January 2026

Designing Digital Diabetes Care

A Usability-First Framework

RESEARCH SOCIETY FOR THE STUDY OF DIABETES IN INDIA

RSSDI – Koita Centre for Digital Diabetology

KCDD

ZEUX

Contents

Diabetes and the Role of Diabetologists

In India, diabetes has shifted from being a personal condition to a national challenge, demanding new ways of thinking about care and technology. More than 101 million Indians are living with diabetes, and another 136 million are at risk, earning us the label of the "Diabetes Capital of the World." This represents one of the largest global burdens of a chronic condition, with significant implications for public health, healthcare systems, and economic productivity.

In this ecosystem, diabetologists play a critical role as specialist physicians who manage complex cases, interpret nuanced patient data, and personalize treatment strategies. They must handle a longitudinal view of each patient's health, tracking HbA1c trends, insulin titration, lifestyle adherence, comorbidities, and risks. Their workflows involve intensive data review and interpretation, making usability and efficiency of digital systems far more critical compared to other clinical specialties.

Building on ZEUX x KCDO's Healthcare Framework

In 2024, ZEUX Innovation and the Koita Centre for Digital Oncology (KCDO) published a paper called *Digital Healthcare in India: A Design Blueprint for Better Healthcare.* This work identified the low adoption of digital health tools as a major barrier to impact, often stemming from usability challenges. Doctors reported slow, unreliable systems, confusing navigation, redundant data entry, and lack of integration across devices.

To address these gaps, ZEUX and KCDO created the SHIFT and HEALING frameworks as structured approaches for auditing and designing healthcare systems. These frameworks placed user experience (UX) at the center of adoption.

In the present paper, we extend this work by adapting the HEALING framework to diabetes clinic management systems, ensuring that design guidelines are tailored to the unique workflows of diabetologists. The adaptation process involved benchmarking existing clinic management systems (CMS)/electronic medical record (EMR) platforms, studying emerging technologies such as continuous glucose monitors (CGMs), wearables, & AI-driven decision support, and conducting user research with diabetologists to understand their workflows and challenges more deeply. The result is a reference framework supported by a Self Assessment Checklist enabling both qualitative and quantitative evaluation.

What Makes Diabetology Unique

The practice of diabetology is distinct because it blends longitudinal disease management, lifestyle counselling, and complication monitoring into every consultation. Unlike episodic care in many specialties, a diabetologist's workflow is continuous and layered:

1. **Long-term disease management**: Focus extends beyond immediate concern to long-term trends & risks.
2. **Dynamic therapy adjustment**: Insulin and oral medications need frequent recalibration from labs, devices, and patient inputs.
3. **Data-rich consultations**: Focus is on trends like HbA1c, BMI, and BP, making clear visualization of longitudinal data essential.
4. **Patient education as a part of clinical care**: Structured advice on lifestyle and self-monitoring makes patient education a core part of every visit.

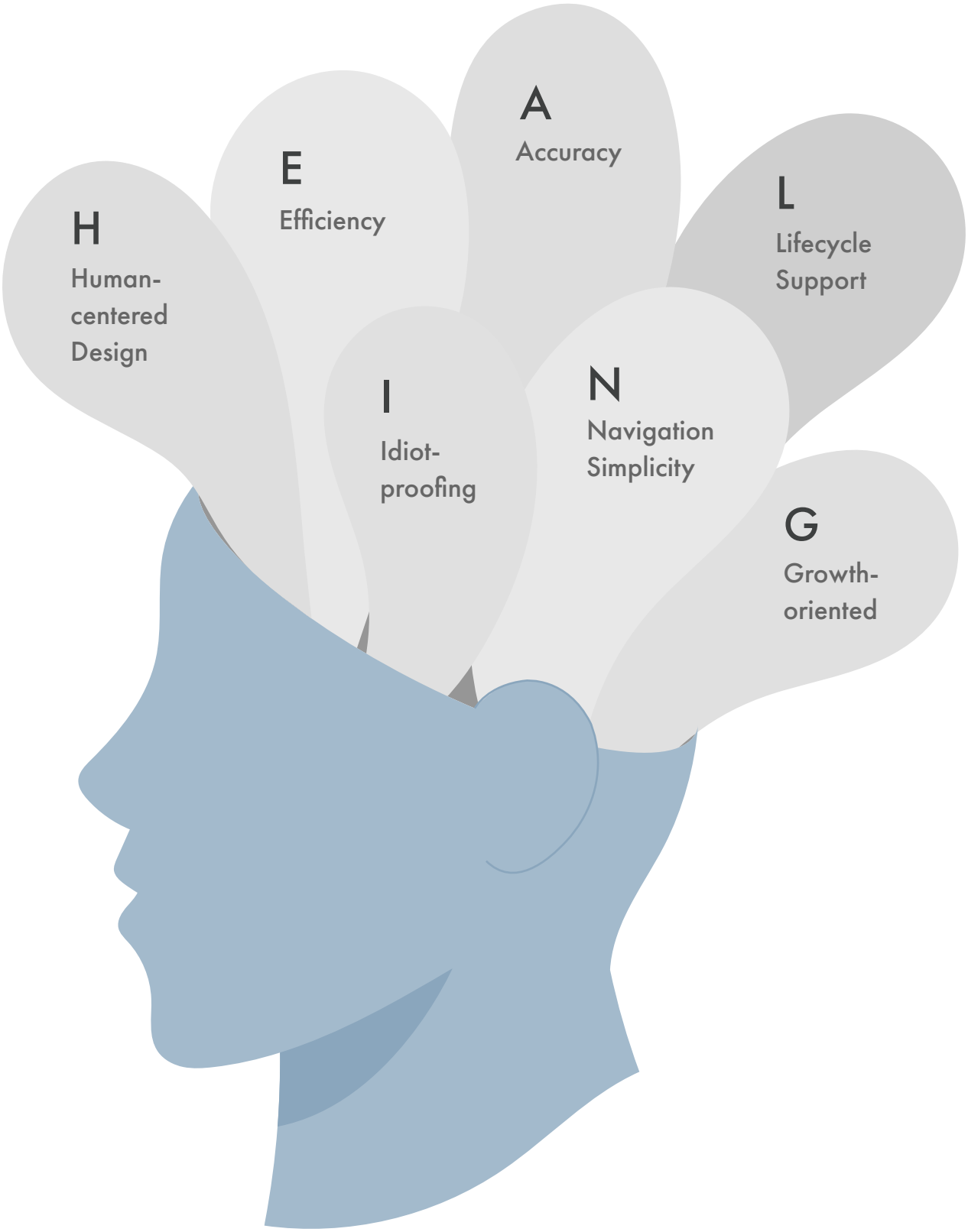
These layered demands mean diabetologists need systems that consolidate diverse data streams, surface patterns, and present information in ways that enable quick, accurate decisions.

The HEALING Framework

A guide to designing & developing diabetes clinic management systems

The HEALING Framework defines seven core design principles that serve as the foundation for creating usable, scalable, and clinician-friendly systems. When adapted for diabetes care, these principles go beyond theory — they translate into practical, actionable guidelines for vendors building diabetes clinic management systems. By aligning design with the real-world needs of diabetologists and their patients, the framework ensures that technology reduces effort, supports better decisions, and ultimately improves outcomes.

*To view the detailed application of the design framework leveraging the HEALING framework, please refer to **the annexure***


H
Human-centered Design
E
Efficiency
A
Accuracy
L
Lifecycle Support
I
Idiot-proofing
N
Navigation Simplicity
G
Growth-oriented

7 Keys to Best-in-Class Diabetes CMS

H Human-centered Design

Prioritize the needs, preferences, and experiences of users, including healthcare professionals and patients, throughout the design process to create a system that is intuitive, empathetic, and supportive.

- Define your target audience
- Identify users' pain points
- Map the process & role players
- Provide at-a-glance insights
- Support multi-lingual prescriptions

E Efficiency

Design workflows and interactions that optimize efficiency in diabetes clinic management tasks, enabling users to accomplish their goals quickly & effectively.

- Land users in the right place
- Persistently display decision-aiding information
- Design for speed and ease of input

A Accuracy

Ensure that the system provides accurate and reliable information, such as medication dosages, treatment schedules, and patient records to support safe and effective diabetes management.

- Prioritize error prevention
- Visually represent key statuses
- Clearly indicate outdated data

L Lifecycle Support

Provide comprehensive support throughout the entire treatment lifecycle, from treatment planning and administration to monitoring, follow-up care.

- Design comprehensive treatment management
- Seamlessly integrate with patient's wearable devices
- Make past data available

I Idiot-proofing

Include features and fail-safes that simplify complex processes and ensure critical tasks are performed correctly. The goal is to ensure that systems are accessible and safe for users of all skill levels.

- Minimize the use of icons
- Provide reference information
- Include redundancies

N Navigation Simplicity

Design intuitive navigation structures and user interfaces that simplify the user experience, making it easy for users to find information, complete tasks, and navigate the system effectively.

- Maintain flat menu structures
- Provide clear location cues
- Simplify switching between patients & processes

G Growth-oriented

Build the system with scalability and adaptability in mind, allowing it to grow and evolve alongside advancements in treatment, healthcare practices, and technological innovations.

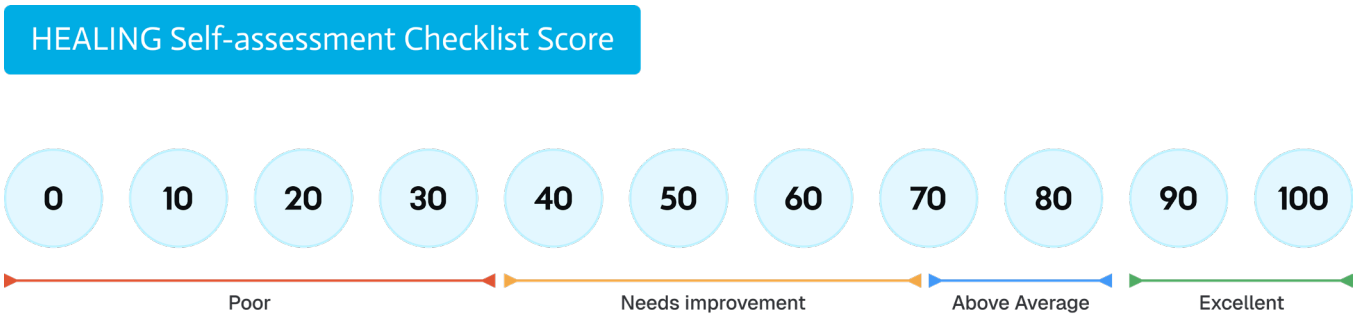
- Reuse existing templates and components
- Design for scalable processes
- Design for scalable actions

HEALING Self–Assessment Checklist

A benchmark for assessing the usability and design maturity of Diabetes Clinic Management Systems.

The HEALING Self-Assessment Checklist helps evaluate how well a Diabetes Clinic Management System aligns with the HEALING framework, translating qualitative design principles into measurable indicators. It provides a structured, quantitative score that reflects a system's usability and design maturity, making it easier to identify compliance levels, benchmark performance, and prioritize areas for improvement.

This serves as a practical reference for CMS vendors, hospitals, clinics, auditors, and policymakers seeking to strengthen digital adoption and user experience.



Distribution of HEALING Self-assessment scores and corresponding usability categories

HEALING Scale

H - Human-centered design

1. Does the system identify different user types, understand their objectives & pain points, and provide role-appropriate workflows?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

2. Does the system provide at-a-glance insights into patient history and treatment plan?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

3. Does the system support multilingual communication for patients?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

E - Efficiency

4. Does the system land users on a default view/dashboard that surfaces all critical patient information first?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

5. Does the system persistently display decision-aiding data (e.g., abnormal lab results, high-risk alerts) across workflows?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

6. Does the interface minimize typing through features like auto-fill defaults, single-click inputs, and smart form design?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

A - Accuracy

7 Does the system prevent errors through validation & alerts?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

8 Does the system use clear visual markers to represent key statuses?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

9 Does the system indicate when data is outdated or not synced (e.g., timestamp or warning label)?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

L - Lifecycle Support

10 Can patients manage their treatment and lifestyle in one continuous, guided experience?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

11 Can patients easily sync their wearable device data with the app?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

12 Does the system allow easy access to all historical data (consultations, labs, prescriptions, notes)?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

I - Idiot Proofing

13 Does the interface minimize ambiguous icon use, preferring text & standard icons?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

14 Does the system provide contextual reference information wherever required (tooltips, pop-ups, embedded help)?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

15 Does the system include redundancies for critical actions and information?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

N - Navigation simplicity

16 Does the system maintain flat menu structures (no more than 2–3 levels)?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

17 Does the interface provide clear location cues (highlights, headers, etc.)?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

18 Does the system allow quick switching between patients and processes?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

G - Growth oriented

19 Does the system reuse existing templates and UI components consistently across modules?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

20 Is the system designed for scalable phases, actions and processes?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

Building the Roadmap for Scalable & Usable Digital Care

As India faces an unprecedented diabetes burden, the need for usable, scalable, and clinician-friendly digital systems has never been greater. By adapting ZEUX and RSSDI-KCDD's HEALING framework to the workflows of diabetologists, this paper provides a foundational guide for diabetes clinic management systems.

This framework positions usability not as an afterthought, but as a core requirement for adoption, ensuring that digital systems reduce effort, save time, and empower doctors to focus on what matters most: patient care.

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zeuxinnovation.com

ZEUX Innovation, based in Mumbai with over 8 years of experience, specializes in user centered design across sectors, including healthcare. Their expertise in crafting solutions tailored for India's unique challenges makes them a valuable partner.

RSSDI - Koita Centre for Digital Diabetology

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The Research Society for the Study of Diabetes in India (RSSDI), Asia's largest association of physicians for diabetes care. In 2024, the Koita Foundation partnered with RSSDI to establish the RSSDI–Koita Centre for Digital Diabetology (KCDD), India's first centre focused on digital diabetology. It combines clinical expertise with healthcare technology to strengthen national programs in digital diabetes care and research, with a vision to leverage technology to improve management and drive innovation.

Annexure >

Designing Digital Diabetes Care

HEALING Framework

Design Framework

H	Human-centered Design
E	Efficiency
A	Accuracy
L	Lifecycle Support
I	Idiot-proofing
N	Navigation Simplicity
G	Growth Oriented

Human-centered Design

Prioritize the needs, preferences, and experiences of users, including healthcare professionals and patients, throughout the design process to create a system that is intuitive, empathetic, and supportive.

- **Define your target audience**
- **Identify users' pain points**
- **Map the process & role players**
- **Provide at-a-glance insights**
- **Support multi-lingual prescriptions**

Define your target audience

Human-centered Design

Where will your system be implemented?

Single-doc clinics

Polyclinics

Clinic with a Lab

Clinic with a Pharmacy

Define your target audience

Human-centered Design

Who are your users?

