The myth of standardized workflow in primary care

G Talley Holman¹, John W Beasley², Ben-Tzion Karsh³, Jamie A Stone⁴, Paul D Smith⁵, Tosha B Wetterneck⁶

ABSTRACT

Objective Primary care efficiency and quality are essential for the nation’s health. The demands on primary care physicians (PCPs) are increasing as healthcare becomes more complex. A more complete understanding of PCP workflow variation is needed to guide future healthcare redesigns.

Methods This analysis evaluates workflow variation in terms of the sequence of tasks performed during patient visits. Two patient visits from 10 PCPs from 10 different United States Midwestern primary care clinics were analyzed to determine physician workflow. Tasks and the progressive sequence of those tasks were observed, documented, and coded by task category using a PCP task list. Variations in the sequence and prevalence of tasks at each stage of the primary care visit were assessed considering the physician, the patient, the visit’s progression, and the presence of an electronic health record (EHR) at the clinic.

Results PCP workflow during patient visits varies significantly, even for an individual physician, with no single or even common workflow pattern being present. The prevalence of specific tasks shifts significantly as primary care visits progress to their conclusion but, notably, PCPs collect patient information throughout the visit.

Discussion PC workflows were unpredictable during face-to-face patient visits. Workflow emerges as the result of a “dance” between physician and patient as their separate agendas are addressed, a side effect of patient-centered practice.

Conclusions Future healthcare redesigns should support a wide variety of task sequences to deliver high-quality primary care. The development of tools such as electronic health records must be based on the realities of primary care visits if they are to successfully support a PCP’s mental and physical work, resulting in effective, safe, and efficient primary care.

Keywords: healthcare, primary care, workflow, task list, patient interaction

INTRODUCTION

Primary care efficiency and quality are essential to the health of a nation.¹–⁴ Delivering efficient and high-quality care is complex,⁵–¹¹ stemming from the demands of making first contact with the patient, then providing comprehensive, longitudinal care across a patient’s lifetime while also coordinating the patient’s care by other clinicians across multiple healthcare settings.¹¹

Much work has been done to better understand primary care processes and to identify care delivery problems.¹² For instance, various studies have examined the amount of time primary care physicians (PCPs) spend on a patient visit,¹³,¹⁴ while others have examined specific tasks or types of tasks performed by PCPs during,¹⁵–¹⁹ between, and after patient visits.¹⁹–²² Other studies have evaluated the amount of time PCPs “should” spend on prevention and chronic care.²³,²⁴ The number of patient problems addressed per primary care visit²⁵ and the number of different patient problems addressed²⁶–²⁸ and tasks performed per patient visit have also been evaluated.²⁹ PCP communication patterns and approaches have been compared,¹³,¹⁴,²⁹–³⁴ as have other sources of variation during a primary care visit that lead to different outcomes.³⁵ Hopefully, gaining a deeper understanding of the care process will lead to solutions that can be implemented to improve efficiency, performance, and quality of care.¹² However, despite a vast body of literature on the processes and environment of primary care that can guide the development and implementation of healthcare tools (eg, electronic health records [EHRs]), efforts have thus far been ineffective at supporting PCPs’ care process during face-to-face interactions with patients in the examination room and, in some cases, have hindered that interaction.³⁶,³⁷ This may be a result of the critical lack of knowledge of the sequence in which tasks are performed during a primary care visit – the workflow.

The term “workflow” refers to the actual manner and sequence in which work is carried out, as opposed to how work is supposed to or believed to be carried out.³⁸–⁴³ Studying physician workflow is different from studying the tasks that physicians do or the time physicians spend on those tasks.⁴⁴ Tasks are discrete; workflow is both discrete and continuous and describes how people move from task to task, based on an objective (ie, a pattern of work based on sequences of tasks). Hence, task sequence patterns can be studied based on the objective and/or the outcome of tasks. Task sequences can reveal how individual tasks may be dependent on preceding and subsequent tasks, which aids in supportive workflow design. Disruptions in a PCP’s workflow pattern during an interaction with a patient in an office visit might allow for the identification of inadequately supported aspects of their work as well as failures related to patient care. In order to develop solutions to address care delivery problems, eg, EHR integration,⁴⁵,⁴⁶ it is critical to understand the details of primary care workflows. This can only happen if the basic science of the primary care workflow is understood.¹³,³²

