Aspects of Technology That Influence Athletic Trainers' Current Patient Care Documentation Strategies in the Secondary School

Sara L. Nottingham, EdD, LAT, ATC*; Tricia M. Kasamatsu, PhD, ATC†; Lindsey E. Eberman, PhD, LAT, ATC‡; Elizabeth R. Neil, PhD, ATC§; Cailee E. Welch Bacon, PhD, ATC‖

*Department of Health, Exercise, and Sports Sciences, University of New Mexico, Albuquerque; †Department of Kinesiology, California State University, Fullerton; ‡Department of Applied Medicine and Rehabilitation, Indiana State University, Terre Haute; §Department of Sport Studies, Xavier University, Cincinnati, OH; ‖Department of Interdisciplinary Health Sciences, A.T. Still University, Mesa, AZ

Context: Previous research on athletic trainers' (ATs) documentation practices in the secondary school setting has focused on users of 1 electronic medical record (EMR) platform. These studies have identified that ATs use multiple platforms for documentation, including paper, even when an EMR is available.

Objective: To examine the documentation practices of ATs who use various forms of patient care documentation, including paper, EMRs, or both.

Design: Qualitative study.

Setting: Individual telephone interviews.

Patients or Other Participants: Twenty ATs participated in this study: 12 women and 8 men who averaged 38 ± 14 years of age, 15 ± 13 years of clinical experience, and 11 ± 11 years of employment at their current secondary school.

Data Collection and Analysis: Semistructured telephone interviews were conducted to gain insight into ATs' documentation practices. Three researchers and 2 auditors inductively coded the transcripts using a consensual qualitative research process that consisted of 4 rounds of consensus coding and determination of data saturation. Trustworthiness was ad-dressed with member checking, multiple-analyst triangulation, and peer review.

Results: The ATs' documentation practices were largely influenced by technology, organized in 3 themes. Participants' *current documentation strategies* included the use of both paper and EMRs, as they found different benefits to using each platform. Oftentimes documentation practices were shaped by *technological challenges*, including unreliable networks, software design problems, and the lack of a streamlined approach. Lastly, participants identified *future strategies* for improving documentation, including the need for better EMR options and streamlining their individual documentation behaviors.

Conclusions: Many ATs wanted to incorporate EMRs in their clinical practice but faced challenges when attempting to do so. In turn, clinicians often duplicated documentation or used 2 platforms. Athletic trainers should communicate with administrators to select an EMR that fits their documentation needs and seek resources, such as network access and educational opportunities, to learn how to use EMRs.

Key Words: electronic medical records, medical records, qualitative research, quality improvement

---

Key Points

- Athletic trainers used both paper and electronic medical record formats to document patient care, which often involved duplication or transferring information from paper to electronic formats.
- Many athletic trainers wanted to use more electronic documentation but faced challenges with electronic medical records, including limited network access and difficulty using platforms.
- Athletic trainers should consider streamlining their documentation practices to minimize duplication and ensure thorough and accurate record keeping that maintains patient confidentiality.

Documentation is an essential responsibility of athletic training clinical practice.[1,2] *Documentation* consists of recording interactions with and decisions about patient care, along with a description of and rationale for the services provided.[2] Previous researchers[3] identified that athletic trainers (ATs) document patient care to monitor patient improvement, communicate with other clinicians, and obtain legal protection. At the same time, ATs face barriers to documenting, such as limited time and resources and uncertainty about what to document.[4]

Considering the necessity of documenting patient care, it is important to understand what facilitators and barriers to ATs' documentation exist to ensure that patient care documentation is accurate and complete.

Investigations[3–5] of ATs' documentation practices have focused on users of 1 electronic medical record (EMR) platform: the CORE-AT EMR. Although ATs in these studies reported using the CORE-AT EMR, several used paper documentation in addition to the EMR. Athletic trainers[3,5,6] and physicians[7,8] have described using multiple

Table 1. Participant Demographic Information

Pseudonym	Age, y (Mean = 38 ± 14)	Sex	Experience as Athletic Trainer, y (Mean = 15 ± 13)	Primary Documentation Type	Computer Access	Internet Access
Alexander	54	M	30	Equal	Employer desktop	Cable, wireless
Alexis	24	F	2	EMR	Employer desktop and tablet	Cable, wireless
Ayesha	29	F	6	EMR	Personal laptop	Wireless
Ben	30	M	8	Equal	Employer laptop	Wireless
Damon	37	M	15	Equal	Employer desktop and laptop	Cable, wireless
Emilia	50	F	27	Paper	Laptop and tablet	Cable, wireless
Emma	33	F	11	EMR	Employer desktop	Cable, wireless
Francesco	71	M	50	EMR	Employer laptop and tablet	Cable, wireless
Gabriel	43	M	16	Paper	Employer desktop and laptop	Cable
Jose	47	M	24	EMR	Employer desktop and personal laptop	Cable, wireless
Juan	57	M	32	Equal	Employer laptop	Cable
Linda	25	F	2	Paper	Employer desktop and personal laptop	Wireless, hotspot
Liz	24	F	3	Equal	Employer desktop and tablet, personal laptop	Cable, wireless
Louisa	22	F	1	Paper	Personal laptop	Wireless
Maria	53	F	31	Equal	Employer desktop and laptop	Cable, wireless
Martine	45	F	18	Paper	Employer desktop	Cable
Olivia	29	F	1.5	EMR	Employer desktop	Cable, wireless
Ren	33	M	10	EMR	Employer laptop and tablet	Wireless
Sofia	38	F	15.5	EMR	Employer desktop and personal laptop	Cable, wireless
Victoria	22	F	1	Paper	Personal laptop	None

