Quality of Essential Medicines in Public Health Care Facilities of Nepal, 2019

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Nepal Health Research Council

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Contributors

Prof. Dr. Anjani Kumar Jha

Dr. Meghnath Dhimal

Ms. Neelam Dhakal

Dr. Pradip Gyanwali

Mr. Baburam Humagain

Dr. Nisha Jha

Dr. Rajendra Kumar BC

Mr. Phoolgen Sah

Prof. Dr. Amita Pradhan

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Office Address:
Government of Nepal
Nepal Health Research Council
Ramshah Path Kathmandu, Nepal
P O Box 7626
Phone no: 977-1-4254220
Fax: 977-1-4262469/977-1-4268284
Email: nhrc@nhrc.gov.np

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Prof. Dr. Anjani Kumar Jha
Executive Chairman
Nepal Health Research Council

ACRONYMS

A.D.	: Anno Domini
BP	: British Pharmacopeia
DDA	: Department of Drug Administration
DH	: District Hospital
DT	: Dispersible tablet
EDL	: Essential Drug Lists
GoN	: Government of Nepal
H	: Hospital
HP	: Health Post
HPLC	: High Performance Liquid Chromatography
IP	: Indian Pharmacopeia
LMD	: Logistic Management Division
mg	: milligram
ml	: milliliter
NML	: National Medicine Laboratory
NHRC	: Nepal Health Research Council
PH	: Potential of Hydrogen
PHCC	: Primary Health Care Center
RMS	: Regional Medical Store
SPSS	: Statistical packages for Social Sciences
SSFFC	: Substandard, Spurious, Falsely labeled, Falsified and Counterfeit
USP	: United States Pharmacopeia
UV	: Ultra Violet
WHO	: World Health Organization
w/v	: Weight per volume

EXECUTIVE SUMMARY

Introduction

Essential medicines are widely being consumed in various illnesses in health facilities of Nepal. Poor quality of essential medicines can have serious impact on public health. The quality of essential medicines available in health facilities of Nepal have been questioned several times. Thus, this study is aimed to assess the quality of essential medicines available in public health care facilities of Nepal.

Methods

A cross sectional descriptive study was carried out in 21 districts representing all seven provinces. Altogether 62 health facilities including District/Zonal/Regional hospital, Primary Health Care Center and Health Post was included in this study. Districts were selected proportionately from all three ecological belts i.e. Terai, Hill and Mountain using lottery method. Health facilities in selected districts were chosen using random number generator. Face to face interview was taken with health facility in charge using structured questionnaire. Humidity, temperature record and other storage conditions information i.e. protection from sunlight, humidity, heat, maintenance of cleanliness and ventilation were recorded through observation. To collect medicine samples, sample list of 20 molecules was prepared such that the sample list includes all the major therapeutic category medicines which were mostly prescribe and used in various illnesses. Altogether 244 batches of 20 different generic medicines were collected and sent to laboratory for testing.

Result

Out of 244 batches of 20 different generics of essential medicines, 37 batches failed to meet the required pharmacopeial standards which constitute 23 (62.16%) batches of medicines supplied by Government of Nepal and 14(37.83%) batches purchased from local resources. The generic name of failed medicines include Ciprofloxacin hydrochloride eye/ear drop, Iron supplement tablets, Metformin Hydrochloric tablet 50 mg, Metronidazole Tablets 400 mg, Paracetamol Oral suspension 60 ml, Paracetamol tablet 500 mg and Povidone Iodine solution. Among identified list of substandard medicines, the batches of Metronidazole tablets 400 mg and Povidone-Iodine solution were in highest number while paracetamol tablets constituted least number of batches. Among 62 health facilities, only 13% of health facilities were found to follow the medicine storage guidelines regarding sunlight protection, humidity protection, heat protection and maintenance of ventilation. Maximum temperature and humidity record was found to be 37°C and 86% respectively.

