

**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:	Michael McManus, MD, MPH
Title:	Senior Associate in Critical Care Medicine and Perioperative Anesthesia, Boston Children's Hospital Associate Professor of Anaesthesia, Harvard Medical School
Organization:	Boston Children's Hospital – Department of Anesthesia
Project Title:	The long-term impact of pediatric conditions in Massachusetts
Mailing Address:	Boston Children's Hospital – Department of Anesthesia Division of Critical Care 300 Longwood Avenue, Bader, 6 th Floor Boston, MA, 02115
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Email Address:	michael.mcmanus@childrens.harvard.edu
Names of Co-Investigators:	Urbano França, PhD
Email Addresses of Co-Investigators:	urbano.franca@childrens.harvard.edu
Original Data Request Submission Date:	10 Septiembre 2015
Dates Data Request Revised:	
Project Objectives (240 character limit)	1. Quantify, trend, and model the variability in demand and access to pediatric hospital care across Massachusetts 2. Quantify and model long-term disease progression for pediatric conditions
Project Research Questions (if applicable)	1. What are the key epidemiological differences between pediatric and adult hospital care in MA? 2. Is there a robust metric for quantifying access to pediatric care in different regions areas? 3. What are the long-term effects on newborns that were treated for opioid withdrawal? 4. How do pediatric conditions progress with time?

II. PROJECT SUMMARY

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

This project aims to quantify and understand the demand for and access to pediatric hospital care. We are interested in both comparing general pediatric acute care to general adult acute care and in furthering the understanding of long-term outcomes and comorbidities associated with pediatric conditions. By modeling trends, we hope to inform future policy decisions related to hospital expansion, consolidation, and closure. In addition, by understanding the long-term patterns of disease progression, we seek to improve clinical care decisions, reduce admissions and readmissions, and decrease costs associated with short and long-term care.

Using the Case Mix data from 2004-2014, we will extend our research into condition prevalence and access to care in Massachusetts. One of the examples will be the analysis of long-term impacts on opiate-exposed newborns. In a previous work using deidentified Massachusetts Case Mix data, we quantified the number of cases and worked closely with the Department of Children and Families to map the impact of these newborns on the family service system in Massachusetts. With patient identifiers we hope to “follow” these infants and identify evolving comorbidities. Another example of our work is the recent proposal of new indices for quantifying regionalization of care and hospital capability. With patient identifiers, we can more accurately map the movement of patients and better understand their needs.

The general theme of our work remains the same: we will use tools from systems science and network theory to (i) model the network of hospitals throughout MA including patient flows among hospitals at different levels of care and (ii) map the trajectory of disease progression for different conditions to understand their clinical and policy impacts.

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
<p>Inpatient Discharge</p>	<p> <input type="checkbox"/> Level 1 – No Identifiable Data Elements <input type="checkbox"/> Level 2 – Unique Physician Number (UPN) <input checked="" type="checkbox"/> Level 3 – Unique Health Information Number (UHIN) <input 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: Our project consists in (i) identifying the evolving comorbidities associated with opiate-exposed newborns (a follow-up of our project in collaboration with DCF) and (ii) the mapping of movements of patients between hospital to better understand their needs and patterns of care. Both projects require patient’s Unique Health Information Number (UHIN) that will provide us with longitudinal data to assess subsequent episodes of care. </p>	<p> <u>1998 – 2014 Available</u> (limited data 1989-1997) 2004 - 2014 </p>
<p>Outpatient Observation</p>	<p> <input type="checkbox"/> Level 1 – No Identifiable Data Elements <input type="checkbox"/> Level 2 – Unique Physician Number (UPN) <input checked="" type="checkbox"/> Level 3 – Unique Health Information Number (UHIN) <input type="checkbox"/> Level 4 – UHIN and UPN </p>	<p> <u>2002 – 2014 Available</u> 2004 - 2014 </p>

