods of validation were used:

1. Manual abstraction was performed for the target elements first, then the SQL output for the same elements was shared.
2. The SQL output for target elements was shared, then the abstractor reviewed the output to determine if the data was appropriate.

- We chose to build and validate simultaneously. Other teams might prefer to receive all specifications up front and only move to validation after the build is complete.

- Validation accounted for approximately 25% of the project time.

Technical Build:
SQL – Data Mapping I

The SQL begins by creating temporary tables to hold all possible and relevant values from Clarity and their corresponding codes in the CSV specifications (SQL table definition on the following slide).

- We chose to include the text descriptions for each code. This took extra development time which was **not** necessary for producing the CSV, but it made debugging much easier.

- <u>The temporary tables containing the mappings accounted for approximately 25% of the project time.</u>

Technical Build:
SQL – Data Mapping II

Primary data mapping table definition

```
172 ------------------------------------------------------------------------------------------------------------------------
173 IF OBJECT_ID('tempdb..#HFCATTBL') IS NOT NULL   DROP TABLE #HFCATTBL
174
175 CREATE TABLE #HFCATTBL
176 (
177     [HF_CAT_TBL_ID]     INT         NOT NULL,       --Table ID
178     [SSM_C]             VARCHAR(50) NOT NULL,       --Value pulled from SSM's Clarity tables.
179     [VENDOR_C]          VARCHAR(50) NOT NULL,       --Value to be sent to the Vendor
180     [ITEMDESC]          VARchar(250),               --Description of this item, used for patient lists
181     [VENDOR_ITEMDESC]   VARCHAR(250)                --Description of this item on the HF Patient Management Tool
182     PRIMARY KEY ([HF_CAT_TBL_ID],[SSM_C],[VENDOR_C])
183 )
184
185 INSERT INTO #HFCATTBL ([HF_CAT_TBL_ID], [SSM_C], [VENDOR_C], [ITEMDESC], [VENDOR_ITEMDESC]) VALUES
186
187 /*TABLE CATEGORY IDS:
188 1 - Heart Failure Diagnosis Codes (ICD-9 and ICD-10)
189 2 - Heart Failure Diagnosis Codes (ICD-9 ONLY)
190 3 - Heart Failure Diagnosis Codes (ICD-10 ONLY)
191 4 - Patient Discharge Dispositions
192 5 - "Other Facilities" under Patient Discharge Dispositions
193 6 - Admission source
194 7 - Ethnic group
195 8 - Race
196 9 - Payment source
197 10 - Medical History (ICD-9 ONLY)
198 11 - Medical History (ICD-10 ONLY)
199 12 - CAD Diagnoses (ICD-9 ONLY)
200 13 - CAD Diagnoses (ICD-10 ONLY)
201 14 - Medical History Procedure Codes - excluding cardiac assist device removal and revision/replacement procedures (ICD-9 ONLY) --chg009
202 15 - Medical History Procedure Codes - excluding cardiac assist device removal and revision/replacement procedures (ICD-10 ONLY)    --chg009
203 16 - DVT and Pulmonary Embolism Diagnoses Codes (ICD-9 ONLY)
204 17 - DVT and Pulmonary Embolism Diagnoses Codes (ICD-10 ONLY)
205 18 - Surgical History PROC_CODE's (CLARITY_EAP)
206 19 - Cardiac Assist Device Removal, Revision, Replacement Procedure Codes (ICD-9 ONLY)  --chg009
207 20 - Cardiac Assist Device Removal, Revision, Replacement Codes (ICD-10 ONLY)   --chg009
208 21 - Sleep-Disordered Breathing Types (ICD-9 ONLY)     --chg012
209 22 - Sleep-Disordered Breathing Types (ICD-10 ONLY)     --chg012
210 */
```

