

Rheumatic Fever (RF) and Rheumatic Heart Disease (RHD) Prevention and Control Program in Nepal.

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INTRODUCTION

Ministry of Health and population, Government of Nepal announced the launch of National program for prevention and control of RF/RHD in Nepal in Ashad 2063 BS. Implementation of this program started on 15 Ashad 2064 with technical and organization support from Nepal Heart Foundation. Budget allocated for this Program in fiscal year 2063/064 was Nrs. 30 Lakhs, in 2064/065 Nrs. 40 Lakhs and in 2065/66 Nrs 10 Lakhs. This is the first program in Nepal launched by the government for prevention & control of heart disease. Nepal Heart foundation is the main authorized organization for implementation of this program.

Background:

RF is an inflammatory syndrome related to beta-hemolytic group A streptococcal infection, mainly of the throat. Characteristically it tends to recur. The name rheumatic fever emphasizes involvement of the joints, but it is the involvement of the heart that makes it important. The attack of RF may affect the heart, causing damages to the heart valves and leading to high morbidity and mortality. RF and RHD are common in Nepal as well as other developing countries. Prevalence of RHD among school children in Kathmandu was reported to be 1.35 per 1000 in 1991, 1.2 per 1000 in 1997 and 2003 (13). This shows the prevalence of RHD remains of same during the last decade in Kathmandu city. There are no national data on RHD prevalence reflecting the situation in whole country. Nepal heart foundation estimates the prevalence of RHD in Nepal to be 2 per 1000 in school children. In Nepalese population of 27 million the incidence of RF is estimated to be 15000 per year and the incidence of RHD 7500 per year.

RF and RHD are preventable diseases. In Nepal the cost of Secondary prevention for an affected child is approximately 6 USD per year, but the Surgical treatment of the damaged heart valve requires about 3000 USD. Therefore, Prevention of RF and RHD will not only decrease the morbidity and mortality in the children but also will be economically beneficial.

Ministry of Health and Population has been providing 200 prosthetic heart valves every year to central hospitals like Shahid Gangalal national Heart Center and Bir Hospital for free implantation to poor patients. The list of patients needing valve replacement surgery is quite long. Most of the patients die due to lack of fund for surgery. The most effective and long lasting way to address this problem is to prevent RF and RHD. It is in this context the National RF and RHD prevention & control program has been launched.

Objectives:

- 1) To conduct secondary prophylaxis of RF/RHD by providing injection Benzathine Penicillin free of cost to needy patients through hospitals & health centers.

- 2) To conduct primary prophylaxis of RF/RHD by providing injection Benzathine Penicillin or oral Penicillin to needy children of school going age through health posts and sub-health posts.
- 3) To establish centers for safe administration of injection Penicillin.
- 4) To conduct epidemiological studies on streptococcal infection, RF and RHD.
- 5) To establish a national strategy for RF/RHD prevention and control in Nepal.

Overall goal:

To reduce the morbidity, disabilities and mortality from RF & RHD in Nepal.

Components of RF/RHD Prevention & control program

- 1) Epidemiological studies.
- 2) Awareness creation.
- 3) Training of Health workers.
- 4) Case detection.
- 5) Delivery of Medicines for prophylaxis.
- 6) Community involvement.
- 7) Evaluation, Monitoring & Surveillance system.

Phases of implementation

The program is planned to be implemented and expanded phase wise:

Phase—1- Secondary prophylaxis of RF/RHD at central, Regional & zonal level (Central, Regional * zonal Hospitals)

Phase—2- Secondary prophylaxis of RF/RHD at district level
Phase—3- Secondary prophylaxis of RF/RHD at village level (Health posts & Sub-health posts).

Phase—4- Primary prophylaxis of RF/RHD at village level.

Hospitals involved in this program.

Initially 22 hospitals were involved in this program. In second year 4 hospitals were added. Now altogether 26 hospitals covering all 14 Zones of Nepal are involved. Among them 4 are central hospitals, 12 Regional & zonal Hospitals, 4 district hospital and 6 community hospitals. (Table - 1)

Medicines and materials supplied to the participating hospitals.

