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IDEAL DRUG PRESCRIPTION WRITING

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INTRODUCTION

The prescription is one of the most important therapeutic transaction between physician and patient .The word 'prescription' derive from pre (before) and 'script' (writing written) which denotes that it is an order that must be written down before or for the prescription and administration of drug. Commonly the term prescription is used to mean an order to take certain medication. A prescription(Rx) is defined as a health care program implemented by a physician in the form of instruction that govern the plan care for an individual patient .the fact that a prescription instructs some one to 'tack' rather then 'give' make it clear that it is directed at the patient and is not directly an instruction to anyone else. Prescription writing is a crucial task and suggests prescriber's responsibility to wards the clinical care and the safe monitoring of the patient thus also carries legal implication. It is a written order for the medication to be used for diagnosis prevention and treatment of specific patient directed by physician. The art of prescription writing is ancient in origin and had complex prescriptions which were in latin, recently, it is being greatly replaced by English and the contemporary practices are more simplified and systematic.

The prescription symbol (Rx) currently in use is an ancient symbol which was established centuries ago. It signifies the specific latin verb *recipe* of the medication and the direction for taking it. Many historic stories are associated with prescription symbol which note its similarity to the eye of horus or to the symbol of zeus or for Jupiter and to various gods.

Objective of learning prescription writing

- To learn basic concepts writing, including terms and abbreviations.

- To be able to apply basic concepts in writing valid prescriptions as per guidelines.
- To encourage 'rational' use of drugs.
- To enhance understanding of use of medications in accordance with scientific knowledge.
- To know how to prescribe unusual dose regimens on a drug cheat and a controlled drug.
- To ensure that patient gets right medicine in right does.
- To get familiar with organization of physician's desk reference (PDR) to help in selecting medications.

Who can write prescriptions

The prescriber is not always a doctor or the dispenser is not always a pharmacist. National or local (i.e. state or provincial) legislation governs who can write a prescription. Only a registered medical practitioner who has registered with the respective State Council is authorized to prescribe allopathic drugs that include an allopathic doctor, a dentist, and a veterinarian. Some states stipulate that only a dentist can prescribe those classes of drugs directly involved in dental treatment. A nurse, pharmacist, unqualified persons or persons with dubious and unauthorized degrees, not recognized by the government as quacks are not authorized to recommend allopathic prescription medicines. In some countries, the clinical pharmacists, nurse practitioners, medical psychologists and physician assistants who have undergone specialized training in script-writing to prescribe drugs to treat emotional and mental disorders can prescribe medications. Doctors with full registration who hold a license to practice may prescribe all medicines, but not those drugs in Schedule 1 which includes drugs with high abuse potential and may lead to severe dependence such as heroin, marijuana, LSD, mescaline, Methaqualone , peyote and psilocybin.

Writing prescription

National or local (i.e. state or provincial) legislation governs who can write a prescription. In the United States, physicians (either M.D. and D.O.) have the broadest prescriptive authority. All 50 states and the District of Columbia allow licensed certified Physician Assistants (PAs) prescription authority (with some states, limitations exist to controlled substances). All 50 states allow registered certified nurse practitioners and other advanced practice registered nurses (such as certified nurse-midwives) prescription power (with some states including limitations to controlled substances). Many other healthcare professions also have prescriptive authority related to their area of practice. Veterinarians and dentists have prescribing power in all 50 states and the District of Columbia. Clinical pharmacists are

allowed to prescribe in some states through the use of a drug formulary or collaboration agreements. Florida pharmacists can write prescriptions for a limited set of drugs. In all states, optometrists prescribe medications to treat certain eye diseases, and also issue spectacle and contact lens prescriptions for corrective eyewear. Several states have passed Rxp legislation, allowing clinical psychologists (PhDs or PsyDs) who are registered as medical psychologists and have also undergone specialized training in script-writing to prescribe drugs to treat emotional and mental disorders. Chiropractors may have the ability to write a prescription, depending on scope of practice laws in a jurisdiction.

In August 2013, legislative changes in the UK allowed physiotherapists and podiatrists to have independent prescribing rights for licensed medicines that are used to treat conditions within their own area of expertise and competence.

Introduction to Good Prescribing: What constitutes good prescribing?

Barber stated that 'Drugs are the stronghold of medical treatment, yet there are fewreports on what constitutes "good prescribing" and the existing direction tends to imply that right answers exist, rather than recognizing the complex trade-offs that have to be made between conflicting aims'. There are four aims that a prescriber should try to achieve, both on first prescribing a drug and on subsequently monitoring it. They are: to maximize effectiveness, minimize risks, minimize costs, and respect the patient's choices. This model of good prescribing brings together the traditional balancing of risks and benefits with the need to reduce costs and the right of the patient to make choices in treatment.'The four aims are shown as a diagram plotting their commonest conflicts, which may be used as an aid to discussion and decision making:'

- Minimize risk
- Minimize cost
- Respect patient source

History

The idea of prescriptions dates back to the beginning of history. So long as there were medications and a writing system to capture directions for preparation and usage, there were prescriptions. Modern prescriptions are actually *extemporaneous prescriptions* (from the Latin *ex tempore* = at/from the time), meaning that the prescription is written on the spot for a specific patient with a specific ailment. This is distinguished from a non-extemporaneous

prescription that is a generic recipe for a general ailment. Modern prescriptions evolved with the separation of the role of the pharmacists from that of the physician. Today the term *extemporaneous prescriptions* is reserved for *compound prescriptions* that requires the pharmacist to mix or *compound* the medication in the pharmacy for the specific needs of the patient.

