PERSPECTIVE

Moving Away from Chaos: Intentional and Adaptive Management of the Non-visit Care River

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In modern primary care practice, clinicians face increasing volumes of asynchronous, electronic, non-visit care (NVC). Systems for completing this work, however, remain under-developed and often lack definition around patient and practice expectations for work completion and team member contributions. The resulting reactive, unstructured, and unscheduled NVC workflows cause and exacerbate physicians’ cognitive overload, distraction, and dissatisfaction. Herein, we propose that primary care practices take an intentional, holistic approach to managing systems of NVC and offer a conceptual model for managing NVC work, analogizing the flow of these tasks to the flow of water through a river system: (1) by carefully controlling the inputs into the NVC system (the tributaries entering the river system); (2) by carefully defining the workflows, roles and responsibilities for completion of common tasks (the direction of river flow); (3) by improving the interface of the electronic health record (obstacles encountered in the river); and (4) by optimizing effectiveness of primary care teams (the contours of the river determining rate of flow). This framework for managing NVC, viewed from a broader system perspective, has the potential to improve productivity, quality of care, and clinician work experience.

KEY WORDS: primary health care; health care quality; professional burnout; workflow; patient portals.

Abbreviations

EHR  Electronic health record
NVC  Non-visit care

The pieces weren’t fitting together. My 2:00 p.m. patient had just described a confusing constellation of symptoms and a vague temporal profile; lacking an obvious diagnostic pivot point, I ordered basic labs and promised to follow-up soon. I hoped that taking 5 minutes to organize my thoughts while putting together the clinical note could offer some structure to my evolving diagnostic framework. As I logged on to my computer and opened the electronic health record (EHR), there it was... again. In bright red font, an upward arrow indicating a “high priority” patient message next to a bold number 4, informing me of the number of new messages I had been assigned to address, but hadn’t yet reviewed. The attention switch was unavoidable. What if someone was dying? What if I really screwed something up? After clicking into the message, I learned a patient was asking for an urgent refill of their antibiotics, yet the single line of clinical information was insufficient to judge the best course of action. 15 minutes later, following a clarifying phone call to the patient, a phone note rendered, and a prescription sent, I was able to hit the done button on the message. A quick view of my schedule informed me that my 2:30 p.m. patient has been waiting for me for 15 minutes and my 3:00 patient is well into the process of being roomed. My motivation to think deeply about my puzzling patient lost, I move on and focus on the next patient. I finish the day, go home, have dinner with the family. I help put the kids to bed and log on to the computer at 8:30 pm. I stare at the in basket. The vague unease and resentment I felt last night quickly seeps back in. Tomorrow, I promise, I will leave with all my work done.

William Osler extolled us to “cultivate the power of concentration, which grows with its exercise”.1 Piecing together complex and disjointed information, creating a coherent patient narrative while integrating the unique psychosocial identities of the patient into clinical decision-making demands focus, attention, and clarity of thought. Internal medicine, at its best, enables accessible, high-quality, patient-centered care with timely and accurate diagnoses, cost-effective evaluation and management, and improved health outcomes for patients entrusting their health care to us.2 Reliable, clear, and manageable non-visit care (NVC) workflows are not only important for effectively executing the cognitively demanding work necessary for patient care, but they are also necessary for the physician’s physical, social, and emotional well-being.3,4 The

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unpredictable flow of non-patient facing work and low levels of control over clinical work are well-recognized contributors to burnout among primary care physicians.\textsuperscript{5,6}

In-basket message volumes have increased in many health care systems since the start of the COVID-19 pandemic,\textsuperscript{7,8} with time spent on in-basket work higher for female physicians, and those caring for older and sicker patients.\textsuperscript{9–11} Asynchronous, electronic patient care remains undervalued in modern primary care practice. The time allocated for answering these messages is inadequate, nor purposefully supported by the care team in a way that optimizes the clinician’s role in the process.\textsuperscript{12–15}

The development of asynchronous, directly pushed, electronic NVC has created an unrelenting conveyer belt of unscheduled and reactive messages seen in many primary care practices. Electronically routed NVC tasks do not require delivery from a trusted team member, and can instead be sent on by employees who may have never met the physician or the patient being cared for.\textsuperscript{13} These unscheduled tasks are relegated to time that does not exist on the physician’s calendar, with other team members unaware of how, when, or where the physician would complete these tasks. The physician, nurse, or administrative staff member may be drowning in messages while their fellow care team members remain busy and unaware, separately sequestered in their own electronic world.

