



WHITEPAPER

How Veradigm is Addressing Clinician Burnout Through User-Centered Design & A Helper Philosophy

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TABLE OF CONTENTS

Introduction	3
What Causes Clinician Burnout?	4
Addressing The Problem Through User-Centered Design	5
User-Centered Design at Veradigm.....	6
What Is User-Centered Design (UCD)?.....	6
Helper Philosophy	7
Feature Enhancement Examples	7
Conclusion.....	13
References	14
Authors	16
About Our Company & Products	18

INTRODUCTION

Clinician burnout is a complex issue with many contributing causes. Reducing its prevalence in the healthcare industry requires careful consideration of the challenges clinicians face as well as a holistic approach to addressing those issues. Clinician burnout is specifically defined as a long-term stress reaction characterized by emotional exhaustion, depersonalization (cynicism), and loss of work fulfillment.¹ It has been linked to serious consequences that impact clinicians, patients, and the entire U.S. healthcare system. Some examples include: reduced job performance; decreased patient engagement; poor quality and safety of care; increased healthcare costs; and inferior health outcomes.²

Based on a recent report published by the National Academy of Medicine,³ a number of alarming statistics illustrate the severity of the problem (**Figure 1**) and highlight the need for immediate intervention:

- More than 50% of U.S. physicians report symptoms of burnout³
- Physician depression rates significantly higher than general population (39% vs. 7%)³
- Physician suicide rates 2X higher than general population³
- Significant numbers of physicians leaving practice early³
- Cost of replacing a physician is \$500,000 to \$1,000,000⁴

FIGURE 1 | Examples of Increasing Severity of Clinician Burnout³



WHAT CAUSES CLINICIAN BURNOUT?

Clinician burnout is a systemic problem caused by numerous external and individual factors. External factors are defined as the attributes over which clinicians have limited control and within which they must work and adapt. These include: society and culture; rules and regulations; organizational factors; the learning and/or practice environment; and healthcare responsibilities. Individual factors are those which are unique to the clinician and over which they have more control. These include personal factors and the individual’s skills and abilities (Figure 2).⁵ The National Academy of Medicine (NAM) Action Collaborative on Clinician Well-Being and Resilience illustrates this conceptual model with specific examples of external and individual factors (Figure 3):⁵

FIGURE 2 | Conceptual Model of the External (Yellow) and Individual (Blue) Factors Affecting Clinician Well-Being and the Clinician-Patient Relationship⁵

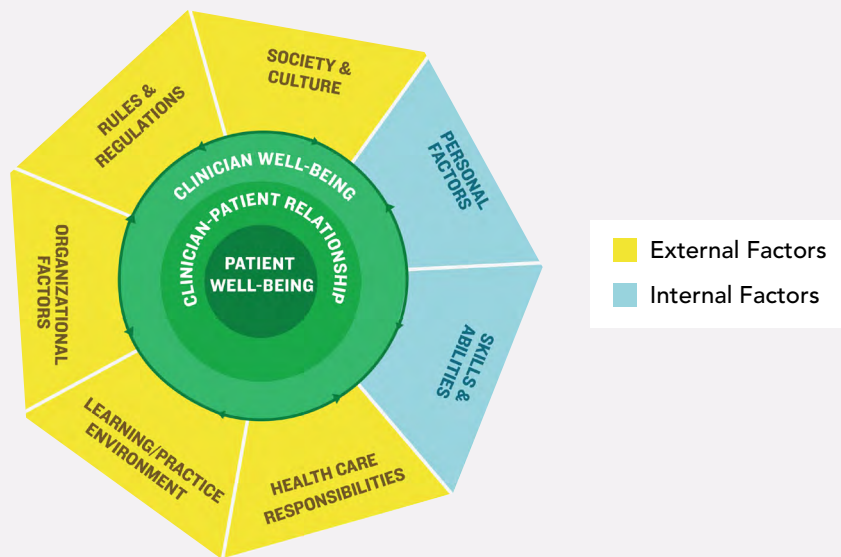


FIGURE 3 | Specific Examples of External And Individual Factors Affecting Development of Clinician Burnout⁵

