Charting, Rhetoric, and Technical Communication

Improving Primary-Care Progress Notes and Patient Care through Attention to Audience and Purpose

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Abstract: Medical documentation—i.e., charting—is widely known to be crucial for patient care, billing, and legal protection, but it is simultaneously largely viewed as tedious, time-consuming busywork that takes clinicians away from patients, especially in the era of electronic health records (EHRs). Scholars in both rhetoric of health and medicine and medical humanities have done significant work on both the importance of writing skills for health professionals and how to teach those skills. In this project, I investigate how progress notes within EHRs could be improved if medical providers had more training in rhetoric and technical writing, with a specific focus on primary-care providers. I draw upon a corpus of de-identified primary-care progress notes and the insights of providers themselves, both sourced from clinics in rural Oregon. I argue that understanding basic principles of audience-centered writing is crucial to medical providers—and, more specifically, that looking at actual chart notes can help us to develop and implement curriculum for teaching rhetorical reading and writing principles to providers, thereby positively impacting both patient care and administrative efficiency.

Keywords: electronic health records, rhetoric of health and medicine, medical charting, technical communication, medical documentation, workplace writing

"I hate charting."
"Charting is extremely important."

These two statements, spoken one after the other by a retired family physician, aptly summarize the paradox that remains at the heart of medical documentation. Medical documentation—also known as charting or clinical notes—is generally acknowledged by clinicians to be crucial for patient care, billing, and legal protection. At the same time, charting is widely viewed as tedious, time-consuming busywork that takes clinicians away from patients, especially in the era of electronic health records (EHRs). Medical providers live every day in this tension of simultaneously valuing and resenting medical documentation; as another family physician expressed to me, "I love writing a real good note. It's a joy. I never experience that joy."

In this essay, I focus specifically on the structure of clinical notes themselves, using de-identified clinical progress notes from primary-care clinics in rural Oregon. As Reed (2018) acknowledges, limited attention has been given thus far in the rhetoric of health and medicine (RHM) to "discourse-in-use" (p. 182), or how clinicians actually use language. Reed acknowledges the challenges RHM scholars may face with gaining entry to clinical settings for such research, which are largely due (though she doesn't say as much) to the Health Insurance Portability and Accountability Act (HIPAA) that protects patients' Protected Health Information (PHI). The "discourse-in-use" of medical documentation is what especially interested me, however, so I partnered with a rural family-practice residency and medical center in Oregon to help me navigate HIPAA and to see how I could help medical providers with their own charting.

What I found is that progress notes are varied and overwhelming to read, because providers write them in so many different ways and with so many different skill levels. Even a single patient's records can shift between radically different styles and structures depending on the provider seeing them for a given visit, as will be clear in the examples later in this essay. This means that two different notes for the same patient may present information in a different order, with inconsistent or missing section headings to guide reading, with crucial information buried in paragraphs or underdeveloped, and more. This disadvantages providers who are trying to efficiently discover the context of their patient's illness, including what treatments have already been attempted, as is necessary for continuity of care. It also disadvantages patients whose providers may not be able to reliably identify patients' health

histories and past medical interventions, especially while those providers are balancing overscheduling and burgeoning patient loads (Yurkiewicz, 2023).

In light of this, looking at and discussing real notes with primary-care providers, rather than primarily analyzing those texts apart from providers, can be quite fruitful. I also found that providers were receptive to but unfamiliar with principles from rhetoric and technical communication. Building off Opel & Hart-Davidson (2019), I argue that good charting is an important part of the "care work" that primary-care providers do, and that, therefore, these providers would benefit from some basic grounding in rhetoric and technical communication.

Current research on charting in health communication and the rhetoric of health and medicine

Research on charting abounds in fields related to health care and health communication: It describes how burdensome charting is, leading to clinician burnout (Gesner et al., 2019); how good documentation plays a key role in protecting against malpractice suits (Ghaith et al., 2022); how providers need to avoid using stigmatizing language about patients in their chart notes, as such language can undermine patients' future care (Davis, 2021); how providers navigate the widespread transition to electronic health records (Barrett, 2018; Butler et al., 2022; Heckemann et al., 2022); how auto-populating in medical documentation undermines chart quality and patient care (Shoolin et al., 2013), and so on. Scholars in both rhetoric of health and medicine (RHM) and medical humanities (MH) have done significant work on both the importance of writing skills for health professionals and how to teach those skills (Hellerstein, 2015; Ariail et al, 2013; Angeli, 2020; Campbell, 2018; Assad, 2013; Schryer, 1993). RHM Scholars, including Angeli & Campbell (2023) and Kenzie & Daniel (2018), have developed curricula with varying emphases on technical writing skills, humanistic training, genre and audience awareness, and ideological context. Angeli et al (2022) conducted a notable study of paramedic responses to patient-care reports, while Campbell (2017) persuasively argued that rhetoricians and health professionals should collaborate to create learning opportunities for health professionals.

Unfortunately, as Dawn Opel and William Hart-Davidson (2019) assert in their study of primary-care providers, most medical providers see charting as antagonistic to the "care work" they do for patients, which is central to clinicians' vocation (p. 364); providers see documentation as an administrative, rather than clinical, concern. Opel & Hart-Davidson go on to make a compelling argument that we should call charting "writing" and see it as central to patient care—and that, therefore, medical providers need to see themselves as writers as well as clinicians. Family physician Sarah Yonder (2022) similarly argues for the importance of writing effective clinical notes as part of patient care, and that medical students are more likely to succeed at writing good notes if they "understand the value of well-written notes" and have "the confidence that they have the knowledge and skills to be successful" (p. 14). Both Opel & Hart-Davidson's and Yonder's observations resonate strongly with my own observations during my study of primary-care notes and primary-care providers, as described below, which is why I recommend framing rhetorical reading and writing of clinical notes as equally part of patient-care practice as it is part of administrative practice.

Industry trend to use generative AI in charting

While researchers are investigating the effects of charting on provider burnout, provider error, and equitable care, as well as how best to teach providers the writing skills they need to succeed in their professions, there's increasing enthusiasm within industry about generative AI taking on a role in medical documentation. For example, in April 2023, Epic Systems and Microsoft announced that they will be partnering to integrate generative AI ChatGPT into Epic's EHR system, promising increased productivity as clinicians are able to focus more on clinical work and less on writing notes (Microsoft News Center, 2023). In June 2023, *The New York Times* reported on how generative AI can be used to "ease the crushing burden of digital paperwork that physicians must produce" and how various companies are developing AI tools to act as "tireless scribe[s]" for medical documentation (Lohr, 2023). In August 2023, *The Washington Post* reported on concerns some healthcare workers have about the rollout of generative AI in healthcare, including that it's motivated by hospital administrators' desire to cut labor costs at the expense of care (Verma, 2023). In other

words, generative AI is being proposed as a solution to provider burnout by taking the administrative tedium of charting off providers' plates, which overlooks the vital role good charting plays in the care work providers do for patients and reifies the notion that charting is primarily a matter of administrivia, in addition to ignoring other systemic issues in the American healthcare system that lead to burnout.

Contribution: Rhetorically analyzing clinical notes for teaching and learning

Regardless of the role generative AI ends up playing in medical documentation, however, I argue alongside Assad (2013) that understanding basic principles of audience-centered writing is crucial to medical providers—and, more specifically, that looking at actual chart notes can help us to develop and implement curriculum for teaching rhetorical reading and writing principles to providers, principles that will positively impact both patient care and administrative efficiency. As previously mentioned, my project offers something new by presenting concrete examples from actual clinical notes with a discussion that draws upon both a close reading of this corpus of progress notes and the insights of primary-care providers. My major conclusion is that primary-care providers would benefit from learning how to write with attention to audience and purpose—cornerstone principles from rhetoric for which technical communication offers practical strategies—and that engaging with actual chart notes can aid with that learning. This seems especially needful since these primary-care physicians spend the most time in electronic health records (Rotenstein et al., 2023). However, few providers receive explicit training in rhetoric and technical communication, and such training is certainly not part of standard medical school and residency curricula even as medical schools are incorporating medical humanities curriculum more often (Campbell, 2017). (Hellerstein's wry comment about his narrative medicine course provides a clear contrast to my own focus in this project: "And thank God I wasn't being asked to give one of the all-too-sadly needed classes in 'writing in the electronic health record'") (2015, p. 270).