Abbreviations: EMR, electronic medical record; F, female; M, male.

modes of documentation. Many clinicians used paper documentation to supplement electronic documentation in order to keep track of patient encounters throughout the day or document information that was not easily captured within the EMR.[3,8] Others perceived that they were more efficient and accurate in their documentation when they maintained paper notes along with EMRs.[3,8,9]

Knowing that ATs are using a variety of modes and systems for documentation, it is necessary to understand their documentation practices. Additionally, the recently released "Prioritized Research Agenda for the Athletic Training Profession"[10] identified gaining more insight into the documentation practices of ATs as an important goal. Therefore, the purpose of our study was to determine ATs' perceived strategies for and challenges in documenting patient care. We purposefully sought ATs who used paper documentation, EMR documentation, or both to gain a broader perspective on documentation practices in the secondary school setting.

METHODS

Design

We used a consensual qualitative research (CQR) design for this study and established a primary research team of 3 individuals and 2 auditors.[11] The CQR method draws from both phenomenologic and grounded theory approaches to qualitative research that seek to gain insight from individuals who have experienced a phenomenon, such as documentation practices.[11] Also included is a comprehensive analysis that involves multiple researchers, auditors, and coding steps to reduce bias and provide an in-depth description of participants' experiences.[11] All 5 members of the research team had previous training in the CQR method and experience conducting many CQR and other types of qualitative research studies. The CQR method facilitated the recruitment of participants with insight into the topic

while allowing for a systematic, consensus-based data-collection and -analysis process.[11]

Participants and Setting

After obtaining institutional review board approval, we recruited participants via purposeful and snowball sampling to obtain the perspectives of ATs working in the secondary school setting.[12] We began by contacting our professional networks nationwide to initiate the recruitment of a geographically diverse sample. Because documentation practices may be guided by state practice acts, we sought participants in several states. Additionally, at the end of each interview, we asked the participant to suggest 1 or 2 ATs in the secondary school setting in a different state by either providing the name(s), if comfortable doing so, or forwarding the recruitment email. Inclusion criteria were certified ATs who had been employed at their current secondary school for at least 1 academic year. Volunteers were excluded if they used the CORE-AT EMR, as this was investigated in a previous study.[3–5] Twenty secondary school ATs were recruited to participate in the study. Their demographics are shown in Table 1.

Instrumentation

We developed an interview guide based on previous research into documentation practices in athletic training[3] (Table 2). The interview was semistructured to facilitate discussion of documentation strategies, challenges, and perceptions and promote consistency between 2 interviewers.[11] The interview guide also allowed for open-ended discussion and probing to gain more understanding of each participant's experiences with documentation. The interview guide was peer reviewed by 2 individuals with qualitative research experience and familiarity with research on documentation practices. They examined the interview guide for content, clarity, and organization. After

Table 2. Interview Guide[a]

1. Tell me about your background as an athletic trainer.
2. Please discuss what patient care documentation means to you.
   a. What are your thoughts when you hear the phrase "patient care documentation"?
   b. What does documenting athletic training services mean to you?
3. Describe your typical work week at the secondary school during the academic year
   a. When does patient care documentation occur?
   b. What strategies do you use, if any, to note patient encounters throughout the day?
   c. Where does patient care documentation occur?
4. Are there specific patient care documentation requirements at your secondary school?
5. Please discuss what mechanisms (eg, paper, electronic medical record) you currently use to document patient care in your clinical practice.
   a. Do you primarily document via paper or electronic methods? Please explain.
6. What are the primary reasons you document patient care?
   a. Do you have any type of systematic approach to documenting your patient care? Please explain.
   b. How do you decide what to document or what not to document regarding patient care?
   c. Please describe your process for documenting an initial injury vs documenting follow-up care.
7. In what ways, if any, do you use your patient care documentation to influence your actual patient care decisions?
8. Please discuss what mechanisms you have used in the past to document patient care in your clinical practice.
a. If these mechanisms differ from what you have used in the past, can you reflect upon any differences in your documentation practices since changing mechanisms?
9. What are your perceptions of your own patient care documentation behaviors?
10. In what ways, if any, do you feel you could refine/evolve your patient care documentation behaviors?
    a. Probe: To enhance your patient care documentation behaviors, are there any aspects of your clinical practice you would change? Please explain.
11. What are your perceptions of patient care documentation in the athletic training profession?
12. What barriers, if any, do you believe clinicians have toward patient care documentation?
    a. Follow up to determine if the barriers identified are ones they personally have.
13. What strategies do you feel are/would be useful for improving patient care documentation in the athletic training profession?
    a. Are there any educational techniques you think would be useful to help educate or reinforce the importance of documentation in athletic training?
14. Is there anything else you would like to add about patient care documentation or your personal clinical experiences?

