



## A Prescription Audit Using the World Health Organization Recommended Prescribing Indicators in Dermatology Department of a Tertiary Care Hospital of Uttarakhand

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### ABSTRACT

**Introduction:** The irrational use of drugs is a global health problem, especially in developing countries. Irrational prescriptions have a bad effect on health as well as health-care expenditure. Prescription auditing is one of the tools to assess the quality of prescriptions, which in turn improves the quality of health care provided. The present study was conducted to investigate the rational use of drugs for completeness, legibility, and as per the World Health Organization (WHO)-recommended core drug use indicators in Dermatology department.

**Materials and Methods:** A cross-sectional, outpatient department-based study was carried out in dermatology department of Government Doon Medical College, Dehradun wherein 600 prescriptions were taken, irrespective of patient characteristics and diagnosis over a period of 3 months. All the prescriptions were analyzed for general details, medical details, and WHO core drug use indicators. The data was analyzed using the Microsoft Excel and SPSS version 28.

**Results:** Almost all the prescriptions had general details mentioned in it. An average of 3.46 drugs per encounter was prescribed. The diagnosis was mentioned in 90.57% of prescriptions, and 15.57% of drugs were prescribed by their generic name. 99.63% of the patients had correct knowledge of dose.

**Conclusions:** Our study highlights irrational prescriptions and the need to write rational prescriptions for quality improvement.

**Ethics Approval:** GDMC/IEC/2023/85

**Keywords:** Prescription audit, rational prescription, World Health Organization core indicators.

### INTRODUCTION

Prescription is a reflection of the quality of health-care service being given to the patient. Prescribing errors gives rise to irrational use of drugs and decrease the patient health care outcome.<sup>1</sup> Irrational prescriptions unnecessarily may spike the cost and duration of the treatment. It can also be responsible to the emergence of drug interactions, drug resistance, and adverse drug reactions which may increase the mortality, morbidity, and financial burden on the patient.<sup>2</sup>

The World Health Organization (WHO) stated, "The rational use of drugs requires that patients receive medication according to their clinical needs, in doses that meet their own individual requirement for an adequate period of time for the treatment of that particular disease and at the lowest cost to them and their family".<sup>3</sup> WHO has reported that around 50% of all medicines are irrationally prescribed, dispensed, or sold.<sup>4</sup> This has potential implications on health-care budgets as almost 25%–70% of worldwide health-care expenditure is spent on medicines.<sup>5</sup>

To make a standard criterion for the rational use of drugs, the WHO in collaboration with the International Network

for Rational Use of Drugs developed a set of "core drug use indicators." The indicators measure performance in three related areas that are prescribing practices, patient care, and facility-specific factors where we have taken prescribing indicators as a tool to evaluate our data. Prescribing indicators include the number of drugs prescribed per encounter, the percentage of drugs prescribed by generic name, the percentage of encounter by injection and antibiotics prescription, and the percentage of drugs prescribed from essential drug list (EDL).<sup>6</sup>

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 review of care against given criteria and the implementation of change.<sup>7</sup> Prescription auditing is also an educational activity, and if regularly done, can improve the prescription quality and thus enable the patient to receive best-quality care.<sup>8</sup>

This study was conducted to audit the quality of outpatient department (OPD) prescriptions at dermatology department of a Government Doon Medical College, Dehradun to investigate the rational use of drugs for



completeness, legibility, and against the WHO-recommended core drug use prescribing indicators.

**MATERIALS AND METHODS**

A cross-sectional, OPD-based study was carried out in a tertiary hospital of Dehradun after taking ethical clearance from the institutional ethics committee. The study was carried out over a period of 3 months from October 2022 to December 2022. A total of 600 outpatient prescriptions were taken, irrespective of patient characteristics and diagnosis.

All prescriptions were analyzed on the following parameters:

Prescription format and its completeness with regard to:

- General details (OPD registration number, name, age, sex, date of consultation, and legible handwriting)
- Medical attributes (history, examination, investigations, provisional/definite diagnosis, correct dose and dosage, duration of treatment, follow-up advice, referral details, precautions advised, legible signature).