INDIVIDUAL FACTORS

Personal Factors

- Access to a personal mentor
- Inclusion and connectivity
- Family dynamics
- Financial stressors/economic vitality
- Flexibility and ability to respond to change
- Level of engagement/connection to meaning and purpose in work
- Personality traits
- Personal values, ethics and morals
- Physical, mental, and spiritual well-being
- Relationships and social support
- Sense of meaning
- Work-life integration

Skills & Abilities

- Clinical Competency level/experience
- Communication skills
- Coping skills
- Delegation
- Empathy
- Management and leadership
- Mastering new technologies or proficient use of technology
- Optimizing work flow
- Organizational skills
- Resilience skills/practices
- Teamwork skills

continued on next page

FIGURE 3 | Specific Examples of External and Individual Factors Affecting Development of Clinician Burnout Continued⁵

EXTERNAL FACTORS

Society & Culture

- Alignment of societal expectations and clinician's role
- Culture of safety and transparency
- Discrimination and overt and unconscious bias
- Media portrayal
- Patient behaviors and expectations
- Political and economic climates
- Social determinants of health
- Stigmatization of mental illness

Learning/Practice Environment

- Autonomy
- Collaborative vs. competitive environment
- Curriculum
- Health IT interoperability and usability/Electronic health records
- Learning and practice setting
- Mentorship program
- Physical learning and practice conditions
- Professional relationships
- Student affairs policies
- Student-centered and patient-centered focus
- Team structures and functionality
- Workplace safety and violence

Rules & Regulations

- Accreditation, high-stakes assessments, and publicized quality ratings
- Documentation and reporting requirements
- HR policies and compensation issues
- Initial licensure and certification
- Insurance company policies
- Litigation risk
- Maintenance of licensure and certification
- National and state policies and practices
- Reimbursement structure
- Shifting systems of care and administrative requirements

Healthcare Responsibilities

- Administrative responsibilities
- Alignment of responsibility and authority
- Clinical responsibilities
- Learning/career stage
- Patient population
- Specialty related issues
- Student/trainee responsibilities
- Teaching and research responsibilities

Organizational Factors

- Bureaucracy
- Congruent organizational mission and values
- Culture, leadership, and staff engagement
- Data collection requirements
- Diversity and Inclusion
- Harassment and discrimination
- Level of support for all healthcare team members
- Power dynamics
- Professional development opportunities
- Scope of practice
- Workload, performance, compensation, and value attributed to work elements

Research suggests that external factors contribute more significantly to burnout and that interventions should focus on addressing these systemic issues (e.g., federal and state regulations, insurance reimbursement policies, reporting requirements, prior authorization, health information technology (health IT) usability, organizational bureaucracy) to reduce burnout and promote well-being.^{6,7} Understanding the complexity of this public health priority, Veradigm is taking steps to systematically address both external and individual factors. Directly and in partnership with organizations like the Electronic Health Records Association (EHRA),⁸ Veradigm is providing leadership to alleviate clinician burnout with the ultimate goal of increasing clinician, patient, and population health and well-being.

ADDRESSING THE PROBLEM THROUGH USER-CENTERED DESIGN

As with any systemic problem, there is no “silver bullet” to alleviate clinician burnout across the healthcare system. To address burnout, stakeholders from across disciplines must take a holistic approach to understanding burnout and its contributing factors, measure⁹ the experience, develop and implement thoughtful interventions, evaluate the impact of those interventions to ensure continuous improvement, and advocate for change.¹⁰

Some examples of meaningful interventions include the following:

- Practice redesign with increased emphasis on team-based care¹¹
- Leveraging health IT to facilitate person-centered care¹²
- Increased investment in electronic health record (EHR) training¹³

