Rwandan Nurses Saving Lives

GG2459030 Final Report

CERTIFIED CONFERENCE PRESENTERS QUESTIONNAIRES

An addition train-the-trainer model was developed to educate a selected group of key nurses who already had some experience with Rheumatic Heart Disease to increase the capacity of additional local education of the training at the participating District Hospitals. Utilizing the Patricia Benner model of Novice to Expert in knowledge acquisition, the CCP was trained to the proficient level. These nurses were chosen by Team Heart due to their contact and knowledge of staff at each District hospital. A minimum of two nurses per district hospital. In addition to the conference modules, the CCP training include a leadership-Mentorship module to provide knowledge and skills in mentorship using a proven program in Rwanda, called LEAP (Leadership, Engagement, Accountability, Professionalism). The CCP training was conducted by the Core Team with supervision from the VTT.

The role of the CCP included an enhance ability in physical exams, knowledge, and critical thinking for the assessment, diagnosis, and treatment of the full spectrum of Rheumatic Heart Disease (Strep throat, impetigo, ARF, HF, RHD); a conference presenter, works with paired Core team member on the virtual mentorship; acts a liaison between HCN nurse and cardiology; conducts on-site evaluation and mentorship of selected HCN; a role model for the HCN; and is a certified conference presenter who can present at the District Hospital to train additional staff.

The CCP are responsible for the following questionnaires:

1.Pre and post knowledge

2.Skills

3. Virtual Mentorship

4. On-site Mentorship (2 or 3 HCN evaluations per CCP)

5.Post Mentorship and role experience

CCP Knowledge Questionnaire- Proficient level and Results

1. A 16-year-old male who reports he has always been active in sports. He presents with new shortness of breath on exertion for the past few months. On auscultation, he has a murmur. What is the most likely cause of his murmur?
    a. Congenital heart disease
    b. Rheumatic heart disease
    c. Iron deficiency anemia
    d. Endocarditis

    Phase 1: Rwamagana and Byumba = 83% Pre Test 100% Post Test

    Phase 2: Kabguyi and Kiboroga= 100% Pre Test 100% Post Test

    Phase 3: Nyagatare and Gatunda =100% Pre Test 100% Post Test

2. How can nurses prevent acute rheumatic fever (ARF) and rheumatic heart disease (RHD)?
    a. Early recognition and management of streptococcal sore throat
    b. Vaccination against streptococcal infection
    c. Effective management of syphilis during pregnancy
    d. It's an autoimmune condition for which no effective prevention has been discovered

    Phase 1: Rwamagana and Byumba = 66% Pre Test 83% Post Test

    Phase 2: Kabguyi and Kiboroga= 83% Pre Test 100% Post Test

    Phase 3: Nyagatare and Gatunda =100% Pre Test 100% Post Test

3. What is the most common age for onset of acute rheumatic fever and rheumatic heart disease?
    a. Less than 5 years
    b. 5 to 15 years
    c. 15 to 30 years
    d. 30 to 50 years

Phase 1: Rwamagana and Byumba = 66% Pre Test 83% Post Test

Phase 2: Kabguyi and Kiboroga= 66% Pre Test 83% Post Test

Phase 3: Nyagatare and Gatunda =16% Pre Test 100% Post Test

4. What is the nature of acute rheumatic fever and rheumatic heart disease?

   a. Infectious disease
   b. Congenital disease
   c. Autoimmune disease
   d. Neoplastic disease

Phase 1: Rwamagana and Byumba = 0% Pre Test 0% Post Test

Phase 2: Kabguyi and Kiboroga= 0% Pre Test 83% Post Test

Phase 3: Nyagatare and Gatunda = 0% Pre Test 100% Post Test

5. What is the ***most common presentation*** of acute rheumatic fever?

   a. Fever and muscle spams
   b. Fever and joint pain
   c. Fever and skin rashes
   d. Fever and heart murmur

Phase 1: Rwamagana and Byumba = 33% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 33% Pre Test 33% Post Test

Phase 3: Nyagatare and Gatunda =33% Pre Test 100% Post Test

6. A patient with acute rheumatic fever comes with repetitive finger, hand or leg movement like dancing, how do you explain this movement?

   a. Myopathy
   b. Conversion disorder
   c. Sydenham's Chorea
   d. Psychosis

Phase 1: Rwamagana and Byumba = 17% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 33% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =0% Pre Test 100% Post Test

7. A 10-year-old child comes to the OPD with a sore throat and cough for a few days. What is the most likely cause of the sore throat?
    a. Viral infection
    b. Bacterial infection
    c. Smoke and dust
    d. Gastric reflux

Phase 1: Rwamagana and Byumba = 20% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 33% Pre Test 66% Post Test

Phase 3: Nyagatare and Gatunda =16% Pre Test 43% Post Test

8. Which is the preferred antibiotic for treating Group A Streptococcus?
    a. Augmentin
    b. Amoxicillin
    c. Penicillin
    d. Erythromycin

Phase 1: Rwamagana and Byumba = 66% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 100% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =50% Pre Test 100% Post Test

9. Which of the following is NOT a feature of a bacterial Strep throat?
    a. Swollen tonsils with white exudate
    b. Fever
    c. Swollen lymph nodes in the neck
    d. Runny nose and sneezing

Phase 1: Rwamagana and Byumba = 100% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 66% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =16% Pre Test 14% Post Test

Note: In Phase 3 there was apparent confusion on the use of "NOT" where some respondents crossed out the word "NOT" – This question was removed from the Phase 3 Mean calculations.

10. Which of the following is the feared complication of acute rheumatic fever?
    a. Permanent Joint damage
    b. Irreversible cardiac valve damage
    c. Long-term Neurological complications
    d. Complex Dental abscess

Phase 1: Rwamagana and Byumba = 83% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 100% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =66% Pre Test 100% Post Test

11. Which of the following is a serious adverse effect of penicillin?
    a. Skin rashes
    b. Severe headache
    c. Breathing difficulties
    d. Persistent vomiting

Phase 1: Rwamagana and Byumba = 83% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 50% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =16% Pre Test 0% Post Test

Note: In Phase 1 and 2 the word for "c" was "anaphylaxis". In Phase 3 we changed the word to determine if the nurses knew the main symptom in anaphylaxis. This change proved to be important. In phase 3 100% chose "a. Skin rashes" in the post test. The Core Team was notified and education provided to prevent this error.

12. A normal cardiac ejection fraction (the amount of blood squeezed to the body with every heart beat) is:
    a. 30-45%
    b. 40-55%
    c. 55-70%
    d. 70-85%

Phase 1: Rwamagana and Byumba = 66% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 83% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =100% Pre Test 100% Post Test

Note: NCD nurses work with cardiac patients and many do echocardiograms. These results show the excellent work of the Rwandan Biomedical Center and Team Heart in providing education to these DH NCD clinics.

13. Non-traumatic polyarthritis (painful joints without trauma) is the major musculoskeletal manifestation in ARF, which joints are most affected?
    a. Fingers and toes
    b. Elbows, wrists, knees, and ankles
    c. Back and Hips
    d. All of the joints

Phase 1: Rwamagana and Byumba = 17% Pre Test 66% Post Test
Phase 2: Kabguyi and Kiboroga= 0% Pre Test 50% Post Test
Phase 3: Nyagatare and Gatunda =0% Pre Test 100% Post Test

Note: Upon review of the use of "All of the above" reveals that it is the most common selection choice by culture or scholastic tradition. This is reinforced by the selection in the pretest. Yet, through correct education, the post test reveals the educational success.

This question reinforces the assumption that ARF is really identified because nurses do not know the signs and symptoms of this disease.

14. Which valve is mostly affected by RHD?

a. Aortic
b. Pulmonic
c. Mitral
d. Tricuspid

Pre: C=6
Post: C=6
Phase 1: Rwamagana and Byumba = 83% Pre Test 83% Post Test (1 blank)
Phase 2: Kabguyi and Kiboroga= 100% Pre Test 100% Post Test
Phase 3: Nyagatare and Gatunda =50% Pre Test 100% Post Test

15. When assessing for a potential strep throat, which of the following symptoms causes you to critically think this sore throat **is a strep throat**?

a. A child with a sore throat with red spots instead of white pus on tonsils
b. A child with a sore throat and persistent cough and runny nose
c. A child with a sore throat and has nausea and may have vomited
d. A child with a sore throat and very high fever

Phase 1: Rwamagana and Byumba = Not applicable- question rewritten
Phase 2: Kabguyi and Kiboroga= 32% Pre Test 100% Post Test
Phase 3: Nyagatare and Gatunda =50% Pre Test 100% Post Test

Note: These result indicate excellent teaching from the Core team

16. What HEENT physical finding indicates a need for emergent referral to a physician to rule out meningitis?

a. Fever greater than 100
b. Pain with passive or active range of motion of the neck
c. Ringing in the ears
d. Bilateral rales with high pitch wheezing

Phase 1: Rwamagana and Byumba = 33% Pre Test 100% Post Test
Phase 2: Kabguyi and Kiboroga= 83% Pre Test 100% Post Test
Phase 3: Nyagatare and Gatunda =50% Pre Test 100% Post Test

17. Which skin manifestations indicate severe carditis with ARF?

a. Painful, raised, red lesions that have a clearing in the center, uniform size of 1 centimeter
b. Painless, firm nodule, variable in size (typically between a few millimeters and 2 centimeters in diameter), and usually found over joint extensor surfaces .
c. Painful and pruritic (itchy), flat lesions, red and irregular shape that are usually clumped together
d. Painless tiny (1-2 millimeters) red lesions scattered on back and chest.

Phase 1: Rwamagana and Byumba = 66% Pre Test 66% Post Test
Note: question rewritten for clarity for Severe carditits.
Phase 2: Kabguyi and Kiboroga= 0% Pre Test 83% Post Test
Phase 3: Nyagatare and Gatunda =33% Pre Test 28% Post Test

Note: ARF is complex. Skin nodules is the least common symptom. Yet if present, there is usually severe carditis. Skin nodules are easily seen. Thus this is an important symptom to recognize. These results may indicate a lack of full knowledge of the Core Team, or a poor translation and understanding of the difference between a skin nodule and the skin rash. These result indicate that the concept of ARF nodules and the relationship to severe carditis has not been translated from the Core Team through to the CCP and NCD.

18. What is the **most effective** way to prescribe and administer the correct antibiotic every 3-4 weeks for long term treatment of **rheumatic heart disease?**

a. Oral: once daily for 7 days

b. Oral: twice a times a day for 7 days
c. Oral: four times a day for 10 days
d. Intramuscular shot

Phase 1: Rwamagana and Byumba = question not asked
Phase 2: Kabguyi and Kiboroga= 50% Pre Test 83% Post Test
Phase 3: Nyagatare and Gatunda = 33% Pre Test 100% Post Test

19. How long after a streptococcus infection can acute rheumatic fever occur?

a. 2-6 days
b. 1-8 weeks
c. 3-4 months
d. 1 year

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked
Phase 2: Kabguyi and Kiboroga= 50% Pre Test 83% Post Test
Phase 3: Nyagatare and Gatunda =33% Pre Test 100% Post Test

20. A patient with moderate to severe heart failure has which of these physical changes:

a. Shortness of breath and swelling of the feet
b. Cough at nighttime and a fullness of the stomach
c. Inability to complete daily activities and being tired or fatigued.
d. All of the above

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked
Phase 2: Kabguyi and Kiboroga= 83% Pre Test 100% Post Test
Phase 3: Nyagatare and Gatunda =33% Pre Test 100% Post Test

Note: After phase 2 the core team suggested that true and false questions should be changed as they did not feel that knowledge was being tested. However, after the construction and review of this question we were not informed that "all of the above" is almost always the correct answer in Rwanda. Thus the relevance of this answer to reflect per knowledge is doubtful. The HF lecture provided new knowledge and the common symptoms were clearly not understood as evidence of the discussions during the HF lecture.

21. An important class of medication for **all** heart failure patients is _____.

a. Antiarrhythmic
b. Antibiotic

c. Diuretic

d. All of the above

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked

Phase 2: Kabguyi and Kiboroga= 0% Pre Test 0% Post Test

Phase 3: Nyagatare and Gatunda =83% Pre Test 100% Post Test

Note: This question was added after Phase 1, it became apparent that understanding the medication requirements for HF management was lacking. The high pre test knowledge for Phase 3 was influenced by the continued education and support of the Phase 3 DH by Team Heart who have been charged by the Rwandan government to educate and support NCD clinics in those DH.

22. A HC nurse calls for your advice concerning an 8-year-old male who came to the clinic with a swollen, red, and painless knee. There is a positive history of undertreated Strep throat 4 weeks ago. The HC thinks this might be ARF. What is your role as District Hospital nurse for the evaluation of a child with possible ARF?

a. As long as the child has no symptoms of heart failure, mentor the HC nurse to monitor child for HF and provide education

b. As long as the child has no symptoms of heart failure, have the child referred to NCD OPD for an evaluation by NCD nurse in the near future.

c. As long as the child has no symptoms of heart failure, have the HC nurse obtain an ECG, labs (CBC, comprehensive metabolic panel)

d. As long as the child has no symptoms of heart failure, request immediate transfer to DH for hospital admission and echocardiogram.

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked

Phase 2: Kabguyi and Kiboroga= Not Applicable-question not asked

Phase 3: Nyagatare and Gatunda =83% Pre Test 100% Post Test

Note: This question was added in Phase 3 to ascertain clinical practice decision making in the referral process.

23. A HC nurse calls to discuss a patient with you: An 13-year-old girl presented with her parents. She has been losing weight. The parents are concerned as she has been increasingly tired, late to school, a decrease in grades, poor appetite, and difficulty sleeping. The exam includes bibasilar rales, a left deviated point of maximal intensity (PMI) and muffled heart sounds. There is hepatojugular reflux, mild ascites, and lower extremity edema. The HC nurse thinks this child has significant HF. The nurse informs you the family declines a transfer to the DH until they have transport money. What is the best plan of care for this patient?

a. Give HC support on diagnosis. Explain that HF is slow and waiting until the parents can get transport money is OK. Have the patient transferred to the non-communicable disease OPD.

b. Give HC support on diagnosis, have her obtain CBC and electrolytes today. Start Furosemide 10 mg daily at noon. Have the parents bring the child back in 4-7 days. Contact the cardiologist to get the child evaluated as soon as possible.

c. Give HC support on diagnosis. Have her obtain labs, set an appointment at the DH for the echocardiogram so a plan can be made.

d. Give HC support on diagnosis. Have her provide education to the family with the most probable cause of the HF is congenital heart disease or RHD. Explain that at the DH, the NCD clinic will be able to provide care to help the child breath better. When they have transport money, to call for an appointment.

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked

Phase 2: Kabguyi and Kiboroga= Not Applicable-question not asked

Phase 3: Nyagatare and Gatunda =16% Pre Test 0% Post Test

Note: This question was added in Phase 3 to ascertain clinical practice decision making in the referral process. These results are interesting because lack of transport money is a common barrier. In question 24, it was recognized transport for even non-symptomatic children was important, yet when a common barrier was placed, the decision was to allow the child to miss the referral. This indicates that additional education and clinical scenarios so help decisions when barriers are present.

24. Heart failure is diagnosed from the history and clinical exam. What is the best diagnostic test for heart Failure?

a. Chest x-ray

b. Echocardiogram

c. EKG- electrocardiogram

d. Laboratory tests: CRP, H&H, T4, Troponin

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked

Phase 2: Kabguyi and Kiboroga= Not Applicable-question not asked

Phase 3: Nyagatare and Gatunda =83% Pre Test 100% Post Test

Note: This question was added in Phase 3 to ascertain clinical practice in NCD clinics. This question validates the Rwandan medical practice of using echocardiograms for diagnosis. In Rwanda, NCD nurses are trained to conduct

echocardiograms which greatly increases the access to this very important diagnostic tool and improving the diagnosis of ARF and RHD.

Phase 2- Different questions

23. Which is NOT a characteristic of Sydenham chorea?

a. Uncontrollable jerking movements

b. Emotional instability

c. Falling

d. Rash

Pre: 83% Post:83%

24.New research concerning Sydenham Chorea indicates that the peak age is 7-9 year olds and can impact up to 70% of ARF. What symptoms impacting school would alert you to check for ARF?

a. Being late to school and walking home and a decline in sports activities.

b. New anxiety and depression and emotional events in school.

c. A decrease in vocabulary, ability to speak, and handwriting.

d. All of the above

Pre: 100% Post: 100%

Note: All questionnaires were reviewed and approved by the Core team. The VTT was not informed that "all of the above" is almost always the correct answer in Rwanda. Thus, the relevance of this answer to reflect per knowledge is doubtful. During the ARF lecture all S&S of ARF was new information to the nurses.

Physical Exam Skills Questionnaire
ALL PHASES

Phase	#	Category	Instrument name	Data Type	#Quest
1	6	CCP	CCP-POST SKILL	Quant	18
2	6	CCP	CCP-POST SKILL	Quant	18
3	6	CCP	CCP-PRE & POST SKILL	Quant	18

Title: CCP Skills Questionnaire

Locations:
Phase 1
Dates: July- Oct 2024
Locations: 2 CCP from each DH at Byumba, Rwamagana, and Kagabaga
Phase 2
Dates: Jan-April 2025
Locations: 3 CCP from each DH at Kabguyi and Kabogora
Phase 3
Dates: Nov 2025-March 2026
Location: 3 CCP from each DH Nyagatare and Gatunda

Executive Summary

The *Nurses Saving Lives* project addresses preventable morbidity and mortality from streptococcal infection, acute rheumatic fever (ARF), rheumatic heart disease (RHD), and heart failure in Rwanda by strengthening the clinical capacity of frontline nurses. Consistent with Rotary s focus on disease prevention and treatment and capacity building, the project emphasizes sustainable skill development through education, mentorship, and local leadership.

