1 BALDWIN STREET,
MONTPELIER, VT 05633-5701

PHONE: (802) 828-2295
FAX: (802) 828-2483

STATE OF VERMONT
JOINT FISCAL OFFICE

MEMORANDUM

To: Joint Fiscal Committee members

From: Daniel Dickerson, Fiscal Analyst

Date: July 7, 2017

Subject: Grant Request #2884

Enclosed please find one (1) item, which the Joint Fiscal Office has received from the administration.

JFO #2884 – $86,960 grant from the March of Dimes to the VT Department of Health (VDH). The funding will be used over to allow the Department to utilize the Vermont Birth Information System to conduct a comprehensive case finding and review of medical records to estimate the incidence of Neonatal Abstinence Syndrome (NAS) in infants, document health characteristics of NAS infants, and calculate health care utilization of NAS infants in their first year of life. NAS is a post-natal drug withdrawal syndrome caused by opioid exposure to infants during pregnancy. The funds will pay for the staff time of existing VDH employees who will conduct the study over one year.
[*JFO received 6/30/17]*

Please review the enclosed materials and notify the Joint Fiscal Office (Daniel Dickerson at (802) 828-2472; ddickerson@leg.state.vt.us) if you have questions or would like an item held for legislative review. Unless we hear from you to the contrary by July 21, 2017 we will assume that you agree to consider as final the Governor's acceptance of these requests.

VERMONT

State of Vermont
Department of Finance & Management
109 State Street, Pavilion Building
Montpelier, VT 05620-0401
[phone] 802-828-2376

JFO 2884

STATE OF VERMONT
FINANCE & MANAGEMENT GRANT REVIEW FORM

Grant Summary:	Grant of $86,960 for March of Dimes, Neonatal Abstinence Syndrome (NAS) Study, to estimate the incidence of hospital utilization during the first year of life.
Date:	6/14/2017
Department:	Department of Health
Legal Title of Grant:	Using Vermont's Birth Information Network Surveillance System to Estimate the Incidence of Neonatal Abstinence Syndrome (NAS)
Federal Catalog #:	N/A
Grant/Donor Name and Address:	March of Dimes, 1401 K Street NW, Suite 900A, Washington, DC 20005
Grant Period: From:	6/1/2017 **To:** 5/31/2017
Grant/Donation	$86,960

	SFY 1	SFY 2	SFY 3	Total	Comments
Grant Amount:	$86,960	$0	$0	$0	

	# Positions	Explanation/Comments
Position Information:		Acceptance recommended.

Additional Comments:	Funding will enable the Department to capture and evaluate NAS data using Vermont's Birth Information Network (BIN).

Department of Finance & Management		(Initial)
Secretary of Administration		(Initial)
Sent To Joint Fiscal Office		**Date**

STATE OF VERMONT REQUEST FOR GRANT (*) ACCEPTANCE (Form AA-1)

BASIC GRANT INFORMATION	
1. Agency:	Human Services
2. Department:	Department of Health
3. Program:	Health Surveillance
4. Legal Title of Grant:	Using Vermont's Birth Information Network Surveillance System to Estimate the Incidence of Neonatal Abstinence Syndrome (NAS)
5. Federal Catalog #:	N/A

6. Grant/Donor Name and Address:
March of Dimes, 1401 K Street NW, Suite 900A Washington, DC 20005

7. Grant Period:	**From:**	6/1/2017	**To:**	5/31/2018

8. Purpose of Grant:
To enable the Department to conduct a comprehensive case finding and review of medical records to estimate the incidence and hospital utilization during the first year of life of NAS infants in Vermont

9. Impact on existing program if grant is not Accepted:
None

10. BUDGET INFORMATION

	SFY 1	SFY 2	SFY 3	Comments
Expenditures:	**FY 18**	**FY**	**FY**	
Personal Services	$86,960	$0	$0	
Operating Expenses	$0	$0	$0	
Grants	$0	$0	$0	
Total	$86,960	$0	$0	
Revenues:				
State Funds:	$0	$0	$0	
Cash	$0	$0	$0	
In-Kind	$0	$0	$0	
Federal Funds:	$0	$0	$0	
(Direct Costs)	$0	$0	$0	
(Statewide Indirect)	$0	$0	$0	
(Departmental Indirect)	$0	$0	$0	
Other Funds:	$86,960	$0	$0	
Grant (source March of Dimes)	$86,960	$0	$0	
Total	$86,960	$0	$0	

Appropriation No:	3420021000	**Amount:**	$73,916
	3420010000		$13,044
			$
			$
			$
			$
		Total	$86,960

JUN 06 2017

STATE OF VERMONT REQUEST FOR GRANT (*) ACCEPTANCE (Form AA-1)

Has current fiscal year budget detail been entered into Vantage? ☐ Yes ☒ No

PERSONAL SERVICE INFORMATION

11. Will monies from this grant be used to fund one or more Personal Service Contracts? ☐ Yes ☒ No
If "Yes", appointing authority must initial here to indicate intent to follow current competitive bidding process/policy.

Appointing Authority Name: Mark Levine, MD Agreed by: _____ (initial)

12. Limited Service Position Information:	**# Positions**	**Title**
Total Positions		

12a. Equipment and space for these positions: ☐ Is presently available. ☐ Can be obtained with available funds.

13. AUTHORIZATION AGENCY/DEPARTMENT

I/we certify that no funds beyond basic application preparation and filing costs have been expended or committed in anticipation of Joint Fiscal Committee approval of this grant, unless previous notification was made on Form AA-1PN (if applicable):

Signature: _____ Date: 5/18/17

Title: Commissioner

Signature: _____ Date: 6.1.17

Title: Secretary, AHS

14. SECRETARY OF ADMINISTRATION

☒ Approved: (Secretary or designee signature) _____ Date: 6/15/17

15. ACTION BY GOVERNOR

☑ Check One Box: Accepted

☐ Rejected

(Governor's signature) _____ Date: 6/22/17

16. DOCUMENTATION REQUIRED

Required GRANT Documentation

- ☐ Request Memo
- ☐ Dept. project approval (if applicable)
- ☐ Notice of Award
- ☐ Grant Agreement
- ☐ Grant Budget
- ☐ Notice of Donation (if any)
- ☐ Grant (Project) Timeline (if applicable)
- ☐ Request for Extension (if applicable)
- ☐ Form AA-1PN attached (if applicable)

End Form AA-1

(*) The term "grant" refers to any grant, gift, loan, or any sum of money or thing of value to be accepted by any agency, department, commission, board, or other part of state government (see 32 V.S.A. §5).