[a] Instrument is reproduced in its original format.

their review, we pilot tested the interview guide with 2 participants who met the inclusion criteria. We made minor changes to the order of questions to improve the flow of the interview. No changes were made to the content of the interviews, so the pilot data were included in the final analysis.

Procedures

Recruits were invited to participate via an email that provided the study overview and oral consent form. Once recruits expressed interest in participating, a telephone interview was scheduled. We sent participants a demographic form to complete and email to their interviewer in advance. Individuals provided consent to participate and be audio recorded via oral confirmation and then the interview recording began. Two members of the primary research team (S.L.N. and T.M.K.) conducted the interviews, which averaged 33 minutes each and were transcribed verbatim by a professional transcription company (Connecticut Secretary, Branford, CT). Participants were then sent their transcribed interviews and given the opportunity to add and clarify information as a form of member checking or testimonial validity.[11] However, they were not permitted to change their responses. Participants were allowed 3 weeks to respond to the member-checking request. At that time, the transcripts were finalized and the analysis began.

Data Analysis

We followed a structured data-analysis process guided by the CQR approach.[11] Before the analysis, each interviewer reviewed the other's transcripts to determine if there were any differences in the researchers' content or approach to questioning the participants. We agreed that the interviews were conducted consistently and proceeded with analysis. The primary research team (S.L.N., T.M.K, C.E.W.B.), who previously worked together using the CQR method, individually coded 3 interviews and developed an initial coding structure. Each investigator read the transcripts multiple times using an inductive coding process, labeling and grouping participants' responses to organize their statements into core ideas. We then met to develop an initial codebook that was used to code an additional 2 interviews, met again to discuss the coding structure and agree on a final consensus codebook, and proceeded to each individually code 6 interview transcripts. Lastly, each primary researcher conducted a final round of analysis to confirm the coding by the other members. This step allowed us to revisit the raw data in relation to the codebook to confirm accurate summaries of the participants' responses. At this time, we also confirmed stability of the coding to ensure that no additional data needed to be collected. Thus, after 4 rounds of coding, we finalized a codebook and confirmed each other's analysis. To ensure additional credibility of the analysis process, 2 remaining researchers (L.E.E., E.R.N.) served as external auditors of the data-analysis process and used the codebook to analyze 2 sample interview guides. They confirmed the accuracy of the coding, and data analysis was deemed complete.

The CQR analytic process inherently includes several methods to improve the credibility and trustworthiness of the research process.[11] We also implemented additional strategies to establish the study's credibility. By recruiting participants who used a variety of documentation systems and methods across the United States, we performed data source triangulation.[12] We also used member checking to allow participants to clarify their interview responses and ensure the accuracy of their statements.[12] The peer review of the interview guides helped to minimize bias early in the research process. Finally, by following a stepwise process of analysis and discussion, the primary research team and auditors were able to reach consensus on the findings.

Table 3. Frequency of Each Theme and Category

Theme	Category	Frequency[a]	No.
No. 1: Current strategies	No. 1: Multiple platforms	Typical	16
	Separate	Typical	11
	Transfer	Typical	11
	No. 2: Benefits of paper	Variant	9
	No. 3: Benefits of electronic	Typical	11
No. 2: Challenges		Typical	13
No. 3: Future strategies	No. 1: Electronic medical record improvements	Typical	11
	No. 2: Individual strategies	Typical	13

[a] *Typical* applies to half or more cases, and *variant* applies to 2 or 3 but fewer than half of cases.[11]

RESULTS

Athletic trainers practicing in the secondary school setting perceived that several aspects of technology influenced their documentation practices. Our analysis resulted in 3 themes related to technology and documentation: (1) current strategies for documentation, (2) technological barriers to documentation, and (3) future strategies for documentation. Themes and supporting categories are described in the sections that follow, and the frequencies of each theme are shown in Table 3.

Theme No. 1: Current Strategies for Documentation

Most of the participants in our study used several strategies for documenting patient care, and oftentimes these strategies included the use of multiple platforms, such as paper and EMRs. Athletic trainers recognized benefits to using each platform, which is why most used some version of both paper and electronic documentation. Although they acknowledged that using both paper and EMR documentation platforms was inefficient, many believed this was necessary to complete patient care documentation with their available resources. This theme was further divided into 3 categories: (1) multiple platform use, (2) benefits of paper documentation, and (3) benefits of electronic documentation.

Category No. 1: Multiple Documentation Platforms. Some participants used different documentation platforms separately by keeping some medical records on paper and certain records in an electronic documentation system. Other ATs duplicated documentation by transferring information from paper to an electronic medical record.

