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**DEPARTMENT OF PEDIATRICS
MAULANA AZAD MEDICAL COLLEGE
NEW DELHI**

ADVERTISEMENT

Proposals are invited for selecting the system-integrator for the pilot phase of Mission NEEV under DSHMFW and RBSH/K. Expression of interest document has been uploaded on MAMC website (www.mamc.ac.in)

RBSK

Last date for submission of On-line proposal is 4th October, 2021 before 17:00 hours.

**Hon'ble Dean
MAMC**

Sana Kapoor

Call for Expression of Interest for Selection of a System Integrator for NEEV

1. Introduction

According to March of Dimes (2006), out of every 100 babies born in this country annually, 6 to 7 have a birth defect. This would translate to around 17 lakhs birth defects annually in the country and accounts for 9.6% of all the new-born deaths. Under National Health Mission (NHM), significant progress has been made in reducing mortality in children. There is however an imperative need to improve survival outcome. This can be achieved by early identification of birth defects and developmental delays and subsequently linking the child (through unique IDs) for progressively checking of all other conditions of 4Ds (viz. Defects at birth, Deficiencies, Diseases, Development delays).

There is an urgent need to establish system to capture data on comprehensive new-born screening. This data will subsequently permit the description of the epidemiology and public health impact and anticipate the health care needs for birth defects. With epidemiological transition underway, the system should provide data disaggregated for urban and rural births, as the risk exposures are likely to be different in both these settings. Surveillance should also provide data on the number of infants with special needs, in order to provide support for childhood disability and children with chronic medical needs.

The Neonatal Early Evaluation Vision (NEEV) will cover close to 1.5 lakh new-borns to tackle visible, functional and metabolic defects in them. The major objectives are:

- 1.1 Screening for Visible Birth Defects
- 1.2 Screening of functional birth defects (Retinopathy of prematurity & Hearing evaluation}
- 1.3 Screening for metabolic birth defects which include screening for congenital hypothyroidism, congenital adrenal hyperplasia and G6PD deficiency.

2. Purpose

Purpose of the EOI is to identify companies for the system integration of the NEEV Project. They will participate in a limited tender process to select one among them as the system integrator for the first phase covering 10 hospitals.

3. Project scope

The scope of the project is briefly listed below:

- 3.1 Work in close collaboration with NEEV team in Delhi to crystalize the work-flow in various departments of the associated hospitals, so that it can be seamlessly replicated for the rest of the hospitals to be added later.
- 3.2 Decide on the specification of the hardware sub-systems (Server with HVAC, Rack, Peripherals, devices for screening, and devices for data entry). Create the SLAs for the after sales support required from the OEMs. The items will be procured through GeM through a different tender process (not part of the scope of this



- project). In case, many units of the same systems are required, the quantity may be split among multiple OEMs, so that there is no vendor locking in future.
- 3.3 Identify / modify / Develop the software modules needed for the workflow described in section 4 below. Presently a comprehensive NEEV portal and five different Mobile Apps (VBD, OAE, Metabolic, Pulse Oximetry and Retinopathy) are envisaged. As far as possible, existing systems already working in the field is to be identified, modified as needed and integrated. In case instruments from different vendors are introduced for same modality, the responsibility of proper working of the mobile app with all of them is to be ensured by the selected vendor.
 - 3.4 Integrate 3.2 and 3.3 to create the proper operational environment in all the participating hospitals. This will also involve acceptance process for the hardware procured as per 3.2 and applications developed or procured as per 3.3. Subsequent to such acceptance, seamless operation of the systems in the associated hospitals will be the primary responsibility of the selected vendor.
 - 3.5 Provide the system for operational trials after 3.4 above for a period of one month during which training will be given to operational staff. The software may have to be modified or tuned as per the field requirements. The primary responsibility for this will rest with the selected vendor.
 - 3.6 Provide warranty support for one year for the total system including hardware and software. The SLAs entered with the OEMs will be operated by the vendor to effectively provide this support.
 - 3.7 Provide AMC support for subsequent years based on separate agreement to be executed prior to the close of the warranty period.

4. NEEV Workflow

Fig 1 gives the general workflow for the screening. It consists of five distinctive steps during the birth period followed with repeat tests during re-visits upto 5 years. These are described in the following subsections. Table 1 gives more details on requirements for each of these steps.

