Prescription Audit

Guidelines

सत्यमेव जयते

NATIONAL HEALTH MISSION
राष्ट्रीय स्वास्थ्य मिशन

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SECTION 1

Introduction

Background

Irrational prescribing is a global problem. The emerging data reveal that prescribing errors are common and can affect between 4.2 to 82% of the prescriptions[1]. Such errors can result inadverse event, unsafe treatment,additional cost of treatment, inefficient use of resources, and irrational medicine use. Almost 4 in 1000, prescriptions have errors that have the potentialsto cause adverse effects[2]. A study done by Bates *et al.* to assess adverse medicine events found that 28% of adverse medicine events are preventable. The study has concluded that 56% of such preventable adverse events occurred at the stage of prescription ordering[3].

Prescription errors can result from an individual as well as system-related factors. Prescription errors are typically events that derive from slips, lapses, or mistakes, such as writing a higher or lower dosethan the correct one. Factors related to patients can also result in errors and adverse effects, such ashistory of allergy and non-adherence to instructions. Therefore, detecting such errors is the first crucial step in building safer systems and preventing adverse events. A systemic analysis of prescriptions can detect these errors through the prescription audit. Once opportunities for improvement are

1. The Pursuit of Responsible use of Medicines: Sharing and Learning from Country experiences, World Health Organization 2012.
2. Ross S, Bond C, Rothnie H, Thomas S, Macleod MJ. What is the scale of prescribing errors committed by junior doctors? A systematic review. British Journal of Clinical Pharmacology 2009 Jun.
3 Velo GP, Minuz P. Medication errors: prescribing faults and prescription errors. British Journal of Clinical Pharmacology 2009.

identified; set priorities, timelines and actions to mitigate the occurrence of prescriptions and ordering errors.

What is Prescription Audit

A prescription audit is a part of the holistic clinical audit and is a quality improvement process that seeks to improve patient care and outcomes through a systematic review of care against explicit criteria and the implementation of change[4].

Importance of conducting Prescription Audit

Prescription audit is a facility level review exercise, conducted periodically, for reviewingthe facility's prescriptions. It helps in assessingthe extent of OPD patient-related information as recorded on the prescriptions, prescribing habits of clinicians, appropriateness of medicine usage and its availability, drug dispensing practices and workload of the dispensary. Prescription audit is an improvement activity, and if regularly done, it ensures that the patients receive high-quality care, which is equitable, cost-effective and effecient[5].

Pre-requisites for Prescription Audit

1. Prescription Format

Generation of correct prescription format with patient's details is one of the non-negotiable requisites before initiating the prescription audit. Attributes and characteristics of a right prescription attached as **Annexure - A** and **Annexure - B**, respectively.

Typed or electronic Prescriptions are most suited for prescription audits. It is possible only at health facilities having functional HMS (Hospital Management System) with the facility of generating electronic

4. National Institute for Clinical Excellence (NICE): Principles for Best Practice in Clinical Audit. Oxford: Radcliffe Publishing; 2002.
5. Ahsan M, Shaifali I, Mallick AK, Singh HK, Verma S, Shekhar A. Prescription auditing based on World Health Organization prescribing indicators in a teaching hospital in North India. Int J Med Res Rev. 2016; 4: 1847–52.

prescriptions. Electronic prescriptions make random selections and analysis of prescriptions easy.

The next best option is to have a prescription in three copies. The first copy is handed over to the patient, and pharmacist retains a second copy and a third copy for the auditing.

2. EML (Essential Medicine List)

Essential Medicines List (EML) for different levels of facilitiesand provisioning of the medicines as per EML are essential for robust prescription audits. EMLs are required to be reviewed biennially through a consultative process involving all stakeholders. The states may establish a standing mechanism for such review of the EMLs.

3. State-specific Standard Treatment Guidelines and Policy on Medicine Usage

Having Standard Treatment Guidelines (STGs) for common clinical conditions and case management according to STGs ensures equitable and safe care as per current protocols, minimises errors and negligence and brings down care costs.Such efforts can be furtherstrengthened by developing an appropriate antibiotic policy, which will go a long way in reducing irrational use of antimicrobials and healthcare-associated infections (HAI).

4. Understanding of Audit Philosophy

One of the prescription audit's core principles is that it is not a 'fault-finding exercise' but a 'fact-finding exercise'.The emphasis is not on 'who went wrong', but on identifying 'why did it happen' in terms of system's problem; and 'what can be done to prevent its recurrence and bring about the improvement'. Therefore, it becomes important that the prescription audits are conducted in a candid and transparent environment with no "fear" of punitive actions.

5. Standardize Prescription

It is often observed that the prescription, especially at public health facilities are available in different shapes and sizes. They encompass a whole range -

from the use of plain paper, self-developed formats, formats supplied by the state government, local pharmacy stores, or charitable organizations. It is not possible to conduct a meaningful 'Prescription Audit' without a standard prescription.

Objectivesof Prescription Audit

- To assess the extent of irrational prescribing.
- Detection of prescribing errors with their reasons.
- To reduce the irrational usage of antibiotics, syrups, injections, etc.
- To identify opportunities for the improvement and developing benchmarks at the facility level, district, state and national.
- To channelize the good practice of writing complete, legible and rational prescriptions by the service providers.

Expected Outcomes

These guidelines intend to guide the health facilities in conduct of prescription audit and thereby helps to:

- Assist public healthcare providers to analyse and interpret the results of Prescription audits and provide feedback to the service providers.
- Improve prescription quality at public health facilities.
- Promote the rational use of drugs.
- Reduce prescription errors and thus improves patient safety.
- Reduce the cost of treatment by reducing unnecessary prescriptions (e.g. Antibiotics), efficient use of therapeutic agents, encouraging generic medicines, and reducing polypharmacy.
- Improving Quality of Care (QoC).

Target Users

These guidelines are meant to be used atPrimary and Secondary care public health facilities providing Out-Patient Services,at District Hospitals (DHs), Sub-divisionalHospitals (SDHs), Community Health Centres (CHCs), Primary Health Centres (PHCs), etc. Authorised personnel's prescriptions would be used for the Prescription audit except medicines given under the National Health Programmes.It will be prudent to exclude the prescriptions of medico-legal cases.

