

Commonwealth of Massachusetts
Center for Health Information & Analysis (CHIA)
Non-Governmental Application for Case Mix Data

This form is to be used by all applicants, except Government Agencies, as defined in 957 CMR 5.02.

NOTE: In order for your application to be processed, you must submit the required application fee. Please consult the fee schedule for the appropriate fee amount. A remittance form with instructions for submitting the application fee is available on the CHIA [website](#).

I. GENERAL INFORMATION

APPLICANT INFORMATION	
Applicant Name:	Angela Sherwin
Title:	Vice President of Public Policy and Strategic Analysis
Organization:	Steward Health Care System LLC ("Steward")
Project Title:	Understanding Trends and Changes in the Massachusetts Health Care Market
Mailing Address:	500 Boylston St., Suite 500 Boston, MA 02116
Telephone Number:	617-419-4725
Email Address:	angela.sherwin@steward.org
Names of Co-Investigators:	Kara Ellis, VP of Business Solutions Vikram Karandikar, Director of Strategic Analysis
Email Addresses of Co-Investigators:	kara.ellis@steward.org vikram.karandikar@steward.org
Original Data Request Submission Date:	3/31/15
Dates Data Request Revised:	5/29/15; 6/24/15; 9/1/15 (updated to request most recent available data year: 2014)
Project Objectives (240 character limit)	Steward seeks to understand the Massachusetts health care market, including inpatient, outpatient, and ED utilization patterns. Our analysis of the requested data will inform Steward's planning efforts to deliver services our patients need while driving value in the market. Our analysis will also help Steward understand its impact on the Massachusetts market over time.
Project Research Questions (if applicable)	<ol style="list-style-type: none"> 1. What are the patterns of inpatient, outpatient, and ED utilization in the Massachusetts health care market from 2009-2014 and how do those patterns vary by geography, payer type, and type of service? How have these patterns varied over time? 2. How have new models of care (e.g. accountable care organizations) and other changes to the health care landscape impacted the way Massachusetts residents utilize inpatient, outpatient, and ED services? 3. Where do Steward's patients travel from for care

	<p>(historically and now)? What are current health care needs of the communities Steward serves?</p> <p>4. What is the impact of Steward’s integrated community care model on patient utilization?</p> <p>5. How can trends observed in inpatient, outpatient, and ED utilization support Steward’s system-wide planning efforts?</p>
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II. PROJECT SUMMARY

Briefly describe the purpose of your project and how you will use the requested CHIA data to accomplish your purpose.

The Massachusetts health care market has undergone great change in recent years and remains poised for additional transition. Steward seeks to analyze case mix data to understand inpatient, outpatient, and ED utilization patterns in Massachusetts, which will inform Steward’s health system planning for the needs of the communities we serve. Through multiple and ongoing analyses, Steward seeks to analyze our patient base and service mix against the overall market environment. With this information, Steward can conduct health resource planning for each community where we provide care. As noted in Section III below, Steward requests data from 2009-2014, so we can assess trends over time since Steward entered the Massachusetts market.

III. FILES REQUESTED

Please indicate the databases from which you seek data, and the Level(s) and year(s) of data requested.

CASE MIX	Levels 1 – 6	Fiscal Years Requested
Inpatient Discharge	<input type="checkbox"/> Level 1 – No Identifiable Data Elements <input type="checkbox"/> Level 2 – Unique Physician Number (UPN) <input type="checkbox"/> Level 3 – Unique Health Information Number (UHIN) <input checked="" type="checkbox"/> Level 4 – UHIN and UPN <input type="checkbox"/> Level 5 – Date(s) of Admission; Discharge; Significant Procedures <input type="checkbox"/> Level 6 – Date of Birth; Medical Record Number; Billing Number <p>PLEASE PROVIDE JUSTIFICATION BELOW FOR REQUESTING THE CHOSEN LEVEL: Level 4 data will enable Steward to analyze inpatient utilization trends. With this level of detail, we will study changes in utilization such as patient migration, physician referral patterns, and length of stays for specific procedures. We will use this data to conduct analyses to support planning efforts across our system, and pinpoint needed clinical initiatives that improve care delivery in Steward’s inpatient settings.</p>	<p><u>1998 – 2013 Available</u> (limited data 1989-1997)</p> <p>2009 – 2013 (Received August 2015)</p> <p>Requesting 2014</p>
Outpatient Observation	<input type="checkbox"/> Level 1 – No Identifiable Data Elements <input type="checkbox"/> Level 2 – Unique Physician Number (UPN) <input type="checkbox"/> Level 3 – Unique Health Information Number (UHIN) <input type="checkbox"/> Level 4 – UHIN and UPN <input checked="" type="checkbox"/> Level 5 – Date(s) of Admission; Discharge; Significant Procedures <input type="checkbox"/> Level 6 – Date of Birth; Medical Record Number; Billing Number	<p><u>2002 – 2013 Available</u></p> <p>2009 – 2013 (Received August 2015)</p> <p>Requesting 2014</p>