JR 5/31/17

JUN 06 2017

JR 5/31/17

VERMONT

RECEIVED
MAY 25 2017

Department of Health
Business Office
108 Cherry Street – PO Box 70
Burlington, VT 05402-0070
HealthVermont.gov

[phone] 802-863-7736

Agency of Human Services

MEMORANDUM

To: Sarah Clark, AHS CFO

From: Paul Daley, VDH Financial Director

Re: Grant Acceptance of *Using Vermont's Birth Information Network Surveillance System to Estimate the Incidence of Neonatal Abstinence Syndrome (NAS)*

Date: 05/10/17

The Department of Health has received a grant from March of Dimes, providing $86,960 over one year to enable the Department to conduct a comprehensive case finding and review of medical records to estimate the incidence and hospital utilization during the first year of life of NAS infants in Vermont.

We are requesting approval to receive these funds and are enclosing: The Grant Acceptance Request (AA1), narrative summary, budget summaries, a copy of the grant award document, and a copy of the grant application.

We appreciate your support in moving this request forward. Please let me know if you have questions or need additional information. Thank you.

Request for Grant Acceptance

Vermont's Birth Information Network Surveillance System to Estimate the Incidence of Neonatal Abstinence Syndrome (NAS Surveillance)

Summary 5/10/2017

The Department of Health has received a grant from the March of Dimes, providing $86,960 over one year to conduct a comprehensive case finding and review of medical records, using a standard definition of Neonatal Abstinence Syndrome (NAS), to estimate the incidence and hospital utilization during the first year of life in Vermont.

This funding will enable the Department to capture and evaluate NAS data using Vermont's Birth Information Network. NAS is a postnatal drug withdrawal syndrome caused by opioid exposure to the infant during pregnancy. The incidence of NAS has increased significantly in Vermont, as well as the rest of the United States.

Goals include: (1) determining the NAS incidence rate based on a standard definition; (2) documenting the health characteristics of NAS infants and their mothers; and 3) calculating the health care utilization of NAS infants during their first year of life.

The Health Department is hereby seeking approval to receive $86,960 in new funds in State Fiscal Year 2018. The remainder of the funding will be included in the Department's future budget requests. We have attached the grant award document and a copy of the grant application.

VERMONT DEPARTMENT OF HEALTH

SFY18 NAS Surveillance

VISION Account	Admin & Support (3420010000)	Public Health (3420021000)	VDH Total
Employee Salaries	$0	$43,480	$43,480
Fringe Benefits	$0	$17,392	$17,392
3rd Party Contracts	$0	$0	$0
Total Personal Services	$0	$60,872	$60,872
Equipment	$0	$0	$0
Supplies	$0	$0	$0
Other	$0	$0	$0
Travel	$0	$0	$0
Total Operating Expenses	$0	$0	$0
Subgrants	$0	$0	$0
Total Direct Costs	$0	$60,872	$60,872
Total Indirect Costs	$13,044	$13,044	$26,088
Total SFY12 Grant Costs	$13,044	$73,916	$86,960

Appropriation Summary

Total Personal Services	$13,044	$73,916	$86,960
Total Operating Expenses	$0	$0	$0
Total Subgrants	$0	$0	$0
	$13,044	$73,916	$86,960

march of dimes
A FIGHTING CHANCE FOR EVERY BABY

Katie Sellers, DrPH, CPH
Senior Vice President,
Science and Strategy

1401 K Street NW
Suite 900A
Washington, DC 20005
Telephone (202) 659-1847
ksellers@marchofdimes.org
marchofdimes.org

May 8, 2017

Peggy Brozicevic, MA
Vermont Department of Health
108 Cherry Street, Drawer 41 PHS
PO Box 70
Burlington, VT 05402

Dear Ms. Brozicevic:

I am pleased to inform you that the March of Dimes Foundation has approved both the project content and budget request contained in your application, entitled "Using Vermont's Birth Information Network Surveillance System to Estimate the Incidence of Neonatal Abstinence Syndrome," under the March of Dimes funding opportunity "Building On Existing Infrastructure of Population-Based Birth Defects Surveillance Systems to Estimate the Incidence of Neonatal Abstinence Syndrome (NAS)." The approved amount of funding is $86,960 for the one-year period, June 1, 2017 – May 31, 2018. A copy of the reviewers' comments is enclosed for your reference; please consider the questions raised by the reviewers as you begin work on your project.

By May 10, 2017, you will receive materials to begin the subcontract process with the March of Dimes Foundation. These communications will come from Kathy Harris, Director of Sponsored Programs.

All other questions concerning your project should be directed to Licelot Eralte Mercer, Research Analyst in the Perinatal Data Center, at 914-997-4454 or LEralteMercer@marchofdimes.org. You can also reach out to the entire March of Dimes project staff at birthdefectsresearch@marchofdimes.org.

Sincerely,

Katie Sellers, DrPH, CPH
Senior Vice President, Science and Strategy

Enclosure

march of dimes
A FIGHTING CHANCE FOR EVERY BABY

2017 NAS State Surveillance Project

Project Title:

Applicant	
Name: Peggy Brozicevic	Degree MA
Title: Research & Statistics Chief	
Department: Department of Health	
Institution: Vermont State Agency of Human Services	
Telephone: 802-863-7298	Email: peggy.brozicevic@vermont.gov

Using Vermont's Birth Information Network to Estimate the Incidence of Neonatal Abstinence Syndrome in Vermont

Background: Neonatal Abstinence Syndrome (NAS) is a postnatal drug withdrawal syndrome that occurs among opioid-exposed infants. The reported incidence of NAS has significantly increased in recent years nationally and in Vermont. However, most studies have been based on hospital coding of infants. The purpose of this study is to conduct a comprehensive case finding and review of medical records, using a standard definition of NAS, to estimate the incidence in Vermont.