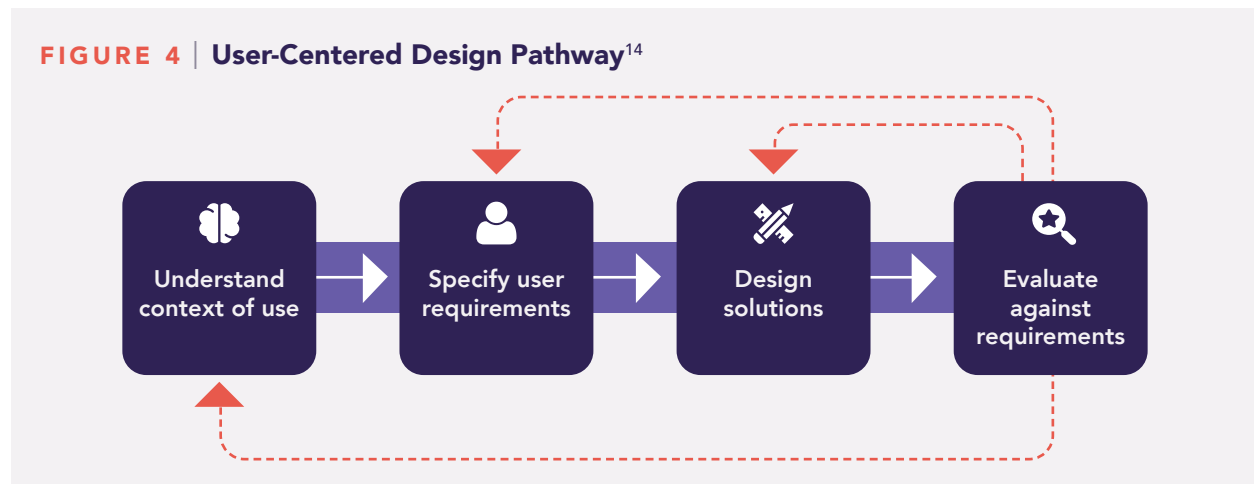
User-Centered Design at Veradigm

Examining opportunities within health IT is an important part of the multi-dimensional approach to address clinician burnout. Within Veradigm, one of our most important strategies to mitigate burden is grounded in a rigorous user-centered design (UCD) process that not only aims to make our products usable but also strives to create solutions helpful to our customers.

What is User-Centered Design (UCD)?

UCD¹⁴ is an iterative process in which designers focus on customers and their needs in each phase of the design and implementation process. UCD engages customers in each of its phases, creating products that are usable, accessible, and delightful for the people who use them. Within this process, designers and user researchers work with a cross-disciplinary team that includes engineers, product managers, customer experts, and other stakeholders to design and deliver great products.

A typical UCD process follows the pathway illustrated in **Figure 4**, which aims to 1) understand people and problems; 2) explore and create solutions; and 3) measure impact:



One of the most important phases of the UCD process is the evaluation of usability through objective and subjective measures (usability metrics). Based on input from users about their needs and goals, we define the usability metrics that we want to achieve, and we measure our progress toward our goals during design and development with usability testing and customer involvement. Collecting feedback throughout the design and development process saves time and effort and, more importantly, it enables us to deliver a product that best meets the goals and needs of our customers.

In the field of product design for health IT, UCD is critical to designing successful tools for health-care providers. This best practice within the design world was further informed by the guidelines established by the National Institute of Standards and Technology (NIST)¹⁵ in 2010 to provide guidance for those developing electronic health record (EHR) applications.

As a new division within Allscripts, Veradigm is committed to implementing UCD within its software development process for all its offerings, gaining insights on best practices from the Allscripts and Practice Fusion Design and User Research teams. Practice Fusion has employed a UCD process since the inception of its Design and User Research teams in 2013. Allscripts has long been committed to UCD. In 2017, Allscripts published its UCD approach in a user-centered design whitepaper.¹⁶ Our UCD process has been recognized as the most rigorous across EHR vendors.