Separate Platform Use. Most participants who used separate documentation platforms did so because some patient information was documented with one method and other information was documented using another method. Linda described her rationale for using multiple platforms:

It starts on the clipboard when they sign in, and if I need to write a SOAP [subjective, objective, assessment, plan] note, I do a hard-copy SOAP note. And then, I'm required to put it into SportsWare as well. And then, at my school in our district, if I'm referring them out to any physician or medical care, I also have to write another injury report to send to the district. So, there's about 5 copies that go through, there's a lot of moving papers, unfortunately, and it's getting a little bit redundant.

In Linda's case, her employer required some information to be documented on paper, whereas she preferred to document other information in her EMR. Olivia described a similar situation:

If there's something that I have to refer for, or if I have to hold out an athlete for a longer period of time, or for any kind of concussion protocols, we have to fill out what is called an injury report, which is a lot more detailed.

Although these ATs primarily used an EMR to document patient care, their employers required additional paper documentation.

Other participants chose to document some information electronically and other information on paper. For example, Emma chose to document some information on paper and some in an EMR:

My sign-in sheet is a separate paper, but everything else is done on the computer for me. I have some paperwork for concussions that I still have to do that are handwritten. But everything else, doctor's note or injury report, follow-up care, all that type of stuff is done now on my computer.

Liz used different platforms based on the severity of injury:

I use the tracking log that I just mentioned and then for the major injuries, will add them into SportsWare. I also will hand write documentation for those mild injuries, some of those overuse types of injuries that I don't think are necessarily withholding an athlete from participation. I will hand write some notes and jot down notes on the backs of those.

Transferring Documentation From One Platform to Another. Although some participants maintained separate paper and electronic documentation, several ATs documented initially on paper and then transferred the information to their EMR. Maria described having paper documents in a case with her throughout the day: "then when I go back in that night, it only takes about 2 minutes to put one in the computer." Francesco took a similar approach to transferring documentation, which helped him overcome the challenges of his EMR:

We have a small quarter-sheet of paper that we carried with us, that we could quickly put notes on it immediately about any injury that occurred during a game. And then, all that information was transferred onto the computer when we got back to the athletic training room. With the Presagia [EMR] system, we're not able to enter all of that information immediately on the field.

Other participants took quick notes on paper and later transferred the information as a time-management strategy. Ayesha said: "I'll have them do it on a paper form first, and then I'll take the paper form and I'll put it in my computer. I know that kind of seems like a lot of work, but for me, it keeps me organized."

Category No. 2: Benefits of Paper Documentation. When asked to explain their documentation strategies, most participants cited benefits to using either paper documentation, electronic documentation, or both. These preferences also influenced why they chose to keep separate documentation or transfer paper documentation into an EMR. Despite using some electronic documentation, several participants still preferred to document on paper. In Linda's case, she preferred paper documentation for the convenience:

I utilize a lot of paper and a little bit of electronic. If it was my personal preference, I would probably do all paper, it's the easiest for me being on the go. But, I would say [the] majority of mine initially is paper just because I don't have to sit down in between every patient and athlete to see and write a note for them.

Other ATs used paper documentation out of necessity when working in certain locations. According to Ben, "When on the field for a concussion case, we utilize our concussion-evaluation assessment tool based off of the SCAT5, which allows us to do a single sheet evaluation on the field."

For other ATs, the preference for paper documentation came down to efficiency and personalization. Martine developed her own paper documentation system to improve her efficiency and meet her individual needs:

I have injury reports that I've created. What I have found works best for me over the years is, because I do have a large number of athletes, the way I've done my injury report is where I don't have to do a lot of writing. I like circles, arrows, X's and stuff like that. So, most of our reports, I have the words are already there and I can just circle them. But then obviously, I have observation and stuff like that, where I interpret. And then I have a follow-up area on the bottom of that, where I just write out follow-ups and stuff.

Other participants, such as Alexander, liked that they could rely on paper documentation if the electronic information was lost: "I feel like that I can go back between my paper documentation and the SportsWare, just in case any of that SportsWare ever gets lost."

Category No. 3: Benefits of Electronic Documentation. Although some ATs preferred paper documentation, others described benefits of EMRs that encouraged them to document electronically. Several participants said EMRs aided in their communication with other health care providers. Sofia stated:

It makes it easier to communicate with other health care professionals. So, having our team doctor be on our ImPACT account, is easy for him to go in and do those things. So, having that online is easier than trying to send what someone's test may be, printing out things, stuff like that. So, I think just moving online, it's mostly easy for people to turn it in, making sure it gets to the right place, and also it eases communication.

Alexander described a similar benefit of communication via EMRs:

I may be scheduled to go to a district facility or a district stadium to cover schools that I'm not even aware of. So, there's some documentation that has to take place that way. And then when you get home, the beauty of SportsWare is, I can document everything and enter it and then we shoot a text to the home school athletic trainer to say, "Hey listen, Billy got hurt at the soccer game and his information has been entered in Sports-Ware." So, that way, they know to look for it as a new occurrence in the EMR.