Predating modern legal definitions of a prescription, a prescription traditionally is composed of four parts: a *superscription*, *inscription*, *subscription*, and *signature*. The *superscription* section contains the date of the prescription and patient information (name, address, age, etc.). The symbol "℞" separates the superscription from the inscriptions sections. In this arrangement of the prescription, the "℞" is a symbol for *recipe* or literally the imperative "take!" This is an exhortation to the pharmacist by the medical practitioner, "I want the patient to have the following medication" – in other words, "take the following components and compound this medication for the patient."

The *inscription* section defines what is the medication. The inscription section is further composed of one or more of

- a basis or chief ingredient indended to cure (curare)
- an adjuvant to assist its action and make it cure quickly (cito)
- a corrective to prevent or lessen any undesirable effect (tuto)
- a vehicle or excipient to make it suitable for administration and pleasant to the patient (jucunde)

The *subscription* section contains dispensing directions to the pharmacist. This may be compounding instructions or quantities.

The *signature* section contains directions to the patient and is often abbreviated "Sig." or "Signa." It also obviously contains the signature of the prescribing medical practitioner though the word *signature* has two distinct meanings here and the abbreviations are sometimes used to avoid confusion.

Format and Definition

The format of a prescription falls in to seven parts. However, with modern prescribing habits, some are no longer applicable or included on an everyday basis. Definition: For such prescriptions to be accepted as a legal medical prescription, it needs to be filed by a qualified

dentist, herbalist, nurse, pharmacist, physician, veterinarian etc., which falls within their remit to prescribe such treatments. This is regardless of whether they included controlled substances or freely available over-the-counter treatments.

Prescriptions may be entered into an electronic medical record system and transmitted electronically to a pharmacy. Alternatively, a prescription may be handwritten on preprinted prescription forms that have been assembled into pads, or printed onto similar forms using a computer printer or even on plain paper according to the circumstance. In some cases, a prescription may be transmitted from the physician to the pharmacist orally by telephone; this practice may increase the risk of medical error. The content of a prescription includes the name and address of the prescribing provider and any other legal requirement such as a registration number (e.g. DEA Number in the United States). Unique for each prescription is the name of the patient. In the United Kingdom and Ireland, the patient's name and address must also be recorded. Each prescription is dated and some jurisdictions may place a time limit on the prescription. In the past, prescriptions contained instructions for the pharmacist to use for compounding the pharmaceutical product but most prescriptions now specify pharmaceutical products that were manufactured and require little or no preparation by the pharmacist. Prescriptions also contain directions for the patient to follow when taking the drug. These directions are printed on the label of the pharmaceutical product.

'℞' is a symbol meaning "recipe". It is sometimes transliterated as "R_x" or just "Rx". This symbol originated in medieval manuscripts as an abbreviation of the late Latin verb *recipere*, specifically the second person singular imperative form *recipe* meaning "take", thus: "take thou". Originally abbreviated *Rc*, the *c* was simplified and finally written as a straight stroke making it look like an *x* in combination with the right "leg" of *R*. Medieval prescriptions invariably began with the command to "take" certain materials and compound them in specified ways. Folk theories about the origin of the symbol '℞' note its similarity to the Eye of Horus, or to the ancient symbol for Zeus or Jupiter, gods whose protection may have been sought in medical contexts.

The word "prescription", from "pre-" ("before") and "script" ("writing, written"), refers to the fact that the prescription is an order that must be written down before a compound drug can be prepared. Those within the industry will often call prescriptions simply "scripts".

In certain states medical marijuana legislation has been drafted calling for a health care professional's written or oral "recommendation", in the belief that a written one would be legally distinguishable from a prescription, but since written advice to a patient is what a prescription is, that belief is mistaken. Jurisdictions may adopt a statutory definition of "prescription" that applies as a term of art only to the operation of that statute (see below about prescriptions that may legally be filled with prescription-only items), but the general legal definition of the word is this broad one.

Type of Prescribing

There are two types of prescribing based on approach of prescriber, one is Rational (Appropriate) and another approach is irrational (Inappropriate) prescribing.

Parts of the Presciption

The elementary requirements of a prescription are that it should state what is to be given to whom and by whom prescribed, and give instructions on how much should be taken how often, by what route and for how long or total quantity to be supplied.

1) Date
2) Address of doctor
3) Superscription {Symbol (Rx)}
4) Inscription or the name and dose of medication prescribed
5) Subscription or Dispensing direction to Pharmacist
6) Signature or Instructions for Patient
7) Signature of doctor

1) Date: Prescriptions are dated at the time they are written and also when they are received and filled in the pharmacy. The date is important in creating the medication record of the patient. The Date is also important to pharmacist infilling prescription of controlled substances. No Prescription order of controlled drugs may be dispensed or renewed more than 6 months after the date prescribed.