Helper Philosophy

Following a rigorous UCD process is necessary to reduce clinician burden and improve the health IT experience, but it is not enough by itself. It is critical that this best practice be coupled with a “helper philosophy” as we design products for healthcare providers. What does that mean? Simply put, we ask ourselves the question: “*What would make this experience most helpful for the user?*” This investigation provides the fuel for innovation and ultimately allows us to deliver features that go beyond mere usability to being actively helpful and even delightful to our customers.

Our customers do not necessarily evaluate us on what features we deliver, but rather on 1) the quality of the experience they have using those features on a daily basis and 2) the result—i.e., whether the features help them achieve their goals. Veradigm strives to create products that guide, warn, suggest, orient, and assist users in a variety of ways to help them meet their goals. We engage with our customers on a regular basis for nearly everything we build to understand what they need, when they need it, and how to help them be more efficient and effective throughout their day.

FEATURE ENHANCEMENT EXAMPLES

We have recently launched some new features and enhancements to our health IT products designed to reduce clinician burden by integrating best practice design methods and our helper philosophy. These include: 1) Veradigm ePrescribe mobile application overhaul; 2) Veradigm ePrescribe prescription price transparency; and 3) Patient Summary redesign in the Practice Fusion EHR.

Veradigm ePrescribe Mobile Application Redesign

The goal of the design updates was to reduce the cognitive burden on users, increase efficiency, and improve the utility of the solution used by healthcare professionals to electronically prescribe medications and send those orders electronically to the patient’s pharmacy of choice. The intent was to provide an improved look and feel (**Figure 5**) and a more intuitive workflow that required less effort and understanding on the part of users, while also delivering features new to mobile e-prescribing, including a) enhancements to approval, refill, and reconciliation tasks, particularly

for controlled substances; b) an improved Drug Utilization Review interface; c) the ability to display selected coverage/co-pay; d) the addition of a controlled substance state registry check indicator.

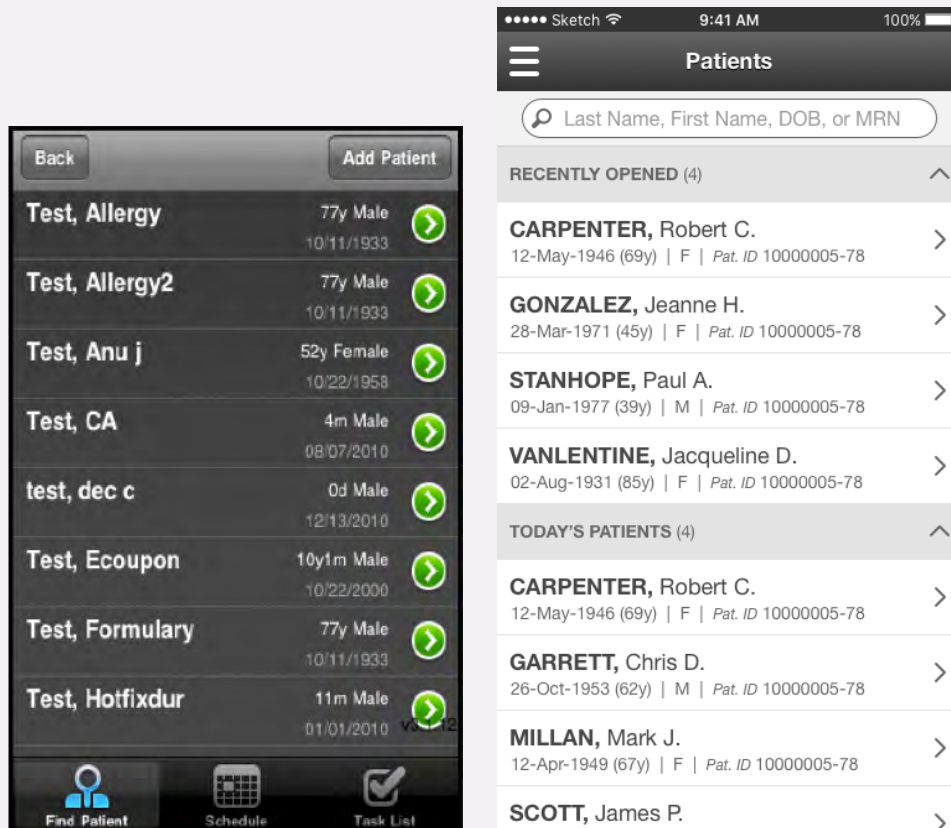
Focusing on our customers and integrating their feedback throughout the design process enabled development of a product that allows them to find patients, review their data, and prescribe more quickly. Through the application of best practice design principles and deep understanding of user workflows and product expectations, we created an application that lets our customers work most efficiently and effectively.