- 4.1 **VBD Screening:** VBD screening is the first screening to be conducted within 48 hours of the birth. The VBD screening mobile app running on the mobile phone of the nurse who conducts the screening is used for this. The information is automatically transferred to the NEEV portal that is accessible from anywhere over the internet. A unique VBD number is created for this child at this time and it may be used later to identify this child. All demographic details of the child and mother is entered in the portal along with this number, so that these may be accessed from other systems interlinked with it over the NEEV portal. The barcodes needed during blood sample collection for the metabolic test also are generated and kept in the case sheet (with VBD number in it) so that it can be pasted on the vials of blood samples later.
- 4.2 **OAE Screening:** OAE screening is done on the second or third day of birth. It is done by the nurse using the OAE mobile app linked to the OAE instrument over blue-tooth

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or other interfaces. The mobile app displays an audiometry chart on the mobile screen and give an indication of pass or fail. The test is repeated for both ears. In case of failure, the child is tagged for further periodic monitoring and remedial procedures. The chart is time stamped and stored in the NEEV portal for later comparative checks.

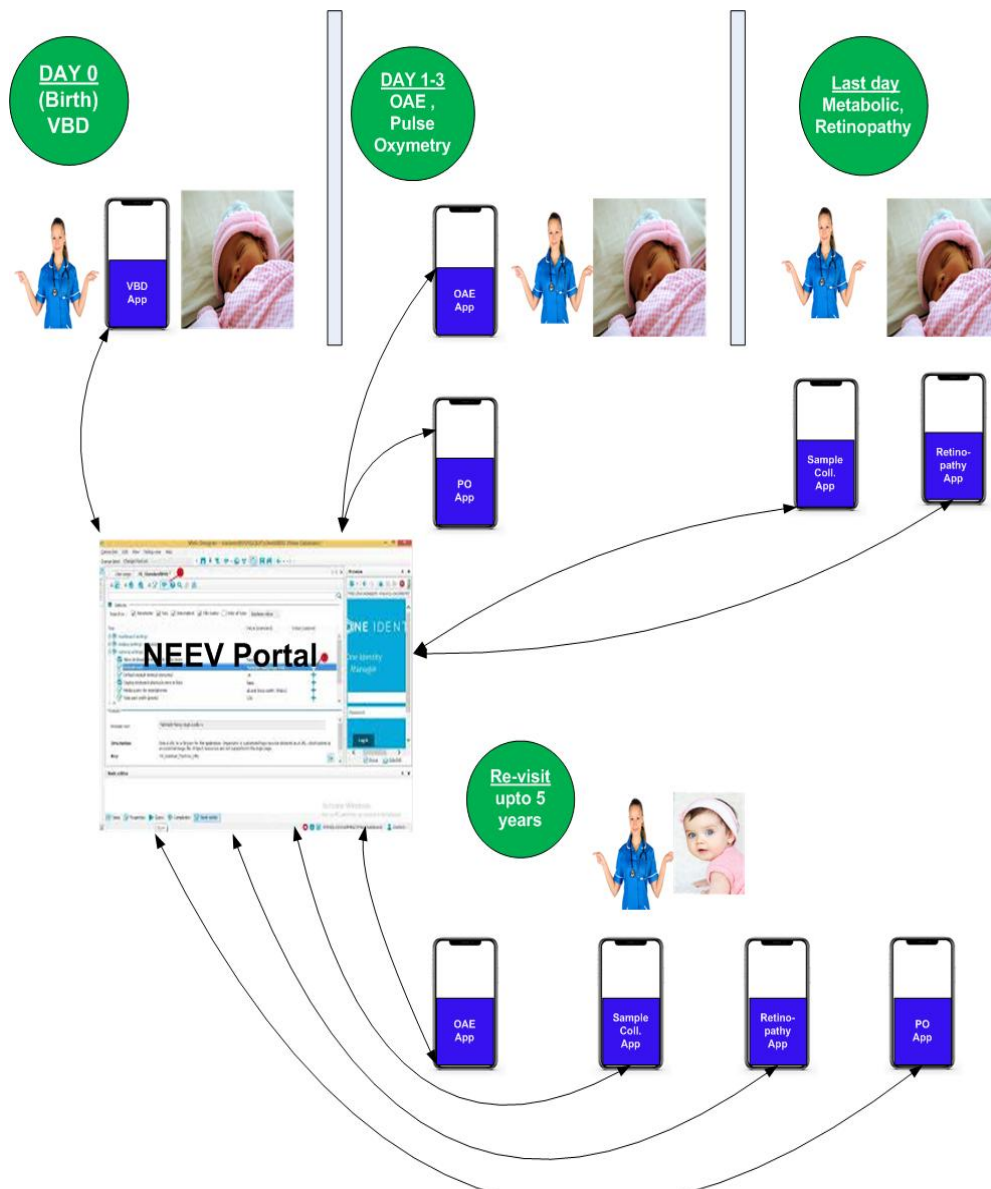


Fig 1: NEEV Workflow

- 4.3 **Metabolic Screening:** Blood collection for Metabolic screening is conducted along with other vaccinations prior to discharge. It is done by the nurse using the Metabolic mobile app. The collected samples are tagged with the VBD number and sent to the lab. When the results are available, it is stored in the Neev portal using a portal page provided for this purpose. The VBD number pasted on the vial provides the required linkage.