Objectives:

- Estimate a NAS incidence rate based on a standard definition
- Determine the positive predictive value of hospital coding
- Describe the characteristics of NAS infants
- Describe the maternal characteristics of NAS infants
- Determine what proportion of NAS infants have birth defects, and the type of birth defect
- Describe the health care utilization of NAS infants in the first year of life
- For cases coded by the hospital as NAS but not confirmed, determine the reason for the coding

Methods: The Vermont Birth Information Network (BIN) uses passive case finding with active follow-up. Using the Vermont hospital discharge dataset, Medicaid claims data and the all-payer claims data we will identify potential cases, including all infants with a NAS diagnosis, a NICU admission or who were prescribed morphine or methadone. We will also include newborns at community hospitals with the following diagnoses that have been associated with newborns with NAS: seizures, respiratory symptoms or feeding difficulties. Records will be linked to the vital records database. Medical records for these newborns will be abstracted and reviewed to determine if they meet the NAS definition used in this project. For those infants with a hospital diagnosis code of NAS, but who do not meet the definition, the reason for the coding will be identified. Medical records of infants with a confirmed diagnosis of NAS will be further reviewed to identify hospital readmissions, emergency department visits and early interventions services during the first year. The confirmed cases will be linked to the BIN database to identify any birth defects.

Vermont Department of Health

Using Vermont's Birth Information Network to Estimate the Incidence of Neonatal Abstinence Syndrome in Vermont

A. Background of Surveillance Population, Birth Defects Surveillance System and Public Health Value of NAS Surveillance

The incidence of Vermont newborns diagnosed with Neonatal Abstinence Syndrome (NAS) has increased annually between 2001 and 2013 as reported in a recent MMWR *(1)*. Vermont's NAS rate in 2013 was 33.3 per 1,000 hospital births, the second highest among the 28 states included in the report, and Vermont's annual incidence rate change of 3.6 per 1,000 births was the highest among the states. The Department of Health's analysis of the 2014 & 2015 hospital discharge data found that the incidence rate increased to 35.3 in 2014, and then decreased slightly to 34.0 in 2015.

The Vermont Department of Health began tracking NAS births in 2012 using the Vermont Uniform Hospital Discharge Data Set (VUHDDS) and Medicaid claims data. Findings from these analyses have been published as a Data Brief *(2)* and a poster presentation at the 2014 APHA conference *(3)*. However, Vermont's high incidence rate of NAS compared to other states may be, in part, a reflection of a culture of treating opioid addiction as a chronic disease. Since 2002, Vermont has greatly expanded access to medication assisted treatment (MAT), including for pregnant women. Vermont's first methadone clinic opened in 2004, and in 2012 the Vermont initiated the Vermont Care Alliance for Opioid Addiction, the Hub and Spoke Model. The Hub and Spoke model ensures that each person's care is effective, coordinated and supported.

Since 2002 Vermont hospitals have gone through quality improvement programs in treating opioid-dependent pregnant women and their infants as part of the Vermont Child Health

Improvement Program's Improving Care for Opioid–exposed Newborns (ICON) project at the University of Vermont Medical Center. The Vermont Department of Health and the University of Vermont Medical Center also collaborated to write "Treatment of Opioid Dependency in Pregnancy – Vermont Guidelines" in 2010, outlining best practices for providers across the state *(4)*.

Vermont's rate of NAS may reflect the women who are in medically assisted treatment rather than reflecting symptoms, or the severity of symptoms, of the newborn. In a recent study at the University of Vermont's Children's Hospital, where just over half of the known opioid-exposed newborns are delivered, only 25% of these newborns showed signs of withdrawal severe enough to require treatment *(5)*. They also report that approximately half of the mothers of the opioid-exposed infants were on medication-assisted therapy prior to conception.

All of the estimates of rates of NAS to date are based on coding in the hospital and Medicaid claims data. The Vermont Department of Health is interested in obtaining a more systematic assessment of the incidence of NAS in the state, and the Birth Information Network (BIN) is the ideal program to do so. The Vermont Birth Information Network was established by legislation in 2003 (18 V.S.A. § 5087) to conduct statewide, population-level surveillance of selected structural birth defects and other congenital conditions in order to improve outreach and referral services for families with children with special health needs, ensure adequate services are available for children and their families, evaluate efforts to prevent health problems and document possible links between environmental and chemical exposure with the special health conditions of Vermont's infants and children. The BIN began collecting data on birth defects and other newborn conditions with Vermont's 2006 birth cohort. The BIN collects data on all of the birth defects recommended by the National Birth Defects Prevention Network (NBDPN), plus 29

metabolic and genetic conditions, congenital hearing loss and very low birthweight. In August 2016 Vermont received funding through CDC-RFA-DD16-1605 and began collecting data on conditions specified by the CDC as possibly associated with the Zika virus. The BIN's authority is broadly defined to include "...conditions existing at or before birth regardless of cause and symptoms" which allows the BIN to include newborns with NAS.

The BIN currently uses passive case finding with active follow-up, requesting medical records of potential cases from hospitals and providers, and contracts with a nationally recognized clinical geneticist to make final case determinations for any questionable cases. The BIN follows the NBDPN guidelines and standards for case identification, confirmation and reporting. The BIN submits data annually to the NBDPN for their annual report, and provides data on 12 birth defects for the Vermont and National Environmental Public Health Tracking Programs. The Vermont EPHT birth defects reporting was recently enhanced with Community Profiles. The BIN also participated in a New England Birth Defects Consortium study on critical congenital heart defects.

