Nepal Heart Foundation
Heart Screening Protocol

Standard Operating Procedure (SOP) for School-Based Heart Screening Program (2026)

Background

Cardiovascular diseases in children, including congenital heart defects and acquired conditions such as rheumatic heart disease, remain significant public health concerns, particularly in developing countries like Nepal. Many children, teen aged, with underlying cardiac abnormalities remain asymptomatic during early stages and are often diagnosed only after complications develop.

Systematic heart screening of particularly the school-based children provides an effective strategy for early identification, timely referral, and appropriate management of cardiac conditions. At most of the time early detection and treatment of heart condition in children results in prevention of life-threatening complications. Such programs are cost-effective, practical, and efficient in reaching large populations of children within the community. This protocol outlines a standardized and ethically sound approach for conducting heart screening among school-aged children.

This Protocol is developed and adopted by Nepal Heart Foundation for implementation at its screening program at the field all over the country.

Objectives

General Objective

To identify previously undiagnosed cardiac abnormalities among school children, i.e. teen aged children, for early prevention of life-threatening complications and treatment.

Specific Objectives

1. To detect Rheumatic Heart Disease (RHD), Congenital Heart Disease (CHD) and acquired heart diseases through structured clinical examinations.
2. To identify children demonstrating symptoms suggestive of cardiac conditions.
3. To refer suspected cases for further diagnostic evaluation, including echocardiography.
4. To provide treatment support (medical/surgical) to the students with positive echocardiography findings.
5. To create awareness among students, teachers, and parents regarding early signs of heart disease.
6. To maintain systematic documentation for follow-up, monitoring, and reporting.

Target Population:

School children aged 3 to teen aged.

Screening Team Composition

The size of the team will be adjusted according to the requirements. However, the standard team should include:

1. Cardiologist (Team Lead) with at least three-years' experience in Echocardiographic examination
2. Physicians
3. Nurse/Health Assistant/Auxiliary health worker
4. Echocardiography-trained Auxiliary Staff (Optional)
5. Data Recorder

6. Volunteers

Materials Required

1. Cardiology stethoscope
2. Portable echocardiography machine
3. Gel, tissue papers, gowns, towels, gloves, and sanitizers.
4. Data recording forms (school data, echo test list, abnormal echo findings)
5. Prescription and referral forms.
6. Medications for distribution (Azithromycin and Pen V)
7. Bed sheets, mats (foam), ropes, scissors, tapes, torch light, extension cords.
8. Markers

Preliminary Administration Preparation

1. **Confirmation of the Local partner including that of the existing Branch or the Ad-hoc Committee of the NHF:** Confirm the local partner organization for coordinating with schools and relevant government agencies, as required.
2. **Selection of School**: Schools shall be selected in coordination with relevant authorities.
3. **Information Dissemination:** Inform the school administration, students, and other stakeholders about the screening program to ensure participation and cooperation. Written information about the screening procedure, should be sent to the school administration prior to the screening program.
4. **Administrative Approval:** Obtain **f**ormal approval from the school administration prior to the screening program.

Pre-Screening Preparation

1. **Screening Hall:** Depending upon availability,
    - The hall should have preferably two separate doors: one for entry and other for exit to ensure smooth flow of the students.
    - The approximate size of the hall should be 20 ft x 40 ft.
    - The room should be empty, with required number of chairs to be arranged for the doctors conducing the screening.
    - The area should be well-ventilated and adequately lit.

    In cases of nonavailability of the Screening Hall as explained above, the Team leader may choose to screen the students in the classroom itself or in the nearby spaces without disturbing the adjoining classrooms.

2. **Echocardiography Room,**
    - A separate private room of approximately 13 ft x 15 ft.
    - A curtained changing corner will be arranged to ensure privacy while changing clothes.
    - Privacy must be ensured during clothing adjustments for examination.
    - The room must have electricity, proper lighting, and adequate space.
    - Curtains may be fixed, as necessary, to ensure the privacy of the room to prevent visibility from outside.
    - An echocardiography table and bed of same height, and chairs for waiting students shall be arranged.
    - A table for the purposes of data recording.

3. **Volunteers**

Ten volunteers preferably from the students of higher classes, aged 14 years and above, shall be selected (preferably 8 females and 2 males).

4. **Briefing Session**
    - Prior to screening, a briefing will be conducted with the principal, teachers, volunteers, and students (as applicable).
    - The objectives, procedures, expected outcomes, and confidentiality measures will be explained clearly.

5. **Volunteer Orientation**
    - Volunteers will be clearly informed of their roles and responsibilities to ensure smooth flow of students for the screening.
    - Volunteers will assist in queue management, noise control, dress management, gender coordination, echo test listing, Recheck (R) marking and overall logistical support.