While professional ethics dictate that physicians sacrifice themselves to meet a patient’s needs,\textsuperscript{16} there is always a breaking point. How many messages with inadequate information, unclear patient expectations, or assigned tasks below their skill level can be sent to the frantically busy primary care physician before that breaking point arrives? That breaking point may result in cutting back clinical FTE, seeking administrative or non-primary care clinical responsibilities, or leaving primary care to reinvent one’s career. We can and must do better. And better is possible.

**WHAT DOES THE LITERATURE SAY?**

There is a growing body of literature discussing the challenges posed by electronic in-baskets and potential steps for improvement. A thematically organized summary of selected recent literature is described in Table 1. A recent call to action from subject matter experts on primary care transformation translates this literature base into steps which health care systems, payors, and regulators can take to begin addressing NVC overload.\textsuperscript{17} While these prescriptions are well reasoned, physician leaders and their administrative partners looking for actionable and feasible solutions may find the recommendations daunting and wonder where to begin. Herein, we propose a conceptual framework for NVC that primary care physician leaders and their administrative partners can leverage to develop a more intentional, balanced, and adaptive system of NVC (Table 2).

**MANAGING THE NVC TRIBUTARIES OR CONTROLLING NVC INPUTS**

The selection of tasks which flow into the primary care team’s NVC work system, or the process by which patient requests are transferred from an intake point to the primary care team’s established workflows, is a critical step in calibrating the volume and content of NVC work to the primary care team’s capacity and skillsets. The entry of NVC tasks not only determines the volume of NVC work entering the system, but also defines the content of the daily work of the primary care team. Indistinct boundaries surrounding the work of the primary care team, including lack of clarity on which team member should be assigned a particular task and how that assigned work should be completed, are important contributors to primary...
care physician dissatisfaction. The creation of structured and transparent NVC processes presents an opportunity for primary care physician leaders and their administrative partners to seek input and provide clarification on which tasks should be done by the front-line primary care team and which tasks can be delegated to non-primary care team support staff, as well as whether that work should be completed through visit (traditional or telemedicine) or NVC workflows. Common requests which should and should not enter the primary care team NVC system must be clearly established by the practice, and the best way for patients to make common requests needs to be consistently communicated to both team members and patients. Table 3 provides hypothetical examples of common patient requests that could be considered for entry into the primary care team’s NVC system.

**DEFINING NVC WORKFLOWS**

The workflow an NVC task follows before reaching its endpoint is where the selected NVC task is clarified, necessary information is added to the request as appropriate, and the task is routed to the most appropriate team member who has a clear understanding of their role in completing this task. Robust workflows in this part of the system are the backbone of a well-managed NVC system. HealthPartners Medical Group in St. Paul, MN, after comprehensive restructuring of in-basket folders and redefining team member roles, specified and reengineered in-basket workflows, achieving significant improvements in physician efficiency and satisfaction. Clearly defining workflows for common NVC tasks was felt to be foundational for the improvements observed. The lesson from this work is that once well-designed and clear workflows are established, common tasks can be completed with a reasonable level of variation and improved efficiency when outcomes such as message turn-around time, communication quality, and patient experience are evaluated.