The following medicines and materials are supplied to the participating hospitals on regular basis:

- 1) Inj. Benzathine Penicillin 6 lac & 12 lac.
- 2) Tab Erythromycin 250 mg.
- 3) Disposable syringe 3 ml / 5ml / 10 ml.
- 4) Distilled water for injection 5 ml ampoule.

RF/RHD Registry:**Hospital Registry**

Each hospital participating in the program has its own registry of RF/RHD patients receiving secondary prophylaxis. These hospitals forward the patients list to central (national) registry.

National (Central) Registry

All the patients registered in this program and receiving penicillin nationwide are enlisted in the National RF/RHD registry list which is maintained at the program office at Nepal Heart Foundation, Babarmahal, Kathmandu.

Penicillin injection card:

This card is issued to all the patients receiving secondary prophylaxis. Penicillin injection card contains patient information, diagnosis, batch number of injection Benzathine penicillin that patient is receiving, dates of injection given, next injection date and signature of health person delivering injection penicillin.

Epidemiological studies:

It is planned to conduct national survey on prevalence of RF/RHD in Terai, Mountain and Hilly regions of Nepal to collect national data.

Penicillin allergy & penicillin skin testing

The incidences of allergic and anaphylactic reactions to Benzathine penicillin injections are reported to be 3.2% and 0.2% respectively; fatal reactions are rare (4,5). The risk of a serious reaction is reduced in children under the age of 12 years and the duration of prophylaxis does not appear to increase the risk of an allergic reaction (6-8). The long-term benefits of Benzathine penicillin.

S.N.	Code No.	Hospital	District
1	C1	Shahid gangalal National Heart Center	Kathmandu
2	C2	Bir Hospital	kathmandu
3	C3	TU Teaching Hospital	kathmandu
4	C4	Kanti Children Hospital	Kathmandu
5	Z1	Mechi Zonal Hospital	Jhapa
6	Z2	Koshi Regional Hospital	Morang
7	Z3	Sagarmatha Zonal Hospital	Saptari
8	Z4	Janakpur Zonal Hospital	Dhanusha
9	Z5	Lumbini Zonal Hospital	Butwal
10	Z6	Bheri Zonal Hospital	Banke
11	Z7	Seti Zonal Hospital	kailali

12	Z8	Narayani Sub Regional Hospital	Parsha
13	Z9	mahakali Zonal Hospital	Kanchanpur
14	Z10	Western Regional Hospital	Kaski
15	Z11	Mid-Western Regional Hospital	Surkhet
16	Z12	Bharatpur Hospital	Chitwan
17	D1	Bhakatapur Hospital	Bhaktapur
18	D2	Hetauda Hospital	Makawanpur
19	D3	Palpa District Hospital	Palpa
20	D4	Gorkha District Hospital	Gorkha
21	CH1	Patal Hospital	lalitpur
22	CH2	Sheer Memorial Hospital	Kavre
23	CH3	Dhulikhel Hospital	Kavre
24	CH4	Lalitput Heart Clinic	Lalitpur
25	CH5	United Mission Hospital	Palpa
26	CH6	Ampiipal Hospital	Gorkha

Therapy in preventing RF far outweighs the risk of a serious allergic reaction (6-10).

Penicillin skin testing is recommended to be done in all patients who are to receive injection penicillin. However there are no published guidelines whether it is mandatory or not to perform skin testing before each and every injection in the same patient. Hospitals involved in secondary prophylaxis program in Nepal do not have a unanimous guideline for penicillin skin testing. Some centers perform skin test before each and every injection penicillin whereas some centers limit the test to the first injection penicillin only.

Nepal Heart Foundation is working on this issue and will be publishing a guideline very shortly. RHD patients because of poor cardiac function are more susceptible to vaso-vagal reaction and are at high risk of life-threatening arrhythmias (11). All health workers dispensing secondary prophylaxis need proper training in performing penicillin skin test and delivery of intramuscular injection. An emergency care kit should also be made available in the penicillin injection room. Attempts have been made to establish a penicillin injection delivery room in all participating hospitals with all necessary emergency medicines & tools to deal with anaphylactic shock.