2) Address of doctor: It is important to write physician’s name, address, telephone number and Drug Enforcement Agency (DEA) number or Medical council registration number in India on prescription pads.

3) Superscription {Symbol (Rx**)}:** This is the symbol R generally is understood to be a contraction of the Latin verb recipe, meaning *take thou or you take.* The stroke after "R" is considered as an invocation to Jupiter. Jupiter is a god of healing. Sign of Jupiter employed as request for healing. Today, the symbol is representative of both the prescription and the pharmacy itself.

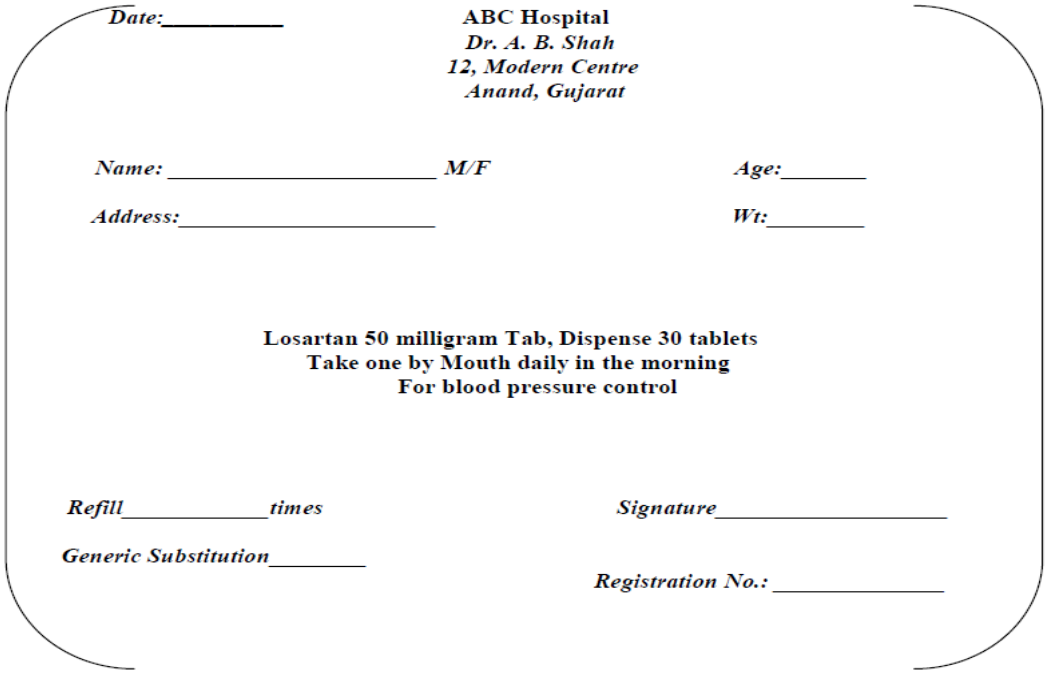
4) Inscription or the name and dose of medication prescribed: This is the body or principal part of the prescription order. It contains the name and quantities of the prescribed ingredients Today, majority of the prescriptions are written for medication already prepared or prefabricated into dosage forms by industrial manufacturers. The medications may be prescribed under their trademarked or manufactures proprietary name or by their nonproprietary or generic names. Pharmacists are required to dispense the trademarked products when prescribed, unless substitution of an equivalent product is permitted by the prescribing physician or by the state law. Prescription orders requiring the pharmacist to mix ingredients are termed compounding prescriptions. Prescriptions requiring compounding contain the names and quantities of each ingredients required. The names of the ingredients generally are written using the nonproprietary names of the materials, although occasionally proprietary names may be employed. Quantities of ingredients to be used may be indicated in the metric or apothecary system of weights and measures; however, the use of the apothecary system is diminishing. In the metric system the decimal point is often replaced by vertical line that may be imprinted on the prescription blank or drawn by the prescriber.

5) Subscription or Dispensing directions to Pharmacist: This part of the prescription consists of directions to the pharmacists for preparing the prescription. In majority of prescriptions, the subscription serves merely to designate the dosage form (as tablets, capsules, etc) and the number of dosage units to be supplied. Examples of prescription directions to the pharmacist are "make a solution," "mix and place into 30 capsules," or "dispense 30 tablets.