To better understand primary care workflows, we analyzed observational data from two primary care studies conducted in the Midwestern United States. Specifically, we wanted to evaluate the workflow of physician tasks that occur during face-to-face visits between PCPs and patients, with the aim of addressing the following question: Is there a common or consistent workflow during primary
care visits? The intent of this article is to describe the workflows happening in various clinics on any given day between a patient and physician, so that, when tools or guidelines for primary care are being developed, both healthcare and non-healthcare personnel have a common basis for understanding the work that is to be supported.

METHODS

We conducted a secondary analysis, or post-analysis, of data gathered during two observational studies of primary care work in family and internal medicine, using both a qualitative and quantitative approach.8

Setting and Participants

The first study we analyzed evaluated the care of elderly patients in 15 primary care clinics, observing two patient visits for each PCP per clinic from 2008–2009. The second study we analyzed evaluated the work of 16 PCPs in three clinics (two with and one without an EHR system) from 2008–2010 with 5–10 PCP visits documented per PCP. In the present study, clinics were divided into two groups, EHR and non-EHR, and five clinics were randomly selected from each group. One clinic with multiple PCPs was selected, from which one PCP and two PCP visits were chosen at random, for a total of 20 PCP visits. Pediatric and obstetrical visits were excluded from our analysis. Participating patients in both studies were based on a convenience sample. Both studies were approved by the clinics’ and/or investigators’ Institutional Review Boards.

Data Collection

The details of the data collection in each of the studies we analyzed are reported in a separate article,8 but can be summarized as:

- Direct observation of the entire patient visit.
- Task-level recording.
- Post-observation PCP interview, for clarification of what was observed, as needed.

Trained observers (J.S., T.B.W., and T.H.) recorded the work of PCPs for a convenience sample of adult patient visits, using a protocol based on the Systems Engineering Initiative for Patient Safety model of the work system in healthcare.47 For this assessment, an observation started when the PCP physically entered the examination room and ended when the PCP physically ended his/her time with the patient, regardless of where that event occurred. The assessment included work performed away from the patient and work performed with the patient present outside of the examination room.

Task Analysis Coding

Data were coded using NVivo software (QSR International, Inc., Burlington, MA), with a previously published PCP task list developed from the aforementioned observations, which identified 12 major categories of tasks (Table 1).8

Analysis

Utilizing a mixed-methods approach to assess the data both qualitatively and quantitatively, we began by inductively coding PCP actions in order to understand and identify agendas, approach, style, intent of actions, interruptions, outcomes, etc. (eg, a qualitative assessment). Actions were then classified and categorized according to the PCP task list. Each action was then counted and sequenced for statistical analysis (eg, a quantitative assessment). After the quantitative assessment, significant findings were traced back to the qualitative assessments, so events could be better interpreted.

Workflow maps were created in Microsoft Excel, with tasks sequentially displayed in a horizontal workflow visualization, similar to Zheng et al.44 and Tai-Seale et al.16 Variations in workflow across visits were noted and the reasons for the differences between workflows were assessed using coded observational notes from the primary care visits. The time spent on each task was not recorded.

The descriptive analyses we conducted determined the prevalence of the tasks performed by PCPs during each patient visit and for EHR and non-EHR clinic visits. A nonparametric comparison, a Mann-Whitney test,48 was performed using Minitab Statistical Software (Minitab, State College, Pennsylvania) for the EHR status. Task prevalence during the beginning, middle, and end of the primary care visit was determined using nonparametric r by c contingency tables, to determine whether the number of tasks remained consistent.48 Primary care visits were divided into thirds based on the total number of tasks.

