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REGIMEN OF DOSAGE

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Abstract—There has been some sort of misdiagnosis a lot of times when it comes to medicine, since every person is different and has different requirements according to factors like age, weight and other factors. Although a doctor generally has the knowledge regarding this and gives prescription accordingly, there can still be room for error. To prevent this error, our team is aiming to develop an online application that specialises in dosage regime. This application would be made for the use of medical personal only and it would not be open for general public as the use and the initial cause of making might be misused.

Keywords: Dosage Regimen, Artificial Intelligence, Pharmaceuticals, Diagnosis, Post-traumatic stress disorder (PTSD)

I. Introduction

Diagnosis is a medical term given to the dosage, frequency, and time duration required taking the medicines. It is different for every person as diagnosis depends on factors like age, weight, height and so on. Taking a simple example, the quantity of rice eaten by every person is different, the same goes for medicine, the quantity of medicine to take is different for every person. The doctor is prepared in such a way that he makes a prescription considering all the factors for prescription, but there might be some room for error. So to solve this problem, an application with the aim to aid in diagnosis of medicine is being developed by our team. We hope for your patience and cooperation for our project to succeed.

II. What is Diagnosis?

The process of identifying the illness or condition that accounts for a person's symptoms and indicators is known as medical diagnosis. Most of the time, the medical context is implied when it is referred to as a diagnostic. The patient is usually examined physically and has their medical history taken in order to gather the data needed for a diagnosis. During the process, medical tests and other diagnostic procedures are frequently performed. The posthumous diagnosis is occasionally seen as a type of medical diagnostic.

The ramifications of diagnosis for patient treatment, research, and policy are significant. Both a procedure and a categorization system, or a “pre-existing set of categories agreed upon by the medical profession to designate a specific condition,” have been defined as diagnosis.

Diagnosing a medical condition involves identifying the ailment the patient has and then prescribing him or her the correct medicine and its dose.

III. Role of Food in Diagnosis

Food plays a vital role in diagnosis. Sometimes, an illness is so serious and it may be simply

cured with a proper diet. The diet taken can also prevent various diseases from contacting us too. For example, taking warm liquids every morning and having citrus fruits can prevent common cold, taking proper balanced diet can prevent vitamin deficiency, and many such cases. Some of the common food as diagnosis are:

- Fever: Taking fluid rich food, protein rich food, and fresh fruits can also elevate the conditions and make one feel at ease.
- Common Cold: When you're sick with a cold, some foods and beverages to consider are pomegranate juice, bananas, chamomile tea, and turmeric.

Fever and common cold mention here are some examples, otherwise there are various other illnesses and diet suitable for them.

Sufficient rest during an illness also give the body the energy required to heal itself, as the energy taken by physical activities is instead used to heal the patient.

IV. Steps Taken for Diagnosis of a Patient

A list of possible diagnoses (a differential diagnosis) or just one possible diagnosis could serve as the working diagnostic. In order to explain a patient's symptoms, clinicians typically weigh multiple diagnostic hypotheses or possibilities. As more data becomes available during the diagnostic process, they will whittle down this list. The patient should be given the working diagnosis together with an explanation of the level of ambiguity surrounding it.

Clarifying the etiology—or what caused the sickness or condition—of the diseases or conditions of interest is not always a part of a diagnostic technique or the conclusion formed by it. Such clarification can help to improve the course of treatment, provide more details about the prognosis, or stop the illness or condition from recurring in the future.

Finding a medical indication to carry out a diagnostic procedure is the first task. Among the indications are:

The identification of any departure from the accepted definition of normal, which includes descriptions of, among other things, anatomy (the composition of the human body), physiology (the functioning of the body), pathology (the potential for problems with anatomy and physiology), psychology (the study of thought and behavior), and human homeostasis (the processes by which the body maintains homeostasis). Understanding normalcy and comparing the patient's current state to those norms can help identify the specific deviation from homeostasis that the patient is experiencing, as well as the extent of that deviation. This information can then be used to quantify the indication for additional diagnostic processing.

A complaint expressed by a patient.

The patient's desire to see a diagnostician may be a sign in and of itself that a diagnostic procedure is necessary. For instance, during a visit to the doctor, even before the patient begins to complain, the doctor may begin a diagnostic process by observing the patient's movement from the waiting area to the doctor's office.