6) Signature or Instructions for Patient: The prescriber indicates the directions for the patient's use of the medication in the portion of the prescription called signature. The word, usually abbreviated signa or sig means mark thou. The directions in the signa commonly are written using abbreviated forms of English or Latin terms or a combination of each. Examples are Tabs ii q4h (Take two tablets every four hours) Caps I 4xd pc & hs (Take one capsule four times a day after meals and atbed time) Instill (Instill two drops into the right

eye) The directions for use must be both drug-specific and patient-specific .The simpler the directions, the better; and the fewer the number of doses (and drugs) per day, the better. Many physicians continue to use Latin abbreviations; for example, "1 cap tid pc," will be interpreted by the pharmacist as "take one capsule three times daily after meals." However, the use of Latin abbreviations for these directions only mystifies the prescription and is discouraged. This can be a hindrance to proper patientphysician communication and is an otherwise unnecessary source of potentialdispensing errors. Because the pharmacist always writes the label in English (or, as appropriate, in the language of the patient), the use of such abbreviations or symbols is unnecessary. Many serious dispensing errors can be traced to the use of abbreviations. Instructions to patients should be clear and preferably in English or vernacular language.

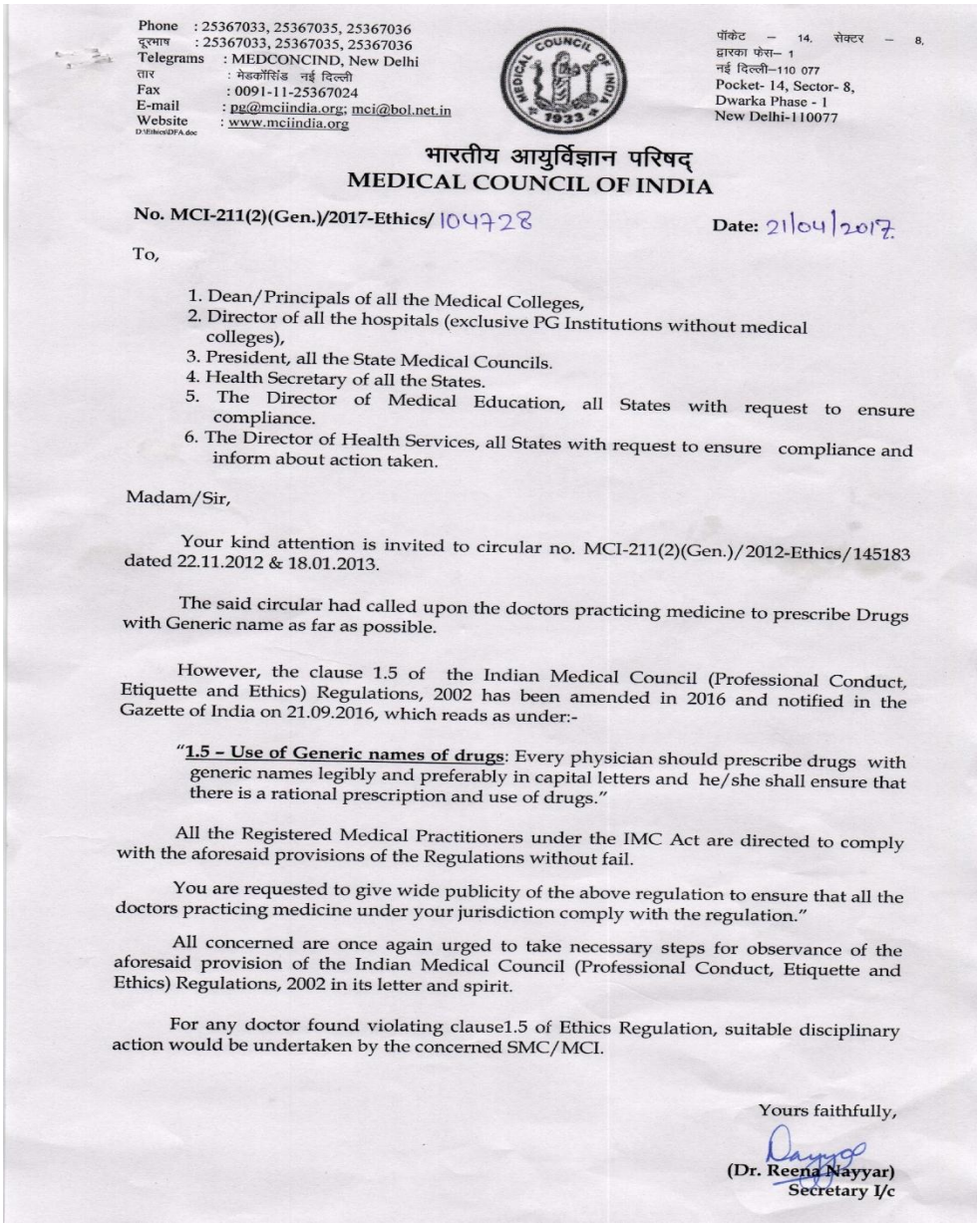
7) Signature of the doctor: It is the end of prescription.



(8) - Medical council of india guidline for prescription writing

The above Clause – 1.5 is substituted in terms of Notification published in the Gazette of India on 08.10.2016 as under.

“Every physician should prescribe drugs with generic names legibly and preferably in capital letters and he/she shall ensure that there is a rational prescription and use of drugs”.



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भारतीय आयुर्विज्ञान परिषद्
MEDICAL COUNCIL OF INDIA

No. MCI-211(2)(Gen.)/2017-Ethics/ 104728 Date: 21/04/2017.

