



Clinical reasoning refers to a way of logical thinking to recognize diseases and conclude diagnoses based on a series of mind activities during the process of probe and study, analysis and summary, and judgement and inference on the disease phenomena of the patient.

1. Two major factors of clinical reasoning:

- Clinical practice is also known as “bedside”. It is a practice in which doctors obtain firsthand information through multiple clinical activities such as inquiries and physical examination. With the help of laboratory and other auxiliary examinations, the doctors observe closely the changes of patient conditions to identify, analyze and solve problems; and they keep asking further questions that they try to answer through practice. Sufficient practice and detailed firsthand information serves not only as the foundation for a correct diagnosis but also as the source for clinical reasoning.
- Scientific reasoning is a reasoning process where the general rules of maladies are applied to identify the disease of a particular individual. It is also a process of sorting, analyzing and summarizing practical materials, as well as a process of comprehensive evaluation, logical association, judgement and reasoning. Only after going through such a process, can the doctor make a diagnosis.

2. Basic principles of reasoning for clinical diagnosis:

- Seeking truth from facts. Doctors must try their best to obtain first-hand information and handle the objective clinical information with a down-to-earth spirit. They cannot accept or reject the information discretionarily based on their own range of knowledge and limited

experience, or place it into their own understanding framework or mind track in a far-fetched manner; they should avoid subjectivity and one-sidedness.

- Monism, namely the singular pathological principle, refers to the principle of using one disease to explain multiple clinical manifestations. In clinical practice, it is very unlikely that multiple diseases co-exist but are little relevant to each other. When facing numerous and complicated clinical manifestations, doctors should try to select one disease to generalize or explain the multiple manifestations of the patient. For instance, when a patient has a long-term fever and shows multiple pathological manifestations in his skin, joints, heart, liver and kidneys, the doctor should not diagnose him with concurrent diseases such as rheumatism, tuberculosis, skin disease, arthritis, heart disease and hepatitis. Instead, systemic lupus erythematosus (SLE) is probably the correct choice. However, if it is confirmed that several diseases do exist concurrently, the doctor does not have to be constrained by “the pathological monism”; rather, he should draw a clear distinction between the primary and the secondary and decide on priorities.
- The principle that common diseases should be considered first. The morbidity of diseases is influenced by multiple factors. The spectrum of human diseases varies by time, region and environmental condition. When several diagnostic possibilities exist simultaneously, common and frequently-occurring diseases should be considered first, and then rare and uncommon diseases.
- The principle that organic diseases should be considered first. This principle could best help doctors avoid missing the good opportunities for treating organic diseases. For instance, a patient of colon cancer with a manifestation of abdominal pain can be cured by means of surgery if diagnosed early. Nevertheless, the golden chance for treatment may be lost if the disease is diagnosed as functional. Certainly, doctors should be aware that an organic disease may have functional

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symptoms and may even co-exist with functional diseases. If so, the diagnosis of an organic disease should be considered with priority.

- The principle that curable diseases should be considered first. This principle can facilitate an early and timely treatment. For instance, when the X-ray results of a patient with hemoptysis show shadows in the upper part of the right lung that cannot secure a confirmed diagnosis, the diagnosis of tuberculosis should be considered first to avoid delay in treatment.
 - The principle of human-oriented, comprehensive assessment. The doctors need to bear in mind that the subject of a disease is a human being. The patient's age, sex, physique, living conditions, occupation, nutritional conditions, psychological status and education level would all have impacts on the occurrence and clinical manifestations of a disease. When making a diagnosis, if the doctor focuses only on the name of the disease while ignoring the human factors, it is difficult for them to make a comprehensive and accurate diagnosis, let alone develop a reasonable diagnostic plan and therapeutic regime.
3. **Procedures and contents of clinical reasoning:** The process of clinical reasoning of a doctor begins from the early stage of clinical practice. This process is not only active, but also orderly. It can be divided into ten procedures, which are to be considered in the following sequence:
- From an anatomic point of view, consider any structural abnormality that may exist.
 - From a physiological point of view, consider any functional change that may have taken place.
 - From a pathophysiological point of view, propose possibilities of pathological changes and pathogenesis.
 - Consider a number of possible pathogenic factors.
 - Consider the severity of the disease and avoid missing severe conditions.
 - Propose 1–2 particular hypotheses.
 - Verify the hypothesis by judging and weighing the symptoms and signs that may or may not support the hypothesis.
 - Seek particular assemblages for differentiated diagnosis.
 - Narrow down the diagnostic range and decide on the most possible diagnosis; and
- Suggest further examinations and treatments.
- This process of clinical reasoning seems tedious and mechanical. As a matter of fact, however, it represents good order. Such a process in which a doctor learns to diagnose resembles that in which a beginner learns to dance. The dance learner studies the divided movements first and then bring them together until the final mastery of all of them. Likewise, the doctor achieves proficiency in his trade through frequent and repeated practice on each and every one of the ten procedures.
4. **Commonly-used methods of clinical diagnosis:**
- **Direct diagnosis:** This method is employed when the disease conditions are simple and evident. For diseases like nettle rash, traumatic hematoma, acute tonsillitis and acute gastroenteritis, just to name a few, the doctor may confirm the diagnosis based on medical history and signs and with the help of some simple laboratory examinations; in some cases, he may not even need any laboratory or other auxiliary examinations at all.
 - **Exclusion diagnosis:** When clinical symptoms and signs are not specific, and multiple diseases may co-exist, the doctor needs to make in-depth examinations and comprehensive analyses to identify doubtful points. After excluding the diagnosis of multiple possibilities and keeping one or two possibilities for further confirmation, the doctor should be able to propose a confirmed diagnosis.
 - **Differentiated diagnosis:** The main symptoms and signs of a disease may suggest multiple possibilities. Therefore, it is still difficult to differentiate them or conclude a diagnosis even after comprehensive analysis. Under such a circumstance, the doctor needs to make continual comparisons and judgements, and gather various kinds of information to differentiate diagnoses. If the new information does not support the existing diagnosis, the original possibilities should be eliminated; or a new diagnosis should be proposed. Such diagnostic reasoning over multiple possibilities, a method through continuous differentiation and comparisons for a final diagnosis, is a commonly used method of diagnosis-making for difficult and complicated diseases.