Vermont proposes to conduct this project with either the 2014 or the 2015 birth cohort. Currently the BIN has available the first three quarters of the 2016 hospital data. If the fourth quarter becomes available before this project begins, we would be able to use the 2015 birth cohort. At this time, all of the 2014 and 2015 hospital data are available, and the project could be conducted with the 2014 birth cohort. In 2014 there were 5,186 hospital births to Vermont residents. Of these, 93.2% of the mothers were white, 2.7% were Asian, 1.7% were black and 1.7% reported multiple races. Additionally, 1.3% reported they were of Hispanic origin.

In the 2014 hospital discharge data system, 183 infants had a diagnosis code indicating NAS, which is a rate of 35.3 per 1,000 births based on hospital coding. Building on the BIN's

established data sources and methods we propose to identify and confirm cases of NAS using the standard definition in the RFP. With this information we will be able to:

- Estimate a NAS incidence rate based on a standard definition
- Determine the positive predictive value of hospital coding
- Describe the characteristics of NAS infants, including gestation age, birth weight, and NAS scores
- Determine what proportion of NAS infants have birth defects, and the type of birth defect
- Describe the health care utilization of NAS infants, including NICU admission, length of stay, medication use, and hospital readmissions
- Describe maternal characteristics of NAS infants, including age, race/ethnicity, types of opioids used during pregnancy, reasons for opioid use, other substance use, timing of entry into prenatal care, and other health conditions.

In addition, Vermont is interested in determining:

- Positive predictive value of hospital coding by hospital, as it appears from examining the data that there may be differences in coding practices between hospitals
- Emergency department visits during the first year of life
- Utilization of early intervention services, and types of services, in the first year of life
- For cases coded by the hospital as NAS, but where the newborn does not meet the definition used by this project, what were the reasons for the coding, e.g. mothers receiving treatment, use of medications for depression or other causes, tobacco use

The findings and interpretation of this project will be shared and discussed with the Health Department's Divisions of Alcohol and Drug Abuse Programs and Maternal and Child Health. As a follow-up to this project the Health Department has discussed with the University of Vermont Medical Center (UVMC) possible collaborations. UVMC maintains a comprehensive database of infants of mothers known to have substance abuse disorders, whether or not they are in treatment. The database also includes any additional infants who show signs of opioid withdrawal. The Health Department will share aggregate numbers from this project, which is using a standard definition, to compare with the number of cases their program is identifying. A second potential collaboration would be to compare the outcomes of infants whose mothers were in treatment for opioid use prior to conception with mothers who began treatment during pregnancy and with those who did not receive treatment. This would depend on whether the numbers of cases identified are sufficient for this comparison, and on a data sharing agreement.

B. Plans for NAS Surveillance

The BIN uses passive case finding with active follow-up for case confirmation, requesting medical records of potential cases from hospitals and providers. A wide variety of administrative data systems are used for case finding. BIN cases must be diagnosed in the first year of life, which often requires following cases as further tests and evaluations are conducted before the diagnosis is confirmed. However, for the NAS surveillance the confirmation of a case is determined in the newborn period. For the NAS surveillance we will use the hospital discharge records, the Vermont Health Care Utilization and Evaluation System (VHCURES), and Medicaid claims database for case finding. VHCURES is Vermont's all-payer claims database.

Vermont has one hospital, UVMC, with a Neonatal Intensive Care Unit (NICU). Case finding will be slightly different for the other 11 community hospitals that deliver babies.

The BIN Coordinator has access to two hospital discharge databases. The Research & Statistics unit, in which the BIN program is located, is also responsible for managing the hospital discharge data system for Vermont's Green Mountain Care Board (GMCB) under a MOU. The Green Mountain Care Board is the data owner for both the hospital discharge data and the VHCURES data. The hospital data system contains records for all visits to Vermont hospitals (resident and non-resident) and for Vermont resident visits to hospitals in the border states. It includes inpatient discharges, emergency room visits, and a broad range of outpatient visits. The Vermont hospital data is provided by the Vermont Association of Hospital and Health Systems (VAHHS), under the contract the GMCB has with VAHHS to collect data from each of the Vermont hospitals. This is the file that has been used within the state for analysis of NAS coded records. The BIN receives quarterly data files from VAHHS on a subset of infant records based on diagnosis codes associated with the conditions collected by the program. These files are often received on a timelier basis. The hospital files have the medical record number, which allows the BIN staff to contact hospitals directly to request records. Because the BIN hospital files are only a subset of the infant records, it does not currently have access to all of the records that will be needed for this project. If this project is funded, the BIN will use the files maintained by the Hospital Data Manager.

Case finding will begin with the hospital discharge data selecting cases with:

- ICD-9-CM codes 779.5 and 760.72 for all hospitals. If the 2015 birth cohort is used, ICD-10-CM code P96.1 will be used for the fourth quarter.

- Newborns admitted to the Neonatal Intensive Care Unit for UVMC based on revenue codes for the NICU.
- Newborns with a length of stay greater than 2 days, and diagnosis codes of seizures (779.0, 780.3) or feeding difficulties (779.3) or respiratory symptoms (769.x, 770.x) at the community hospitals. These are conditions that have been found in prior studies to be associated with NAS *(6,7)*.
- The hospital discharge dataset does not include pharmacy data, but both Medicaid and VHCURES do. The Medicaid claims data will be queried for newborns that are prescribed methadone or morphine, the medications used in Vermont for newborns with severe withdrawal symptoms. The VHCURES pharmacy data will be queried for newborns with private insurance.

The BIN program will then request the medical records for all infants identified using the methods described above. The BIN Coordinator is provided electronic access to the medical records requested at UVMC, which includes both hospital and physician practice data. For the other hospitals, he typically requests copies of the medical records. For this project, depending on the number of records being requested from the hospital, he may request copies or he may arrange visits to hospitals to review the medical records on site.

The BIN does have authority to request the delivery records for the mother as well as the infant, however it is unclear whether 42 CFR Part 2, which protects the confidentiality of substance abuse treatment records, would apply to the mother's delivery record. The Health Department's legal staff will make a final determination as to whether we can request the mother's delivery record. If we are unable to review mothers' delivery records, there may be

cases where we cannot document a history of maternal drug use, but we would expect this to affect only a relatively small number of records. In the course of birth defects activities, the BIN Coordinator routinely sees reference to mother's drug history in the infant record.