In what follows, I describe the parameters of my own study, explain the purpose and audience of primary-care progress notes, and discuss examples of both de-identified primary-care progress

notes and how they could be improved with more focus on audience and purpose. As part of this, I also share thoughts from resident primary-care physicians about reading and writing chart notes, based on conversations I had with these physicians-in-training and their faculty during a series of workshops I facilitated at a rural residency program.

Study Parameters, Participant Inclusion Criteria, and Methodology

For this study, I partnered with a medical center and associated family-practice residency in rural Oregon. I received IRB approval for access to de-identified progress notes from 30 patients at two primary-care clinics; staff at the medical center de-identified these notes and provided them to me digitally. The notes are all from primary-care office visits between January 2019 and December 2022; all patients included in the study had had at least three total visits at one of the clinics; and all patients were over the age of 21. Because some patients had more than three office visits between January 2019 and December 2022, I had significantly more than 90 total progress notes from which to sample.

For the purposes of the study, I only looked at progress notes written by primary-care providers—that is, family physicians (MDs), including residents; family nurse practitioners (FNPs); and certified physician assistants (PA-Cs). Initial input of patient vitals, etc., by medical assistants is also tagged as 'progress notes' in the Epic system, but, for the purposes of this study, I focused exclusively on provider-generated progress notes, as I was specifically collaborating with a physician-training program. I only requested progress notes, because progress notes are the primary writing site within chart notes; providers have to write something in them, unlike the many sections of the electronic health record that are auto-populated. All notes were made and stored in Epic Systems, one of the U.S.'s largest electronic health record (EHR) companies; many readers may be familiar with Epic's seemingly ubiquitous MyChart, which is the patient-side portal of the EHR.

During this project, I spoke with a variety of family physicians—retired, attending, and resident. Participant criteria for these provider-interlocutors were simple: Were they primary-care providers, and would they talk to me? Some spoke with me in informal settings, like a personal residence; others, in residency

didactics sessions; others, in Zoom meetings or over drinks. Most, but not all, were associated with the residency program, and most were family physicians. Methodologically, conversations were organic and informal; sometimes I shared de-identified progress notes with them and asked for their thoughts, always echoing back my understanding of what they'd said for confirmation. Similarly, while my criteria for which notes I requested was well defined, my approach to analyzing the notes themselves ended up being fairly organic—though I initially considered a variety of analytical frameworks with which to approach the notes, I decided that my primary purpose for this particular project was to support primary-care providers in their charting, which, in this case, meant consulting providers on how effective they found the notes and reading the notes rhetorically for linguistic manifestations of audience and purpose.

Audiences and Purposes of Primary-Care Progress Notes

As part of my study, I asked participants about the audience and purpose of progress notes; from these discussions, I've identified four main audiences for progress notes.

As can be seen in Table 1, the four main audiences for primary-care progress notes are lawyers, health insurance companies, colleagues/medical providers, and patients themselves. The purposes for addressing each of these audiences are distinct: defend against potential malpractice suits, get paid for services provided, provide continuity of care, and keep patients informed. Providers did not express a consistent awareness of ranking audiences, though, in practice, many mentioned prioritizing an imagined malpractice lawyer.

In other words, there is a lot going on rhetorically in medical progress notes, with multiple audiences' needs to be met and multiple purposes to be fulfilled. Based on widespread complaints about notes, most of those needs are not being met, and only some of these needs are being prioritized (e.g., Jaroudi & Payne, 2019). This isn't surprising, considering how rhetorically complex these notes are and how little explicit training providers get in writing—or, more specifically, in audience-centered writing. For example, writing to avoid malpractice invites CYA (Barabas, 1993) rather than writing with the clarity that would help patients and other

providers. If providers learned to meet the needs of multiple audiences with their writing—as technical communicators often must—progress notes would more successfully fulfill their multiple purposes for multiple audiences.

Chart Note Audience	**Chart Note Purpose**
Lawyers	Defend against potential malpractice suits by justifying providers' medical decision-making.
Health Insurance Companies	Justify medical necessity of care and get paid for services provided by documenting time spent and problems identified by provider.
Colleagues/Medical Providers	Provide continuity of care to patient by keeping other providers abreast of treatment and condition.
Patients	Keep patients informed about their care and confirm that notes accurately represent what patients shared with providers.

Table 1: Each of the four audiences for progress notes has a distinct purpose.

Problems in Primary-Care Progress Notes

Let's look at some of the major problems in primary-care progress notes by looking, first, at the direct complaints of physicians, and then, by looking at two de-identified progress notes from my corpus. In so doing, my hope is to show how having access to actual clinical notes can enhance our understanding of how and why to apply rhetorical principles to clinical progress notes.

Provider complaints about progress notes

In this section, we'll look at how primary-care providers characterize their reading of and frustration with progress notes.

In March 2023, I had the opportunity to run two workshops on charting as technical communication during a rural family-practice residency's regularly scheduled drop-in "didactics" sessions (i.e., time set aside once a week in the residency curriculum for intentional teaching and learning). Participants were resident

physicians and faculty physicians from the residency program. There was little overlap in the two workshop groups, because physicians attended the two different sessions purely based on their availability on a given Thursday in March. My sample size was small—fewer than ten total resident physicians and four attending physicians participated in the two sessions I facilitated—and yet, participants' responses, shared as part of a discussion, were very telling.

When asked—in the context of a group discussion—how they themselves read chart notes, providers all seemed to agree that no one reads the whole thing, and some don't read any of them. In describing chart notes, providers consistently refer to sections of the Problem-Oriented Medical Record (POMR), commonly known as the SOAP ("Subjective, Objective, Assessment, Plan") note (Kenzie & Daniel, 2018; Jacobs, 2009; Jaroudi & Payne, 2019; Yonder, 2022). For many providers, learning these formulae is the extent of their formal training on writing chart notes.

In our discussion about how they read notes, some providers said that they just read the assessment and plan section of the note (which summarizes the diagnosis and what's being done about it); others said that they skip reading the 'subjective' note entirely (in which the provider records what the patient says) and go straight to the 'objective' lab data (where blood tests, vitals, etc. are listed) or other tab in the electronic medical record interface; others said that they skip notes written by certain providers entirely, as they don't find them useful. All of this points to interesting assumptions about the role providers see notes playing in their clinical work. Asked why they read this way, they cited reasons like time, efficiency, boredom, and the possibility of having their perceptions of a patient's symptoms clouded by another provider's interpretation (presumably, a provider whose interpretation they do not implicitly trust).

When we looked at some de-identified chart notes together, I asked these provider-participants what helped them find what they were looking for and, in contrast, what distracted them from what they were looking for. Providers called out responses, which I noted down on a projected document so they could confirm my interpretation of their comments. From our discussion, what providers found helpful in reading a note were clear section headings and evidence that a human actually wrote the note (e.g., according to providers, full words in the physical exam section can

mean that it wasn't just auto-populated from another section of the chart, which increased the likelihood that an exam had actually taken place).

Overarching Distraction	How the Distraction Manifests in Progress Notes
Inconsistent Organization	Inconsistent terminology in section headers (e.g., Summary instead of History of Present Illness or Assessment, etc.). Lack of clear delineations between sections. Inconsistent formatting. Missing named sections from the SOAP problem-oriented chart-note formula.
Irrelevant Note Content	Redundant information (e.g., problem list provided twice). "Lots of superfluous junk" (e.g., unnecessary copies—known as 'dotphrases'—of patient data found in other sections of the EHR, like medications, etc.). "So much bullshit" (e.g., physical exam data that is auto-populated and directly contradicts the actual patient encounter, as when a patient with dementia is listed as having no neurological symptoms).
Inconsistent Style	Paragraphs when a list would be more appropriate ("needs list with a plan"). "Too many things" (i.e., extra, non-standard sections, etc.). Content that seems machine-generated (i.e., auto-populated from another chart section through user macros/'dotphrases').

Table 2: Providers found it distracting when progress notes violated basic principles of rhetoric and technical communication.