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- 4.4 Pulse Oximetry Screening:** Pulse Oximetry screening is conducted on the second or third day of birth. It is done by the nurse using the PO mobile app that is linked to the PO instrument. The mobile app displays the SPO2 chart on the mobile screen and gives derived parameters like heart rate, etc. The test is repeated for both hands and legs and the data is stored for later analysis and display to cardiologists. In case of observed abnormalities, the child is tagged for further periodic monitoring and remedial procedures.
- 4.5 Retinopathy Screening:** It is done by the nurse using the Retinopathy mobile app. The images are stored in the NEEV data base for later examination by an ophthalmologist, whenever necessary.
- 4.6 Later Screening:** It is done when a child visits the hospital either for follow up or for a new visit. In case of the follow up, the old VBD number is used to access the previous results. Otherwise, a new VBD number is generated and the child admitted to the system as a fresh case. The OAE, PO, and Retinopathy screening may be done at this stage as suggested by the clinician.

5. Eligibility

- 5.1 Individual firms or a consortium with a lead firm may participate for this EoI. In case of a consortium, the lead firm will take the full responsibility for the project. The stage payments will be made to it. It will ensure that the consortium agreement is in place at the time of submission of the EoI.
- 5.2 The bidder should be a registered agency of India (company, partnership firm, Non-Profit Organization, etc.) under the relevant act which has been in operation for at least seven (07) continuous preceding years in the field of Mobile and Web Technology.
- 5.3 The bidder should have experience in working with the government department/s (developed and implemented state wide web based mobile/GIS projects) in the past five years).
- 5.4 Experience of successful implementation of enterprise wise system in individual child tracking with GIS backbone is desirable.
- 5.5 The Bidder should have annual turn-over of Rs. 75 lacs in each of the last 3 (three) financial years. (Self-Attested Audited balance sheets for the last three financial years should be submitted)
- 5.6 Bidder should not have been black listed by any State or Central Government or PSU in India and Bidder should not have been terminated by any State or Central Government or PSU in India ever. (A declaration in the letter head of Bidder should be submitted)

6. Selection process

Following are the steps involved in the selection process:



- 6.1 Call for Expression of Interest among interested eligible firms for submitting their technical proposal in on-line mode. Proforma for the submission is attached Annexure1.<https://forms.gle/yziZC5L46R5oXvTc9>
- 6.2 Submission of EOI within the last date indicated in the call for EOI
- 6.3 Pre-bid meeting in online mode for firms who submitted the interest. This is to provide them with an opportunity to interact with NEEV officials prior to submission of their technical proposal. Attendance is optional. Minutes of the meeting will be published in the NEEV portal.
- 6.4 Technical Proposals are then obtained from those who have submitted the interest as per 6.2.
- 6.5 Technical proposals are evaluated by an empowered committee.
- 6.6 The firms who qualify the technical evaluation are then asked to submit the financial proposal.
- 6.7 L1 among the firms is identified by the method of Quality and Cost Based Selection (QCBS) wherein 70% marks is for the technical proposal and 30% for the financial proposal.

Table 1: Requirements Elaboration

Visual Birth Defect (VBD) Screening	
1.1	A comprehensive GIS enabled web portal to show all designated delivery points of public health facilities and SNCUs.
1.2	Online Digital pictorial atlas is to be embedded in the software, helping in identification in this regard to act as job aid for the front-line workers and service providers.
1.3	An Android application for service providers at delivery points and staff nurse, for Visible Birth Defects Screening (through Head to Toe screening) with the help of Birth Defect Pictorial Atlas embedded in the mobile app. This data needs to cover and automatically code the defects based on the International Classification of Disease (ICD) coding.
1.4	Comprehensive result (Report module) of the birth defect findings along with management steps followed, to be made available for individual child.
1.5	Follow up of identified child module : A two way electronic data process from the treating facility and DEICs would be created for Identification, Confirmation and Management of birth defect in time bound fashion (the time lapse and reason thereof would be a process indicator) with the software.
1.6	The data needs to be collected and collated from the designated public delivery points across Delhi.
Otoacoustic Emissions (OAE) Screening	
2.1	An Android application for service providers at delivery points and staff nurse, for OAE Screening with the help of any of the identified OAE instruments, in an Acoustically clean room provided for this purpose. The test is to be done for both ears and individual pass/fail status is to be provided in the NEEV portal.