Other benefits to using EMRs included integration with other forms of documentation. Ben gave an example of this integration with concussion-evaluation forms: "Within our clinic, we utilize the SCAT5 developed within our EMR because it is convenient since it is already put in there." Gabriel also cited integration with preparticipation physical examination forms:

Now the reason I'm progressing is this system, it's integrated with all our kids' physical forms and everything is going to be on the same system and only the administrator and myself have the ability to go in and edit it and look at it. So I'll be able to have better access, plus I have it on my phone as well, and I can better access that.

Some ATs found that shifting to electronic documentation over time became more efficient than writing on paper. According to Juan,

As the years went on and I got more involved with treatment... To hand write 30 or 40 charts every day just got to be too much, and that's why I went to the electronic. It became much easier just having drop-down lists and pressing enter.

Theme No. 2: Technology Barriers to Documentation

Several participants' documentation practices were shaped by challenges faced when attempting to record patient care. For example, several ATs had attempted to use electronic documentation at some point in their career but went back to paper documentation due to various challenges with the EMR system, network access, or equipment. Additionally, other ATs wanted to modify their current documentation practices but were limited by resources or faced challenges when documenting in various settings or patient care situations.

Many participants faced challenges due to network access, limiting their ability to use an EMR. Victoria said: "I am currently in the process of trying to get an EMR set up. I don't have access to Wi-Fi in the athletic training clinic, and our IT department is very touchy and specific on who they give it to." Other participants were able to access an EMR but found the setup to be too cumbersome. Emilia was able to gain network access, but the equipment required to do so became overwhelming:

They bought us hotspots. But, then you have to keep track of all that. So, there's your hotspot. And there's your iPad. And all your stuff. And ice and all the stuff we

carry to the game. And like I said, it just becomes, I wouldn't say impossible but unyielding.

Other users faced challenges with EMRs and network access. For example, Maria said: "Sometimes your Internet goes down. What are you doing to do? Like if I had everything on electronics, and my network went down, which once in a while it does. Or they'll do service on it on the weekend when I'm with patients."

Some ATs had concerns about the security and backup of electronic documentation. Alexander stated,

I'm always worried about losing it. Even though I know SportsWare is backed up on the cloud and it's all certified gold standard and all this other stuff. I'm always afraid of losing it or the phone running out of battery or something of that nature.

Maria had a bad experience with data loss, which left her hesitant to use electronic documentation:

I actually had a situation where I had put a bunch of stuff into SportsWare into the computer. My computer crashed. I lost like 6 months of patient records. So from that time on, I never trusted 100% full documentation on electronics.

These challenges often led ATs to duplicate their documentation on paper, even when they had an existing EMR system.

Additional technology challenges shaped ATs' documentation strategies. Damon shared his concerns about EMR use: "I think there's some EMRs out there that are good, but there are some that are still all too much of point and click. They're not very user friendly. I don't know if our technology has caught up to what we need." For others, such as Martine, general hesitance toward technology was a barrier to using an EMR: "I am not a tech-savvy person. Me and computers don't completely go hand in hand. I'm old, and I don't really like change, so my reason is just because I'm not tech savvy."

Theme No. 3: Future Strategies for Documentation

When participants described their current documentation practices and the challenges they faced, several identified future strategies to improve their documentation practices. These strategies were in 2 categories: (1) the need to improve EMRs and (2) individual strategies to streamline documentation.

Category No. 1: EMR Improvements. Several ATs wanted to document more patient care in an EMT, but they identified challenges with current systems and the need for improvements in EMRs. Many participants wanted EMR systems to be more streamlined and consistent for the athletic training profession. They thought having a more universal system within the profession would help facilitate communication among health care providers, both ATs and others. Louisa advocated for a universal EMR:

I think it would be cool if there was one streamlined method of an EMR that all athletic trainers use. I wish there was one universal documentation system that we could disperse to athletic trainers. That no matter what setting they are at we could just be like, "hey, we're going to switch over to this. Let's get the ball rolling and hopefully have a plan to implement some kind of universal documentation system."

Other ATs offered specific suggestions for improving EMRs. Damon stated: "I think for us, more communications across disciplines would be great. And then improved user interface would be my second choice." Ayesha commented on the EMR interface with her state's concussion requirements: "I think there needs to be an option to where [you are asked]: 'do you work in a state that currently has a state-mandated concussion return-to-play protocol?' If *yes*, click, and then it lets you upload your state's protocol." These ATs thought such modifications to EMRs would improve their use of electronic documentation.

Additionally, several participants perceived that the EMRs they used were overly cumbersome. Some ATs cited too many drop-down boxes and restrictive sections, which limited the freedom they had regarding the type and format of information they wanted to enter into the system. Others thought the existing systems did not meet their needs for various reasons. Olivia commented, "I think easier systems would be nice. But I definitely think a documentation system that's quick and effective, that will actually help generate a note for you [would help]." Gabriel thought additional access and streamlined mobile use would improve the EMRs he's used: "Just streamline it; make it simpler. Having access to do it on your phone. We need to make sure it's secure, but we need to have access to it and make it easy for us to get to it and to fill out."