6. **Volunteers' roles**
    - **Screening Hall – 6 Volunteers (4 Females, 2 Males)**
        - **1 Male** (Entry): Control entry and guide students to remove outer garments as required.
        - **1 Male** (Exit): Manage orderly exit.
        - **2 Females:** Manage queue and dress of students with privacy and dignity.
        - **1 Female:** Mark recheck (R) cases.
        - **1 Female:** Escort (R) cases to the echo room.
    - **Echo listing- 1 Female:** maintain the list of cases presenting with R mark
    - **Echo Room – 3 Female Volunteers**
        - **1:** Manage entry/exit and R mark removing of those who completed the examination
        - **1:** Support dress changing and preparation for echo testing, ensuring privacy and comfort.
        - **1:** Assist with form filling.

Procedures for Heart Screening

1. **Dress Management:** Volunteers shall assist in ensuring students are appropriately prepared for examination while maintaining dignity and comfort.

2. **Queue Management:** Students shall be organized in a systematic queue to facilitate orderly screening.

3. **Noise Control:** The screening environment must remain quiet to allow accurate cardiac auscultation.

4. **Gender Management**
    - Up to Grade 5, male and female students may be screened in the same queue.
    - From Grade 6 onwards, screening shall be conducted separately by gender to ensure privacy and comfort. It is good to have a female physician in the team to check the girls.
    - Depending upon the physic of the student the above can be adjusted.

5. **Auscultation Algorithm:** The screening physician shall auscultate the heart at the following four primary focal points:
    - **Aortic Area** (Right 2nd intercostal space, parasternal)
    - **Pulmonary Area** (Left 2nd intercostal space, parasternal)
    - **Tricuspid Area** (Left lower sternal border (4th–5th intercostal space)
    - **Mitral Area (Apical Area)** (Left 5th intercostal space, midclavicular line)

6. **Identification of Suspected Cases**
    - Students with abnormal cardiac murmurs shall be marked with "R" (Recheck required).

- Their details shall be recorded in a separate susceptible echocardiography recording sheet.
- The terms “abnormal murmur” or “requiring echocardiography” shall not be disclosed to the student to prevent anxiety or labeling.

7. **Re-evaluation by Cardiologist**
   - Students marked for recheck shall undergo confirmation examination by the cardiologist (second screening) in the echo room.
   - For students above Grade 6, re-evaluation shall be conducted separately by gender.
   - Students found normal upon second examination shall have their “R” mark removed using a spirit swab or sanitizer.

Procedures for Echocardiography

1. **Room Setup and Positioning**
   - The echocardiography examination bed shall be positioned such that the student faces the wall when turned for examination.
   - Upper body exposure must be minimized and handled respectfully.
   - If possible, curtain the student while testing.

2. **Gender Separation**
   - Male and female students shall undergo echocardiography separately.
   - During the echocardiography procedure of the female student, a female attendant must be present.

3. **Dress Protocol**
   - The upper chest area is exposed for examination.
   - Female students shall be provided with a gown prior to examination.

4. **Confidentiality of Findings**
   - All findings shall remain confidential.
   - Only the principal and the student’s guardian shall be informed in cases of positive findings.

5. **Referral and Treatment**
   Students diagnosed with cardiac conditions shall receive referral slips and/or medication as indicated based on severity.

6. **Parental Consultation**
   - Parents or guardians of positive findings shall be invited to the school (as applicable).
   - A detailed consultation shall be provided explaining diagnosis, severity, treatment options (medical or surgical), and prognosis.

7. **Documentation and Record Keeping**
   - With consent, a photograph of the student along with the referral slip may be taken for confidential record-keeping by the relevant foundation (e.g., NHF).
   - If medication is provided, documentation including photographic record (with consent) shall be maintained.

Post-Screening Reporting (Social Audit)

Upon completion of screening and echocardiography:

- Teachers shall be informed of aggregate findings only (total screened, number requiring echocardiography, number diagnosed, number given medication, and number referred for surgical or medical intervention).
- Individual identities shall not be disclosed.

Ethical Considerations

- Prior approval must be obtained from the school administration before conducting the screening program.
- Verbal consent from student must be obtained prior to the screening and echocardiography testing.
- All student information and medical findings must be kept strictly confidential.
- Communication with students and parents should be clear, respectful, and non-alarming.
- Labeling, stigmatization, or any form of public disclosure of suspected or confirmed cases must be strictly avoided.
- Gender sensitivity, privacy, and the dignity of every child must be upheld throughout the screening process.

Monitoring and Evaluation at the screening sites

Upon the completion of the Screening, the concerned Teachers and available parents, guardian or the community members will be requested to fill up a short form indicating their overall observation and evaluations of the screening program.

Reporting Requirements

The following information must be submitted to the **NHF Central Office** upon completion of the screening program:

- Total number of children screened.
- List of schools from which children were screened.
- Total number of echocardiography (Echo) tests performed.
- Number of children with positive echocardiographic findings, including detailed information:
    - Name
    - Age/Sex
    - Class
    - Roll Number
    - Name of School
    - Parents' Contact Details
    - Echocardiographic Diagnosis/Findings
- List of children with positive Echo findings referred for surgical or device procedures (with full details)
- List of children provided with medications, specifying the names and quantities of medicines distributed.