To,

1. Dean/Principals of all the Medical Colleges,
2. Director of all the hospitals (exclusive PG Institutions without medical colleges),
3. President, all the State Medical Councils.
4. Health Secretary of all the States.
5. The Director of Medical Education, all States with request to ensure compliance.
6. The Director of Health Services, all States with request to ensure compliance and inform about action taken.

Madam/Sir,

Your kind attention is invited to circular no. MCI-211(2)(Gen.)/2012-Ethics/145183 dated 22.11.2012 & 18.01.2013.

The said circular had called upon the doctors practicing medicine to prescribe Drugs with Generic name as far as possible.

However, the clause 1.5 of the Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations, 2002 has been amended in 2016 and notified in the Gazette of India on 21.09.2016, which reads as under:-

"**1.5 – Use of Generic names of drugs**: Every physician should prescribe drugs with generic names legibly and preferably in capital letters and he/she shall ensure that there is a rational prescription and use of drugs."

All the Registered Medical Practitioners under the IMC Act are directed to comply with the aforesaid provisions of the Regulations without fail.

You are requested to give wide publicity of the above regulation to ensure that all the doctors practicing medicine under your jurisdiction comply with the regulation."

All concerned are once again urged to take necessary steps for observance of the aforesaid provision of the Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations, 2002 in its letter and spirit.

For any doctor found violating clause1.5 of Ethics Regulation, suitable disciplinary action would be undertaken by the concerned SMC/MCI.

Yours faithfully,

(Dr. Reena Nayyar)
Secretary I/c

The prescription must be carefully prepared to identify the patient and the medication to be dispensed, as well as the manner in which the drug is to be administered. Accuracy and legibility are essential. Use of abbreviations, particularly Latin, is discouraged, because it leads to dispensing errors. Inclusion of the therapeutic purpose in the subscription (e.g., "*for control of blood pressure*") can prevent errors in dispensing. For example, the use of losartan for the treatment of hypertension may require 100 mg/day (1.4 mg/kg/day), whereas treatment of congestive heart failure with this angiotensin II receptor antagonist generally should not exceed 50 mg/day. Including the therapeutic purpose of the prescription also can assist patients in organizing and understanding their medications. In addition, including the patient's weight on the prescription can be useful in avoiding dosing errors, particularly when drugs are administered to children.

Function

- Patient identification.
- Generating a complete active medication list, possibly incorporating electronic data received from an insurance provider.
- Access to patient historical data.
- Prescribe or add new medication and select the pharmacy where the prescription will be filled.
- Work with an existing medication within the practice, this can involve viewing details of a medication, remove a medication from the active medication list, change dose, etc., for a medication or renew one or more medications.
- Printing prescriptions.
- Electronically transmitting prescriptions to a transaction hub.
- Conducting all safety checks using an integrated decision support system, known as a Drug Utilization Review. Safety checks include: automated prompts that offer information on the drug being prescribed, potential inappropriate dose or route of administration, drug-drug interactions, allergy concerns, or warnings of caution.
- Flagging availability of lower cost, therapeutically appropriate alternatives (if any).
- Providing information on formulary or tiered formulary medications, patient eligibility, and authorization requirements received electronically from the patient's insurance provider.
- System integration capabilities (e.g., connection with various databases, connection with pharmacy and pharmacy benefit manager systems).
- Educational capabilities (e.g., patient education, provider feedback).

Format of Prescription Writing: The document on which prescriptions are written is called as prescription order or prescription pad or prescription blank. Prescription order is a legal document. It should be clear, concise, accurate and legible. It should include complete information and be written in indelible ink pen especially while prescribing for Schedule II controlled substances that although has accepted medical use show high abuse potential. It includes drugs as amphetamine, cocaine, codeine, meperidine, methadone, methylphenidate, morphine, oxycodone, pentobarbital and secobarbital. At some of the places, prescriptions are regulated by state and federal laws and must be properly written with specific information included to avoid the errors and to prevent misuse of prescription information.

Prescriptions are made for `prescription drugs, there are 3 categories of drugs as follows

• *Over-the-Counter (OTC) Drugs*: can be dispensed to patient without a prescription.

• *Prescription medications or Legend Drugs:* may not be dispensed by a pharmacist without a prescription from a physician. Labels on these medications carry the legend: "Caution! Federal law prohibits dispensing without a prescription."

• *Controlled Drugs:* Along with prescription, these drugs require additional safeguards for storage. Both State and Federal government agencies generate regulations regarding these drugs.

Requirements of prescription writing

Prescription should talk adequately to patients and communicate clearly with pharmacist. Every state has their own requirements for prescriptions but most follow a similar format.

By country

Electronic prescription in Australia is currently provided by two service providers, Medi Secure and e Rx. Both services can be integrated into many of the existing clinical and pharmacy prescribing software systems. Since December 2012, they have become interoperable allowing bilateral transfer of information.