The prescribing indicators from WHO core drug use indicators<sup>5</sup> are as follows which were assessed in this study:

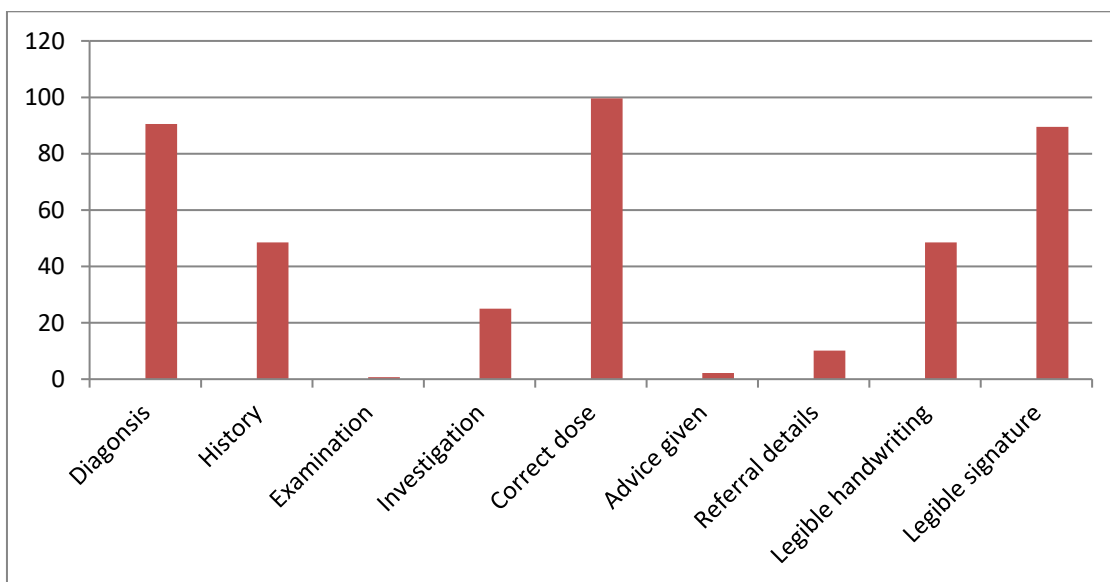
1. Prescribing indicators
  - Average number of drugs per prescription
  - Percentage of drugs prescribed by generic name
  - Percentage of prescriptions containing antimicrobial agents (antibiotics)
  - Percentage of injections per prescription
  - Percentage of drugs prescribed from the EDL.

The prescribing indicators of WHO core drug use indicators include five questions.

The data obtained were summed up and presented as percentages using the Microsoft Excel. The data were analyzed using SPSS version 28.

**RESULTS**

Among the 600 prescriptions analyzed, almost all of them had the general details, i.e., name, age, sex, and OPD registration number. Date of consultation was mentioned in 89.13% of prescriptions and only 48.55% had legible handwriting. In the medical parameter, diagnosis was mentioned in 90.57% of prescriptions. Out of 600 prescriptions, 25% had been advised investigations, and patient. Only 10.14% had mentioned reason for referral. Legible signature was found in 89.48% of prescriptions. [Figure 1].



**Figure 1:** Bar graph showing completeness of prescriptions

**Table 1:** The World Health Organization core drug use indicators

Core Drug use Indicators	Frequency/ percentage
<b>Prescribing indicators</b>	
Average number of drugs per encounter	3.46
Percentage of drugs prescribed by generic name	15.57
Percentage of encounters with an antibiotic prescribed	30.07
Percentage of encounters with an injection prescribed	13.04
Percentage of drugs prescribed from essential drugs list of hospital	99.63



An average of 3.46 drugs per encounter was prescribed. A total of only 15.57% of drugs were prescribed by generic name and 99.63% of prescriptions have at least one drug from EDL were. In the hospital, 23.75% of the prescribed drugs were actually from the hospital formulary. [Table 1].

## DISCUSSION

Prescription is an important documentation by the physician, and it is the ethical and legal duty of the practitioner to write complete, clear and legible prescriptions. In our study, we found that the date of prescription and patient's details (name, age, sex, and address) were complete in all the prescriptions. Study have found that patient details were usually incomplete in almost all prescriptions.[9] It is important to mention the accurate patient details for medicolegal purpose and also to ensure patient receives correct treatment for his/her ailment.

On analyzing the prescriptions, it was found that the prescriptions were incomplete with regard to history, examination, diagnosis, and investigations and many more. There could be various reasons like heavy OPD load, nonspecific complaints, or verbal communication by doctors, rather than writing in detail.

The prescriptions were incomplete with regard to follow-up advice, referral details, drug dosage, and direction of administration in some prescriptions. A large number of drugs are available in variable strengths and dosage forms and thus it poses problems for dispensing. This can also lead to issues such as treatment failure, antibiotic resistance, and adverse drug reaction which are related with underdosing or overdosing. Faulty dose, dose omission, and wrong duration were the most common types of prescribing errors found in many studies worldwide.[10,11,12]

The doctors are known for their illegible handwriting, and this can cause medication errors, dispensing of faulty drugs, and can lead to adverse drug reactions. In our study, we found that 48.55% of doctors had illegible handwriting. In our study, 89.49% of the prescriptions were duly signed by respective doctors. Given details are important to identify the prescribing doctor and validate the authenticity of prescriptions. To avoid such errors, the use of capital letters while prescribing drugs should be preferred and if possible moving to electronic prescribing system.