A central strategy of the project is the development of Certified Conference Presenters (CCPs)—district level nurses trained to deliver evidence based education, mentor peers, and support long-term practice change within the Rwandan health system. The total

number of CCP trained were 18 (six per Phase) with at least 2 NCD nurses per District Hospitals.

Training Intervention

Between July 2024 and March 2026, CCPs participated in a structured physical examination skills training delivered before the three implementation phases at district hospitals in Rwanda by the Core Team. The skills curriculum focused on practical bedside assessments critical to early identification and management of ARF, RHD, and heart failure.

Training included six hands-on skill stations:

- HEENT assessment
- Respiratory examination (normal and abnormal findings)
- Cardiac examination (normal and abnormal findings)
- Abdominal assessment

Each station incorporated standardized instruction, visual flipcharts, and supervised practice. To promote sustainability and ongoing clinical application, each participant was provided with basic diagnostic tools, including a stethoscope and otoscope.

Monitoring and Evaluation Approach

To measure skill acquisition and training effectiveness, a standardized 18question quantitative skills questionnaire was administered before and after training. The same tool was used consistently across all phases and participant groups, allowing for comparison over time.

Following Phase 1, evaluation findings were reviewed by the Core Team and used to strengthen instructional methods and mentorship support. This adaptive approach reflects Rotary s emphasis on data driven project improvement and accountable use of grant resources.

Results and Outcomes

Evaluation results demonstrated consistent improvement in physical examination skills among CCP participants across all three phases. While CCPs entered the training with higher baseline knowledge compared to health center nurses, post training scores improved in all cohorts, confirming the added value of the intervention.

Key outcome themes from the skills questionnaire and direct observation included:

- Improved accuracy in identifying normal and abnormal respiratory and cardiac findings
- Increased competence in auscultation techniques
- Strengthened understanding of structured physical examination processes
- Enhanced confidence in clinical decision making related to referral and early diagnosis

Skill areas involving stethoscope use showed notable post training improvement, although continued mentorship remained important due to the relative novelty of this tool for many nurses.

Sustainability and Impact

By building advanced clinical skills in CCPs, the project establishes a locally led, peer-to-peer education model that extends beyond the life of the grant. CCPs serve not only as educators during conferences but also as onsite and virtual mentors to health center nurses, reinforcing learning and promoting consistent standards of care.

This approach supports long-term sustainability by:

- Reducing dependence on external trainers
- Strengthening district level clinical leadership
- Encouraging knowledge transfer within the existing health system

The measurable improvement in CCP skills demonstrates progress toward Rotary s goal of creating durable, community owned solutions.

Lessons Learned

- Standardized pre and post testing is essential for documenting impact and guiding real time program improvements.
- Practical, hands on instruction combined with mentorship is effective for building clinical capacity in low resource settings.
- Early identification of instructional gaps allows for rapid, formative course correction across phases.

Recommendations for Future RotarySupported Programming

1. Continue systematic pre and post training evaluation for all clinical skills education.
2. Expand and validate a broader skills question bank to maintain adaptability while preserving evidence based standards.
3. Maintain post training mentorship, particularly for complex examination skills, to ensure sustained competency.
4. Use CCPs as key facilitators for scaleup to additional districts.

Appendix:
CCP- PROFICIENT SKILL QUESTIONNAIRE & RESULTS
Highlighted indicates correct answer
HEENT:

1. When assessing for a potential Strep Throat, which of the following symptoms would make you consider this sore throat is NOT strep throat?

a. A throat with red spots instead of white pus on tonsils
b. A child with a persistent cough and runny nose

c. A child who has been nauseated and may have vomited

Phase 1 PRE test: N/A posttest: 100% correct
Phase 2: PRE test: 100% post test: 100% correct
Phase 3: PRE test: 83% correct posttest: 100% correct

Note: The high pre-test knowledge may be related to the previous education provided to NCD nurses at this district hospital by Team Heart prior to the knowledge of phase 3.

2. What HEENT physical finding would indicate an emergent need to refer to a physician to rule out meningitis?

a. Fever greater than
b. Pain with passive or active range of motion of the neck
c. Ringing in the ears

Phase 1 PRE test: N/A posttest: 100% correct
Phase 2: PRE test: 83% post test: 100% correct
Phase 3: PRE test: 100% correct posttest: 100% correct

Note: The high pre-test knowledge may be related to the previous education provided to NCD nurses at this district hospital by Team Heart prior to the knowledge of phase 3.

3. You are checking a child for Strep throat, but when inspecting the oral cavity you cannot see well, what should you do?

a. Have patient cough while you look
b. Use a tongue depressor
c. Hyperextend the neck

Phase 1 PRE test: N/A posttest: 100% correct
Phase 2: PRE test: 100% post test: 100% correct
Phase 3: PRE test: 100% correct posttest: 100% correct

Note: The high pre-test knowledge may be related to the previous education provided to NCD nurses at this district hospital by Team Heart prior to the knowledge of phase 3.

RESP- Normal

4. To listen to the breath sounds you need to use the _____ side of the stethoscope.

a. Diaphragm
b. Bell
c. Either one will work well

Phase 1 PRE test: N/A posttest: 67% correct
Phase 2: PRE test: post test:
Phase 3: PRE test: 50% correct posttest: 100% correct

Note: There are 3 questions concerning the use of the stethoscope. There appears to have persistent confusion. The stethoscope is a new tool for most Rwandan nurses. This reinforces the importance to follow up and provide mentorship to HCN nurses on the use of the stethoscope.

5. To help you hear breath sounds better have the patient _____.

a. Breathe slowly through the nose

b. Breathe slowly through the mouth

c. **Breath forcibly through the mouth**

Phase 1 PRE test: N/A posttest: 83% correct

Phase 2: posttest: N/A post test:

Phase 3: PRE test: 33% correct posttest: 100% correct

Note: This is a critical skill to help hear breath sounds. This indicates good education techniques by the Core Team

6. The right middle lobe of the lung is heard _____

a. At the middle of the back, right side

b. **Under the arm about breast level, right side**

c. At the middle of front chest, right side

Phase 1 PRE test: N/A posttest: 100% correct

Phase 2: posttest: N/A post test:

Phase 3: PRE test: 33% correct posttest: 50% correct

Note: This is a critical skill to help hear breath sounds. This indicates good education techniques by the Core Team

7. Which of the following are functions of the respiratory system?

a. Acid-base

b. Storage and filtration of blood for systemic circulation

c. Inspiration, expiration, and ventilation

d. **All of the above**

Phase 1 PRE test: N/A posttest: 100% correct

Phase 2: posttest: N/A post test:

Phase 3: PRE test: 66% correct posttest: 100% correct

Note: Upon review of the use of "All of the above" reveals that it is the most common selection choice. Thus, the understanding of the true understanding of the respiratory system.

RESP- Abnormal

8. Fluid congestion in the lungs is common in Heart Failure patients. What does this HF fluid (pulmonary edema) sound like?

b. **Fine crackles like rubbing hair together.**

b. Water bubbles like blowing air in a straw in your drink.

c. Louder wet sounds like fine rain hitting the roof.

Phase 1 PRE test: N/A posttest: 83% correct

Phase 2: posttest: N/A post test:

Phase 3: PRE test: 66% correct posttest: 100% correct

Note: The high pre-test knowledge may be related to the previous education provided to NCD nurses at this district hospital by Team Heart prior to the knowledge of phase 3.

9. You are listening to a patient and you hear abnormal breath sounds, what technique do you use to determine whether the fluid is in the lung versus the bronchial-tracheal tree?

a. Have the patient cough and relisten, pulmonary edema will stay the same

b. Have the patient take deeper breaths while listening, the fluid in the bronchial-tracheal tree will go away.

c. Have the patient stand up and bend over 3 times to move the fluid and reassess, the pulmonary edema will go away.

Phase 1 PRE test: N/A posttest: 66% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 25% correct posttest: 66% correct

Note: Using a stethoscope and understanding what is heard during pulmonary auscultation are learned skills. Fluid in the can be fine or coarse. Coarse pulmonary edema sounds similar to rhonchi. However, having a patient cough will clear rhonchi. This is an important skill to understand to complete a god resp exam and it impacts critical decision-making. These results may indicate a poor knowledge of the Core team, or poor respiratory skill station. Review of the Respiratory Skill flip chart provides the correct information.

CARDIAC-Normal

10. When listening to the heart, which part of the stethoscope will allow the best sound transmission for murmurs?

a. The diaphragm

b. The bell

c. The equalizer

d. All parts are equal

Phase 1 PRE test: N/A posttest: 57% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 33% correct posttest: 50% correct

Note: There are 3 questions concerning the use of the stethoscope. There appears to have persistent confusion. The stethoscope is a new tool for most Rwandan nurses. This reinforces the importance to follow up and provide mentorship to HCN nurses on the use of the stethoscope.

11. When listening to the heart, which part of the stethoscope do you use to hear the normal (lub-dub) heart sounds best?

a. The diaphragm

b. The bell

c. The equalizer

d. All parts are equal

Phase 1 PRE test: N/A posttest: 83% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 50% correct posttest: 83% correct

Note: There are 3 questions concerning the use of the stethoscope. There appears to have persistent confusion. The stethoscope is a new tool for most Rwandan nurses. This reinforces the importance to follow up and provide mentorship to HCN nurses on the use of the stethoscope.

12. When listening to the heart, how many different locations do you need to listen to for a complete assessment?

a. 2
b. 3
c. 4
d. 5

Phase 1 PRE test: N/A posttest: 50% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 66% correct posttest: 100% correct

Note: Review of this question indicates that the Core Team taught this question to the Expert level where Erb's point was included in the education. However, Erb's point is the site where S1 and S2 are heard at the same intensity. For NCD and HCN nurses, listening at each site of specific cardiac murmurs are 4 sites and the only required. Interestingly, when score by the Core team "D" was the selected correct answer.

13. You are having troubles hearing the heart sounds clearly, what can you do so you can hear better?

a. Have the patient cough before listening to the heart
b. Have the patient lean forward while listening to the heart
c. Have the patient run in place to increase the heart rate before listening
d. Have the patient hold their breath while listening to the heart

Phase 1 PRE test: N/A posttest: 14% correct
Phase 2: PREtest: N/A posttest:
Phase 3: PRE test: 25% correct posttest: 16% correct

Note: Review of this question shows an inadequate knowledge of the Core team as they used "D" as the correct answer which is incorrect and developing a habit of patients holding their breath can lead to problems as the cardiac auscultation takes time. Having a patient lean forward allows the heart to move towards the chest wall and will increase the quality of sound. This is a simple skill easily implemented by HCN to improve sound.

CARDIAC- Abnormal

14. What physical exam supports the diagnosis of an enlarged heart and heart failure?

a. You can feel for an enlarged point of maximum intensity- it will be big and deviated left
b. You can assess for jugular vein distension
c. An abnormal cardiac exam with a loud murmur in the mitral location
d. All of the above

Phase 1 PRE test: N/A posttest: 29%% correct

Phase 2: posttest: N/A post test:

Phase 3: PRE test: 0% correct posttest: 0% correct. 100% chose "D"

Note: Review of this question shows an inadequate knowledge of the Core team as they used "D" as the correct answer which is incorrect for the critical thinking of an enlarged heart. Not all enlarged hearts are in fluid over load and not all fluid over load are from an enlarged heart. This question was designed for critical think and separation of cardiac enlargement versus heart failure. Again, the "All of the above" may have driven the Core team to assume that was the correct answer.

15. When you are making a referral to the District hospital NCD clinic for a cardiac murmur, what do you need to communicate to the NCD nurse concerning the murmur?

a. **Location**
b. Intensity
c. Radiation
d. All of the above

Phase 1 PRE test: N/A posttest: 16% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 33% correct posttest: 0% correct 100% chose "D"

Note: The review of this question may indicate that the Core Team did not separate Expert knowledge and competent knowledge. The intent of this question was for HCN nurses referring to the NCD clinic. HCN nurses were to be taught normal cardiac sounds and anything else is abnormal and requires an echo. Thus, the only requirement is location. It is the NCD nurses' responsibility to know which valve and to listen for location, intensity, radiation, and thrills.

16. You suspect that your patient has carditis, what can you do to confirm the sound is from the heart?

a. Have the patient cough before listening to the heart
b. Have the patient lean forward while listening to the heart
c. Have the patient run in place to increase the heart rate before listening
d. **Have the patient hold their breath while listening to the heart**

Phase 1 PRE test: N/A posttest: 100% correct
Phase 2: PRE test: N/A post test:
Phase 3: PRE test: 50% correct posttest: 83% correct

Note: This is a critical skill to help determine the faint scratch of carditis versus breath sounds. Carditis is a common finding in ARF and the primary time of the autoimmune process that involves the entire pericardium. As ARF becomes RHD the impact isolated in the valves. Thus, this is an important physical exam skill. This is a critical thinking skills that aids in diagnosis of ARF. This indicates good education techniques by the Core Team

ABDOMEN

17. Which abdominal assessment can be done to help your decision concerning fluid overload?

a. Check for an enlarged spleen

b. A heel-thump test

c. Check for hepato-jugular reflux

d. All of the above

Phase 1 PRE test: N/A posttest: 50% correct

Phase 2: PRE test: N/A post test:

Phase 3: PRE test: 66% correct posttest: 100% correct

Note: The high pre-test knowledge may be related to the previous education provided to NCD nurses at this district hospital by Team Heart prior to the knowledge of phase 3.

18. You are caring for a child with complaints of abdominal pain. You what to rule out a surgical emergency. What assessments can you do?

a. Listen to bowel sounds

b. A heel-thump test

c. A Psoas test

d. All of the above

Phase 1 PRE test: N/A posttest: 83% correct

Phase 2: PRE test: N/A post test:

Phase 3: PRE test: 50% correct posttest: 83% correct

Note: The abdominal assessment was new for most nurses. The "All of the above" may have been chosen from previous school work. The question needs to be redesigned to truly assess the difference between pre and post skills education.

Title: CCP Virtual Mentorship

Phase	# respond	Category	Instrument name	Data Type	# Questions
1	6	CCP	CCP- WhatsApp Evaluation	Mixed	9 Likert 3 open ended
2	3	CCP	CCP Virtual Mentorship	Mixed	9 Likert 3 open-ended
3	5	CCP	CCP Virtual Mentorship	Mixed	13 Likert 10 strengths 2 open-ended 8 yes/no

Executive Summary

Phase 1
Dates: Sept 1- Nov 15 2024
Locations: virtual via a WhatsApp platform.
Phase 2
Dates: Feb1-March 31 2025
Locations: virtual via a WhatsApp platform.
Phase 3
Dates: Dec 1 2025- March 15, 2026
Locations: virtual via a WhatsApp platform.

Project Component: Virtual Mentorship

The Virtual Mentorship component was designed to strengthen post conference capacity building by providing structured, ongoing access to conference presenters for participating Health Center Nurses (HCNs). The goal was to reinforce learning, support clinical confidence, and promote sustained application of conference knowledge and skills in routine clinical practice.

WhatsApp was selected as the mentorship platform due to its universal accessibility in Rwanda and its established use as the primary mobile communication method for professional and personal communication. This approach represented an innovative and cost-effective strategy to extend the impact of in person training without the need for additional infrastructure or financial burden on participants.

The two month mentorship period, delivered via participants' personal mobile phones, was intentionally designed to provide continued reinforcement during the critical post conference period. This duration was expected to support retention of skills, encourage consistent clinical application, and foster the development of strong, sustainable clinical habits.

The Core Team developed the mentorship structure, content, and engagement strategy. For implementation, each Core Team member was paired with a Certified Conference Presenter (CCP), who co-led a mentorship group of six HCNs. This mentorship model leveraged the CCPs' clinical expertise and leadership roles, positioning them as trusted nursing resources. The approach aimed to strengthen professional relationships, enhance clinical decision making, and promote earlier identification and referral of suspected rheumatic heart disease (RHD) cases.

Project Component Evaluation

The Virtual Mentorship component was evaluated using a single post mentorship questionnaire incorporating a mixed methods design, including both quantitative measures and qualitative feedback. The questionnaire was administered following

completion of the two month mentorship period to assess participant experience, perceived impact, and overall effectiveness of the model.

Executive Summary

This innovative virtual mentorship approach significantly enhanced the impact of conference based training by supporting the translation of knowledge into clinical practice. Feedback from the Core Team, CCPs, and all participating HCNs indicated overwhelmingly positive outcomes, demonstrating high levels of engagement, satisfaction, and perceived clinical benefit.

The success of this component highlights the value of low cost, sustainable, and scalable mentorship models in strengthening healthcare capacity. This approach aligns closely with Rotary's focus on sustainability, workforce development, and measurable impact.

Based on evaluation findings, continued use of the questionnaire within Rwanda is not required, as results clearly demonstrate the effectiveness of the intervention. However, the mentorship model and evaluation tool offer strong potential for replication in other Sub-Saharan African countries, where the tool may be used to validate outcomes and support program adaptation to local contexts.

Lessons Learned

1. The Virtual Mentorship uses the WhatsApp platform proved to be highly successful in reinforcing conference knowledge and skills and assisting in the translation into clinical practice with building confidence of HCN.
2. The virtual mentorship helped to build the CCPs as highly knowledgeable and trustworthy, thereby improving relationships between the district hospitals and the Health centers.
3. Continue the Virtual Mentorship in all future Nurses Saving Lives activities.

Appendix: All Phases CCP Virtual Mentorship Questionnaire and Results

Phase 1 and 2 Quantitative Data Analysis

Instrument description – this questionnaire was developed to assess how the CCP members felt the impact of a virtual mentorship to the nurse participants. The quantitative data was limited to a Likert scale 0 (no impact) to 5 (high impact).
See appendix for instrument.

Results

What was the impact of the 2-month WhatsApp group on...

1.Building trust relationships= **5.0**

2.Improving communications= **5.0**
3. Increasing knowledge= **5.0**
4. Remembering key concepts = **5.0**
5. Discussing scenarios = **5.0**
6. Mentoring critical thinking = **4.67**
7. Sharing successes/cases = **4.83**
8. Encouraging use of stethoscopes = **4.67**
9. Empowering Nurses= **5.0**

Phase 1 and 2 Qualitative Data Analysis

Instrument description – It was important to gain an understanding of the potential of using a post-conference WhatsApp platform in the virtual mentorship component. This is important information for the MoH for other nursing education and for the project as it has a financial impact to the project. Three questions were posed.