Conclusion

High number of essential medicines (Thirty seven batches of seven different generics of essential medicines) available in health facilities was found substandard. The recommended medicine storage guidelines for protection of sunlight, humidity, heat and maintenance of ventilation along with recommended temperature and humidity were found to be followed by few health facilities and seemed to be highly ignored in Nepal. As majority of identified sub-standard medicines were purchased by Government of Nepal, there is dire need to take necessary steps towards ensuring quality of essential medicines that are supplied to health facilities of Nepal.

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CHAPTER 1 INTRODUCTION

1.1 Background

Quality of medicines has gained increased concern globally in recent days. Poor quality of medicines comprising substandard, spurious, falsely labeled, falsified and counterfeit medicines (SSFFC) have resulted serious impacts[1] and is a prominent issue in both developed and developing countries[2,3]. Availability of safe, effective and affordable medicine is one of the indicators of quality of health services[4] and also a major target area of Universal health coverage[5]. However, quality of medicine seems to be neglected in most of the developing countries. There is increased risk for circulation of substandard/counterfeit products worldwide due to globalization; more notably to the developing countries with weak regulatory authorities[6].

Essential medicines are defined by WHO as the medicines that satisfy the priority healthcare needs of the population; the concept of which first emerged in 1977 A.D with an intent to ensure safe and effective treatment of major communicable and non-communicable diseases[7-11]. The concept of Essential medicines was adopted by Nepal in 1986 A.D in order to enhance the access of essential medicines to every individual[12]. With several revisions, Essential drug lists (EDL) of Nepal 2016 includes 70 medicines for District Hospital (DH), 60 medicines for Primary Health Care Centers (PHCC) and 34 medicines for Health Posts (HP). Recently, the EDL also includes medicine to treat mental illness for some affected districts. These essential medicines are supplied free of cost at governmental health facilities of Nepal in order to meet the basic rights i.e. right to health of disadvantaged people. However, ensuring access to essential medicines only do not certain the good health unless medicine is of standard quality. It is profound important to ensure the quality of essential medicines which are frequently being used in health facilities by the ignorant people.

Evidences show prevalence of substandard and counterfeit medicines worldwide encompassing drugs of classes : anti-infective, anti-malarial, paracetamol, antibiotics, anti-helminthic and essential medicines tool [2,13-16]. The presence of substandard medicines has been explored in pharmaceutical market of Nepal also[17,18]. Moreover, newspapers and drug bulletins of Nepal have published several notices disclosing the identified substandard products in Nepalese pharmaceutical markets [19,20]. There is provision of post market surveillance and analysis of medicine samples from various private outlets by DDA but assessment of quality of essential medicines that are freely available at health facilities was highly neglected. Thus, this study is aimed to assess the quality of essential medicines that are available free of cost at different health care facilities of Nepal.

1.2 Objectives of the study

General Objective:

To assess the quality of selected essential medicines available in public health care facilities of Nepal.

Specific Objectives:

- To assess the storage condition of medicines in public health facilities
- To study in-vitro parameters of collected medicine samples through laboratory testing

CHAPTER 2
METHODOLOGY

2.1 Study design

A cross sectional descriptive design was conducted throughout Nepal.

2.2 Study area

This study was carried out in 21 districts representing each province. Selected districts were:

Province 1	Jhapa, Panchthar, Okhaldhunga, Solukhumbu
Province 2	Mahottari, Saptari
Province 3	Bhaktapur, Dhading, Rasuwa, Makwanpur
Province 4	Lamjung, Tanahun, Mustang
Province 5	Kapilvastu, Nawalparasi, Palpa, Baglung
Province 6	Rukum, Kalikot
Province 7	Kailali, Baitadi

2.3 Study Setting

Selected health facilities and all Regional Medical Stores.

2.4 Sample Design

Out of 77 districts including 26 Terai districts, 35 Hill districts and 16 Mountain districts, 7 Terai, 10 Hill and 4 Mountain districts were selected proportionately. Depending on the volume of distribution of districts in each province, 2 to 4 districts were selected. Considering proportion of three ecological belts, districts from each belt in each province were chosen randomly using lottery method. From each selected district, one Zonal / Regional/District Hospital, one Primary Health Care Center (PHCC) and one Health Post (HP) were identified using random number generator. Numbers of health facilities to include in the study was determined based on WHO guidelines on 'how to investigate drug use in health facilities'[21].