However, they had a lot more to say about what was distracting. Keep in mind that any "distraction" that prevents providers from effectively using clinical notes is affecting patient care, because

clinical notes are part of patient care; these are not merely administrative concerns. In Table 2, I provide examples of what providers said they found distracting in a progress note, which can be broadly summarized as inconsistent organization, irrelevant note content, and inconsistent style. I created the three major categories ("overarching distractions") to synthesize the various examples provided by participants in the discussion ("how the distraction manifests").

As I argue that having access to a corpus of chart notes can help us teach relevant principles of rhetoric and technical communication to providers, what these distractions look like in practice should become clearer when looking at some sample progress notes.

Two sample progress notes

In what follows, I walk you through two sample progress notes from my corpus. These notes were written about the same patient by different primary-care providers, which helps illuminate the contrast in writing strategies. I've chosen these two notes to serve as examples because they showcase different ways progress notes are written and they are notes my workshop participants viewed and discussed. Each note has potentially positive characteristics that the other lacks—bulleted lists instead of paragraphs (Note One); clear delineations between sections (Note Two); and so on. However, both have serious issues for skimmability and, thus, usability for at least some of their intended audiences. Notably, participants in my workshops complained about both Note One and Note Two.

Note One (Figs. 1-2) shows one provider's note about an office visit with this patient; Note Two (Figs. 3-5) shows another provider's note about the same patient at a different visit. In this paper, I'm presenting the notes with two pages next to each other, read left to right, such that each figure shows two pages of notes. These are screenshots of pdfs, because I received the notes in pdf form. However, in the electronic health record, these pages would all be presented in one-page view, like a webpage; a provider would need to scroll down to get to page 2, 3, etc., rather than seeing the pages side by side.

Note One (Figs. 1-2)

Note One is characterized by the brevity of provider-generated content (around 150 words[1], including some copypasta between sections), delayed specifics about the nature of the office visit, and inconsistent formatting delineating different sections of the note. It also has approximately 400 words of auto-populated content, meaning that provider-generated text is about 27% of the note.

In Note One, no mention of the specific reason for this office visit is made until the bottom of the second full page of the note (Fig. 2); the note starts by stating the purpose of the visit as simply "follow-up," and then the first two pages of the note are auto-populated with sections on social history (half a page) and current medications (one page). In other words, the specific reason for the follow-up visit is not mentioned until after at least a page and a half of generic, auto-populated text.

Beneath the current medications, the provider has written the abbreviation "HPI" [history of present illness], followed by a line stated the age and sex of the patient. Next is a brief list, headed by the abbreviation "GLF" [ground-level fall]. The whole HPI section is not differentiated from the preceding sections with formatting, though some of the auto-populated sections have clearly templated formatting (e.g., see "Current Outpatient Medications on File Prior to Visit" in Fig. 1)—in other words, the formatting of this part of Note One is inconsistent. In fact, no explicit section headers for the "Subjective" or "Objective" portions of the note are provided.

At the end of Note One, there is another list that is almost word-for-word the same as the list provided under HPI, with two changes: 1) the heading is "GLF/T11 compression fx" [Ground-level fall/Thoracic vertebra 11 compression fracture] rather than just "GLF," and 2) there is one additional line at the end of the list stating "referral to ortho, MRI of lumbar/thoracic spine to r/u sig spinal cord impingement d/t intermittent BL LE paralysis."

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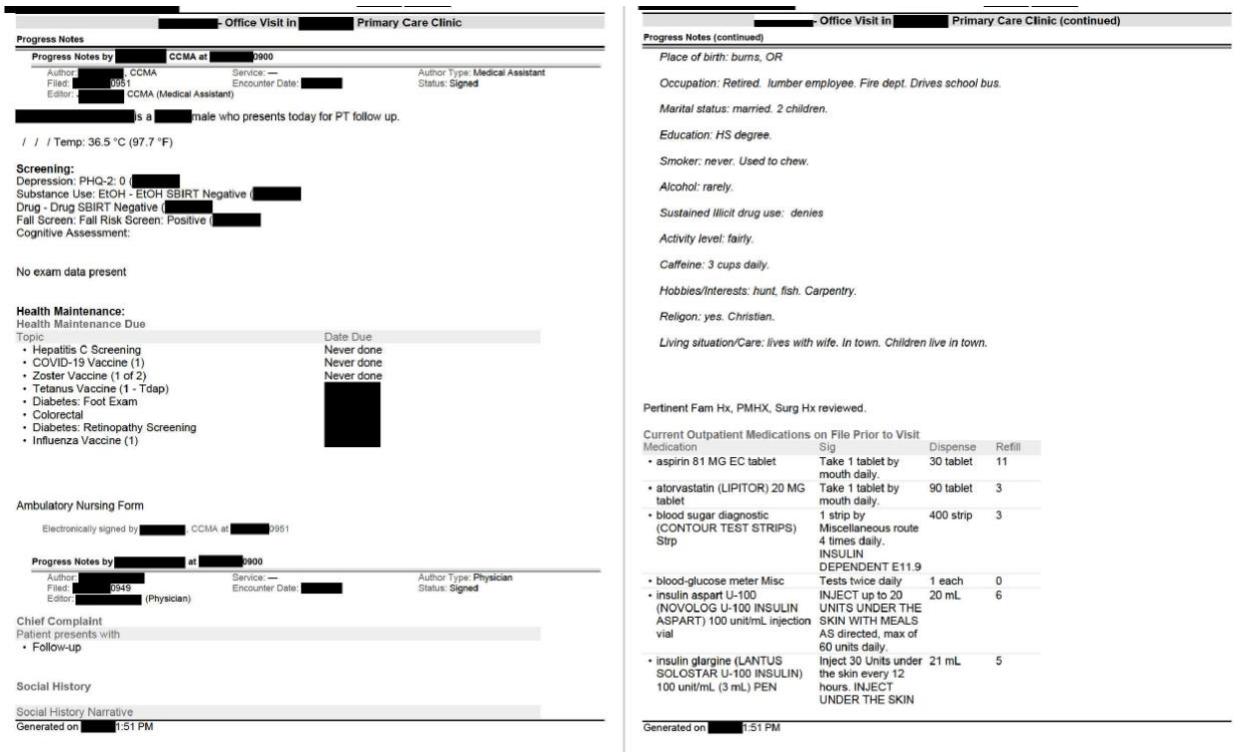
[1] I provide approximate word counts for context. These word counts are approximate for a number of reasons, including that some words were lost in the redaction process, some words may have been imperfectly transcribed when exporting the pdf to .docx to use the word-count tool, the word-count tool sometimes counted punctuation marks as words, and some sections (e.g., physical exam) combine provider-generated and auto-populated text.



- Office Visit in Primary Care Clinic

Progress Notes

Progress Notes by , CCMA at 0900

Author: , CCMA | Service: — | Author Type: Medical Assistant
Filed: 0951 | Encounter Date: | Status: Signed
Editor: CCMA (Medical Assistant)

is a male who presents today for PT follow up.

/ / / Temp: 36.5 °C (97.7 °F)

Screening:
Depression: PHQ-2: 0 (
Substance Use: EtOH - EtOH SBIRT Negative (
Drug - Drug SBIRT Negative (
Fall Screen: Fall Risk Screen: Positive (
Cognitive Assessment:

No exam data present

Health Maintenance:
Health Maintenance Due

Topic	Date Due
• Hepatitis C Screening	Never done
• COVID-19 Vaccine (1)	Never done
• Zoster Vaccine (1 of 2)	Never done
• Tetanus Vaccine (1 - Tdap)	
• Diabetes: Foot Exam	
• Colorectal	
• Diabetes: Retinopathy Screening	
• Influenza Vaccine (1)	

Ambulatory Nursing Form

Electronically signed by , CCMA at 0951

Progress Notes by at 0900

Author: | Service: — | Author Type: Physician
Filed: 0949 | Encounter Date: | Status: Signed
Editor: (Physician)

Chief Complaint
Patient presents with
• Follow-up

Social History

Social History Narrative
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- Office Visit in Primary Care Clinic (continued)

Progress Notes (continued)

Place of birth: burns, OR

Occupation: Retired. lumber employee. Fire dept. Drives school bus.