1. **Do you think the WhatsApp mentorship is a good tool for Rwanda?** All six Core member reported the Virtual Mentorship was important and should continue both in NSL and be considered for other educational opportunities in Rwanda. The universal theme reported by the CCP concerned the unique opportunity to share and gain knowledge of conference topics.

   P1CCP2. "Because we use WhatsApp for discussing different topics. We ask questions and we got responses easily on WhatsApp. We shared opinions about the diseases strep throat, acute rheumatic fever, rheumatic heart disease and also heart failure."
   P1CCP4. "The WhatsApp mentorship is good tool for Rwanda because it is easy to share the information to the community. The knowledge was improved because of this tool here in Rwanda this helps nurses to learn and gain confidence."

2. **What would make it better?** 5/6 CCP responded to this question, and the focus was on using a well-prepared activity to improve knowledge through the structured sessions. In addition, availability of WhatsApp and its ability to become a sustainable tool were mentioned.
3. **Share impactful stories from your threads.**

The CCPs reported about how WhatsApp impacted them personally and allowed them to increase their knowledge.

P1CCP4. “WhatsApp mentorship help me for work about NCD's by learning and sharing knowledge with different scenarios or cases. Has resulting of this tool in my everyday work.”
P2CCP2. “What's up mentorship help me day-to-day to work as an NCD nurse by increasing knowledge and skills on the examples, investigations, education and management of different cases.”

Virtual Mentorship (WhatsApp)
Certified Conference Presenter
Phase 3- COMPILED N=5

Phase 3- This tool was adapted from the qualitative of Phase 1and 2 and discussions with the Core team on the intent and possibilities of the virtual mentorship.

How do you think mentoring the health center (HC) nurses on the conference topics with the WhatsApp impacted the HC nurses?

Rate the following 0-5 on how much it benefitted you. “0” is none, “3” is average, “5” is high benefit

1.Building trust relationships	4.2
2.Improving communications	4.6
3. Increasing knowledge	4.0
4. Remembering key concepts	4.2
5. Discussing scenarios	4.2
6. Mentoring critical thinking	4.6
7. Sharing successes/cases	4.6
8. Encouraging use of stethoscopes	4.4
9. Empowering nurses	4.8

10. Gain confidence in understanding the pathology of disease processes	4.6

How did your confidence level change over the course of your training and mentoring of the health center nurses

Rate the following 0-5 on how much the mentorship increased your confidence level. "0" is none, "3" is average, "5" is high benefit

11. Before training	1.8
12. After training, providing instruction, and mentoring health center nurses	4.6

Please indicate which areas were strengths OF YOUR MENTOR FROM THE CORE TEAM:

Areas of Strength	Place a check mark in this column if this was a strength of your mentor
13. Building trust relationships	100%
14. Improving communications	100%
15. Increasing knowledge	100%
16. Remembering key concepts	100%
17. Discussing scenarios	100%
18. Mentoring critical thinking	100%
19. Sharing successes/cases	100%
20. Encouraging use of stethoscopes	100%
21. Empowering Nurses	100%
22. Frequently and readily available	100%

23. Do you think the WhatsApp mentorship is a good tool for nurses? YES NO

YES 4	NO 1

24. Why?

The CCPs identified time, no transport requires and it is a process to improve communication.

> P3CCP3. “because it help more things , first of all communication easily, relationship, and more knowledge we shared between us.”
>
> P3CCP5. NO, Because, there is insufficient of network availably of mentee collectively

25. How do you think you helped the HCN gain knowledge or skills during the eight weeks after the conference?

> P3CCP1. “By explaining and reminding signs and symptoms of strep throat and treatment plan. Using WhatsApp mentorship also improves communication quickly about patients.”
>
> P3CCP3. “I think they wish to keep use this method even after other training they gain more things, and it interested methods and easy.”

Barriers to your mentorship. Write “yes” to any barrier that applies to your experience.

Barrier to my availability to mentor	YES	NO
26. I am too busy at work to spend time sending information/discussion or answering questions	80%	20%
27. I am too busy after work with family commitments to participate fully	60%	40%

28. I can only respond at nighttime after work	40%	60%
29. No Core team member ever asked me for help or to give me mentorship support	20%	80%
30. I did not have internet access	20%	80%
31. I did not think there was a need to reach out to the HCNs to check on their progress	40%	80%

- Other: No transport means to go to health center.
- Other: inefficient internet
- Other: overwork at health center
- Other: it was very interested

CCP to HCN Onsite Mentorship

Phases 1, 2, and 3

Phase	# respond	Category	Instrument name	Data Type/ #Question	Dates
1	15	CCP evaluate HCN	CCP to HCN Onsite Mentorship – conference to Practice translation	Mixed evaluation- Direct observation + questions	Oct 2024
2	18	CCP evaluate HCN	CCP to HCN Onsite Mentorship – conference to Practice translation	Mixed evaluation- Direct observation + questions	May 2025
3	20 *Only 16 unique answers	CCP evaluate HCN	CCP to HCN Onsite Mentorship – conference to Practice translation	Mixed evaluation- Direct observation + questions	April 2026

Project component (Disease Prevention and Treatment area of focus): To strengthen disease prevention and management at participating health centers by confirming that Health Center Nurse (HCN) participants were applying the conference knowledge and clinical skills in routine care 6 to 8 weeks after training (conference-to-practice translation).

Monitoring and evaluation approach: The project used structured on-site mentorship visits to collect post-training performance data through direct observation and documented responses to standardized clinical scenarios (knowledge checks, clinical reasoning, and treatment planning), supplemented by mentor feedback.

On-site mentorship tool and capacity-building method: This structured mentorship tool was designed to enable Conference Core Practitioners (CCP) to provide post-training supportive supervision and to assess conference-to-practice translation among a selected group of conference HCN attendees. Implemented approximately eight weeks after the conference, the tool supports Rotary s Disease Prevention and Treatment goals by strengthening local clinical capacity and reinforcing evidence-based practice at the point of care. The tool uses three standardized pediatric clinical scenarios (strep throat, acute rheumatic fever (ARF), and rheumatic heart disease (RHD)) to guide discussion on history-taking, critical thinking, differential diagnosis, and treatment planning. Mentors (CCP) then provide coaching, as needed, during a focused physical examination of a pediatric patient. Each scenario includes the case presentation, structured questions to assess clinical reasoning and knowledge, and evidence-based rationale to support accurate mentoring and consistent messaging.

Implementation, adaptations, and learning across phases: Each phase of implementation presented challenges that informed continuous quality improvement of the mentorship approach. In Rwanda, a key contributing factor was the decision to reduce the number of education hours provided to the Core Team. Although Core Team members voiced understanding of the tool, early implementation revealed that additional orientation and simplification were needed to ensure consistent use. In Phase 1, each scenario was presented followed by questions; however, limited embedded guidance was available for CCPs to support HCNs through the scenarios. As a result, the Phase 1 data identified gaps in tool familiarity and inconsistent translation of conference content into clinical practice, while still providing valuable baseline information about knowledge transfer. Post–Phase 1 review led to revisions. In Phase 2, questions were presented in bold, with reference information (answers) in standard font, followed by questions and space for CCP documentation. The ARF module was also adapted to have the HCN use the Nurses flip chart to describe ARF, allowing mentors to evaluate correct use of a standardized patient

education tool (a novel approach in Rwanda). In Phase 3, the revised tool was maintained and additional education was provided to the Core Team and Team Heart. Phase 3 was designed to be led by the Rwandan team, with the Vocational Training Team (VTT) providing virtual mentorship. Data analysis suggests the tool remains complex and continues to surface persistent learning needs, particularly in advanced nursing processes that are inherently difficult and relatively new for HCNs (using patient history as a diagnostic tool and applying critical thinking to develop a differential diagnosis). At the same time, results show meaningful progress: most nurses demonstrated developing skills in history of present illness assessment and in considering multiple etiologies for presenting signs and symptoms (S&S).

On-site Mentorship Summary

This project component advanced The Rotary Foundation s Disease Prevention and Treatment area of focus by strengthening local nursing capacity to prevent, recognize, and manage common infections and their complications (including ARF and RHD) through structured post-training mentorship. The on-site mentorship model was new for CCP mentors and for HCN participants, who hosted CCPs at their workplaces for supportive peer mentorship rather than a test." This approach reinforced skill application in real clinical settings and supported sustainability by embedding mentorship within the local health system. In alignment with Rotary International requirements for Vocational Training Team (VTT) grants, the Rwandan Nurses Saving Lives (RNSL) model provided follow-up education and reinforcement of conference topics. CCPs received education, a manual, and ongoing support to build mentorship competencies (trust-building, effective communication, and positive reinforcement) to encourage continued use of conference knowledge and skills in clinical practice. CCPs also remained active through conference presentation roles and WhatsApp follow-up to support ongoing learning and problem-solving. Across Phases 1 and 2, data sources including the HCN experience questionnaire, WhatsApp evaluations, and the on-site mentorship assessments indicate that this component contributed to improved clinical practice behaviors related to history-taking and physical assessment. Findings suggest that nurses were applying conference content in the workplace, including oral-pharyngeal examinations for suspected strep throat, skin assessment for impetigo, respiratory assessment for heart failure, and cardiac assessment for murmurs. Overall, the results demonstrate early progress toward improved confidence, stronger peer-to-peer clinical relationships (supporting referral pathways to cardiology), and improved recognition across the spectrum of RHD-related presentations. Team Heart remains assigned to these seven District Hospitals to continue nursing education and

support for RHD; this continued local support is expected to further institutionalize and sustain knowledge and skill translation into routine practice after grant activities conclude.

Lessons learned:

1. On-site mentorship provided direct, workplace-based verification that HCNs were applying conference knowledge, skills, and tools, strengthening monitoring and evaluation and supporting sustainability through conference-to-practice translation.
2. Peer-to-peer mentorship led by CCPs strengthened professional relationships and trust, improving coordination and supporting more timely, appropriate referrals to cardiology.
3. Although on-site mentorship is time-intensive in busy health centers, completion by all selected HCNs demonstrates feasibility. The approach is recommended for continuation and replication, with ongoing simplification and scheduling adaptations to reduce burden while maintaining quality.
4. The mentorship model built CCP leadership and coaching capacity, strengthening local ownership and enabling continued supportive supervision after grant activities conclude.
5. Documentation on the on-site mentorship forms by the CCPs was inconsistent and different from person to person. These discrepancies indicate a need for a more in-depth training of the CCPs concerning the actual visits to Health Centers.

Phase timing and Locations

Phase 1
Dates: July- Oct 2024
Locations: Health Centers in District Hospitals of Byumba, Rwamagana, and Kagabaga
Phase 2
Dates: Jan-April 2025
Locations: Health Centers in District Hospitals of Kabguyi and Kabogora
Phase 3
Dates: Nov 2025-March 2026
Location: Health Centers in District Hospitals of Nyagatare and Gatunda

Appendix: Onsite mentorship Quantitative Data

Level: N= needs more support C= competent and safe

Note: Phase 2 CCP did not use this form

Strep Throat Knowledge Checklist

Knowledge	Needed Help	Competent
Knows the correct requirements of the clinical diagnosis for Strep Throat	P1 No Answer: 15 (all) P3 12.5%	P1 NA P3 87.5%
Uses good history questions to ask the child/parent to obtain good data	P1 No Answer: 15 (all) P3 6.25%	P1 NA P3 93.75%
Understanding the Vital sign ranges	P1 No Answer: 15 (all) P3 25%	P1NA P3 75%
Has the ability to critically think concerning a variety of S&S to Strep infections.	P1 No Answer: 14 P3 6.25%	P1 7.1% P3 93.75%

Strep Throat Skill Checklist

Skill	Needed Help	Competent
Oral pharynx: describes tonsils, uvula, and tongue	P1 20% P3 6.25%	P1 80% P3 93.75%
Use of a tongue depressor, if needed.	P1 0% P3 25%	P1 100% P3 75%
Use of a light source	P1 0% P3 12.5%	P1 100% P3 87.5%

Range of motion of head with and without resistance	P1 0% P3 25%	P1 100% P3 75%
Gentle palpation of lymph nodes	P1 0% P3 31.25%	P1 100% P3 68.75%
Can assess for meningitis	P1 0% P3 25%	P1 100% P3 75%

Strep Throat Treatment

Concept for IM PCN	Needed help	competent
Dose: Can the correct dose be calculated?	P1 0% No Answer x 1 P3 6.7% No Answer x 1	P1 100% responding P3 93.3% responding
Site on body: Can you point both thigh and gluteal injection sites?	P1 6.7 No answer x 1 P3 20% No Answer x 1	P1 93.3% responding P3 80% responding
Understands how to decrease pain: identified at least 3 of the following: 1-use a new needle after drawing up, 2-give slowly, 3-can lightly stimulate skin, 4- have child be held by parent, 5- be gentle, smile, and explain to child what you are doing.	P1 6.7% No Answer x 1 P3 13.3% No Answer x1	P1 93.3% responding P3 86.7% responding
Knows how to decrease side effects concerns: shared education to child and parent that some muscle soreness or redness is normal, have child eat before coming to the clinic, increase hydration before and after injection, faints and nausea are often related to fear. A very rare response to the IM PCN is breathing problems. This is why the child needs to wait 15 min in the office before going home.	P1 33.3% P3 6.7% No Answer x 1	P1 66.7% P3 93.3% responding

SCENARIO 2: Acute Rheumatic Fever

The CCP asked the nurse to share signs and symptoms a child might experience if there is ARF. Check off which ones were identified. Then have a discussion about all the signs and symptoms to remind the nurse.

Sign or Symptom	**Needed Help**	**Competent**
Knows that ARF signs and symptoms can develop from 1 to 8 weeks after an untreated or undertreated Streptococcus pyogenes infection (Strep throat or impetigo). **A recent history of a streptococcus pyogenes infection of Strep Throat or Impetigo- VERY IIIMPORTANT**	P—No Answer x 15 P3 0%	P1—No answer x 15 P3 100%
Knows that ARF damage is permanent and damage is limited by monthly PCN to block the continued autoimmune response.	P1 N/A NEW QUESTION P2/P3 P3 0%	P1 P3 100%
A red swollen joint without trauma. Lasts a few days and then can be in a different site. Most commonly in knees, ankles wrists, and elbows	P1 6.7% P3 18.75%	P1 93.7% P3 81.25%
Chest pain, discomfort, or pressure. This occurs from the inflamed heart muscle. The child may feel better leaning forward and have more discomfort laying flat.	P1 20% P3 18.75%	P1 80% P3 81.25%
Tachycardia- very important as it shows the heart is inflamed from the autoimmune response	P1 0% P3 6.25%	P1 100% P3 93.75%
A murmur: most common at the apex (mitral location. 5 ICS mid-clavicular line). It is usually soft, pansystolic (throughout the cardiac cycle) and blowing	P1 20% P3 12.5%	P1 80% P3 87.5%
Fatigue, tired and tires easily	P1 6.7% P3 6.25%	P1 93.3% P3 93.75%
Shortness of breath with exertion because the heart is inflamed	P1 6.7% P3 6.25%	P1 93.3% P3 93.75%

Odd behavior: laughs or cries inappropriately. Facial muscle twitch or grimaces. Odd hand and finger movements. This is Sydenham chorea related to inflammation in the brain. Change in handwriting, word choice, decrease vocabulary noted at school	P1 13.3% P3 25%	P1 86.7% P3 75%
A skin rash (very rare)- looks like red, wavy shapes with clear centers.	P1 6.7% P3 33.3% No Answer x 1	P1 93.3% P3 66.7% responding
FEVER of unknown origin- 100% of patients will have a fever at some time during ARF	P1 40% P3 33.3% No Answer x 1	P1 60% P3 66.7% responding
Nodules on extending tendons (related to severe carditis)- small, painless and firm. The nodules are inflammatory cell clusters (granulomas). Nodules are autoimmune responses from molecular mimicry.	P1 26.7% P3 35.6% No Answer x 2	P1 73.3% P3 64.4% responding

SCENARIO 3: HF and RHD

The HCN is to use the Rwandan Nurses Saving Lives Flip chart to explain HF and why he/she need this patient to get an echocardiogram. The CCP evaluates the HCN during the scenario as they have mentored discussion on the critical thinking of this scenario.