At the time that the BIN Coordinator reviews the medical record he will be able to make a determination as to whether the infant meets the definition of (1) an NAS score > 8, not explained by another etiology; (2) documented history of maternal drug use or laboratory confirmation; and (3) length of stay greater than 2 days. At that same review he will collect the other variables of interest such as head circumference, other adverse outcomes, types of opioids used during pregnancy, reasons for opioid use, other substance/medications used during pregnancy, and health conditions of the mother, such as Hepatitis C seropositivity, depression and HIV. Even if the mother's delivery record is not available, much of this information can be obtained from the infant's record or from the birth certificate. Also collected will be any subsequent hospitalizations and emergency room visits to the birth hospital. Similar information will be collected for infants who were not found to meet the criteria for NAS, but had ICD-9-CM and ICD-10-CM codes indicating NAS.

Mother's demographic information, e.g. age, race/ethnicity, can be collected either from the medical records or from the birth files. Information on birth defects will be drawn from the BIN.

Most of the infants with diagnosis codes indicating NAS were insured by Medicaid, 92% in 2014 and 86% in 2015. We assume that Medicaid will insure a similar high percent of infants who meet the criteria for NAS. We will use the Medicaid claims database to identify any additional inpatient hospitalizations or emergency department visits that may have occurred at hospitals other than the birth hospital. For infants with other insurance types, we will examine the hospital discharge database for inpatient visits other than the birth, and emergency

department visits, using the infant's date of birth and gender. We won't use zip codes, as families may move during the infant's first year. We will follow-up with hospitals to request any records identified as potentially matching our cases to determine if they are a match.

Also of interest are any early intervention services in the first year. Because early intervention services are paid by the state regardless of insurance status, all of these records can be found in the Medicaid claims database. Data will be collected on the number and type of services used.

C. Plans for Linkage of Vital Records and Hospital Discharge Data with NAS Surveillance Data

The BIN database is an Access database that includes variables from all the various data sources, including vital records, hospital discharge data, VHCURES claims data, Medicaid claims data, and medical records from hospitals and physician practices. Names and addresses of the infants and their parents are included.

The hospital file includes the medical record number, which is also on the birth certificate. Records in the hospital file are linked to the birth files via the infant's medical record number.

The VHCURES pharmacy data will also be used for case finding for newborns with private insurance. VHCURES does not include direct identifiers, but does include date of birth, zip code and birth hospital. However, infant birth dates are not unique enough for a reliable match. Instead the BIN first links the infant's record to the mother's record using the insurance number in VHCURES. With both mother's and infant's dates of birth as well as infant's gender and birth hospital, these records are then matched to the birth record. The only complication is

with multiple births of the same gender. In these cases, the medical records will be requested for both infants.

Medicaid claims data will also be used in this project to ensure no infants have been missed, to examine pharmacy claims, to search for any additional hospital admissions or emergency department visits, and to search for early intervention services. The Medicaid data include the infant's name and address and the head of household.

An overview of the major components of this project and their timeline is as follows:

Month 1	Prepare and submit IRB application
	Obtain legal opinion on whether we can request mother's delivery records
	Modify BIN database, or build new database modeled on the BIN
Month 2	IRB review completed
Months 2-4	Begin case finding once IRB review is completed
	Case finding using hospital discharge data
	Case finding using Medicaid claims data
	Case finding using VHCURES data
	Link to Birth Certificate
Month 4	Begin requesting Medical Records from hospitals
Months 4-8	Review and abstract medical records
Month 9	(a) Follow-up using Medicaid data to identify any hospital readmissions or Emergency Department visits to non-birth hospitals
	(b) Follow-up using hospital discharge data to identify any hospital readmissions or emergency department visits to non-birth hospitals for infants not on Medicaid

(c) Link to BIN for birth defects data

Month 10 Review Medicaid database for Early Intervention Services

Months 11-12 Prepare Reports

A more complete Timeline is attached.

D. Capacity of Applicant to Create Summary Analysis Report

The BIN database is an Access database that includes variables from all the various data sources, including vital records, hospital discharge data, VHCURES claims data, Medicaid claims data, and medical records from hospitals and physician practices. For surveillance of the Zika conditions a second Access database, the Zika Information Network (ZIN), was created because some birth conditions were common to both programs, but had different definitions. The ZIN is based on the BIN, and provides the same capacity for importing data from the different datasets and producing reports. For the NAS surveillance we will either modify the BIN to include all the variables needed, or create another database copying the BIN database's structure.

The BIN was designed to collect all the variables needed for the surveillance of birth defects and other conditions, to readily import data from various data sources, to produce case level reports for review by the BIN Coordinator and the BIN's clinical geneticist, to routinely track the progress of the surveillance system, and to produce reports. On a monthly basis, the BIN runs the following reports on birth cohorts that are not closed:

- A report by birth cohort that shows the number of cases identified by type of birth defect or other condition and their current status – confirmed, ruled out or provisional. This shows us the number of cases we've tracked and how close we are to completing that birth cohort.

- A report by birth cohort that shows the number of cases that have been found by type of birth defect and data source. This allows us to track which data sources are identifying which type of birth defect.
- A report of all provisional cases that show where they are in the process of being confirmed or ruled out. This report shows how many cases are waiting for the BIN Coordinator's initial review, how many need a medical records request sent out, how many are waiting for a medical record return, need to be sent to the clinical reviewer, etc.
- A report that shows the timeliness of the case confirmations for each birth cohort.

Annually the BIN Coordinator submits a report of the confirmed cases to the NBDPN for their annual report. He also submits an aggregate data file for uploading to the National and the Vermont Environmental Public Health Tracking portals for the 12 birth defects included in this program. As definitions for birth defects have changed and as data reporting requirements changed, the BIN Coordinator has modified his queries to meet the new requirements.