Marital status: married. 2 children.

Education: HS degree.

Smoker: never. Used to chew.

Alcohol: rarely.

Sustained illicit drug use: denies

Activity level: fairly.

Caffeine: 3 cups daily.

Hobbies/Interests: hunt, fish. Carpentry.

Religon: yes. Christian.

Living situation/Care: lives with wife. In town. Children live in town.

Pertinent Fam Hx, PMHX, Surg Hx reviewed.

Current Outpatient Medications on File Prior to Visit

Medication	Sig	Dispense	Refill
• aspirin 81 MG EC tablet	Take 1 tablet by mouth daily.	30 tablet	11
• atorvastatin (LIPITOR) 20 MG tablet	Take 1 tablet by mouth daily.	90 tablet	3
• blood sugar diagnostic (CONTOUR TEST STRIPS) Strp	1 strip by Miscellaneous route 4 times daily. INSULIN DEPENDENT E11.9	400 strip	3
• blood-glucose meter Misc	Tests twice daily	1 each	0
• insulin aspart U-100 (NOVOLOG U-100 INSULIN ASPART) 100 unit/mL injection vial	INJECT up to 20 UNITS UNDER THE SKIN WITH MEALS AS directed, max of 60 units daily.	20 mL	6
• insulin glargine (LANTUS SOLOSTAR U-100 INSULIN) 100 unit/mL (3 mL) PEN	Inject 30 Units under the skin every 12 hours. INJECT UNDER THE SKIN	21 mL	5

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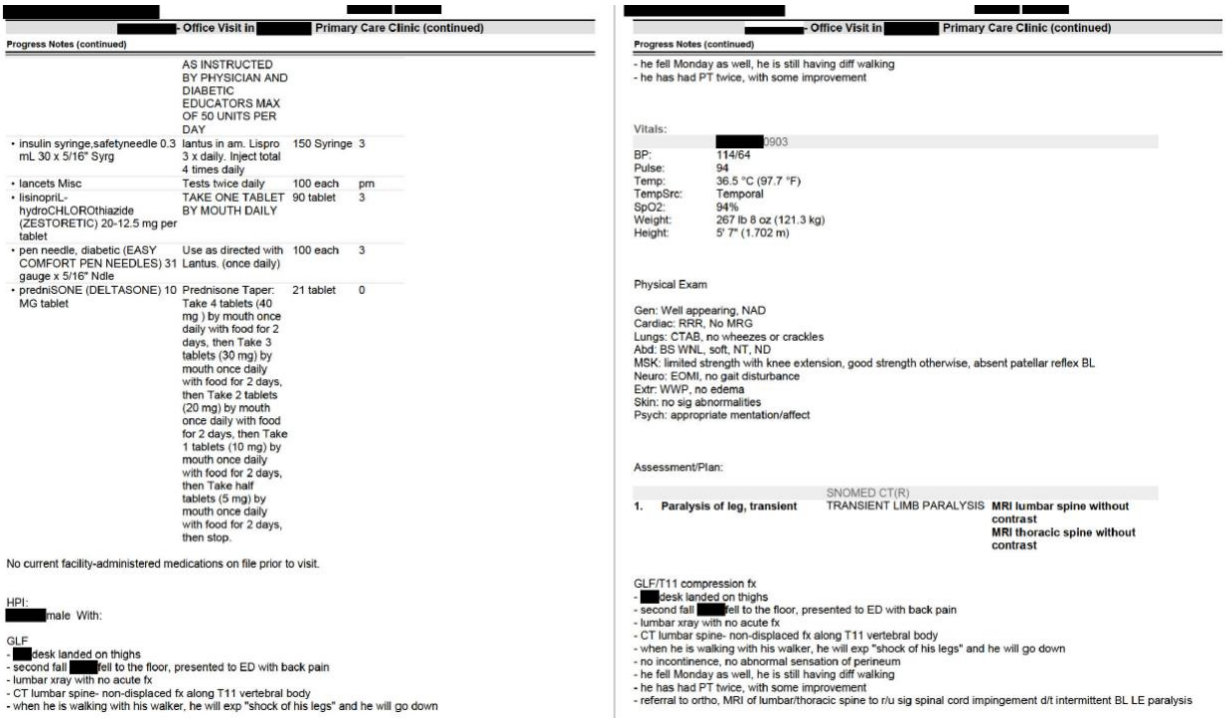
Figure 1: First Two Pages of Note One



- Office Visit in Primary Care Clinic (continued)

Progress Notes (continued)

	AS INSTRUCTED BY PHYSICIAN AND DIABETIC EDUCATORS MAX OF 50 UNITS PER DAY		
• insulin syringe,safetyneedle 0.3 mL 30 x 5/16" Syrg	lantus in am. Lispro 3 x daily. Inject total 4 times daily	150 Syringe	3
• lancets Misc	Tests twice daily	100 each	prn
• lisinopriL-hydroCHLOROthiazide (ZESTORETIC) 20-12.5 mg per tablet	TAKE ONE TABLET BY MOUTH DAILY	90 tablet	3
• pen needle, diabetic (EASY COMFORT PEN NEEDLES) 31 gauge x 5/16" Ndle	Use as directed with Lantus. (once daily)	100 each	3
• predniSONE (DELTASONE) 10 MG tablet	Prednisone Taper: Take 4 tablets (40 mg) by mouth once daily with food for 2 days, then Take 3 tablets (30 mg) by mouth once daily with food for 2 days, then Take 2 tablets (20 mg) by mouth once daily with food for 2 days, then Take 1 tablets (10 mg) by mouth once daily with food for 2 days, then Take half tablets (5 mg) by mouth once daily with food for 2 days, then stop.	21 tablet	0

No current facility-administered medications on file prior to visit.

HPI:
male With:

GLF
- desk landed on thighs
- second fall fell to the floor, presented to ED with back pain
- lumbar xray with no acute fx
- CT lumbar spine- non-displaced fx along T11 vertebral body
- when he is walking with his walker, he will exp "shock of his legs" and he will go down

- Office Visit in Primary Care Clinic (continued)

Progress Notes (continued)

- he fell Monday as well, he is still having diff walking
- he has had PT twice, with some improvement

Vitals:

	0903
BP:	114/64
Pulse:	94
Temp:	36.5 °C (97.7 °F)
TempSrc:	Temporal
SpO2:	94%
Weight:	267 lb 8 oz (121.3 kg)
Height:	5' 7" (1.702 m)

Physical Exam

Gen: Well appearing, NAD
Cardiac: RRR, No MRG
Lungs: CTAB, no wheezes or crackles
Abd: BS WNL, soft, NT, ND
MSK: limited strength with knee extension, good strength otherwise, absent patellar reflex BL
Neuro: EOMI, no gait disturbance
Extr: WWP, no edema
Skin: no sig abnormalities
Psych: appropriate mentation/affect

Assessment/Plan:

	SNOMED CT(R)	
1. **Paralysis of leg, transient**	TRANSIENT LIMB PARALYSIS	**MRI lumbar spine without contrast** **MRI thoracic spine without contrast**

GLF/T11 compression fx
- desk landed on thighs
- second fall fell to the floor, presented to ED with back pain
- lumbar xray with no acute fx
- CT lumbar spine- non-displaced fx along T11 vertebral body
- when he is walking with his walker, he will exp "shock of his legs" and he will go down
- no incontinence, no abnormal sensation of perineum
- he fell Monday as well, he is still having diff walking
- he has had PT twice, with some improvement
- referral to ortho, MRI of lumbar/thoracic spine to r/u sig spinal cord impingement d/t intermittent BL LE paralysis

Figure 2: Last Two Pages of Note One

Overall, participants did not find Note One useful; memorably, one participant said that he recognized the style of this note and

always skipped this provider's notes when treating patients. (Both provider and patient names were removed from all notes before participants viewed them.) This demonstrates that, even without rhetorical terminology, providers recognize ineffective practices in others' notes, which means such practices directly impact the usability of notes in a clinical setting—and, thus, continuity of patient care.