Assessment & Rationale	**Needed Help**	**Competent**
Explains, “what is heart failure”	P1 13.3% P3 0%	P1 86.7% P3 100%
Shares how his symptoms are most likely because his heart is not pumping well	P1 6.7% P3 25%	P1 93.3% P3 75%
Explains about an echocardiogram and why it is important	P1 0% P3 0%	P1 100% P3 100%

Explains what the treatment plan is going to be (medications) and follow up	P1 13.3% P3 12.5%	P1 86.7% P3 87.5%
Explains the importance of a heart diet (decrease salt and eat fruits and vegetables that are green, yellow, orange and red for high potassium) and walking	P1 20% P3 12.5%	P1 80% P3 87.5%
Discusses with parents about including the teacher in understanding the diagnosis. He/She is not lazy, he has a heart disease.	P1 0% P3 0%	P1 100% P3 100%
Explains that this time can be emotional and stressful and that the staff at the clinic are there to help him and his family.	P1 26.7% P3 0%	P1 73.3% P3 100%

HF Skills: ADDED TO PHASE 2 AND 3

Skill	Needs Support	COMPETENT
Can ask good history questions (fatigue, sleep, capacity, edema)	P1 N/A P3 6.25%	P1 N/A P3 93.75%
Stethoscope use for a respiratory assessment. Can explain abnormal	P1 N/A P3 -No Answer x1	P1 N/A P3 100% responding
Correct stethoscope placement for cardiac assessment. Can explain abnormal sounds	P1 N/A P3 0%	P1 N/A P3 100%
Can assess for edema (hepatojugular reflux, ascites, feet-to knees)	P1 N/A P3 – No Answer x I	P1 N/A P3 100% responding

Mentorship Review

Rate the following 0"= none, 1"= minimal, 2"= some, 3"= good, 4"= great

		1	2	3	4

This mentorship will improve clinical practice	P1 P3 3.63		P1 P3 0%	P1 P3 37.5%	P1 P3 62.5%
This mentorship helps the nurses to recognize that they understand the conference knowledge and skills	P1 P3 3.67		P1 P3 I 6.25%	P1 P3 18.75%	P1 P3 75%
This mentorship helped the nurse gain the confidence needed	P1 P3 3.56		P1 P3 0%	P1 P3 43.75%	P1 P3 56.25%
This mentorship allows me to see how a nurse thinks in these clinical process so I can provide better support as a leader	P1 P3 3.69		P1 P3 0%	P1 P3 31.25%	P1 P3 68.75%
This mentorship process has improve our relationship and will help with patient transfers	P1 P3 3.69		P1 P3 0%	P1 P3 31.25%	P1 P3 68.75%
I think this nurse to nurse mentorship is a good process for supporting specialized nursing knowledge and skills	P1 P3 3.56		P1 P3 6.25%	P1 P3 31.25%	P1 P3 62.5%

Rwandan Nurses Saving Lives
Certified Conference Presenter Post-Mentorship: Review of the Mentorship Role
Phases 1, 2 and 3

Phase	# respond	Category	Instrument name	Data Type	#Question
1	6	CCP	CCP Review of on-site mentorship	Mixed	9 Quantitative 2 Qualitative
2	3	CCP	CCP Post mentorship: a review of their mentorship role	Mixed	9 Quantitative 5 Qualitative
3	5	CCP	CCP Post mentorship: a review of their mentorship role	Mixed	9 Quantitative 5 Qualitative

N=14

Title: **Certified Conference Presenter (CCP) Review of Mentorship Role**
Phase 1: July 18, 2024- Oct 15, 2024
Locations: Rwamagana, Kagabaga, and Byumba
Phase 2 Category: CCP
Dates: Jan 7-April 1, 2025
Locations: Kabguyi and Kabogora
Phase 3
Dates: Nov 18, 2025- Feb 17, 2026
Location: Nyagatare and Gatunda

Tool Description: CCP Post-Mentorship Evaluation

The Rwandan Nurses Saving Lives (NSL) project is a capacity

building initiative designed to reduce preventable morbidity and mortality related to streptococcal throat infection, acute rheumatic fever (ARF), rheumatic heart disease (RHD), and heart failure through nurse education and mentorship.

Project Component: This questionnaire was developed to assess the Certified Conference Presenter (CCP) role as a mechanism for strengthening clinical leadership within the Nurses Saving Lives (NSL) initiative. Following Phase 1, findings indicated that CCPs are essential to the long-term sustainability of NSL, as they demonstrated increased leadership within their communities and strong competency in NSL implementation. Accordingly, for Phase 2 the instrument was revised to better capture CCP perspectives on their training experience and their responsibilities as both virtual and on-site mentors. Phase 3 utilized the same CCP post-mentorship instrument. The CCP mentorship component aimed to:

- Strengthen clinical nurses' leadership and mentorship capacity
- Improve communication and trust between mentors and mentees
- Support evidence based assessment, diagnosis, and management of ARF and RHD
- Expand sustainable, nurse led education capacity at the district health level

The project emphasized peer-to-peer mentorship rather than traditional hierarchical testing models.

Context note: During initial training delivered by the Core Team, CCPs receive structured instruction in mentorship and are provided with a mentorship manual. Training addresses effective communication, delivery of educational and supportive feedback, peer-to-peer mentorship approaches, and distinctions between directive (top-down") leadership and mentorship-based leadership. The mentorship manual was developed by a member of the Volunteer Training Team (VTT) who has implemented this LEAP (leadership-engagement-accountability-professionalism) leadership approach in Rwanda since 2014 across multiple settings (including nursing, engineering, business, and hospital environments), supporting its cultural relevance and appropriateness. In addition, two Core Team members were certified LEAP leadership presenters.

CCP Role: The CCP role is demanding. CCPs complete three days of training and are subsequently paired with a Core Team mentor. Each pair is expected to deliver a conference module, and CCPs may also support skills stations during conference sessions. CCPs then serve as active mentors during the virtual mentorship period for Health Center Nurses (HCNs) and complete two to three on-site mentorship visits to participating health centers. Despite this workload, respondents in Phases 2 and 3 (5 of 6) reported that on-site mentorship was a valuable experience for both the CCP and the nurse mentee, and all agreed that this component should be continued as an integral part of the NSL project. Overall, the mentorship module within CCP training, the pairing with a Core Team member, and the mentorship manual appear to provide a strong foundation for CCPs to further develop their clinical leadership.

Evaluation Methodology: A mixed methods evaluation was conducted using standardized post mentorship questionnaires:

- Quantitative component: Nine Likert scale questions (0 = no impact to 5 = high impact)
- Qualitative component: Five open-ended questions addressing mentorship experiences, barriers, leadership confidence, and program sustainability

The evaluation tool was refined after Phase 1 and used consistently in Phases 2 and 3.

Sustainability and Long Term Impact: The CCP model intentionally builds local capacity by training district level nurses to educate and mentor others, creating a multiplier effect that reduces reliance on external trainers. CCPs unanimously endorsed continued onsite mentorship, citing its role in reinforcing clinical skills, leadership development, teamwork, and sustainable improvements in patient care. The mentorship approach aligns with Rotary's focus on sustainability, local ownership, and capacity building within healthcare systems.

7. **Key Achievements**

- Development of confident nurse leaders capable of mentoring peers
- Expansion of skilled nurse educators at the district hospital level
- Strengthened nurse-to-nurse collaboration and professional identity
- Improved dissemination of evidence based ARF and RHD prevention practices

These outcomes directly support Rotary International's goal of saving lives through sustainable health system strengthening.

Recommendations: The CCP post mentorship evaluation demonstrates that the Rwandan Nurses Saving Lives project has achieved meaningful, sustainable leadership and mentorship outcomes. Despite demanding workloads, all participating CCPs reported significant professional growth and unanimously supported continuation of the mentorship component. The CCP model represents a scalable and sustainable approach consistent with Rotary International's mission and grant prior

Based on evaluation findings, the following actions are recommended:

- For the CCP training maintain structured leadership training grounded in mentorship and values based, transformational, and servitude leadership skills
- Support continued peer learning and leadership development to ensure long-term sustainability between the Core Team and CCP and the CCPs to HCNs.
- Advocate for the CCPs to be key RHSL educators at the District Hospital, health Centers and Health Post to provide continued education and mentorship to all nurses.

See appendix for instrument.

Summary of Quantitative Results: CCP Mentorship Role Review

Although the sample size was modest (N=14), respondents reported consistently high scores across the nine quantitative items. These results indicate that CCPs perceived strong support from the Core Team during CCP training and through the two-month post-conference period. Overall, the findings are consistent with the project intent of strengthening professional relationships and build clinical leadership capacity among participating nurses.

Compiled data from Phases 1–3 (N=14)

	Avg score	**1 = Low Impact**	**2**	**3 = Average**	**4**	**5 = High Impact**
1.Building trust relationships	4.86				II	IIIII IIIII II
2.Improving communications	4.93				I	IIIII IIIII III
3. Increasing knowledge	4.93				I	IIIII IIIII III
4. Remembering key concepts	4.86				II	IIIII IIIII II

5. Discussing scenarios	4.64			I	III	IIIII IIIII
6. Mentoring critical thinking	4.71				IIII	IIIII IIIII
7. Sharing successes/case	4.79				III	IIIII IIIII I
8. Encouraging use of stethoscopes	4.86				II	IIIII IIIII II
9. Empowering Nurses	4.93				I	IIIII IIIII III

Summary of Qualitative Results.

Phase 1-Question 1: Share successes and barriers to this process:

P1CCP1. This mentorship was very helpful for me as ncds nurse it provided knowledge and experience in patient assessment treatment of sore throats and prevention of complications (ARF-RHD-HF). How to diagnose ARF, RHD, HF prevention and management. To give health education to the community about sore throat and treatment. Barriers were overwork load, travelling long distance to arrive at HC."

P1CCP4. The success is that while mentoring the HC nurses I saw that they all being familiar with conducting a full physical examination including the use of a stethoscope and otoscope as well. The barrier is that there is still a problem on medication the insurance offices who don't understand the protocol."

Phase 1-Question 2. Should this aspect of the Rwandan Nurses Saving Lives Project continue within the Core Team- NCD [CCP] nurse mentorship?

P1CCP 5. Yes, if continues it will help NCD nurses to improve professional development in NCD cases and prevention of heart disease Caused by streptococcus pyogenes. It will also increase our knowledge and the skills in critical thinking".

Phase 2&3-

Question 1. Share your success on your mentorship abilities and how you can support and mentor another nurse.

Across Phases 2 and 3, CCP respondents emphasized that effective mentorship required a solid clinical foundation in sore throat (ST), acute rheumatic fever (ARF), heart failure (HF), and

rheumatic heart disease (RHD). Approximately half of respondents additionally highlighted improvements in relationship-building, provision of constructive feedback, and the use of a supportive (non-testing) approach as factors that strengthened their mentorship effectiveness.

P2 CCP2. Success in Mentorship Abilities: -significantly improved my ability to mentor others by - Providing scenarios, Building trust relationships. Improving communications. Remembering key concepts. Encouraging use of stethoscopes. Empowering Nurses - Guiding nurses through case discussions, critical thinking and confidence-building activities, rather than just "testing" them meanly, but by sharing experience between mentor and mentee."

P3CCP4. Mentorship in nursing isn't just about passing on clinical skills; it s about fostering the resilience, critical thinking, and professional identity that keeps great nurses in the profession."

Question 2. What barriers do you see in continuing mentoring other nurses in the Rwandan Nurses Saving Lives topics?

CCPs identified several barriers to sustaining mentorship, including limited physician support in rural areas; high patient volume and time constraints for Health Center Nurses (HCNs) (often exceeding 100 patients per day); intermittent internet connectivity; language considerations (some HCNs trained in French and reported challenges with English); and implementation challenges related to evidence-based practice (e.g., ensuring 10 days of penicillin treatment for confirmed streptococcal pharyngitis).

P2CCP2 Time constraints: Nurses often have heavy workloads, here in Rwanda, limiting availability for mentorship Adequately, which has impact on quality of care delivery to client/patient. Even following all steps during physical assessment is impossible, so that they can loose diagnosis resulting in bad management. Some health insurances like MUSA/MUTIWEL de Sante do not cover all required fees necessary in treatment of required total days: for example 10 days in case of treatment of tonsillitis, because they do not have guide line from national protocols in treatment of that disease."

P3CCP2 Some difficulties I foresee include time constraints due to heavy clinical workloads, staff shortages, and limited opportunities for protected mentoring time. Differences in baseline knowledge and experience among nurses may also require more time and tailored approaches. In addition, limited resources including transport or materials and occasional resistance to change can affect the mentoring process. However, these challenges can be managed through good planning, teamwork, and ongoing institutional support."

Question 3. Describe your confidence before and after these last 2 months for you as a nurse leader?

CCPs reported that, prior to CCP training, many—despite experience as noncommunicable disease (NCD) and pediatric nurses—did not have a comprehensive understanding of the full spectrum of knowledge and clinical skills related to RHD. Respondents also reported limited prior exposure to mentorship models and peer-to-peer supportive supervision. In addition, the LEAP leadership approach was new to participants. All respondents described increased confidence following CCP training and at the conclusion of the virtual mentorship period.

P2CCP Before I was confused on use stethoscope, at end of 2 month I was very confident in all land marks, able to know normal and abnormal. Second, my communication skills were improved.

P2CCP2. Before: I lacked structured methods for mentorship and doubted my ability to lead, and I didn't have enough knowledge. -After: The training and peer interactions boosted my confidence as a nurse leader. I now approach mentorship with clarity, empathy, and evidence-based strategies regarding protocols by using my skills obtained after training and mentorship now I am able to manage and help other nurses to do so via skills obtained through conference, training and mentorship."

P3CCP2. Before the last two months, my confidence as a nurse leader was moderate; I had the clinical knowledge but sometimes hesitated in leadership and mentoring roles. After these two months, my confidence has significantly improved. I now feel more comfortable leading discussions, mentoring peers, making decisions, and communicating effectively with colleagues. The mentorship experience helped me recognize my leadership potential and strengthened my belief in my ability to positively influence nursing practice."

Question 4. Should Rwandan Nurses Saving Lives continue with the Onsite- mentorship? Why?

All 14 responding CCPs indicated that on-site mentorship should continue. Respondents noted that on-site mentorship required travel to participating health centers (HCs) and provided opportunities to work through clinical scenarios and consult on patient cases in a peer-to-peer mentor–mentee model. CCPs described this approach as distinct from more traditional assessment-based (testing") frameworks and reported broad acceptance of the mentorship model and associated leadership principles introduced during CCP training. Respondents also noted that, within the local context, formal leadership education is often provided only after nurses assume supervisory roles; however, CCPs reported that the leadership content and the NSL mentorship manual supported their ability to mentor HCNs using scenario-based discussion.

P2CCP3. Yes, this helps to empower health center nurse, then feel free to ask question where they do not understand."

P2CCP2. Yes. On-site mentorship bridges theory and practice, allowing real-time feedback and stronger relationships. It reinforces skills like stethoscope use and scenario-based learning in a clinical context so that mentor and mentee are closer to see really what is going on. Example problems they have, number of cases they have received."

P3CCP2 Yes, Rwandan Nurses Saving Lives should continue with onsite mentorship. Onsite mentorship allows for hands-on learning, immediate feedback, and real-time problem-solving in the clinical setting. It strengthens the connection between theory and practice and builds confidence among nurses. Onsite mentorship also promotes teamwork, accountability, and sustainable improvements in patient care."

Question 5. Should Rwandan Nurses Saving Lives continue the Mentorship program for you (CCP) to gain theses skills? Why?

In response to Question 5, CCPs cited two primary reasons to continue the mentorship program. Approximately half of respondents emphasized the importance of continued education and support related to NSL clinical content (history-taking, physical assessment, and evidence-based treatment planning). The remaining respondents emphasized the value of mentorship skill development and its perceived positive impact within their communities. Both themes underscore the importance of strengthening frontline nursing capacity and clinical leadership to support improved patient outcomes.

P2CCP2. Absolutely. The program builds critical leadership and mentoring skills through collaborative learning : WhatsApp , and onsite mentorship. It empowers nurses to train others sustainably, creating a ripple effect of improved patient care in our County: Rwanda. The combined approach of training, conferences, and WhatsApp peer support has been transformative for mentorship skills. Continuing and expanding these initiatives will amplify their impact on Rwanda s nursing and community."

P3CCP2. Yes, Rwandan Nurses Saving Lives should continue the mentorship program for me (CCP). The program has played a critical role in developing my leadership and mentoring skills. Continued mentorship will help me further refine these skills, increase my impact as a nurse leader, and enable me to mentor others more effectively. This investment not only benefits my professional growth but also contributes to strengthening the overall quality of nursing care and leadership within the health system."

P3CCP4. The Rwandan Nurses Saving Lives mentorship program should absolutely continue for you as a Clinical Care Provider (CCP) because it is the primary engine for transforming a skilled nurse into a Nurse Leader. While your initial training gave you the "what" (the clinical protocols), this mentorship program provides the "how"-how to lead, how to teach, and how to improve a health system."

Appendix: Blank Questionnaires

Rwandan Nurses Saving Lives CCP Post Mentorship (Phase 1)

Rate the following 0-5 on impact. 0" is none, 3" is average, 5" is high impact

	0= No Impact	1 = Low Impact	2	3 = Average	4	5 = High Impact
1.Building trust relationships						
2.Improving communications						
3. Increasing knowledge						

4. Remembering key concepts						
5. Discussing scenarios						
6. Mentoring critical thinking						
7. Sharing successes/cases						
8. Encouraging use of stethoscopes						
9. Empowering Nurses						

Phase 1-Question 1: Share successes and barriers to the on-site mentorship process: The successes all focused on the technical skills and knowledge of the conference with assessment, diagnosis and treatment of ST, ARF, RHD

Phase 1-Question 2: Should this aspect of the Rwandan Nurses Saving Lives Project continue within the Core Team- NCD [CCP] nurse mentorship?

Rwandan Nurses Saving Lives CCP Post Mentorship (Phase 2 and 3)

You were chosen to be a Certified Conference Presenter for the Rwandan Nurses Saving Lives. In your education, you learned about mentoring HC nurses instead of testing them. And you received a mentorship manual to help you prepare as a mentor.

As you consider the process that gained knowledge, skills, and confidence for this conference, please share how you think the Certified Conference Training, the conferences, and the WhatsApp help **YOU to build the following skills so that YOU can mentor others**?

Rate the following 0-5 on impact. 0" is none, 3" is average, 5" is high impact

	0= No Impact	**1 = Low Impact**	**2**	**3 = Average**	**4**	**5 = High Impact**
1.Building trust relationships						
2.Improving communications						
3. Increasing knowledge						
4. Remembering key concepts						

5. Discussing scenarios						
6. Mentoring critical thinking						
7. Sharing successes/cases						
8. Encouraging use of stethoscopes						
9. Empowering Nurses						

1)Share your success on your mentorship abilities and how you can support and mentor another nurse.
2)What difficulties do you see in continuing mentoring other nurses in the Rwandan Nurses Saving Lives topics?
3)Describe your confidence before and after these last 2 months for you as a nurse leader?

4)Should Rwandan Nurses Saving Lives continue with the Onsite- mentorship? Why?