Technical Build:
SQL – Data Mapping III

Example: Discharge Disposition & Other Facilities

```
-- ** Discharge Disposition **
,(4,'01','1','Home or Self Care','1 - Home')
,(4,'1','1','Home or Self Care','1 - Home')
,(4,'06','1','Home Health Care Svc','1 - Home')
,(4,'50','2','Hospice:Home','2 - Hospice - Home')
,(4,'51','3','Hospice:Medical Facility','3 - Hospice - Health Care Facility')
,(4,'02','4','Inpatient Hospital','4 - Acute Care Facility')
,(4,'05','4','Cancer Center or Childrens Hospital','4 - Acute Care Facility')
,(4,'43','4','Hospital Federal/VA','4 - Acute Care Facility')
,(4,'03','5','Other Facility','5 - Other Health Care Facility')
,(4,'83','5','Other Facility','5 - Other Health Care Facility')
,(4,'04','5','Other Facility','5 - Other Health Care Facility')
,(4,'21','5','Other Facility','5 - Other Health Care Facility')
,(4,'22','5','Other Facility','5 - Other Health Care Facility')
,(4,'61','5','Other Facility','5 - Other Health Care Facility')
,(4,'62','5','Other Facility','5 - Other Health Care Facility')
,(4,'63','5','Other Facility','5 - Other Health Care Facility')
,(4,'64','5','Other Facility','5 - Other Health Care Facility')
,(4,'65','5','Other Facility','5 - Other Health Care Facility')
,(4,'66','5','Other Facility','5 - Other Health Care Facility')
,(4,'70','5','Other Facility','5 - Other Health Care Facility')
,(4,'20','6','Expired','6 - Expired')
,(4,'07','7','Left Against Medical Advice','7 - Left Against Medical Advice/AMA')
,(4,'','8','Not documented or UTD','8 - Not Documented or Unable to Determine (UTD')
-- ** Other facilities **
,(5,'03','1','Skilled Nursing Facility','A - Skilled Nursing Facility (SNF)')
,(5,'62','2','Rehab:Inpatient','B - Inpatient Rehabilitation Facility (IRF)')
,(5,'63','3','Long Term Acute Care','C - Long Term Care Hospital (LTC)')
,(5,'21','5','Court/Law Enforcement','5 - Other')
,(5,'22','5','Court/Law Enforcement','5 - Other')
,(5,'61','5','Swing Bed','5 - Other')
,(5,'64','5','Nursing Facility:Medicaid','5 - Other')
,(5,'65','5','Psychiatric Hospital or Unit','5 - Other')
,(5,'66','5','Critical Access Hospital','5 - Other')
,(5,'70','5','Other Facility Not Defined Elsewhere','5 - Other')
```

Technical Build: Main SQL

After the mapping table is created, the SQL continues on to:

1) **Input** the appropriate date & location filters from the automation process
2) **Define** the population
3) **Gathe**r attributes about the population
4) **Evaluate** new attributes continuously for conditions that impact branching logic
   - For example: if we found in the medical history that the patient had a CRT-D placed prior to hospitalization, we don't need to go through the logic to identify the reasons ICD therapy was not placed or prescribed at discharge.

- The amount of time required for processing each data element was highly variable and dependent on design choices made before and while writing the SQL. The mapping table was revisited and revised several times as the project progressed.

- <u>Development of the main SQL took approximately 25% of the project time.</u>

Technical Build:
SQL – Data Mapping IV

Once all of the elements are gathered, the SQL finishes by applying the data mapping tables to convert the output from an SSM Health Clarity report to the IQVIA/Quintiles-defined CSV (example on following slide).

Review

- **Extensive review of the final uploaded file**

At this point, changes to the output were made based on the feedback received by the CSV uploader & IQVIA/Quintiles technical support.

- We found that there were fewer late-stage changes to the output than expected. We attribute this to the creation and utilization of the data element tracking document as well as including the text descriptions in the mapping tables.

- <u>Additional work and re-work needed to correctly format the output to the CSV specifications accounted for approximately 5% of the project time.</u>