Note Two (Figs. 3-5)

In contrast, Note Two is characterized by the length (around 800 words) of provider-generated content, upfront specifics about the nature of the office visit, consistent formatting delineating different sections of the note, and use of nonstandard section headings. It also has 500-600 words of auto-populated content, meaning that provider-generated text is about 59% of the note.

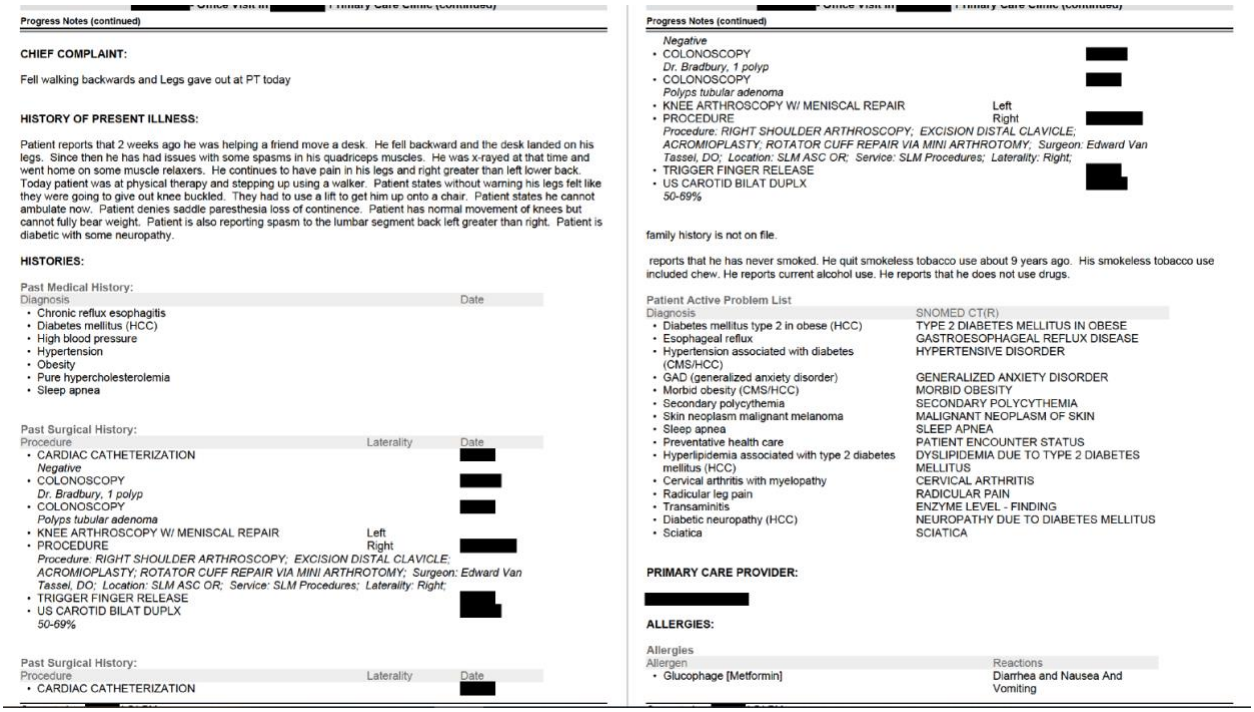
In Note Two, provider-generated text begins early, as the reason for the visit is clear in the first section, labeled "Chief Complaint": "Fell walking backwards and Legs gave out at PT today." This is followed by a paragraph of narrative under "History of Present Illness" (spelled out, not abbreviated), all before any auto-populated text is introduced. This contrasts positively with Note 1 for efficiency of reading.

In Note Two, the writer has incorporated lengthy paragraphs to convey information, particularly in the HPI (9 line-paragraph, Fig. 3) and Summary (12-line paragraph, Fig. 5) sections. Participants noted that they did not appreciate these long paragraphs, though it's worth acknowledging that Yonder (2022) argues for the value of a "well-constructed narrative" (p. 16) for the HPI section.

In addition, as can be seen throughout Note Two, this writer has provided headings for all sections that are bolded and in all capitals, creating clear section breaks. This provider includes a multitude of consistently formatted section headers, including "Histories," which contains bulleted lists for "Past Medical History," "Past Surgical History" (input twice—presumably an error), and "Patient Active Problem List"; "Primary Care Provider," which lists the patient's main provider (who happens to be the author of the other note); "Allergies"; "Home Medications," "Review of Systems"; "Physical Exam"; "Procedures/Orders"; "Assessment/Plan" (which includes formatted subsections for "Lumbar pain," "Lumbar back pain with radiculopathy affecting lower extremity," "Bilateral leg weakness," and "Other orders");

"Summary"; and "Impression." Many of these section headers are not seen in Note One, again pointing to inconsistencies of formatting between providers; however, such specific headers—particularly under the "Assessment/Plan" section, where many providers report looking first—certainly added useful skimmability to the progress note.

Sections in Note Two are, therefore, clearly delineated, which participants appreciated, but it's worth noting that some headings are nonstandard—the most striking being "Summary" and "Impression" after "Assessment/Plan" (Fig. 5)—and, like Note One, there are no headings for standard SOAP sections "Subjective" and "Objective." Participants noted that deviating from the established formulae caused them some confusion as readers—and, again, anything that interrupts the usability of clinical notes is affecting patient care.



Progress Notes (continued)

CHIEF COMPLAINT:

Fell walking backwards and Legs gave out at PT today

HISTORY OF PRESENT ILLNESS:

Patient reports that 2 weeks ago he was helping a friend move a desk. He fell backward and the desk landed on his legs. Since then he has had issues with some spasms in his quadriceps muscles. He was x-rayed at that time and went home on some muscle relaxers. He continues to have pain in his legs and right greater than left lower back. Today patient was at physical therapy and stepping up using a walker. Patient states without warning his legs felt like they were going to give out knee buckled. They had to use a lift to get him up onto a chair. Patient states he cannot ambulate now. Patient denies saddle paresthesia loss of continence. Patient has normal movement of knees but cannot fully bear weight. Patient is also reporting spasm to the lumbar segment back left greater than right. Patient is diabetic with some neuropathy.

HISTORIES:

Past Medical History:

Diagnosis	Date
• Chronic reflux esophagitis	
• Diabetes mellitus (HCC)	
• High blood pressure	
• Hypertension	
• Obesity	
• Pure hypercholesterolemia	
• Sleep apnea	

Past Surgical History:

Procedure	Laterality	Date
• CARDIAC CATHETERIZATION		[redacted]
Negative		
• COLONOSCOPY		[redacted]
Dr. Bradbury, 1 polyp		
• COLONOSCOPY		[redacted]
Polyps tubular adenoma		
• KNEE ARTHROSCOPY W/ MENISCAL REPAIR	Left	
• PROCEDURE	Right	[redacted]
Procedure: RIGHT SHOULDER ARTHROSCOPY; EXCISION DISTAL CLAVICLE; ACROMIOPLASTY; ROTATOR CUFF REPAIR VIA MINI ARTHROTOMY; Surgeon: Edward Van Tassel, DO; Location: SLM ASC OR; Service: SLM Procedures; Laterality: Right;		
• TRIGGER FINGER RELEASE		[redacted]
• US CAROTID BILAT DUPLX		
50-69%		

Past Surgical History:

Procedure	Laterality	Date
• CARDIAC CATHETERIZATION		[redacted]

Progress Notes (continued)

Negative
• COLONOSCOPY [redacted]
Dr. Bradbury, 1 polyp
• COLONOSCOPY [redacted]
Polyps tubular adenoma
• KNEE ARTHROSCOPY W/ MENISCAL REPAIR Left
• PROCEDURE Right [redacted]
Procedure: RIGHT SHOULDER ARTHROSCOPY; EXCISION DISTAL CLAVICLE; ACROMIOPLASTY; ROTATOR CUFF REPAIR VIA MINI ARTHROTOMY; Surgeon: Edward Van Tassel, DO; Location: SLM ASC OR; Service: SLM Procedures; Laterality: Right;
• TRIGGER FINGER RELEASE [redacted]
• US CAROTID BILAT DUPLX
50-69%

family history is not on file.

reports that he has never smoked. He quit smokeless tobacco use about 9 years ago. His smokeless tobacco use included chew. He reports current alcohol use. He reports that he does not use drugs.