	<p>PLEASE PROVIDE JUSTIFICATION BELOW FOR REQUESTING THE CHOSEN LEVEL: Level 5 data will enable Steward to analyze outpatient utilization trends. With this level of detail, we will study changes in utilization such as patient migration, physician referral patterns, and lengths of stays for specific services. We will use this data to conduct analyses to support planning efforts across our system and pinpoint needed clinical initiatives that improve care delivery in Steward’s outpatient settings.</p>	
<p>Emergency Department</p>	<p> <input type="checkbox"/> Level 1 – No Identifiable Data Elements <input type="checkbox"/> Level 2 – Unique Physician Number (UPN) <input type="checkbox"/> Level 3 – Unique Health Information Number (UHIN) <input checked="" type="checkbox"/> Level 4 – UHIN and UPN <input type="checkbox"/> Level 5 – Date(s) of Admission; Discharge; Significant Procedures <input type="checkbox"/> Level 6 – Date of Birth; Medical Record Number; Billing Number PLEASE PROVIDE JUSTIFICATION BELOW FOR REQUESTING THE CHOSEN LEVEL: Level 4 data will enable Steward to analyze specific ED utilization trends. With this level of detail, we will study changes in utilization such as patient migration, physician referral patterns, and lengths of stays for specific procedures. We will use this data to conduct analyses to support planning efforts across our system and pinpoint needed clinical initiatives that improve care delivery in Steward’s EDs. </p>	<p><u>2000 – 2013 Available</u></p> <p>2009 – 2013 (Received August 2015)</p> <p>Requesting 2014</p>

IV. FEE INFORMATION

Please consult the fee schedules for Case Mix data, available at http://chiamass.gov/regulations/#957_5, and select from the following options:

- Single Use
- Limited Multiple Use
- Multiple Use

Are you requesting a fee waiver?

- Yes
- No

If yes, please submit a letter stating the basis for your request. Please refer to the [fee schedule](#) for qualifications for receiving a fee waiver. If you are requesting a waiver based on the financial hardship provision, please provide documentation of your financial situation. Please note that non-profit status alone isn’t sufficient to qualify for a fee waiver.

V. REQUESTS PURSUANT TO 957 CMR 5.04 (Researchers, Payers, Providers, and Provider Organizations)

Please complete only if you are requesting Level 1 (de-identified) Case Mix.

Please describe how you will use such data for the purposes of lowering total medical expenses, coordinating care, benchmarking, quality analysis or other administrative research purposes.

N/A

VI. ALL OTHER REQUESTS - PURPOSE AND INTENDED USE

1. Please explain why completing your project is in the public interest.

Steward is a community-based accountable care organization with nearly 3,000 physicians, 10 hospital campuses, 24 affiliated urgent care providers, behavioral health services, home care, and other post acute services. Steward is committed to providing the highest quality, cost effective, integrated patient care in the communities where our patients live. Steward serves over one million patients annually in more than 150 communities.

As an organization that serves communities throughout Eastern Massachusetts, understanding the inpatient, outpatient and ED utilization patterns across the state is crucial to Steward’s system-wide resource allocation and decision-support needs. By learning how different cohorts of patients across the geographies we serve access inpatient, outpatient, and ED care, we can better plan for and provide high-quality, cost-efficient care in communities across Eastern Massachusetts.

2. **Attach** a brief (1-2 pages) description of your research methodology. (This description will not be posted on the internet.)

Please refer to Attachment #1.

3. Has your project received approval from your organization’s Institutional Review Board (IRB)? Please note that CHIA will not review your application until IRB documentation has been received (if applicable).
 - Yes, and a copy of the approval letter is attached to this application.
 - No, the IRB will review the project on _____.
 - No, this project is not subject to IRB review.
 - No, my organization does not have an IRB.