2.5 Sampling Technique

In total 21 districts were selected randomly. Altogether 63 health facilities were selected randomly comprising one Zonal / Regional/District Hospital, one PHCC and one HP from each selected district. However, one HP of Mustang district was dropped due to unfavorable geographical condition during data collection. In total, 3 Zonal Hospitals, 1 Regional Hospital, 17 District Hospitals (DH), 21 PHCCs, 20 HPs and 5 Regional Medial Stores (RMSs) were included in the study.

2.6 Data Collection procedure

Training of the data collection team

Two days orientation training on tools, interview techniques with health facility in-charge and procedures for sample collection was organized to enumerators at NHRC before mobilizing them for data collection.

2.7 Data collection technique

Face-to-face interview was taken with health facilities in-charge of selected health facilities. Structured questionnaire based on WHO guidelines- 'how to investigate drug use in health facilities'[21] was used to collect the information. Observation checklists were prepared based on Logistic Management Division (LMD) guidelines[22] to assess the storage condition of medicine store room i.e. protection from sunlight, humidity, heat, maintenance of cleanliness and ventilation. The information was recorded based on observation. Digital device was used to record temperature and humidity of the storage room. Data and sample collection was carried out from June to October, 2018 in 20 districts; while data collection in Mustang was possible on April, 2019 only due to unfavorable geographical conditions and transportation barriers.

Altogether 20 generic medicines were selected for the collection by the study team. Ten generics from hospitals included Tinidazole 500 mg tablet, Ciprofloxacin 250 mg tablet, Paracetamol syrup 60 ml, Azithromycin 500 mg tablet, Iron supplement tablet, Povidone-iodine liquid 500 ml 5 % w/v solution, Aluminium Hydroxide+magnesium hydroxide 250 mg tablet, Hyoscine butylbromide 10 mg tablet, Amlodipine 5 mg tablet, Metformin 500 mg tablet; 5 generics from PHCCs: Cetrizine Hydrocloride 10 mg tablet, Metronidazole 400 mg tablet, Ciprofloxacin eye and ear drops, 5 ml 0.3 %w/v, Sulfamethoxazole+trimethoprim tablet 960 mg DT, Fluconazole 150 mg tablet/capsule; 5 generics from HPs: Amoxycillin capsule 500 mg, Ranitidine 150 mg tablet, Oral rehydration salt, Salbutamol 4 mg tablet, Paracetamol 500 mg tablet and 6 generics from Regional Medical Stores(RMS)- Paracetamol 500 mg tablet - 3 batch, Tinidazole 500 mg tablet (130 tablets) - 2 batch, Ciprofloxacin 250 mg tablet (130 tablets) - 3 batch, Ciprofloxacin eye and ear drops, 5 ml 0.3 %w/v - 3 batch, Oral Rehydration Salts (25 sachets) - 5 batch, Iron supplement(130 tablets) - 1 batch and Amlodipine 5 mg tablet (150 tablets) - 2 batch were collected. The selection criteria of medicines were made based on the therapeutic category and frequency of use. Medicines were selected such that the sample list includes all the major therapeutic category medicines which were mostly prescribe and used in various illnesses.

Medicine samples were collected on a zip lock bag with adequate label on it.