Technical Build:
SQL – Data Mapping V

Example output of the SQL

```
/*ARRIVAL AND ADMISSION INFORMATION*/
                ,[jc_arrdatetime] = CONVERT(VARCHAR, #HFPATLIST.[ARRIVAL_TM], 101) + ' ' + CONVERT(VARCHAR, DATEPART(HOUR, #HFPATLIST.[ARRIVAL_TM])) + ':' +
                                    RIGHT('0' + CONVERT(VARCHAR, DATEPART(MINUTE, #HFPATLIST.[ARRIVAL_TM])), 2)
                ,[jc_arrdatetime_precision] = 5                         --datetime
                ,[jc_admitdate] = CONVERT(VARCHAR,#HFPATLIST.[ADM_DATE_TIME],101)
                ,[aha_admitsource] = ISNULL(HFCATTBL_6.VENDOR_C,'10')
/*DEMOGRAPHIC DATA*/
                ,[jc_dob] = CONVERT(VARCHAR,#HFPATLIST.[BIRTH_DATE],101)
                ,[jc_gender] =  CASE WHEN #HFPATLIST.[GENDER] = 'Male' THEN '1'
                                     WHEN #HFPATLIST.[GENDER] = 'Female' THEN '2'
                                     ELSE '3'
                                END
                ,[hf_race] = ISNULL(HFCATTBL_8.VENDOR_C,'8')
                ,[sp_ethnic] = ISNULL(HFCATTBL_7.VENDOR_C,'2')
                ,[jc_pmtsrce] = ISNULL(HFCATTBL_9.VENDOR_C,'4')
                ,[jc_zip1] = LEFT(#HFPATLIST.[PATIENT_POSTAL_CODE],5)
/*MEDICAL HISTORY*/
                ,[dyn_medhist] = ISNULL(#HFPATHX_U.HFPATHX_LST,'')      --chg012
                ,[dyn_medhistnone] = IIF(#HFPATHX_U.HFPATHX_LST IS NULL, '1', '')   --chg012
                ,[jc_hxsmoking] = ISNULL(#SMOKERTABLE_U.SMOKER_12MO, '2')
                ,[oh_priorhf] = IIF(#HFPATHX_U_C.PAT_ID IS NOT NULL, '1', '2')
/*DIAGNOSIS*/
                ,[aha_diagnosis] =  CASE
                                        WHEN #HFPAT_FLAGS_H.CARDIAC_DIAGNOSIS IS NULL THEN '4'
                                        WHEN #HFPAT_FLAGS_H.CARDIAC_DIAGNOSIS = 1 THEN '130'
                                        ELSE NULL
                                    END
                ,[dyn_atrialfib] = IIF(CAST(#AFIB_AT_PRES_C.AFIB_AT_PRES AS VARCHAR) = '1' OR CAST(#HFPAT_FLAGS_H.[AFIB_DURING_YN] AS VARCHAR) = '1', '1', '2')
                ,[hf_atrialflutter] = IIF(CAST(#AFLUT_AT_PRES_C.AFLUT_AT_PRES AS VARCHAR) = '1' OR CAST(#HFPAT_FLAGS_H.[AFLUT_DURING_YN] AS VARCHAR) = '1', '1', '2')
/*EXAMS/LABS AT ADMISSION*/
                ,[oh_heartrate] = LEFT(FIRST_HR_H.[HEART_RATE],3)
                ,[aha_systolic] = LEFT(SUBSTRING(FIRST_BP_H.BP_SUPINE,0,CHARINDEX('/',FIRST_BP_H.BP_SUPINE,0)),3)
                ,[aha_diastolic] = LEFT(SUBSTRING(FIRST_BP_H.BP_SUPINE,CHARINDEX('/',FIRST_BP_H.BP_SUPINE,0)+1,LEN(FIRST_BP_H.BP_SUPINE)),3)
                ,[oh_sodium] = ISNULL(FIRST_NA.NA_VALUE,'')
                ,[oh_sodium_u] = ISNULL(FIRST_NA.[NA_UNITS],'')
                ,[oh_sodium_na] = IIF(FIRST_NA.NA_VALUE IS NULL, '1', '')
                ,[oh_scr] = ISNULL(LEFT(FIRST_CR.CR_VALUE,3),'')
                ,[oh_scr_u] = ISNULL(FIRST_CR.[CR_UNITS],'')
                ,[oh_scr_na] = IIF(FIRST_CR.CR_VALUE IS NULL, '1', '')
                ,[aha_ekg] = ISNULL(#FIRST_QRS.QRS_VALUE,'')
                ,[hfs_ekg_na] = IIF(#FIRST_QRS.QRS_VALUE IS NULL, '1', '')
                ,[aha_ekg_mor] = ISNULL(#SMART.QRS_MORPH,'')
```

Process Overview: Automation

Automation options will vary based on the resources available at your specific organization and how you store and retrieve your data.

- We chose a business process automation approach where the following steps are performed in a single script:
  1. Identify the reporting period for the upload file
  2. Create appropriate date-based folders on a network drive
  3. Execute the SQL
  4. Determine the sample size for each location based on number of records returned
  5. Randomly select the sample from the full dataset for each location
  6. Write out a CSV for each participating location to the folders created in step 2

- <u>Development of the automation script accounted for approximately 10% of the project time.</u>

Project Results

- There are **69 data points** for abstraction in the limited version of the PMT AHA HF registry.
- Post-project, we now manually abstract only **13 data points** which are found mostly in narrative charting.
- A full manual abstract previously took **35 minutes per chart.**
- Post-project, an abstractor now spends about **10 minutes per chart** using the data pull automation method.
- As a result, one 0.5 FTE abstractor is now able to support HF registry abstraction for 6 adult hospitals.

Key Takeaways:
Vital for Optimization Success

- ✓ Multidisciplinary team approach
- ✓ Development of a roadmap process
- ✓ Frequent collaboration and communication among team members
- ✓ Ongoing data validation
- ✓ Experienced clinical chart abstractor
- ✓ Technical expertise
- ✓ Time commitment

Questions?

Please submit any post-presentation questions to:

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Thank you for your active participation and contributions to GWTG-Heart Failure!