Doctors / Assistants

Receptionists

Others
(Pharmacy, Labs, etc.)

Define your target audience

Human-centered Design

Understand user’s objectives

Doctors / Assistants

- Have an overview of patient history & treatment plan
- View latest reports
- Add/ view notes on the fly

Receptionists

- Quick intake
- Book/reschedule with reminders
- Live queue management
- Recall overdue and follow ups

Identify users' pain points

Human-centered Design

Doctors / Assistants

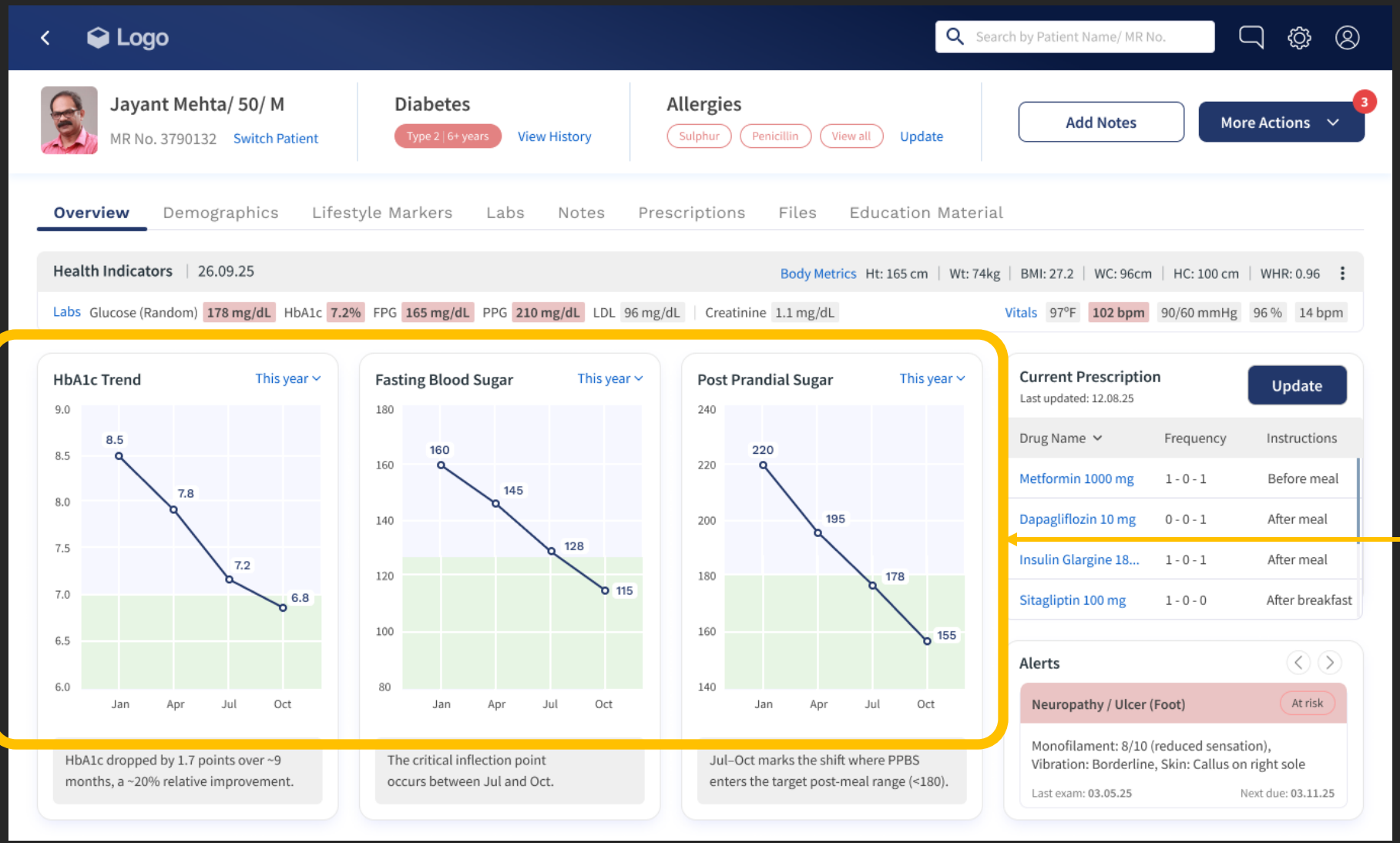
- Using digital systems reduces efficiency
- "When it's too crowded, I use pen & paper"
- Different clinics/hospitals, different systems

Receptionists

- Manage patient requests /reschedules/cancels/no shows
- Live queue management
- Managing follow ups

Provide at-a-glance insights

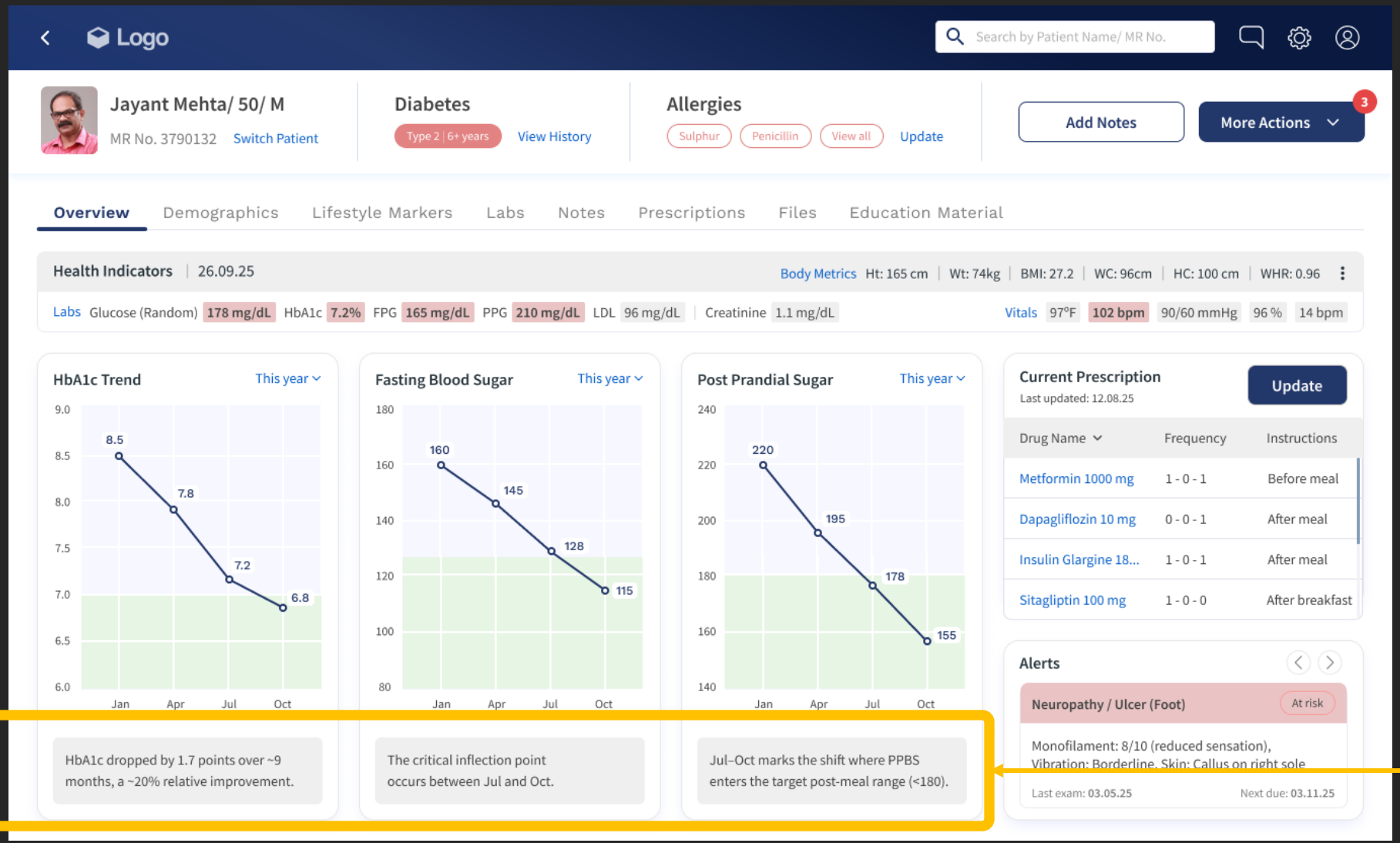
Human-centered Design



Leverage visualizations to simplify data and accelerate decisions.

Provide at-a-glance insights

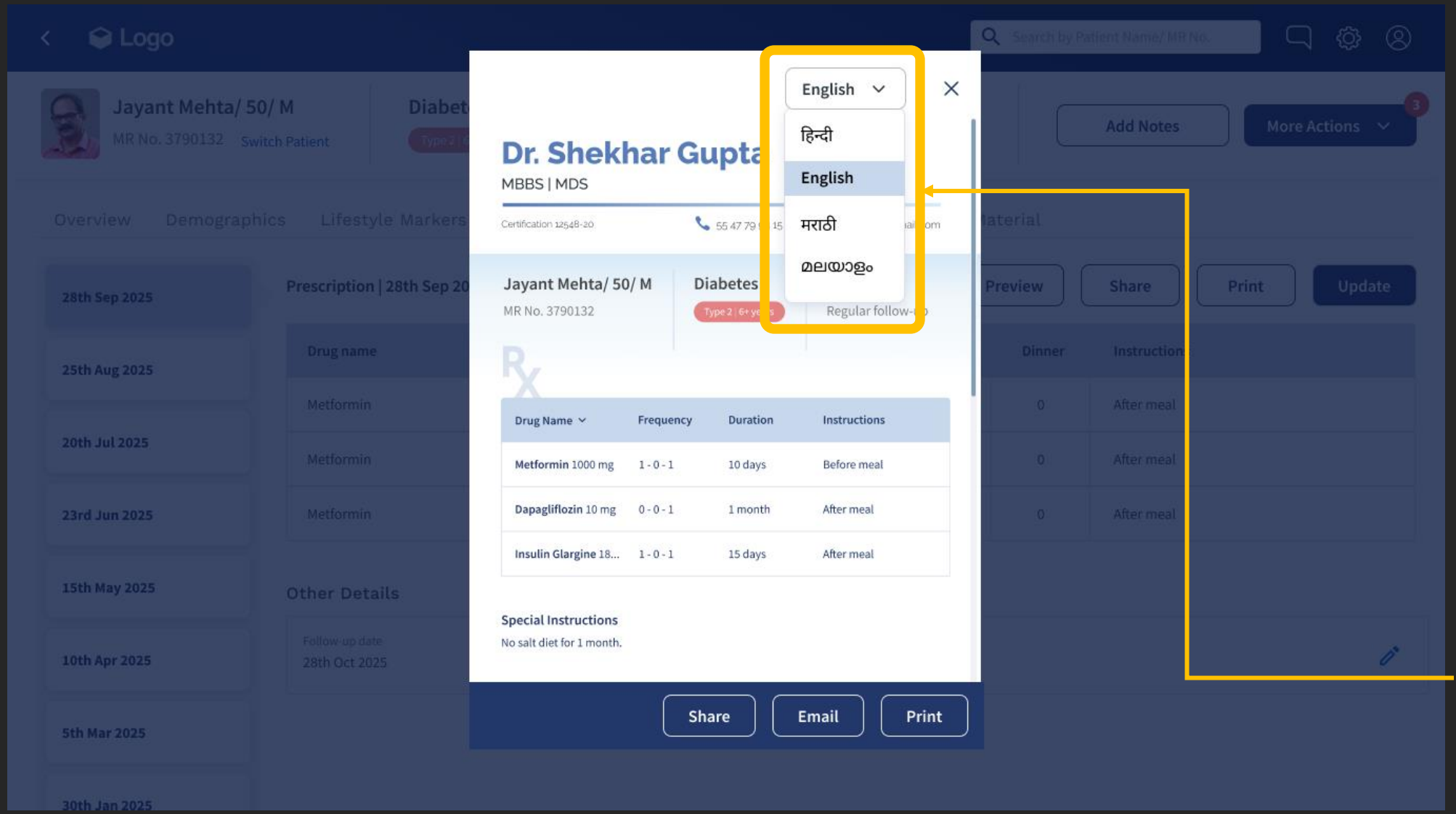
Human-centered Design



Highlight meaningful patterns for easy and quick understanding

Support multi-lingual content

Human-centered Design



Support multilingual communication to improve accessibility and adherence.

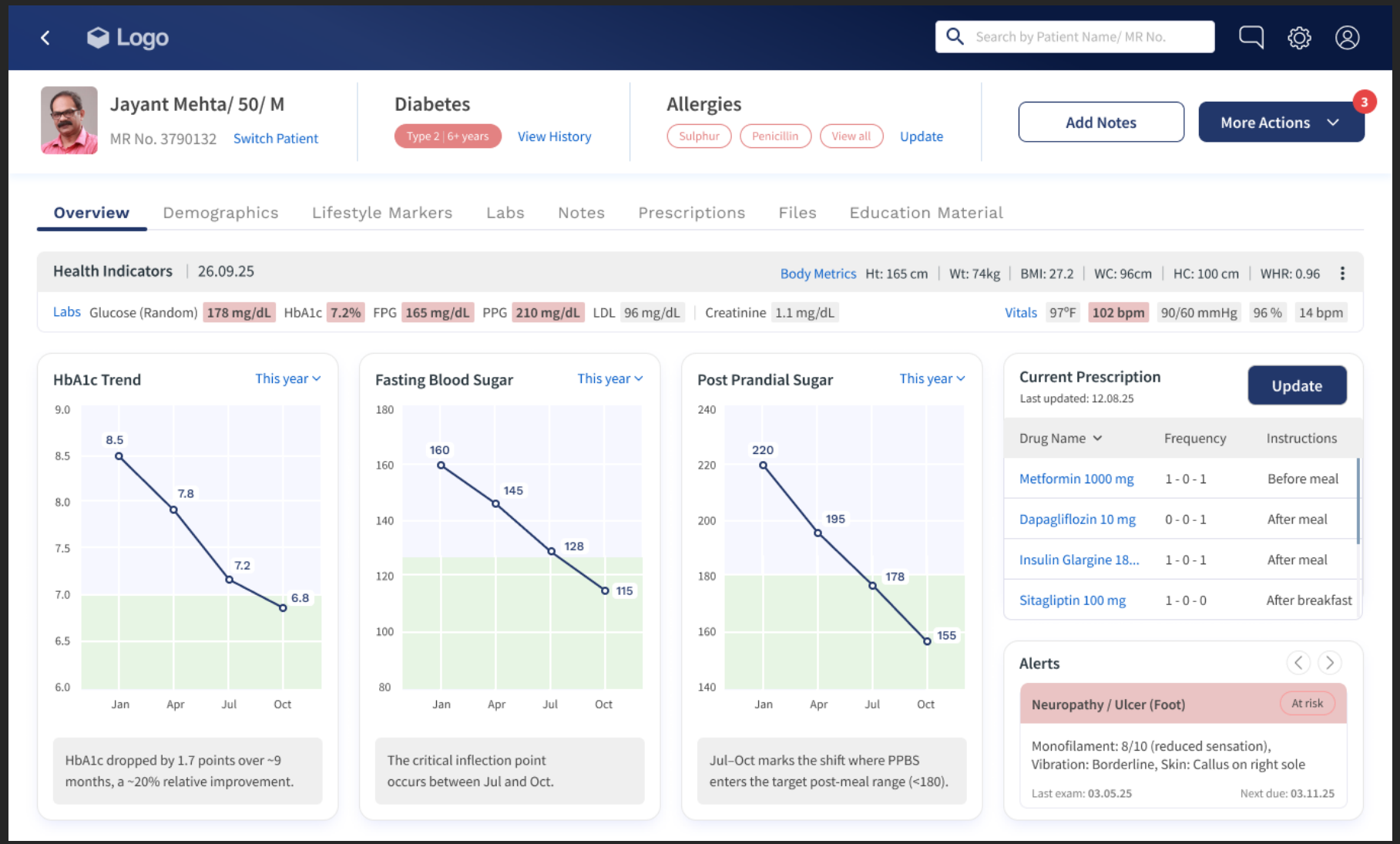
E Efficiency

Design workflows and interactions that optimize efficiency in diabetes management tasks, enabling users to accomplish their goals quickly & effectively.