Sequence analyses were used to confirm our visual and descriptive workflow variation findings across the 20 workflows we examined. Our analyses were performed at the highest categorical level (12 fixed tasks) to yield the best chance of identifying a pattern. Further, we utilized a data mining approach in which entropy-gain (C4.5 algorithm) was used to create a decision tree, to determine how quickly the workflows diverged from one another, ie, demonstrated a decreasing level of task sequence concordance. The relevance of this step is that the workflows are coded at the highest level, at which a pattern has the highest probability of occurring and being identified. To further evaluate the impact of EHRs on workflow, we looked at sequences of paired tasks. Two tasks (“gather patient information” and “recommend or discuss treatment options”) were selected based on their high prevalence during primary care visits. The probability of other tasks being performed before and after these two selected tasks based on whether or not the PCP had access to an EHR was evaluated using Kruskal-Wallis tests48 and nonparametric r by c contingency tables, to identify inconsistencies.

Because a series of specific tasks under the same task category (eg, “gather information”) could follow one another, creating a string of the same task in the workflow, we repeated the sequence analyses after reducing these strings to a single task occurrence. Hence, no task could be preceded by itself. For example, in Figure 1, Tasks 7, 8, and 9 are all “gather information” tasks on different information types (eg, chief compliant, medication use, etc.) and would be collapsed into a single task. The resulting “compressed” workflows were evaluated in the same manner as the complete workflows and compared with one another.

RESULTS

Our comparative qualitative assessment of the observational notes revealed a strong theme: many individual sub-objectives of each visit were driven by either the PCP or patient and the interactive conversation between them. The specific tasks associated with each stage of the PCP-patient interaction were unpredictable. The following vignettes provide a snapshot of PCP-patient interactions that occur during common primary care visits. The examples in Figure 1 are selected from two different PCPs, one with and one without access to an EHR, to illustrate some typical back-and-forth between PCPs and patients and events that drive the sequence of tasks and variation between primary care visits.

Visit A shows the workflow for a 35-minute patient visit at a clinic with no EHR, in which the PCP managed a patient with 10 different...
problems. The PCP gathers information from the patient at multiple points and intermittently performs physical examinations to evaluate the patient’s problems. In the “middle” of the patient visit, the PCP attempts to end the visit, but then re-engages with the patient, due to a communication failure regarding what was believed to be a resolved problem. In fact, three of the patient’s problems come up repeatedly during the visit, even after being resolved to the PCP’s satisfaction. This emphasizes that PCPs often cannot completely resolve one patient problem (eg, gather information about the problem, examine the patient, and make recommendations about the problem), then move to the next problem in the course of one patient visit. This causes the PCP to rethink his/her approach to the patient on the fly, while still considering how to address the remaining patient problems in the time available in the visit. The PCP did not document the tasks performed during the visit and immediately moved on to the next patient after the preceding visit had ended.

Visit B illustrates a primary care visit with a patient who has five problems that are brought up as the visit progresses. The PCP repeatedly gathers information about the patient’s problems and makes recommendations while intermittently documenting these problems and

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Table 1: Twelve major PCP task categories

<table>
<thead>
<tr>
<th>#</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enter (examination) room</td>
<td>PCP physically enters examination room</td>
</tr>
<tr>
<td>2</td>
<td>Gather information from patient</td>
<td>PCP and patient discussions or questioning</td>
</tr>
<tr>
<td>3</td>
<td>Review patient information</td>
<td>PCP looks at or reads some type of patient information without interacting with the patient (eg, from EHR or paper chart)</td>
</tr>
<tr>
<td>4</td>
<td>Document patient information</td>
<td>PCP records patient information (eg, writes on paper, types into EHR)</td>
</tr>
<tr>
<td>5</td>
<td>Perform</td>
<td>Physical examination, procedure, dictation, log-in to EHR, etc.</td>
</tr>
<tr>
<td>6</td>
<td>Recommend/discuss treatment options</td>
<td>Discussion with patient</td>
</tr>
<tr>
<td>7</td>
<td>Look up</td>
<td>Treatment information, referral physicians, drug information, etc.</td>
</tr>
<tr>
<td>8</td>
<td>Order</td>
<td>Medication, test, procedure, etc.</td>
</tr>
<tr>
<td>9</td>
<td>Communicate</td>
<td>PCP communicates with someone other than patient or patient caregiver</td>
</tr>
<tr>
<td>10</td>
<td>Print/give patient</td>
<td>Prescription, information, instructions, etc.</td>
</tr>
<tr>
<td>11</td>
<td>Appointment wrap-up</td>
<td>PCP walks patient to another clinic location at the end of the visit</td>
</tr>
<tr>
<td>12</td>
<td>Leave (examination) room</td>
<td>PCP physically leaves examination room</td>
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EHR, electronic health record; PCP, primary care physician.