During usability testing we heard comments like these:

"[This application] provides better information in front of me than the current application."

"I like the Script Pad screen much more than the current application because it gives a nice overview and the current application is so small and it's hard to know what I sent."

FIGURE 5 | Appearance of Veradigm's ePrescribe Mobile Application Screen Before and After Redesign



Medication Price Transparency – EHR Agnostic

The ability for prescribers to access patient-specific benefit and cash pricing, by pharmacy, for their patients' specific medications has become an important component of the clinical workflow for many providers—but only recently, such a capability did not exist. To develop and deploy a prescription price transparency solution that could be directly integrated into users' EHR software and would meet or exceed user expectations, we again leveraged our UCD process, best practice design standards, and the helper philosophy. To begin, we investigated whether customers would find value in seeing medication pricing information in the EHR. We conducted customer interviews focused on the relevance of the information, their expectations, and their concerns for the interface.

We learned that providers spend between 20 minutes to several hours a day just on prescription-related cost discussions and tasks. The customers we spoke with felt that 1) seeing cost information would help them frame efficient conversations with their patients, and 2) taking the guesswork out of medication costs could greatly improve their workflow. They also wanted to see data that was entered in this tool flow to other areas of the EHR to reduce duplicative data entry.

We shared design concepts and evaluated ease of use for the proposed designs in customer interviews (**Figures 6, 7**). Based on the outcomes of these sessions, we iterated the design to better align with our customers' mental model and vocabulary. Key learnings included:

- Participants wanted the pharmacy with the “as low as” price to be easily surfaced.
- Participants did not understand some terminology used in the interface and indicated that “Cash offer” would be a better term than just “Offer.”

FIGURE 6 | Initial Concepts for Veradigm's ePrescribe Prescription Price Transparency Solution: Summary and Detail Screens

Topamax, 25MG	
Cigna	Est. \$15.00
Cigna at CVS	\$13.00
Offer at CVS	\$11.94
As Low As	\$9.21

FIGURE 7 | Revised Concepts for Veradigm's ePrescribe Prescription Price Transparency Solution: Summary and Detail Screens

Topamax, 25MG	
Cigna	Est. \$15.00
Cigna at CVS	\$13.00
Cash w/ Offer at CVS	\$11.94
Low As at Rite Aid	\$9.21

Practice Fusion Patient Summary Redesign

The Patient Summary is one of the most highly utilized features in the Practice Fusion EHR. It provides a snapshot view of a given patient's clinical data and medical history. User research revealed some key issues with the Summary including lack of data density and customers' desire to review historical information on the Summary while entering new information at the same time (**Figure 8**).