- **Land users in the right place**
- **Persistently display decision-aiding information**
- **Design for speed and ease of input**

Land users in the right place

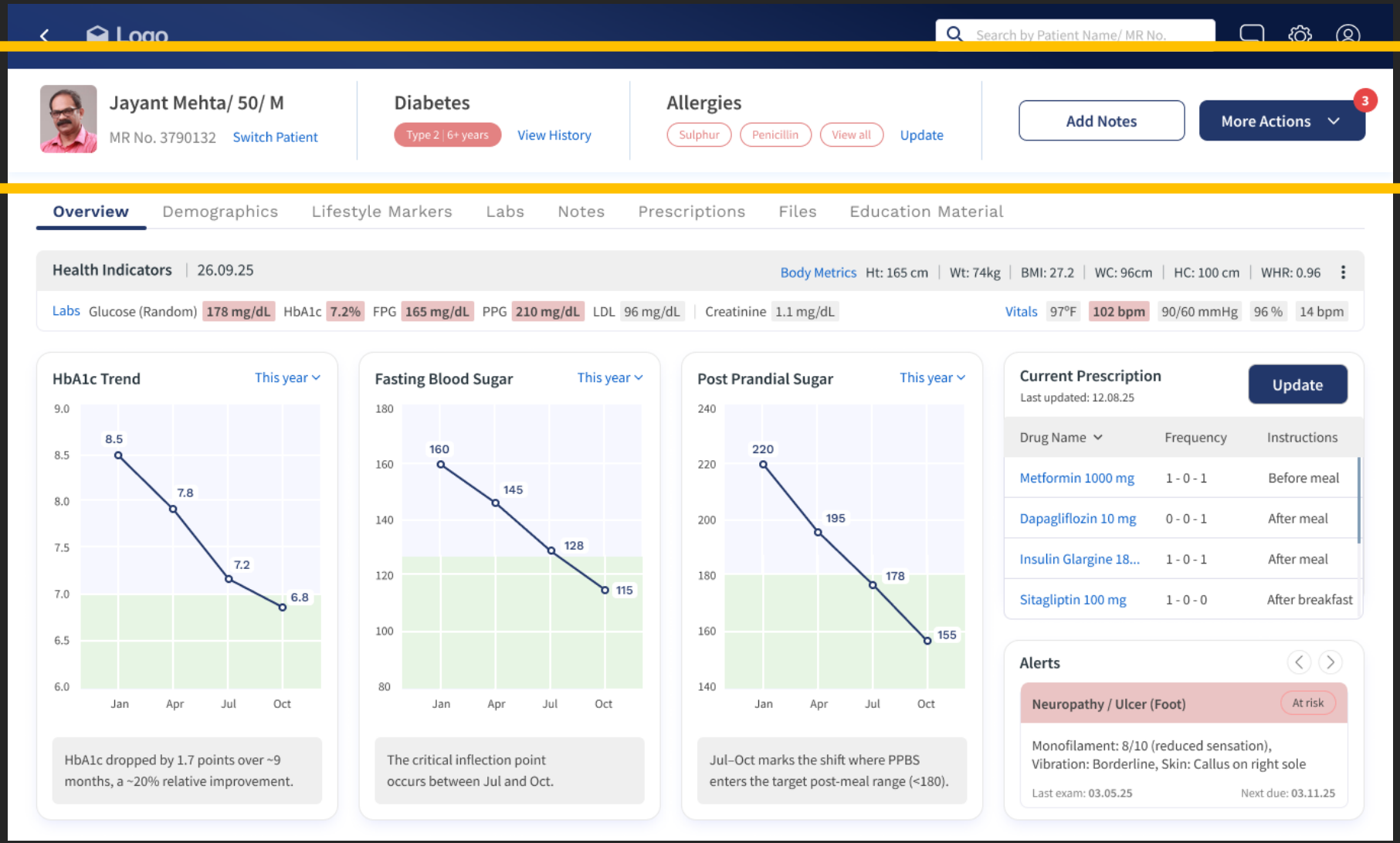
Efficiency



Bring users to the page that shows the patient's overview

Persistently display decision-aiding info

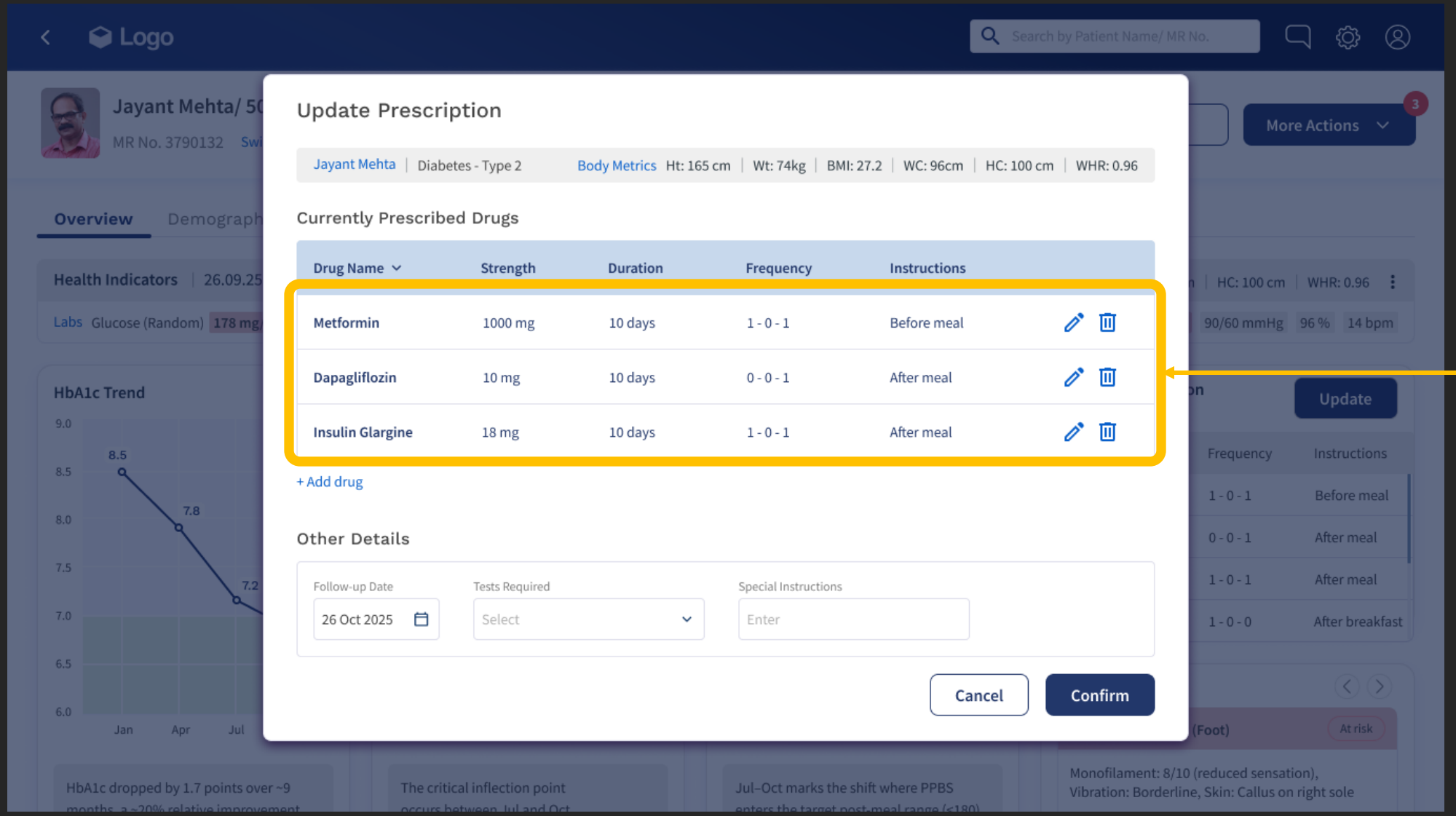
Efficiency



Maintain key patient information that affects the treatment plan as the central object.

Design for speed & ease of input

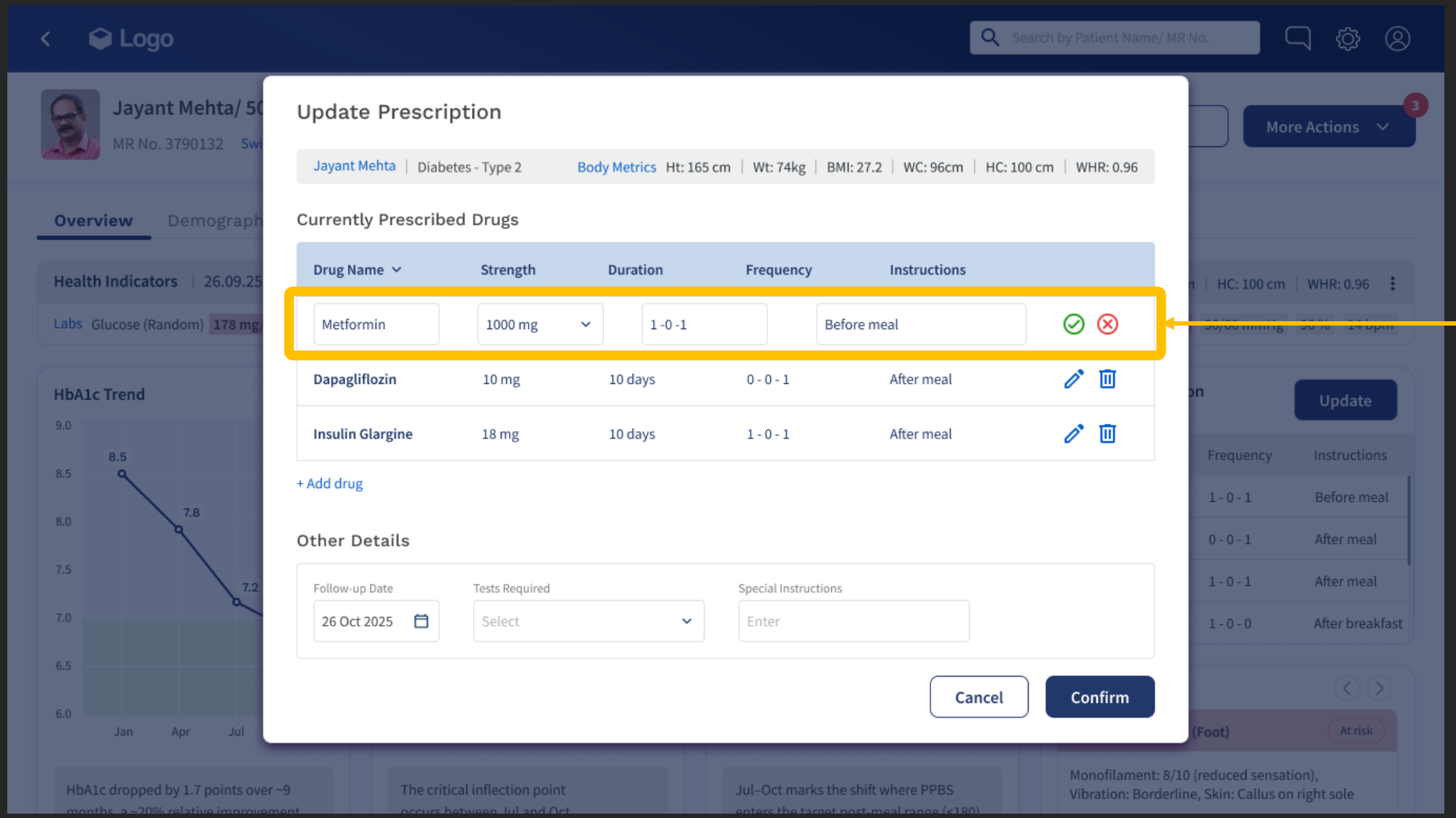
Efficiency



Enable editing of existing prescriptions for follow-up patients to simplify updates.