Generally speaking, a diagnostic procedure in the majority of the several accessible procedures consists of the following general components:

- Supplementing the information provided with additional data collection, which could involve a physical examination, different diagnostic procedures, and inquiries about the patient's medical history (perhaps from other family members as well).
- Any medical examination used to help with disease identification or diagnosis is referred to as a diagnostic test. A person's prognosis after an established illness can also be ascertained by diagnostic testing.
- Processing of the data, conclusions, or other outcomes, you could try to get advice from other healthcare professionals and subject matter experts.

There are a number of methods or techniques that can be used in a diagnostic procedure, including performing a differential diagnosis or following medical algorithms. In reality, a diagnostic procedure may involve components of multiple methods.

V. Error in Diagnosis

The National Academies of Sciences, Engineering, and Medicine (NASEM) defines diagnostic mistake as the inability to provide the patient with an accurate and timely explanation of their health problem(s) or to establish a diagnosis. Determining whether a diagnosis was "timely" can be challenging when using the NASEM definition, especially in emergency or inpatient settings when patients may change quickly. The diagnostic research community responds by using a variant of this definition. A diagnostic error resulting from a system or provider error is defined as "a missed opportunity to make a timely or correct diagnosis, or take the next diagnostic action step, based on available evidence at the time." Both of these definitions identify diagnostic error (missing, delayed, or incorrect diagnosis) even in the absence of harm, which is similar to other patient safety events, in which there may be an error that does not result in an adverse event (e.g., medication errors that do not result in an adverse drug event).

It's crucial to remember that diagnosis is a process, and not all modifications to the diagnosis equate to inaccuracy. Due to incomplete diagnostic data, unusual presentations, or clinical progression, making the right diagnosis may take some time (for example, a patient may finally receive a lupus diagnosis even though their initial symptoms did not fit the diagnostic profile). There could be no process or outcome errors after a protracted diagnostic procedure.

A diagnostic adverse event is a term used to describe patient harm that arises from a diagnostic error. This harm usually results from treating a patient who has received the incorrect diagnosis or from failing to treat them. According to malpractice research, the most frequent reason for serious injury is diagnostic error.

Diagnostic process error, sometimes known as a "near miss," refers to errors in the diagnostic process that do not ultimately lead to a diagnosis error (e.g., procalcitonin usage but patient still diagnosed with viral pneumonia correctly). These bear resemblance to a "near miss" and have the potential to yield insights into the safety of healthcare systems.

VI. Factors to Note to Prevent Error in Diagnosis

Previous Health History: First, find out whether the patient has any health issues. If you get little to no response, you can find out significant historical events by asking the following questions: Have they ever had medical attention? If yes, what concerns or difficulties were resolved? Was the care episodic or continuous—that is, given by a single individual on a regular basis? Have they ever had any operations, special testing, MRIs, CAT scans, or X-rays performed? Have you ever visited a hospital? If yes, for what purpose? The number of patients who seem to forget seemingly significant medical incidents is astounding. Every one of you will come across the patient who, in spite of giving you minimal prior medical history in your interview, exposes to your resident or attending a convoluted array of ailments! Most of the time, these patients are not deliberately withholding information. All you have to do is ask the appropriate questions to get them thinking!

Previous Surgical History: Have they ever undergone surgery, even as a young child? Which year was this? Were there any complexities? Try to find out at least why the procedure was done if they are unaware of its name. Urge them to provide as much detail as they can.

Self-prescription medication taken: Are they now taking any prescribed drugs? If yes, how often and at what dose? Are they aware of the purpose of their treatment? A significant clinical issue is medication non-compliance or confusion, especially in cases with complex regimens, elderly patients, patients with cognitive impairments, or patients who are just uninterested. Finding out if they are taking the medication as directed is crucial. This can give important information since often, non-compliance with a prescribed regimen masks a perceived failure to respond to a medication. Recognizing these circumstances calls for tact because you don't want to come out as judgmental while promoting honesty. It is helpful to state unequivocally that in the absence of these data, evaluating the effectiveness of treatment and modifying therapy becomes challenging or even hazardous. Ask patients why they are missing doses or not taking their prescriptions at all, if that is the case. Maybe they are having a significant side effect, they have a legitimate anxiety that can be allayed, or there might be a better alternative regimen that can be tried. Remember to enquire about OTC or "non-traditional" drugs. What are they treating, and how much are they taking? Has it worked well enough? Is a medical professional prescribing these medications? Administered by self?

