COMMENTARY

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Teaching More About Less: Preparing Clinicians for Practice

INTRODUCTION

The purpose of medical education is to prepare learners for independent practice, where they must recognize and treat the most prevalent and most morbid conditions across society.[1,2] This requires the development of clinicians who recognize the subtleties and varied presentations of common conditions. However, throughout their training, learners receive an unspoken message that encyclopedic knowledge of myriad diseases—including rare ones—rather than mastery of common conditions is a hallmark of clinical excellence. This idea permeates medical school and residency, where teachers, tests, conferences, case reports, and licensing exams highlight and celebrate the ability to recognize and name uncommon diagnoses. This emphasis betrays the reality of clinical practice and distracts teachers and students. To prepare learners for practice, frontline teachers should develop a skillset that highlights and celebrates common diseases and signals that clinical excellence is grounded in mastering variations of common conditions.

RARE IS COMMON IN MEDICAL CULTURE

Exaltation of rare diseases is widespread in medicine. In conferences, presenters routinely take the audience through an extended differential diagnosis for dyspnea that starts with pneumonia and heart failure but gives equal time to granulomatosis with polyangiitis, nocardiosis, and shrinking lung syndrome. Outsized praise is lavished on learners for answering a question correctly about Still's disease or diagnosing pseudopseudohypoparathyroidism, while laurels seldom are given for differentiating gout from cellulitis. Popular TV shows (*House MD*) and social media, which are not strictly part of the professional culture but are widely consumed by members of the profession, emphasize experiences with uncommon and hard-to-diagnose conditions.

THE ATYPICAL IS TYPICAL

Variations of common diseases are often neglected when the textbook template is used to teach a patient's presentation. Angina is taught as having a characteristic profile; when this prototype is repeatedly codified through teaching interactions and tests, clinicians may mistakenly characterize chest pain as noncardiac or "atypical" even though many patients with symptomatic coronary artery disease never experience a "typical" presentation.[3] Many clinicians learn about the classic descriptions of eczema or scabies but may be unable to recognize them when they appear differently depending on body location, temporal stage, immunocompromised state, or skin color.[4]

CONNECTION WITH SAFETY

The National Academy of Medicine report *Improving Diagnosis in Health Care* highlighted that physicians make diagnostic errors in approximately 15% of patient encounters and that most errors are over- and underdiagnosis of common conditions, such as asthma, cellulitis, stroke, or cancer, and not the failure to recognize rare ones.[5] For instance, venous stasis is frequently misdiagnosed as cellulitis and treated with antibiotics and hospitalization.[6] Miscategorization of common diseases leads to the greatest morbidity and most frequent and costly malpractice actions.[7,8]

HOW TO TEACH MORE ABOUT LESS

In the clinical learning environment, frontline teachers shape trainees' experiences and perceptions through their words, their actions, and their enthusiasm. Teachers who maintain focus on common conditions signal that clinical excellence is characterized by mastery of disease nuance and variation. (Figure)

As a learner demonstrates increasing knowledge about gout, the teacher would not reroute the conversation to less common causes of acute arthritis; instead, they would keep

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Requests for reprints should be addressed to Juan N. Lessing, MD, Division of Hospital Medicine, Department of Medicine, University of Colorado School of Medicine, Mail Stop F782, 12401 E. 17th Avenue, Aurora, CO, 80045.

E-mail address: juan.lessing@cuanschutz.edu

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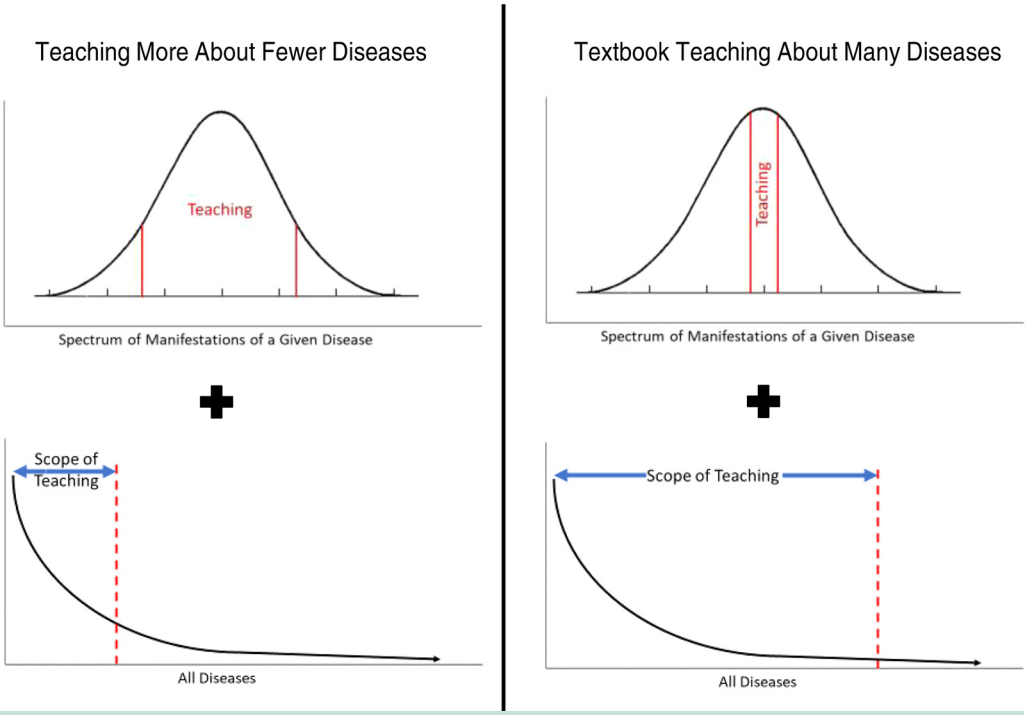

