



SmartDoc: Pre-Visit Summary Tool for Doctors

INFO 6215 - Business Analysis and Information Engineering

Kalyani Wasave



Industry Segmentation: Outpatient Clinics in Healthcare

- Outpatient Physicians/Doctors
- Medical Assistants (MAs)
- Patients
- Administrative Staff
- EHR Vendors (Epic, Athena, PrognoCIS)
- ACOs (Accountable Care Organizations)
- Hospitals (If connected)



Problem Statement:

“Nearly 70% of doctors in outpatient clinics struggle to find the most relevant information before a patient’s visit because Electronic Health Records (EHR) systems are complex and spread across many tabs. This inefficiency contributes to cognitive overload, reduces meaningful patient interaction, and leads to physician burnout.”

-Source: JAMA, NIH, Stanford studies (2023–2025)



Problem Discovery & Validation

Primary Research ✓

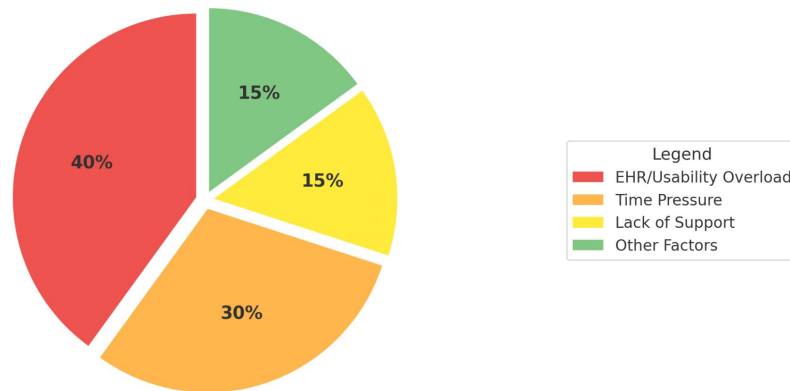
Spoke with healthcare professionals and reviewed academic studies as below:

- [Stanford Medicine \(2025\)](#) on burnout and its impact on care quality
- [JMIR Medical Informatics \(2024\)](#) on EHR-related burnout
- [JAMA Network Open \(2023\)](#) on physician dissatisfaction with EHR usability
- [NIH Study \(2024\)](#) on time allocation in outpatient care

EHR Observation ✓

Explored demo EHR systems like PrognoCIS; identified usability gaps and time-consuming navigation.

Primary Drivers of Physician Burnout



Key Insights ✓

- **40%** of burnout is linked to EHR usability.
- Doctors spend **50%** of time on EHRs, only **27%** with patients.
- ACOs lack tools for efficient pre-visit prep.

Meet Our User: Dr. John Miller



John Miller

Primary Care Physician



Age/Gender
42/Male



Location
San Jose, CA



Clinic Type
Mid-sized private
outpatient clinic

“I want to spend more time with patients – not jumping across tabs. I need relevant history at a glance so I can focus on care, not clicks.”

Bio

Dr. John Miller sees 20–25 patients per day, treating everything from diabetes checkups to first-time visits. Despite being efficient and experienced, he often finds himself overwhelmed by the fragmented nature of EHR systems.

He depends on support staff for vitals but must dig through multiple tabs to get patient context. He prefers clean, intuitive digital tools that reduce his cognitive load and help him stay focused on providing quality care.