As a birth cohort is completed the report that shows the number of cases found by type of birth defect and data source is run on just those cases that have been confirmed. This provides a picture of where the true cases are being identified.

In addition to these standard reports, the BIN Coordinator routinely produces ad hoc queries as needed. For example, recently there was concern that because the queries of the various data sources needed to be modified for ICD-10-CM codes, that an error may have been introduced. He developed a report that showed the number of potential cases found by data source and by quarter – defined by date of service. The results were graphed, and it was clear that case finding has remained consistent since ICD-10-CM was implemented for all data sources.

For the NAS surveillance we will either modify the BIN database to include all the variables needed, or create another database using the same database structure. Whichever approach is used will have the same reporting capabilities as the BIN and the ZIN. We've reviewed the analysis and summary reports described in the RFP, and do not anticipate any problems providing this information.

E. Capacity of Applicant to Undertake Project

The PHAB Accreditation Committee awarded five-year accreditation status to the Vermont Department of Health on June 18, 2014. With accreditation, the Health Department is demonstrating its commitment to improving and protecting the health of Vermonters and advancing the quality of public health services nationally. The process has allowed our department to assess our strengths and identify areas for improvement in order to continue to improve the quality of our services and performance.

The Public Health Accreditation Board's standards and measures provide a means for the department to continually assess its effectiveness in delivering the ten essential public health services. This grant will enable the department to continue to adhere to the standards and measures.

The Vermont Birth Information Network (BIN), established by Vermont legislation in 2003 (18 V.S.A. § 5087), is authorized to conduct statewide, population-level surveillance of selected structural birth defects and other congenital conditions. The legislation explicitly lists the extensive set of data sources available to the BIN, including the hospital discharge data, Medicaid claims data and vital records. In 2011 additional legislation expanded the list of birth defects and other conditions that could be collected by the BIN, added a new data source that had

recently become available in the state, VHCURES, an all-payer claims database, and established that other changes to the BIN could be made through the rule-making process.

The Vermont Birth Information Network is located in the Research & Statistics (R&S) unit of the Public Health Statistics section in the Division of Health Surveillance. The R&S unit has extensive experience with surveillance systems, data analysis and dissemination, and collaborating with programs both inside and outside of the Department of Health. The R&S unit consists of the unit supervisor and ten Public Health Analysts/Epidemiologists.

Peggy Brozicevic, the Research & Statistics Chief, is the BIN Project Director. She provided staff support to the legislatively appointed committee that recommended establishing the BIN and was responsible for implementing the program. She provides overall management of the program, is responsible for grants and contracts, and provided oversight for previous legislative and rule-making changes. Ms. Brozicevic would serve as Principal Investigator for this project.

Brennan Martin is the BIN Coordinator, and has been with the program since March of 2010. He is responsible for data collection and case finding using various data sources that are then linked within the BIN database. The Coordinator requests and reviews charts, abstracts data and coordinates with the clinical geneticist for case confirmation. He collaborates with the CSHN Medical Director and staff on timely referrals. He evaluates data sources, analyzes data and writes reports.

Currently we are in the process of hiring a new Epidemiologist position to work with the BIN. Their role will be focused on the surveillance of the Zika associated birth conditions, and they will be coordinating with the community hospitals in Vermont for more active case finding for these conditions. While this position has been vacant Mr. Martin has taken the lead on the surveillance of the conditions potentially associated with the Zika virus. He developed a new

database for Zika conditions modeled on the BIN structure. He has provided the Vermont hospitals with the description of the conditions we are collecting for the Zika surveillance system, and has been reviewing records and submitting reports to the CDC bi-weekly.

BIN staff are experienced with designing data systems that not only store data in an efficient and useful manner, but can also be used to generate reports on the timeliness and completeness of the data for quality assurance and control. The database used by the BIN was built to be able identify cases that need additional follow up, report monthly on the status of all cases in the BIN broken down by various measures, and report on the timeliness in resolving birth defect cases. These same capabilities will be used to ensure that the analysis and reporting requirement of this RFP are met.

For this project we will need use existing staff. This is a one-year project, and it would take a minimum of six months to hire someone. That would not provide enough time to train someone new and complete the project. Mr. Martin will be responsible for the database for this project, reviewing and abstracting medical records and producing reports. We will also be drawing on other staff members for specific roles to assist with the project.

In addition to the BIN staff, Barbara Carroll, the Hospital Data Manager, will also be contributing to this project. Dr. Carroll has worked closely with analysts supporting the Division of Alcohol and Drug Abuse Programs on the various NAS analyses and has taken the lead in analyzing and reporting the data from the hospital discharge data. In addition to her work with the hospital discharge data, she is also experienced in analyzing the VHCURES data. Ms. Carroll will take the lead in case finding using the hospital discharge data and the VHCURES data for this project, and assist with interpreting the data and producing reports.

Kristen Cameron is an Administrative Services Coordinator in the Division of Health Surveillance. Ms. Cameron will be responsible for requesting medical records from the 11 community hospitals and tracking their receipt. If visits are made to these hospitals for the BIN Coordinator to review records on-site, she will be responsible for scheduling those visits.

Biographical sketches for the BIN Project Director and Coordinator, the Hospital Discharge Data Manager and Administrative Services Coordinator are attached.