5)Should Rwandan Nurses Saving Lives continue the Mentorship program for you (CCP) to gain these leadership/mentor skills? Why

CERTIFIED CONFERENCE PRESENTERS

An addition to the traditional train-the-trainer model was developed to educate a selected group of key nurses who already had some experience with Rheumatic Heart Disease to increase the capacity of additional local education of the training at the participating District Hospitals. This added layer provided highly trained nurses at the District Hospitals to have the ability to continue to share the RNSL education to DH staff, CHWs and communities to increase RNSL reach and sustainability. Utilizing the Patricia Benner model of Novice to Expert in knowledge acquisition, the CCP was trained to the proficient level. These nurses were chosen by Team Heart due to their contact and knowledge of staff at each District hospital. A minimum of two nurses per district hospital. In addition to the conference modules, the CCP training include a leadership-Mentorship module to provide knowledge and skills in mentorship using a proven program in Rwanda, called LEAP (Leadership, Engagement, Accountability, Professionalism). The CCP training was conducted by the Core Team with supervision from the VTT.

The role of the CCP included an enhance ability in physical exams, knowledge, and critical thinking for the assessment, diagnosis, and treatment of the full spectrum of Rheumatic

Heart Disease (Strep throat, impetigo, ARF, HF, RHD); a conference presenter, works with paired Core team member on the virtual mentorship; acts a liaison between HCN nurse and cardiology; conducts on-site evaluation and mentorship of selected HCN; a role model for the HCN; and is a certified conference presenter who can present at the District Hospital to train additional staff.

The CCP are responsible for the following questionnaires:

1.Pre and post knowledge

2.Skills

3. Virtual Mentorship

4. On-site Mentorship (2 or 3 HCN evaluations per CCP)

5.Post Mentorship and role experience

CCP Knowledge Questionnaire- Proficient level and Results

2. A 16-year-old male who reports he has always been active in sports. He presents with new shortness of breath on exertion for the past few months. On auscultation, he has a murmur. What is the most likely cause of his murmur?
    e. Congenital heart disease
    f. Rheumatic heart disease
    g. Iron deficiency anemia
    h. Endocarditis

    Phase 1: Rwamagana and Byumba = 83% Pre Test 100% Post Test

    Phase 2: Kabguyi and Kiboroga= 100% Pre Test 100% Post Test

    Phase 3: Nyagatare and Gatunda =100% Pre Test 100% Post Test

3. How can nurses prevent acute rheumatic fever (ARF) and rheumatic heart disease (RHD)?
    e. Early recognition and management of streptococcal sore throat

f. Vaccination against streptococcal infection

g. Effective management of syphilis during pregnancy

h. It's an autoimmune condition for which no effective prevention has been discovered

Phase 1: Rwamagana and Byumba = 66% Pre Test 83% Post Test

Phase 2: Kabguyi and Kiboroga= 83% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =100% Pre Test 100% Post Test

5. What is the most common age for onset of acute rheumatic fever and rheumatic heart disease?

e. Less than 5 years

f. 5 to 15 years

g. 15 to 30 years

h. 30 to 50 years

Phase 1: Rwamagana and Byumba = 66% Pre Test 83% Post Test

Phase 2: Kabguyi and Kiboroga= 66% Pre Test 83% Post Test

Phase 3: Nyagatare and Gatunda =16% Pre Test 100% Post Test

6. What is the nature of acute rheumatic fever and rheumatic heart disease?

e. Infectious disease

f. Congenital disease

g. Autoimmune disease

h. Neoplastic disease

Phase 1: Rwamagana and Byumba = 0% Pre Test 0% Post Test

Phase 2: Kabguyi and Kiboroga= 0% Pre Test 83% Post Test

Phase 3: Nyagatare and Gatunda = 0% Pre Test 100% Post Test

6. What is the ***most common presentation*** of acute rheumatic fever?

e. Fever and muscle spams

f. Fever and joint pain

g. Fever and skin rashes

h. Fever and heart murmur

Phase 1: Rwamagana and Byumba = 33% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 33% Pre Test 33% Post Test

Phase 3: Nyagatare and Gatunda =33% Pre Test 100% Post Test

7. A patient with acute rheumatic fever comes with repetitive finger, hand or leg movement like dancing, how do you explain this movement?

e. Myopathy
f. Conversion disorder
g. Sydenham's Chorea
h. Psychosis

Phase 1: Rwamagana and Byumba = 17% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 33% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =0% Pre Test 100% Post Test

8. A 10-year-old child comes to the OPD with a sore throat and cough for a few days. What is the most likely cause of the sore throat?

e. Viral infection
f. Bacterial infection
g. Smoke and dust
h. Gastric reflux

Phase 1: Rwamagana and Byumba = 20% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 33% Pre Test 66% Post Test

Phase 3: Nyagatare and Gatunda =16% Pre Test 43% Post Test

9. Which is the preferred antibiotic for treating Group A Streptococcus?

e. Augmentin
f. Amoxicillin
g. Penicillin
h. Erythromycin

Phase 1: Rwamagana and Byumba = 66% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 100% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =50% Pre Test 100% Post Test

10. Which of the following is NOT a feature of a bacterial Strep throat?

e. Swollen tonsils with white exudate

f. Fever
g. Swollen lymph nodes in the neck
h. Runny nose and sneezing

Phase 1: Rwamagana and Byumba = 100% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 66% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =16% Pre Test 14% Post Test

Note: In Phase 3 there was apparent confusion on the use of "NOT" where some respondents crossed out the word "NOT" – This question was removed from the Phase 3 Mean calculations.

11. Which of the following is the feared complication of acute rheumatic fever?
    e. Permanent Joint damage
    f. Irreversible cardiac valve damage
    g. Long-term Neurological complications
    h. Complex Dental abscess

Phase 1: Rwamagana and Byumba = 83% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 100% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =66% Pre Test 100% Post Test

12. Which of the following is a serious adverse effect of penicillin?
    e. Skin rashes
    f. Severe headache
    g. Breathing difficulties
    h. Persistent vomiting

Phase 1: Rwamagana and Byumba = 83% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 50% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =16% Pre Test 0% Post Test

Note: In Phase 1 and 2 the word for "c" was "anaphylaxis". In Phase 3 we changed the word to determine if the nurses knew the main symptom in anaphylaxis. This change proved to be important. In phase 3 100% chose "a. Skin rashes" in the post test. The Core Team was notified and education provided to prevent this error.

12. A normal cardiac ejection fraction (the amount of blood squeezed to the body with every heart beat) is:
    a. 30-45%
    b. 40-55%
    c. 55-70%

d. 70-85%

Phase 1: Rwamagana and Byumba = 66% Pre Test 100% Post Test

Phase 2: Kabguyi and Kiboroga= 83% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =100% Pre Test 100% Post Test

Note: NCD nurses work with cardiac patients and many do echocardiograms. These results show the excellent work of the Rwandan Biomedical Center and Team Heart in providing education to these DH NCD clinics.

13. Non-traumatic polyarthritis (painful joints without trauma) is the major musculoskeletal manifestation in ARF, which joints are most affected?

a. Fingers and toes

b. Elbows, wrists, knees, and ankles

c. Back and Hips

d. All of the joints

Phase 1: Rwamagana and Byumba = 17% Pre Test 66% Post Test

Phase 2: Kabguyi and Kiboroga= 0% Pre Test 50% Post Test

Phase 3: Nyagatare and Gatunda =0% Pre Test 100% Post Test

Note: Upon review of the use of "All of the above" reveals that it is the most common selection choice by culture or scholastic tradition. This is reinforced by the selection in the pretest. Yet, through correct education, the post test reveals the educational success.

This question reinforces the assumption that ARF is really identified because nurses do not know the signs and symptoms of this disease.

14. Which valve is mostly affected by RHD?

a. Aortic

b. Pulmonic

c. Mitral

d. Tricuspid

Pre: C=6

Post: C=6

Phase 1: Rwamagana and Byumba = 83% Pre Test 83% Post Test (1 blank)

Phase 2: Kabguyi and Kiboroga= 100% Pre Test 100% Post Test

Phase 3: Nyagatare and Gatunda =50% Pre Test 100% Post Test

15. When assessing for a potential strep throat, which of the following symptoms causes you to critically think this sore throat **is a strep throat**?
    a. A child with a sore throat with red spots instead of white pus on tonsils
    b. A child with a sore throat and persistent cough and runny nose
    c. A child with a sore throat and has nausea and may have vomited
    d. A child with a sore throat and very high fever

    Phase 1: Rwamagana and Byumba = Not applicable- question rewritten
    Phase 2: Kabguyi and Kiboroga= 32% Pre Test 100% Post Test
    Phase 3: Nyagatare and Gatunda =50% Pre Test 100% Post Test
    Note: These result indicate excellent teaching from the Core team

16. What HEENT physical finding indicates a need for emergent referral to a physician to rule out meningitis?
    a. Fever greater than 100
    b. Pain with passive or active range of motion of the neck
    c. Ringing in the ears
    d. Bilateral rales with high pitch wheezing

    Phase 1: Rwamagana and Byumba = 33% Pre Test 100% Post Test
    Phase 2: Kabguyi and Kiboroga= 83% Pre Test 100% Post Test
    Phase 3: Nyagatare and Gatunda =50% Pre Test 100% Post Test

17. Which skin manifestations indicate severe carditis with ARF?
    a. Painful, raised, red lesions that have a clearing in the center, uniform size of 1 centimeter
    b. Painless, firm nodule, variable in size (typically between a few millimeters and 2 centimeters in diameter), and usually found over joint extensor surfaces .
    c. Painful and pruritic (itchy), flat lesions, red and irregular shape that are usually clumped together
    d. Painless tiny (1-2 millimeters) red lesions scattered on back and chest.

    Phase 1: Rwamagana and Byumba = 66% Pre Test 66% Post Test
    Note: question rewritten for clarity for Severe carditits.
    Phase 2: Kabguyi and Kiboroga= 0% Pre Test 83% Post Test

Phase 3: Nyagatare and Gatunda =33% Pre Test 28% Post Test

Note: ARF is complex. Skin nodules is the least common symptom. Yet if present, there is usually severe carditis. Skin nodules are easily seen. Thus this is an important symptom to recognize. These results may indicate a lack of full knowledge of the Core Team, or a poor translation and understanding of the difference between a skin nodule and the skin rash. These result indicate that the concept of ARF nodules and the relationship to severe carditis has not been translated from the Core Team through to the CCP and NCD.

18. What is the **most effective** way to prescribe and administer the correct antibiotic every 3-4 weeks for long term treatment of **rheumatic heart disease?**

a. Oral: once daily for 7 days
b. Oral: twice a times a day for 7 days
c. Oral: four times a day for 10 days
d. Intramuscular shot

Phase 1: Rwamagana and Byumba = question not asked
Phase 2: Kabguyi and Kiboroga= 50% Pre Test 83% Post Test
Phase 3: Nyagatare and Gatunda = 33% Pre Test 100% Post Test

19. How long after a streptococcus infection can acute rheumatic fever occur?

a. 2-6 days
b. 1-8 weeks
c. 3-4 months
d. 1 year

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked
Phase 2: Kabguyi and Kiboroga= 50% Pre Test 83% Post Test
Phase 3: Nyagatare and Gatunda =33% Pre Test 100% Post Test

20. A patient with moderate to severe heart failure has which of these physical changes:

a. Shortness of breath and swelling of the feet
b. Cough at nighttime and a fullness of the stomach
c. Inability to complete daily activities and being tired or fatigued.
d. All of the above

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked
Phase 2: Kabguyi and Kiboroga= 83% Pre Test 100% Post Test
Phase 3: Nyagatare and Gatunda =33% Pre Test 100% Post Test

Note: After phase 2 the core team suggested that true and false questions should be changed as they did not feel that knowledge was being tested. However, after the construction and review of this question we were not informed that "all of the above" is almost always the correct answer in Rwanda. Thus the relevance of this answer to reflect per knowledge is doubtful. The HF lecture provided new knowledge and the common symptoms were clearly not understood as evidence of the discussions during the HF lecture.

21. An important class of medication for **all** heart failure patients is _____.

a. Antiarrhythmic
b. Antibiotic
c. Diuretic
d. All of the above

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked
Phase 2: Kabguyi and Kiboroga= 0% Pre Test 0% Post Test
Phase 3: Nyagatare and Gatunda =83% Pre Test 100% Post Test

Note: This question was added after Phase 1, it became apparent that understanding the medication requirements for HF management was lacking. The high pre test knowledge for Phase 3 was influenced by the continued education and support of the Phase 3 DH by Team Heart who have been charged by the Rwandan government to educate and support NCD clinics in those DH.

22. A HC nurse calls for your advice concerning an 8-year-old male who came to the clinic with a swollen, red, and painless knee. There is a positive history of undertreated Strep throat 4 weeks ago. The HC thinks this might be ARF. What is your role as District Hospital nurse for the evaluation of a child with possible ARF?

a. As long as the child has no symptoms of heart failure, mentor the HC nurse to monitor child for HF and provide education
b. As long as the child has no symptoms of heart failure, have the child referred to NCD OPD for an evaluation by NCD nurse in the near future.
c. As long as the child has no symptoms of heart failure, have the HC nurse obtain an ECG, labs (CBC, comprehensive metabolic panel)

d. As long as the child has no symptoms of heart failure, request immediate transfer to DH for hospital admission and echocardiogram.

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked
Phase 2: Kabguyi and Kiboroga= Not Applicable-question not asked
Phase 3: Nyagatare and Gatunda =83% Pre Test 100% Post Test
Note: This question was added in Phase 3 to ascertain clinical practice decision making in the referral process.

23. A HC nurse calls to discuss a patient with you: An 13-year-old girl presented with her parents. She has been losing weight. The parents are concerned as she has been increasingly tired, late to school, a decrease in grades, poor appetite, and difficulty sleeping. The exam includes bibasilar rales, a left deviated point of maximal intensity (PMI) and muffled heart sounds. There is hepatojugular reflux, mild ascites, and lower extremity edema. The HC nurse thinks this child has significant HF. The nurse informs you the family declines a transfer to the DH until they have transport money. What is the best plan of care for this patient?

a. Give HC support on diagnosis. Explain that HF is slow and waiting until the parents can get transport money is OK. Have the patient transferred to the non-communicable disease OPD.

b. Give HC support on diagnosis, have her obtain CBC and electrolytes today. Start Furosemide 10 mg daily at noon. Have the parents bring the child back in 4-7 days. Contact the cardiologist to get the child evaluated as soon as possible.

c. Give HC support on diagnosis. Have her obtain labs, set an appointment at the DH for the echocardiogram so a plan can be made.

d. Give HC support on diagnosis. Have her provide education to the family with the most probable cause of the HF is congenital heart disease or RHD. Explain that at the DH, the NCD clinic will be able to provide care to help the child breath better. When they have transport money, to call for an appointment.

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked
Phase 2: Kabguyi and Kiboroga= Not Applicable-question not asked
Phase 3: Nyagatare and Gatunda =16% Pre Test 0% Post Test
Note: This question was added in Phase 3 to ascertain clinical practice decision making in the referral process. These results are interesting because lack of transport money is a common barrier. In question 24, it was recognized transport for even non-symptomatic children was important, yet when a common barrier was placed, the decision was to

allow the child to miss the referral. This indicates that additional education and clinical scenarios so help decisions when barriers are present.

24. Heart failure is diagnosed from the history and clinical exam. What is the best diagnostic test for heart Failure?

a. Chest x-ray
b. Echocardiogram
c. EKG- electrocardiogram
d. Laboratory tests: CRP, H&H, T4, Troponin

Phase 1: Rwamagana and Byumba = Not Applicable-question not asked
Phase 2: Kabguyi and Kiboroga= Not Applicable-question not asked
Phase 3: Nyagatare and Gatunda =83% Pre Test 100% Post Test

Note: This question was added in Phase 3 to ascertain clinical practice in NCD clinics. This question validates the Rwandan medical practice of using echocardiograms for diagnosis. In Rwanda, NCD nurses are trained to conduct echocardiograms which greatly increases the access to this very important diagnostic tool and improving the diagnosis of ARF and RHD.

Phase 2- Different questions

23. Which is NOT a characteristic of Sydenham chorea?

a. Uncontrollable jerking movements
b. Emotional instability
c. Falling
d. Rash

Pre: 83% Post:83%

24.New research concerning Sydenham Chorea indicates that the peak age is 7-9 year olds and can impact up to 70% of ARF. What symptoms impacting school would alert you to check for ARF?

a. Being late to school and walking home and a decline in sports activities.

b. New anxiety and depression and emotional events in school.

c. A decrease in vocabulary, ability to speak, and handwriting.

d. All of the above

Pre: 100% Post: 100%

Note: All questionnaires were reviewed and approved by the Core team. The VTT was not informed that "all of the above" is almost always the correct answer in Rwanda. Thus, the relevance of this answer to reflect per knowledge is doubtful. During the ARF lecture all S&S of ARF was new information to the nurses.

Certified Conference Presenters
Physical Exam Skills Questionnaire
ALL PHASES

Phase	#	Category	Instrument name	Data Type	#Quest
1	6	CCP	CCP-POST SKILL	Quant	18
2	6	CCP	CCP-POST SKILL	Quant	18
3	6	CCP	CCP-PRE & POST SKILL	Quant	18

Title: CCP Skills Questionnaire

Locations:
Phase 1
Dates: July- Oct 2024
Locations: 2 CCP from each DH at Byumba, Rwamagana, and Kagabaga
Phase 2

Dates: Jan-April 2025

Locations: 3 CCP from each DH at Kabguyi and Kabogora

Phase 3

Dates: Nov 2025-March 2026

Location: 3 CCP from each DH Nyagatare and Gatunda

Executive Summary

The *Nurses Saving Lives* project addresses preventable morbidity and mortality from streptococcal infection, acute rheumatic fever (ARF), rheumatic heart disease (RHD), and heart failure in Rwanda by strengthening the clinical capacity of frontline nurses. Consistent with Rotary s focus on disease prevention and treatment and capacity building, the project emphasizes sustainable skill development through education, mentorship, and local leadership.