VII. APPLICANT QUALIFICATIONS

1. Describe your qualifications to perform the research described or accomplish the intended use of CHIA data.

Steward has leveraged Case Mix data from Massachusetts Health Data Consortium since 2010 for internal analyses. Collectively, our team has over 30 years of experience in health care and data analytics, and we have been trained in statistical and data analysis. Additional supporting detail may be found in the attached resumes of project team members.

2. Attach résumés or curricula vitae of the applicant/principal investigator, key contributors, and of all individuals who will have access to the data. (These attachments will not be posted on the internet.)

Please refer to Attachment #2.

VIII. DATA LINKAGE AND FURTHER DATA ABSTRACTION

Note: Data linkage involves combining CHIA data with other databases to create one extensive database for analysis. Data linkage is typically used to link multiple events or characteristics that refer to a single person in CHIA data within one database.

1. Do you intend to link or merge CHIA Data to other datasets?

- Yes
- No linkage or merger with any other database will occur

2. If yes, will the CHIA Data be linked or merged to other individual patient level data (e.g. disease registries, death data), individual provider level data (e.g., American Medical Association Physician Masterfile) , facility level (e.g., American Hospital Association data) or with aggregate data (e.g., Census data)? [check all that apply]

Individual Patient Level Data

What is the purpose of the linkage:

N/A

What databases are involved, who owns the data and which specific data elements will be used for linkage:

N/A

Individual Provider Level Data

What is the purpose of the linkage:

N/A

What databases are involved, who owns the data and which specific data elements will be used for linkage:

N/A

Individual Facility Level Data

What is the purpose of the linkage:

N/A

What databases are involved, who owns the data and which specific data elements will be used for linkage:

N/A

Aggregate Data

What is the purpose of the linkage:

To understand raw data provided by CHIA, Steward will link aggregate level data to definition tables provided by CHIA, as well as internal crosswalk tables - one existing and one to be created. These tables are :

- Geography Crosswalk: This crosswalk will contain a mapping of Massachusetts zipcodes to town names and county names, which to Steward’s knowledge, are not available in CHIA’s definition tables.
- DRG Crosswalk: This existing crosswalk contains a mapping of DRGs to DRG description, service line, and subservice line. To Steward’s knowledge, service lines and subservice lines are not available in CHIA’s definition tables.

What databases are involved, who owns the data and which specific data elements will be used for linkage:

Steward will rely on internally created databases and crosswalk tables to conduct our analyses. Linkages will be established to the following CHIA data elements:

- Geography Crosswalk: PermanentPatientZIPCode
- DRG Crosswalk: CMS270_DIS_DRG

3. If yes, for each proposed linkage above, please describe your method or selected algorithm (e.g., deterministic or probabilistic) for linking each dataset. If you intend to develop a unique algorithm, please describe how that algorithm will link each dataset.

Linkages will be made within the Microsoft Access file environment of the CHIA inpatient, outpatient and ED databases. No algorithms will be used.

4. If yes, please identify the specific steps you will take to prevent the identification of individual patients in the linked dataset.

All queries to the linked data will be conducted in an aggregate manner within Microsoft Access. Our scope of study is focused on aggregate data—whether limited to a specific geography, payer, or service. As such, individual patient information will not be part of our analyses in the linked dataset.

5. If yes, and the data mentioned above is not in the public domain, please attach a letter of agreement or other appropriate documentation on restrictions of use from the data owner corroborating that they agree to have you initiate linkage of their data with CHIA data and include the data owner’s website.

N/A

IX. PUBLICATION / DISSEMINATION / RE-RELEASE

1. Describe your plans to publish or otherwise disclose CHIA Data, or any data derived or extracted from such data, in any paper, report, website, statistical tabulation, seminar, conference, or other setting.

Steward may occasionally share some or a portion of its CHIA Case Mix data analyses with state agencies and policymakers to support or advance health care policy initiatives that will allow Steward to meet its mission of providing world class health care in the communities where our patients live.

2. Will the results of your analysis be publicly available to any interested party? Please describe how an interested party will obtain your analysis and, if applicable, the amount of the fee.

The results of Steward’s analyses are generally not available to the public or for any interested party, though as noted above, Steward may selectively choose to make public some or a portion of its analyses.

