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Authors

Henry, Stephen G
White, Anne Elizabeth Clark
Magnan, Elizabeth M
et al.

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Making the most of video recorded clinical encounters: Optimizing impact and productivity through interdisciplinary teamwork

Stephen G. Henry[a,b,*], Anne Elizabeth Clark White[a,b], Elizabeth M. Magnan[b,c], Eve Angeline Hood-Medland[a,b], Melissa Gosdin[b], Richard L. Kravitz[a,b], Peter Joseph Torres[d], Jennifer Gerwing[e]

[a] Department of Internal Medicine, University of California, Davis, Sacramento, USA
[b] University of California Davis Center for Healthcare Policy and Research, Sacramento, USA
[c] Department of Family and Community Medicine, University of California Davis, Sacramento, USA
[d] Department of Linguistics, University of California Davis, Davis, USA
[e] Health Services Research Unit, Akershus University Hospital, Oslo, Norway

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ABSTRACT

Patient-clinician interactions are central to technical and interpersonal processes of medical care. Video recordings of these interactions provide a rich source of data and a stable record that allows for repeated viewing and analysis. Collecting video recordings requires navigating ethical and feasibility constraints; further, realizing the potential of video requires specialized research skills. Interdisciplinary collaborations involving practitioners, medical educators, and social scientists are needed to provide the clinical perspectives, methodological expertise, and capacity needed to make collecting video worthwhile. Such collaboration ensures that research questions will be based on scholarship from the social sciences, resonate with practice, and produce results that fit educational needs. However, the literature lacks suggested practices for building and sustaining interdisciplinary research collaborations involving video data. In this paper, we provide concrete advice based on our experience collecting and analyzing a single set of video-recorded clinical encounters and non-video data, which have so far yielded nine distinct studies. We present the research process, timeline, and advice based on our experience with interdisciplinary collaboration. We found that integrating disciplines and traditions required patience, compromise, and mutual respect; learning from each other enhanced our enjoyment of the process, our productivity, and the clinical relevance of our research.

1. Introduction

Patient-clinician interactions are a common focus of health communication research because they play a central role in both the technical and interpersonal processes of medical care [1]. Direct observation of interactions, in comparison to chart review or post-visit patient or clinician self-report, is usually considered the gold standard for analyzing processes of care and patient-clinician communication [2,3]. Recordings of clinical encounters are usually preferred over third-party observation because recordings provide a durable, verifiable record of the encounter and allow for the study of phenomena that would be difficult or impossible to notice without repeat viewings [4]. Although video recordings are, in turn, a much richer source of data than audio recordings (because videos include both sound and images), research analyzing audio recordings of clinical encounters is much more common than research using video recordings. One reason audio recordings predominate is that video recordings raise greater privacy concerns than audio recordings and so may lead to heightened regulatory scrutiny, more hesitancy from participants to enroll in research studies, and increased potential for research participation effects [5,6].

In our experience, another important but underrecognized reason for the predominance of audio recordings is that substantially greater levels of skill and time are required to realize the added potential of video compared to audio recordings. Interdisciplinary collaborations involving practitioners, medical educators, and social scientists are often needed to provide the clinical perspectives, methodological expertise, and capacity needed to make collecting video worthwhile. Prior studies have provided general guidance for collecting and analyzing video recorded interactions [7–10] and for weighing tradeoffs between

* Corresponding author at: 4150V Street Suite 2400, Sacramento, CA 95817, USA.
E-mail address: sghenry@ucdavis.edu (S.G. Henry).

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audio versus video recordings. [9,11,12]. However, there has been a lack of focus on best practices for building and sustaining interdisciplinary research collaborations involving video data.

In this paper, we make recommendations for successful research collaborations among practitioners, medical educators, and social scientists involving video-recorded clinical encounters. We draw from our experience forming interdisciplinary teams and conducting multiple primary and secondary analyses on a single corpus of video data. Our overall goal is to provide practical advice to researchers and research trainees planning interdisciplinary studies involving video-recorded clinical encounters or conducting interdisciplinary research on extant video data.