Patient Active Problem List

Diagnosis	SNOMED CT(R)
• Diabetes mellitus type 2 in obese (HCC)	TYPE 2 DIABETES MELLITUS IN OBESE
• Esophageal reflux	GASTROESOPHAGEAL REFLUX DISEASE
• Hypertension associated with diabetes (CMS/HCC)	HYPERTENSIVE DISORDER
• GAD (generalized anxiety disorder)	GENERALIZED ANXIETY DISORDER
• Morbid obesity (CMS/HCC)	MORBID OBESITY
• Secondary polycythemia	SECONDARY POLYCYTHEMIA
• Skin neoplasm malignant melanoma	MALIGNANT NEOPLASM OF SKIN
• Sleep apnea	SLEEP APNEA
• Preventative health care	PATIENT ENCOUNTER STATUS
• Hyperlipidemia associated with type 2 diabetes mellitus (HCC)	DYSLIPIDEMIA DUE TO TYPE 2 DIABETES MELLITUS
• Cervical arthritis with myelopathy	CERVICAL ARTHRITIS
• Radicular leg pain	RADICULAR PAIN
• Transaminitis	ENZYME LEVEL - FINDING
• Diabetic neuropathy (HCC)	NEUROPATHY DUE TO DIABETES MELLITUS
• Sciatica	SCIATICA

PRIMARY CARE PROVIDER:

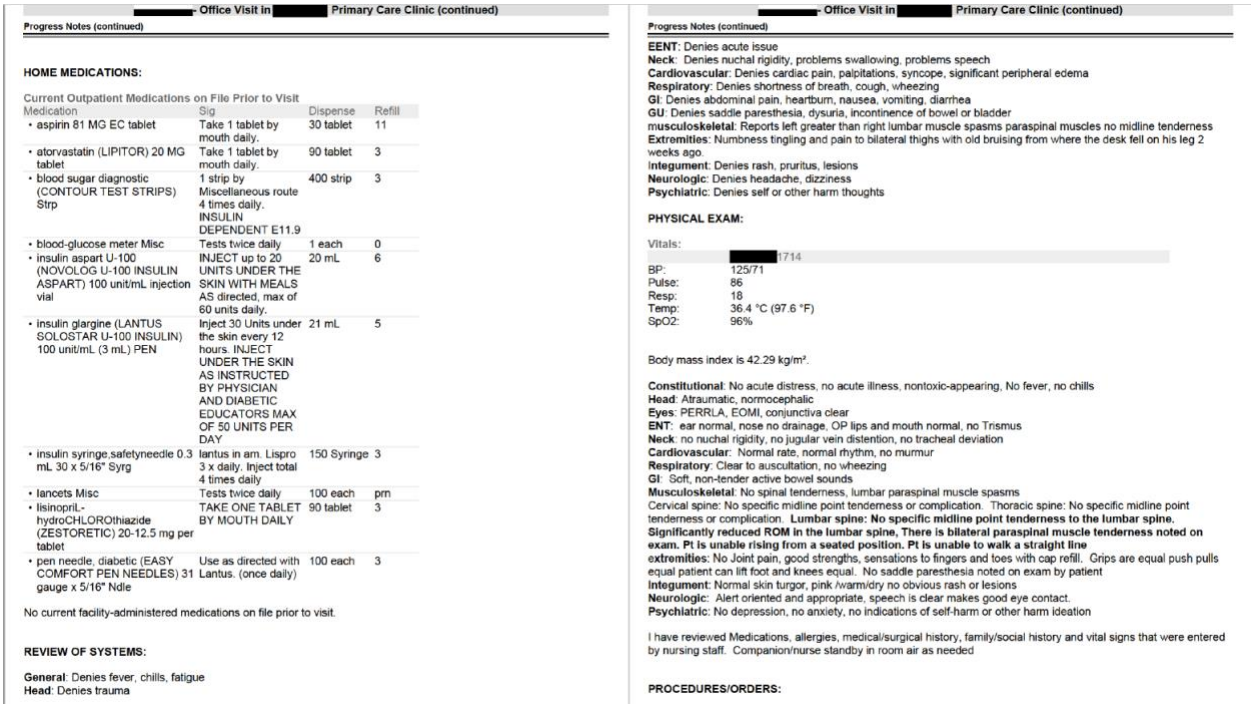
[redacted]

ALLERGIES:

Allergies

Allergen	Reactions
• Glucophage [Metformin]	Diarrhea and Nausea And Vomiting

Figure 3: First Two Pages of Note Two



Office Visit in [redacted] Primary Care Clinic (continued)

Progress Notes (continued)

HOME MEDICATIONS:

Current Outpatient Medications on File Prior to Visit

Medication	Sig	Dispense	Refill
• aspirin 81 MG EC tablet	Take 1 tablet by mouth daily.	30 tablet	11
• atorvastatin (LIPITOR) 20 MG tablet	Take 1 tablet by mouth daily.	90 tablet	3
• blood sugar diagnostic (CONTOUR TEST STRIPS) Strp	1 strip by Miscellaneous route 4 times daily. INSULIN DEPENDENT E11.9	400 strip	3
• blood-glucose meter Misc	Tests twice daily	1 each	0
• insulin aspart U-100 (NOVOLOG U-100 INSULIN ASPART) 100 unit/mL injection vial	INJECT up to 20 UNITS UNDER THE SKIN WITH MEALS AS directed, max of 60 units daily.	20 mL	6
• insulin glargine (LANTUS SOLOSTAR U-100 INSULIN) 100 unit/mL (3 mL) PEN	Inject 30 Units under the skin every 12 hours. INJECT UNDER THE SKIN AS INSTRUCTED BY PHYSICIAN AND DIABETIC EDUCATORS MAX OF 50 UNITS PER DAY	21 mL	5
• insulin syringe,safetyneedle 0.3 mL 30 x 5/16" Syrg	lantus in am. Lispro 3 x daily. Inject total 4 times daily	150 Syringe	3
• lancets Misc	Tests twice daily	100 each	prn
• lisinopriL-hydroCHLOROthiazide (ZESTORETIC) 20-12.5 mg per tablet	TAKE ONE TABLET BY MOUTH DAILY	90 tablet	3
• pen needle, diabetic (EASY COMFORT PEN NEEDLES) 31 gauge x 5/16" Ndle	Use as directed with Lantus. (once daily)	100 each	3

No current facility-administered medications on file prior to visit.

REVIEW OF SYSTEMS:

General: Denies fever, chills, fatigue
Head: Denies trauma

Office Visit in [redacted] Primary Care Clinic (continued)

Progress Notes (continued)

EENT: Denies acute issue
Neck: Denies nuchal rigidity, problems swallowing, problems speech
Cardiovascular: Denies cardiac pain, palpitations, syncope, significant peripheral edema
Respiratory: Denies shortness of breath, cough, wheezing
GI: Denies abdominal pain, heartburn, nausea, vomiting, diarrhea
GU: Denies saddle paresthesia, dysuria, incontinence of bowel or bladder
musculoskeletal: Reports left greater than right lumbar muscle spasms paraspinal muscles no midline tenderness
Extremities: Numbness tingling and pain to bilateral thighs with old bruising from where the desk fell on his leg 2 weeks ago.
Integument: Denies rash, pruritus, lesions
Neurologic: Denies headache, dizziness
Psychiatric: Denies self or other harm thoughts

PHYSICAL EXAM:

Vitals:

	[redacted]1714
BP:	125/71
Pulse:	86
Resp:	18
Temp:	36.4 °C (97.6 °F)
SpO2:	96%

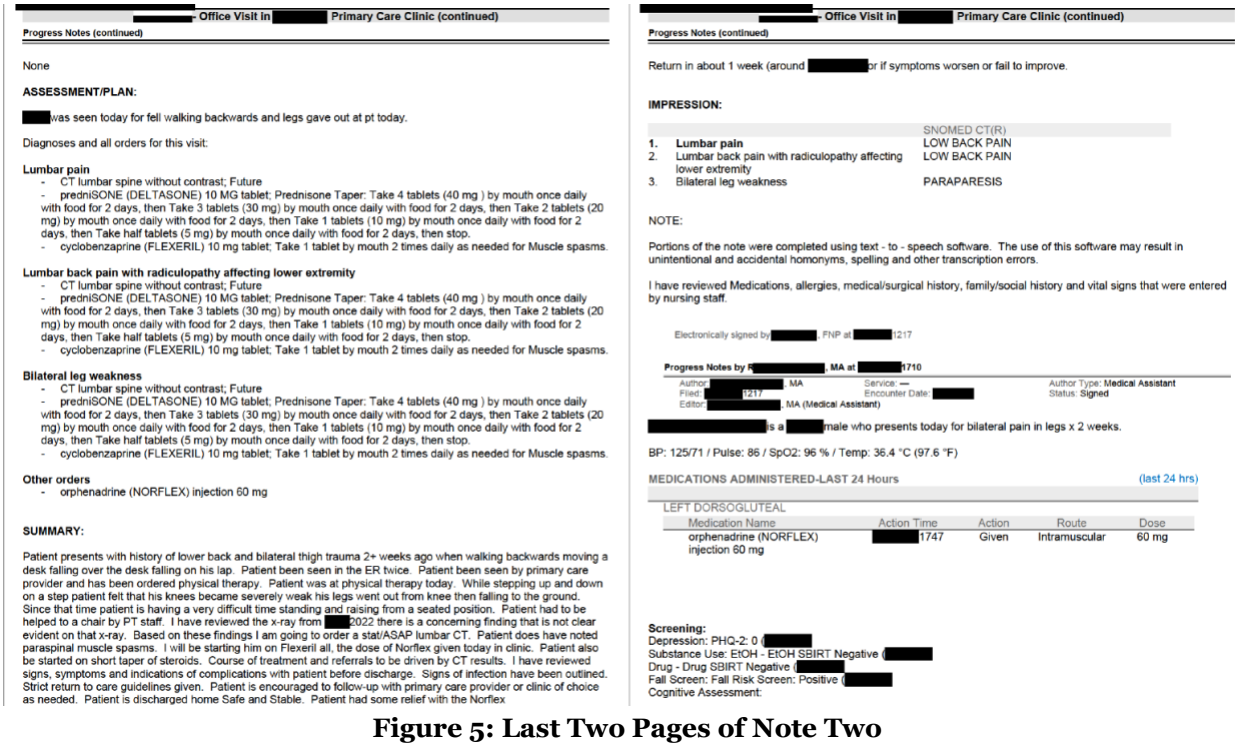
Body mass index is 42.29 kg/m².

Constitutional: No acute distress, no acute illness, nontoxic-appearing, No fever, no chills
Head: Atraumatic, normocephalic
Eyes: PERRLA, EOMI, conjunctiva clear
ENT: ear normal, nose no drainage, OP lips and mouth normal, no Trismus
Neck: no nuchal rigidity, no jugular vein distention, no tracheal deviation
Cardiovascular: Normal rate, normal rhythm, no murmur
Respiratory: Clear to auscultation, no wheezing
GI: Soft, non-tender active bowel sounds
Musculoskeletal: No spinal tenderness, lumbar paraspinal muscle spasms
Cervical spine: No specific midline point tenderness or complication. Thoracic spine: No specific midline point tenderness or complication. **Lumbar spine: No specific midline point tenderness to the lumbar spine. Significantly reduced ROM in the lumbar spine, There is bilateral paraspinal muscle tenderness noted on exam. Pt is unable rising from a seated position. Pt is unable to walk a straight line**
extremities: No Joint pain, good strengths, sensations to fingers and toes with cap refill. Grips are equal push pulls equal patient can lift foot and knees equal. No saddle paresthesia noted on exam by patient
Integument: Normal skin turgor, pink /warm/dry no obvious rash or lesions
Neurologic: Alert oriented and appropriate, speech is clear makes good eye contact.
Psychiatric: No depression, no anxiety, no indications of self-harm or other harm ideation

I have reviewed Medications, allergies, medical/surgical history, family/social history and vital signs that were entered by nursing staff. Companion/nurse standby in room air as needed

PROCEDURES/ORDERS:

Figure 4: Middle Two Pages of Note Two



Office Visit in [redacted] Primary Care Clinic (continued)

Progress Notes (continued)

None

ASSESSMENT/PLAN:

[redacted] was seen today for fell walking backwards and legs gave out at pt today.

Diagnoses and all orders for this visit:

Lumbar pain
- CT lumbar spine without contrast; Future
- predniSONE (DELTASONE) 10 MG tablet; Prednisone Taper: Take 4 tablets (40 mg) by mouth once daily with food for 2 days, then Take 3 tablets (30 mg) by mouth once daily with food for 2 days, then Take 2 tablets (20 mg) by mouth once daily with food for 2 days, then Take 1 tablets (10 mg) by mouth once daily with food for 2 days, then Take half tablets (5 mg) by mouth once daily with food for 2 days, then stop.
- cyclobenzaprine (FLEXERIL) 10 mg tablet; Take 1 tablet by mouth 2 times daily as needed for Muscle spasms.

Lumbar back pain with radiculopathy affecting lower extremity
- CT lumbar spine without contrast; Future
- predniSONE (DELTASONE) 10 MG tablet; Prednisone Taper: Take 4 tablets (40 mg) by mouth once daily with food for 2 days, then Take 3 tablets (30 mg) by mouth once daily with food for 2 days, then Take 2 tablets (20 mg) by mouth once daily with food for 2 days, then Take 1 tablets (10 mg) by mouth once daily with food for 2 days, then Take half tablets (5 mg) by mouth once daily with food for 2 days, then stop.
- cyclobenzaprine (FLEXERIL) 10 mg tablet; Take 1 tablet by mouth 2 times daily as needed for Muscle spasms.

Bilateral leg weakness
- CT lumbar spine without contrast; Future
- predniSONE (DELTASONE) 10 MG tablet; Prednisone Taper: Take 4 tablets (40 mg) by mouth once daily with food for 2 days, then Take 3 tablets (30 mg) by mouth once daily with food for 2 days, then Take 2 tablets (20 mg) by mouth once daily with food for 2 days, then Take 1 tablets (10 mg) by mouth once daily with food for 2 days, then Take half tablets (5 mg) by mouth once daily with food for 2 days, then stop.
- cyclobenzaprine (FLEXERIL) 10 mg tablet; Take 1 tablet by mouth 2 times daily as needed for Muscle spasms.

Other orders
- orphenadrine (NORFLEX) injection 60 mg

SUMMARY:

Patient presents with history of lower back and bilateral thigh trauma 2+ weeks ago when walking backwards moving a desk falling over the desk falling on his lap. Patient been seen in the ER twice. Patient been seen by primary care provider and has been ordered physical therapy. Patient was at physical therapy today. While stepping up and down on a step patient felt that his knees became severely weak his legs went out from knee then falling to the ground. Since that time patient is having a very difficult time standing and raising from a seated position. Patient had to be helped to a chair by PT staff. I have reviewed the x-ray from [redacted]2022 there is a concerning finding that is not clear evident on that x-ray. Based on these findings I am going to order a stat/ASAP lumbar CT. Patient does have noted paraspinal muscle spasms. I will be starting him on Flexeril all, the dose of Norflex given today in clinic. Patient also be started on short taper of steroids. Course of treatment and referrals to be driven by CT results. I have reviewed signs, symptoms and indications of complications with patient before discharge. Signs of infection have been outlined. Strict return to care guidelines given. Patient is encouraged to follow-up with primary care provider or clinic of choice as needed. Patient is discharged home Safe and Stable. Patient had some relief with the Norflex

Office Visit in [redacted] Primary Care Clinic (continued)

Progress Notes (continued)

Return in about 1 week (around [redacted] or if symptoms worsen or fail to improve.

IMPRESSION:

		SNOMED CT(R)
1.	**Lumbar pain**	LOW BACK PAIN
2.	Lumbar back pain with radiculopathy affecting lower extremity	LOW BACK PAIN
3.	Bilateral leg weakness	PARAPARESIS

NOTE:

Portions of the note were completed using text - to - speech software. The use of this software may result in unintentional and accidental homonyms, spelling and other transcription errors.