Design for speed & ease of input

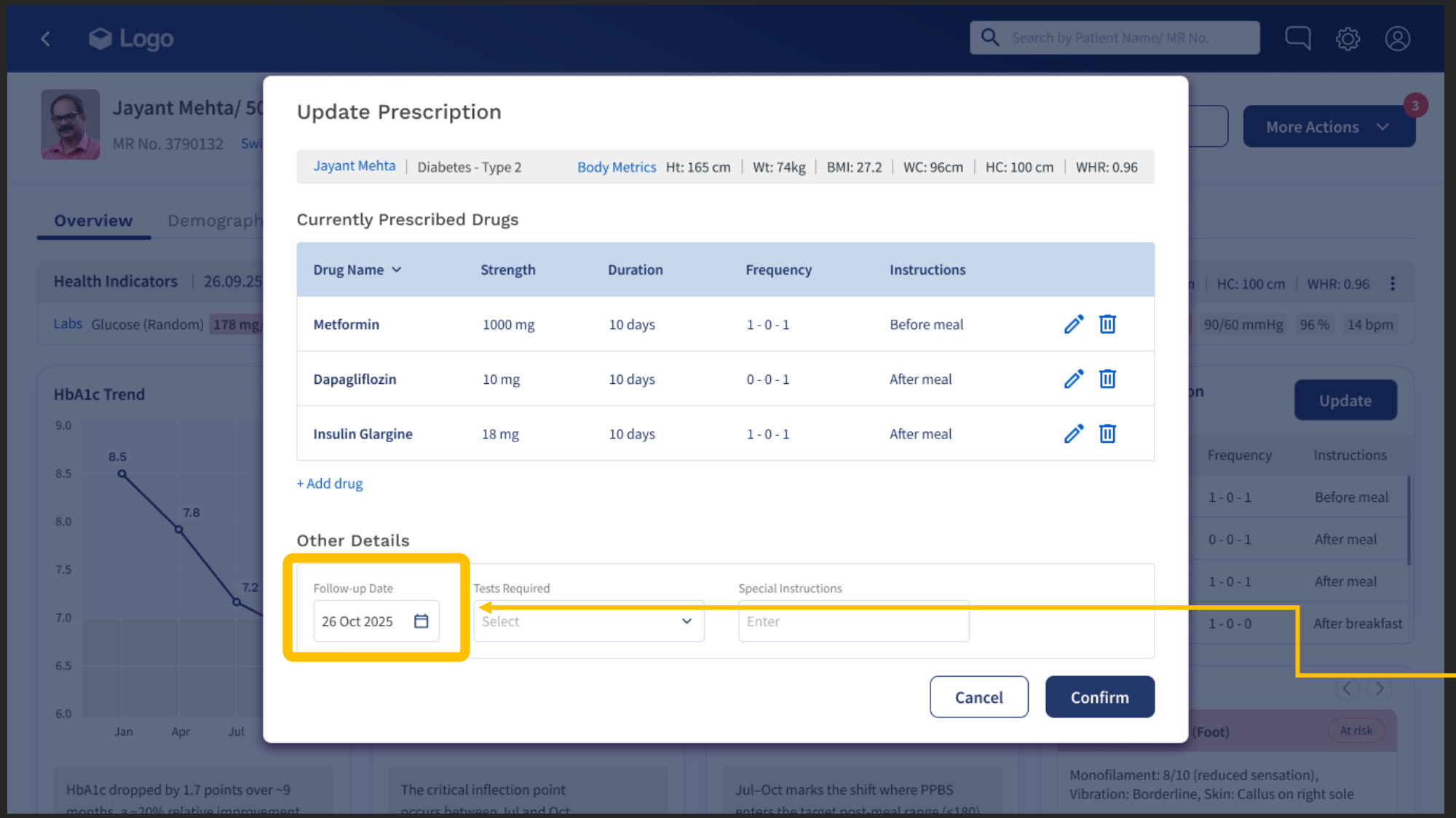
Efficiency



Allow in-line edits for tables when it is critical to see all other info and no additional fields are required.

Design for speed & ease of input

Efficiency



Reduce the need of typing each & every detail. Auto-fill default values.

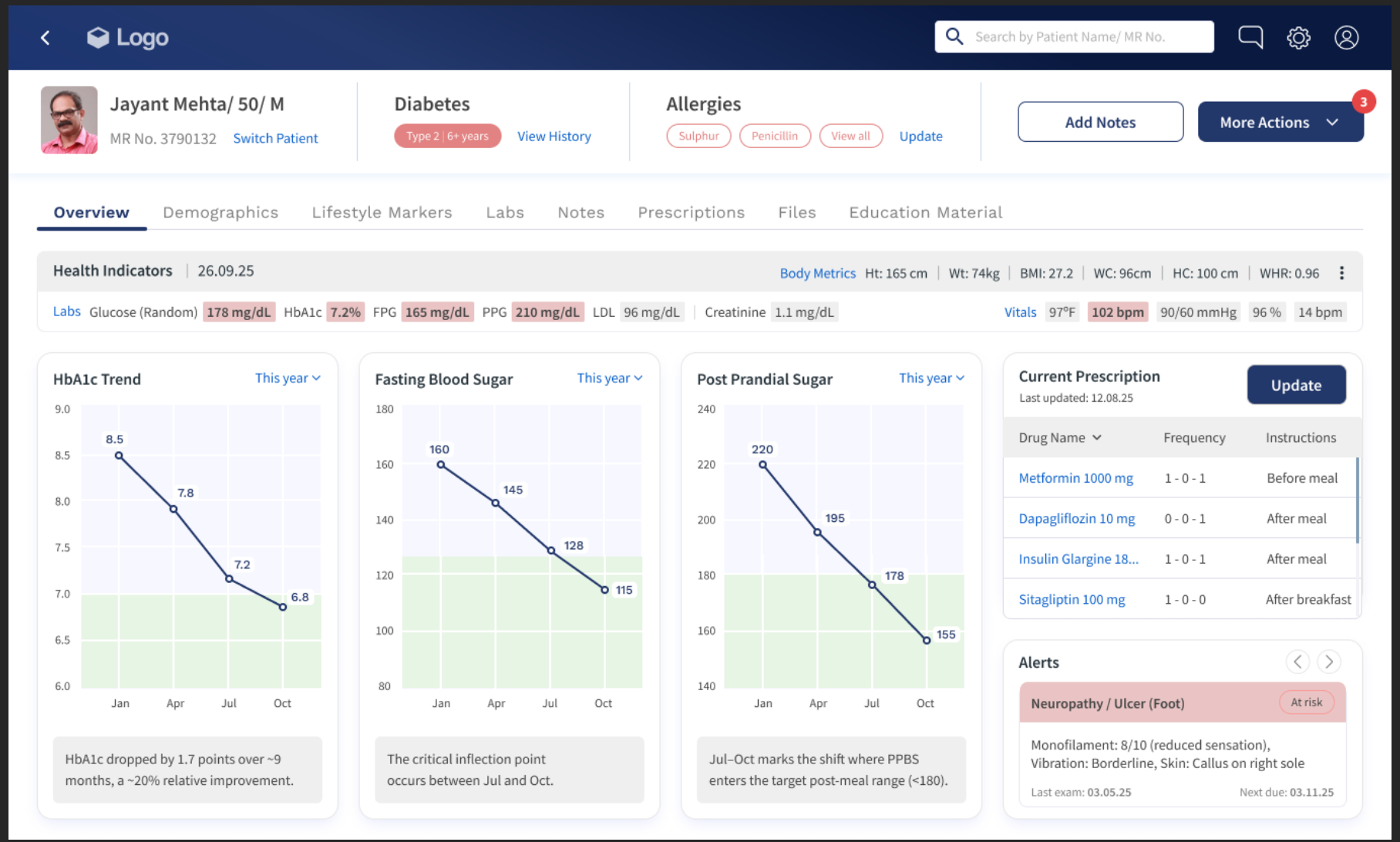
A Accuracy

Ensure that the system provides accurate and reliable information, such as medication dosages, treatment schedules, and patient records to support safe and effective diabetes management.

- **Prioritize error prevention**
- **Visually represent key statuses**
- **Clearly indicate outdated data**

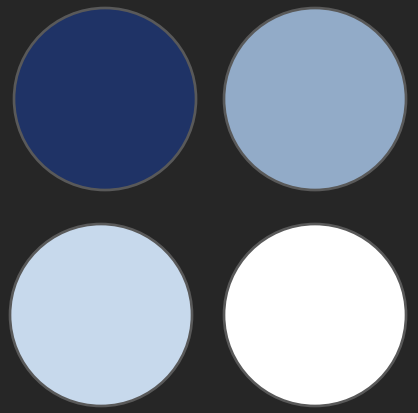
Prioritize error prevention

Accuracy



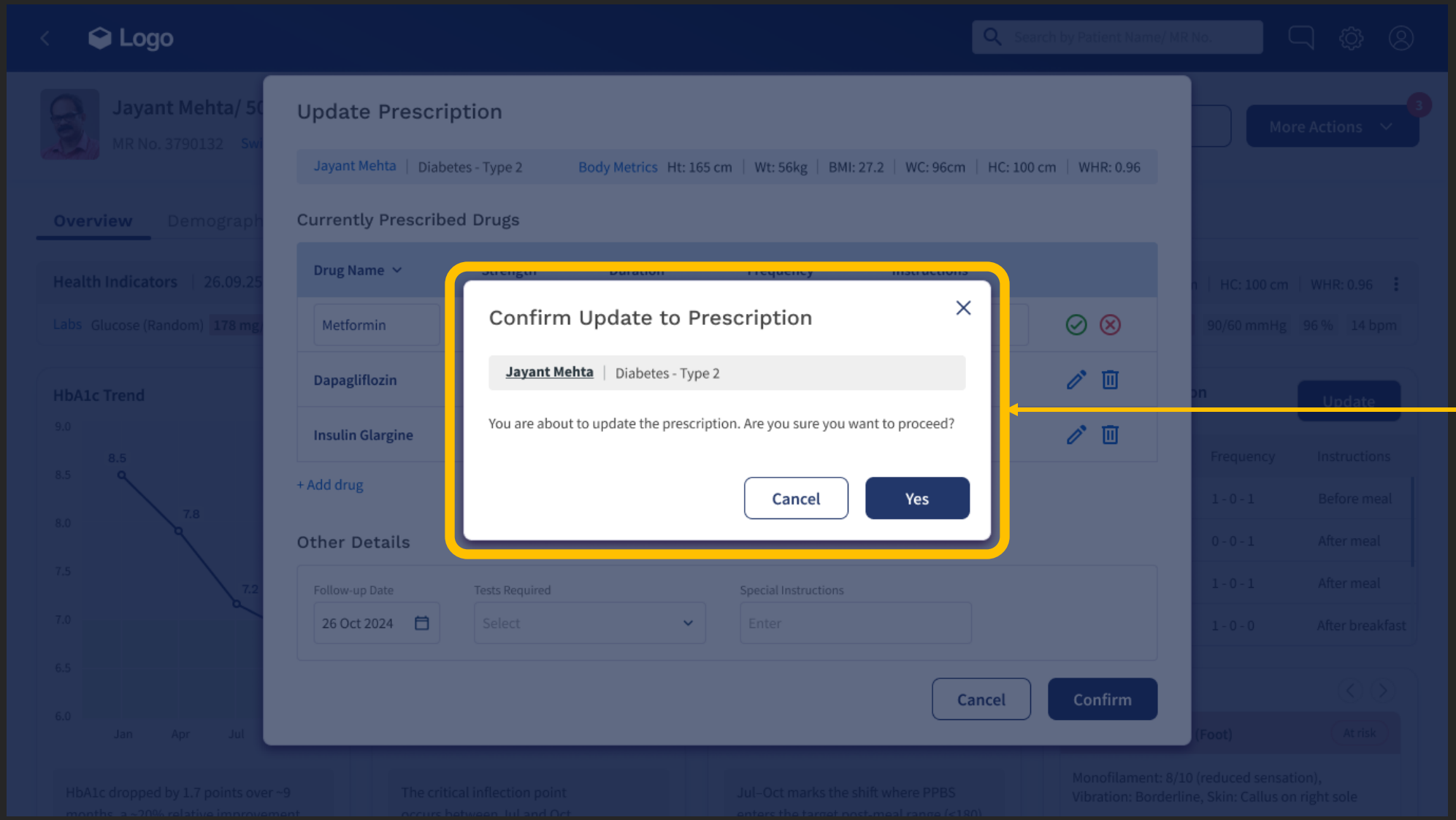
Use a single-color palette with variations in shade.

Avoid using green, amber, and red as primary or secondary colors to prevent users from associating them with preconceived meanings
(e.g., red for danger or stop).



Prioritize error prevention

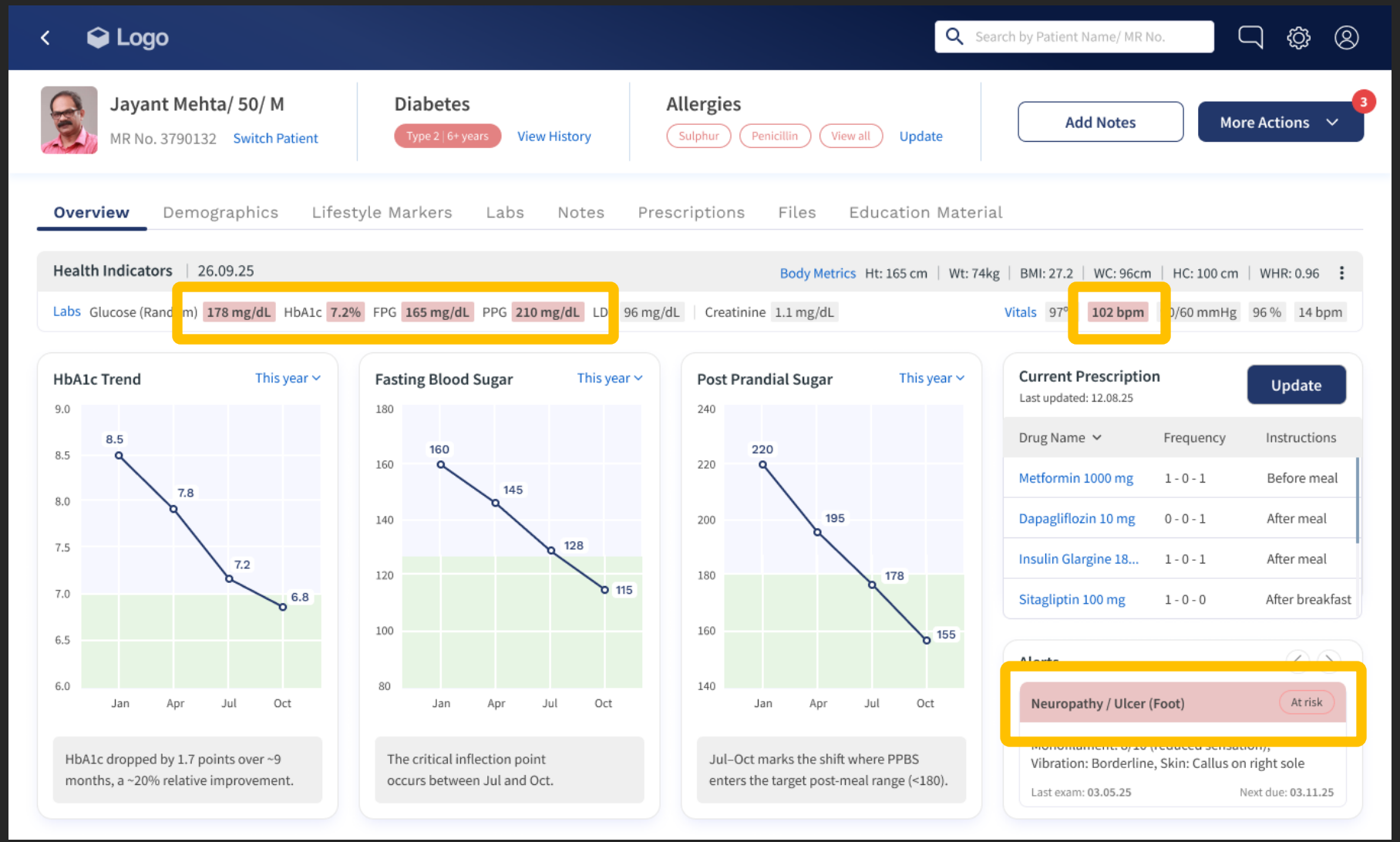
Accuracy



Ask confirmation questions for critical actions
Alert the users about destructive actions.