Pains

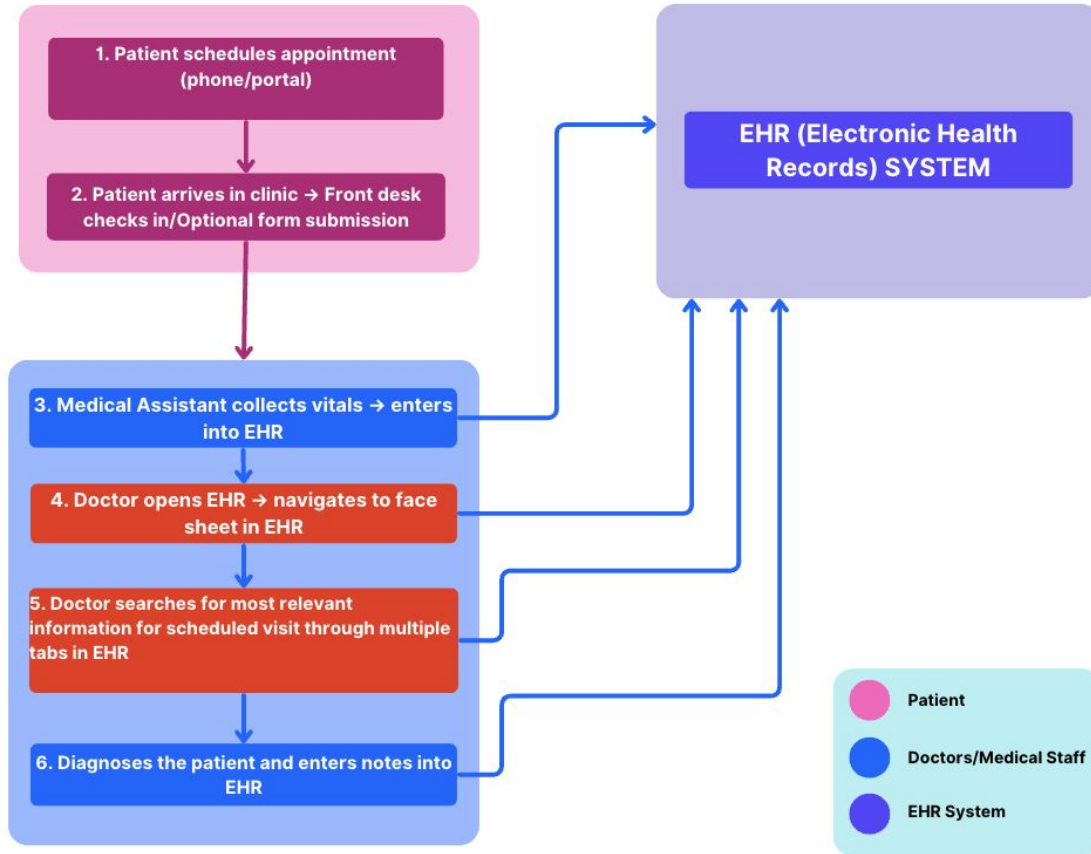
- No summarized view of patient history at the start of visits
- Too many tabs and clicks to access needed information
- High risk of missing key context due to poor layout
- Burnout from EHR fatigue
- Limited time to prepare between back-to-back appointments

Goals

- Access a summarized patient history at a glance before each visit
- Reduce time spent navigating EHR tabs and clicking through fragmented sections
- Increase time available for patient interaction, not screen time
- Feel confident that no important context is missed during prep
- Streamline back-to-back appointments without feeling rushed or disorganized
- Use intuitive tools that complement – not complicate his existing workflow



Current Workflow (Without SmartDoc)



Key Challenges:

- Physicians must manually navigate multiple EHR tabs to locate visit-relevant information
- Lack of a centralized summary leads to fragmented patient context
- Increased cognitive load reduces time available for meaningful patient interaction
- Data entry processes are disjointed between medical assistants and physicians

EHR System Dashboard – What Doctors See Today

Prognosis: A Product By Bizmatix Inc. - Google Chrome
 sales.prognosis.com/prognosis/scrMasterFrame.jsp?isIE=no&width=1351&height=668

West Bay Clinic QPP/PI(MU) updates **Welcome, Marcus Welby** (Last Log in 10-26-2021 13:54 PST)