I have reviewed Medications, allergies, medical/surgical history, family/social history and vital signs that were entered by nursing staff.

Electronically signed by [redacted], FNP at [redacted]1217

Progress Notes by [redacted], MA at [redacted]1710

Author: [redacted], MA | Service: — | Author Type: Medical Assistant
Filed: [redacted]1217 | Encounter Date: [redacted] | Status: Signed
Editor: [redacted], MA (Medical Assistant)

[redacted] is a [redacted] male who presents today for bilateral pain in legs x 2 weeks.

BP: 125/71 / Pulse: 86 / SpO2: 96 % / Temp: 36.4 °C (97.6 °F)

MEDICATIONS ADMINISTERED-LAST 24 Hours (last 24 hrs)

LEFT DORSOGLUTEAL

Medication Name	Action Time	Action	Route	Dose
orphenadrine (NORFLEX) injection 60 mg	[redacted]1747	Given	Intramuscular	60 mg

Screening:
Depression: PHQ-2: 0 ([redacted]
Substance Use: EtOH - EtOH SBIRT Negative ([redacted]
Drug - Drug SBIRT Negative ([redacted]
Fall Screen: Fall Risk Screen: Positive ([redacted]
Cognitive Assessment:

Figure 5: Last Two Pages of Note Two

Discussion: What makes these notes problematic?

What does looking at these two notes in conjunction show us? These notes contrast with each other in length, formatting, and

both writing style and amount. Both, however, are problematic, albeit in different ways. Both rely heavily on auto-populated text sections, making their notes significantly longer than they would otherwise be (auto-populated content was what the providers in my workshop discussion generally referred to as "irrelevant junk" or "so much bullshit"; as another physician told me, "the signal-to-noise ratio is quite high" in contemporary notes, because of how much auto-populated content—noise—there is). In fact, despite the significant difference in length (the note in Figs. 3-5 is twice as long as the note in Figs. 1-2), neither note is particularly skimmable, in large part due to the very things that frustrate providers: Inconsistent Organization, Irrelevant Note Content, and Inconsistent Style (the very "distractions" previously outlined in Table 2).

In terms of **inconsistent organization**, these notes provide different headings from each other and supply them in a different order, which upsets reader expectations and makes reading less efficient. Additionally, while Note Two has very clear section delineations, Note One does not. Neither note uses section headings for "Subjective" or "Objective," though both include that information in various ways. Participants noted that inconsistent section headings made it harder to use the notes.

In terms of **irrelevant note content**, both notes use a lot of auto-populated content from dotphrases. Since this information is easily available in other tabs of the EHR, I—and the physicians I consulted during this project[2] —argue that auto-generated content does not need to be in the progress note, as having it in the progress note makes the progress note less useable to another provider. Participants noted that they would like to easily skim to whatever section is most relevant to them (often, assessment and plan, though residency faculty noted they are especially interested in reviewing the validity of residents' clinical reasoning, making the subjective and objective portions of great interest to them)—and having a high "signal-to-noise ratio" with redundant, auto-

2 Generally, in fact, notes that originated from physicians working within the residency program had a lot less of this irrelevant note content, because efficient charting has been an emphasis in the residency program—however, progress notes from the other primary-care site whose notes I had access to tended to use a lot more auto-populated content, like the two examples provided here do.

populated, and sometimes inaccurate content undermines that goal.

Some might argue that having auto-populated content duplicated in both its original EHR tab and throughout the progress note may be more efficient for an attorney seeking evidence of malpractice; however, I would dispute this argument by saying that, while redundancy can accomplish some things, it can often be more efficient and serve more audiences to simply have clear and consistent structural and organizational choices. The inconsistency of section names, order, and formatting—as illustrated above—make the current practice inefficient for all readers, including attorneys, especially in an age of searchable documents; it's certainly inefficient for a provider using the notes to determine care.

Lastly, in terms of **inconsistent style**, Note Two has long paragraphs rather than lists, inhibiting skimmability, while Note One includes copypasta in its lists, making it less likely that a busy reader (like a primary-care provider walking into an exam room) will notice the additional information tacked on to the end of the Assessment & Plan section.

Ultimately, both of these example notes are problematic, though in different ways—and, fundamentally, what makes them both problematic is how they fail to adequately address the needs of the most relevant audiences, which means they are not adequately fulfilling their purposes. All audiences of progress notes are trying to get something done—whether they be lawyers, billing officers, other providers, or patients themselves. Progress notes—*especially* primary-care progress notes—should be written in a way that facilitates rather than hinders their goals. While EHR design plays an obvious role in the efficiency and effectiveness of clinical notes today, it cannot substitute for rhetorical awareness of audience and purpose amongst providers—despite Hellerstein's description of EHR-writing as "how to type something reasonably coherent in the lonely free-text fields set among thickets of check-boxes and numerical data-fields" (2015, p. 270), there's more to it than that—and writing good progress note is an important part of the care work that medical providers engage in daily.

Practical Strategies from Technical Communication

As rhetoricians and technical communication professionals, we take for granted certain principles of clear workplace writing—principles, I argue, that would benefit medical providers writing chart notes as well as the various audiences who end up reading those notes. In particular, providers would benefit from the practical rhetorical grounding to always write with their reader(s)/audience(s) in mind, and to always write with their writing's purpose(s) in mind. Doing the former—writing for audience—means always assuming that the reader(s) is busy and frequently interrupted, which means making sure writing is skimmable and easy to navigate, and also means writing different sections for different audiences[3]. Doing the latter—writing with purpose—means identifying a specific purpose; the overall purpose of technical communication is always to *get something done*, but it's important to figure out what exactly that 'something' is and organize information accordingly.

Practical strategies from technical communication, including the following, help us live up to the above principles, thereby making it less likely for readers to miss crucial information and more likely to process complexity when skimming:

- Use specific headings.
- Use consistent formatting, including heading levels.
- Use white space intentionally.
- Use lists whenever appropriate.
- Write paragraphs of no more than nine lines.
- Write lists of no more than nine items.
- Put crucial information on the left margin.

When writers incorporate such strategies into their writing, readers are more able to get something done—like caring for their next patient, or determining billing and payment, or evaluating clinical reasoning. Teaching primary-care providers such principles while looking at actual clinical notes is a promising avenue for continued research and practice.

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[3] I particularly like how Pfeiffer (2011) describes different readers' *technical and decision-making levels.*

Solution: Explicit Instruction in Rhetoric and Technical Communication

From my experience with reading these and many other progress notes, as well as working with these physicians at the family-practice residency, it is clear that providers experience the problems with chart notes—they just aren't consistently given the time or training to actually write better notes. This feeds into an emphasis on note-writing as administrivia rather than care work. While the lack of time providers are given for many tasks is one of many systemic flaws in the American healthcare system and beyond the scope of rhetoricians to solve, giving providers some explicit, applied instruction in rhetoric and technical communication as part of their medical education (whether in medical school or, perhaps ideally, residency) needn't require a systemic overhaul.

What if providers—rather than simply pre-health majors (Kenzie & Daniel, 2018; Angeli & Campbell, 2022)—were taught how to write for multiple audiences, how to focus on purpose, and on some simple strategies for doing both in their notes? What if they then got to practice writing notes and having them evaluated for clarity and usability as well as content? What if they were engaged in a recursive process of not only writing notes but also reviewing notes?

Chart notes today are a hot mess, and many solutions—including, as mentioned before, generative AI—have been proposed to address this problem. However, teaching providers principles from rhetoric and technical communication would provide a longer term, more holistic solution to this problem, a solution without the ethical quagmire of using energy-intensive generative AI to process sensitive patient data. This solution may be as simple as offering a series of workshops or as formal as requiring a class. Obviously, there is limited time in medical school curricula for such training (Ariail et al, 2013; Campbell, 2017), but that doesn't make the need any less crucial.

Physicians needn't be full-blown technical writers—but, as both Opel & Hart-Davidson (2019) and Yonder (2022) note, writing is a crucial part of patient care, because chart notes are crucial to patient care. In other words, primary-care providers are *already* writers, even if they don't think of what they're doing as writing. They deserve to be equipped to succeed at the writing they already have to do.

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