Frameworks for Internal Medicine

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DEDICATION

For my mother Salma, and my father Edward. All that I have ever hoped to be, I owe to you.

FOREWORD

In the end, after the "large group learning studios" have fallen silent, the "breakout" rooms are in disarray, and nobody knows that the remotes for the massive TV sets no longer work, medical students will still know 90% of the expected core knowledge. How can this be? It is because these handpicked students are surrounded by handpicked residents, fellows, and junior faculty, all of whom believe it is a fundamental obligation of the profession to teach. They teach all who thirst and most of those who should thirst. It has been this way since the "breakthrough" at Kos. More amazing, the best of these people do not expect any remuneration other than the satisfaction of doing the job well. Education is still the first of the professional expectations at most academic medical centers. These teachers bring the stringent and austere life of physicians-in-training to the task. They can be counted on to teach students what they need to know and, sometimes, what they ought to know.

This task, for which most academic centers pay nothing, is in peril. RVUs, EMRs, "rooming efficiency," and grading scales for "patient satisfaction" all take a toll. These faculty members are expected to recognize "kaizen events" and alert the managers. Some of the managers want to teach the "silver spoon" doctors a lesson or 2 about "hard times." Controversy abides, but the teachers persevere. They are, however, in dire need of help.

Where to start? More than anything else, they need blackboards. Blackboards have disappeared. The boards that fill the old blackboard gaps are white and can be written on only with special order pens. When the pens disappear, "informative flyers" begin to fill the space on the whiteboards. "Quiet please. No one can get well in a noisy place!" Are you sure? Sit and listen to an intensive care unit for an hour. "Wash your hands!" The sinks have all disappeared, too, and the wall "hand wash stations" deliver a foul-smelling liquid that fails to dispatch C-diff spores. It has been labeled toxic for human beings by the FDA. Other messages of importance are an invitation to a potluck lunch. There is an invitation to attend the next art committee meeting. The boards are covered with ephemerata. Doctors need a sacrosanct clean board in every corridor of every ward service in every specialty. What will happen at these boards, should they appear, is an ongoing unscripted discussion of the clinical problems at hand for all to see and hear. Approaches to all of the "slings and arrows that life is heir to" show up on these boards. These challenges to health and happiness are ever-present and countless in number. More appear every day. Doctors learn much of what they know at these vestigial boards. Give them real boards and get out of the way!

This book preserves the art of Socratic teaching, a method that reaches back 2500 years. Not only does the process reveal what is known but, even more clearly, it reveals what is not known. Everybody learns. Students, teachers, and nurses learn. Laboratory personnel and patients learn. All will evolve and grow. It is a powerful thing to witness.

Fifty of the most common clinical problems are illustrated in this book. The cache of questions will evolve as the anatomy of erudition points the way. This book contains frameworks that guide the discussion of the "chosen fifty." The 60-year-old man with hematocrit of 32. The 29-year-old pregnant woman with pitting edema to the axillae. The acutely dyspneic long haul truck driver. The young person with fever of unknown origin. The framework prepares the teacher and the learners. It creates the environment most conducive to high-impact learning efficiency. In the end, it is the *process* rather than the framework. The process becomes generalized. Academia is back on track.

Now that we have the book, the boards will appear, hopefully!

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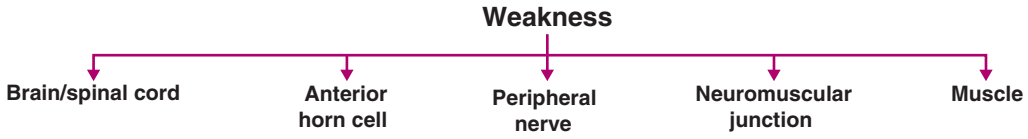
PREFACE

Twenty: The number of years the average American physician spends as a student before a degree is earned and residency training begins. Experienced physicians would respond to this notion with a grin; medicine is a dynamic field that requires ongoing refinement of those who practice it. For the physician, learning is a *lifelong* endeavor. It does not end after 20 years. However, 20 years does mark an important inflection point in the life of an academic physician: there begins the transition from full-time student to part-time student and part-time educator. For most young doctors, this evolution does not happen naturally. It must be sought.