3. Will you use the data for consulting purposes?

- Yes
 No

4. Will you be selling standard report products using the data?

- Yes
 No

5. Will you be selling a software product using the data?

- Yes
 No

6. Will you be reselling the data?

- Yes
 No

If yes, in what format will you be reselling the data (e.g., as a standalone product, incorporated with a software product, with a subscription, etc.)?

N/A

7. If you have answered “yes” to questions 3, 4 or 5, please describe the types of products, services or studies.

N/A

X. USE OF AGENTS AND/OR CONTRACTORS

Third-Party Vendors. Provide the following information for all agents and contractors who will work with the CHIA Data.

Company Name:	N/A
Contact Person:	
Title:	
Address:	
Telephone Number:	
E-mail Address:	
Organization Website:	

8. Will the agent/contractor have access to the data at a location other than your location, your off-site server and/or your database? N/A

- Yes
- No

If yes, please provide information about the agent/contractor’s data management practices, policies and procedures in your Data Management Plan.

9. Describe the tasks and products assigned to this agent or contractor for this project.

N/A

10. Describe the qualifications of this agent or contractor to perform such tasks or deliver such products.

N/A

11. Describe your oversight and monitoring of the activity and actions of this agent or subcontractor.

N/A

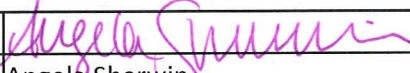
XIII. ASSURANCES

Applicants requesting and receiving data from CHIA pursuant to 957 CMR 5.00 (“Data Recipients”) will be provided with data following the execution of a data use agreement that requires the Data Recipient to adhere to processes and procedures aimed at preventing unauthorized access, disclosure or use of data.

Data Recipients are further subject to the requirements and restrictions contained in applicable state and federal laws protecting privacy and data security, and will be required to adopt and implement policies and practices to protect CHIA data in a manner consistent with the requirements of the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA).

Data Recipients must promptly notify CHIA of any unauthorized use or disclosure of CHIA data.

By my signature below, I attest to: (1) the accuracy of the information provided herein; (2) my organization’s ability to meet CHIA’s minimum data security requirements; and (3) my authority to bind the organization seeking CHIA data for the purposes described herein.

Signature:	
Printed Name:	Angela Sherwin
Original Application Submission Date:	3/31/15
Dates Application Revised:	5/29/15; 6/24/15; 9/1/15

Attachment #1: Research Methodology (per Section VI.2)

Steward will study inpatient, outpatient, and ED utilization in the Massachusetts health care market. Our approach includes conducting aggregate-level analyses for relevant geographies, payers, and services to:

- 1) Establish appropriate crosswalk table linkages between definition tables provided by CHIA and internal crosswalk tables (e.g. Geography crosswalk and DRG Service Line crosswalk) to CHIA hospital inpatient discharge database, outpatient observation database, and ED database.

- 2) Utilize customized queries within Microsoft Access to obtain an aggregated subset of data from CHIA's hospital inpatient discharge, outpatient observation, and ED databases.
 - a. Geographic Aggregate Analysis:
 - i. Identify geographies of interest (e.g. Massachusetts towns, counties, Steward-defined service areas, geographic subsets based on zip codes, etc.)
 - ii. Conduct an aggregated query limited to these geographies
 - iii. Analyze the aggregated data output further in Microsoft Excel to study utilization
 - b. Payer Aggregate Analysis
 - i. Identify payers of interest (e.g. Commercial, Medicaid, Medicare)
 - ii. Conduct an aggregated query limited to these payers
 - iii. Analyze the aggregated data output further in Microsoft Excel to study utilization
 - c. Service Line Aggregate Analysis
 - i. Identify services of interest using DRGs (inpatient) or primary diagnosis codes (ED)
 - ii. Conduct an aggregate query limited to these services
 - iii. Analyze the aggregated data output further in Microsoft Excel to study utilization
 - d. Other Combined Analyses
 - i. Identify a combined subset of geographies, payers, and services of interest, depending on findings from analyses in (a) to (c) above
 - ii. Conduct an aggregated query limited to these fields of interest
 - iii. Analyze the aggregated data output further in Microsoft Excel to study utilization

- 3) Identify trends over time, by conducting the analyses described in #2 across all years of data requested: 2009 – 2014.