Prescriptions, written for the admitted patients, are examined at time of conduct of medical audit, which also looks at the full range of care provided within the health facility.

How to Conduct Prescription Audit
A Step-by-Step Methodology

SECTION II

Prescription Audit Methodology

Acquisition of information about error in the prescription order is a pre-requisite for preventing a cascade of errors that possibly could lead to an adverse event. The auditing process is a cyclical activity of reviewing prescriber's practice of writing prescription order and refining practice to remedy identified deficiencies and measure the outcomes against agreed audit criteria.

General principles of conducting prescription audit

Following principles should be followed while conducting audit:

- Outcome under prescription audit need to be measured against pre-defined prescribing indicators. Minimum required indicators are given in **Annexure - D.** As the audit system matures, certain other indicators could be added. For further information on the indicators, WHO's 'Core Prescribing Indicators' may be referred to.
- The healthcare facility provides the administrative and clinical support required to conduct the prescription audit.
- Prescription audit engages with clinical as well as non-clinical stakeholders.
- The target sample should be representative of OPD patients to generate meaningful results.
- The data collection process is robust.

- The data are analysed, and the results reported to maximise the impact of the audit.
- An action plan is developed and implemented to take forward any recommendation made.
- The prescription audit is a cyclical process that demonstrates that improvement has been achieved and sustained through re-audit.

Audit Criteria

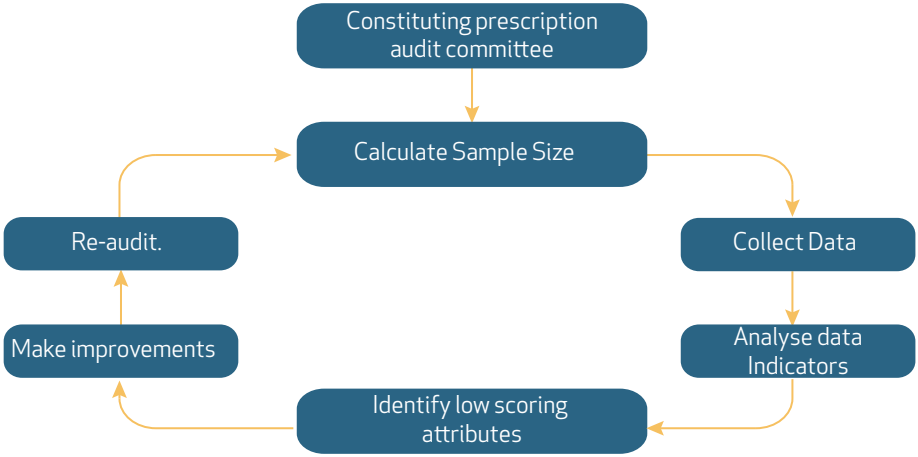
Within prescription audit, criteria are used to assess the quality of care objectively. As defined by the *Institute of Medicine 1992*, criterion is a systematically developed statement that can be used to assess the appropriateness of specific healthcare decisions, services, and outcomes. A facility can set their own audit criteria based on certain guiding principles as mentioned below:

- Describing the definition of prescribing indicators for audit.
- Criteria should identify the required or desired state or expectation concerning the national and state health policies and programmes.
- Set the benchmarks against which performance is compared or evaluated.
- Criteria must provide a context for evaluating evidence and understanding the findings, conclusions, and recommendations in the audit report.
- Compare the indicators and track the percentage improvement made quarterly.

Frequency of Prescription Audit

Ideally, prescription audit should be conducted every month, more so at bigger facilities having multiple specialities and reasonable utilization of services. For small healthcare facilities (like UPHCs, PHCS, HWCs, etc.), prescription audit may be conducted quarterly, i.e. every three months.

Figure 1: Overview of Prescription Audit Methodology



STEP 1: Constituting Prescription Audit Committee

All relevant service providers providing care to the patients should be allowed to contribute to the prescription audit. Audit Committee is part or subcommittee of the 'Medicines and Therapeutic Committee'. As most clinical practice involves multi-professional teams, the prescription audit committee should cover the practice of the different clinical and managerial disciplines. Everyone must be aware of the aims of the audit and their role in it. The specific responsibilities of all those involved should be clarified and agreed before the audit starts.

An audit committee may be constituted at different levels, i.e. DH, SDH, CHC, and PHC. Suggested members of the Audit Committeeat DH/SDH and CHC may include:

- Hospital In-charge (MS/CMO) (overall Responsibility).
- Hospital Administrator/Manager (wherever available, for conducting and analysing Prescriptions' findings).
- One Clinician from each department.
- In charge Nursing Services/Matron.
- Chief Pharmacist/Senior most pharmacists managing dispensary and Medical Store.

However, in small healthcare facilities like UPHCs, PHCs and HWCs- Medical Officer, Pharmacist, and one senior nurse may be part of the Audit Committee. In such facilities, basic details of prescription order (like name of the patient, age, sex, OPD no., etc.) can be collated and analysed by the facility's pharmacist.Specific details (like antibiotics prescribed, medicines prescribed as per STGs, no medicines given, etc.) can be audited through peer review by another Medical Officer of neighbouring health facility. Alternatively, scanned copies of minimum 30 prescriptions can be sent to District Quality Assurance Unit (DQAU) for review.

STEP 2: Calculatesample Size

Adequate sample size is essential for the audit and meaningful evaluation of prescriptions. The sample (prescriptions selected for audit) should be representative of the total OPD attendance. Calculating sample size may be a cumbersome process. For ease of calculation, asample size calculator is provided below with the Margin of Error (-10%) and Confidence Level (95%). Facilities having resources may aspire for calculating sample size on -5% margin of error.