A central strategy of the project is the development of Certified Conference Presenters (CCPs)—district level nurses trained to deliver evidence based education, mentor peers, and support long-term practice change within the Rwandan health system. The total number of CCP trained were 18 (six per Phase) with at least 2 NCD nurses per District Hospitals.

Training Intervention

Between July 2024 and March 2026, CCPs participated in a structured physical examination skills training delivered before the three implementation phases at district hospitals in Rwanda by the Core Team. The skills curriculum focused on practical bedside assessments critical to early identification and management of ARF, RHD, and heart failure.

Training included six hands-on skill stations:

- HEENT assessment
- Respiratory examination (normal and abnormal findings)
- Cardiac examination (normal and abnormal findings)
- Abdominal assessment

Each station incorporated standardized instruction, visual flipcharts, and supervised practice. To promote sustainability and ongoing clinical application, each participant was provided with basic diagnostic tools, including a stethoscope and otoscope.

Monitoring and Evaluation Approach

To measure skill acquisition and training effectiveness, a standardized 18question quantitative skills questionnaire was administered before and after training. The same tool was used consistently across all phases and participant groups, allowing for comparison over time.

Following Phase 1, evaluation findings were reviewed by the Core Team and used to strengthen instructional methods and mentorship support. This adaptive approach reflects Rotary s emphasis on data driven project improvement and accountable use of grant resources.

Results and Outcomes

Evaluation results demonstrated consistent improvement in physical examination skills among CCP participants across all three phases. While CCPs entered the training with higher baseline knowledge compared to health center nurses, post training scores improved in all cohorts, confirming the added value of the intervention.

Key outcome themes from the skills questionnaire and direct observation included:

- Improved accuracy in identifying normal and abnormal respiratory and cardiac findings
- Increased competence in auscultation techniques
- Strengthened understanding of structured physical examination processes
- Enhanced confidence in clinical decision making related to referral and early diagnosis

Skill areas involving stethoscope use showed notable post training improvement, although continued mentorship remained important due to the relative novelty of this tool for many nurses.

Sustainability and Impact

By building advanced clinical skills in CCPs, the project establishes a locally led, peer-to-peer education model that extends beyond the life of the grant. CCPs serve not only as educators during conferences but also as onsite and virtual mentors to health center nurses, reinforcing learning and promoting consistent standards of care.

This approach supports long-term sustainability by:

- Reducing dependence on external trainers
- Strengthening district level clinical leadership
- Encouraging knowledge transfer within the existing health system

The measurable improvement in CCP skills demonstrates progress toward Rotary s goal of creating durable, community owned solutions.

Lessons Learned

- Standardized pre and post testing is essential for documenting impact and guiding real time program improvements.
- Practical, hands on instruction combined with mentorship is effective for building clinical capacity in low resource settings.

- Early identification of instructional gaps allows for rapid, formative course correction across phases.

Recommendations for Future RotarySupported Programming

5. Continue systematic pre and post training evaluation for all clinical skills education.
6. Expand and validate a broader skills question bank to maintain adaptability while preserving evidence based standards.
7. Maintain post training mentorship, particularly for complex examination skills, to ensure sustained competency.
8. Use CCPs as key facilitators for scaleup to additional districts.

Appendix:

CCP- PROFICIENT SKILL QUESTIONNAIRE & RESULTS

Highlighted indicates correct answer

HEENT:

4. When assessing for a potential Strep Throat, which of the following symptoms would make you consider this sore throat is NOT strep throat?

a. A throat with red spots instead of white pus on tonsils
b. A child with a persistent cough and runny nose
c. A child who has been nauseated and may have vomited

Phase 1 PRE test: N/A	posttest: 100% correct
Phase 2: PRE test: 100%	post test: 100% correct
Phase 3: PRE test: 83% correct	posttest: 100% correct

Note: The high pre-test knowledge may be related to the previous education provided to NCD nurses at this district hospital by Team Heart prior to the knowledge of phase 3.

5. What HEENT physical finding would indicate an emergent need to refer to a physician to rule out meningitis?

a. Fever greater than
b. Pain with passive or active range of motion of the neck
c. Ringing in the ears

Phase 1 PRE test: N/A	posttest: 100% correct
Phase 2: PRE test: 83%	post test: 100% correct
Phase 3: PRE test: 100% correct	posttest: 100% correct

Note: The high pre-test knowledge may be related to the previous education provided to NCD nurses at this district hospital by Team Heart prior to the knowledge of phase 3.

6. You are checking a child for Strep throat, but when inspecting the oral cavity you cannot see well, what should you do?

a. Have patient cough while you look
b. Use a tongue depressor
c. Hyperextend the neck

Phase 1 PRE test: N/A posttest: 100% correct
Phase 2: PRE test: 100% post test: 100% correct
Phase 3: PRE test: 100% correct posttest: 100% correct

Note: The high pre-test knowledge may be related to the previous education provided to NCD nurses at this district hospital by Team Heart prior to the knowledge of phase 3.

RESP- Normal

8. To listen to the breath sounds you need to use the _____ side of the stethoscope.

a. **Diaphragm**

b. Bell

c. Either one will work well

Phase 1 PRE test: N/A posttest: 67% correct
Phase 2: PRE test: post test:
Phase 3: PRE test: 50% correct posttest: 100% correct

Note: There are 3 questions concerning the use of the stethoscope. There appears to have persistent confusion. The stethoscope is a new tool for most Rwandan nurses. This reinforces the importance to follow up and provide mentorship to HCN nurses on the use of the stethoscope.

9. To help you hear breath sounds better have the patient _____.

a. Breathe slowly through the nose

b. Breathe slowly through the mouth

c. **Breath forcibly through the mouth**

Phase 1 PRE test: N/A posttest: 83% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 33% correct posttest: 100% correct

Note: This is a critical skill to help hear breath sounds. This indicates good education techniques by the Core Team

10. The right middle lobe of the lung is heard _____

a. At the middle of the back, right side

b. **Under the arm about breast level, right side**

c. At the middle of front chest, right side

Phase 1 PRE test: N/A posttest: 100% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 33% correct posttest: 50% correct

Note: This is a critical skill to help hear breath sounds. This indicates good education techniques by the Core Team

11. Which of the following are functions of the respiratory system?

a. Acid-base
b. Storage and filtration of blood for systemic circulation
c. Inspiration, expiration, and ventilation
d. **All of the above**

Phase 1 PRE test: N/A posttest: 100% correct

Phase 2: posttest: N/A post test:
Phase 3: PRE test: 66% correct posttest: 100% correct

Note: Upon review of the use of "All of the above" reveals that it is the most common selection choice. Thus, the understanding of the true understanding of the respiratory system.

RESP- Abnormal

10. Fluid congestion in the lungs is common in Heart Failure patients. What does this HF fluid (pulmonary edema) sound like?

b. Fine crackles like rubbing hair together.

b. Water bubbles like blowing air in a straw in your drink.
c. Louder wet sounds like fine rain hitting the roof.

Phase 1 PRE test: N/A posttest: 83% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 66% correct posttest: 100% correct

Note: The high pre-test knowledge may be related to the previous education provided to NCD nurses at this district hospital by Team Heart prior to the knowledge of phase 3.

11. You are listening to a patient and you hear abnormal breath sounds, what technique do you use to determine whether the fluid is in the lung versus the bronchial-tracheal tree?

a. Have the patient cough and relisten, pulmonary edema will stay the same

b. Have the patient take deeper breaths while listening, the fluid in the bronchial-tracheal tree will go away.

c. Have the patient stand up and bend over 3 times to move the fluid and reassess, the pulmonary edema will go away.

Phase 1 PRE test: N/A posttest: 66% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 25% correct posttest: 66% correct

Note: Using a stethoscope and understanding what is heard during pulmonary auscultation are learned skills. Fluid in the can be fine or coarse. Coarse pulmonary edema sounds similar to rhonchi. However, having a patient cough will clear rhonchi. This is an important skill to understand to complete a god resp exam and it impacts critical decision-making. These results may indicate a poor knowledge of the Core team, or poor respiratory skill station. Review of the Respiratory Skill flip chart provides the correct information.

CARDIAC-Normal

14. When listening to the heart, which part of the stethoscope will allow the best sound transmission for murmurs?

a. The diaphragm
b. The bell
c. The equalizer
d. All parts are equal

Phase 1 PRE test: N/A posttest: 57% correct

Phase 2: posttest: N/A post test:
Phase 3: PRE test: 33% correct posttest: 50% correct

Note: There are 3 questions concerning the use of the stethoscope. There appears to have persistent confusion. The stethoscope is a new tool for most Rwandan nurses. This reinforces the importance to follow up and provide mentorship to HCN nurses on the use of the stethoscope.

15. When listening to the heart, which part of the stethoscope do you use to hear the normal (lub-dub) heart sounds best?

a. The diaphragm
b. The bell
c. The equalizer
d. All parts are equal

Phase 1 PRE test: N/A posttest: 83% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 50% correct posttest: 83% correct

Note: There are 3 questions concerning the use of the stethoscope. There appears to have persistent confusion. The stethoscope is a new tool for most Rwandan nurses. This reinforces the importance to follow up and provide mentorship to HCN nurses on the use of the stethoscope.

16. When listening to the heart, how many different locations do you need to listen to for a complete assessment?

a. 2
b. 3
c. 4
d. 5

Phase 1 PRE test: N/A posttest: 50% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 66% correct posttest: 100% correct

Note: Review of this question indicates that the Core Team taught this question to the Expert level where Erb's point was included in the education. However, Erb's point is the site where S1 and S2 are heard at the same intensity. For NCD and HCN nurses, listening at each site of specific cardiac murmurs are 4 sites and the only required. Interestingly, when score by the Core team "D" was the selected correct answer.

17. You are having troubles hearing the heart sounds clearly, what can you do so you can hear better?

a. Have the patient cough before listening to the heart
b. Have the patient lean forward while listening to the heart
c. Have the patient run in place to increase the heart rate before listening

d. Have the patient hold their breath while listening to the heart

Phase 1 PRE test: N/A posttest: 14% correct
Phase 2: PREtest: N/A posttest:
Phase 3: PRE test: 25% correct posttest: 16% correct

Note: Review of this question shows an inadequate knowledge of the Core team as they used "D" as the correct answer which is incorrect and developing a habit of patients holding their breath can lead to problems as the cardiac auscultation takes time. Having a patient lean forward allows the heart to move towards the chest wall and will increase the quality of sound. This is a simple skill easily implemented by HCN to improve sound.

CARDIAC- Abnormal

17. What physical exam supports the diagnosis of an enlarged heart and heart failure?

a. **You can feel for an enlarged point of maximum intensity- it will be big and deviated left**
b. You can assess for jugular vein distension
c. An abnormal cardiac exam with a loud murmur in the mitral location
d. All of the above

Phase 1 PRE test: N/A posttest: 29%% correct

Phase 2: posttest: N/A post test:

Phase 3: PRE test: 0% correct posttest: 0% correct. 100% chose "D"

Note: Review of this question shows an inadequate knowledge of the Core team as they used "D" as the correct answer which is incorrect for the critical thinking of an enlarged heart. Not all enlarged hearts are in fluid over load and not all fluid over load are from an enlarged heart. This question was designed for critical think and separation of cardiac enlargement versus heart failure. Again, the "All of the above" may have driven the Core team to assume that was the correct answer.

18. When you are making a referral to the District hospital NCD clinic for a cardiac murmur, what do you need to communicate to the NCD nurse concerning the murmur?

a. **Location**
b. Intensity
c. Radiation
d. All of the above

Phase 1 PRE test: N/A posttest: 16% correct
Phase 2: posttest: N/A post test:
Phase 3: PRE test: 33% correct posttest: 0% correct 100% chose "D"

Note: The review of this question may indicate that the Core Team did not separate Expert knowledge and competent knowledge. The intent of this question was for HCN nurses referring to the NCD clinic. HCN nurses were to be taught normal cardiac sounds and anything else is abnormal and requires an echo. Thus, the only requirement is location. It is the NCD nurses' responsibility to know which valve and to listen for location, intensity, radiation, and thrills.

19. You suspect that your patient has carditis, what can you do to confirm the sound is from the heart?

a. Have the patient cough before listening to the heart

b. Have the patient lean forward while listening to the heart

c. Have the patient run in place to increase the heart rate before listening

d. **Have the patient hold their breath while listening to the heart**

Phase 1 PRE test: N/A posttest: 100% correct

Phase 2: PRE test: N/A post test:

Phase 3: PRE test: 50% correct posttest: 83% correct

Note: This is a critical skill to help determine the faint scratch of carditis versus breath sounds. Carditis is a common finding in ARF and the primary time of the autoimmune process that involves the entire pericardium. As ARF becomes RHD the impact isolated in the valves. Thus, this is an important physical exam skill. This is a critical thinking skills that aids in diagnosis of ARF. This indicates good education techniques by the Core Team

ABDOMEN

19. Which abdominal assessment can be done to help your decision concerning fluid overload?

a. Check for an enlarged spleen

b. A heel-thump test

c. **Check for hepato-jugular reflux**

d. All of the above

Phase 1 PRE test: N/A posttest: 50% correct

Phase 2: PRE test: N/A post test:

Phase 3: PRE test: 66% correct posttest: 100% correct

Note: The high pre-test knowledge may be related to the previous education provided to NCD nurses at this district hospital by Team Heart prior to the knowledge of phase 3.

20. You are caring for a child with complaints of abdominal pain. You what to rule out a surgical emergency. What assessments can you do?

a. Listen to bowel sounds

b. A heel-thump test

c. A Psoas test

d. **All of the above**

Phase 1 PRE test: N/A posttest: 83% correct

Phase 2: PRE test: N/A post test:

Phase 3: PRE test: 50% correct posttest: 83% correct

Note: The abdominal assessment was new for most nurses. The "All of the above" may have been chosen from previous school work. The question needs to be redesigned to truly assess the difference between pre and post skills education.

Title: CCP Virtual Mentorship

Phase	# respond	Category	Instrument name	Data Type	# Questions
1	6	CCP	CCP- WhatsApp Evaluation	Mixed	9 Likert 3 open ended
2	3	CCP	CCP Virtual Mentorship	Mixed	9 Likert 3 open-ended
3	5	CCP	CCP Virtual Mentorship	Mixed	13 Likert 10 strengths 2 open-ended 8 yes/no

Phase 1
Dates: Sept 1- Nov 15 2024
Locations: virtual via a WhatsApp platform.
Phase 2
Dates: Feb1-March 31 2025
Locations: virtual via a WhatsApp platform.
Phase 3
Dates: Dec 1 2025- March 15, 2026
Locations: virtual via a WhatsApp platform.

Project Component: Virtual Mentorship

The Virtual Mentorship component was designed to strengthen post conference capacity building by providing structured, ongoing access to conference presenters for participating Health Center Nurses (HCNs). The goal was to reinforce learning, support clinical confidence, and promote sustained application of conference knowledge and skills in routine clinical practice.

WhatsApp was selected as the mentorship platform due to its universal accessibility in Rwanda and its established use as the primary mobile communication method for professional and personal communication. This approach represented an innovative and cost-effective strategy to extend the impact of in person training without the need for additional infrastructure or financial burden on participants.

The two month mentorship period, delivered via participants' personal mobile phones, was intentionally designed to provide continued reinforcement during the critical post conference period. This duration was expected to support retention of skills, encourage consistent clinical application, and foster the development of strong, sustainable clinical habits.

The Core Team developed the mentorship structure, content, and engagement strategy. For implementation, each Core Team member was paired with a Certified Conference Presenter (CCP), who co-led a mentorship group of six HCNs. This mentorship model leveraged the CCPs' clinical expertise and leadership roles, positioning them as trusted nursing resources. The approach aimed to strengthen professional relationships, enhance clinical decision making, and promote earlier identification and referral of suspected rheumatic heart disease (RHD) cases.

Project Component Evaluation

The Virtual Mentorship component was evaluated using a single post mentorship questionnaire incorporating a mixed methods design, including both quantitative measures and qualitative feedback. The questionnaire was administered following completion of the two month mentorship period to assess participant experience, perceived impact, and overall effectiveness of the model.

Executive Summary

This innovative virtual mentorship approach significantly enhanced the impact of conference based training by supporting the translation of knowledge into clinical practice. Feedback from the Core Team, CCPs, and all participating HCNs indicated overwhelmingly positive outcomes, demonstrating high levels of engagement, satisfaction, and perceived clinical benefit.

The success of this component highlights the value of low cost, sustainable, and scalable mentorship models in strengthening healthcare capacity. This approach aligns closely with Rotary's focus on sustainability, workforce development, and measurable impact.

Based on evaluation findings, continued use of the questionnaire within Rwanda is not required, as results clearly demonstrate the effectiveness of the intervention. However, the mentorship model and evaluation tool offer strong potential for replication in other Sub-Saharan African countries, where the tool may be used to validate outcomes and support program adaptation to local contexts.

Lessons Learned

4. The Virtual Mentorship uses the WhatsApp platform proved to be highly successful in reinforcing conference knowledge and skills and assisting in the translation into clinical practice with building confidence of HCN.
5. The virtual mentorship helped to build the CCPs as highly knowledgeable and trustworthy, thereby improving relationships between the district hospitals and the Health centers.
6. Continue the Virtual Mentorship in all future Nurses Saving Lives activities.

Appendix: All Phases CCP Virtual Mentorship Questionnaire and Results

Phase 1 and 2 Quantitative Data Analysis

Instrument description – this questionnaire was developed to assess how the CCP members felt the impact of a virtual mentorship to the nurse participants. The quantitative data was limited to a Likert scale 0 (no impact) to 5 (high impact). See appendix for instrument.