**IMPROVING THE EHR INTERFACE**

Primary care physician leaders and their administrative partners should also address EHR features which create turbulence in NVC workflows. Redesigning the EHR to improve user experience can yield significant improvements in NVC efficiency and physician wellness. At the University of Colorado, real-time redesign of the EHR interface resulted in improved end-user experience. During brief and focused periods of time, team members, informatics leaders, and process engineers conducted “EHR sprints” consisting of EHR training, user customization, and real-time EHR interface redesign, collectively resulting in significant improvements in end-user satisfaction. For practices that are just getting started, simple EHR optimizations such as reducing the number of in-basket categories and removing automated notifications and unnecessary tasks can significantly improve the cognitive burden faced by front-line team members. EHR training, protected time for EHR personalization, and “at the elbow” support to improve user efficiency may also be important adjuncts to reducing this turbulence created in the EHR interface.

### Table 1 Summary of selected NVC literature and recommendations for improvement

| EHR in-basket challenge                                           | Specific recommendations                                                                 | Citing articles                    |
|------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------|
| Low-value message content sent to clinician                      | Automate low-value messages out of in-basket                                             | Murphy et al. 28, Shah et al. 29, Sinsky et al. 17, Tai-Seale et al. 12 |
| Insufficient time provided                                        | Delegation of messages to optimized care team                                            | Sinsky et al. 17, Murphy et al. 28 |
| Sub-optimal team member support                                   | Team-based training, expanded roles and responsibilities, protocols and standing orders | Murphy et al. 28, Dymek et al. 30 |
| Message processing and interface too complex                      | Rapid access to contextual information (appointments, tests, medications, notes)       | Murphy et al. 28, Dymek et al. 30, Winner 31, Smith et al. 24 |
| Clinic flows not streamlined                                       | “EHR Sprints,” improved documentation tools                                                | Siczia et al. 26, Shah et al. 29 |
| Existing tools in EHR not optimized                               | Create EHR templates and individual work protocols                                        | Winner 31 |

### Table 2 Intentional and adaptive vs. chaotic NVC systems

| NVC system component                | Chaotic NVC management approach                                                                 | Intentional, adaptive NVC management approach                                                                 | River analogy |
|-------------------------------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------|
| Undifferentiated patient requests   | Variable and unclear criteria regarding which requests proceed through NVC workflows         | Carefully defined and clearly communicated criteria identifying requests which should and should not proceed through NVC workflows | Defined tributaries form a river |
| Workflow for selected NVC tasks     | Unclear roles and responsibilities; individuals unsure of their requested action in completing NVC work | Clearly defined roles and responsibilities; measured volumes of workload and staffing adjustment as appropriate | A river follows a clear and well-defined path to its terminus |
| EHR interface                       | Static EHR interface rendering a high-cognitive load and limited functionality                 | Iterative improvements to EHR interfaces reduce cognitive load and improve user experience                 | A river adapts and changes course in response to obstacles |
| Primary care team effectiveness     | Failure not seen as opportunity to improve, ineffective communication, inadequate care team structures | Failures result in learning, effective communication, and dynamic multidisciplinary team structures       | River contours and gradient enable reliable and consistent flow |
**OPTIMIZING THE EFFECTIVENESS OF THE PRIMARY CARE TEAM**

Successful and sustainable NVC systems require high-functioning primary care teams. Trust among team members, predicated on team members trusting their colleagues to accurately and reliably identify the patient’s need and the urgency for action, serves as an important elixir to the angst provoked by messages arriving in the in-basket with uncertain expected actions and prioritization. The principles that make this team trust possible, and on which high-functioning primary care teams rely, have been previously outlined and include promoting shared decision-making among team members, fostering effective interprofessional communication, learning from failure, and creating organizational structures that support multidisciplinary teamwork. For example, a primary care practice at Bellin Health in Wisconsin redesigned care team roles and processes alongside systematic efforts at cultural change and team building resulting in dramatically expanded primary care team capacity.

**FINDING A PLACE TO START**

Primary care physician leaders and their administrative partners, recognizing the challenge of developing better systems for managing NVC workflows, need not “conquer the in-basket,” but should instead seek to make iterative and continuous improvements to existing NVC systems. Individual leaders will need to focus improvement efforts differently based on their patient population’s needs, clinic resources, and electronic and regulatory environments. Primary care practices which have successfully improved NVC systems have done so by considering the design of the entire NVC system and by clearly identifying the optimal roles and workflows for each care team member. A logical starting point is to ask team members which NVC processes most contribute to team frustration. Involving ancillary and non-clinician staff such as medical assistants, nursing team members, scheduling staff and medical administrative assistants in the redesign will be critical for these staff to maximally utilize their professional skills and optimally contribute to the work of the high-functioning primary care team.