Table 1: Sample Size Calculator for Prescription Audit

Population (OPD attendance)	Sample Size (No. of Prescriptions to be audited)
	Margin of Error -10%; confidence level 95%
10	9
20	17
50	34
100	50
200	66
300	73
500	81
1000	88
3000	94

Population (OPD attendance)	Sample Size (No. of Prescriptions to be audited)
	Margin of Error -10%; confidence level 95%
5000	95
10,000	96
15,000	96
20,000	96
30,000	96
50,000	96
1,00,000	96

Prescribing Indicators

The Performance of the health care providers related to the appropriate use of drugs, can be accessed by analysing the different prescribing indicators. Prescribers can only treat patients in a rational way if they have access to essential medicinesas per approved list and such list is based on the current clinical practices and evidences.

World Health Organization (WHO) has established ***"core prescribing indicators"*** for analysis of the prescriptions, and promotion of rational use of medicines. These indicators have been broadly classified into following three categories:

a) Prescribing Indicators

b) Patient Care Indicators

c) Facility Indicators

Detailed list of core prescribing indicators isgiven at **Annexure - C**.

Aforementioned core prescribing indicators do not provide information on recording the patient's demographic details, clinical details, legibility of notes, etc. Hence, following indicators are expected to be recorded in undertaking analysis of prescriptions, so as to cover all dimensions

of prescription-writing in terms of patient's & prescriber's details and indicators related to the legibility & rationality of prescription.

Indicators for Completeness of the Prescription

Completeness of the prescription can be assessed, and scores are given for each component of the prescription and its correctness, as given below:

- Patient details- name, age, sex, address, reported allergy, Date of consultation/registration in OPD date.
- Diagnosis or description of the health problem.
- Medicine information- dosage forms, name of medicines prescribed in full or abbreviation, strength of formulation, dose, advisory (before/after food, at bedtime, etc.) duration of therapy, medicine interactions.
- Non-pharmacological treatment description.
- Signature and information about the prescriber– doctor's name, qualification, registration no.

Indicators for Legibility and Rationality of the Prescription

- Percentage of prescription with legible handwriting.
- Percentage of prescription where medicines prescribed are in line with STG.
- Percentage of prescription where allergies are mentioned.
- Percentage of prescription with brief history written.
- Percentage of prescription with provisional or Final Diagnosis
- Percentage of prescription where salient features of clinical examination are recorded.
- Percentage of prescription where schedule/Dosages are written.
- Percentage of prescription with Vitamins, Tonics, or Enzymes.
- Percentage of prescription wherein Antibiotics are prescribed as per Hospital Antibiotic Policy.

- Percentage of prescription with prescribed injections.

STEP 3: Data Collection

After calculating the sample size, prescriptions should be randomly selected for meaningful analysis.Simple random sampling techniques may be used. Half of the sample should be taken from the first two weeks and remaininghalf of the sample is drawn from the subsequent two weeks of a month. The Pharmacist/Nurse/Hospital Manager may be assigned the responsibility of collecting the sample prescriptions.

A Prescription audit template for data collection is given at **Annexure - D**. All the facilities may follow this format. However, the states have the flexibility to make any changes (addition/deletion/modification) in the attributes as per the state's policy after approval of the State Quality Assurance Committee (SQAC). Audit template encompasses following details:

- **OPD Registration Number mentioned:** A Unique Health Identification Number (UHID) is given to each patient.
- **Complete Name of the patient is written:** It should have first, middle (if have) and last name of the patient written on the prescription.
- **Age:** It should be writtenin years (≥ 5 in years) in case of < 5 years (in months).
- **Weight in Kg:** Weight of paediatric patients need to be recorded up to two points after the decimal. Weight of low birth weight neonates needs to be recorded in grams.
- **Date of consultation:** In the format(day/month/year).
- **Gender of the patient:** Male/Women/Others.
- **Legibility:** Prescription should be written in Capital letter for clear understanding of the pharmacist.
- **Brief history written:** For dispensing of correct and proper medication to the patient.
- **Allergy status mentioned:** Mention abouta drug that has caused allergy/side effects/unexpected outcome.

- **Salient features of Clinical Examination recorded:** It includes Temperature, Pulse, Blood Pressure, Respiratory rate, etc.
- **Presumptive/definitive diagnosis written:** For dispensing of correct and proper medication to the patient.
- **Medicines prescribed are in line with STG or as per National/State programme guidelines.**
- **Medicines are prescribed by generic names:** Medicines are not prescribed by brand/trade name.
- **Medicine schedule/doses/duration of treatment clearly written:** Write the quantity of tablets/capsules/liquid & number of times the medicine needs to be taken.
- **Date of next visit (review) writtenwith follow-up instructions:** Oral instructions to be followed by the patient are written on the prescription.
- **In case of referral, the relevant clinical details and reason for referral given:** It should include the name of the referral health facility, department referred to, name of the doctor/speciality to be visited, along with the detailed reason for referral.
- **Prescription duly signed (legibly):** Signed by consulting doctor along with the stamp marked to confirm the authenticity of prescription and to avoid misuse of blank prescription.
- **Medicines Prescribed are as per EML/Formulary:** Medicines advised are available in the dispensary.
- **Vitamins, Tonics or Enzymes prescribed:** Must be in line with the standard treatment guidelines.
- **Antibiotics prescribed:** Antibiotics are prescribed as per facility's Antibiotic Policy.
- **Investigations advised:** Must be in line with the standard treatment guidelines.
- **Injections prescribed:** Exclude immunization injections.
- **Number of medicines prescribed:** To avoid polypharmacy, as per WHO average no of drugs prescribed is expected to vary from 2 to 2.9 in

a general OPD. However, number of drugs per prescription would increase at health facilities, taking care of senior citizens.

STEP 4: Data Analysis

Detailed analysis is required to understand the prescription practices, identification of the bottlenecks and opportunities for improvement. Once the calculated number of prescriptions have been received, all 26 attributesneed to be written in a tabular form.Afterward, each prescription is evaluated against these attributes in the form of observed response as 'YES' or 'NO'. The collected information is then transferred into an excel sheet to get a comprehensive view of prescription practices, indicators' calculation, gap identification, and best practices.