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Figure 1: Primary care physician workflow maps. EHR, electronic health record; PCP, primary care physician.
the patient’s care plan in the EHR. The PCP suggests a medication for one of the patient’s problems, and the patient recognizes that the medication was tried previously and affected her negatively. The PCP again searches the patient’s EHR, reviewing the patient’s historical medications and laboratory values to confirm this and changes the patient’s treatment recommendation. This visit illustrates that EHR design may not always facilitate easy access to necessary patient information, and the physician may rely on his/her memory or the patient’s memory for that information. In this case, there was a trigger (the patient) that led the PCP to change his/her workflow and review additional EHR information before prescribing a medication that the patient had tried previously.

These vignettes illustrate the interaction between the PCP and the patient that results from a patient-centered approach. Figure 1 shows PCP task workflow maps of Visit A and B, coded across the 12 tasks. Workflow maps for all 20 coded visits are available online only as Supplementary Appendix A (Insert URL for Supplementary Appendix A here). Even at this high-level task category level, these workflow maps show that tasks change frequently and lack a predictable pattern; there is no common workflow. This result was consistent for all 20 workflows, as seen in Supplementary Appendix A. Workflows differ within a PCPs own practice and between PCPs and varied widely irrespective of whether or not the PCP had access to an EHR. Inconsistency in workflow between visits, even for the same PCP, was common.

Descriptive Workflow Analyses
An average of 37 tasks were performed across the 20 visit workflows (range: 12–74, median: 38). Figure 2 shows task prevalence during an entire visit and at the beginning, middle, and end of a visit. For the entire visit, “gather patient information” was the most common task (48%) followed by “recommend/discuss treatment options” (15%). The tasks “gather patient information,” “review patient information,” “document patient information,” “perform,” and “recommend/discuss treatment options” all occurred often during the beginning, middle, and end of the visit. The remaining tasks (except “enter room”) all occurred primarily during the middle and end of the visit. The shifts in task prevalence based on their performance during the beginning, middle, or end of the visit were statistically significant ($P = .002$). In addition, the tasks dedicated to gathering, reviewing, or documenting information comprise 77% of the beginning third of a visit, 64% of the middle third, and 38% in the last third, and, thus, were commonly performed at all stages of a patient visit.

Sequence Analyses
Table 2 displays the quantitative results of the sequence analysis that we performed to determine the concordance of sequential tasks, for both complete and compressed workflows, with a pictorial representation of the results shown in Figures 3 and 4. In the model’s design, every primary care visit starts with the PCP physically entering the room, so concordance = 100% for Task 1. Task concordance progressively decreases as the visit proceeds, to 5% concordance by Task 9 and 0% concordance by Task 12. Further, when examining the task concordance of the compressed workflows, concordance was down to 5% by Task 7 and 0% by Task 9.

However, despite the lack of concordance at the highest task level, there is an underlying, cyclical pattern that emerges. That pattern starts with either a specific problem or information gathered from the patient or the patient’s chart and results in the next task relevant to that information. This cycle repeats as necessary until the PCP gathers enough information to formulate the patient’s care plans and ends the visit.