When I was a third-year medical student on the internal medicine clerkship, I was introduced to the "morning report" case conference, usually led by the chief residents. It was the aspect of the rotation I most enjoyed. I was drawn to the challenge of solving the cases, eventually turning it into a game: I would silently record how long it took for me to guess the correct diagnosis. My record was the time needed for the presenter to finish her opening words, "shortness of breath, facial plethora, and upper extremity swelling" (which I immediately recognized as superior vena cava syndrome). Often I was wrong. However, no one else knew about those mistakes. Then, I became an intern and sat in the same room as before, but my role had changed. As an intern, I was obligated to share my thoughts with the group. Still, it remained simple. I would speak up only when I thought I had a pretty good idea of the correct answer. When I did not, someone else would, and eventually we would get on the right path. On some occasions, however, no one spoke up.

One such occasion involved the case of a middle-aged man with weakness. After time was spent clarifying additional history from the presenter, the chief resident advised that we begin to construct a differential diagnosis. "Stroke," offered a resident in the audience. "Is that all?" asked the chief. The room was quiet. My mind was scrambling to come up with more diagnoses, as it often had when confronted with a problem associated with a broad differential diagnosis. "Does anyone have an approach to weakness?" Meeting more silence, he offered his own method. Breaking it down anatomically, he began to write several headings on the board, including "brain/spinal cord," "anterior horn cell," "peripheral nerve," "neuromuscular junction," and "muscle."

It was as if a light had suddenly turned on in the room. Using this structural format, new possibilities were uncovered. Below the heading "brain/spinal cord," the chief began listing the diagnoses that were now flowing from the audience, including brain tumor, multiple sclerosis, and epidural abscess. Next were lesions of the anterior horn cell. Prompting the group, the chief asked, "Does anyone remember what disease Lou Gehrig had?" Of course, within seconds, ALS appeared on the list. In a similar way, the audience identified diseases of the peripheral nerve, neuromuscular junction, and muscle. With this framework for approaching weakness, we had achieved what seemed impossible moments before.

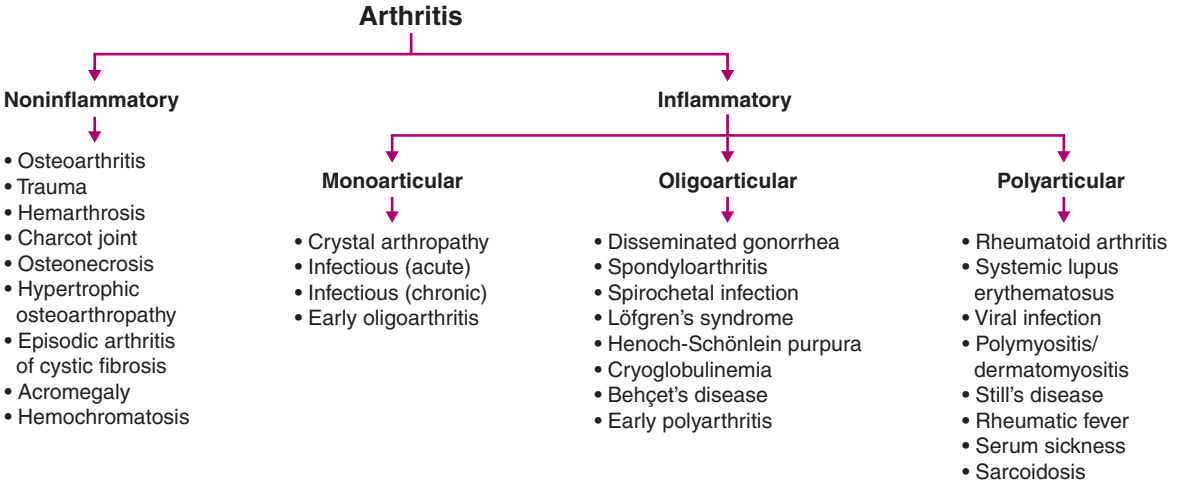
I left that session with an appreciation of the challenges of leading case conference. When the audience is quiet, the leader must not only determine the direction of the conference but also guide the audience forward. The following year, I was offered one of the future chief resident positions. With joy came some trepidation. One of the concerns on my mind was the idea of leading the case conferences that I always enjoyed as a member of the audience.