To study the drug use in health facilities, the WHO has recommended core prescribing indicators. These indicators aim to measure the performance of health-care providers in several areas related to rational use of drugs. These indicators have been developed by the WHO after carefully observing prescribing practices at health facilities for the treatment of various diseases.[6] The average number of drugs per consultation in our study was 3.46 drugs.[13] The motive of using this indicator is to measure polypharmacy, and the WHO recommends 2 drugs per encounter. Polypharmacy spikes the cost of health care for the patient and its family as well as government and it can also result in

adverse drug reaction due to drug–drug interaction. In our study, majority of the drugs were prescribed from the EDL.30.07% of prescriptions had an antibiotic prescribed which was almost close to what the WHO recommends (20%–25.4%).

The high prevalence of antibiotic prescriptions implies inappropriate use of antibiotics in other setting. Overprescription of antibiotics by health workers and overuse of antibiotics by public are leading to antibiotic resistance and thus making it difficult to treat common infectious diseases. There should be a concrete national action plan in place and regulation for rational use of antibiotics. To raise awareness among health care professionals, antimicrobial resistance should be made a part of their curriculum, and regular trainings and certifications like that used for biomedical waste should be carried out. General public should also be made aware to use antibiotics only when prescribed by certified doctors and not use over-the-counter prescriptions or use leftover antibiotics.

The prescription audit should be carried out at regular intervals in various outpatient departments of every hospital for rationalizing drug prescriptions and continuous quality improvement of any hospital.

## CONCLUSIONS

Our study emphasises the need to write rational prescriptions and adhere to the WHO standards for prescriptions for the quality improvement of hospitals.

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## REFERENCES

1. Fijn R, Van den Bemt PM, Chow M, De Blaey CJ, De Jong-Van den Berg LT, Brouwers JR, et al. Hospital prescribing errors: Epidemiological assessment of predictors. *Br J Clin Pharmacol.* 2002;53:326–31. [PMc free article] [PubMed] [Google Scholar]
2. World Health Organization (WHO) *Introduction to Drug Utilization Research.* OSLO: World Health Organization; 2003. [Google Scholar]
3. World Health Organization (WHO) *The World Medicine Situation.* Geneva: World Health Organization Press. World Health Organization; 2004. [Google Scholar]
4. World Health Organization. *The World Medicines Situation.* World Health Organization. [Last accessed on 2015 Jun 06]. Available from: <http://www.apps.who.int/medicinedocs/en/d/Js6160e/>
5. World Health Organization. *Measuring Medicine Prices, Availability, Affordability and Price Components.* 2008. [Last accessed on 2015 Mar 21]. Available from: [http://www.who.int/medicines/areas/access/OMS\\_Medicine\\_prices.pdf](http://www.who.int/medicines/areas/access/OMS_Medicine_prices.pdf).



6. World Health Organization. *How to Investigate Drug Use in Health Facilities: Selected Drug Use Indicators – EDM Research Series No 007*. 1993. [Last accessed on 2015 May 05]. Available from: <http://www.apps.who.int/medicinedocs/en/d/Js2289e/>
7. National Institute for Clinical Excellence (NICE): *Principles for Best Practice in Clinical Audit*. Oxford: Radcliffe Publishing; 2002. [[Google Scholar](#)]
8. 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. [[Google Scholar](#)]
9. Shelat PR, Kumbar SK. Analysis of outdoor patients' prescriptions according to world health organization (WHO) prescribing indicators among private hospitals in Western India. *J Clin Diagn Res*. 2015;9:FC01–4. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
10. Abidi A, Gupta S, Kansal S. Prescription auditing and drug utilization pattern in a tertiary care teaching hospital of western UP. *Int J Basic Clin Pharmacol*. 2012;1:184–90. [[Google Scholar](#)]
11. Seden K, Kirkham JJ, Kennedy T, Lloyd M, James S, McManus A, et al. Cross-sectional study of prescribing errors in patients admitted to nine hospitals across North West England. *BMJ Open*. 2013;3 pii: e002036. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
12. Kiekkas P, Karga M, Lemonidou C, Aretha D, Karanikolas M. Medication errors in critically ill adults: A review of direct observation evidence. *Am J Crit Care*. 2011;20:36–44. [[PubMed](#)] [[Google Scholar](#)]
13. Potharaju HR, Kabra SG. Prescription audit of outpatient attendees of secondary level government hospitals in Maharashtra. *Indian J Pharmacol*. 2011;43:150–6. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]

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