Note: The Heart Screening Recording Forms (included in the annex of this protocol) must be filled and submitted along with the report.

Same protocol will be maintained for the students brought from other schools to the screening sites. Those students will receive priority over the students of the existing school.

Screening of the schoolteachers and other children who is not a student can also be done following the required protocol as described above, at the discretion of the team leader.

Annexes:

Annex I Screening Details

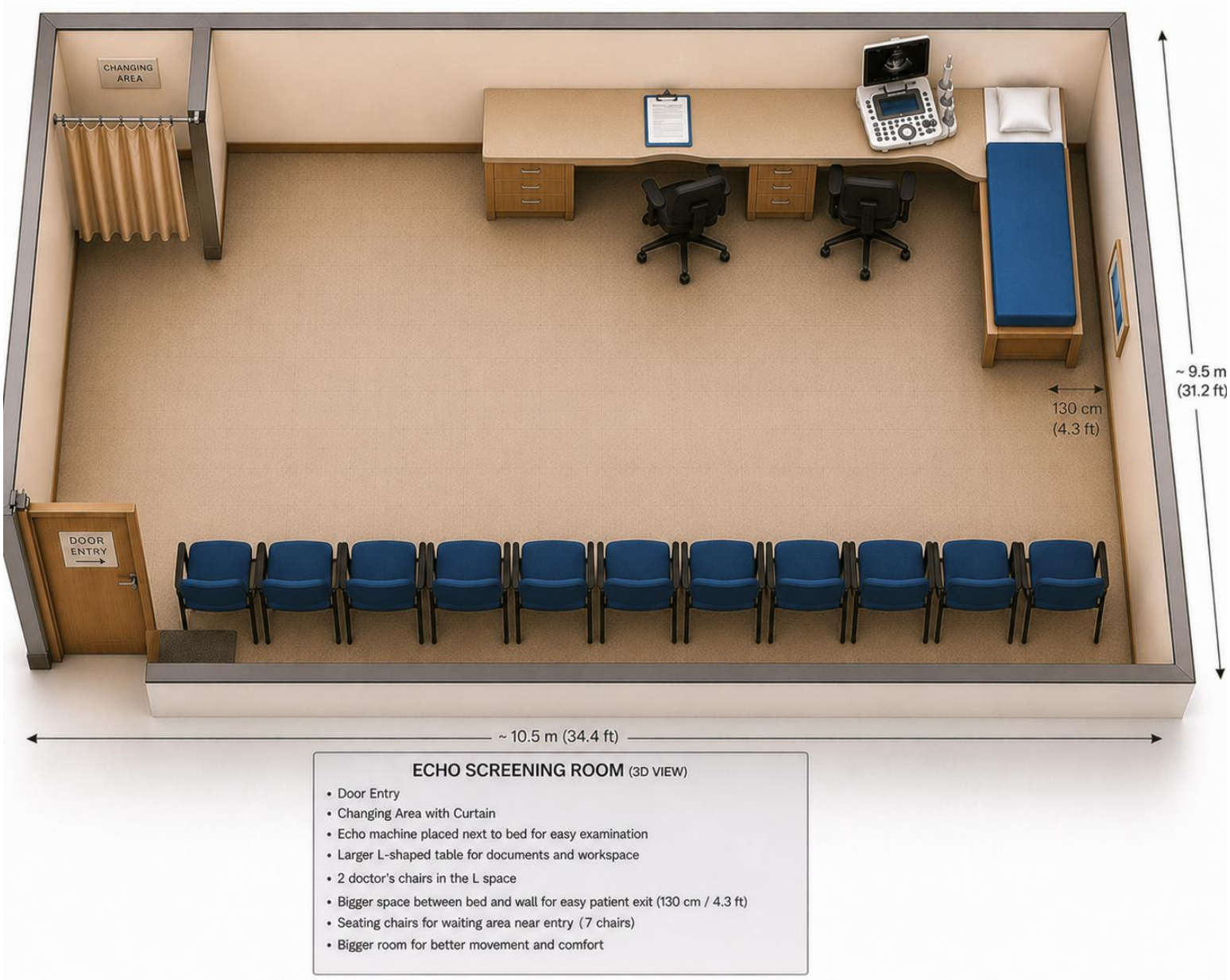
S.N.	Name of the Schools	Address	Number of Students screened	No. of Echo testing	No. of Positive cases

Annex II Positive Cases Details

Date: Venue:

Sn.	Name of Student/ Name of the School and address	Age/ Sex	Class / Roll No	Echocardiography Findings	Parents Contact Detail (For abnormal cases only)	Medication Provided and Quantity	Referral details Surgery/ Device/Full examination

Annex: III
Echocardiography room design:



Annex: IV

Auscultation room design: