

**Commonwealth of Massachusetts
Center for Health Information & Analysis (CHIA)
Non-Government Agency Application for Data**

This application 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 schedules for APCD and Case Mix data 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:	David Goodman, MD MS
Title:	Professor of Pediatrics and of Health Policy
Organization:	The Dartmouth Institute for Health Policy and Clinical Practice, the Geisel School of Medicine
Project Title:	A population-based study assessing regional variation in newborn care and outcomes, including the risk of NICU admission
Date of Application:	September 15, 2014
Project Objectives (240 character limit)	To describe the use of neonatal intensive care services in New England and to test hypotheses as to the relationship between NICU capacity and utilization.
Project Research Questions (if applicable)	<ol style="list-style-type: none"> 1. To what extent is regional variation seen in NICU utilization and how is it affected by adjustment for known risk factors? 2. To what extent is any observed variation explained by geographic differences in the capacity of NICU services (e.g. NICU beds or neonatologists)? 3. What are the implications of any variation for infant outcomes such as mortality and future use of health care resources?

I. PROJECT SUMMARY

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

This project seeks to examine patterns of care for newborns, with a particular focus on neonatal intensive care. Neonatal intensive care has been among the most successful developments in the field of pediatrics, experiencing robust growth since its initial development such that between 1981 and 2011 the supply of neonatologists had increased more than fivefold from 490 to 88 low birth weight newborns per neonatologist, with similar growth in capacity seen for NICU beds as well. Although NICU care is among the most expensive pediatric services, there has been little study of outcomes-adjusted costs in the field and thus limited understanding of its value, particularly at a population level. Much of the existing work examining NICU use has only studied care provided within a NICU episode for select populations (e.g. infants <1,500 grams), while population-based studies looking at the entire newborn

cohort have not used claims data and thus been unable to answer questions about spending, efficiency, and the value of care. Additionally, the population-based studies from the U.S. that do exist are over 10 years old. This project will provide both a more up to date picture of the care received by all newborns while being able to answer important questions as to the value of such care. It first seeks to define market areas for neonatal intensive care services (Neonatal Intensive Care Regions; NICR) using claims data and established methods in small-area analysis. This involves attributing populations to NICRs based on the ZIP code of maternal residence and actual patterns of care (ZIP codes of hospitals). Using these service areas as the unit of analysis, it will then perform a number of descriptive analyses to characterize the use of such services. Finally, it will look to test certain hypotheses as to the relationship between NICU capacity and utilization, as well as downstream effects on patient outcomes, health care utilization (e.g. length of stay, use of imaging, etc.), and costs.

II. FILES REQUESTED

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

ALL PAYER CLAIMS DATABASE	Level 1 ¹ or 2 ²	Single or Multiple Use	Year(s) Of Data Requested Current Yrs. Available 2009 - 2012
<input checked="" type="checkbox"/> Medical Claims	<input type="checkbox"/> Level 1 ³ <input checked="" type="checkbox"/> Level 2	Select...	<input checked="" type="checkbox"/> 2009 <input checked="" type="checkbox"/> 2010 <input checked="" type="checkbox"/> 2011 <input checked="" type="checkbox"/> 2012
<input type="checkbox"/> Pharmacy Claims	<input type="checkbox"/> Level 2	Select...	<input type="checkbox"/> 2009 <input type="checkbox"/> 2010 <input type="checkbox"/> 2011 <input type="checkbox"/> 2012
<input type="checkbox"/> Dental Claims	<input type="checkbox"/> Level 2	Select...	<input checked="" type="checkbox"/> 2009 <input checked="" type="checkbox"/> 2010 <input checked="" type="checkbox"/> 2011 <input checked="" type="checkbox"/> 2012
<input checked="" type="checkbox"/> Member Eligibility	<input checked="" type="checkbox"/> Level 2	Select...	
<input type="checkbox"/> Provider	<input type="checkbox"/> Level 2	Select...	
<input type="checkbox"/> Product	<input type="checkbox"/> Level 2	Select...	

CASEMIX	Level 1 - 6	Fiscal Years Requested
Inpatient Discharge	<input type="checkbox"/> Level 1 – No Identifiable Data Elements	1998-2013 Available (limited data 1989-1997)
	<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 type="checkbox"/> Level 5 – Date(s) of Admission; Discharge; Significant Procedures	
	<input type="checkbox"/> Level 6 – Date of Birth; Medical Record Number; Billing Number	

¹ Level 1 Data: De-identified data containing information that does not identify an individual patient and with respect to which there is no reasonable basis to believe the data can be used to identify an individual patient. This data is de-identified using standards and methods required by HIPAA.