Visually represent key statuses

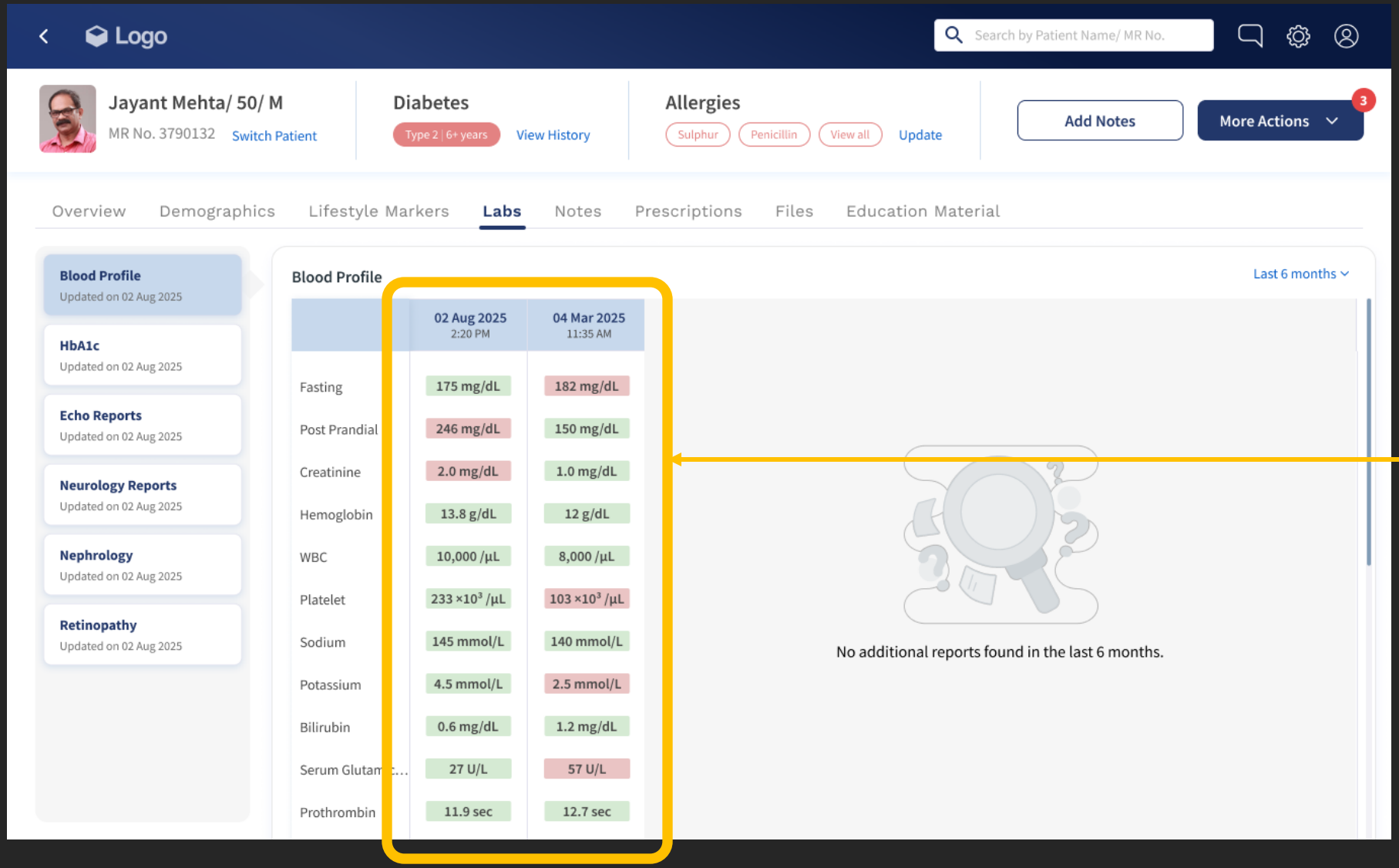
Accuracy



Restrict red to critical information only; exclude it from primary and secondary usage to prevent users from associating it with preconceived meanings

Visually represent key statuses

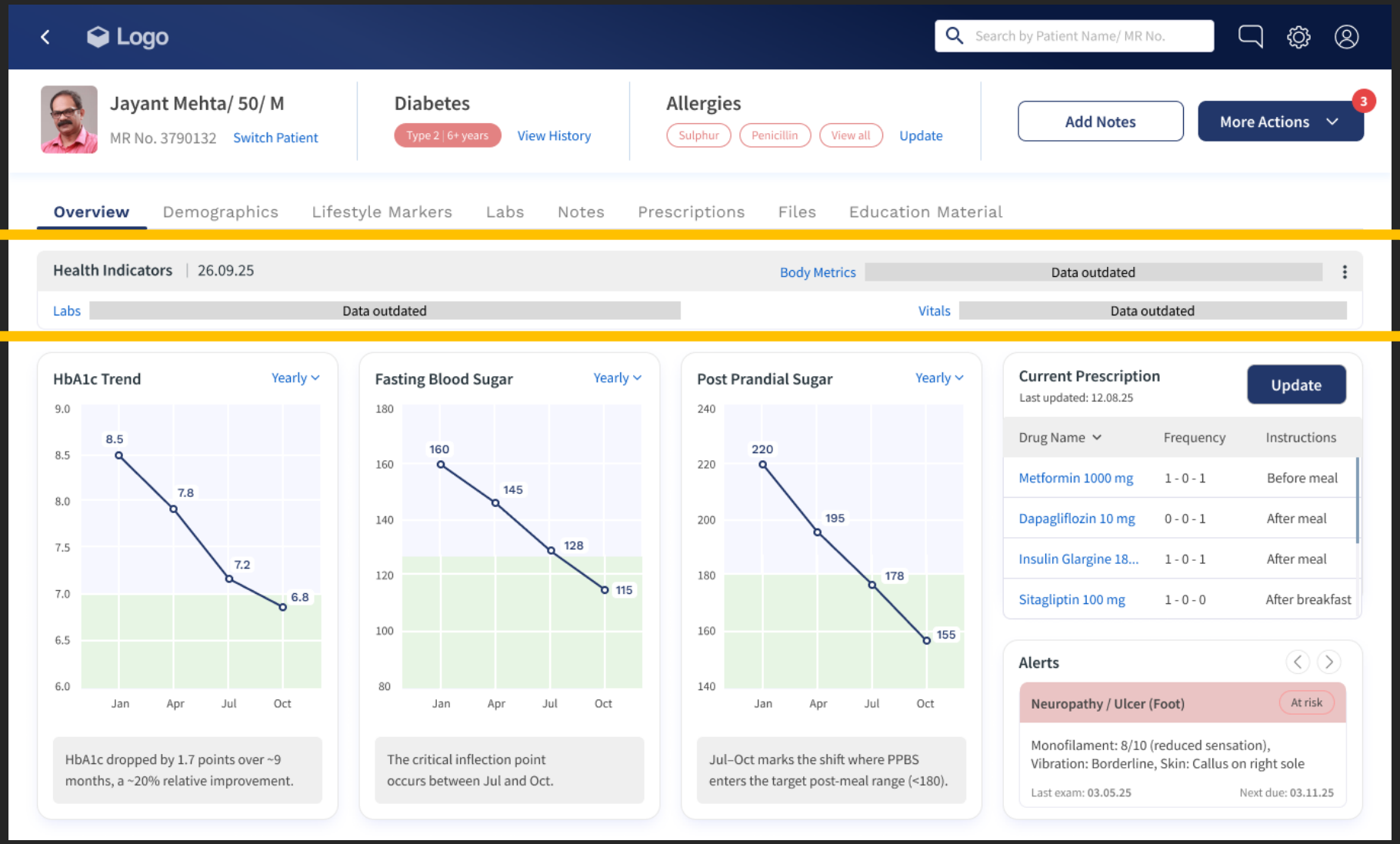
Accuracy



Use clear visual cues to separate out-of-range lab results from normal values for instant understanding.

Clearly indicate outdated data

Accuracy



Notify users when data is outdated and pending update.

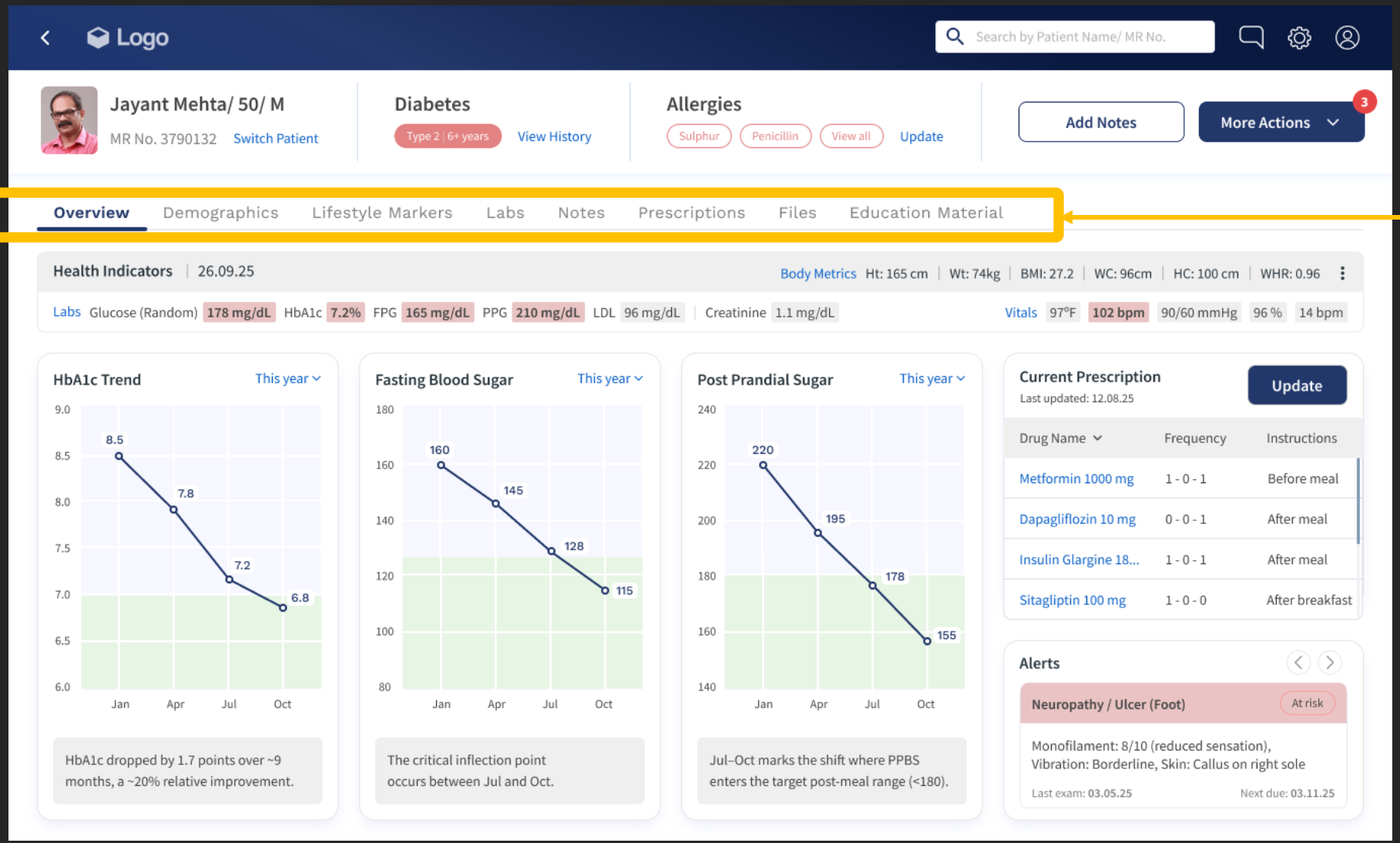
L Lifecycle Support

Provide comprehensive support throughout the entire treatment lifecycle, from treatment planning and administration to monitoring, follow-up care.

- **Design comprehensive treatment management**
- **Seamlessly integrate with patient's wearable devices**
- **Make past data available**

Design comprehensive treatment management

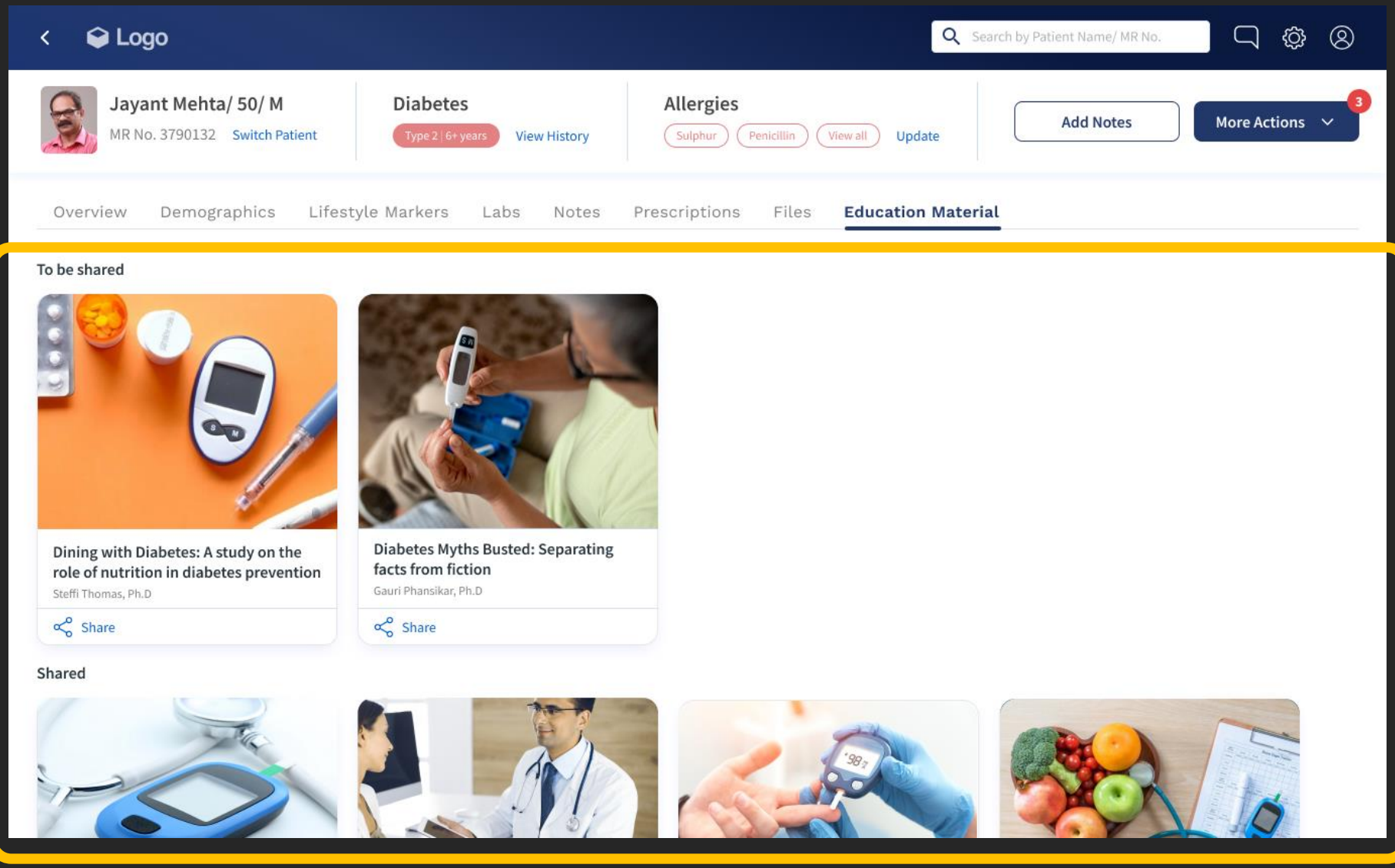
Lifecycle Support



Cover all the aspects of treatment, making sure the doctor has a comprehensive understanding