Let us understand it with an example,on a sample of 5 prescriptions (Table 2). Each prescription is evaluated against attributes of the prescription audit tool and has been put in a table. Following this, two lowest-performing attributes have been identified to prepare an action plan with a defined timeline.

As mentioned in table 2, all 26 attributes can be categorised into positive or negative indicators for further action. Out of 5 analysed prescriptions, top 5 areas of concern were: (100%) had the injections prescribed, and (20%) had the medicines prescribed as per EML/formulary. Handwriting was legible in capital letters in 20% of prescriptions. None of the prescription had prescribed medicationsin generic name and not in line with STGs. Based on the findings and suggestive recommendations, an action plan should be prepared for taking corrective and preventive measures (as described in section-III) to improve the identified opportunities. A representative reporting format is attached as **Annexure - D.**

Table 2: Data Analysis and Calculation of Indicators

S.No.	Criteria	P1	P2	P3	P4	P5	Indicator
1	OPD Registration Number mentioned?	Y	Y	Y	Y	Y	% of prescription with OPD Registration Number
2	Complete Name of the patient is written?	Y	Y	Y	N	Y	% of prescription with Complete Name of the patient
3	Age in years (≥ 5 in years) in case of < 5 years (in months)	N	Y	Y	Y	Y	% of prescription with correct age of the patient.
4	Date of consultation - day/month/year	Y	Y	Y	Y	Y	% of prescription with date
5	Gender of the patient	Y	Y	Y	Y	Y	% of prescription with sex of the patient.
6	Handwriting is Legible in Capital Letters	N	N	N	N	Y	% of prescription with legible handwriting, preferably in Capital letters.
7	Brief history Written	Y	Y	N	N	N	% of prescription with Brief history Written
8	Allergy status mentioned	Y	Y	Y	N	N	% of prescription Allergy status mentioned
9	Salient features of Clinical Examination recorded	N	Y	N	Y	Y	% of prescription with Salient features of Clinical Examination
10	Presumptive / definitive diagnosis written	N	N	Y	Y	Y	% of prescription with Presumptive / definitive diagnosis
11	Medicines are prescribed by generic names	N	N	N	N	N	% of prescription with medicines in Generic names
12	Medicines prescribed are in line with STG	N	N	N	N	N	% of prescription with medicines prescribed in line with STG
13	Medicine Schedule/ doses clearly written	N	Y	Y	Y	Y	% of prescription with clearly written medicine Schedule/ doses

	Formula	Calculation
	No. of Prescriptions with OPD registration/No. of prescription audited. X 100	5/5 X 100= **100%**
	No. of prescription with Complete Name of the patient/No. of prescription audited. X 100	4/5 X 100=**80%**
	No. of prescription with correct age of the patient. /No. of prescription audited. X 100	4/5 X 100=**80%**
	No. of prescription with date/No. of prescription audited. X 100	5/5 X 100=**100%**
	No. of prescription with sex of the patient. /No. of prescription audited. X 100	5/5 X 100=**100%**
	No. of prescription with legible handwriting. /No. of prescription audited. X 100	1/5 X 100=**20%**
	No. of prescription with Brief history Written/No. of prescription audited. X 100	2/5 X 100=**40%**
	No. of prescription Allergy status mentioned/No. of prescription audited. X 100	2/5 X 100=**40%**
	No. of prescription with Salient features of Clinical Examination/No. of prescription audited. X 100	3/5 X 100=**60%**
	No. of prescription with Presumptive / definitive diagnosis/No. of prescription audited. X 100	3/5 X 100=**60%**
	No. of prescription with medicines in Generic names/No. of prescription audited. X 100	0/5 X 100**=0%**
	No. of prescription with medicines prescribed in line with STG/ No. of prescription audited. X 100	0/5 X 100=0%
	No. of prescription with clearly written medicine Schedule/ doses/No. of prescription audited. X 100	3/5 X 100=**60%**

S.No.	Criteria	P1	P2	P3	P4	P5	Indicator
14	Duration of treatment written	N	Y	Y	Y	N	% of prescription with duration of treatment.
15	Date of next visit (review) written	N	Y	Y	Y	N	% of prescription with date of next visit
16	In case of referral, the relevant clinical details and reason for referral given	NA	NA	N	Y	Y	% of prescription with details and reasons of referral.
17	Follow-up advise and precautions (do's and don'ts) are recorded	Y	Y	Y	Y	N	% of prescription with follow-up advise
18	Prescription duly signed (legibly)	Y	Y	Y	N	Y	% of prescription duly signed.
19	Medicines Prescribed are as per EML/Formulary	N	N	N	N	Y	% of prescription with medicines prescribed from EML
20	Medicines advised are available in the dispensary	Y	Y	Y	Y	Y	% of prescription with medicines available in dispensary.
21	Vitamins, Tonics or Enzymes prescribed	N	N	N	Y	Y	% of prescription with Vitamins, Tonics or Enzymes.
22	Antibiotics prescribed	Y	Y	Y	Y	Y	% of prescription with antibiotics
23	Antibiotics are prescribed as per facility's Antibiotic Policy	Y	Y	Y	N	N	% of prescription with Antibiotics as per Antibiotic Policy
24	Investigations advised	Y	N	N	Y	Y	% of prescription with investigations
25	Injections prescribed	Y	Y	Y	Y	Y	% of prescription with injections
26	Number of Medicines prescribed	6	4	10	7	8	Average no. of medicines/ prescription