**CONCLUSION**

In the modern primary care practice, the evolution of unstructured systems of NVC poses significant challenges to the work experience of primary care physicians and team members. Developing trusted systems for managing NVC, where tasks are intentionally and clearly selected for NVC completion, where selected tasks default to mutually agreed upon, reliable workflows, and where those workflows are executed by a high-functioning primary care team, will significantly improve the experience of the NVC work that makes up a substantial part of the work-life of contemporary primary care teams. Success in these systems is dependent on front-line team

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**Table 3 Hypothetical dispositions for common patient requests**

| Patient request | Disposition of that request | Next steps | NVC system component addressed | Rationale |
|-----------------|-----------------------------|------------|--------------------------------|-----------|
| Patient reports updated blood pressure and blood glucose readings | Enter the primary care team NVC system | Organize and format necessary data; seek clarifying medication information from the patient when appropriate → communicate results to the physician with clear demarcation of normal vs. abnormal | Defining workflows and optimizing primary care team effectiveness | Effective chronic disease management requires frequent NVC touches |
| Patient requesting lab work for new symptoms | Do not enter the primary care team NVC system | Automatically schedule telemedicine or in-person visit | Controlling inputs | Patient history and differential diagnosis are required before test ordering to promote evidence-based, cost-effective care |
| Patient requesting letter or form completion after recent visit | Enter the primary care team NVC system | Obtain specific information from the patient related to required documentation elements → route to administrative team member to draft letter for physician signature | Defining workflows and optimizing primary care team effectiveness | External communication is a core NVC service |
| COVID-19 vaccination or testing questions | Do not enter the primary care team NVC system | Non-primary care team member responds to request using protocols established by the practice | Controlling inputs | Protocolized processes improve reliability and efficiency of communicated information |
| Patient asks question related to a prescribed medication | Enter the primary care team NVC system | Develop an interface which obtains necessary information related to patient’s question and automatically route the question to the appropriate pharmacist or prescriber | Defining workflows and improving EHR interface | Limited, well-defined concerns can be efficiently and appropriately addressed by NVC |
| Patient requesting routine health maintenance task completion | Do not enter the primary care team NVC system | Non-primary care team members respond to the request using protocols established by the practice or automated health maintenance outreach systems | Controlling inputs | Where possible, standardized outreach process and protocols should replace physician chart review and order entry |
member engagement, role clarity, task clarity, and building trusting relationships among team members. While redesigning these processes may appear onerous and costly when compared with continuing the status quo of reactive and ad hoc systems of electronic work, the rewards of diminished frustration, enhanced team member relationships and connection, and better patient care are not only worth the effort, but necessary for the primary care clinic to remain a place where physicians want to continue to work and thrive for the duration of their careers.

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**Author Contribution** John C. Matulis: Dr. Matulis is an Assistant Professor of Medicine at Mayo Clinic in Rochester, MN. He was involved in the planning, conceptualization, and design of the article and drafted, revised, and finalized the current manuscript. The initial vignette is representative of his experience in balancing non-visit care with other expected clinical work as an early career internist.

Rozalina McCoy: Dr. McCoy is an Associate Professor of Medicine at Mayo Clinic in Rochester, MN. She assisted with the planning, organization, writing, and finalization of the manuscript. She reviewed and revised all sections of the manuscript, and approved the final manuscript as submitted.

Stephen K. Liu: Dr. Liu is an Associate Professor of Medicine at the Geisel School of Medicine at Dartmouth in Hanover, NH. He conceptualized and planned the project with Dr. Matulis. He assisted with the planning, organization, writing, and finalization of the manuscript. He reviewed and revised all sections of the manuscript, and approved the final manuscript as submitted.

**Declarations:**

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