To address a Patient Summary redesign adequately, Practice Fusion had first to address the overall design system in the EHR, simplifying things like text styles and colors and standardizing page layouts throughout the application (**Figure 9**). With a new set of styles, the team set out to understand how the Summary is used in different roles in a healthcare practice. The design was created and refined over the course of four rounds of user research to ensure that the ultimate outcome would be truly helpful to customers. Here are some of the key accomplishments achieved in the redesign:

- Increased information density to improve scannability and reduce cognitive load
- Developed tools to allow customers to customize their view of the Summary (**Figure 10**)
- Added a highly requested section of information (Screenings, Interventions, and Assessments) to help users find data that was previously buried in patient encounters.

FIGURE 8 | Practice Fusion's Patient Summary: Original Screen Design

The screenshot displays the original Practice Fusion Patient Summary interface for a patient named Carol Patient. The interface is divided into several sections:

- Header:** Patient lists, Carol Patient x, PRN: ET730042 | 64 yrs F | Invite to Patient Portal | Insurance | DOB: 04/09/1951 | M: (415) 234-5678 | Actions
- Navigation:** Summary (selected), Timeline, Profile, Go to..., Print chart, New encounter (SOAP)
- Left Sidebar:** Home, Schedule, Tasks, Charts, Messages, Reports, Account
- Main Content:**
 - Flowsheets:** Vitals
 - Diagnoses:** Ash leaf spot, tuberous sclerosis Acute (Start: 12/02/16), Abdominal pain, epigastric Acute (Start: 10/01/15), Otitis media, acute Acute (Start: 12/15/16), Open bite Chronic
 - Patient risk score:** No patient risk score recorded
 - Social history:** Smoking status: Current every day smoker 03/08/17
 - Gender Identity:** Female
 - Sexual orientation:** Straight or heterosexual
 - Allergies:** Drug allergies: Amphetamine-Dextroamphetamine Severe Adulthood, Salicylic Acids Moderate Hives Unknown, Vitamin D Anesthetics Mild Chest pain Unknown; Food allergies: Almond oil Moderate Bloating/gas; Environmental allergies: No environmental allergies recorded
 - Medications:** You may have therapeutic duplications (2): Amphetamine-Dextroamphetamine (Adderall XR) 5 MG Oral Capsule Extended Release 24 Hour, Amphetamine-Dextroamphetamine (Adderall XR) 5 MG Oral Capsule Extended Release 24 Hour (Duplicate therapy)
 - Implantable device:** Heart valve stent, Implant date: 11/20/2018
 - Health concerns:** Patient has no health concerns
 - Goals:** No patient goals recorded
 - Encounters:** 06/20/2016 Office Visit (SOAP Note) CC: No chief complaint recorded; 06/08/2015 Office Visit (SOAP Note) CC: follow up diabetes, BP; 09/10/2014 Office Visit (SOAP Note) CC: follow up diabetes, BP
 - Messages:** No messages for this patient
 - Appointments:** Past: Jun 20, 2016 - 03:13 PM Follow-Up Visit Pending arrival - Santosh Provider; Jun 08, 2015 - 05:32 PM Follow-Up Visit In lobby - Karyn Staff; Sep 10, 2014 - 05:32 PM New Patient Visit Pending arrival - Sook nurse