² Level 2 (and above) Data: Includes those data elements that pose a risk of re-identification of an individual patient.

³ Please note that Level 1 APCD data is not available as of 4/30/2014. This is scheduled to be available later in 2014.

<p>Outpatient Observation</p>	<p><input type="checkbox"/> Level 1 – No Identifiable Data Elements</p> <p><input type="checkbox"/> Level 2 – Unique Physician Number (UPN)</p> <p><input type="checkbox"/> Level 3 – Unique Health Information Number (UHIN)</p> <p><input type="checkbox"/> Level 4 – UHIN and UPN</p> <p><input type="checkbox"/> Level 5 – Date(s) of Admission; Discharge; Significant Procedures</p> <p><input type="checkbox"/> Level 6 – Date of Birth; Medical Record Number; Billing Number</p>	<p>2002-2012 Available (2013 available 8/1/14)</p>
<p>Emergency Department</p>	<p><input type="checkbox"/> Level 1 – No Identifiable Data Elements</p> <p><input type="checkbox"/> Level 2 – Unique Physician Number (UPN)</p> <p><input type="checkbox"/> Level 3 – Unique Health Information Number (UHIN)</p> <p><input type="checkbox"/> Level 4 – UHIN and UPN; Stated Reason for Visit</p> <p><input type="checkbox"/> Level 5 – Date(s) of Admission; Discharge; Significant Procedures</p> <p><input type="checkbox"/> Level 6 – Date of Birth; Medical Record Number; Billing Number</p>	<p>2000-2012 Available (2013 available 9/1/14)</p>

III. FEE INFORMATION

Please consult the fee schedules for APCD ([Administrative Bulletin 13-11](#)) and Case Mix data ([Administrative Bulletin 13-09](#)) and select from the following options:

APCD Applicants Only

- Academic Researcher
- Others (Single Use)
- Others (Multiple Use)

Case Mix Applicants Only

- 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.

IV. REQUESTED DATA ELEMENTS [APCD Only]

State and federal privacy laws limit the use of individually identifiable data to the minimum amount of data needed to accomplish a specific project objective. Please use the [APCD Data Specification Workbook](#) to identify which data elements you would like to request and attach this document to your application.

V. MEDICAID DATA [APCD Only]

Please indicate here whether you are seeking Medicaid Data:

- Yes
- No

Federal law (42 USC 1396a(a)7) restricts the use of individually identifiable data of Medicaid recipients to uses that are directly connected with the administration of the Medicaid program. If you are requesting Medicaid data from Level 2 or above, please describe in detail why your use of the data meets this requirement. Applications requesting Medicaid data will be forwarded to MassHealth for a determination as to whether the proposed use of the data is directly connected to the administration of the Medicaid program. MassHealth may impose additional requirements on applicants for Medicaid data as necessary to ensure compliance with federal laws and regulations regarding Medicaid.

Medicaid covers more than one-quarter of the total births in the state of Massachusetts. Not having this data would leave a significant gap in the analysis. Additionally, in 2012, Massachusetts newborns covered by Medicaid were more likely to be admitted to a NICU than those covered by private insurance (9% vs. 7.4%).(CDC VitalStats) Owing to this increased risk and the high costs associated with such admissions, this data will help inform MassHealth about the value of care received by newborns covered under the Medicaid program. After adjustments are made for illness severity, the analysis from this project may help to identify the potential overuse of costly services, or conversely, the underuse of effective care for critically ill infants from an already disadvantaged population.

VI. REQUESTS PURSUANT TO 957 CMR 5.04

If you are a payer, provider, provider organization or researcher seeking access to Level 1 (de-identified) data, 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. Please provide this information below.

N/A

VII. FILTERS

If you are requesting APCD elements from Level 2 or above, describe any filters you are requesting to use in order to limit your request to the minimum set of records necessary to complete your project. (For example, you may only need individuals whose age is less than 21, claims for hospital services only, or only claims from small group projects.)

APCD FILE	DATA ELEMENT(S) FOR WHICH FILTERS ARE REQUESTED	RANGE OF VALUES REQUESTED
Medical Claims	All	Exclude males >1 year of age and females >55 years of age (includes

		newborn and maternal claims).
Pharmacy Claims	N/A	N/A
Dental Claims	N/A	N/A
Membership Eligibility	All	Same as above.
Provider	N/A	N/A
Product	N/A	N/A

VIII. PURPOSE AND INTENDED USE

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

Newborns represent perhaps the most vulnerable population. There has been limited population-based analysis examining the quality of care across regions and how health system factors such as supply of resources affects the care they receive. Additionally, NICU admissions are among the most costly services received by children and associated with the longest length of stays.