List of collected drug samples

S.N.	Name of drugs	Dosage form	Unit collected per batch	Total collected batches
1	Tinidazole	tablet 500 mg	130 tablets	9
2	Ciprofloxacin	tablet 250 mg	130 tablets	11
3	Paracetamol syrup	60 ml syrup	8 bottles	14

4	Azithromycin	tablet 500 mg	130 tablets	8
5	Iron supplements	tablet 30/60 mg	130 tablets	12
6	Povidone-iodine solution	liquid 500 ml 5 % w/v	8 bottles	15
7	Aluminium Hydroxide+magnesium hydroxide	tablet 250 mg	130 tablets	9
8	Hyoscine butylbromide	tablet 10 mg	130 tablets	7
9	Amlodipine	tablet 5 mg	150 tablets	15
10	Metformin	tablet 500 mg	130 tablets	17
11	Cetrizine Hcl	tablet 10 mg	130 tablets	6
12	Metronidazole	tablet 400 mg	130 tablets	20
13	Ciprofloxacin	eye and ear drops, 5 ml 0.3 %w/v	8 vials	7
14	Sulfamethoxazole+ trimethoprim	tablet 960 mg DT	130 tablets	17
15	Fluconazole	tablet/capsule 150 mg	130 tablets/ capsules	2
16	Amoxycillin	capsule 500 mg	130 capsules	10
17	Ranitidine	tablet 150 mg	130 tablets	15
18	Oral rehydration salt	sachet/litre	8 sachets	17
19	Salbutamol	tablet 4 mg	150 tablets	11
20	Paracetamol	tablet 500 mg	130 tablet	22
			Total	244

Due to the shortage of medicines in the health facilities at the time of data collection, only 244 batches were collected. Out of these 20 generic medicines, Fluconazole was found only in two health facilities and were highly shortage in rest of the health facilities.

2.8 Data management and analysis

The collected data were entered in epidata version 3.00 and analyzed using SPSS version 21.00. The drug samples collected from different health facilities were sent to National Medicine Laboratory (NML) for in vitro analysis. Drug samples were analyzed based on the pharmacopeial guidelines written on the label of the sample which include either United States Pharmacopea(USP), Indian Pharmacopea(IP) or British Pharmacopea(BP) guidelines. The obtained result were further analyzed in excel.

Test parameters:

Descriptions: The physical description of the medicine sample was noted which included color, size, shape, thickness, diameter and dosage form of the medicine sample.

Identification test: The identification test was performed to verify the presence of active pharmaceutical ingredients.

Weight variation: Weight variation of medicine sample was carried out to ensure the presence of proper amount of drug in the sample. The test was carried out by weighing 20 tablets individually using analytical balance (Metlar Toledo balance and Shimadju balance) was used for weight calculation. The average weight was calculated and individual weight of the sample was compared with the average weight.

Friability test: It provides tendency of a tablet to break in the presence of duress or contact. To test the friability, tablets were repeatedly drooped in the apparatus over a fixed time using a rotating drum with baffle. Veego India friability apparatus was used for friability test.

Dissolution: The dissolution test measures the amount of time required for certain percentage of drug substance in a tablet to go into solution under a specified set of conditions simulating in vivo conditions. Aqueous medium with controlled pH is used for the test. The specification for dissolution requirements varies according to drugs and pharmacopeia. Electro lab and lab India dissolution apparatus was used for dissolution.

Disintegration test: Disintegration test measures the ability of a sample to break into smaller particles under a standard condition. Veego India disintegration apparatus was used for disintegration test.

Assay: Quantitative assay of a drug provides amount of substance in a sample. It measures biological or pharmacological potency of a drug. Shimadju HPLC and Shimadju UV were used for assay.

Uniformity of content: Uniformity of content test was performed to obtain the degree of uniformity in the amount of the drug substance among dosage units.

Fill volume: Fill volume test was carried out for liquid dosage sample.

PH: To measure pH, ohaus pH meter was used.

2.9 Ethical considerations

This study was approved by the Ethical Review Board of the Nepal Health Research Council (NHRC). Formal Permission was taken from Ministry of Health and Population to collect medicine samples from selected health facilities. An informed written consent was obtained from health facilities in-charge of selected health facilities.