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2.2	In case the child starts crying during the test, it may have to be abandoned for the present (for that ear) and redone at a later point. The mobile app has to handle this situation
2.3	In case of failure status for either of the ears, the child is to be tagged for OAE defect and tracked to be brought again for re-test after a few weeks of discharge. SMS to parents/caregivers is to be used for this tracking.
2.4	The child may come to another hospital (not the originally discharged one) for re-test. The mobile app will interact with the portal to handle the case appropriately.
2.5	The mobile app to additionally handle monitoring of failed cases that hasn't turned up for re-testing
2.6	The portal will always have the raw data from the instrument. This will be tagged with the details of the instrument, date and time of test, left or right indicator, pass/failure status, demographic details of the parents, and comments from the nurse who conducted the test. This will help in subsequent clinical studies
2.7	Comprehensive result (Report module) of the OAE findings along with management steps followed, to be made available for individual child.
Retinopathy Screening	
3.1	An Android application for service providers at delivery points and staff nurse, for Retinopathy Screening with the help of an Iris-Scope, . The test is to be done for both eyes and individual images are to be provided in the NEEV portal for later reference.
3.2	In case the child starts crying during the test, it may have to be abandoned for the present (for that eye) and redone at a later point. The mobile app has to handle this situation
3.3	The portal will always have the image from both eyes from the instrument. This will be tagged with the details of the instrument, date and time of test, left or right indicator, demographic details of the parents, and comments from the nurse who conducted the test. This will help in subsequent clinical studies
3.4	The child may come to another hospital (not the originally discharged one) for re-test. The mobile app will interact with the portal to handle the case appropriately.
3.5	Comprehensive result (Report module) of the findings along with management steps followed, to be made available for individual child.
Metabolic Screening	
4.1	An Android application for service providers at delivery points and staff nurse, for drawing blood sample for Metabolic Screening , . The test is to be done for both eyes and individual images are to be provided in the NEEV portal for later reference.
4.2	A portal page for use by the associated laboratories to transfer the test in the NEEV portal for later reference. An intimation will be sent to the originating Mobile app on receipt of the result from the lab.
4.3	The portal will always have the status of the test done and the results already available that conducted the test. This will be tagged with the details of the instrument, date and time of test, pass failure indicators and comments from the nurse /technician who conducted the test. This will help in subsequent clinical studies
4.4	Comprehensive result (Report module) of the findings along with management steps followed, to be made available for individual child.
Pulse Oximetry Screening	
5.1	An Android application for service providers at delivery points and staff nurse,

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	for PulseOximetry(PO) Screening with the help of any of the identified PO instruments. The test is to be done for both hands and legs. There is no individual pass/fail status for the test. Instead, it displays the heart rate and oxygen saturation levels along with their normal ranges. The associated doctor can view these later and may recommend a re-test.
5.2	In case the child starts crying during the test, the test may have to be abandoned for the present to be redone at a later point. The mobile app has to handle this situation
5.3	In case the doctor has advised a re-test, the child is to be tagged and tracked to be brought again for the re-test. SMS to parents/caregivers is to be used for this tracking.
5.4	The child may come to another hospital (not the originally discharged one) for re-test. The mobile app will interact with the portal to handle the case appropriately.
5.5	The mobile app to additionally handle monitoring cases that hasn't turned up for re-testing
5.6	The portal will always have the raw data from the instrument. This will be tagged with the details of the instrument, date and time of test, hand/leg and left/right indicator, pulse rate, oxygensaturation%, demographic details of the parents, and comments from the nurse who conducted the test. This will help in subsequent clinical studies
5.7	Comprehensive result (Report module) of the PO findings along with management steps followed, to be made available for individual child.

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Mission NEEV, under RBSK and DHSM

System Integrator for NEEV- Annexure-I

Name of the firm:

Email/s:

Name of the contact person and designation:

Contact numbers:

Year of establishment:

Annual turn-over for Financial Years:

2020-21	2019-20	2018-19

A brief write-up on experience of the company in this field (maximum 300 characters)

A brief write-up on the plan to implement the project within the 90 day time limit after final selection (maximum 1000 characters)

**Completed forms may be mailed to neevmamc@gmail.com by 04th Oct 2021
05:00 PM**