Bangladesh

Private companies started working with electronic prescriptions. On 2017 July easypres.com launched Bangladesh first cloud-based electronic prescription and patient management software for Doctors in Bangladesh. Within a year, more than thousand doctors registered for the software out of 83 thousand registered MBBS doctors in Bangladesh for this Digital prescription writing software. High court of Bangladesh issued a rule that doctors need to write the prescription in readable format meaning they need to use software of ALL caps later while writing prescription. This software also stores the medical history of patients and doctors can access these data easily from anywhere using the Internet.

Canada

On March 22, 2016, the Government of Canada allocated funds to Canada Health Infoway to develop an e-prescribing service. Infoway is working with Health Canada, the provinces and territories and industry stakeholders to create Prescribe IT, a multi-jurisdiction e-prescribing service. Infoway will create, operate and maintain the service, along with its partners. The

service will be financially self-sustaining and is designed to be scaled across the country and will enable prescribers to electronically transmit a prescription to a patient's pharmacy of choice. Physicians, nurse practitioners and other prescribers will be able to use the system either through their existing electronic medical record or through a standalone application. Health Canada included supporting better prescribing practices, including e-prescribing, as part of its Action on Opioid Misuse plan.

Until recently in Canada, it was the position of Health Canada that, to allow for e-prescribing, amendments to Part C of the Food and Drugs Regulations made under the Food and Drugs Act, regulations made under the Controlled Drugs and Substances Act and possibly regulations made under Personal Information Protection and Electronic Documents Act would be required. After further review, Health Canada has concluded that there are currently no regulatory impediments to moving ahead with electronically generated and transmitted prescriptions and that these are permissible to the extent that they achieve the same objectives as written prescriptions. Provinces and territories wishing to proceed with e-prescribing are obligated to ensure that electronic prescriptions meet existing regulatory requirements and achieve the same objectives as written prescriptions. For example, there must be evidence of a genuine practitioner/patient relationship, and in the case of controlled substances, pharmacists filling prescriptions must verify prescriptions are signed by the practitioner before selling or providing drugs containing controlled substances to a patient. Health Canada has collaborated with Canada Health Infoway on the development of a technical document entitled Ensuring the Authenticity of Electronic Prescriptions, in order to provide advice about how to ensure the authenticity of electronic signatures.

Europe: The use of electronic prescription has been designated as an important strategic policy to improve health care in Europe. The aim of the European Union is to have a cross-border electronic healthcare system in Europe which will enable EU citizens to obtain e-Prescriptions anywhere in Europe. The Scandinavian countries are leading Europe in deploying e-Prescription. Electronic prescriptions were introduced in Estonia in January 2010 and by mid-2013, 95% of all prescriptions in the country were being issued electronically. Other countries which use the prescription process routinely are Norway, Denmark, Finland, Sweden, Belgium, the Netherlands, Italy, Iceland, Greece, England, Scotland, Wales and Northern Ireland. The European Union is pushing for more cross border health data exchange. Despite favourable attitudes towards cross border e-Prescriptions, multiple

perceived barriers impede its incorporation in clinical practice. There are varying interpretations and implementations of data protection and confidentiality laws in the 27 member states. Infrastructures are not in place to support the system and stakeholders in some jurisdictions are reluctant to embrace e-health due to the high cost and the lack of security of the systems. Member states have varying degrees of health care policy, privacy enforcement and laws concerning data protection, telecommunication services and digital signature with regards to e-Prescription. Interoperability of different systems is only a partial solution. Security and enforcement of privacy must also be equally enforced.

India: In India some private hospitals started using electronic prescription. But a major step was taken by government of West Bengal in August 2014 when they started the process of issuing e-prescriptions instead of hand-written instructions in top government hospitals. The biggest advantage of the system is that a patient has all his medical data stored in the server of state health department which can be referred to in future. In the private sector number companies have initiated to build software to support Electronic Prescription in India. ERXPAD.COM is one among the pioneer player offer cloud based electronic prescription software (erx) in India.

Russia: With the development and implementation of electronic technologies in Russian healthcare system, electronic prescription became part of the project called EMIAS. EMIAS is the digital system designed to increase the quality and access of the medical aid in the public health facility. The project was designed and being implemented as part of «Digital city» program in execution of the Moscow Government's order from April 7, 2014 (as Moscow government amended on 21.05.2013№22-PP). The system offers special portal Emias. Info, that provides appointment service to the patients and client area with different services including e-Prescription. Government social program allows getting pharmaceutical products for free or with the discount, depending on the category of the citizen.

United Kingdom

About 420 million repeat prescriptions are generated in the UK each year - about 200 for each general practitioner each week. They account for about 80% of the cost of medication in primary care. Paper based Repeat Dispensing Services were introduced by the NHS in 2005, and in 2009 it became possible to use the NHS Electronic Prescription Service for this purpose. In 2017 awareness of the scheme among patients was low. In October 2017 Keith McNeil, NHS England's chief clinical information officer demanded that NHS hospitals

should be moved rapidly onto electronic prescribing in the light of research showing it would cut serious prescribing errors by more than half. There was no information about the extent to which it is happening in hospitals. After successful pilots in London and the East Midlands it was agreed in April 2018 that electronic prescribing should be introduced in all urgent care settings in England, including NHS 111 and other Out-of-hours services so that dispensed medication can be ready for collection at a pharmacy when patients arrive.