From: 6/01/17 **TOTAL-BUDGET** APP #FY17-
(All Entries Must be Typed)

To: 5/31/20 PI Name: Peggy Brozicevic

Institution: Vermont Department of Health City, State: Burlington, VT

A. SALARIED PERSONNEL

Name/Degree	Title of Position	% of Time on This Grant	Total Salary from All Sources	Amount Charged To this Grant	Totals
Peggy Brozicevic, MA	PRINCIPAL INVESTIGATOR	15%	$ 81,700	$ 0	0
			*FB $ 32,680	*FB $ 0	$ 0
Brennan Martin, MPH	BIN Coordinator	40%	$68,225	$27,290	27,290
			*FB $27,290	*FB $10,916	$ 10,916
Barbara Carroll, EdD	Hospital Data Manager	10%	$69,000	$6,900	6,900
			*FB $27,600	*FB $2,760	$ 2,760
Kristen Cameron, BA	Administrative Services Coor.	20%	$46,450	$9,290	9,290
			*FB $18,580	*FB $3,716	$ 3,716
*Fringe Benefits					$

B. PERMANENT EQUIPMENT – List individually each item and amount over $300

	$	
	$	
	$	
	$	$ 0

C. EXPENDABLE SUPPLIES – List individually each category and amount over $300

	$	
	$	
	$	
	$	
	$	$ 0

D. OTHER EXPENSES - List individually each item and amount over $300

	$	
	$	
	$	
	$	$ 0

E. TRAVEL - By Principal Investigator, not to exceed $1,000 per year

Travel by Principal Investigator		$ 0

TOTAL DIRECT COSTS.....	$ 60,872
INDIRECT COSTS (10%OF TOTAL DIRECT COSTS).....	$ 26,088
TOTAL AMOUNT REQUESTED.....	$ 86,960

Vermont Department of Health

DETAILED LINE-ITEM BUDGET AND JUSTIFICATION

A. SALARIES AND WAGES

Personnel $43,480

Position Title	Annual Salary	% of Time	No. of Months	Amount Requested
BIN Coordinator Brennan Martin	$68,225	40%	12	$27,290
Hospital Data Manager Barbara Carroll	$69,000	10%	12	$ 6,900
Admin. Services Coordinator Kristen Cameron	$46,450	20%	12	$ 9,290

Justification

The BIN Coordinator will be responsible for the development of the database for the NAS surveillance, either modifying the BIN database or creating a new database modeled on the BIN. He will oversee the case finding by the hospital data manager from the hospital discharge and VHCURES data system. He will conduct addition case finding from the Medicaid claims data, plus use the Medicaid and hospital discharge data for the one year follow-up of health care utilization. He will be responsible for reviewing medical records and abstracting the data. He will link the data from the hospital discharge data system, VHCURES and Medicaid with the Vital Records data, conduct the analyses and produce the reports.

The Hospital Data Manager will be responsible for much of case finding. She will examine the hospital data for ICD codes indicating NAS, to identify infants who were in the NICU, and for selected diagnoses of newborns in community hospitals for greater that two days. She will use the VHCURES data system to identify newborns with private insurance who were prescribed methadone or morphine.

The Administrative Services Coordinator will be responsible for tracking requests to the 11 community hospitals for medical records and their receipt. If visits are made to these hospitals for the BIN Coordinator to review records on-site, she will be responsible for coordinating those visits.

Peggy Brozicevic, BIN Project Director, will provide in-kind support to this project. She will coordinate with the Health Department's legal office to obtain a decision as to whether the BIN can request the delivery records for these mothers. She will prepare and submit the IRB

application. She will oversee grant activities and will be responsible for grant reporting. She will coordinate with Health Department's Division of Maternal and Child Health and the University of Vermont's Vermont Child Health Improvement Program.

B. FRINGE BENEFITS

40% of $43,480 (direct salary) $17,392

Justification

The actual cost of fringe benefits (not a fringe benefit rate) will be reported as a direct cost of the program. The actual cost of fringe benefits varies from employee to employee based on salary, employee choice of health care plan, and employee election of certain benefits. The usual components of these fringe benefits are FICA at 7.65% of salary, retirement at 7% of salary, dental and medical and life insurance coverage at 80% of the actual costs of the insurance premium if and as elected by the employee, and $1.50 per pay period for the employee assistance program. Based on the current fringe benefits for employees working in the statistics programs, we are estimating the cost of these fringe benefits at 40% of salary.

I. TOTAL DIRECT COSTS $ 60,872

J. INDIRECT COSTS $ 26,088

The Vermont Department of Health uses a Cost Allocation Plan, not an Indirect rate. The Vermont Department of Health is a department of the Vermont Agency of Human Services, a public assistance agency, which uses a Cost Allocation Plan in lieu of an indirect rate agreement as authorized by OMB Circular A-87. This Cost Allocation Plan was initially approved by the U.S. Department of Health and Human Services effective October 1, 1987. The most recent approval letter, dated February 1, 2016 and effective January 1, 2015, is attached. The cost allocation plan summarizes actual, allowable costs incurred in the operation of the program. These costs include items which are often shown as direct costs, such as telephone and general office supplies as well as items which are often included in an indirect rate, such as the cost of office space and administrative salaries. These costs are allocated to the program based on the salaries and wages paid in the program relative to the total salaries and wages paid in the department (or division) bearing the original expense. Because these are actual costs, unlike an indirect rate, these costs will vary from quarter-to-quarter and cannot be fixed as a percentage of program costs.

We estimate these allocated costs at 60 percent of the direct salary line item, or $26,088 (60% x $43,480).

TOTAL DIRECT AND INDIRECT COSTS $ 86,960
(Total Budget Requested)

MARCH OF DIMES FOUNDATION
birthdefectsresearch@marchofdimes.org

FOR MOD USE ONLY
APPLICATION NO. _____

INSTITUTIONAL SIGNATURE FORM

Project: Building on Existing Infrastructure of Population-Based Birth Defects Surveillance Systems to Estimate the Incidence of Neonatal Abstinence Syndrome (NAS)

(All Entries Must Be Typed.)

Title of Research Proposal: Using Vermont's Birth Information Network to Estimate the Incidence of Neonatal Abstinence Syndrome in Vermont

Name of Institution: Vermont Department of Health

This grant application is for a one-year period.

I HAVE READ AND HEREBY AGREE TO CONFORM WITH THE MARCH OF DIMES POLICIES GOVERNING RESEARCH GRANTS.