Results

What was the impact of the 2-month WhatsApp group on…

1.Building trust relationships= **5.0**
2.Improving communications= **5.0**
3. Increasing knowledge= **5.0**
4. Remembering key concepts = **5.0**
5. Discussing scenarios = **5.0**
6. Mentoring critical thinking = **4.67**
7. Sharing successes/cases = **4.83**
8. Encouraging use of stethoscopes = **4.67**
9. Empowering Nurses= **5.0**

Phase 1 and 2 Qualitative Data Analysis

Instrument description – It was important to gain an understanding of the potential of using a post-conference WhatsApp platform in the virtual mentorship component. This is important information for the MoH for other nursing education and for the project as it has a financial impact to the project. Three questions were posed.

4. **Do you think the WhatsApp mentorship is a good tool for Rwanda?** All six Core member reported the Virtual Mentorship was important and should continue both in NSL and be considered for other educational opportunities in Rwanda. The universal theme reported by the CCP concerned the unique opportunity to share and gain knowledge of conference topics.

P1CCP2. “Because we use WhatsApp for discussing different topics. We ask questions and we got responses easily on WhatsApp. We shared opinions about the diseases strep throat, acute rheumatic fever, rheumatic heart disease and also heart failure.”
P1CCP4. “The WhatsApp mentorship is good tool for Rwanda because it is easy to share the information to the community. The knowledge was improved because of this tool here in Rwanda this helps nurses to learn and gain confidence.”

5. **What would make it better?** 5/6 CCP responded to this question, and the focus was on using a well-prepared activity to improve knowledge through the structured sessions. In addition, availability of WhatsApp and its ability to become a sustainable tool were mentioned.

6. **Share impactful stories from your threads.**

   The CCPs reported about how WhatsApp impacted them personally and allowed them to increase their knowledge.

   P1CCP4. “WhatsApp mentorship help me for work about NCD's by learning and sharing knowledge with different scenarios or cases. Has resulting of this tool in my everyday work.”
   P2CCP2. “What's up mentorship help me day-to-day to work as an NCD nurse by increasing knowledge and skills on the examples, investigations, education and management of different cases.”

Virtual Mentorship (WhatsApp)
Certified Conference Presenter
Phase 3- COMPILED N=5

Phase 3- This tool was adapted from the qualitative of Phase 1and 2 and discussions with the Core team on the intent and possibilities of the virtual mentorship.

How do you think mentoring the health center (HC) nurses on the conference topics with the WhatsApp impacted the HC nurses?

Rate the following 0-5 on how much it benefitted you. “0” is none, “3” is average, “5” is high benefit

1.Building trust relationships	4.2
2.Improving communications	4.6

3. Increasing knowledge	4.0
4. Remembering key concepts	4.2
5. Discussing scenarios	4.2
6. Mentoring critical thinking	4.6
7. Sharing successes/cases	4.6
8. Encouraging use of stethoscopes	4.4
9. Empowering nurses	4.8
10. Gain confidence in understanding the pathology of disease processes	4.6

How did your confidence level change over the course of your training and mentoring of the health center nurses

Rate the following 0-5 on how much the mentorship increased your confidence level. "0" is none, "3" is average, "5" is high benefit

11. Before training	1.8
12. After training, providing instruction, and mentoring health center nurses	4.6

Please indicate which areas were strengths OF YOUR MENTOR FROM THE CORE TEAM:

Areas of Strength	Place a check mark in this column if this was a strength of your mentor
13. Building trust relationships	100%
14. Improving communications	100%

15. Increasing knowledge	100%
16. Remembering key concepts	100%
17. Discussing scenarios	100%
18. Mentoring critical thinking	100%
19. Sharing successes/cases	100%
20. Encouraging use of stethoscopes	100%
21. Empowering Nurses	100%
22. Frequently and readily available	100%

23. Do you think the WhatsApp mentorship is a good tool for nurses? YES NO

YES 4	NO 1

24. Why?

The CCPs identified time, no transport requires and it is a process to improve communication.

> P3CCP3. “because it help more things , first of all communication easily, relationship, and more knowledge we shared between us.”
>
> P3CCP5. NO, Because, there is insufficient of network availably of mentee collectively

25. How do you think you helped the HCN gain knowledge or skills during the eight weeks after the conference?

> P3CCP1. “By explaining and reminding signs and symptoms of strep throat and treatment plan. Using WhatsApp mentorship also improves communication quickly about patients.”
>
> P3CCP3. “I think they wish to keep use this method even after other training they gain more things, and it interested methods and easy.”

Barriers to your mentorship. Write "yes" to any barrier that applies to your experience.

Barrier to my availability to mentor	YES	NO
26. I am too busy at work to spend time sending information/discussion or answering questions	80%	20%
27. I am too busy after work with family commitments to participate fully	60%	40%
28. I can only respond at nighttime after work	40%	60%
29. No Core team member ever asked me for help or to give me mentorship support	20%	80%
30. I did not have internet access	20%	80%
31. I did not think there was a need to reach out to the HCNs to check on their progress	40%	80%

- Other: No transport means to go to health center.
- Other: inefficient internet
- Other: overwork at health center
- Other: it was very interested

CCP to HCN Onsite Mentorship

Phases 1, 2, and 3

Phase	# respond	Category	Instrument name	Data Type/ #Question	Dates
1	15	CCP evaluate HCN	CCP to HCN Onsite Mentorship – conference to Practice translation	Mixed evaluation- Direct observation + questions	Oct 2024

2	18	CCP evaluate HCN	CCP to HCN Onsite Mentorship – conference to Practice translation	Mixed evaluation- Direct observation + questions	May 2025
3	20 *Only 16 unique answers	CCP evaluate HCN	CCP to HCN Onsite Mentorship – conference to Practice translation	Mixed evaluation- Direct observation + questions	April 2026

Project component (Disease Prevention and Treatment area of focus): To strengthen disease prevention and management at participating health centers by confirming that Health Center Nurse (HCN) participants were applying the conference knowledge and clinical skills in routine care 6 to 8 weeks after training (conference-to-practice translation).

Monitoring and evaluation approach: The project used structured on-site mentorship visits to collect post-training performance data through direct observation and documented responses to standardized clinical scenarios (knowledge checks, clinical reasoning, and treatment planning), supplemented by mentor feedback.

On-site mentorship tool and capacity-building method: This structured mentorship tool was designed to enable Conference Core Practitioners (CCP) to provide post-training supportive supervision and to assess conference-to-practice translation among a selected group of conference HCN attendees. Implemented approximately eight weeks after the conference, the tool supports Rotary s Disease Prevention and Treatment goals by strengthening local clinical capacity and reinforcing evidence-based practice at the point of care. The tool uses three standardized pediatric clinical scenarios (strep throat, acute rheumatic fever (ARF), and rheumatic heart disease (RHD)) to guide discussion on history-taking, critical thinking, differential diagnosis, and treatment planning. Mentors (CCP) then provide coaching, as needed, during a focused physical examination of a pediatric patient. Each scenario includes the case presentation, structured questions to assess clinical reasoning and knowledge, and evidence-based rationale to support accurate mentoring and consistent messaging.

Implementation, adaptations, and learning across phases: Each phase of implementation presented challenges that informed continuous quality improvement of the mentorship approach. In Rwanda, a key contributing factor was the decision to reduce

the number of education hours provided to the Core Team. Although Core Team members voiced understanding of the tool, early implementation revealed that additional orientation and simplification were needed to ensure consistent use. In Phase 1, each scenario was presented followed by questions; however, limited embedded guidance was available for CCPs to support HCNs through the scenarios. As a result, the Phase 1 data identified gaps in tool familiarity and inconsistent translation of conference content into clinical practice, while still providing valuable baseline information about knowledge transfer. Post–Phase 1 review led to revisions. In Phase 2, questions were presented in bold, with reference information (answers) in standard font, followed by questions and space for CCP documentation. The ARF module was also adapted to have the HCN use the Nurses flip chart to describe ARF, allowing mentors to evaluate correct use of a standardized patient education tool (a novel approach in Rwanda). In Phase 3, the revised tool was maintained and additional education was provided to the Core Team and Team Heart. Phase 3 was designed to be led by the Rwandan team, with the Vocational Training Team (VTT) providing virtual mentorship. Data analysis suggests the tool remains complex and continues to surface persistent learning needs, particularly in advanced nursing processes that are inherently difficult and relatively new for HCNs (using patient history as a diagnostic tool and applying critical thinking to develop a differential diagnosis). At the same time, results show meaningful progress: most nurses demonstrated developing skills in history of present illness assessment and in considering multiple etiologies for presenting signs and symptoms (S&S).

On-site Mentorship Summary

This project component advanced The Rotary Foundation s Disease Prevention and Treatment area of focus by strengthening local nursing capacity to prevent, recognize, and manage common infections and their complications (including ARF and RHD) through structured post-training mentorship. The on-site mentorship model was new for CCP mentors and for HCN participants, who hosted CCPs at their workplaces for supportive peer mentorship rather than a test." This approach reinforced skill application in real clinical settings and supported sustainability by embedding mentorship within the local health system. In alignment with Rotary International requirements for Vocational Training Team (VTT) grants, the Rwandan Nurses Saving Lives (RNSL) model provided follow-up education and reinforcement of conference topics. CCPs received education, a manual, and ongoing support to build mentorship competencies (trust-building, effective communication, and positive reinforcement) to encourage continued use of conference knowledge and skills in clinical practice. CCPs also remained active through conference presentation roles and WhatsApp follow-up to support ongoing learning and problem-

solving. Across Phases 1 and 2, data sources including the HCN experience questionnaire, WhatsApp evaluations, and the on-site mentorship assessments indicate that this component contributed to improved clinical practice behaviors related to history-taking and physical assessment. Findings suggest that nurses were applying conference content in the workplace, including oral-pharyngeal examinations for suspected strep throat, skin assessment for impetigo, respiratory assessment for heart failure, and cardiac assessment for murmurs. Overall, the results demonstrate early progress toward improved confidence, stronger peer-to-peer clinical relationships (supporting referral pathways to cardiology), and improved recognition across the spectrum of RHD-related presentations. Team Heart remains assigned to these seven District Hospitals to continue nursing education and support for RHD; this continued local support is expected to further institutionalize and sustain knowledge and skill translation into routine practice after grant activities conclude.

Lessons learned:

6. On-site mentorship provided direct, workplace-based verification that HCNs were applying conference knowledge, skills, and tools, strengthening monitoring and evaluation and supporting sustainability through conference-to-practice translation.
7. Peer-to-peer mentorship led by CCPs strengthened professional relationships and trust, improving coordination and supporting more timely, appropriate referrals to cardiology.
8. Although on-site mentorship is time-intensive in busy health centers, completion by all selected HCNs demonstrates feasibility. The approach is recommended for continuation and replication, with ongoing simplification and scheduling adaptations to reduce burden while maintaining quality.
9. The mentorship model built CCP leadership and coaching capacity, strengthening local ownership and enabling continued supportive supervision after grant activities conclude.
10. Documentation on the on-site mentorship forms by the CCPs was inconsistent and different from person to person. These discrepancies indicate a need for a more in-depth training of the CCPs concerning the actual visits to Health Centers.

Phase timing and Locations

Phase 1

Dates: July- Oct 2024

Locations: Health Centers in District Hospitals of Byumba, Rwamagana, and Kagabaga
Phase 2
Dates: Jan-April 2025
Locations: Health Centers in District Hospitals of Kabguyi and Kabogora
Phase 3
Dates: Nov 2025-March 2026
Location: Health Centers in District Hospitals of Nyagatare and Gatunda

Appendix: Onsite mentorship Quantitative Data

Level: N= needs more support C= competent and safe

Note: Phase 2 CCP did not use this form

Strep Throat Knowledge Checklist

Knowledge	Needed Help	Competent
Knows the correct requirements of the clinical diagnosis for Strep Throat	P1 No Answer: 15 (all) P3 12.5%	P1 NA P3 87.5%
Uses good history questions to ask the child/parent to obtain good data	P1 No Answer: 15 (all) P3 6.25%	P1 NA P3 93.75%
Understanding the Vital sign ranges	P1 No Answer: 15 (all) P3 25%	P1NA P3 75%
Has the ability to critically think concerning a variety of S&S to Strep infections.	P1 No Answer: 14 P3 6.25%	P1 7.1% P3 93.75%

Strep Throat Skill Checklist

Skill	Needed Help	Competent

Oral pharynx: describes tonsils, uvula, and tongue	P1 20% P3 6.25%	P1 80% P3 93.75%
Use of a tongue depressor, if needed.	P1 0% P3 25%	P1 100% P3 75%
Use of a light source	P1 0% P3 12.5%	P1 100% P3 87.5%
Range of motion of head with and without resistance	P1 0% P3 25%	P1 100% P3 75%
Gentle palpation of lymph nodes	P1 0% P3 31.25%	P1 100% P3 68.75%
Can assess for meningitis	P1 0% P3 25%	P1 100% P3 75%

Strep Throat Treatment

Concept for IM PCN	Needed help	competent
Dose: Can the correct dose be calculated?	P1 0% No Answer x 1 P3 6.7% No Answer x 1	P1 100% responding P3 93.3% responding
Site on body: Can you point both thigh and gluteal injection sites?	P1 6.7 No answer x 1 P3 20% No Answer x 1	P1 93.3% responding P3 80% responding
Understands how to decrease pain: identified at least 3 of the following: 1-use a new needle after drawing up, 2-give slowly, 3-can lightly stimulate skin, 4- have child be held by parent, 5- be gentle, smile, and explain to child what you are doing.	P1 6.7% No Answer x 1 P3 13.3% No Answer x1	P1 93.3% responding P3 86.7% responding

Knows how to decrease side effects concerns: shared education to child and parent that some muscle soreness or redness is normal, have child eat before coming to the clinic, increase hydration before and after injection, faints and nausea are often related to fear. A very rare response to the IM PCN is breathing problems. This is why the child needs to wait 15 min in the office before going home.	P1 33.3% P3 6.7% No Answer x 1	P1 66.7% P3 93.3% responding

SCENARIO 2: Acute Rheumatic Fever

The CCP asked the nurse to share signs and symptoms a child might experience if there is ARF. Check off which ones were identified. Then have a discussion about all the signs and symptoms to remind the nurse.

Sign or Symptom	**Needed Help**	**Competent**
Knows that ARF signs and symptoms can develop from 1 to 8 weeks after an untreated or undertreated Streptococcus pyogenes infection (Strep throat or impetigo). **A recent history of a streptococcus pyogenes infection of Strep Throat or Impetigo- VERY IIIMPORTANT**	P—No Answer x 15 P3 0%	P1—No answer x 15 P3 100%
Knows that ARF damage is permanent and damage is limited by monthly PCN to block the continued autoimmune response.	P1 N/A NEW QUESTION P2/P3 P3 0%	P1 P3 100%
A red swollen joint without trauma. Lasts a few days and then can be in a different site. Most commonly in knees, ankles wrists, and elbows	P1 6.7% P3 18.75%	P1 93.7% P3 81.25%
Chest pain, discomfort, or pressure. This occurs from the inflamed heart muscle. The child may feel better leaning forward and have more discomfort laying flat.	P1 20% P3 18.75%	P1 80% P3 81.25%

Tachycardia- very important as it shows the heart is inflamed from the autoimmune response	P1 0% P3 6.25%	P1 100% P3 93.75%
A murmur: most common at the apex (mitral location. 5 ICS mid-clavicular line). It is usually soft, pansystolic (throughout the cardiac cycle) and blowing	P1 20% P3 12.5%	P1 80% P3 87.5%
Fatigue, tired and tires easily	P1 6.7% P3 6.25%	P1 93.3% P3 93.75%
Shortness of breath with exertion because the heart is inflamed	P1 6.7% P3 6.25%	P1 93.3% P3 93.75%
Odd behavior: laughs or cries inappropriately. Facial muscle twitch or grimaces. Odd hand and finger movements. This is Sydenham chorea related to inflammation in the brain. Change in handwriting, word choice, decrease vocabulary noted at school	P1 13.3% P3 25%	P1 86.7% P3 75%
A skin rash (very rare)- looks like red, wavy shapes with clear centers.	P1 6.7% P3 33.3% No Answer x 1	P1 93.3% P3 66.7% responding
FEVER of unknown origin- 100% of patients will have a fever at some time during ARF	P1 40% P3 33.3% No Answer x 1	P1 60% P3 66.7% responding
Nodules on extending tendons (related to severe carditis)- small, painless and firm. The nodules are inflammatory cell clusters (granulomas). Nodules are autoimmune responses from molecular mimicry.	P1 26.7% P3 35.6% No Answer x 2	P1 73.3% P3 64.4% responding

SCENARIO 3: HF and RHD

The HCN is to use the Rwandan Nurses Saving Lives Flip chart to explain HF and why he/she need this patient to get an echocardiogram. The CCP evaluates the HCN during the scenario as they have mentored discussion on the critical thinking of this scenario.