2. Designing and conducting interdisciplinary research involving video-recorded encounters

2.1. Conceptualizing the study

Table 1 lists key steps and questions to consider when planning and conducting interdisciplinary research studies that include video-recorded clinical encounters. We illustrate these steps with specific examples of how we navigated these issues during a series of studies we conducted using videos initially collected to study communication about pain and opioids in primary care. Table 2 lists the research projects that we have, to date, conducted on these data, demonstrating the abundant potential for secondary

Table 1
Key steps for optimizing use of video-recorded clinical encounter data.

Step	Selective examples from authors' studies
Study design	
1. Choose a primary research question for which video recording justifies added regulatory and recruitment efforts compared to audio recording	Initial project involved video elicitation interviews, which require video recordings; secondary analyses utilized videos to address a wide range of research questions (see Table 2)
2. Develop research team and plan that includes sufficient time, skill, and financial support to analyze video data	Initial study team included a communication scientist; study team grew after adding collaborators for secondary analyses (see step 9 below and timeline in Table 4); grant funding was sufficient only for primary analysis; secondary analyses were possible with less funding because data were already collected
3. Determine study design and data collection protocol; decide what non-video data to collect	Recorded each patient only once; physicians could be recorded multiple times; collected pre- and post-visit questionnaires and clinical data from electronic health records; conducted video elicitation interviews with a subset of participants (see Table 3)
4. Obtain permission to use videos for secondary analyses, teaching and education	Asked participants to give separate consent for use of unaltered video clips for education and training purposes; changes to the US Common Rule [32] decreased regulatory burden related to secondary analyses
Data management	
5. Choose video camera and camera angles for recording	Used a portable camcorder with a sensitive microphone; unable to find a camera that embedded time stamp in the video; used a mobile instrument tray to position camera at about eye-level with participants; camera position varied based on room configuration; gave physicians a piece of paper to cover camera lens during sensitive portions of physical examinations
6. Develop a strategy for securely storing and sharing video data	University server was useful for backing up data, but slow connections made it impractical to play videos directly from servers. Used university's web-based program for securely sharing lectures online, which allowed secure sharing with both local and international collaborators
7. Determine transcription protocol	Obtained standard verbatim transcripts; formatted de-identified transcript in Microsoft Excel spreadsheets for utterance-level coding; video elicitation interview transcripts were interwoven into encounter transcripts; secondary analyses modified transcripts to fit project needs
Data analysis	
8. Seek out new collaborators interested in secondary analyses	Principal investigator of original study met international collaborator during a research conference; this collaboration sparked additional secondary analyses
9. Form interdisciplinary research teams for each analysis or project	*Life context*: sociologist and family physician researcher examined how social determinants of health are discussed during the clinic encounter *Creaky voice*: two linguists and a physician were involved in coding utterances to capture both clinical (insider) and linguistic (outsider) perspectives.
10. Identify analytical approach and method(s) most suited for research questions pertinent to each project	*Stigma*: modified grounded theory approach using video elicitation interviews and videos; explanations related to stigma expressed during interviews sometimes contradicted explanations expressed during the encounter *Misconceptions*: combined conversation analysis (for background on repairs) with microanalysis of face-to-face dialogue to develop an operational definition and coding procedure
11. Conduct analytical activities	Leader for each project identified early; coders had to navigate practicalities (e.g., coordinating locations and schedules) and determine materials to be analyzed; developing coding methods inductively for each project took time
12. Attend to multiple projects to keep them distinct	Principal investigator of original study tracked projects throughout their development and ensured that research teams communicated early when there was potential for overlap
Writing and publishing	
13. When possible, plan >1 paper for each analysis or project	Jointly-led projects required more time and coordination; researchers planned coding that would result in >1 paper to justify the time invested
14. Begin identifying target audience and journals (clinical versus social science) early	Team members negotiated the optimal target audience; clinical journals often publish more quickly than social science journals and reach a wider audience

Table 2
List of projects conducted by this interdisciplinary team.