Appointments Patient CPOE Messages Reports Settings

Appointments Open Encounters Filter Manage Columns Clinical Staff / MA

< Tue 10-26-2021 > 12/19 ☐ Show Telemedicine Appointments Only

Schedule		Patient	Reason for Visit	Visit Status	Room	Visit Type	Process Status
Elk Grove (#16)							
09:00 am		Barnes, Mary	Review labs	Complete		Telemedicine	
09:15 am		Walker, Daisy	Knee pain and diabetes	Ready For Checkout	3	Established Patient Visit	Process D
09:15 am		Hernandez, Jane	Travel consult	Arrived	Room	Telemedicine Established pt	
09:30 am		White, James	Ankle follow up	With MA	2	Office Visit	
10:30 am		Watkins, Mary	Hives	Ready For Checkout	5	Telemedicine - New Patient	
10:30 am		Whitten, Mary	COVID test	Arrived	Room	Office Visit	
11:15 am		Botros, Jane	Discuss meds	Arrived	Room	Telemedicine - New Patient	Process D
02:00 pm		Jackson, Donna	Routine follow up	With Clinical Staff	Room	Established Patient Visit	
02:30 pm		Borges, Anne	PT Consult	Ready For Clinical Staff	9	Physical Therapy	
03:00 pm		Brooks, Martin	Covid Test	Tentative	Room	Covid 19 Test	
03:00 pm		Brooks, Martin	Covid Test	Arrived	10	Covid 19 Test	
03:15 pm		Kelly, Samantha	NPV	Tentative	Room	New Patient	
03:30 pm		Gibson, John	Lab tests	Arrived	Room	Laboratory	
04:30 pm		Renee, Kylie	F/U Strep Throat	Phone Consult done	Bed 27	Telemedicine	Process LC
04:30 pm		Traverso, Nelson	Lab review	Tentative	Room	Follow up - labs	
05:15 pm		Zaffer, Myriah	Follow up from inpatient care	Tentative	Room	Hospital Follow-up	
Mercy Hospital (#3)							

“Snapshot of EHR Dashboard from Prognosis — typical layout used by outpatient physicians”



EHR System Screens – What Doctors See Today

West Bay Clinic QPP/PI(MU) updates

Welcome, Marcus Welby 1 1

Appointments Patient CPOE Messages Reports Settings

Patient Search Walker, Daisy/ Last Visit: 09-30-2021 Insurance Comp.: Aetna ENC Type: Established Patient Visit ENC Date: 10-26-2021 Pat Age(in yrs):56 year Case No.: DOB: 01-01-1965 (female) Attending Provider: Marcus Welby, PT TYPE:

ENCOUNTER REVIEW Patient > Encounter > Face Sheet Face Sheet Default Check All Manage Layouts

Doctor Forms

- Order Sheet
- Encounter
- Document List
- Face Sheet
- Patient Forms
- Vitals
- HPI
- ROS
- Physical
- Procedures
- Lab
- Radiology
- Prescription
- Education
- Assessment
- E&M
- Progress Notes
- Encounter Close
- Enc History

Vaccination

01-05-2021 Influenza (3 years and up) Administered

Current Medication

10-26-2021 Allegra-D 12 Hour 60-120 mg oral tablet extended release 12 hr 1 A
10-26-2021 Ambien CR 6.25 mg oral tablet,ext release multiphase 11-05-2021 1
10-26-2021 Actos 45 mg oral tablet 11-25-2021 1 Tablet As Needed for 30 Days
09-30-2021 Actos 30 mg oral tablet 10-30-2021 1 As Needed for 30 Days , Pres
09-30-2021 Lipitor 20 mg oral tablet 10-30-2021 1 Tablet Three Times A Day ple
03-22-2021 Cytomel 25 mcg oral tablet 04-21-2021 1 Tablet As Needed for 30 D
03-22-2021 levothyroxine 200 mcg oral capsule 04-21-2021 1 Capsule As Need
03-22-2021 Synthroid 137 mcg oral tablet 04-21-2021 1 Tablet As Needed for 30
12-01-2020 cyclobenzaprine 10 mg oral tablet 1 Tablet As Needed, Prescribe 1
Aspirin
Lisinopril

Personal Notes

Patient has a caregiver who attends the appointments with her.

Health Maintenance

06-25-2025 Cholesterol, Total
09-27-2021 Glucose, Fasting
06-16-2021 EKG
04-01-2020 Colorectal Cancer Screening
04-01-2020 DEXA
04-01-2020 HPV
04-01-2020 Mammogram - Both Breast
04-01-2020 Occult Blood, Feces, Guaiac
04-01-2020 Pap Smear
06-25-2020 Cholesterol, Total Done.
03-09-2021 Controlling High Blood Pressure

Allergy

Bee sting [Hives]
Mold
Penicillin [Upset stomach]
Penicillin [hives and upset stomach]
Tylenol [hives]

Past Surgical History

ACL Repair 1986
Breast Lumpectomy 1996
back surgery
Angioplasty

PMH (Table | Diagrams)