The provision of appropriate care is important to both short-term and long-term outcomes for newborns and their families. Looking specifically at neonatal intensive care, underuse of necessary care has clear health implications, including the potential for death, while the overuse of such services places infants at risk for iatrogenic illness, stresses families, and leads to increased individual and societal costs. Accurately measuring such variation in care is a necessary first step in working to improve the health care system – identifying both low and high quality practices for benchmarking purposes. Additionally, the initial work developing neonatal intensive care regions involves attributing populations to responsible providers based on actual market patterns and this specificity is essential for defining an accountable health system as a locus for improvement. This information can then be used by payers, providers, and policy makers to guide in health care planning, benchmarking, and quality assurance. An additional expected outcome of this research will be to stimulate further health services research in the field of newborn care with the improved health of newborns and their families as the ultimate goal.

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 when the grant is approved in early December.
 - No, this project is not subject to IRB review.
 - No, my organization does not have an IRB.

IX. APPLICANT QUALIFICATIONS

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

Dr. Goodman is Professor of Pediatrics and of Health Policy at The Dartmouth Institute for Health Policy and Clinical Practice (TDI); and Co-Principal Investigator, Dartmouth Atlas of Health Care. His primary research interest is in geographic and hospital variation in health system performance. Over the past

two decades, he has studied the causes and consequences of medical variation in diverse clinical and policy areas including neonatal intensive care, pediatric medical care, primary care, family planning services, and the Medicare population. He currently leads several projects for the Dartmouth Atlas, such as surgical care, and studies of the under age 65 population, including children. He has developed and taught Dartmouth graduate courses on advanced health services research methods, unwarranted variation in health care, and comparative health systems.

The Dartmouth Institute comprises a cross-departmental group of faculty and associated staff who conduct research on medical care and its improvement. More than fifty core faculty of The Dartmouth Institute include representation from many clinical and social science disciplines with particular expertise in (1) the use of administrative databases for measuring medical care, (2) health policy, (3) comparative effectiveness research, (4) technology assessment, (5) decision analysis, (6) health systems improvement, and (7) patient preferences research.

The Data and Analytic Core supports the analytic needs of projects using large administrative datasets, including claims files, for investigators across the Geisel School of Medicine at Dartmouth and Dartmouth College. The Dartmouth Institute is the largest university-based repository of Medicare data in the world and has been working with these data to produce the Dartmouth Atlas and related research for 30 years. The DAC consists of 12 research analysts, as well as 5 administrative and operational staff, with a combined experience-base of more than 150 years of healthcare claims analytic experience and a mastery of a broad range of programming and statistical methods. The DAC is FISMA compliant. New analysts undergo a comprehensive training program to assure a strong foundation in Medicare data analytics. The Dartmouth Institute also supports a joint spatial-epidemiology analytic core with the Norris Cotton Cancer Center that includes geo-spatial analysts and high-speed servers optimized to demanding GIS tasks coupled with licenses for ArcGIS, MapInfo, and other GIS software.

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.)

X. DATA LINKAGE AND FURTHER DATA ABSTRACTION

1. Does your project require linking the CHIA Data to another dataset?
 - Yes
 - No
2. If yes, will the CHIA Data be linked to other patient level data or with aggregate data (e.g. Census data)?
 - Patient Level Data
 - Aggregate Data
3. If yes, please identify all linkages proposed and explain the reasons(s) that the linkage is necessary to accomplish the purpose of the project. Please be specific in describing which data elements will be linked to outside datasets and how this will be accomplished.

In order to develop measures of NICU capacity we will use the American Hospital Association Survey File for NICU beds, and the AMA Masterfile with the CMS National Provider Identifier File as the source of physician (neonatologist) supply. These files are routinely acquired by The Dartmouth Institute. They will be linked with the CHIA Data at the NICR level, a variable developed using patient and provider ZIP codes. Census data will also be linked at the NICR level for adjustment purposes (e.g. median income).

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

The proposed linkages are expected to occur only at the aggregated NICR level and should not present additional threats to privacy or the identification of individual patients. These linked datasets will be under the same security protections described later in this application.

XI. 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.

The immediate outcomes of this project will be peer-reviewed journal papers. There are no plans to engage in public reporting of specific providers/hospital systems based on CHIA data or our analysis.

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 will be made available through the above mentioned journal articles. The Dartmouth Institute will not charge any fee for accessing these results and the papers will be available to all subscribers with access to these academic journals. Upon request, The Dartmouth Institute will provide copies of the articles free.

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

N/A

XII. 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:	