PRINCIPAL INVESTIGATOR		
Name/Degree Peggy Brozicevic, MA	Signature Peggy Brozicevic	
Academic Rank/Title Research& Statistics Chief	Telephone Number 802-863-7298	Fax Number 802-865-7701
Department Department of Health Division of Health Surveillance	E Mail Peggy.Brozicevic@vermont.gov	
Street Address, City, State, and ZIP code 108 Cherry St., PO Box 70, Burlington, VT 05402		
CHAIR OR DIRECTOR		
Name/Degree Harry Chen, MD	Signature	
Title Commissioner of Health	Telephone Number 802-652-4155	Fax Number
Department Department of Health	E Mail Harry.Chen@vermont.gov	
Street Address, City, State, and ZIP code 108 Cherry St., PO Box 70, Burlington, VT 05402		
GRANTS AND CONTRACTS OFFICER		
Name Paul Daley	Signature	
Title Financial Director	Telephone Number 802-863-7284	Fax Number
Office Financial Office	E Mail Paul.Daley@vermont.gov	
Street Address, City, State, and ZIP code 108 Cherry St., PO Box 70, Burlington, VT 05402		
Name and Address of Grantee Institution VT Dept. Of Health	**Mail Check To** 108 Cherry St., PO Box 70, Burlington, VT 05402	
Check to be Made Payable To (Do Not Use Name of Individual or P.O. Box Number) VT Dept. Of Health	**Date submitted** 03-06-2017	

VERMONT

Green Mountain Care Board
89 Main Street
Montpelier, VT 05620

[phone] 802-828-2177
www.gmcboard.vermont.gov

Cornelius Hogan
Jessica Holmes, PhD
Robin Lunge, JD, MHCDS
Susan Barrett, JD, Executive Director

February 24, 2017

Peggy Brozicevic
Research & Statistics Chief
Department of Health
Division of Health Surveillance
108 Cherry St., PO Box 70
Burlington, VT 05401

Dear Peggy:

The Vermont Green Mountain Care Board (GMCB), as data steward for the Vermont All-Payer Claims Database (VHCURES) and for the Vermont Uniform Hospital Discharge Data Set (VUHDDS), would like to confirm that the Vermont Department of Health and Division of Health Surveillance has access to and use of these datasets.

As authorized by statute (18 V.S.A. Sections 9405, 9410, 9453, and 9454), we have executed a Data Use Agreement for the VHCURES database and a Memorandum of Agreement for the VUHDDS data with the Vermont Department of Health.

There are no limitations on the use of these data sources other than what is stated in the agreements referenced above. There is no termination date on the VHCURES (claims) data and the VUHDDS (discharge) agreement runs through the end of the state fiscal year 2017 and is renewed annually.

The VUHDDS is presently available through the first three quarters of 2016. The fourth quarter data should be available in the next few months. VHCURES data is currently available through the first three quarters of 2015. The fourth quarter of 2015 and all of 2016 will be released in April.

Sincerely,

Roger Tubby

Roger Tubby

Director of Data Management and Analytics
Vermont Green Mountain Care Board
http://gmcboard.vermont.gov/
89 Main St. 3rd Floor, Montpelier, VT 05620-3601
802-828-2177 (front desk only)
802-272-5599 (cell)

VERMONT

State of Vermont
Department of Health
Division of Health Surveillance
108 Cherry Street–PO Box 70
Burlington, VT 05402-0070
HealthVermont.gov

[phone] 802-863-7298
[fax] 802-865-7701

Agency of Human Services

March 2, 2017

Peggy Brozicevic
Research & Statistics Chief
Vermont Department of Health
Division of Health Surveillance
108 Cherry St., P.O. Box 70
Burlington, VT 05402

Dear Peggy:

As the Data Steward for Vital Records I can confirm that you will have access to the vital records data for the Neonatal Abstinence Syndrome surveillance project. You and your staff have access to the data for the birth defects surveillance, and link these data to the hospital discharge data and other data sources on an ongoing basis.

Birth records are required to be filed within 10 days of the birth, and you will have access to records as soon as they have been entered into the system. There are no limitations on the use of vital records data, except for the release of individually identifiable data.

Sincerely,

Richard McCoy
Public Health Statistics Manager

VERMONT

State of Vermont
Department of Health
Division of Health Surveillance
108 Cherry Street–PO Box 70
Burlington, VT 05402-0070
HealthVermont.gov

[phone] 802-863-7298
[fax] 802-865-7701

Agency of Human Services

March 2, 2017

Peggy Brozicevic
Research & Statistics Chief
Vermont Department of Health
Division of Health Surveillance
108 Cherry St., P.O. Box 70
Burlington, VT 05402

Dear Peggy:

I can confirm that the Department of Health can release the pooled data from the Neonatal Abstinence Syndrome surveillance project to the March of Dimes and to the Centers for Disease Control and Prevention. Neither Vermont state law nor the data release policies of the Vermont Department of Health would prohibit the release of the aggregate data.

Sincerely,

Richard McCoy
Public Health Statistics Manager

VCHIP
Vermont Child Health Improvement Program
UNIVERSITY OF VERMONT COLLEGE OF MEDICINE

www.vchip.org

February 23, 2017

Re: Building on Existing Infrastructure of Population-Based Birth Defects Surveillance Systems to Estimate the Incidence of Neonatal Abstinence Syndrome (NAS)

Dear March of Dimes,

The Vermont Child Health Improvement Program (VCHIP) at the University of Vermont is delighted to support the Vermont Department of Health's application in response to *Building on Existing Infrastructure of Population-Based Birth Defects Surveillance Systems to Estimate the Incidence of Neonatal Abstinence Syndrome (NAS)*. We plan to partner with the Vermont Department of Health (VDH) and the University of Vermont Medical Center (UVMMC) to conduct this work.

VCHIP has a long history of involvement with NAS surveillance through our Improving Care for Opioid-Exposed Newborns (ICON) project and our Vermont Regional Perinatal Health Project (VRPHP), and we currently collect data on opioid-exposed newborns born in Vermont through these projects. We have provided details of our data collection methodology in the Vermont Department of Health's proposal and we look forward to collaborating with them on this grant.

We are excited about VDH's proposal for this project, and greatly appreciate your consideration.

Rachael Comeau

Rachael Comeau, MBA
Assistant Director, Vermont Child Health Improvement Program