Similarly, Linda suggested:

I would say getting a more user-friendly online portal to record data. I don't necessarily like SportsWare, and I just don't feel like I'm utilizing it to the best of my ability, but I just also have not taken the time to dig more into that. And it's not super electronically friendly unless you have an iPad or something. I think just making it kind of a simple documentation process, especially when we're on the field just getting basic information. And then being able to write a note about it so we can go back and fill in later.

Participants' comments about EMR usability demonstrated the current challenges and need for EMRs that are more user friendly, especially for those who document in different environments.

Category No. 2: Individual Strategies to Streamline Documentation. Although many ATs believed more EMR options would help them improve their documentation practices, most also identified individual strategies for improving their practices that did not rely on available systems, including improving their time management and streamlining when and how they documented patient care. For some, this meant involving patients more when initiating documentation. Jose discussed a plan for more patient-centered documentation of concussion symptoms:

One thing I'm going to try to kick around is I might have another iPad set up to where the kids who are suffering

from concussion, and they're out, every day they come in, log in, and click on the iPad and go through their graded symptom checklist. Because I don't really have objective data on them over time. So, that's one thing I'm dipping my toe into right now.

Gabriel thought some modifications to his existing patient sign-in process would streamline his documentation:

I plan to review my forms at the end of the year, see what's working and what's not. Like my sign-in sheets were per sport and I would have a divider in them and say "okay, make sure you sign in under your sport" and do it that way. But being in high school, they just go to the first page and sign in there; it doesn't matter what sport they're in. So I'm going to revamp that and make it uniform and then have them sign in their name and their sport on the same sheet and kind of document that process and hopefully that helps.

Other ATs thought they could improve their documentation by implementing individual time-management strategies. Damon noted that setting aside time to document would improve his practices, in addition to other goals:

I'd say just concentrate on that window of improving how often I document. Incorporate more patient-reported outcomes, actually seeing how people score them, and interpret[ing] that score is an interest of mine right now. And then maybe improving my documentation of actual conversations with parents via phone call. Right now, I just make hand notes, or I copy emails. I don't really necessarily type up manuscripts for parents or physician phone calls. Maybe make a written schedule that I write out— block out actual times for documentation.

Ben also remarked that he could revamp his documentation strategy with a more streamlined approach:

Having a more streamlined technique for repetitive treatments or preventative treatments would be an advantage. Some way to standardize that check in, the search process, finding them in the information database that could be more standardized and more time saving and thus efficient would be helpful. To make sure that I can still maintain the patient care that I want with my patients but also provide better documentation of that care, regardless of the level of care it is at that time.

Lastly, a few ATs believed that simply documenting sooner and more regularly after seeing patients would improve their documentation. Liz said:

I think documenting sooner to the time of the initial evaluation is always beneficial for your memory and recall of what you did with that patient. I think, personally, documenting immediately after the evaluation or treatment would be the most beneficial for me, so it's still fresh in my mind.

Alexis had a similar comment:

Maybe making time to write the notes quicker after an evaluation. So being more diligent about documentation quickly after an injury occurs. Even like if it's at a game or something and it's late and I'll say, "Well, I'll just write that note tomorrow." I should, at least, you know, write down some stuff to remember for tomorrow before I leave.

DISCUSSION

Current Strategies for Documentation

We found that ATs were using multiple platforms for documenting patient encounters. Even when ATs had access to an EMR, they often used paper documentation due to preference, employer obligation, or perceived limitations of the EMR. Previous researchers[8,13] showed that physicians and other health care providers also used multiple modes of documentation. Coffey et al[9] identified this topic of *split charts* in nursing practice, whereby nurses kept some patient records on paper and some in the EMR. Similarly, physicians often had a *partial EMR*, whereby some information was in the EMR and some information was documented in spreadsheets or on other paper records.[8] Athletic trainers using the CORE-AT EMR also described documenting on paper throughout the day, which they later transferred into the EMR.[3]

The use of multimodal documentation may be problematic because critical information could be located in one form of documentation but not the other, resulting in disruption of the patient record, communication with other providers, and the patient care continuum.[8] Valuable time may be lost searching for specific patient information in multiple locations or transferring handwritten notes into the EMR. Casalino et al[8] found that the use of both paper and EMR documentation produced more medical errors than the exclusive use of either method. Documentation in 2 places may be inefficient and more likely to breach patient confidentiality.[9] Additionally, an advantage of using EMRs is the time and date stamp, which indicates when the documentation was recorded and is lost when transferring patient information from paper to the EMR. Athletic trainers should assess their use of multiple documentation platforms and attempt to minimize the potential problems that may arise.