Assessment & Rationale	**Needed Help**	**Competent**
Explains, "what is heart failure"	P1 13.3% P3 0%	P1 86.7% P3 100%
Shares how his symptoms are most likely because his heart is not pumping well	P1 6.7% P3 25%	P1 93.3% P3 75%
Explains about an echocardiogram and why it is important	P1 0% P3 0%	P1 100% P3 100%
Explains what the treatment plan is going to be (medications) and follow up	P1 13.3% P3 12.5%	P1 86.7% P3 87.5%
Explains the importance of a heart diet (decrease salt and eat fruits and vegetables that are green, yellow, orange and red for high potassium) and walking	P1 20% P3 12.5%	P1 80% P3 87.5%
Discusses with parents about including the teacher in understanding the diagnosis. He/She is not lazy, he has a heart disease.	P1 0% P3 0%	P1 100% P3 100%
Explains that this time can be emotional and stressful and that the staff at the clinic are there to help him and his family.	P1 26.7% P3 0%	P1 73.3% P3 100%

HF Skills: ADDED TO PHASE 2 AND 3

Skill	Needs Support	COMPETENT
Can ask good history questions (fatigue, sleep, capacity, edema)	P1 N/A P3 6.25%	P1 N/A P3 93.75%
Stethoscope use for a respiratory assessment. Can explain abnormal	P1 N/A P3 -No Answer x1	P1 N/A P3 100% responding

Correct stethoscope placement for cardiac assessment. Can explain abnormal sounds	P1 N/A P3 0%	P1 N/A P3 100%
Can assess for edema (hepatojugular reflux, ascites, feet-to knees)	P1 N/A P3 – No Answer x I	P1 N/A P3 100% responding

Mentorship Review

Rate the following 0"= none, 1"= minimal, 2"= some, 3"= good, 4"= great

		1	2	3	4
This mentorship will improve clinical practice	P1 P3 3.63		P1 P3 0%	P1 P3 37.5%	P1 P3 62.5%
This mentorship helps the nurses to recognize that they understand the conference knowledge and skills	P1 P3 3.67		P1 P3 I 6.25%	P1 P3 18.75%	P1 P3 75%
This mentorship helped the nurse gain the confidence needed	P1 P3 3.56		P1 P3 0%	P1 P3 43.75%	P1 P3 56.25%
This mentorship allows me to see how a nurse thinks in these clinical process so I can provide better support as a leader	P1 P3 3.69		P1 P3 0%	P1 P3 31.25%	P1 P3 68.75%
This mentorship process has improve our relationship and will help with patient transfers	P1 P3 3.69		P1 P3 0%	P1 P3 31.25%	P1 P3 68.75%

I think this nurse to nurse mentorship is a good process for supporting specialized nursing knowledge and skills	P1 P3 3.56		P1 P3 6.25%	P1 P3 31.25%	P1 P3 62.5%

Rwandan Nurses Saving Lives
Certified Conference Presenter Post-Mentorship: Review of the Mentorship Role
Phases 1, 2 and 3

Phase	# respond	Category	Instrument name	Data Type	#Question
1	6	CCP	CCP Review of on-site mentorship	Mixed	9 Quantitative 2 Qualitative
2	3	CCP	CCP Post mentorship: a review of their mentorship role	Mixed	9 Quantitative 5 Qualitative
3	5	CCP	CCP Post mentorship: a review of their mentorship role	Mixed	9 Quantitative 5 Qualitative

N=14

Title: **Certified Conference Presenter (CCP) Review of Mentorship Role**
Phase 1: July 18, 2024- Oct 15, 2024
Locations: Rwamagana, Kagabaga, and Byumba
Phase 2 Category: CCP
Dates: Jan 7-April 1, 2025
Locations: Kabguyi and Kabogora
Phase 3
Dates: Nov 18, 2025- Feb 17, 2026
Location: Nyagatare and Gatunda

Tool Description: CCP Post-Mentorship Evaluation

The Rwandan Nurses Saving Lives (NSL) project is a capacity

building initiative designed to reduce preventable morbidity and mortality related to streptococcal throat infection, acute rheumatic fever (ARF), rheumatic heart disease (RHD), and heart failure through nurse education and mentorship.

Project Component: This questionnaire was developed to assess the Certified Conference Presenter (CCP) role as a mechanism for strengthening clinical leadership within the Nurses Saving Lives (NSL) initiative. Following Phase 1, findings indicated that CCPs are essential to the long-term sustainability of NSL, as they demonstrated increased leadership within their communities and strong competency in NSL implementation. Accordingly, for Phase 2 the instrument was revised to better capture CCP perspectives on their training experience and their responsibilities as both virtual and on-site mentors. Phase 3 utilized the same CCP post-mentorship instrument. The CCP mentorship component aimed to:

- Strengthen clinical nurses' leadership and mentorship capacity
- Improve communication and trust between mentors and mentees
- Support evidence based assessment, diagnosis, and management of ARF and RHD
- Expand sustainable, nurse led education capacity at the district health level

The project emphasized peer-to-peer mentorship rather than traditional hierarchical testing models.

Context note: During initial training delivered by the Core Team, CCPs receive structured instruction in mentorship and are provided with a mentorship manual. Training addresses effective communication, delivery of educational and supportive feedback, peer-to-peer mentorship approaches, and distinctions between directive (top-down") leadership and mentorship-based leadership. The mentorship manual was developed by a member of the Volunteer Training Team (VTT) who has implemented this LEAP (leadership-engagement-accountability-professionalism) leadership approach in Rwanda since 2014 across multiple settings (including nursing, engineering, business, and hospital environments), supporting its cultural relevance and appropriateness. In addition, two Core Team members were certified LEAP leadership presenters.

CCP Role: The CCP role is demanding. CCPs complete three days of training and are subsequently paired with a Core Team mentor. Each pair is expected to deliver a conference module, and CCPs may also support skills stations during conference sessions. CCPs then serve as active mentors during the virtual mentorship period for Health Center Nurses (HCNs) and complete two to three on-site mentorship visits to participating health centers. Despite this workload, respondents in Phases 2 and 3 (5 of 6) reported that on-site mentorship was a valuable experience for both the CCP and the nurse mentee, and all agreed that this component should be continued as an integral part of the NSL project. Overall, the mentorship module within CCP training, the pairing with a Core Team member, and the mentorship manual appear to provide a strong foundation for CCPs to further develop their clinical leadership.

Evaluation Methodology: A mixed methods evaluation was conducted using standardized post mentorship questionnaires:

- Quantitative component: Nine Likert scale questions (0 = no impact to 5 = high impact)
- Qualitative component: Five open-ended questions addressing mentorship experiences, barriers, leadership confidence, and program sustainability

The evaluation tool was refined after Phase 1 and used consistently in Phases 2 and 3.

Sustainability and Long Term Impact: The CCP model intentionally builds local capacity by training district level nurses to educate and mentor others, creating a multiplier effect that reduces reliance on external trainers. CCPs unanimously endorsed continued onsite mentorship, citing its role in reinforcing clinical skills, leadership development, teamwork, and sustainable improvements in patient care. The mentorship approach aligns with Rotary's focus on sustainability, local ownership, and capacity building within healthcare systems.

7. **Key Achievements**

- Development of confident nurse leaders capable of mentoring peers
- Expansion of skilled nurse educators at the district hospital level
- Strengthened nurse-to-nurse collaboration and professional identity
- Improved dissemination of evidence based ARF and RHD prevention practices

These outcomes directly support Rotary International's goal of saving lives through sustainable health system strengthening**.**

Recommendations: The CCP post mentorship evaluation demonstrates that the Rwandan Nurses Saving Lives project has achieved meaningful, sustainable leadership and mentorship outcomes. Despite demanding workloads, all participating CCPs reported significant professional growth and unanimously supported continuation of the mentorship component. The CCP model represents a scalable and sustainable approach consistent with Rotary International's mission and grant prior

Based on evaluation findings, the following actions are recommended:

- For the CCP training maintain structured leadership training grounded in mentorship and values based, transformational, and servitude leadership skills
- Support continued peer learning and leadership development to ensure long-term sustainability between the Core Team and CCP and the CCPs to HCNs.
- Advocate for the CCPs to be key RHSL educators at the District Hospital, health Centers and Health Post to provide continued education and mentorship to all nurses.

See appendix for instrument.

Summary of Quantitative Results: CCP Mentorship Role Review

Although the sample size was modest (N=14), respondents reported consistently high scores across the nine quantitative items. These results indicate that CCPs perceived strong support from the Core Team during CCP training and through the two-month post-conference period. Overall, the findings are consistent with the project intent of strengthening professional relationships and build clinical leadership capacity among participating nurses.

Compiled data from Phases 1–3 (N=14)

	Avg score	1 = Low Impact	2	3 = Average	4	5 = High Impact
1.Building trust relationships	4.86				II	IIIII IIIII II
2.Improving communications	4.93				I	IIIII IIIII III
3. Increasing knowledge	4.93				I	IIIII IIIII III
4. Remembering key concepts	4.86				II	IIIII IIIII II
5. Discussing scenarios	4.64			I	III	IIIII IIIII
6. Mentoring critical thinking	4.71				IIII	IIIII IIIII
7. Sharing successes/case	4.79				III	IIIII IIIII I
8. Encouraging use of stethoscopes	4.86				II	IIIII IIIII II
9. Empowering Nurses	4.93				I	IIIII IIIII III

Summary of Qualitative Results.

Phase 1-Question 1: Share successes and barriers to this process:

P1CCP1. This mentorship was very helpful for me as ncds nurse it provided knowledge and experience in patient assessment treatment of sore throats and prevention of complications (ARF-RHD-HF). How to diagnose ARF, RHD, HF prevention and management. To give health education to the community about sore throat and treatment. Barriers were overwork load, travelling long distance to arrive at HC."

P1CCP4. The success is that while mentoring the HC nurses I saw that they all being familiar with conducting a full physical examination including the use of a stethoscope and otoscope as well. The barrier is that there is still a problem on medication the insurance offices who don't understand the protocol."

Phase 1-Question 2. Should this aspect of the Rwandan Nurses Saving Lives Project continue within the Core Team- NCD [CCP] nurse mentorship?

P1CCP 5. Yes, if continues it will help NCD nurses to improve professional development in NCD cases and prevention of heart disease Caused by streptococcus pyogenes. It will also increase our knowledge and the skills in critical thinking".

Phase 2&3-

Question 1. Share your success on your mentorship abilities and how you can support and mentor another nurse.

Across Phases 2 and 3, CCP respondents emphasized that effective mentorship required a solid clinical foundation in sore throat (ST), acute rheumatic fever (ARF), heart failure (HF), and rheumatic heart disease (RHD). Approximately half of respondents additionally highlighted improvements in relationship-building, provision of constructive feedback, and the use of a supportive (non-testing) approach as factors that strengthened their mentorship effectiveness.

P2 CCP2. Success in Mentorship Abilities: -significantly improved my ability to mentor others by - Providing scenarios, Building trust relationships. Improving communications. Remembering key concepts. Encouraging use of stethoscopes. Empowering Nurses - Guiding nurses through case discussions, critical thinking and confidence-building activities, rather than just "testing" them meanly, but by sharing experience between mentor and mentee."

P3CCP4. Mentorship in nursing isn't just about passing on clinical skills; it s about fostering the resilience, critical thinking, and professional identity that keeps great nurses in the profession."

Question 2. What barriers do you see in continuing mentoring other nurses in the Rwandan Nurses Saving Lives topics?

CCPs identified several barriers to sustaining mentorship, including limited physician support in rural areas; high patient volume and time constraints for Health Center Nurses (HCNs) (often exceeding 100 patients per day); intermittent internet connectivity; language considerations (some HCNs trained in French and reported challenges with English); and implementation challenges related to evidence-based practice (e.g., ensuring 10 days of penicillin treatment for confirmed streptococcal pharyngitis).

P2CCP2 Time constraints: Nurses often have heavy workloads, here in Rwanda, limiting availability for mentorship Adequately, which has impact on quality of care delivery to client/patient. Even following all steps during physical assessment is impossible, so that they can loose diagnosis resulting in bad management. Some health insurances like MUSA/MUTIWEL de

Sante do not cover all required fees necessary in treatment of required total days: for example 10 days in case of treatment of tonsillitis, because they do not have guide line from national protocols in treatment of that disease."

P3CCP2 Some difficulties I foresee include time constraints due to heavy clinical workloads, staff shortages, and limited opportunities for protected mentoring time. Differences in baseline knowledge and experience among nurses may also require more time and tailored approaches. In addition, limited resources including transport or materials and occasional resistance to change can affect the mentoring process. However, these challenges can be managed through good planning, teamwork, and ongoing institutional support."

Question 3. Describe your confidence before and after these last 2 months for you as a nurse leader?

CCPs reported that, prior to CCP training, many—despite experience as noncommunicable disease (NCD) and pediatric nurses—did not have a comprehensive understanding of the full spectrum of knowledge and clinical skills related to RHD. Respondents also reported limited prior exposure to mentorship models and peer-to-peer supportive supervision. In addition, the LEAP leadership approach was new to participants. All respondents described increased confidence following CCP training and at the conclusion of the virtual mentorship period.

P2CCP Before I was confused on use stethoscope, at end of 2 month I was very confident in all land marks, able to know normal and abnormal. Second, my communication skills were improved.

P2CCP2. Before: I lacked structured methods for mentorship and doubted my ability to lead, and I didn't have enough knowledge. -After: The training and peer interactions boosted my confidence as a nurse leader. I now approach mentorship with clarity, empathy, and evidence-based strategies regarding protocols by using my skills obtained after training and mentorship now I am able to manage and help other nurses to do so via skills obtained through conference, training and mentorship."

P3CCP2. Before the last two months, my confidence as a nurse leader was moderate; I had the clinical knowledge but sometimes hesitated in leadership and mentoring roles. After these two months, my confidence has significantly improved. I now feel more comfortable leading discussions, mentoring peers, making decisions, and communicating effectively with colleagues. The mentorship experience helped me recognize my leadership potential and strengthened my belief in my ability to positively influence nursing practice."

Question 4. Should Rwandan Nurses Saving Lives continue with the Onsite- mentorship? Why?

All 14 responding CCPs indicated that on-site mentorship should continue. Respondents noted that on-site mentorship required travel to participating health centers (HCs) and provided opportunities to work through clinical scenarios and consult on patient cases in a peer-to-peer mentor–mentee model. CCPs described this approach as distinct from more traditional assessment-based (testing") frameworks and reported broad acceptance of the mentorship

model and associated leadership principles introduced during CCP training. Respondents also noted that, within the local context, formal leadership education is often provided only after nurses assume supervisory roles; however, CCPs reported that the leadership content and the NSL mentorship manual supported their ability to mentor HCNs using scenario-based discussion.

P2CCP3. Yes, this helps to empower health center nurse, then feel free to ask question where they do not understand."

P2CCP2. Yes. On-site mentorship bridges theory and practice, allowing real-time feedback and stronger relationships. It reinforces skills like stethoscope use and scenario-based learning in a clinical context so that mentor and mentee are closer to see really what is going on. Example problems they have, number of cases they have received."

P3CCP2 Yes, Rwandan Nurses Saving Lives should continue with onsite mentorship. Onsite mentorship allows for hands-on learning, immediate feedback, and real-time problem-solving in the clinical setting. It strengthens the connection between theory and practice and builds confidence among nurses. Onsite mentorship also promotes teamwork, accountability, and sustainable improvements in patient care."

Question 5. Should Rwandan Nurses Saving Lives continue the Mentorship program for you (CCP) to gain theses skills? Why?

In response to Question 5, CCPs cited two primary reasons to continue the mentorship program. Approximately half of respondents emphasized the importance of continued education and support related to NSL clinical content (history-taking, physical assessment, and evidence-based treatment planning). The remaining respondents emphasized the value of mentorship skill development and its perceived positive impact within their communities. Both themes underscore the importance of strengthening frontline nursing capacity and clinical leadership to support improved patient outcomes.

P2CCP2. Absolutely. The program builds critical leadership and mentoring skills through collaborative learning : WhatsApp , and onsite mentorship. It empowers nurses to train others sustainably, creating a ripple effect of improved patient care in our County: Rwanda. The combined approach of training, conferences, and WhatsApp peer support has been transformative for mentorship skills. Continuing and expanding these initiatives will amplify their impact on Rwanda s nursing and community."

P3CCP2. Yes, Rwandan Nurses Saving Lives should continue the mentorship program for me (CCP). The program has played a critical role in developing my leadership and mentoring skills. Continued mentorship will help me further refine these skills, increase my impact as a nurse leader, and enable me to mentor others more effectively. This investment not only benefits my professional growth but also contributes to strengthening the overall quality of nursing care and leadership within the health system."

P3CCP4. The Rwandan Nurses Saving Lives mentorship program should absolutely continue for you as a Clinical Care Provider (CCP) because it is the primary engine for transforming a skilled

nurse into a Nurse Leader. While your initial training gave you the "what" (the clinical protocols), this mentorship program provides the "how"-how to lead, how to teach, and how to improve a health system."

Appendix: Blank Questionnaires

Rwandan Nurses Saving Lives CCP Post Mentorship (Phase 1)

Rate the following 0-5 on impact. 0" is none, 3" is average, 5" is high impact

	0= No Impact	1 = Low Impact	2	3 = Average	4	5 = High Impact
1.Building trust relationships						
2.Improving communications						
3. Increasing knowledge						
4. Remembering key concepts						
5. Discussing scenarios						
6. Mentoring critical thinking						
7. Sharing successes/cases						
8. Encouraging use of stethoscopes						
9. Empowering Nurses						

Phase 1-Question 1: Share successes and barriers to the on-site mentorship process: The successes all focused on the technical skills and knowledge of the conference with assessment, diagnosis and treatment of ST, ARF, RHD

Phase 1-Question 2: Should this aspect of the Rwandan Nurses Saving Lives Project continue within the Core Team- NCD [CCP] nurse mentorship?

Rwandan Nurses Saving Lives CCP Post Mentorship (Phase 2 and 3)

You were chosen to be a Certified Conference Presenter for the Rwandan Nurses Saving Lives. In your education, you learned about mentoring HC nurses instead of testing them. And you received a mentorship manual to help you prepare as a mentor.

As you consider the process that gained knowledge, skills, and confidence for this conference, please share how you think the Certified Conference Training, the conferences, and the WhatsApp help **YOU to build the following skills so that YOU can mentor others**?

Rate the following 0-5 on impact. 0" is none, 3" is average, 5" is high impact

	0= No Impact	**1 = Low Impact**	**2**	**3 = Average**	**4**	**5 = High Impact**
1.Building trust relationships						
2.Improving communications						
3. Increasing knowledge						
4. Remembering key concepts						
5. Discussing scenarios						
6. Mentoring critical thinking						
7. Sharing successes/cases						
8. Encouraging use of stethoscopes						
9. Empowering Nurses						

1)Share your success on your mentorship abilities and how you can support and mentor another nurse.
2)What difficulties do you see in continuing mentoring other nurses in the Rwandan Nurses Saving Lives topics?
3)Describe your confidence before and after these last 2 months for you as a nurse leader?

4)Should Rwandan Nurses Saving Lives continue with the Onsite- mentorship? Why?

5)Should Rwandan Nurses Saving Lives continue the Mentorship program for you (CCP) to gain these leadership/mentor skills? Why