CHAPTER 3
RESULTS/FINDINGS

Out of 244 batches of 20 generic medicines sent for testing, 37 batches failed to comply the required pharmacopeal standard i.e. 15.16% of medicines were found substandard. Among the failed medicine samples, 23 (62.16%) batches of medicines were supplied by Government of Nepal and 14(37.83%) batches of medicine samples were purchased from local resources of health facilities. The list of substandard medicine samples included 4 batches of medicines (3 batch of ciprofloxacin eye/ear drop vial and 1 batch of ferrous sulphate with folic acid tablet) collected from RMS. The medicine samples were failed in dissolution test, fill volume test, assay, friability test, uniformity of content and leakage test. However, all the medicine were passed in physical description, weight variation and identification test. Table 1 demonstrates the list of substandard medicines along with their source of supply.

Table 1. List of identified substandard medicines.

Generic name	Collected from	Number(%) of failed batches	Remarks	Source of supply
Ciprofloxacin hydrochloride eye/ear drop	RMS	3(42.85)	Failed in Fill volume test	GoN
Iron supplements tablets	RMS and H	2(16.67)	One failed in uniformity of content and one failed in both Content uniformity and assay	GoN
Metformin Hydrochloride tablets	H	5(29.41)	Failed in Dissolution	Local purchase
Metronidazole Tablets	PHCC	12(60)	One failed in friability test, three failed in dissolution	Local purchase
			Eight failed in Dissolution	GoN
Paracetamol paediatric Oral suspension	HP	3(26.67)	Failed in Assay	GoN
Paracetamol tablets	H	3(13.63)	Failed in Dissolution	Local purchase
Povidone-iodine solution	H	9(60)	Two failed in Leakage	Local purchase
			Six failed in Leakage	GoN
			One failed in both Assay and leakage	GoN

*GoN- Government of Nepal

Table 2. Complaince with medicine storage requirement in selected Health facilities.

	H(21)		PHCC(21)		HP(20)		Total(62)	
	N	%	N	%	N	%	N	%
Sunlight protection	9	42.86	5	23.81	10	50	24	38.71
Humidity protection	14	66.67	13	61.9	11	55	38	61.29
Heat protection	18	85.71	17	80.95	14	70	49	79.03
Good ventilation	17	80.95	18	85.71	15	75	50	80.64
All of the above	2	9.52	2	9.52	4	20	8	12.90

The above table depicts the storage condition of medicine store room of selected health facilities. The data shows that only 13% of health facilities, out of 62 selected health facilities, followed all the storage guideline of LMD [22] for medicine storage i.e. protection from sunlight, humidity, heat and maintenance of good ventilation.