United States

In the United States, the HITECH Act promotes adoption of this technology by defining e-prescribing as one meaningful use of an electronic medical record. Standards for transmitting, recording, and describing prescriptions have been developed by the National Council for Prescription Drug Programs, in particular the SCRIPT standard, which describes data formats. Elsewhere in the world, health care systems have been slower to adopt e-prescribing standards.

Adoption of e-prescribing technology has accelerated in the United States, in large part, due to the arrival of Stage 2 of meaningful use. One of the Stage 2 core measures is: "Generate and transmit permissible prescriptions electronically (e-Rx.)" In order to meet this measure, practices must prescribe and transmit at least 50 percent of permissible prescriptions electronically.

According to data released in May 2012 by Surescripts, a company which operates the nation's largest health information (e-prescribing) network, roughly 317,000 office-based physicians now e-prescribe in the United States. A more recent report released by the Office of the National Coordinator for Health IT in June 2012 finds that 48 percent of U.S. physicians use e-prescribing systems. National growth in e-prescribing over the period September 2008 through June 2012 increased over 40 percent, with individual states increasing adoption anywhere from 28 percent to 70 percent.

Errors in Prescription Writing

Errors in prescribing drugs can occur from a variety of reasons, however, most of the errors boil down to human error in prescription writing (Figure 1).

There are two main error types

• **Slips and lapses**, where actions do not go according to plan e.g. intending to write 5mg of a drug but *unintentionally* writing 50mg.

• **Mistakes**, where the plan itself is wrong e.g. writing 50mg of a drug not knowing the usual dose is 5mg.

Commoner mistakes and observations in prescription writing

• No format or no plan.

• No clarity in writing or Spelling mistakes–in confusion, pharmacist may give wrong drug.

• Illegible or Bad handwriting–as a complication, prescription may be misread and misinterpreted.

DISCUSSION

One of the primary communication links between prescriber, pharmacist and the patient is complete, safe, and accurate prescription. Completion of all 'essential elements' using the standardized format of a prescription will assure that it is accurately interpreted and not subject to alteration.

WHO definition of rational uses of drugs (RUD)

"Rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, and the lowest cost to them and their community" (WHO, 1985). Data on irrational drug use show an increasing trend worldwide, leading to adverse health consequences.

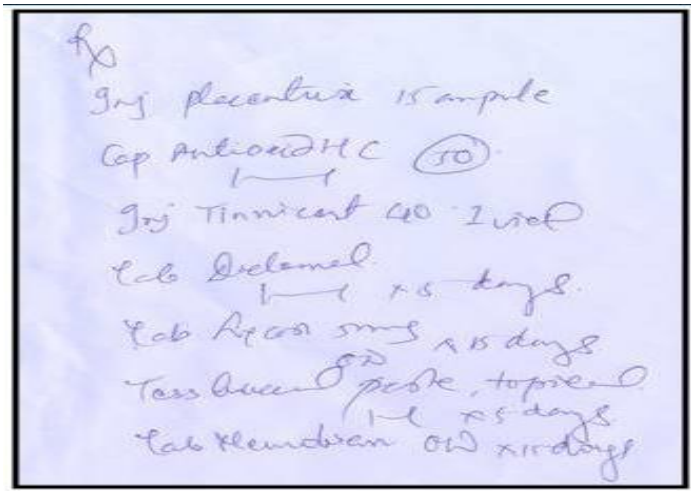

Figure. 2: Prescription from a private practitioner with many drugs (polypharmacy).

2010, the World Health Organization (WHO), reported that more than 50% of drugs were not correctly prescribed, dispensed, or sold, and more than 50% of patients took their drugs incorrectly. The situation was worse in developing countries, where the majority of the patients are not treated as per clinical guidelines and only two thirds of the world's population have regular access to medicines. It was observed that only 50% of people with malaria, 50–70% of people with pneumonia and 40% of people with viral upper respiratory tract infection are treated with appropriate antibiotics. Data on trends in medicines use showed that the average number of drugs used increased from 1990 to 2003 from 2.2 to 2.7 per patient. The overuse of antibiotics during the past 70 years has produced many drug-resistant organisms and diseases. There is an increase in anti-microbial resistance upto 70–90% to first-line antibiotics for dysentery, pneumonia, gonorrhoea, and hospital infections. A study reported that 66.2–75.3% of prescriptions at clinics have antibiotics. Over 50% of surveyed populations do not know consequence of irrational use of antibiotics. Over 50% of prescriptions have injections as the rural patients believe that the injection has better effects than oral drugs. Around .6–60% of patients can not comply with medical advice to take drugs. Similar observations were revealed in study on pediatric patients, the prescription included antibiotics very commonly to treat the illnesses which were not caused by bacteria.

The problem of antimicrobial resistance was one of the important issues brought up at the world health assembly in 2005. Resistance prolongs illnesses and hospital stays. Irrational prescribing add extra burden to national health budgets, Besides, improper and extensive uses of drugs deplete the drug stocks and increase the price of medicines. Studies were carried out to assess the drug prescribing practices and prescription rationality among the.