Impact of EHR Presence on Workflow
Primary care visits in which the physician had access to an EHR had an average of 44 tasks per visit (range: 28–74, median: 41),
Table 2: Progressive Lack of Concordance Between Tasks as Primary Care Visits Progress.

<table>
<thead>
<tr>
<th>Concordance</th>
<th>Sequential Task</th>
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<tbody>
<tr>
<td>Complete Workflowsa (%)</td>
<td>100 90 80 60 45 25 25 15 5 5 5 0</td>
</tr>
<tr>
<td>Non-repeating Workflowsb (%)</td>
<td>100 90 70 45 10 10 5 5 0 0 0 0</td>
</tr>
</tbody>
</table>

aEach discrete task is included.

bMultiple sequential tasks of the same category compressed into one “macro-task.”

statistically different from 29 tasks for primary care visits at clinics with no EHR (range: 12–62, median: 23, \( P = .038 \)). However, tasks associated with looking up information, documenting, ordering, and reviewing patient information were nearly identical between EHR and non-EHR clinic visits and the overall distribution of the tasks performed did not change significantly (data not shown).

The presence of the EHR was found to significantly influence the probability of which task occurred immediately before or after the specific tasks listed below:

After “gathering patient information,” PCPs with access to an EHR present were:

- Four times more likely than PCPs without access to an EHR to “recommend/discuss treatment options” or “document patient information” (both \( P = .02 \)).

After “recommend/discussing treatment options”:

- PCPs with access to an EHR were three times more likely than PCPs without access to an EHR to “gather patient information.” (\( P = .02 \)).
- PCPs in clinics without an EHR were seven times more likely than PCPs in clinics with an EHR to “print/give patient” information (\( P = .02 \)).

Before “gather patient information,” PCPs with access to an EHR were:

- Three times more likely than PCPs without access to an EHR to “recommend/discuss treatment options” and 4.5 times more likely than PCPs without access to an EHR to “document patient information” (both \( P = .04 \)).

Despite these tendencies, the overall sequence of specific tasks remained unpredictable among PCPs with or without access to an EHR.

DISCUSSION

Using a PCP task list to evaluate workflows during primary care visits, we found no consistent workflows when analyzing visits individually or by PCP, or visits conducted at clinics with or without an EHR. The workflow for tasks is dictated not by the type of chart, the patient, or the physician. Instead, workflow emerges from the interaction between the patient’s and the physician’s agendas. Other factors may also impact workflow, including the physician’s work style, the role of support staff, the length of the visit, clinic policies, clinic and examination room layout, technology, and the social statuses or structure of relationships between members of the clinical team.\(^{7,29,31–35}\) However, the aggregated data for all the visits or for any one physician did not show a consistent workflow pattern, suggesting that each visit’s workflow is an independent product of interactions between the physician and the patient, based on a mostly unspecified agenda in a clinic setting.\(^{32}\) This has led some investigators to use a systems approach for analyzing physician workflow.\(^{47}\) Others have studied physician workflow based on consultation length or classifying communication patterns.\(^{29,31,33}\) Each of these studies acknowledges that the physician adapts his/her approach to each individual patient in order to arrive at the best clinical judgment. Our findings are consistent with these previous studies. If PCPs allow the patient to drive the sequence of tasks during the primary care visit, ie, patient-centered medicine, these results are to be expected.

Our data show that, although an underlying cyclical pattern exists in regards to the tasks of gathering information, considering possibilities, and subsequently suggesting a plan, overall, the number and sequence of tasks is varied and unpredictable. Further, the introduction of new information always has the potential to restart the cycle, to address a known patient issue, or start a new cycle, to address a new patient issue. This constitutes, in essence, a “dance” between the physician and the patient, each taking the lead at different times, thus resulting in an unpredictable workflow. Consequently, sometimes PCP workflow resembles the perfect timing and elegant grace you might see between two ballroom dancers, in tune with one another and anticipating the timing and the steps the one another will take. At other times, it looks like a father trying to dance with his 13-year-old daughter to her favorite pop music — the father trying to lead but unable to anticipate the changes in tempo and what steps should come next.