Emergency care kits have been distributed to all participating hospitals. Health workers training at different levels have been performed.

There are no reported deaths from anaphylactic shock during the audit period of 19 months. 29 cases of allergic reactions have been reported so far.

Table 2 . Patients on Secondary Prophylaxis from Valley Group Hospitals.

SN	Hospital	Patients			Age		Diagnosis Pen.Allergy				
		M	F	Total	<18Y	>18Y	RF	RHD	Major	Minor	Deaths
1	SGNHC	566	797	1363	261	1102	6	1357	1	10	0
2	Bir Hosp.	88	212	300	49	251	3	297	1	6	0
3	TUTH	27	49	76	12	64	6	70	0	2	0
4	Kanti CH	58	35	93	93	0	14	79	0	0	0
5	Patan Hosp.	98	216	314	266	48	5	309	0	6	0
6	Bhaktapur H	11	29	40	6	34	5	35	0	1	0
7	Sheer M.H.	17	35	52	23	29	13	39	0	1	0
8	Dhulikhel H.	45	106	151	48	103	10	141	0	1	0
9	Lalitpur HC	49	81	130	23	107	8	122	0	0	0
	Total	959	1560	2519	781	1738	70	2449	2	27	0

Table 3. Secondary Prophylaxis- Defaulter Cases

SN	Hospital	Sex			Causes of Dropouts		Diagnosis Pen.Allergy		
		M	F	Total	DEATH	PHOBIA	ORAL	COMPLETION	MIGRATION
1	SGNHC	76	90	166	0	10	10	17	108
2	Bir Hosp.	47	57	104	0	9	12	17	48
3	TU Teach H.	16	12	28	0	3	2	2	16
4	Kanti Ch.H.	29	31	60	0	0	0	16	38
5	Patan Hosp.	20	24	44	0	6	6	5	17
6	Bhaktapur Hosp.	1	1	2	0	1	1	0	0
7	Sheer M. Hosp.	2	3	5	0	1	0	3	1
8	Dhulikhel Hosp.	5	8	13	0	2	0	3	6
9	Lalitpur H.Clinic	11	13	24	0	2	16	3	3
	Total	207	239	446	0	34	47	66	237

Patients on secondary prophylaxis from valley group of hospitals

Details of patients receiving secondary penicillin prophylaxis in Valley group of hospitals (Table - 2) during period 2064-3-15 to 2065-12-30 have been collected. Data collection in other hospitals is in process which will be published soon. In 9 hospitals of valley group there are total 2519 patients receiving 3 weekly injection Benzathine penicillin. Out of them, 1560 (61.9%) are female and 959 (38.1%) are males. Diagnosis is RF in 70(2.8%) and RHD in 2449 (97.2%), 781(31%) are below 18 years. Patients receiving 6 lacs are 325 (12.9%) and those receiving 12 lacs are 2194 (87.1%). A total of 47638 Benzathine penicillin injections were given there were only 29(0.06%) allergic reactions-2 major and 27 minor. There were no death reported. Out of 2519 patients there were 446 defaulters (those who had missed more than 2 consecutive doses of injection Benzathine penicillin). Out of them 66 had completed the course of prophylaxis, 47 had shifted to other health centers, 34 discontinued prophylaxis due to injection phobia and 62 had other causes. Actual defaulters (dropouts due to injection phobia and other nonspecific causes) were 96 (3.8%), (Table-3)

Awareness campaign:

Revision of text books of health education at school level from class 6 to 10 has been completed. Materials on RF and RHD have been now included in the educational curricula. This will help increase awareness in school children and parents. Health education materials on RF and RHD have been transmitted from national TV and radio A 20 minutes duration documentary film on RHD have been produced and transmitted several times from Nepal TV. Large hoarding boards with awareness messages at major public places of several large cities are on display which have played a significant role in awareness creation

CONCLUSION

RF & RHD prevention and control program in Nepal has been well accepted by the public & health professionals. Expansion of the program to the district and village levels is necessary. It should be integrated with the primary health care system. Success of this program will depend upon the political commitment and its continuity. It is too early to make any evaluation about the result of this program.

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