Design comprehensive treatment management

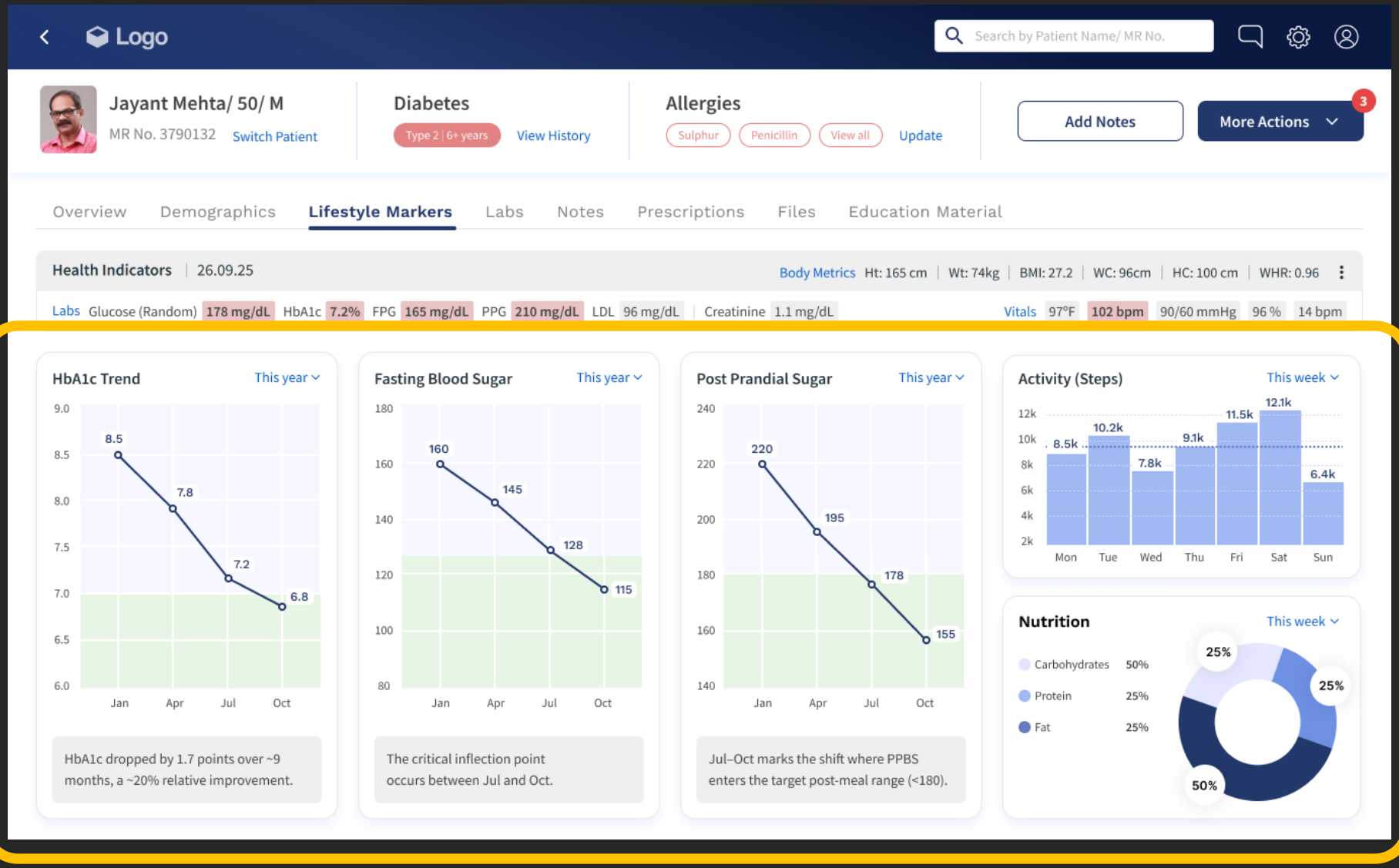
Lifecycle Support



Simplify the process of sharing educational materials with patients.

Seamlessly integrate with patient's wearables

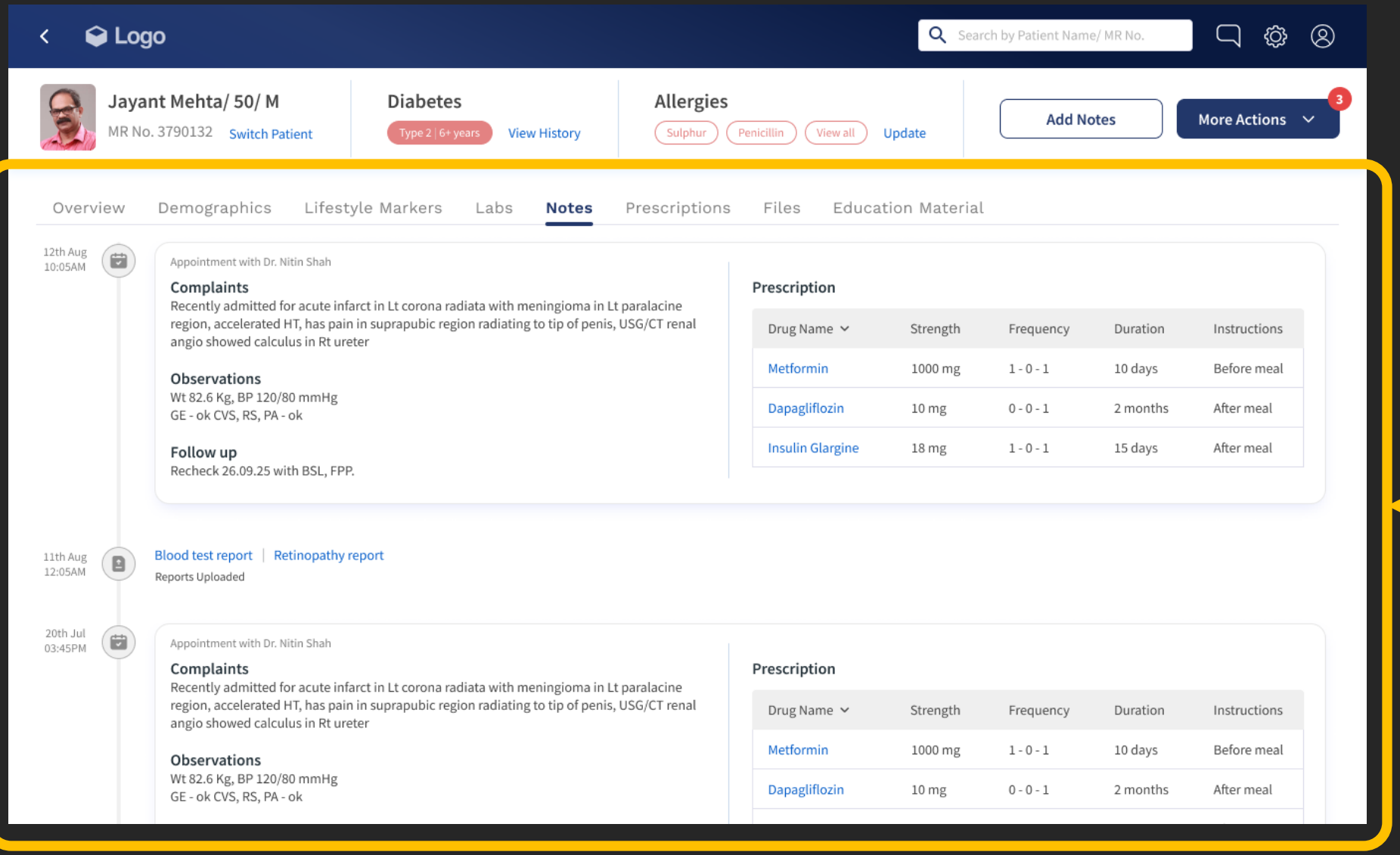
Lifecycle Support



Ensure wearable data is clearly presented within existing clinical workflows to support trend analysis and remote care.

Make past data available

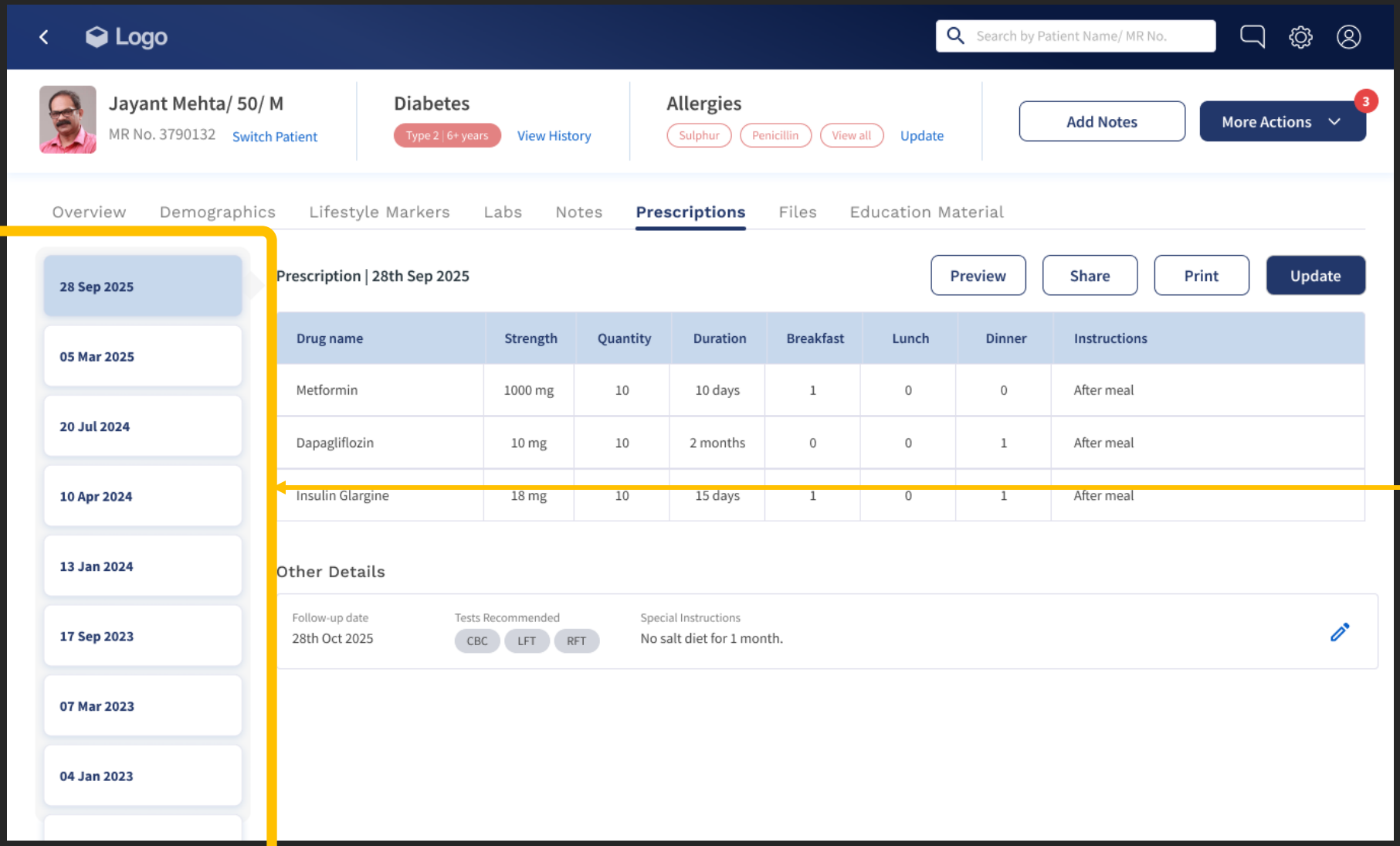
Lifecycle Support



Allow user to access all historical data related to the patient.

Make past data available

Lifecycle Support



Enable access to the complete medical record of the patient.