Tasks dedicated to reviewing, collecting, or documenting information comprise ~77% of the beginning third of a primary care visit and ~38% of the last third of a primary care visit. This is not surprising, because all patient visits must progress towards and end with a “plan” for how to address the patient’s problems. However, it was surprising that “gathering patient information” remained the most performed task even at the end of visits, when it represented one-third of the last third of a primary care visit. This constitutes, in essence, a “dance” between the physician and the patient, each taking the lead at different times, thus resulting in an unpredictable workflow. Consequently, sometimes PCP workflow resembles the perfect timing and elegant grace you might see between two ballroom dancers, in tune with one another and anticipating the timing and the steps the one another will take. At other times, it looks like a father trying to dance with his 13-year-old daughter to her favorite pop music — the father trying to lead but unable to anticipate the changes in tempo and what steps should come next.

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Concerning PCPs’ tools and environment, we found that EHR use increased the number of tasks per visit and significantly influenced the probability of a particular task occurring before or after a few tasks. However, overall, whether or not the PCP had access to an EHR did not change the (un)predictability of their workflows. Neither of these findings is surprising. Additionally, these findings may have implications for the design of EHRs as regards their use during face-to-face patient interactions. Unfortunately, the observational nature of our data recorded the “what” of the patient-physician encounter, not the “why.” so further research into the “why” will be required to guide the design of EHRs to better support the work occurring during clinical office visits.
Our analysis also explored the concept of paired tasks. Two high-prevalence tasks were considered for the analysis, but our results showed that no partnered task could be commonly identified either before or after high-prevalence tasks. However, we did find a significant shift in the overall prevalence of the tasks that occurred as each primary care visit progressed. Upon review, this was seen as the attempt of the PCP to reach the goal of providing the patient with a care plan, ie, the end goal of the primary care visit.

Limitations
The observational data used for our analysis represent a small number of PCPs and PCP visits in only one area of the United States. However, the clinics we gathered data from varied by many characteristics, including size, organizational ties, rural/urban setting, and presence and type of EHR. Hence, the random sample of clinics analyzed in this study could be representative of the region in which the clinics are located, but additional analysis of other physicians in the region and other regions in the United States would be needed to know whether our findings are generalizable on a larger scale. Other limitations were that the original PCP observations did not collect time on task data, because these observations were originally used only to create a PCP task list; this would be an important consideration for future work.

Implications
Our data, while regional, show that PCP workflows are not standardized or linear based on task sequence and, therefore, are not predictable from patient to patient. This finding supports the concept that the sequence of tasks during a primary care visit is driven by the interaction between physicians and patients. Although unpredictable, the series of task(s) building on one another is an expected outcome of practicing patient-centered care, in which the physician seemingly cycles through the Subjective (history taking), Objective (examination and testing), Assessment, Plan method over and over until the end of the primary care visit. However, the pattern of the Subjective, Objective, Assessment, Plan method is too simplistic and does not represent the actual tasks being performed by PCPs. This is why some researchers have compared a primary care patient visit to the creation of jazz music because of the adaptation/improvisation required by the PCP. While many feel that the physician has control of or should control the patient visit, it is important to consider the realities of primary care and the scope that it encompasses. Primary care has the highest variation of patient types and range of diagnoses. PCPs are expected to manage and treat a patient for what has happened since their last visit during a 15- to 60-minute consultation, when, many times, patients are unorganized or unprepared to set or negotiate an agenda, are unwilling to or cannot effectively convey information, or become confused or upset. As a result, the PCP must be able to adapt to these dynamic changes and adjust their goals for the visit accordingly. Although issues such as these are commonly understood by healthcare professionals, non-healthcare professionals that design, modify, create, or manage EHRs and/or...
other health information technology (HIT) systems for providers may not fully understand the nuances of the work PCPs do and the environment in which their work is performed. However, many times, this lack of understanding is not due to a lack of effort to understand, but, rather, is a product of the high level of training required to do the work of designing EHRs and other HIT systems, in which the nuance is the detail leading to success or failure. This is why, in healthcare, true partnerships between practitioners, who have the context and understanding of the problems to be addressed and the environment in which EHR/HIT systems are used, and skilled EHR/HIT system designers, who have a variety of tools to optimize physicians’ work, are required to produce efficient, safe, and high-quality physician and patient outcomes. Hence, if done correctly, tools such as EHRs and other HIT systems can integrate seamlessly into the workflow and support clinicians’ work, not change or constrain it.