Allergies
Back Injuries/Back Pain
DIVERTICULOSIS
Edema
Dizziness
Knee pain, right Since 03-09-2021 M25.561
Hypertension Since 03-09-2021 I10
Asthma Since 03-09-2021 J45.909
Right knee pain Since 03-09-2021 M25.561
Headache Since 03-09-2021 R51
Type 1 diabetes mellitus without complication Since 03-09-2021 E10.9

Social History

Work History
Health hazards at home: No
Family
Marital Status: Widow
Are you Pregnant?: No
Use of Drugs/Alcohol/Tobacco

Family History

Heart Disease - Father
Hypertension - mom

“Snapshot of EHR screens from Prognosis — typical layout used by outpatient physicians”

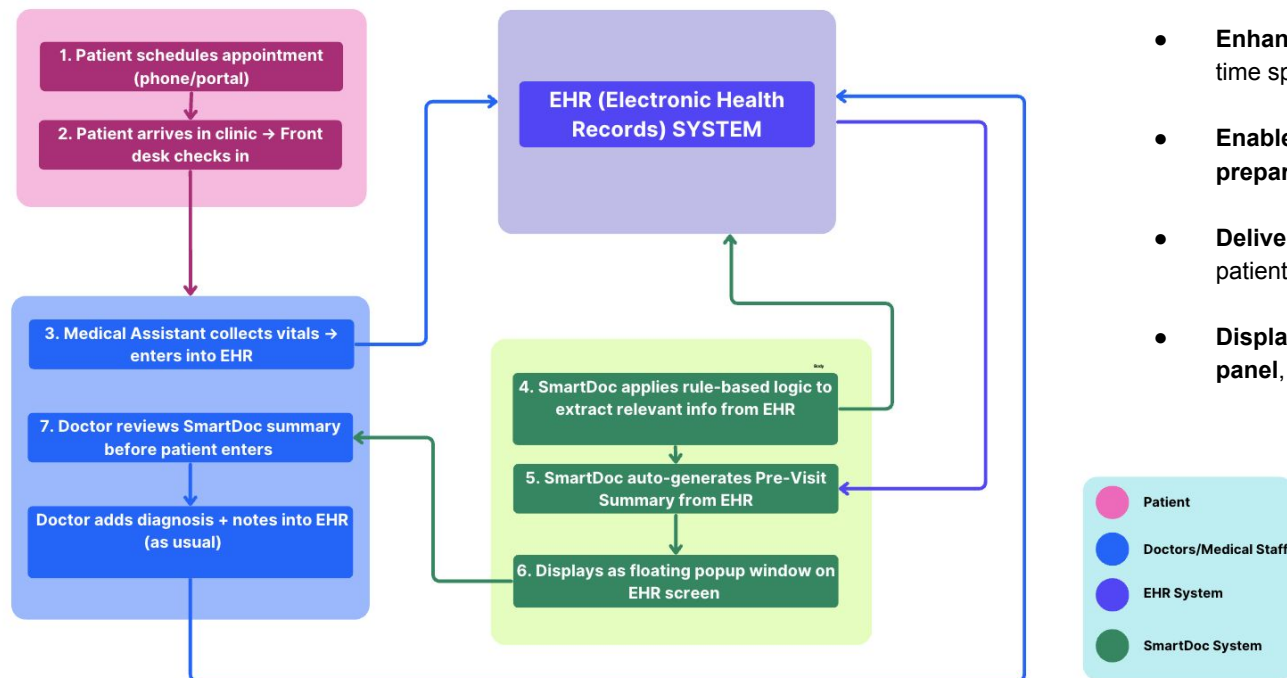


Hypothesis

“If we provide outpatient doctors with a smart, rule-based pre-visit summary in a floating window during scheduled visits, they can reduce pre-visit preparation time by approximately 25%, experience lower EHR-related cognitive load, and improve the quality of patient care.”