Allergies/Reactions: Have they had any unfavorable drug reactions? Given the potential for significant clinical consequences, the precise nature of the reaction needs to be recognized with precision. For instance, anaphylaxis is a potentially fatal reaction for which returning to the medicine is strictly prohibited. But a rash doesn't warrant the same kind of worry, especially if the agent in question is obviously the recommended course of therapy.

History of Smoking: Have they ever used cigarettes? If yes, for how many years and how

many packs a day? If they did leave, when did that happen? The pack years are a commonly used technique for quantifying smoking, calculated by multiplying the number of years by the packs per day. Using a pipe, cigar, or chewing tobacco should be documented as well.

Alcohol: Are they alcohol consumers? If yes, what kind of drink and how much each day? Urge them to provide as much detail as they can. A 12-ounce glass of whiskey or a beer could be considered one drink, but they have different meanings. How much do they drink in a week or month if they don't drink every day?

Other Drug usage: It is important to report any drug usage, past or present. It can be quite difficult to discern who is at risk based solely on appearance, so make it a habit to ask all of your patients these questions. Tell them that the purpose of these questions is to help you discover risk factors for certain illnesses (such HIV and hepatitis) rather than to pass judgment. Occasionally, though, a patient will expressly state that they would prefer not to talk about these matters. Move on and honor their right to privacy. Maybe later on, they'll be more candid**.**

Obstetric (if applicable): Have they previously given birth? If yes, how frequently? What was the result of each pregnancy (e.g., therapeutic abortions, spontaneous abortions, full-term deliveries)?

Sexual Activity: Many practitioners find this line of questioning to be unpleasant. Nonetheless, it is worthwhile to pursue as it may yield valuable information. Just like with drug-related inquiries, it's not always easy to tell at a glance who engages in sexual behavior and in what kind of activity. It will become less awkward if you ask these questions of every patient you see. Do they engage in sexual activity? with individuals of the same or different sexes? Do they have a committed relationship? Do they use birth control pills or condoms? Were you married? spouse's health? Separated? previous STDs? Do they have kids? Are they well, if so? Do they cohabitate with the sufferer?

Family History: You are specifically looking for diseases that are inherited by first or second degree relatives. The most prevalent conditions include diabetes, some cancers, and coronary artery disease, at least in America. Patients ought to be as detailed as they can be. "Heart disease," for instance, encompasses congenital anomalies, valve illnesses, and coronary artery disease, of which only the latter has hereditary ramifications. Find out when the ailments started, as this will help determine the patient's prognosis. In contrast, a father who experienced a similar incident at age 40 would undoubtedly be a marker of hereditary predisposition, whereas a father who experienced one at age 70 is not. Inquire about any strange ailments that relatives may have had; this could provide information regarding uncommon hereditary problems.

Work/Hobbies/Other: What kind of labor is the patient involved in? Have they acted in the same way every time? Do they find it enjoyable? What do retired people do to keep themselves busy? Do you have any interests? involvement in athletics or other physical pursuits? Where were they originated from? The answers to these queries may not always provide details on the patient's condition. Still,

it's good to know something about them that isn't medical. This could strengthen the relationship between the patient and the doctor and show them that you value them as a person. Additionally, it provides you with a resource to consult in the future, demonstrating to the patient that you are truly interested in their care.

Military Service: Evidently, enlisting in the military can mark a significant turning point in a person's life. Furthermore, finding out about atypical exposures (toxins, infections), mental health conditions (PTSD, depression, substance misuse), and physical trauma may also provide crucial information. Patients often leave hints in their past that point to problems that need more investigation. More history taking would be necessary, for example, if they mentioned taking anti-hypertensive or anti-anginal drugs but not heart illness. Additionally, don't hesitate to review the HPI if you come across any material that is pertinent to the main complaint.

VII. Artificial intelligence's function in diagnostics

Artificial intelligence's function in diagnostics would be prescribing a personalised prescription for the patient, given their details like symptoms, and additional information like patient gender, age, height, weight, other drug interactions, and other specifications as mentioned in the above topic. Further this type of artificial intelligence should be only used by the doctors or the pharmacists, who specialise in this field. The client being the general public could lead to further complications like misuse of drug diagnoses, etc.

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