Project title and main research questions	Methodological approach	Key disciplinary perspectives and partnerships
Visit experience (primary analysis) [15]. What pain- and opioid-related communication behaviors are associated with post-visit ratings of patient and physician visit experience?	Quantitative analysis using inductive, utterance-level coding system	Physician led project; communication scientist contributed theoretical insights and guided coding system development; other physicians provided insight on clinical relevance
Opioid assessments [33]. What is the frequency and content of opioid assessments patients express during primary care visits?	Descriptive coding of patient statements about opioids; used a different inductive, utterance-level coding system	Physician led project with the goal of identifying teachable skills; sociologist and physician designed and conducted coding with input from conversation analyst
Creaky voice [34]. How do patients deploy pitch and creaky voice during discussions about pain and opioids?	Acoustic analysis (pitch tracking) for phonetic description of speech. Discourse and conversation analysis to code the context for each intonational phrase	Linguist designed and conducted analysis and led project; physician provided input on clinical relevance; two linguists and a physician applied a modified version of the coding system used in the primary analysis
Agenda setting [35]. How and how often are resident physicians setting an agenda in primary care? How is agenda setting associated with visit organization and post-visit ratings of patient and physician visit experience?	Descriptive and quantitative analysis using an inductive coding system for agenda setting informed by medical education and conversation analysis	Physician-educator and conversation analyst co-led project; jointly developed coding scheme, watched and coded videos in tandem, and co-wrote manuscripts
Visit organization [35]. What is the number and sequence of topics discussed during primary care visits? How is visit organization associated with post-visit ratings of patient and physician visit experience?	Descriptive and quantitative analysis using an inductive, topic-level coding system informed by conversation analysis	Physician-educator and conversation analyst co-led project; jointly developed coding scheme, watched and coded videos in tandem, and co-wrote manuscripts
Misconceptions [36]. How do physicians mark and correct patient misconceptions during encounters?	Conversation analysis with microanalysis of face-to-face dialogue for developing a coding scheme suited to quantification	Research psychologist led project and applied coding; conversation analyst gave input on coding development; physicians gave input on clinical relevance
Life context [37]. How is patient life context addressed during visits for chronic pain? In what ways does discussion of life context impact treatment plans?	Qualitative analysis of video recordings and patient and physician video elicitation interviews using constant comparisons and modified grounded theory approach	Physician and sociologist co-led project, jointly developed coding scheme, watched videos and coded separately, and met to compare codes and complete analysis; physician led analysis and writing
Stigma [38]. What roles do stigma and impression management play during primary care encounters that discuss chronic pain?	Qualitative analysis of video recordings and patient and clinician video elicitation interviews using constant comparisons and modified grounded theory approach	Physician and sociologist co-led project, jointly developed coding scheme, watched videos and coded separately, and met to compare codes and complete analysis; sociologist led analysis and writing
Negotiation [39]. What kinds of social actions do physicians make in response to patient requests for more pain medications?	Used conversation analysis to examine clinician utterances in response to patient requests for more pain medication and develop a coding system suited to quantification	Conversation analyst led project, designed and conducted analysis; physicians provided input on coding system design and analysis to maximize clinical relevance

analyses, the array of methods and approaches utilized, and the perspectives that different team members contributed. This list of projects contextualizes the core of the paper, in which we discuss important decisions we faced while designing and conducting this research.

Including multiple perspectives at early stages—when planning and designing studies that include video recordings—is likely to increase studies' eventual impact and potential for knowledge mobilization. While video-recorded encounters provide rich material for learning about language and interaction from a social science perspective, without collaboration with practitioners, research results may have limited clinical relevance. Conversely, practitioners may recognize problems that video-recorded data can help to address. However, without theory and methodological expertise from fields that focus on language use in interaction (e.g., sociology, psychology, and linguistics), practitioners may not be able to realize the potential of such data. In addition, team members who train, mentor, or educate practitioners can use analysis of video recordings to help identify teachable strategies and skills that have the potential to improve patient-clinician communication and other processes of care. Close collaboration among practitioners, medical educators, and social scientists can draw on theory and scholarship that balance disciplines, allowing for an integrated approach that researchers from a single field could not accomplish alone. Fig. 1 represents these three perspectives. A single team member may hold multiple perspectives (e.g., a practitioner or social scientist who is also a medical educator). Our initial study team included 2 primary care physicians and a communication scientist. The clinicians identified the target population of interest and clinically relevant research questions, while the communication scientist ensured that planned analyses were grounded in communication theory and that we selected variables that could be feasibly and reliably coded from videos.