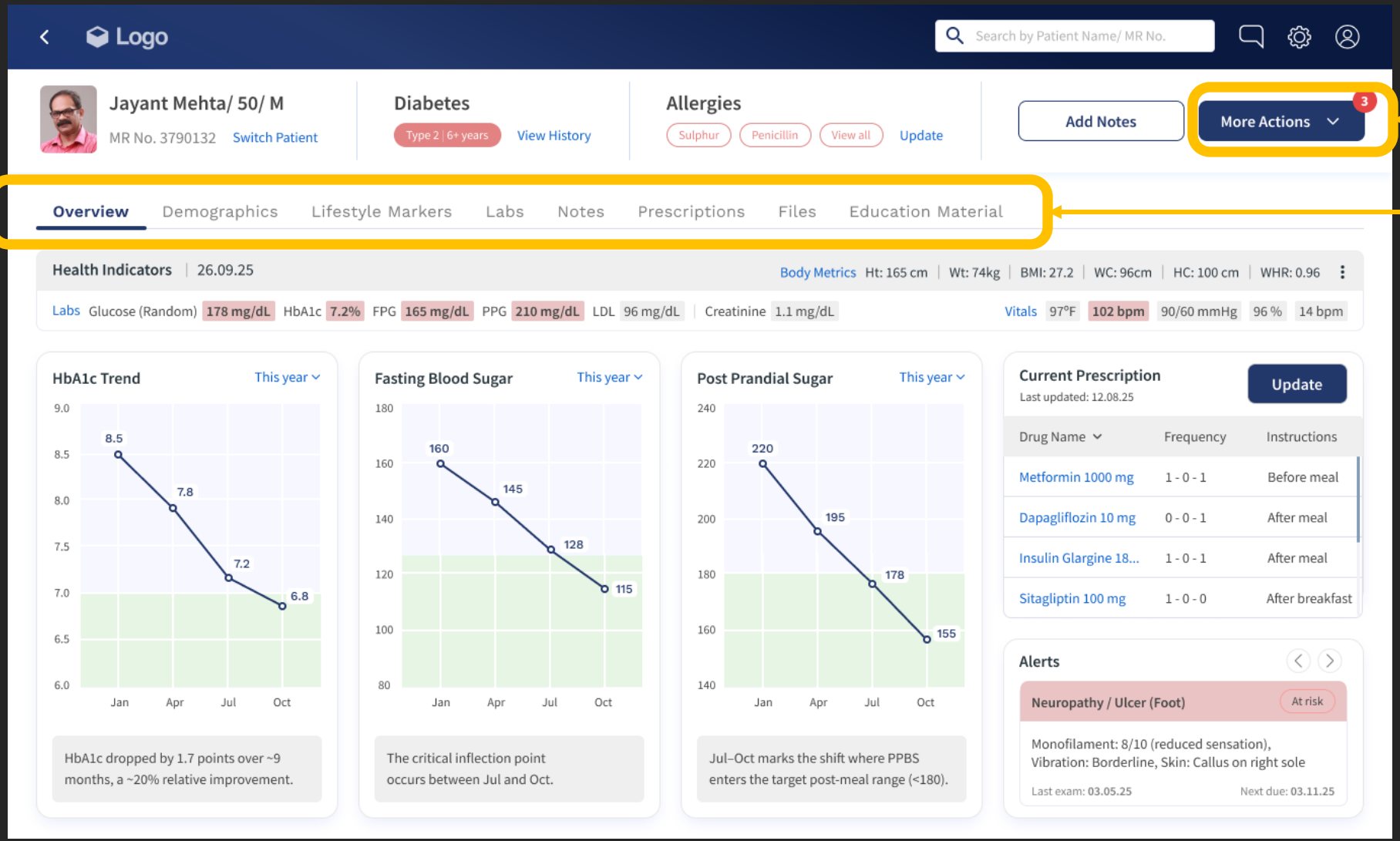
I Idiot-proofing

Include features and fail-safes that simplify complex processes and ensure critical tasks are performed correctly. The goal is to ensure that systems are accessible and safe for users of all skill levels.

- **Minimize the use of icons**
- **Provide reference information**
- **Include redundancies**

Minimum use of icons

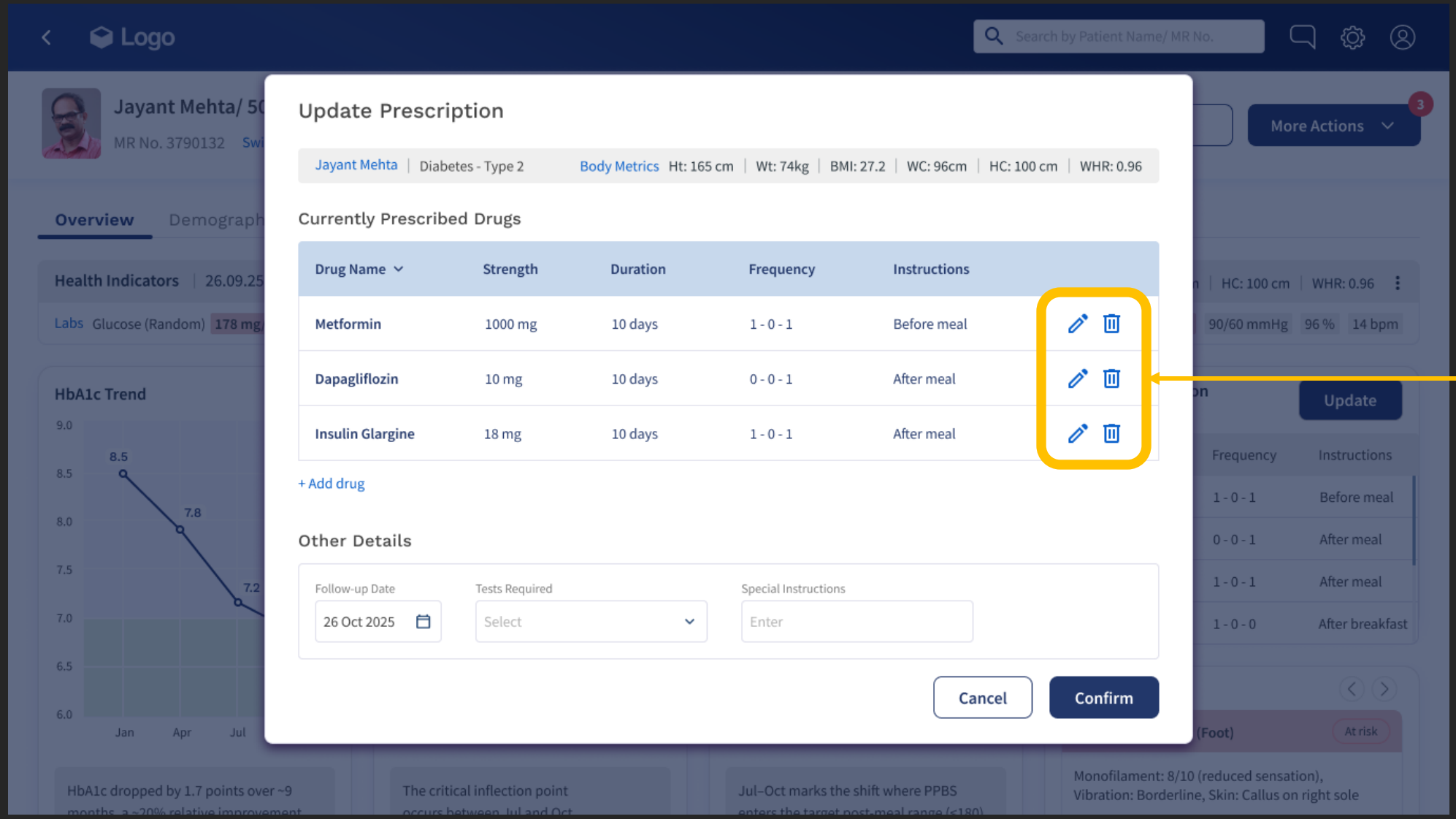
Idiot-proofing



Use text buttons instead of icons to ensure that there is no ambiguity in what the action means.

Minimum use of icons

Idiot-proofing



Use icons only for universally recognizable actions such as edit, delete, search, etc.

Minimum use of icons

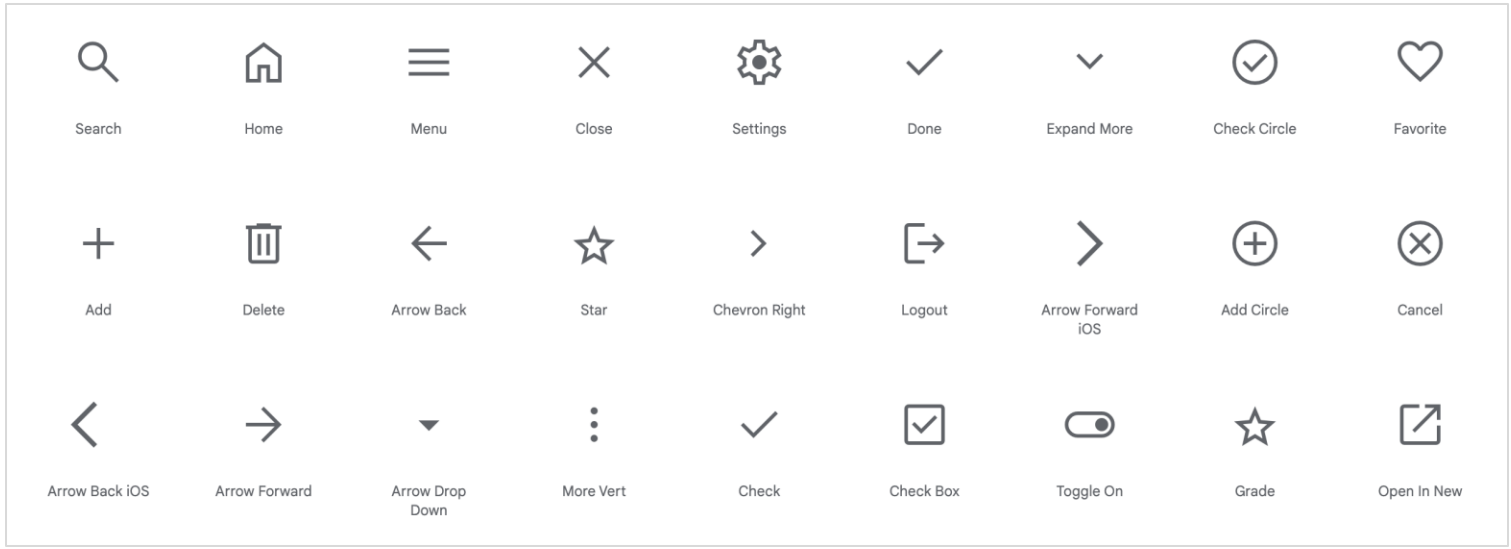
Idiot-proofing

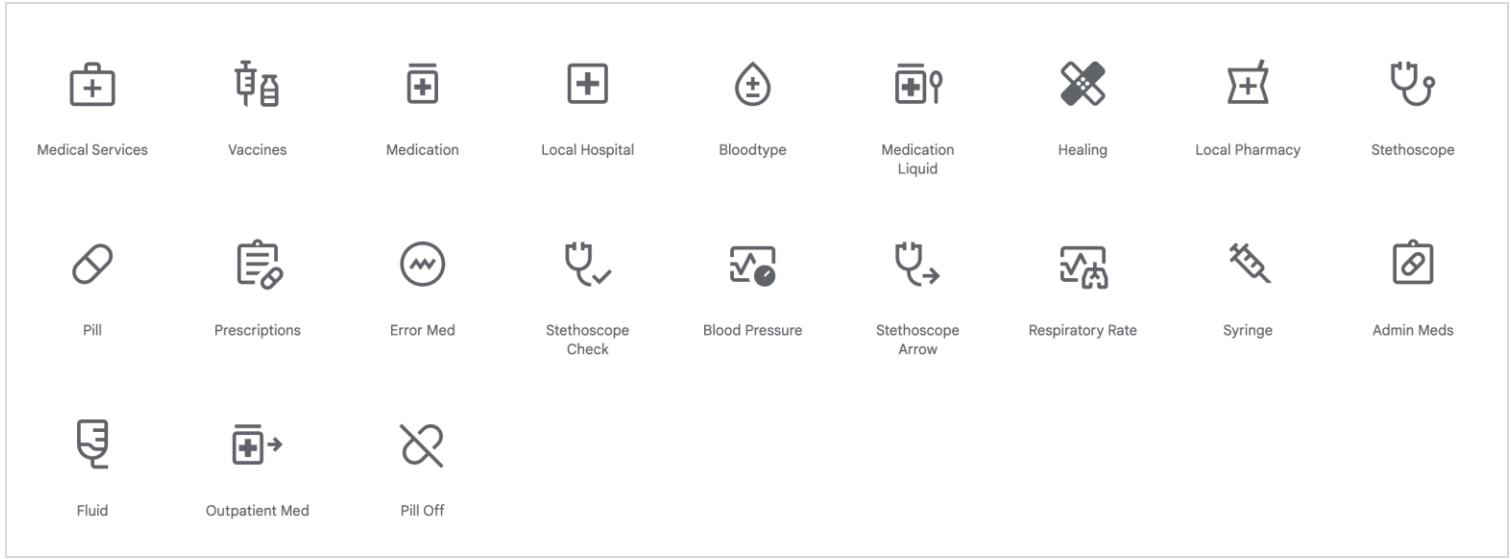
Recommendation for Icons

When necessary, use an existing library of icons that has the same visual style.

