

Daniel M. Kaplan, MD

Hospital Medicine Section, Department of
Medicine, Duke University Medical Center,
Durham, North Carolina

Clear Writing, Clear Thinking and the Disappearing Art of the Problem List

My hospital's electronic medical record helpfully informs me after 1 week on service that there are 524 data available for my attention, a statistic that would be paralyzing without a cognitive framework for organizing and interpreting them in a manner that can be shared among my colleagues. Accurate information flow among clinicians was identified early on as an imperative of hospital medicine. Much attention has been focused on communication during transitions of care, such as that between inpatient and outpatient services and between inpatient teams, taking the form of the discharge summary and the sign-out, respectively. But communication among physicians, consultants, and allied therapists must and inevitably does occur continuously day by day during even the most uneventful hospital stay. On academic services the need to keep multiple and ever-rotating team members on the same page, so to speak, is particularly pressing.

The succinct and accurate problem list, formulated at the end of the history and physical examination and propagated through daily progress notes, is a powerful tool for promoting clear diagnostic and therapeutic planning and is ideally suited to meeting the need for continuous information flow among clinicians. Sadly, this inexpensive and potentially elegant device has fallen into disuse and disrepair and is in need of restoration.

In the 1960s, Dr. Lawrence Weed, the inventor of the "SOAP" note and a pioneer of medical informatics, wrote of the power of the problem list to impose order on the chaos of clinical information and to aid clear diagnostic thinking, in contrast with the simply chronological record popular in earlier years:

It is this multiplicity of problems with which the physician must deal in his daily work....[T]he multiplicity is inevitable but a random approach to the difficulties it creates is not. The instruction of physicians should be based on a system that helps them to define and follow clinical problems one by one and then systematically to relate and resolve them....[T]he basic criterion of the physician is how well he can identify the patient's problems and organize them for solution.¹

Weed proposed that the product of our diagnostic thinking and investigations should be a concise list of diagnoses, as precisely as we are able to identify them, or, in their absence, a clear understanding of the specific problems awaiting resolution and a clear appreciation of the interrelationships among these entities:

The list should...state the problems at a level of refinement consistent with the physician's understanding, running the gamut from the precise diagnosis to the isolated, unexplained finding. Each item should be classified as one of the

following: (1) a diagnosis, e.g., ASHD, followed by the principal manifestation that requires management; (2) a physiological finding, e.g., heart failure, followed by either the phrase “etiology unknown” or “secondary to a diagnosis;” (3) a symptom or physical finding, e.g., shortness of breath; or (4) an abnormal laboratory finding, e.g., an abnormal EKG. If a given diagnosis has several major manifestations, each of which requires individual management and separate, carefully delineated progress notes, then the second manifestation is presented as a second problem and designated as secondary to the major diagnosis.¹

These principles were widely praised and adopted. An editorial in the *New England Journal of Medicine* proclaimed that “...his system is the essence of education itself,”³ and it reigned throughout my own formal medical education.

In the decade that has seen our specialty flourish, with the attendant imperatives of clear thinking and communication, in teaching hospitals the problem list seems to have become an endangered species. The general pattern of its decline is that it is often supplanted by a list of organs, or worse, medical subspecialties, each followed by some assessment of its condition, whether diseased or not. The format resembles that used in critical care units for patients with multiple vital functions in jeopardy, on which survival depends from minute to minute, sometimes regardless of the original etiology of their failure. It is not clear how these notes began to spread from the ICU to the medical floor, where puzzles are solved and progress has goals more varied than mere survival. None of the residents I have queried over the years seem to know. The prevalence of this habit is also unknown, but it is widespread at both institutions at which I have been recently affiliated, and from the generation of notes in this format by trainees freshly graduated from medical schools across the land, I infer that it is no mere regional phenomenon. There may be an unspoken assumption that if this format is used for the sickest patients, it must be the superior format to use for all patients. Perhaps it reflects subspecialists teaching inpatient medicine, equipping trainees with vast technical knowledge of specific diseases and placing less emphasis on formulating coherent assessments. I believe its effects are pernicious and far-reaching, affecting not only the quality of information flow among clinicians, but also the quality and rigor of diagnostic thinking of those in our training programs.

The history and physical examination properly culminate in the formulation of a problem list that

establishes the framework for subsequent investigations and therapy. For each problem a narrative thread is initiated that can be followed in progress notes to resolution and succinctly reviewed in the discharge summary. It is now common to see diagnostic formulations arranged not by problem but by organ or subspecialty, for example, “Endocrine: DKA.” As everyone understands DKA to be an endocrine problem, the organ system preface adds nothing useful and only serves to bury the diagnosis in text. More tortured prose follows attempts to cram into the header all organs or specialties touched by the problem; hence “pneumonia” is often preceded by “pulmonary/ID.” A more egregious recent example was an esophageal variceal hemorrhage designated “GI/Heme.” And efforts to force an undifferentiated problem into an organ group can reach absurdity: “Heme: Asymmetric leg swelling raised concern for DVT, but ultrasound was negative.”