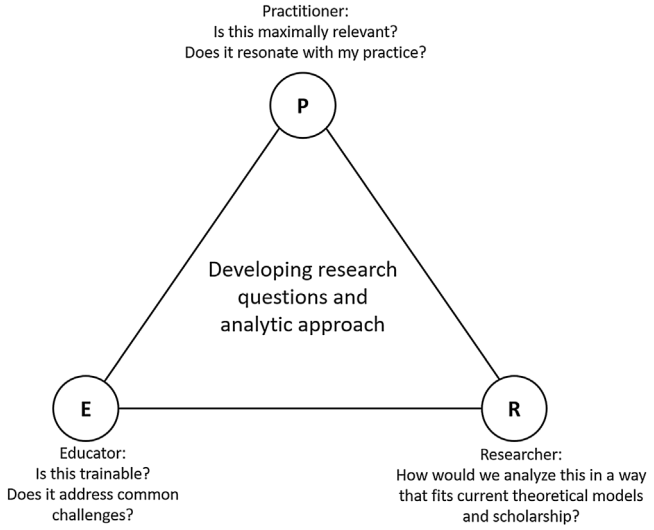

Fig. 1. A model for integrating perspectives in interdisciplinary collaborations. How multiple perspectives in the analysis of video recordings can produce new, relevant knowledge that can be mobilized into practice.

2.2. Study design

2.2.1. Methodological feasibility

Numerous researchers have published accounts comparing video and audio recordings [9,11–14]. We collected video recordings of 86 primary care encounters that involved discussions about chronic pain and opioids [15]. For 10 of these encounters, we also audio recorded post-visit video elicitation interviews. We chose to collect video data because our primary analysis involved video elicitation interviews, a method that requires video recordings [16]. In general, video allows researchers to observe what is happening during periods of silence (e.g., during physical examination), and it reveals clinical activities occurring during the conversation. Video recordings also allow researchers to analyze participants' co-occurring speech (e.g., interruptions), vocal tone, co-speech hand gestures [17,18], gaze [19,20], facial expressions, body movement [21] and posture [22]; however, analyzing such multimodal communication requires specialized expertise [23]. Audio recordings may suffice if researchers have planned analyses that rely purely on specific speech content (e.g., the wording of questions). Although the decision to collect video versus audio recordings should be driven by the primary research question [24], the expertise of available team members is also important. For example, a social scientist who does research on co-speech gesture might argue for collecting video because she routinely works with postdoctoral or graduate students who would be valuable team members for analyses involving video. In this case, collecting video would result in many more secondary analyses and papers.

2.2.2. Potential bias

Drawbacks of video recording include the potential for greater selection bias and research participation effects than audio recording. There is little research comparing selection bias due to video versus audio recording [5,25]. In our study, 7 of 134 eligible patients (5%) declined to enroll due to unease about video recording. In contrast, during a subsequent study that recruited the same population from the same clinics but only involved audio recording, no eligible patients (0 out of 62) declined to enroll due to unease about audio recording. Our collective experience from many video studies is that participants typically appear to forget about the video camera after the first few minutes of an encounter as they become engaged in more pressing activities.

2.2.3. Planning data collection

Video recordings alone are rarely sufficient to address clinically relevant research questions, so a key element of study design is deciding what kinds of additional, non-video data to collect. Table 3 shows the additional data we collected for our original study. Baseline and post-visit questionnaires are a convenient way to collect data about participants' characteristics, beliefs, and attitudes. Qualitative interviews, such as the elicitation interviews we conducted, generate detailed data about participants' perspectives and experiences. Depending on the overall study design, video and non-video data may be collected once or at multiple time points. Both clinical and social science researchers should be involved in decisions about data collection. For example, experts in interaction analysis can ensure that camera angles and video recordings are optimized, while clinicians ensure that the outcome measures collected are clinically relevant.