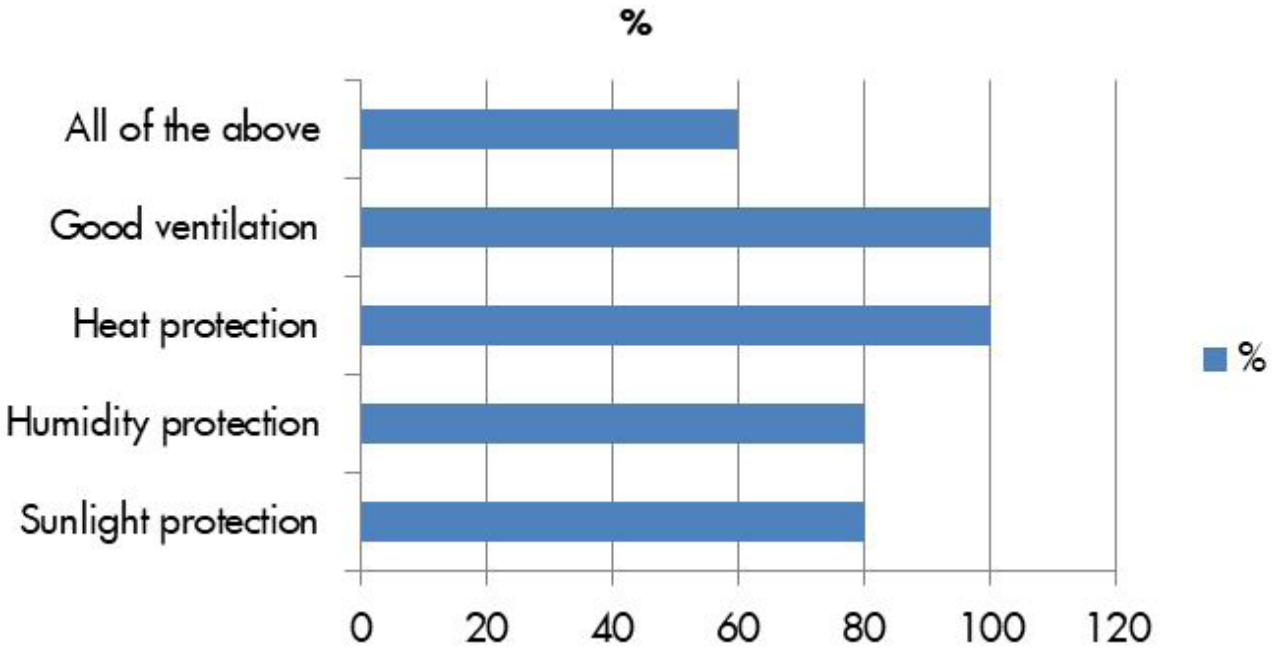

Figure 1. Storage condition of Regional Medical Stores.

The figure illustrates the storage condition of medicine store room of five RMS. The data shows that all the recommended guidelines for medicine storage were found to be followed by 60 % of RMS only.

Table 3. Temperature and humidity records of medicine store room in selected Health Facilities and RMS.

	H (21)		PHCC (21)		HP (20)		RMS(5)	
	Min	Max	min	Max	Min	max	min	Max
Temperature	19°`C	37°C	20.9°C	34.6°C	23.7°C	37°C	30.5°C	37°C
Humidity	40%	77%	44%	86%	45%	80%	61%	77%

The table demonstrates the range of temperature and humidity recorded at a point of time in the medicine store of health facilities. Out of total health facilities, maximum temperature record was found to be 37°C which is greater than the recommended temperature i.e 15°C to 25°C [23]. Likewise, among total health facilities, maximum humidity recorded was 86 % which is also higher than the recommended humidity i.e. 60 % or lower [23]. The data shows that temperature and humidity measure exceeded the recommended range for medicine storage in RMS also.

CHAPTER 4
CONCLUSION

4.1 Conclusion

A high number of essential medicines available in public health facilities are found to be substandard indicating great public health threat in Nepal. Altogether 37 batches of seven generics of essential medicines were found substandard. The storage of essential medicines in health facilities were found to be highly ignored in Nepal as all the important measures required for storage of medicines in health facilities like protection from sunlight, humidity, heat and maintenance of ventilation were found to be adopted by few health facilities only. Temperature and humidity records, which contribute a major role in degradation of medicines, exceeded the recommended range for medicine storage in some selected health facilities and also in Regional Medical Stores. No measures were found to be taken to maintain appropriate humidity and temperature in medicine store room of health facilities and also Regional Medical Stores. Health facilities were found to be deprived of sufficient infrastructures to maintain the storage conditions of medicines which might be a factor responsible for medicines quality to be substandard. However, medicines collected from RMS (with all storage measure followed) were found substandard indicates that there are also other factors responsible for essential medicines to be substandard in addition to storage condition of medicine store room. Thus, this study suggests the immediate need for authoritative body to draw attention towards these matters and take necessary action to ensure availability of standard quality of essential medicines in health facilities of Nepal.

4.2 Recommendation

- There should be provision to assess the quality of essential medicines supplied in health facilities.
- Stringent rules and regulations should be made along with their effective implementation to prevent substandard/counterfeit medicines from entering into pharmaceutical supply chain.
- All the infrastructures required for storage of medicines should be established and maintained in all Regional medical stores and health facilities.
- DDA should strengthen its resources to ensure quality of medicines that are widely being used in pharmaceutical market of Nepal.