	Formula	Calculation
	No. of prescription with duration of treatment. /No. of prescription audited. X 100	3/5 X 100=**60%**
	No. of prescription with date of next visit/No. of prescription audited. X 100	3/5 X 100=**60%**
	No. of prescription with details and reasons of referral/No. of prescription audited. X 100	2/3 X 100=**33.3%**
	No. of prescription with follow-up advise/No. of prescription audited. X 100	4/5 X 100=**80%**
	No. of prescription duly signed. /No. of prescription audited. X 100	4/5 X 100=**80%**
	No. Prescription with medicines prescribed from EML/ No. of prescription audited. X 100	1/5 X 100=**20%**
	No. of prescription with medicines available in dispensary/No. of prescription audited. X 100	5/5 X 100=**100%**
	No. of prescription with Vitamins, Tonics or Enzymes. /No. of prescription audited. X 100	3/5 X 100=**60%**
	No. of prescription with antibiotics/No. of prescription audited. X 100	5/5 X 100=**100%**
	No. of prescription with Antibiotics as per Policy /No. of prescription audited. X 100	3/5 X 100=**60%**
	No. of prescription with investigations/No. of prescription audited. X 100	3/5 X 100=**60%**
	No. of prescription with injections/No. of prescription audited. X 100	5/5 X 100=**100%**
	Total no. of medicines prescribed/Total no. of prescription audited	6+4+10+7+8/5; 35/5=**7**

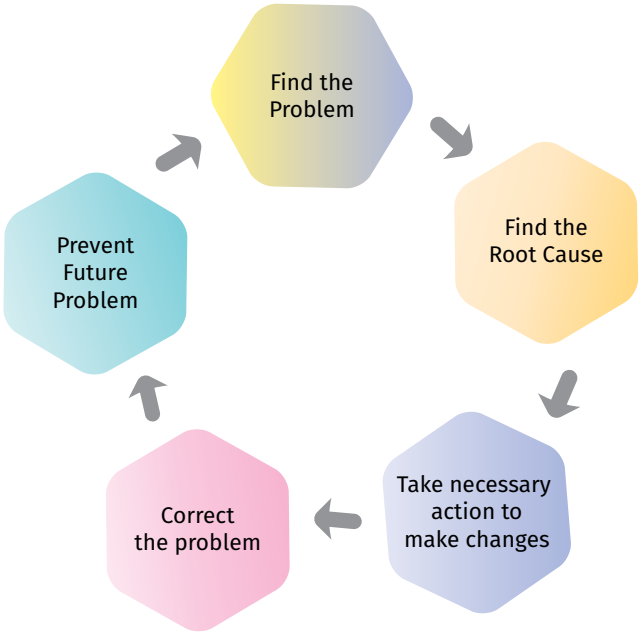
Improving Prescription Practices
The Quality Cycle

SECTION III

Overview of Quality Improvement Cycle for Prescription Audit

Aim of the prescription audit is to highlight the discrepancies between actual practice and standard practice, followed by identification ofchanges that need to improve the quality of care. An audit is a cyclical process to identify the problems, tracing the root cause for the occurrence of the problem followed by the preparation of an action plan to correct the problem. Every time an audit cycle is completed, there should be further improvement in patient care.

Figure 2: Overview of Quality Improvement cycle for Prescription Audit



STEP 1: Find the Problem

During data analysis, we try to identify the attributes withthe lowest scores of positive indicators and highest scores of negative indicators. These are the gaps or problem areas where actions for making improvement are immediately required. To begin with, we can select 2 or 3 problem areas at a point in time. Like in aforementioned example, reduce the number of injections prescribed and ensure that medicines prescribedare in line with Standard Treatment Guidelines (STG).

STEP 2: Find the Root Cause

Once we have identified the problem, the next step is to find the "Root Cause" of the problem. The objective here is to find the 'Root Cause' not the 'Obvious Cause'. Root causes usually fall into three categories:

- Knowledge is inadequate
- Skills are inadequate
- Attitudes are inappropriate

Following Quality Tools may be used to find the root cause of each of the problem:

(a) Brainstorming

Brainstorming is a very useful tool to come up with what the problems are and in finding possible solutions. Here all stakeholders are involved. First state the Gap/Problem statement. The goal is to come up with as many ideas as possible without stifling creativity and criticising. The thumb rules are:

- Every suggestion is documented
- Encourage all to participate
- Ensure a collaborative environment
- No answer is wrong

(b) Why-Why Analysis

Here First we state the problem and ask why it has occurred? Then we keep on asking why? Till we find the root cause. It may be noted that at each step, a most suited statement should be selected for further analysis.

STEP 3: Correct problem and make improvements

If we continue to do the same things in the same way, we will continue to get the same results we are getting. Hence, 'change' is of paramount importance for making improvements.

How do we introduce change to a process?

To implement a new intervention or change, we need to run 'Plan, Do, Check, Act' cycleas explained below:

Plan: Plan what you are going to do differently to make improvement- 'who, what, where and when'.

Do: Carry out the plan and collect information on what worked well and what issues need tackling.

Check: Analyse the information gathered and review the aim of the new intervention or change against what actually happened. Questions that need to be asked include the following:

- What worked and what didn't work
- What should be adopted, adapted or abandoned

Act: Use the new knowledge to plan the next phase of the PDCA cycle as per the measured outcomes. Agree the changes and amend the outcome measures, if necessary. If the intervention or change gives the desired result; next step is to implement the intervention. However, don't assume that a change can simply be rolled out. The first thing that comes with change is 'Resistance'. Following strategies can be used for overcoming resistance to change:

- Education and communication to all stakeholders
- Participation and involvement of implementers
- Facilitation and support to staff
- Explicit and Implicit Coercion (if, required)

STEP 4: Sustaining Improvements

This stage is critical to the successful outcome of an audit: it verifies whether the changes implemented have had an effect and determines whether further improvements are needed to achieve the standards.

Table 3: Examples of improvement process

Continuing with our example, a suggested improvement cycle will have the following key elements.