2.2.4. Ethical and regulatory issues

All data collection plans must align with legal and ethical standards. Research design proposals involving video recording (versus audio recording) will invite heightened regulatory scrutiny. In the United States, clinical researchers must obtain approval from local Institutional Review Boards (IRBs), which often make unpredictable decisions and may lack experience evaluating studies involving video data [26]. Our primary research included conducting video elicitation interviews, so we did not experience resistance from our IRB.

Given the risks to anonymity, obtaining participant consent requires careful planning. We recommend keeping consent broad enough to allow for a wide range of potential secondary analyses involving collaborators from other disciplines. For example, our patient consent form included the following study description: "The purpose of this research is to study how patients and doctors talk about chronic pain and other medical problems in primary care. We hope that this study will help us to improve the quality of care for patients with chronic pain." Finally, we asked participants for separate consent to use unaltered video recordings for education and training purposes (e.g., showing clips during research conferences). We obtained consent for 51% of study encounters; clinicians were much less likely to provide this additional consent than patients. We also recommend asking participants' consent to be contacted for future, follow-up research studies.

In summary, before deciding to collect video rather than audio recordings, researchers should be able to articulate how videos will add meaningful value over audio recordings for their primary research question and ensure their team has the necessary expertise to analyze video data. Including social scientists with experience analyzing video in the study planning process can help determine whether to collect video or audio recordings and, when appropriate, justify the collection of video recordings to regulatory bodies. Broad participant consent maximizes the potential for further research.

2.3. Data management

2.3.1. Technological issues

Due to improvements in technology, collecting video data is now only slightly more expensive and complicated than collecting

Table 3
Non-video data collected concurrently with projects that used them.

Data collection	Examples of variables	Projects using these data[a]
Baseline (pre-visit) clinician and patient questionnaires	demographics, pain severity; mental and physical health status, patient desire for pain medications; clinician attitudes	Visit experience [15], Opioid assessments [33], Creaky voice [34], Life context [37], Stigma [38], Agenda setting [35], Visit organization [35], Negotiation [39]
Post-visit clinician and patient questionnaires	clinician perception of visit difficulty; patient experience measures, changes to prescribed opioid dose; patient and clinician pain treatment goals	Agenda setting [35], Visit organization [35], Negotiation [39], Visit experience [15], Creaky voice [34], Life context [37], Stigma [38],
Clinical data from patients' electronic health records	pain location; pain diagnoses; comorbid physical and mental health diagnoses; medications prescribed	Visit experience [15]
Video elicitation interviews	interviews during which participants watched and commented on the video recording of their study encounter	Life context [37], Stigma [38]

[a] Project titles refer to the projects listed in Table 2; see Table 2 for detailed description of each project and associated research questions.

audio data. However, researchers must still choose a suitable camera and determine optimal camera placement. We used a single battery-powered camcorder that cost about $200 with a wide lens sufficient to capture patient and clinician (but not always patient companions) on a single video frame and used a mobile instrument tray to position the camcorder in the room before each visit. Our research assistants required extensive practice and detailed data collection checklists before they could reliably collect video recordings without technological mishaps. We collected backup audio recordings, which were less prone to technical problems and sometimes provided additional information when the video did not capture the beginning or end of a visit due to technical problems. Installing fixed cameras in exam rooms may mitigate logistical challenges related to recording but was not feasible in our study because we recorded in multiple clinics and could not control which exam rooms were used for study visits.

We paid for standard verbatim transcripts, redacted identifying participant information, and then manually transferred transcripts into spreadsheets to facilitate the utterance-level coding planned for our primary analysis. Producing these transcripts was resource intensive; however, they increased the efficiency of secondary analyses because, as written text [27], they were persistent, static objects we could scan, reference, and share easily.

2.3.2. International and cross-institutional collaboration

To make the most of the rich detail captured by video-recorded clinical encounters, researchers who collected these data should seek out additional collaborators interested in conducting secondary analyses. In our case, the principal investigator of the original study (SGH) sought out additional collaborators once he realized that available funding was only sufficient to complete a subset of the planned primary analyses. He met a social scientist from Norway (JG) interested in conducting secondary analyses at a conference, which catalyzed a larger collaboration involving several other researchers from University of California Davis (UC Davis), where the data were housed.