Figure Contrasting two teaching styles. The graphs on the left reflect a teacher who focuses on a smaller number of more common diseases and emphasizes the multiple variations of the presentations in those conditions. The graphs on the right reflect a teacher who tends to discuss more (including rare) diseases with an emphasis on prototypical presentations.

the spotlight on gout and examine diagnostic and management challenges at the margin of the learner's knowledge. The teacher would treat common conditions with inquiry and excitement rather than disinterested familiarity. After concurring that a patient has a viral upper respiratory infection, the teacher would encourage ongoing learning by stating "let's call the patient Monday to confirm our diagnosis and see how the symptoms evolve," rather than "let's move on to a more interesting case."

Observing a trainee successfully diagnose a textbook presentation of congestive heart failure would not trigger a shift to rarer or different diseases. Instead, the teacher would aim to put the student in front of multiple patients with variations of heart failure—e.g., dyspnea with clear lungs or no lower extremity edema—that reflect everyday practice. When there are limited opportunities to see multiple examples, the teacher would direct the learner to a digital resource with virtual patients or image libraries to convey the breadth of presentations. The teacher would assess readiness for independent practice based on correct recognition of many iterations of appendicitis and not just the textbook version.

WHAT ABOUT RARE DISEASES?

Trainees and teachers who no longer are compelled by cultural norms or pressures of test preparation to recite the entire differential diagnosis of a red leg may fret about a future episode when the clinician encounters erythromelalgia (a rare condition associated with myeloproliferative disorders causing episodic burning and redness in the legs and feet). If learners never hear about rare diseases during early medical training, how could they ever diagnose them during practice?

As learners transition across the undergraduate and graduate medical education continuum, they will grapple with many complex cases and have opportunities to add rare diseases to their repertoires. This growth will mirror the experience of all doctors, who throughout our careers encounter conditions we never heard about in training (e.g., microvascular coronary artery disease, IgG4-related disease, COVID-19). Deep knowledge about common diseases facilitates accurate recognition of presentations that fall outside the boundaries of those conditions and warrant literature search, additional tests, or consultation. When high costs and errant diagnosis of common diseases are drivers of low-value care, preparing trainees for a lifetime of prudent diagnoses and treatment selection for common ailments is an acceptable trade-off for not recognizing by medical school graduation every rare manifestation of a myeloproliferative disorder.

Case reports and teaching conferences that discuss rare conditions will continue to serve an important purpose:

they help move rare diseases from being "unknown unknown" (I've never heard of Behçet's disease) into the "known unknown" (I know Behçet's disease exists, but I don't know much about it).[9] Teachers can help learners become aware of rare diseases while simultaneously encouraging their consideration only *after* multiple variations of common diseases have been persuasively excluded. A focus on common conditions does not preclude mention of rare conditions, but it does require educators to temper their disproportionate emphasis and highlight knowledge of the base rate.[10]

SETTING LEARNERS ON THE PATH TO CLINICAL EXCELLENCE

Clinician-educators understand that every disease, no matter how rare, matters to a patient with that disease. However, from a population standpoint, clinical excellence cannot be equated with the ability to rapidly identify rare conditions. Clinical excellence with the greatest impact on public welfare is rooted in accurate, efficient, and cost-effective recognition and management of the variations of the most common diseases in the population.

Teachers who intentionally shift their instruction toward variations of common conditions will produce learners who do not believe appendicitis always presents with anorexia (it frequently does not) or that scabies is characterized by burrows between the fingers (it rarely is). Their trainees will know that venous stasis is a protean condition that is sometimes pruritic, sometimes bullous, and sometimes deeply erythematous—but in each form never requires antibiotics—and will avoid the trap of pseudocellulitis.[6] The practice of ordering every possible test to show supervisors the learner has considered all potential diagnoses will imply wastefulness, not thoroughness.

Medical discourse features the aphorisms "common diseases are common" and "when you hear hoofbeats, think horses not zebras." Although teachers are fond of making these declarations, we would do well to heed them ourselves. It is hard to know if the culture of medicine drove the informal and formal assessments that emphasize rare diseases, or if our assessment system fostered that culture. The cause is less important than our response. Frontline teachers have an opportunity to teach more about less and, in doing so, fulfill our obligations to our learners and the public we serve.

Juan N. Lessing, MD[a]
Read G. Pierce, MD[b]
Gurpreet Dhaliwal, MD[c,d]

[a]*Division of Hospital Medicine, Department of Medicine, University of Colorado School of Medicine, Aurora, Colorado*
[b]*Division of Hospital Medicine, Department of Internal Medicine, Dell Medical School, The University of Texas, Austin, Austin, Texas*
[c]*Department of Medicine, University of California, San Francisco, San Francisco, California*
[d]*Medical Service, San Francisco VA Medical Center, San Francisco, California*

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