Find the Problem	Root Causes	Suggestive action plan for improvement
Medicines are not prescribed as per EML/ Formulary	**Brainstorming** 1. Knowledge- ➲ Absence of EML/ Formulary ➲ Non-availability of policy on medicines ➲ No access to up-to-date medicine information 2. Skill- ➲ Non-adherence to clinical protocols ➲ Lack of Continual Medical Education 3. Attitude- ➲ Old habits ➲ Vested interests	**PLAN:** Up-date existing EML/Formulary and make it accessible & available to the service providers. ➲ *Who:* Hospital administrator/ Manager/Pharmacist ➲ *What:* a) Display of EML at the pharmacy corner and patient's waiting room/ registration corner b) A hard copy of EML is circulated in the OPD room or to the service providers ➲ *Where:* OPD room, Pharmacy, Registration/ Waiting room ➲ *When:* one week **DO:** Carry out all the activities planned in the PLAN phase with the available resources ➲ Involve all clinicians from all specialties in the formulation and revision of medicines in EML. ➲ Put Draft EML on open forum inviting suggestions before finalizing EML. Also, provide a rationale for inclusion and exclusion of medicines. ➲ Share a copy of EML/Formulary in Dispensary and with all service providers **CHECK:** ➲ What worked (Adopt them) → Display of EML at pharmacy

Find the Problem	Root Causes	Suggestive action plan for improvement
		→ Availability of a copy of EML/ Formulary with all service providers ➲ What didn't work (Abandon them) → Display at waiting room/ registration **ACT:** Again, measure the % of prescription with medicines prescribed from EML and look for the improvement in the prescription practices *If, no improvement has occurred from the baseline-data, again run another PDCA cycle with new intervention/change.*
Medicines are not prescribed as per STG (Standard Treatment Guidelines)	Why-Why Analysis Medicines are not prescribed as per STG ↓ WHY Clinicians not aware of STGs ↓ WHY STGs are not available ↓ WHY Revised STGs are not available	**PLAN:** Up-date existing STGs and make it accessible & available to the clinicians. ➲ *Who:* Hospital administrator/Manager ➲ *What:* a) Share a copy of revised STG with all the clinicians b) Training of all clinicians on usage and importance of adherence with STGs ➲ *Where:* All clinical departments ➲ *When:* two weeks **DO:** Carry out all the activities planned in the PLAN phase with the available resources ➲ Share a copy of STG with all clinicians ➲ Involve all clinicians from all specialists in developing and revising Standard Treatment Guidelines. ➲ Put Draft STG on open forum inviting suggestions before finalizing STG. Also, provide a rationale for suggested treatments.

Find the Problem	Root Causes	Suggestive action plan for improvement
		➲ Sensitization, Orientation, Counselling and Trainings of Clinicians on STGs. **CHECK:** ➲ What worked (Adopt them) → Availability of a copy of STG with the clinicians → Sensitization, Orientation, Counselling and Trainings of Clinicians on STGs ➲ What didn't work (Abandon them) → **Not relevant** **ACT:** ➲ Again, measure the % of prescription with medicines prescribed in line with STGs and look for the improvement in the prescription practices *If, no improvement has occurred from the baseline-data, again run another PDCA cycle with new intervention/change.*

Follow-up Audit

When an audit cycle is run, there are findings which require preventive and corrective action. A follow-up audit should be performed on a quarterly basis to ensure that the improvement cycle is completed and identified gaps have been closed. Due to the paucity of time and scarcity of resources, follow-up audit is normally combined with the next scheduled prescription audit. The activities in this step are essentially the same as those explained in Section-II and Section-III.

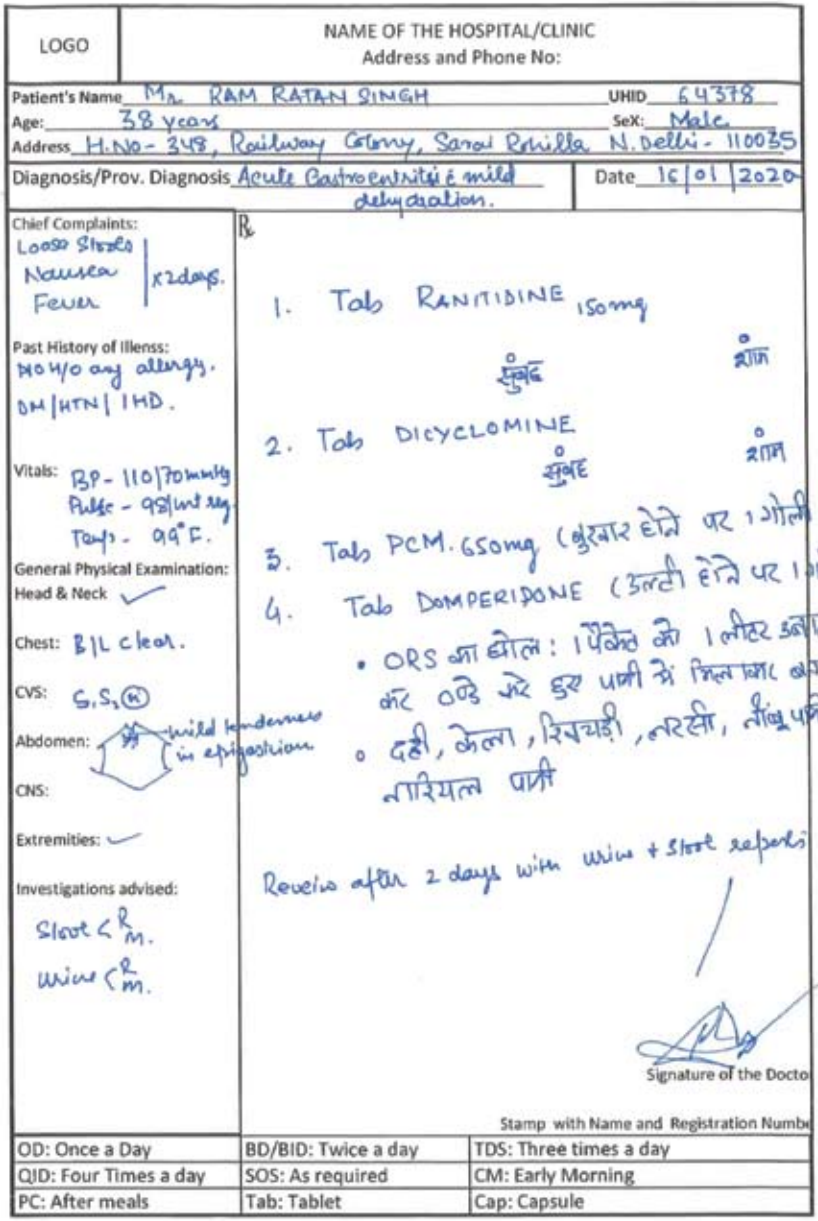
Annexures

Annexure - A

A good prescription should have the following details:

1. **Details of the Health Facility:** Name, Address, Logo, and Phone Number.
2. **Details of the Doctor:** Every prescription in the OPD will have a personal stamp of the prescribing doctor which would have his/her name and Registration Number.
3. **Details of the patient:** Name, Age, Sex, Weight, Address, Phone Number, and category if required (BPL, JSSK beneficiary, Freedom Fighter, Differently able, etc.)
4. **Clinical Details:** Heading and adequate space for:
   - Brief past medical history including history of Allergies
   - General Physical examination: BP, Pulse, Temperature, Chest, CVS, Per abdomen, CNS findings
   - Diagnosis/Provisional Diagnosis
   - Investigations
   - Prescription of medicines
   - Instructions, if any to be followed by the patient
   - Follow-up details

Figure 3: An example of a good prescription



LOGO

NAME OF THE HOSPITAL/CLINIC
Address and Phone No:

Patient's Name: Mr. RAM RATAN SINGH — UHID: 64378
Age: 38 years — Sex: Male
Address: H.No - 348, Railway Colony, Sarai Rohilla, N. Delhi - 110035
Diagnosis/Prov. Diagnosis: Acute Gastroenteritis & mild dehydration. — Date: 16/01/2020

Chief Complaints:
Loose Stools
Nausea
Fever
x2days.

Past History of Illness:
NKH/O any allergy.
DM/HTN/IHD.

Vitals: BP - 110/70mmHg
Pulse - 95/min reg.
Temp. - 99°F.

General Physical Examination:
Head & Neck ✓
Chest: B/L clear.
CVS: S.S.M
Abdomen: mild tenderness in epigastrium
CNS:
Extremities: ✓

Investigations advised:
Stool C/R/M.
Urine C/R/M.

℞

1. Tab RANITIDINE 150mg
   सुबह ० रात ०
2. Tab DICYCLOMINE
   सुबह ० रात ०
3. Tab PCM. 650mg (बुखार होने पर 1 गोली)
4. Tab DOMPERIDONE (उल्टी होने पर 1 गोली)

- ORS का घोल: 1 पैकेट को 1 लीटर उबाले ठंडे किए हुए पानी में मिलाकर बनायें.
- दही, केला, खिचड़ी, लस्सी, नींबू पानी नारियल पानी

Review after 2 days with urine + stool reports

Signature of the Docto

Stamp with Name and Registration Numb

OD: Once a Day	BD/BID: Twice a day	TDS: Three times a day
QID: Four Times a day	SOS: As required	CM: Early Morning
PC: After meals	Tab: Tablet	Cap: Capsule

Annexure - B

Characteristics of a Good Prescription

The right prescription is the right of the patient. The responsibility of a good prescription is not limited to the prescribing doctor. It is a joint and mutual responsibility of the doctor, pharmacist, andpatient. Doctors should prescribe a good, rational, scientific, cost-effective prescription. Pharmacists should follow it and communicate the information to users, in the language best understood.

Patient should also realize the rational use of medicines and shall not impose unnecessary demands for Injection, Tonics, Syrups, and Investigations.

A good prescription comprises of:

5. **Doctor's Details:** The Doctor's name, address is mentioned on prescription so that patient can contact the doctor in case of adverse effect, any emergency, or non-availability.

6. **Complete:** Prescription is complete in all respect of patient details: date, name, age, sex, address, weight-if needed, special instructions, and details of follow up.

7. **Legible:** As per 'Indian Medical Council, (Professional Conduct, Etiquette and Ethics) Regulations published in Part-III, Section 4 of the Gazette of India, dated 6th April 2002, it is notified by the Medical Council of India that "Every Physician should *prescribe medicines with generic names legibly and preferably in capital letters* and he/she shall ensure that there is a rational prescription and use of medicines".

8. **Abbreviations:** Latin abbreviations/directions for use are avoided. Instead, local vernaculars are used for understanding by the patients.

9. **Medicine Details:** Name of the medicines, dosage, form (injections, tablets, syrup, etc.), strength, frequency, and timings of medicines with meals, duration, route of administration are specified and informed.

10. **Generic Names:** Prescription is by generic names only.

11. **Spacing between medicine and its strength:** Give space between medicine and strength as no space may be misread (e.g. Atenolol 10 mg can be misread as Atenolol110 mg).

12. **Diagnosis:** Brief history, provisional diagnosis, and important findings are mentioned.

13. Advice: Supportive advice and investigations are mentioned.

14. **Use of Symbols and Abbreviations:** Avoid error-prone symbols and Abbreviations to the extent possible:

    - Do not use symbols like '>' and '<'
    - Do not abbreviate 'microgram' and 'nanogram' since the abbreviated form 'µg' is very easily misread as 'mg', a 1000-fold overdose.
    - The strength of the medicine should be stated in Standard units using abbreviations that areconsistent with SI (system international) units. "Micrograms" and "Nanograms" should not be abbreviated since abbreviation form "g" is very easily misread as "mg", a 1000-fold overdose.
    - Do not abbreviate 'units' as U since handwritten abbreviated form ('U') can be misread as '0 or 4'.
    - Don't use abbreviations such as 'D/C' for discontinue, 'TCA' for 'to come again', 'CST' for continue same treatment, or discontinue 1, 2, 5, rest to continue, etc.

- Errors due to mix-ups between numbers and alphabets: 'l' & '1'; 'O' & '0,'; 'Z' & '2,'; '1' & '7.' Q1d can easily be mistaken for QID leading to four times the dose.
- Abbreviations/acronyms for medicine name should not be used example PCM (paracetamol), CPM (chlorpheniramine), CPZ (chlorpromazine), carbamazepine (CBZ), chlorpromazine (CPZ), Trihexyphenidyl (TFT) and TFP (Trifluoperazine)

15. **Use of '0' zero:** Leading zeroes should be preferred (e.g. 0.25 mg). Trailing zeros should not be used e.g. 5.0 mg)

16. **Instructions:** Any special instruction like methods of administration (before/after food), unpleasant taste or drug interactions/side effects must be written on the prescription. If any instruction or advisory need to be followed by the pharmacist, then it should also be written in the prescription as a NOTE for pharmacist to avoid confusion.