We recommend seeking out additional collaborators early—even before data collection is complete—because sharing videos across institutions requires substantial time and effort. International collaborations may present additional challenges. For example, our local IRB initially requested documents and information that our Norwegian collaborator's institution could not provide due to the lack of overlap between the institutions' ethical review systems. Another unanticipated challenge was finding a technological solution that allowed researchers to access videos while keeping digital files securely stored at UC Davis. Eventually, we determined that we could use the computer platform the university used to share video-recorded lectures online. This solution represented a compromise for our international collaborator, who was unable to use her standard annotation software program, and who had to travel to UC Davis to resolve administrative problems before she could access the videos remotely. Table 4 shows a detailed timeline of our collaboration, highlighting the time required for collaborating and sharing video data across institutions.

3. Analyzing interdisciplinary research involving video-recorded encounters

3.1. Potential scope and development of interdisciplinary collaborations

Interdisciplinary perspectives shape all stages of research. Even narrowing the range of possible topics for secondary analyses constitutes a collaborative endeavor. For example, one collaborator's (JG) initial interest was patients' co-speech hand gestures to demonstrate pain. However, after viewing the videos and discussion with other team members, she decided to analyze how clinicians addressed patient misconceptions, which are connected to patients' understanding of illness, treatment, and prognosis and have clear practical implications. In interdisciplinary work, finding the intersection of common interests may require discussion and some compromise but often leads to research with greater impact and scholarly relevance.

Table 2 illustrates the inductive orientation of our secondary analyses. When researchers approach video analysis inductively, they can build a unique analysis scheme from the material, defining the phenomena of interest and developing coding schemes tailored to specific research questions [28,29]. While the inductive approach results in innovation, it takes some courage and a significant investment in time and effort. In inductive work, analysts must make choices throughout the analytical process, as ongoing analysis presents unanticipated decisions (e.g., a need to limit or modify the scope of phenomena being studied). Using an existing coding method (e.g., Cancode interaction analysis system [30], Verona coding system [31]) circumvents these challenges and can be efficient. However, it restricts analyses to the tools researchers can find in the literature, thereby limiting the range of potential research questions.

3.2. Conducting interdisciplinary analysis of video-recorded clinical encounters

3.2.1. Settling on relevant disciplinary perspectives

Interdisciplinary projects analyzing video recordings involve different levels of collaboration between practitioners, medical educators, and social scientists, necessitating decisions regarding who is leading the project. Table 2 shows how we made these decisions for each project. For example, the *visit experience* project was mainly practitioner led (SGH) and informed by a social science framework to produce results that could inform practitioner training and intervention development. The *negotiation* project was led by a conversation analyst (AECW) with input from physicians (SGH, RLK) to ensure that the inductively-derived

Table 4
Timeline of data collection and research projects for authors' studies.

July 2013	Start of original grant-funded research project
November 2014 – January 2016	Video data collected for original project
October 2015	Principal investigator of original study (SGH) meets international collaborator (JG), offers access to video data
June 2016	Original grant funding ends
June 2016	Institutional Review Board approves sharing videos with international collaborator JG in Norway
July 2017	Manuscript reporting primary analysis results submitted
September 2017	Other researchers at University of California Davis begin working on secondary analyses of video data
June 2018	JG travels to California to review videos and resolve data access problems
October 2018	Half-day collaborative meeting in Sacramento, California to discuss interdisciplinary projects and methods
February 2019	Symposium proposal submitted for the 2019 International Conference on Communication in Healthcare
October 2019	Symposium presented at the 2019 International Conference on Communication in Healthcare
January 2020	Manuscript based on symposium submitted to *Patient Education and Counseling*

categories were clinically meaningful. Researchers co-led some projects due to overlapping clinical and social science interests. For example, the *stigma* and *life context* projects emerged from shared interests between a sociologist (MG) and physician (EMM) who co-led both projects; the sociologist contributed expertise in social determinants of health and power dynamics during the encounter, and the physician brought expertise in encounter flow and treatment decision making. These co-led projects tended to be more inspiring and fun, but building mutual understanding between traditions with different theoretical assumptions took additional time and patience. For example, in one visit the sociologist felt that the physician's asking repeated questions highlighted the power differential between clinician and patient, while the physician felt these questions were standard procedure when prescribing medication. After much discussion, both investigators agreed that lack of patient-clinician rapport likely contributed to reduced information sharing during the encounter.