The organ preface at best merely adds clutter; the difficulty is compounded when the actual diagnosis or problem is omitted entirely in favor of mention of the organs, for example, for pneumonia: “Pulm/ID: begin antibiotics.” The reader may be left to guess exactly what is being treated, as with “CV: begin heparin and beta-blocker.” The assessment and subsequent notes become even more unwieldy when the unifying diagnosis is approached circuitously on paper by way of its component elements, as with a recent patient with typical lobar pneumonia who was assessed by the house officer as having “(1) ID: fever probably due to pneumonia; (2) Pulm: Hypoxia, sputum production and infiltrate on CXR consistent with pneumonia; and (3) Heme: leukocytosis likely due to pneumonia as well.” Synthesis, the holy grail of the H&P, is thus replaced by analysis. Each tree is closely inspected, but we are lost in the forest. Weed wrote of such notes:

Failure to integrate findings into a valid single entity can almost always be traced to incomplete understanding....If a beginner puts cardiomegaly, edema, hepatomegaly and shortness of breath as four separate problems, it is his way of clearly admitting that he does not recognize cardiac failure when he sees it.²

Often, however, as in the example above, the physician fully understands the unifying diagnosis but nonetheless insists on addressing involved systems separately. Each feature is then apt to be separately followed in isolation through the progress

notes, sometimes without any further mention of pneumonia as such. Many progress notes thus omit stating what is actually thought to be wrong with the patient.

The failure to commit to a diagnosis on paper, even when having done so in practice, ultimately can make its way to the discharge summary, propagating confusion to the outpatient department and ricocheting it into future admissions. It also robs us of the satisfaction of declaring a puzzle solved. I was compelled to write this piece in part by the recent case of a young woman who presented with fever and dyspnea. Through an elegant series of imaging studies and serologic tests, a diagnosis of lupus pericarditis was established, and steroid therapy produced dramatic remission of her symptoms—a diagnostic triumph by any measure. How disheartening then to read the resident's final diagnosis for posterity in the discharge summary: "fever and dyspnea."

The disembodied organ list thus sows confusion and redundant, convoluted prose throughout the medical record. Perhaps even more destructive is its effect on diagnostic thinking when applied to undifferentiated symptoms or problems, the general internist's *pièce de résistance*. Language shapes thought, and premature assignment of symptoms to a single organ or subspecialty constrains the imagination needed to puzzle things out. Examples are everywhere. Fever of unknown origin may be peremptorily designated "ID," by implication excluding inflammatory, neoplastic, and iatrogenic causes from consideration. The asymmetrically swollen legs cited earlier are not hematologic, but they are still swollen. Undiagnosed problems should be labeled as such, with comment as to the differential diagnosis as it stands at the time and the status of the investigation. When a diagnosis is established, it should replace the undifferentiated symptom or abnormal finding in the list, with cardinal manifestations addressed as such when necessary. Thus, for example, "fever in an intravenous drug user" becomes "endocarditis," and "anasarca" becomes "nephrotic syndrome" becomes "glomerulonephritis" as the diagnosis is established and refined. Weed saw the promise of the well-groomed, problem-based record in teaching diagnostic thinking:

The education of a physician...should be based on his clinical experience and should be reflected in the records

he maintains on his patients....The education...becomes defective not when he is given too much or too little training in basic science...but rather when he is allowed to ignore or slight the elementary definition and the progressive adjustment of the problems that comprise his clinical experience. The teacher who ultimately benefits students the most is the one who is willing to establish parameters of discipline in the not unsophisticated but often unappreciated task of preventing this imprecision and disorganization.¹

Hospitalists as generalist clinician-educators have an opportunity to teach fundamental principles of medicine that span subspecialties. These principles must include clear organization and prioritization of complex medical information to enable coherent diagnostic and therapeutic planning and smooth continuity of care. The sign-out and the all-important discharge summary can be only as clear and as logical as the diagnoses that inform them. To these ends, let us maintain and reinvigorate the art of the problem list. As an exercise at morning report and attending rounds, we should emphasize the development of an accurate, comprehensive list of active problems before moving on to detailed discussion of any single issue, as Weed suggested nearly 40 years ago:

A serious mistake in teaching medicine is to expose the student, the house officer, or the physician to an analytical discussion of the diagnosis and management of one problem before establishing whether or not he is capable of identifying and defining all of the patient's problems at the outset...¹

We should expect this list to be formulated at the end of the admission history and physical examination. We must ensure that trainees can correctly identify the level of resolution achieved for each item. They must learn to distinguish among undifferentiated *symptoms*, for example, "passed out"; undifferentiated *problems*, expressed by medical terms with precise meaning, such as syncope; and precise etiologic *diagnoses*, such as ventricular tachycardia. Daily progress notes and sign-out documents must reflect the progressive refinement in classification of each item and give the current status of the diagnostic evaluation. When therapy has been established, daily notes must reflect its precise status relative to its end points; examples include place in the timeline for antibiotics or, for a bleeding patient, a tally of blood products and their impact. In the end, we must ensure that the discharge summary

reflects the highest level of diagnostic resolution achieved for each problem we have identified. In so doing, we will help to ensure coherent and efficient care for our patients, save time and spare confusion for our colleagues, and teach our trainees to think and communicate clearly about our collective efforts.

Address for correspondence and reprint requests: Daniel M. Kaplan, MD, Hospital Medicine Section, Department of Medicine, Duke University Medical

Center, DUMC Box 3377, Durham, NC 27710; Fax: (919) 668-5394; E-mail: d.m.kaplan@duke.edu

REFERENCES

1. Weed LL. *Medical Records, Medical Education and Patient Care*. Cleveland, OH: Press of Case Western Reserve University; 1971.
2. Weed LL. Medical records that guide and teach (concluded). *N Engl J Med*. 1968; 278:593-600.
3. Hurst JW. Ten reasons why Lawrence Weed is right. *N Engl J Med*. 1971;284:51-52.