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ANNEXES

List of selected health facilities

PROVINCE	DISTRICTS	HEALTH FACILITIES
1	JHAPA	Mechi Zonal Hospital, Shivaganj PHC, Dharampur HP
	PANCHTHAR	Panchthar district Hospital, Gopetar PHC, Ekteen HP
	OKHALDHUNGA	Rumjhatar District Hospital,Raniban PHC, Rampur HP
	SOLUKHUMBU	Solukhumbu District Hospital,Sotang PHC, Bung HP
2	SAPTARI	Sagarmatha Zonal Hospital ,Kanchanpur PHC, Gamhariya Prawahan HP
	MAHOTTARI	Mahottari District Hospital,Samsi PHC, Matihani HP
3	BHAKTAPUR	Bhaktapur district Hospital,Dadhikot PHC, Jhoukhel HP
	DHADING	Dhading District Hospital,Gajuri PHC, Baireni HP
	RASUWA	Rasuwa District Hospital, Jibjibe PHC, Syafrubesi HP
	MAKWANPUR	Hetauda district Hospital,Manahari PHC, Agara HP
4	LAMJUNG	Lamjung district Hospital,Gaunda PHC, Hiletaskar HP
	TANAHUN	Damauli District Hospital,Bhimad PHC, Bhanumati HP
	MUSTANG	Mustang District Hospital, Lete PHC
5	KAPILVASTU	Taulihawa District Hospital, Maharajgunj PHC, Gotihawa HP
	NAWALPARASI	Prithavi Chandra District Hospital, Jagnnathpur PHC, Hupsekot HP
	PALPA	Palpa District Hospital, Tanahun PHC, Gothadi HP
	BAGLUNG	Dhaulagiri Zonal Hospital, Kusmisera PHC, Bhakunde HP
6	RUKUM	Rukum district Hospital, Kol PHC, Aathbisdanda HP
	KALIKOT	District Hospital, Kalikot , Kumalgaun PHC, Chilkhaya HP
7	KAILALI	Tikapur Hospital, Bhajanee PHC, Darakh HP
	BAITADI	Baitadi District Hospital, Patan PHC, Shankarpur HP

Questionnaire

फारम : स्वास्थ्य संस्थाको इन्चार्जको लागि

	मिति	
	स्वास्थ्य संस्थाको नाम	
	जिल्ला र प्रदेश	
	स्वास्थ्य संस्थाको इन्चार्जको नाम	
	सम्पर्क नम्बर	
१	तपाईको स्वास्थ्य संस्थामा कुन कुन श्रोत हरु बाट औषधि आपुर्ति गरिन्छ ?	क) ख) ग)
२	तपाईको स्वास्थ्य संस्थामा आएका औषधि हरु लाई काहा संचय गरेर राख्नु हुन्छ ?	क) दराजमा / ऱ्याकमा ग) भुईमा घ) अन्य (खुलाउनुहोस्) ....
३	तपाईको स्वास्थ्य संस्थामा आएका औषधी हरु लाई कसरी व्यबस्थापन गरेर राख्नु हुन्छ ?	क) Randomly stored ख) थेरापियुटिक क्याटेगोरी (Therapeutic category) घ) डोजेज फर्म (dosage form) ङ) FEFO च) अन्य (खुलाउनुहोस्) ....
४	औषधी व्यवस्थापनको लागि तपाईको स्वास्थ्य संस्थामा काम गर्ने कर्मचारीको योग्यता के हो ?	क) फार्मासिस्ट ख) सहायक फार्मसिस्ट ग) स्टाफ नर्स घ) ए.एन्. एम. ङ) अन्य (खुलाउनुहोस्) ....
५	के यहाा भ्याक्सिन (vaccines) उपलब्ध छ ?	क) छ ख) छैन
६	यदि छ भने, कहाा संचय गरिएको छ ?	क) कोल्ड चेन ख) रेफ्रीजिरेटर ग) अन्य (खुलाउनुहोस्) ....