I began to strategize. During ensuing conferences, I made note of each case. I soon recognized that certain problems were often at the center of discussion. This list included entities such as dyspnea, acute kidney

injury, anemia, hypoxemia, diarrhea, fever of unknown origin, and syncope. Given the frequency with which these entities seemed to appear during case conference, I reasoned that developing an approach to each of them would prove valuable, particularly in moving conference along in front of a reticent audience.

As I began to work toward this goal, I realized that having an approach to a problem in many cases is as simple as constructing a framework that divides the long differential diagnosis into shorter sublists, which are easier for our brains to store and process. Rather than memorize a long list of diagnoses, it is sufficient to remember the headings of a framework, from which many of the diagnoses can then be generated.

I began to build frameworks for all of the common clinical problems in internal medicine. I used various resources, from pages of notes I scribbled at one point or another during residency to textbooks and primary literature. Some frameworks are time-honored and commonly taught, such as those used for acute kidney injury (prerenal, intrarenal, postrenal) and vasculitis (small vessel, medium vessel, large vessel). After a few months, I had accumulated a healthy amount of material. Here is 1 example of the frameworks that I was beginning to assemble:



These frameworks would become the "tip of the spear" when I was faced with silence during case conference. I had accomplished my objective. However, I discovered something much more valuable. I had developed a collection of tools that could be used to teach learners how to approach the clinical problems of internal medicine, beyond the boundaries of case conference.

I spent the rest of my time as a resident using these tools to teach, taking advantage of every opportunity. On the inpatient medical ward, the members of my team were the audience of frequent talks. I discovered that the guidance from the framework alone was enough to result in a meaningful teaching session, but I began to expand the outlines with additional learning points, making each talk healthier and more robust. With each passing month, I sharpened my skills as a resident-teacher. By the end of residency, I had become a nascent teacher. I hope this work can help others reach this point.

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When I first came to OHSU in 2005, I was introduced to the legend of Lynn Loriaux. So astute a clinician, it was said he needed only a handshake to make a diagnosis. Behind every legend there is a man. Often, they are nothing alike. Sometimes, the man is equal to the legend. Only seldom does he exceed it. When I met the man himself, it was clear just how rare he is. His guidance throughout this process cannot be overstated. And we could not have done it without Julie Walvatne.

I received immeasurable support from Shangar Meman, from the earliest stages of writing until the end (she is a superb agent). The advice of my friend and colleague Christopher "Kwonsult" Kwock was always as effective as it was sarcastic. He was available any time I needed him. This book benefited from exceptional proofreading by Jennifer Mustard and Spencer "274" Degerstedt. Joseph Mabe provided valuable expertise in matters that are beyond me. Christopher Neck always took time to answer questions. Summer Steele contributed countless reference articles. I thank my friends and colleagues Gregory Magarian, Peter Sullivan, Sima Desai, Brian Chan, Elly Karamooz, and Margot Chase for their interest and advice over the years.

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CONTENTS

SECTION 9 Nephrology

SECTION 10 Neurology

SECTION 11 Pulmonology

SECTION 12 Rheumatology

SECTION 13 Educator's Appendix

LIST OF COMPLETED FRAMEWORKS