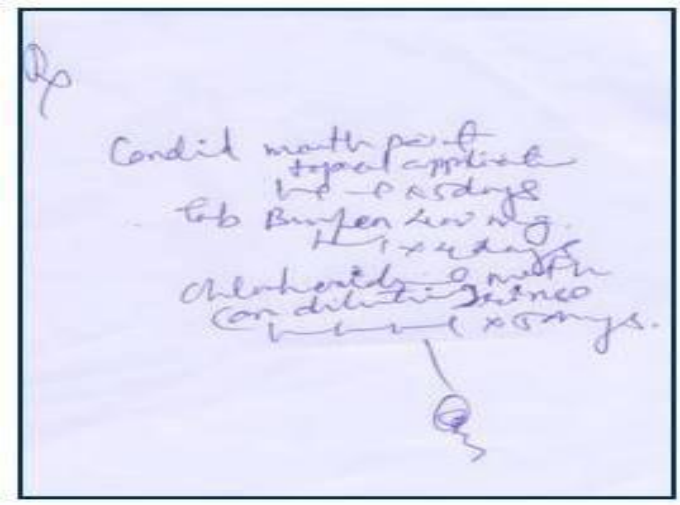

Figure. 3: Illegibly written prescription.

Practitioners and hospitals. The disparity was found in average number of drugs per prescription, use of generic names of drug, adherence to national essential drug list or WHO drug use indicators, drug interactions, adequacy of prescription format, compatibility of prescribed drugs with the diagnosis according to the national practice guidelines. The issues such as inadequacy of prescription format, polypharmacy and non-adherence to the essential drug list are on hike. In hospital based prescribing practices, it was observed that Fourteenth WHO model list of essential medicines (2005) contains only 18 approved drug combinations, whereas in India, many irrational drug combinations are available and are in use.

Recommendations or Tips to Reduce Errors

Over the years, prescribers have developed many conventions for prescription writing. This section includes the tips to avoid ambiguities or misinterpretation as follows:

• Illegibility may be avoided using electronic entry devices and pre-printed prescriptions.

• Doctor may sign prescription preferably in black indelible ink.

• Provide concise dosage information. Dose distortions may result from the use of nonspecific abbreviations, antiquated measures and decimal placement confusion.

• Use of metric measures in place of apothecary and avoirdupois measures.

• Directions should be written out in full in English.

• Avoid units such as “teaspoons” or “tablespoons.”

• Always specify times (7am, 3pm, 11pm) rather than simply frequency (three times a day) and especially relationship to meals for orally consumed medication.

• Ensure that the exact quantity to be dispensed is written. Do not write such things as ‘Continue…..’ or ‘Take as directed’.

• For refills, the minimum duration between repeats and number of repeats should be specified.

• Provide indication for all prescriptions even when obvious to the prescriber, so that the pharmacist may identify possible errors.

• Numbers should be written in numerals as well as in words

• Never pre-sign a blank prescription.

• Do not make any changes or cross-outs, avoid overwriting.

The amount of information given to each patient will vary according to factors such as the nature of the patient’s condition, risks and side effects of the medicine and the patient’s wishes where relevant to have better compliance. Satisfy oneself that the patients have been

given appropriate information in a way they can understand how to take the prescribed medicine and the patient is able to take the medicine as prescribed.

There is a bloom of new drug releases and reformulations in the marketplace, hence doctor needs to keep one-self updated and to be cautious in approaching the medication names. If possible write limited number of medications on a single prescription, since multiple drugs and overlap may confuse the pharmacist. Patients implicitly expect or are privileged for undivided physician attention and caution when prescribing medications. However, modern physician-patient encounters are increasingly marked by limited physician attention. Disruptions and distractions may account for errors such as erroneous substitutions of whole medication regimens and other severe errors, approximately three quarters of transcription errors can be traced to distractions. One of the strategies used for reducing distractions may include separating the cognitive activities from secondary tasks.

CONCLUSION

Prescription writing is a fundamental task performed by health professionals, incorrect prescription may lead to fatal consequences including death. The present article is an attempt to gain insight into thoughtful and deliberate way of prescribing to prevent medication errors. The condition for error-free prescribing must be warranted. While writing the prescriptions, it must be ensured that it is appropriate and is in the best interests of the patient. It is often assumed that once the appropriate drug is chosen, the prescription correctly written and explained, that it will be taken correctly by patient. As medical practice has become more complex, the scope of meaning of the term ‘prescription’ has broadened to also include clinical assessments, laboratory tests, and imaging studies relevant to optimizing the safety or efficacy.

What and how the prescription is written shows the diagnostic acumen and therapeutic efficiency of physician. Prescription becomes useless unless it communicates clearly with patient and the pharmacists. Drug prescription errors may be largely preventable. Proficiency at writing a prescription order accurately and speedily requires practice. Additionally, the motivational prescription writing programmes, patient understanding, pharmacist education and periodic prescription audits may encourage the error-free prescribing.

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