EHRs have been widely adopted in clinical settings in the hope of providing more efficient, more effective, and safer patient care as well as more patient-centered care, but, to date, they have not performed as anticipated. Most EHRs are organized on the assumption that physician workflows are linear or standardized or relate to a single problem, and, therefore, EHRs do not facilitate workflows that are more personalized and unpredictable. As healthcare moves forward and builds systems such as the Patient-Centered Medical Home, the tools that clinicians use, including EHRs, must support such systems. Hence, to begin bridging the gap in knowledge between healthcare professionals and non-healthcare professionals who design, modify, create, or manage tools or systems for providers, we recommend expanding the traditional grounded approach by have EHR/HIT system designers observe healthcare professionals doing their work, which would include a discussion about why the approach for the same task was different for one patient compared to another. The result of such observations and conversations will build understanding and trust between providers and skilled EHR/HIT designers into partnerships and give insight to both sides regarding who and what is being supported and the limitations of creating and using tools or systems in the healthcare setting.

The following are preliminary suggestions, based on our findings, on how to improve the efficiency of PCP visits:

1. End the requirement for physicians to engage in administrative tasks, such as order entry or typing progress notes, which adds burdens, distractions, and interruptions in task performance for physicians.

2. Establish the patient’s agenda before the patient arrives at the clinic. This could facilitate better estimation of the length of time required for the primary care visit and reduce the physician’s and patient’s stress and the potential for medical errors when the physician is trying to meet the patient’s needs with an inadequate amount of scheduled visit time.
3. Do pre-visit planning, to reduce the instances of physicians having incomplete information on each patient and the need for physicians to search for information during the patient visit.

CONCLUSION

PCP workflow during face-to-face interactions with a patient during a clinical office visit appears to be unpredictable, and tools and systems supporting the work of PCPs need to reflect this reality.45,46 If greater effectiveness, safety, and efficiency in healthcare are to be realized, systems such as the Patient-Centered Medical Home and tools such as EHRs should be developed and implemented based on the clinical realities of patient visits. Hence, more work is needed to fully understand the “basic science” of what happens before, during, and after a primary care visit, if we are to design tools and systems50,32 that support physicians rather than hinder them.

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COMPETING INTERESTS

None.

PREVIOUS PRESENTATIONS


REFERENCES


**AUTHOR AFFILIATIONS**

1. American Academy of Family Physicians, Leawood, KS, USA Department of Industrial Engineering, University of Louisville, Louisville, KY, USA, Email: gholman@gmail.com

2. Department of Family Medicine, School of Medicine and Public Health; and the Department of Industrial and Systems Engineering, University of Wisconsin-(UW) Madison, WI, USA, Email: john.beasley@fammed.wisc.edu

3. Department of Family Medicine, School of Medicine and Public Health; Department of Industrial and Systems Engineering, and the Center for Quality and Productivity Improvement, UW- Madison, Madison, WI, USA

4. School of Pharmacy and the Center for Quality and Productivity Improvement, UW- Madison, Madison, WI, USA, Email: jamie.stone@wisc.edu

5. Department of Family Medicine, School of Medicine and Public Health; Department of Industrial and Systems Engineering, and the Center for Quality and Productivity Improvement, UW- Madison, WI, USA, Email: tbw@medicine.wisc.edu

All authors are members of the International Collaborative to Improve Primary Care through Industrial and Systems Engineering (I-PrACTISE).