17. **Chronology:** Chronology to be followed while prescribing medicines e.g.
    - Core Medicine, Supplementary Medicine, Symptomatic medicine or
    - Injections, Oral medicines (Tablets, Capsules, Syrups) Tropical medicines (Ointments, Drops, Creams)

18. Avoid stemmed medicine names

"Nitro' drip for nitro-glycerine can be mistaken as sodium nitroprusside infusion. "Norflox" for norfloxacin can be mistaken as Norflex (Orphenadrine)

Annexure - C

WHO Core Prescribing Indicators

These drug use indicators were developed to be used as measure of performance in three general areas related to the rational use of drugs

A. Prescribing indicators

- Average number of drugs per encounter
- Percentage of drugs prescribed by generic name
- Percentage of encounters with an antibiotic prescribed
- Percentage of encounters with an injection prescribed
- Percentage of drugs prescribed from essential medical list or formulary

B. Patient care indicators

- Average consultation time
- Average dispensing time
- Percentage of drugs actually dispensed
- Percentage of drugs adequately labelled
- Patients' knowledge of correct dosage

C. Facility indicators

- Availability of copy of essential drugs list or formulary
- Availability of key drugs

Annexure - D

Reporting format for prescription audit

(To be filled after each Audit Cycle-Monthly if audits are done once in a month or Quarterly if audits are done once every quarter)

Name of the Facility:

Month and Year of Audit (MM/YY):

Sample Size:Sampling Method:

Findings of Prescription Audit Template

S.No.	Criteria	Score inpercentage (%)
1	OPD Registration Number mentioned?	
2	Complete Name of the patient is written?	
3	Age in years (≥ 5 in years) in case of < 5 years (in months)	
4	Weight in Kg (only patients of paediatric age group)	
5	Date of consultation - day / month / year	
6	Gender of the patient.	
7	Handwriting is Legible in Capital letter	
8	Brief history Written	

S.No.	Criteria	Score inpercentage (%)
9	Allergy status mentioned	
10	Salient features of Clinical Examination recorded	
11	Presumptive / definitive diagnosis written	
12	Medicines are prescribed by generic names	
13	Medicines prescribed are in line with STG.	
14	Medicine Schedule / doses clearly written	
15	Duration of treatment written	
16	Date of next visit (review) written	
17	In case of referral, the relevant clinical details and reason for referral given.	
18	Follow-up advise and precautions (do's and don'ts) are recorded	
19	Prescription duly signed (legibly)	
20	Medicines Prescribed are as per EML/ Formulary	
21	Medicines advised are available in the dispensary	
22	Vitamins, Tonics or Enzymes prescribed?	
23	Antibiotics prescribed?	
24	Antibiotics are prescribed as per facility's Antibiotic Policy	
25	Investigations advised?	
26	Injections prescribed?	
27	Number of Medicines prescribed.	

Action Plan:

Problem identified (Attribute)	Root Cause	Actions to be taken	Responsibility	Evidence	Score in next audit

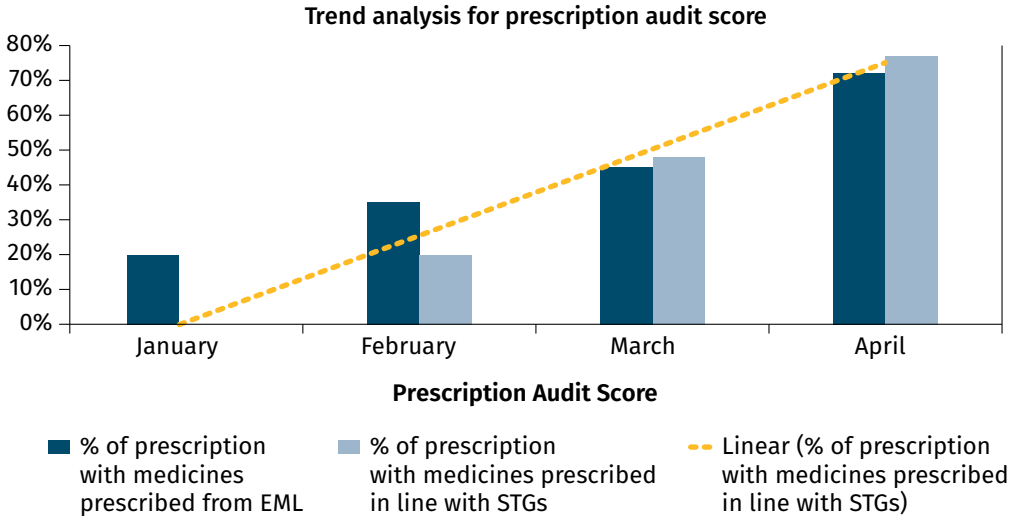
Evidence may be an Officer order, Guidelines or updated copy of guidelines, evidence of training conducted,photograph, record of meetings, etc.

Monitoring and Reporting:

At the time of data collection and analysis, plot all 26 attributes (table 2) in the form of a chart/graph. Afterwards, highlight the lowest scoring attributes for audit cycle to improve the score.Once the improvement cycle is planned, intervention has been implemented and new score is achieved in the next audit cycle. Conduct a trend analysis over period of time of low scoring attributes.Follow the below mentioned example:

Lowest scoring attribute	Prescription Audit Score			
	January	February	March	April
% of prescriptions with medicines prescribed from EML	20%	35%	45%	72%
% of prescriptions with medicines prescribed in line with STGs	0%	20%	48%	77%

Figure 4: Trend analysis over period of time (continued from our example)



Note

Note

Ministry of Health & Family Welfare
Government of India