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THE LOST ART OF CLINICAL DIAGNOSIS

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Throughout history, healers have relied on two sources of information to reach a diagnosis; stories they've heard from patients, and the observations they have made on them through physical examination. As a result, healers have been able to identify patterns of illness that could be treated with the homeopathic remedies available to them.

Numerous discoveries and inventions throughout history have contributed to refining medical practice. For instance, laboratory testing and imaging studies have been added as a third source to the toolbox of healers leading to progressive improvement in medical diagnosis and treatment.

In recent decades, advances in medical technology have made further testing widely available to the population at large, providing accurate results, better healthcare delivery, and predictable outcomes. However, the advanced testing was never meant to take over the process of establishing a diagnosis. History and physical examination have never been so undermined like they are today.

In every diagnostic challenge, physicians gather information from history taking, and along with their physical findings, they generate a list of likely diagnoses, which can be narrowed even further if one avoids the bias of ”confirmation”. Unfortunately, physicians tend to give more weight to the signs and symptoms that confirm their thoughts, yet put less weight on the negative ones, which can be equally important. As a result, we tend to order unnecessary testing, particularly imaging studies. Even with imaging, the bias of “confirmation” is depicted when imaging is ordered just to confirm a diagnosis. More imaging studies mean more findings; some related to the

problem in question, and others discovered incidentally, which can add complexity to patient care, and adds a significant burden to the healthcare delivery system.

In one study of almost 20,000 healthy volunteers, [1] authors found the prevalence of incidental findings on brain MRI to be at 2.7%, and on body MRI, it escalated to 12.8%, requiring further investigation and/or intervention. The problem becomes even bigger for patients under investigation for an illness. In one review article encompassing 44 studies, the mean frequency of incidental findings in those involving CT technology to be at 31%. In another study [2] on screening for lung cancer among smokers aged 55-74, CT scan of the lungs produced 33% false alarms compared to 15% with standard CXR. Using PET-CT for diagnosis of lung cancer produced 6.5% false positive results.[3] Such results leave a major impact on health care delivery in terms of access and cost, and on the patients themselves when it comes to additional unnecessary interventions, cost, eligibility for health and life insurance, and their mental well-being. [4] In the US 5, the cost of unnecessary imaging in 2014 alone was estimated to be at 7.5 - 12 billion US dollars.

Without a doubt, there is less emphasis today on the time-honored history taking and physical examination, and an over-reliance on medical imaging technology. Richard Haywood, a pediatric neurosurgeon, realized the magnitude of the problem when he coined the term "VOMIT" in 2003, which stands for "victims of medical imaging technology. [6]

As a surgical educator for over 3 decades, I can easily see the shift in paradigm at every level. It is not unusual today to hear a presentation by a medical student or a resident that goes, "A 25-year-old, otherwise healthy male, presents with two days history of central abdominal pain. CT scan of the abdomen and pelvis shows acute appendicitis…." My first comment would usually be, "Did we really need the CT scan?"

The pervasive and injudicious ordering of imaging is not always in the best interest of patients. While some physicians may blame it on defensive medicine, others believe that our society does not value the intellectual effort made by their physicians, let alone the higher rewards placed on the use of modern and sophisticated medical technology.[7] Be it as it may, the medical community is facing a major flood, if not a tsunami of "uncalled for" use of imaging. It falls upon every one of us to restore the balance between history taking, physical examination, and the wise use of

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available technology. Patients trust their physicians' reasoning skills to avoid suboptimal diagnostic work up that may end up with unintended consequences

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