Technology Barriers to Documentation

Although many of our participants described using paper documentation by itself or in addition to electronic documentation, this was often not their original intention. Many ATs returned to using paper documentation because they faced various challenges with electronic documentation. Our participants said that a benefit of paper documentation was that they could record information quickly and in real time, which has also been cited by physicians.[13] Clinicians often perceived that it took more time to document patient information in an EMR than on paper,[14] which was why they recorded notes on paper throughout the day before transferring them into an EMR. The increased time to document appears to be attributed to the format of the EMR and the learning curve associated with using a new platform. Clinicians have said that too

many "point and clicks" and screen changes within many EMRs lead to clinician fatigue and decrease accuracy in documentation.[15,16] Those EMRs with more dialogue boxes and fewer drop-down boxes appear to be easier to use for many clinicians.[15]

Although EMRs present challenges for clinicians, especially at initial adoption, they offer benefits over documentation on paper, including increased communication among providers, improved data analysis, enhanced patient safety, and increased accuracy of data entry.[2,9,16] Baumann et al[14] found that the ease of EMR use and accuracy of documentation improved over time, typically 6 to 12 months. Thus, a clinician who adopts a new documentation platform should expect that the initial challenges will lessen over time. For nurses, Whittaker et al[17] observed that the transition from paper to electronic documentation was smoother for those who were more comfortable with technology and computers. Therefore, ATs who are adopting an EMR are encouraged to be patient and persistent in their transition to electronic documentation.

One finding that appears to be new to the literature is our participants' challenge with network access. Only 1 clinician had no work-setting Internet access, but several others described network interruptions or limited access that affected their documentation practices. For secondary school ATs who provide services at gyms, athletic fields, and visiting team facilities, these patient care environments, which are more diverse than clinic and hospital settings, may present unique challenges to documentation. As these topics continue to be explored, ATs should communicate to their employers the importance of medical documentation and the need for reliable network access to thoroughly and securely maintain patient records.

Future Strategies for Documentation

Improvements in EMRs. Participants in our study were interested in documenting more via EMRs but desired more user-friendly and accessible platforms. For example, some ATs had to document concussion-treatment protocols in multiple places to maintain compliance with state concussion-management and employer policies because the EMR format was not compatible with their needs. Several health care researchers[15,17] have identified similar needs for EMRs and electronic health records that are user friendly, adaptable, and include ongoing training and support. Athletic trainers should collaborate with EMR developers to design or modify a platform that meets their needs, which could improve the quality and efficiency of documentation.

In addition to desiring EMRs that are a better fit for their needs, participants suggested that adopting a standardized documentation system for the profession might help to promote communication and consistency of documentation. These needs are further supported by the emergence of patient care documentation as a key area of research emphasis in the athletic training research agenda.[10] Previous authors[5] also identified a desire for more standardized documentation across the athletic training profession. More universal use of EMRs, particularly those that securely facilitate the sharing of and access to information, may help improve communication among health care professionals. Wong et al[18] also demonstrated that standardized use of EMRs helped to streamline documentation of specific aspects of patient care, such as recording of vital signs by nurses. Although adoption of a single EMR across the profession is unlikely, EMR developers should consider the added benefits of compatibility with other systems, such as improved communication and patient care.

Despite the challenges in using EMRs cited by ATs and other health care providers, accuracy appeared to improve with EMR use.[9,16,19] Furthermore, even though some common errors occur in EMRs, other errors occur in paper documentation.[13] Training, support, and a user-friendly design may help to reduce these concerns.[15] Individual acceptance of and commitment to adopting the EMR are also critical to the successful transition to a new documentation platform or process.[17] Nurses working in teams had a smoother adoption of EMRs than those working individually.[17] Therefore, ATs who adopt an EMR may have an easier transition if they collaborate with colleagues. Regardless of which documentation strategy ATs use, clinicians are encouraged to demonstrate commitment to thorough, accurate, and consistent documentation of patient care.

Individual Strategies to Streamline Documentation. In addition to improved resources and EMR options, several ATs described ways in which they could improve their documentation practices. Their ideas included organizing their documentation, streamlining when and how patient care is recorded, and completing documentation more quickly after the patient interaction. Effective clinical practice includes reflection on behaviors and purposeful quality improvement.[20] Clinicians are encouraged to apply a quality improvement model to their documentation practices by assessing their individual documentation practices, identifying areas for improvement, and executing and evaluating the effectiveness of changes to their practices. Not only can quality improvement enhance patient care[20] but it may also help clinicians transition more smoothly to electronic documentation.[17] Whittaker et al[17] found that nurses who were organized and effective time managers and provided high-quality paper documentation had an easier transition to EMR use. Thus, regardless of the documentation platform, clinicians are encouraged to be purposeful in their documentation accuracy and commitment to the quality of their documentation.

Limitations and Future Research

Our study was limited to ATs practicing in the secondary school setting. Because differences in documentation practices may exist among practice settings, future investigators should examine documentation practices across various athletic training practice settings. Our participants identified ways to improve their individual documentation strategies, but we did not follow up to determine whether actual changes were made. Future authors should examine how clinicians assess their work and how their documentation practices evolve, including the role of continuing professional development with respect to those documentation practices. Lastly, our findings were based on the participants' descriptions and may not accurately reflect actual practice. Researchers

should consider evaluating actual behaviors instead of relying solely on self-reported behaviors.