	<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: Our project consists in (i) identifying the evolving comorbidities associated with opiate-exposed newborns (a follow-up of our project in collaboration with DCF) and (ii) the mapping of movements of patients between hospital to better understand their needs and patterns of care. Both projects require patient’s Unique Health Information Number (UHIN) that will provide us with longitudinal data to assess subsequent episodes of care.	
Emergency Department	<input type="checkbox"/> Level 1 – No Identifiable Data Elements <input type="checkbox"/> Level 2 – Unique Physician Number (UPN) <input checked="" type="checkbox"/> Level 3 – Unique Health Information Number (UHIN) <input 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: Our project consists in (i) identifying the evolving comorbidities associated with opiate-exposed newborns (a follow-up of our project in collaboration with DCF) and (ii) the mapping of movements of patients between hospital to better understand their needs and patterns of care. Both projects require patient’s Unique Health Information Number (UHIN) that will provide us with longitudinal data to assess subsequent episodes of care.	<p style="text-align: center;"><u>2000 – 2014 Available</u></p> <p style="text-align: center;">2004 - 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.

We will use the data both to quantify the current state of the pediatric care in the state and to validate models that could increase the quality and coverage of the access to the healthcare system.

VI. ALL OTHER REQUESTS - PURPOSE AND INTENDED USE

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

This project will quantify the access and quality of the pediatric healthcare in the state, and its results will have to policy-relate implications in those areas. We will use the data both to quantify the current state of the pediatric care in the state and to validate models that could increase the quality and coverage of the access to the healthcare system.

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

4.

VII. APPLICANT QUALIFICATIONS

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

Dr. McManus holds a Masters in Public Health from Harvard and has been involved in numerous public health projects, including two commissioned by MA DPH to investigate the problem of hospital crowding and ambulance diversion. Those highly successful efforts involved large datasets and computer modeling similar to the work planned here. In addition, he served from 2006 to 2012 on the MA Cost and Quality Council Advisory Committee as the Governor's pediatric representative and also as a member of that body's Executive Committee. In connection with those positions, he has previously worked with the MA hospital case mix data to monitor the impact of health care reform on children. Through this work and his hospital administrative responsibilities, Dr. McManus has gained experience with data safety and was included as an original member of the MA All Payer Claims Data Release Board. Finally, as President of the Massachusetts Chapter of the American Academy of Pediatrics and member of the AAP's National Committee of State Government Affairs, he is familiar with the special interests and changing needs of children that will be the focus of these projects.

Dr. Urbano França received a PhD in Theoretical Physics in 2012 from the University of Valencia with research collaborations and research visits at different universities, including the Harvard-Smithsonian Center for Astrophysics, where he was a visiting scholar between 2009 and 2011. Currently he is a Research Fellow at the Boston Children's

Hospital working with computational public health. During his PhD studies he has worked with data analysis of cosmological data and modeling of physical and dynamical systems. More recently his research has focused on the modeling of complex social systems and social media analysis, where he has worked to understand spatial and temporal patterns in large social networks datasets.

In 2014, we used the CHIA dataset to develop new metrics for measuring and understanding hospital care (manuscript approved by CHIA and now submitted to peer review). We also worked with the Massachusetts Department of Children and Family Services to model the impact of opiate-exposed infants on the social safety net (manuscript approved by CHIA and now in final stages of peer review).

- 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.)

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:

[Empty text box for purpose of linkage]

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

[Empty text box for databases and ownership]

Individual Provider Level Data

What is the purpose of the linkage:

[Empty text box for purpose of linkage]

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

[Empty text box for databases and ownership]

Individual Facility Level Data

What is the purpose of the linkage:

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

Aggregate Data

What is the purpose of the linkage:

To identify general characteristics of similar regions in terms of delivery and variability of care.

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

We will link the dataset to public Census data, using zipcodes, to study the geographical variability of care and the areas served by different hospitals.

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.

As mentioned above, we will link the 5-digit zipcode of individuals with mean socio-economic status of areas and or cities on the aggregated level.

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

Since we will be dealing with aggregated data, linking it to Census data should not identify individual patients. Moreover, essentially all the results will be discussed in publications at the county level. Nevertheless, particular regions with fewer than 11 patients will not be statistically reported in any publication or presentation of the results.

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.

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.

We plan to publish our results in peer-reviewed journals, and discuss them in seminars and conferences.

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.

Yes, the results will be made available to any interested party free of any charge upon contacting the researchers.

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.)?

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

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:	
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?

- 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.

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

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

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:	Michael L. McManus
Original Application Submission Date:	08 December 2015
Dates Application Revised:	