७	यदि रेफ्रीजिरेटरमा राखिएको छ भने कति तापक्रममा संचय गरिएको छ ?	.....
८	तपाईकोस्वास्थ्यसंस्थामारेफ्रीजेरेटरकोतापक्रमनाप्नेकुनैउपकरण छ ?	क) छ ख) छैन
९	रेफ्रीजेरेटरको तापक्रम एकिन कसरी गर्ने गर्नु भएको छ ?	क) रेफ्रीजेरेटरको तापक्रम स्वीच हेरेर ख) अलग्गै थर्मोमिटर प्रयोग गरेर ग) गर्ने गरेको छैन घ) अन्य (खुलाउनुहोस) .....
१०	बिजुलि नहुदा वैकल्पिक श्रोतको व्यबस्था गर्नु भएको छ ? यदि छ भने खुलाउनुहोस् ।	क) छ ..... ख) छैन
	यदि छ भने, के सञ्चालन अवस्थामा छन् ?	क) छ ख) छैन
११	तपाईको स्वास्थ्य संस्थामा Narcotics र Psychotropic औषधि उपलब्ध छ ?	क) छ ख) छैन
१२	यदि छ भने तिनीहरुलाई कहाा संचय गर्नँ भएको छ ?	क) छुट्टै ख) अरु औषधिहरु सागै ग) अन्य (खुलाउनुहोस्) .....
१३	तिनीहरुको वितरण गर्दा रेकर्ड राख्नु भएको छ ?	क) छ ख) छैन
१४	औषधिको म्याद छोटो छ भने के गर्नु हुन्छ ?	क) विरामीलाई छिट्टै बाढ्ने ख) वितरकलाई पठाउने ग) फाल्ने घ) अन्य (खुलाउनुहोस) .....
१५	म्यादसकिनलागेकाऔषधिहरुकतिसमयबााकीहुादासम्मवितरण गर्ने गर्नुभएको छ ?	क) ? १ हप्ता ख) १ हप्ता - १५ दिन ग) १५ दिन - १ महिना घ) > १ महिना ङ) अन्य (खुलाउनुहोस) .....
१६	भण्डारमा आगो निभाउने साधनको व्यबस्था गर्नँ भएको छ ?	क) छ ख) छैन

१७	भण्डार कोठाको सरसफाई कति समयमा गर्नँ हुन्छ ?	क) दैनिक ख) हप्तामा एक पटक ग) महिनामा एक पटक घ) फोहोर भएपछि मात्र ङ) गर्ने गरेको छैन

Observation checklist

१	संचित औषधि सुर्यको प्रत्यक्ष किरण पर्ने गरी संचय गरिएको छ ?	क) छ	ख) छैन
२	संचित औषधि ओशबाट जोगिने गरी संचय गरिएको छ ?	क) छ	ख) छैन
३	संचित औषधि अत्याधिक तापबाट जोगिने गरी संचय गरिएको छ ?	क) छ	ख) छैन
४	औषधि संचित गरेको कोठामा हावा आवत जावत हुने खालको छ ?	क) सफा ख) फोहोर ग) ठिकै	
५	भण्डार कोठाको सरसफाईको अवस्था कस्तो छ?	क) छ	ख) छैन
६	भण्डार कोठाको तापक्रम कति छ ?		
७	भण्डार कोठाको आद्रता कति छ ?		
८	Narcotic र Psychotropic औषधिको लागि छुट्टै रेकर्ड राख्ने व्यबस्था छ ?	क) छ	ख) छैन
९	Narcotic र Psychotropic औषधिलाई छुट्टै बन्द गरेर राख्ने व्यबस्था गरिएको छ ?	क) छ	ख) छैन
१०	म्याद नागेका औषधिहरु अलग गरिएको छ ?	क) छ	ख) छैन

तथ्याङ्क सङ्कलकको नाम .....

हस्ताक्षर .....

Nepal Health Research Council (NHRC)
Ramshah Path, Kathmandu, Nepal
Tel : +977-1-4254220
Fax : +977-1-4262469
E-mail : nhrc@nhrc.gov.np
Website : www.nhrc.gov.np