CONCLUSIONS

Athletic trainers practicing in the secondary school setting described using multiple methods of documenting patient care, including paper and EMRs. Documentation often occurred in duplicate and involved transferring information from paper to electronic formats, which raises concerns about patient confidentiality, efficiency, and documentation accuracy. Although many clinicians wanted to use EMRs more, they often faced challenges such as difficulty learning and using the system and accessing networks. Developers of EMRs should consider working more closely with clinicians to develop systems and train and support users. Additionally, ATs may be able to improve the efficiency of patient care documentation by streamlining their individual approaches to documentation and working with employers to gain better network access and more resources.

ACKNOWLEDGMENTS

REFERENCES

1. Henderson J. *The 2015 Athletic Trainer Practice Analysis Study*. Omaha, NE: Board of Certification; 2015.
2. Best practice guidelines for athletic training documentation. National Athletic Trainers' Association Web site. https://www.nata.org/sites/default/files/best-practice-guidelines-for-athletic-training-documentation.pdf. Published August 2017. Accessed February 13, 2020.
3. Nottingham SL, Lam KC, Kasamatsu TM, Eppelheimer BL, Welch Bacon CE. Athletic trainers' reasons for and mechanics of documenting patient care: a report from the Athletic Training Practice-Based Research Network. *J Athl Train*. 2017;52(7):656–666.
4. Welch Bacon CE, Eppelheimer BL, Kasamatsu TM, Lam KC, Nottingham SL. Athletic trainers' perceptions of and barriers to patient care documentation: a report from the Athletic Training Practice-Based Research Network. *J Athl Train*. 2017;52(7):667–675.
5. Welch Bacon CE, Kasamatsu TM, Lam KC, Nottingham SL. Future strategies to enhance patient care documentation among athletic trainers: a report from the Athletic Training Practice-Based Research Network. *J Athl Train*. 2018;53(6):619–626.
6. Mathewson C. Documentation: what, why, and how. *NATA News*. 2011;November:22–23.
7. Christino MA, Matson AP, Fischer SA, Reinert SE, Digiovanni CW, Fadale PD. Paperwork versus patient care: a nationwide survey of residents' perceptions of clinical documentation requirements and patient care. *J Grad Med Educ*. 2013;5(4):600–604.
8. Casalino LP, Dunham D, Chin MH, et al. Frequency of failure to inform patients of clinically significant outpatient test results. *Arch Intern Med*. 2009;169(12):1123–1129.
9. Coffey C, Wurster LA, Groner J, et al. A comparison of paper documentation to electronic documentation for trauma resuscitations at a level I pediatric trauma center. *J Emerg Nurs*. 2015;41(1):52–56.
10. Eberman LE, Walker SE, Floyd RT, et al. The prioritized research agenda for the athletic training profession: a report from the Strategic Alliance Research Agenda Task Force. *J Athl Train*. 2019;54(3):237–244.
11. Hill CE, Thompson BJ, Nutt Williams E. A guide to conducting consensual qualitative research. *Counseling Psychol*. 1997;25(4):517–572.
12. Creswell JW. *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*. 3rd ed. Thousand Oaks, CA: SAGE Publications; 2013.
13. Yadav S, Kazanji N, Narayan KC, et al. Comparison of accuracy of physical examination findings on initial progress notes between paper charts and a newly implemented electronic health record. *J Am Med Inform Assoc*. 2017;24(1):140–144.
14. Baumann LA, Baker J, Elshaug AG. The impact of electronic health record systems on clinical documentation times: a systematic review. *Health Policy*. 2018;122(8):827–836.
15. Rodriguez Torres Y, Huang J, Mihlstin M, Juzych MS, Kromrei H, Hwang FS. The effect of electronic health record software design on resident documentation and compliance with evidence-based medicine. *PLoS One*. 2017;12(9):e0185052.
16. Jamieson T, Ailon J, Chien V, Mourad O. An electronic documentation system improves the quality of admission notes: a randomized trial. *J Am Med Inform Assoc*. 2017;24(1):123–129.
17. Whittaker AA, Aufdenkamp M, Tinley S. Barriers and facilitators to electronic documentation in a rural hospital. *J Nurs Scholarsh*. 2009;41(3):293–300.
18. Wong D, Bonnici T, Knight J, Gerry S, Turton J, Watkinson P. A ward-based time study of paper and electronic documentation for recording vital sign observations. *J Am Med Inform Assoc*. 2017;24(4):717–721.
19. Wang N, Yu P, Hailey D. The quality of paper-based versus electronic nursing care plan in Australian aged care homes: a documentation audit study. *Int J Med Inform*. 2015;84(8):561–569.
20. Lopes Sauers AD, Sauers EL, Snyder Valier AR. Quality improvement in athletic health care. *J Athl Train*. 2017;52(11):1070–1078.

Address correspondence to Sara L. Nottingham, EdD, LAT, ATC, Department of Health, Exercise, and Sports Sciences, University of New Mexico, 1 University of New Mexico, MSCO4 2910, Albuquerque, NM 87131. Address e-mail to nottingham@unm.edu.