FIGURE 9 | Practice Fusion's Patient Summary: Updated Screen Design

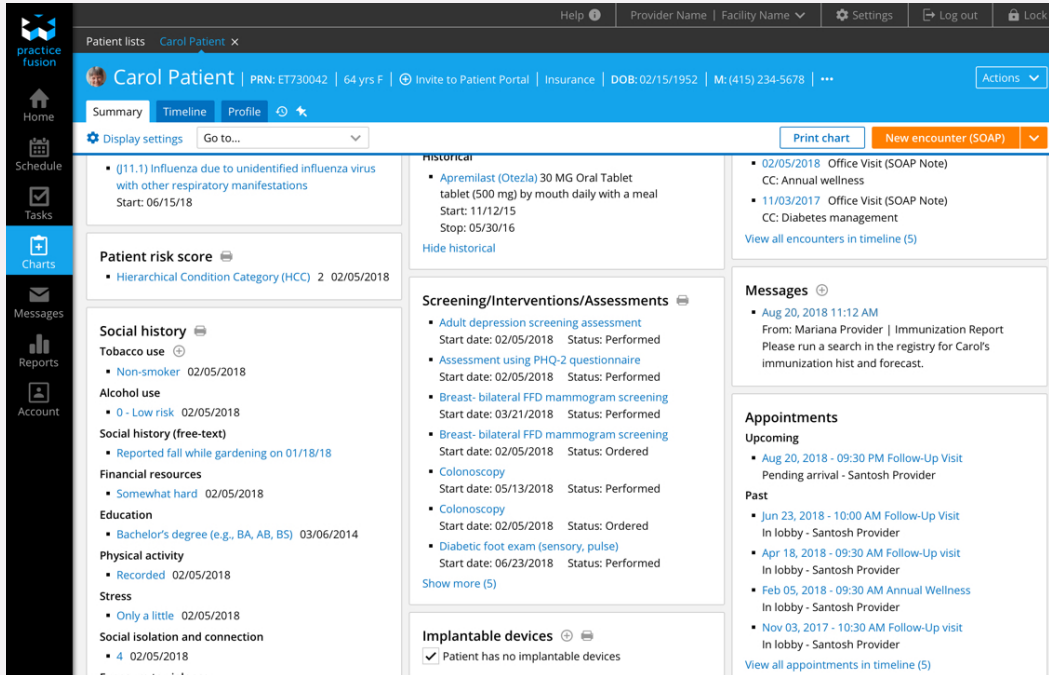
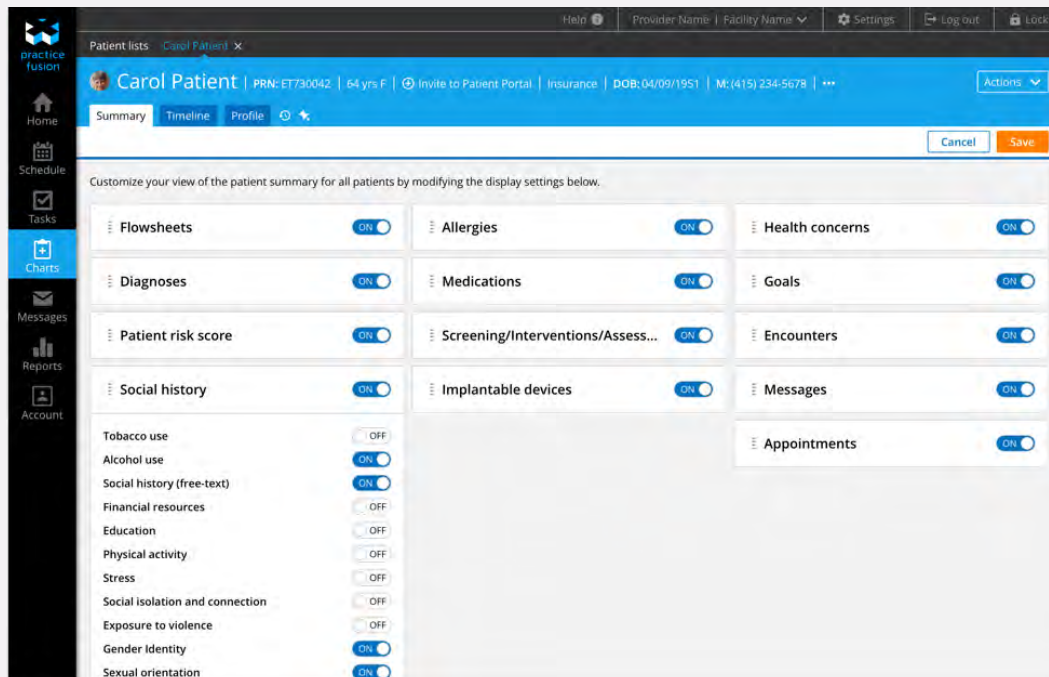


FIGURE 10 | Practice Fusion's Patient Summary: Customization Settings



After the update was released, customers were really excited about and pleased with the new Patient Summary:

“Overall I like it. I love that I can see appointments at the top; that will save me a lot of scrolling in a day.”