3.2.2. Day-to-day analytical activities

The *agenda setting* and *visit organization* projects involved analyzing video in tandem; researchers viewed video together and made consensus coding decisions. Working jointly increased dialogue and intellectual stimulation but required longer analysis times and coordinating busy schedules. When coding transitions between clinical topics, multiple discussions were often required to decide what constituted discrete topics. The conversation analyst (AECW) recognized prosodic, lexical, and pacing practices patients used to separate concerns into several topics (e.g., anxiety, chronic pain, weight gain). However, the physician (EAMH) often interpreted these concerns as different facets of one larger topic (e.g., chronic pain). In other projects, researchers analyzed video independently (after agreeing on the scope and procedures for analysis) followed by discussion. Working independently was more efficient and required less schedule coordination; however, it lacked the stimulation that coding in tandem offers.

3.2.3. Making use of available materials

All projects used video together with transcripts formatted onto spreadsheets. Spreadsheets allowed research teams to add columns for coding or memoing and to modify transcripts based on project needs. For example, in the *creaky voice* project, the linguist (PJT) altered the transcript rows from utterance-level to turn-level organization, while the conversation analyst leading the *negotiation* project (AECW) added notations based on conversation analysis conventions when analyzing the phenomenon of interest. We all found that deriving meaning from the transcripts required going back to the video because the transcripts did not include, for example, pauses, simultaneous talk, or meaning provided by participants' gestures and facial expressions. For example, one transcript sequence in which the physician appeared to be exploring the patient's medical concern was found to be rapport building when viewed on video.

4. Writing and publishing interdisciplinary research involving video-recorded clinical encounters

In addition to standard decisions about writing and publishing research, the substantial time required to analyze video data necessitated strategies to optimize productivity. Secondary analyses that were co-led were particularly time-consuming, so researchers involved in these projects ensured that their analysis would result in sufficient material to produce >1 manuscript. These considerations were particularly important for the research trainees (e.g., postdoctoral scholars) who expected to search for jobs in the near future.

5. Conclusions

Video recordings of interactions between patients and clinicians provide a rich source of data for understanding patient-clinician communication and other processes of medical care. Capitalizing on this material requires a team of researchers who can bring a variety of perspectives and skills to all stages of the project. As evidenced by our timeline (Table 4), we emphasize the need to budget the time and resources necessary to fulfill ethical responsibilities, organize data (e.g., producing and formatting transcripts), and capitalize on the unique potential of the material. Planning a series of secondary analyses can help to realize the potential of video data. Our timeline also shows that trainees (e.g., PhD students) on a tight timeline should consider analyzing extant video data rather than collecting new video recordings for their project. Finally, we found that international collaborations, while worthwhile in our case, may require an especially substantial investment of time and effort.

Applying interdisciplinary approaches and traditions to analysis of video-recorded clinical encounters requires time, patience, compromise, and a great deal of trust and mutual respect. In our projects, each of us was able to recognize our own specific domain of expertise while remaining humble, relying on others to contribute vital knowledge and experience we lacked. Learning from each other enhanced our enjoyment of the process, our creativity and productivity and, we hope, the relevance and impact of our research.

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CRediT authorship contribution statement

Stephen G. Henry: Conceptualization, Funding acquisition, Formal analysis, Writing - original draft. **Anne Elizabeth Clark White:** Formal analysis, Writing - review & editing. **Elizabeth M. Magnan:** Formal analysis, Writing - review & editing. **Eve Angeline Hood-Medland:** Formal analysis, Writing - review & editing. **Melissa Gosdin:** Formal analysis, Writing - review & editing. **Richard L. Kravitz:** Formal analysis, Writing - review & editing. **Peter Joseph Torres:** Formal analysis, Writing - review & editing. **Jennifer Gerwing:** Conceptualization, Formal analysis, Writing - original draft.

Declaration of Competing Interest

No authors have any conflicts of interest to declare.

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