Future Workflow with SmartDoc Pre-visit Summary



Key Improvements:

- **Enhances physician-patient interaction** by minimizing time spent navigating EHR interfaces
- **Enables faster and more effective pre-visit preparation** through access to a consolidated summary
- **Delivers a concise, rule-based one-page summary** of patient information relevant to the visit
- **Displays the summary in a floating, non-intrusive panel**, seamlessly integrated alongside the existing EHR

MVP Solution: SmartDoc One-Page Summary

The screenshot displays the West Bay Clinic SmartDoc interface. The top navigation bar includes the clinic logo, user name (Welcome, Marcus Welby), and various tool icons. The main content area is divided into a left sidebar with navigation options (Encounter, Review, Patient, etc.) and a central panel showing the patient's summary. The summary is organized into sections: Patient Information (Daisy Walker, DOB: 01-01-1965), Current Medication (Allegro-D, Ambien, Actos, Liptor, Cytomel, Synthroid, Aspirin, Lisinopril), Allergy (Bee sting, Mold, Penicillin, Tylenol), PMH (Table | Diagrams) (Allergies, Back Injuries, DIVERTICULOSIS, Edema, Dizziness, Knee pain, Hypertension, Asthma, Headache, Type 1 diabetes), Past Surgical History (ACL Repair, Breast Lumpectomy, back surgery, Angioplasty), Social History (Work History, Family, Marital Status, Are you Pregnant?, Use of Drugs/Alcohol/Tobacco), and Recent Vitals (BP: 148/92, Wt: 160 lbs, Temp.: 98.6°F, Pulse: 84 bpm). The summary is presented in a clean, organized manner with clear section headers and bullet points.

What Does SmartDoc Summary Include?

- Reason for visit (from patient intake form or from patient portal)
- Current vitals (from MA input)
- Known chronic conditions / red flags (via rule-based triggers)
- Past medications & allergies
- Summary sections grouped logically for quick glance



SmartDoc MVP Feature Planning – MoSCoW Analysis

Mo

- Floating SmartDoc panel overlaying EHR
- Manual Patient Intake Form + Parser
- Rule-based Summary Generator

S

- Manual Vitals & Medication Entry
- Rule-based Alert Engine (e.g., chronic condition flags)
- FHIR/EHR Integration (Planned for Phase 2)

Co

AI-generated Summary Highlights
NLP-driven intake classification
Doctor-specific UI customizations

W

- Voice note summarization or transcription
- Auto-summary from clinical notes

Risk Analysis

Risk ID	Risk Description	Likelihood (1-5)	Impact (1-5)	Risk Score (L * I)	Mitigation Strategy
A1	Doctors ignore SmartDoc, prefer existing flow	5	5	25	Begin with early adopter clinics open to innovation; collect testimonials and measure value through time-saving metrics
T1	Floating panel fails or disrupts EHR	3	4	12	Pre-test on multiple EHR setups; fallback UI mode
U1	Summary too complex to use quickly	3	4	12	Run usability testing; iterate layout
C1	PHI (Protected Health Information) accidentally stored or leaked	2	5	10	No data retention; session-based summary only
B1	Clinics don't see ROI or time savings	3	3	9	Provide performance metrics + testimonials

Scale: 1 (Low) → 5 (High)

Risk IDs:

A = Adoption
 T = Technical
 U = Usability
 C = Compliance
 B = Business

Risk Levels:

1-8 = Low
 9-14 = Medium
 15-25 = High



Distribution Plan – SmartDoc MVP Pilot Strategy

Pilot Clinic Setup:

Partner with 1–2 Northeastern university-affiliated outpatient clinics to serve as the initial pilot environment for SmartDoc

- Doctors are onboarded and shown how to access the floating SmartDoc summary panel
- Patients complete pre-visit intake forms prior to arrival or at front desk
- Medical assistants enter vitals as part of existing workflows
- Doctors review the SmartDoc summary prior to the patient visit
- Post-visit feedback is collected to assess usability, value, and clinical efficiency

Channels:

- Direct outreach to academic clinic administrators and program coordinators
- LinkedIn messaging to physician contacts and clinical innovation leaders
- University-affiliated medical forums or newsletters
- Word-of-mouth referrals from faculty or resident program directors

Goal

- Validate the MVP in a live clinical setting and generate evidence for future ACO (Accountable Care Organizations) and EHR-integrated phases



MVP Success Metrics – Validation Benchmarks

We will measure MVP success using the following validation metrics -

✓ **≥ 25% reduction in pre-visit prep time** (measured via observation or doctor self-report — typically around 3 minutes per visit)

✓ **≥ 80% of eligible visits** where the SmartDoc summary is used

✓ **≥ 4.0 / 5 average physician satisfaction rating**

✓ **1–2 strong testimonials** confirming improved pre-visit prep or reduced EHR tab-hopping



THANK YOU

 *Questions? Feedback?*