“This looks more organized, user friendly, and less cluttered with those boxes.”

“I feel like I can find things faster, which is helpful since we track a very extensive social history.”

“The headers are cleaner and look more like other modern applications I’ve seen. I like that.”

CONCLUSION

Clinician burnout is a growing issue that significantly impacts the healthcare landscape. Veradigm sees its product design and user research teams as playing critical roles in reducing burnout. Our approach is always to apply best practice usability and user-centered design methods focused on increasing the helpfulness of our products. Our mission: to continue delivering health IT products that allow our customers to focus on their patients and discover delight in the tools they use day after day.



**Find out how easy to use
an EHR solution can be—**

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Tom Pasquariello, PharmD, is a Clinical Informatics Pharmacist at Veradigm, an Allscripts business unit. Tom brings a wealth of hospital and ambulatory healthcare experience along with providing insights on new FDA-approved medications and relevant medical news, keeping Veradigm at the forefront of medical updates. He graduated from Campbell University College of Pharmacy and Health Sciences in 2008. Dr. Pasquariello joined Allscripts in 2015 and became part of the Veradigm team in 2018. Dr. Pasquariello is currently also practicing at a local hospital in Raleigh, NC.



Geoff Caplea, MD, MBA

MEDICAL DIRECTOR-REGULATORY AFFAIRS, PATIENT SAFETY & PUBLIC HEALTH

Dr. Geoff Caplea is a passionate advocate for the thoughtful use of health IT to achieve healthcare's Quadruple Aim. As Medical Director for the Allscripts Patient Safety Program, Dr. Caplea advocates for patient safety and clinician well-being within Allscripts and across the healthcare industry. Dr. Caplea is board certified in Family Medicine and has practiced in a hospital-owned multispecialty group, a Federally Qualified Health Center (FQHC), and private practice. Dr. Caplea received his medical degree from Loyola Stritch School of Medicine and his business degree from Northwestern Kellogg School of Management.



Ross Teague, PhD

DIRECTOR OF USER EXPERIENCE

Dr. Teague leads a cross-functional team that provides user experience research and design support for teams within Allscripts. He uses his background in Human Factors and Applied Clinical Psychology to address clinician burden and works closely with the Allscripts patient safety and quality teams to create innovative designs that further the Quadruple Aims of Healthcare. He's passionate about teaching design methods and applying the "science of usability" to improve the experience of using health information technology.



Catie Magee, MPH

DIRECTOR OF DESIGN, PRACTICE FUSION

Catie leads a team of designers and user researchers focused on the Practice Fusion EHR who support product design, brand, and marketing. Since 2013, she has led design strategy and process in collaboration with teams across the organization, placing healthcare providers at the center of the products and services Practice Fusion provides. She uses her expertise in design, public health, and qualitative research to cultivate a culture of empathy for customers, their patients, and their practices. Catie leads with a passion for coalescing people to collaborate and create in a supportive environment that thrives on learning and exploring. In addition to her work as a design leader, she has an active art practice focused on creating immersive experiences for audiences across the country. Catie received her Master of Public Health from San Francisco State University and her BA in Psychology from Boston College.

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Practice Fusion, part of the Veradigm family, is on a mission to improve healthcare with the leading cloud-based ambulatory electronic health record (EHR) platform for independent practices. We support more than 30,000 medical practices in delivering better care to over 5 million patients a month with easy-to-use health technology and a team of experts skilled in providing best-in-practice EHR solutions. To learn more, visit www.practicefusion.com.



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