Link to free icon library

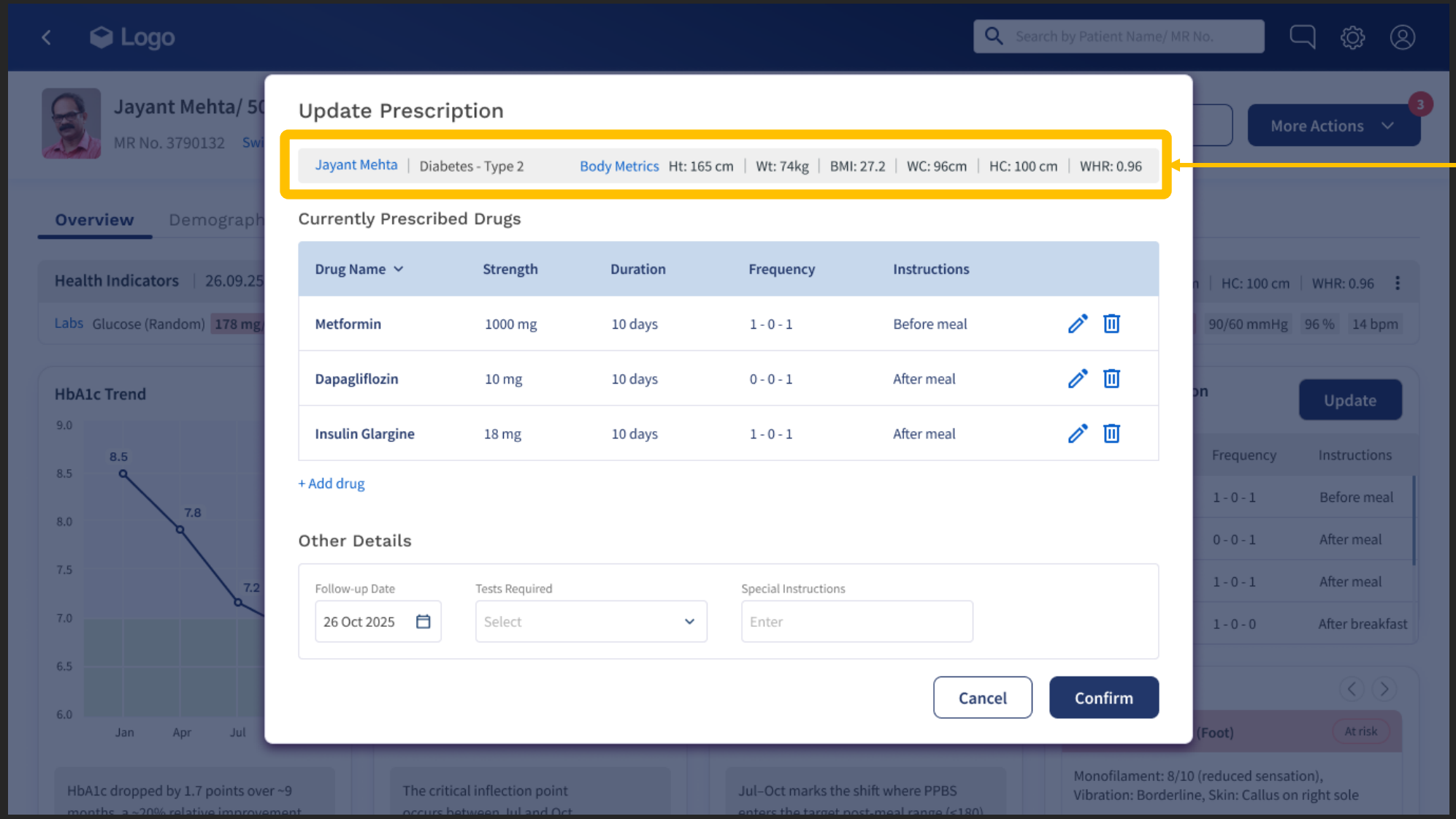
https://fonts.google.com/icons





Provide reference information

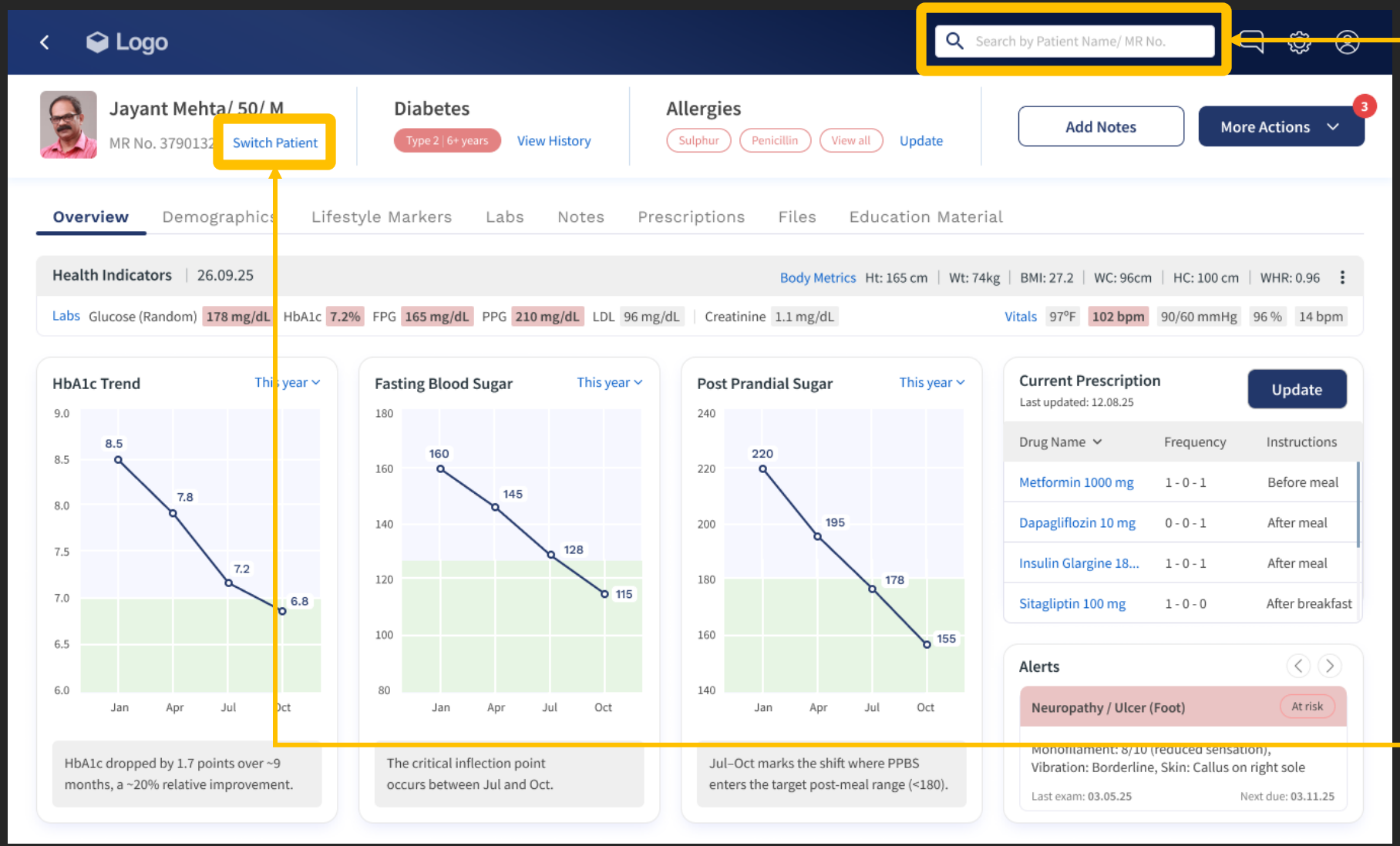
Idiot-proofing



Provide reference information on popups to give the user context.

Include redundancies

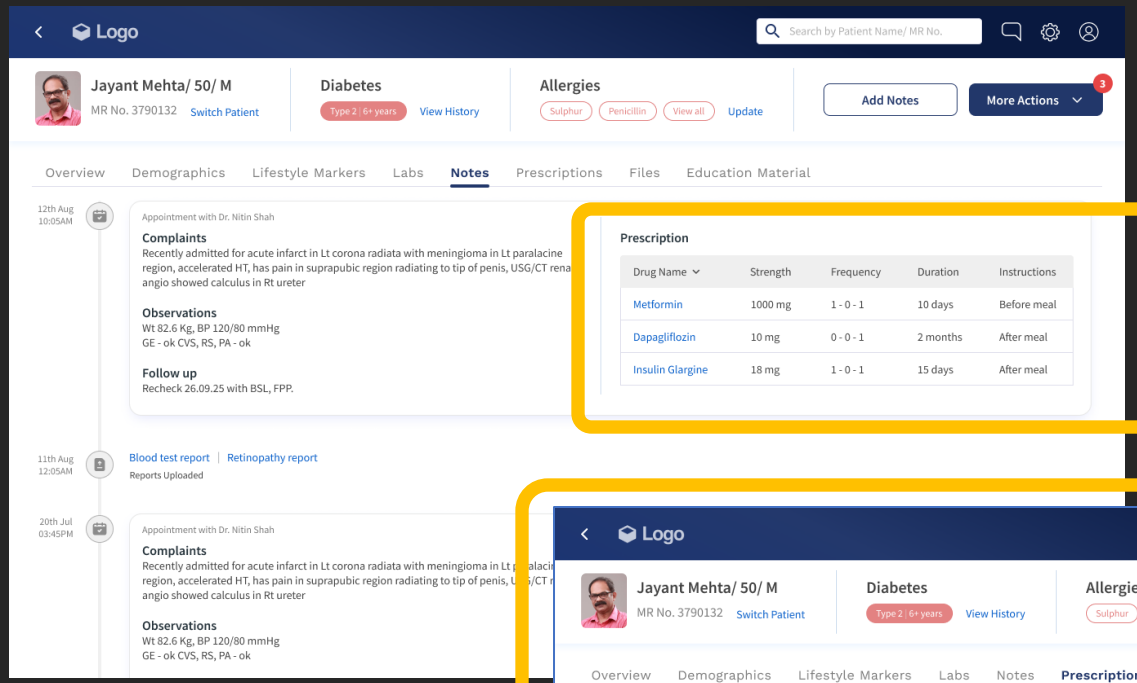
Idiot-proofing

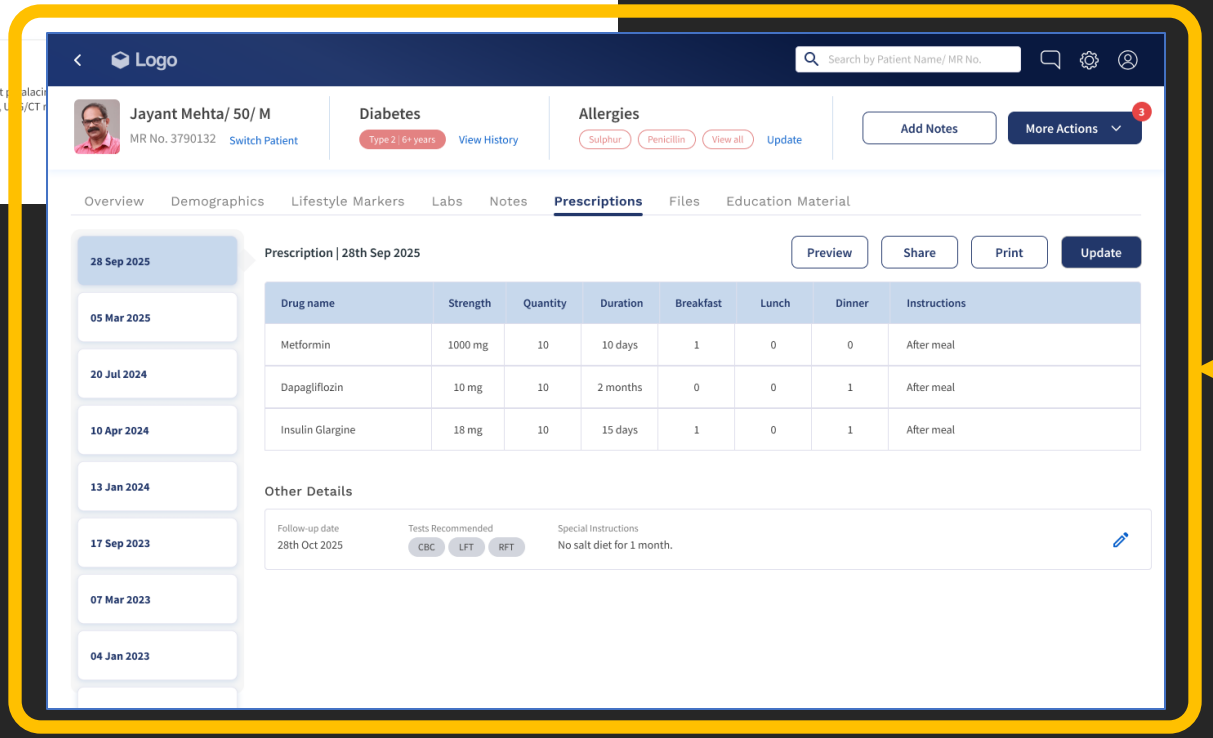


Allow multiple paths for users to complete actions to include users of all skill levels.

Include redundancies

Idiot-proofing





Provide different pathways and user journeys for important information

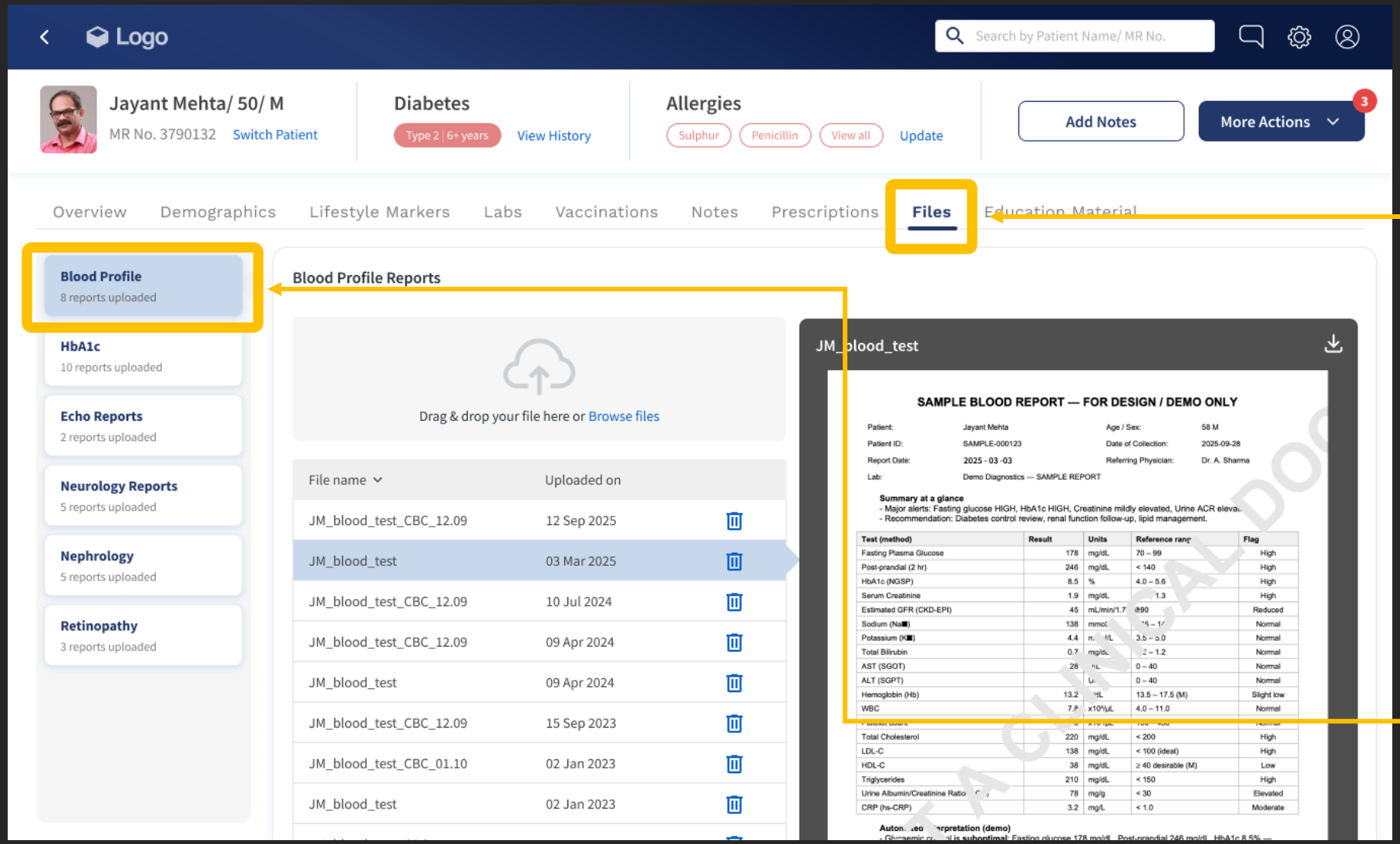
N Navigation Simplicity

Design intuitive navigation structures and user interfaces that simplify the user experience, making it easy for users to find information, complete tasks, and navigate the system effectively.

- **Maintain flat menu structures**
- **Provide clear location cues**
- **Simplify switching between patients & processes**

Maintain flat menu structures

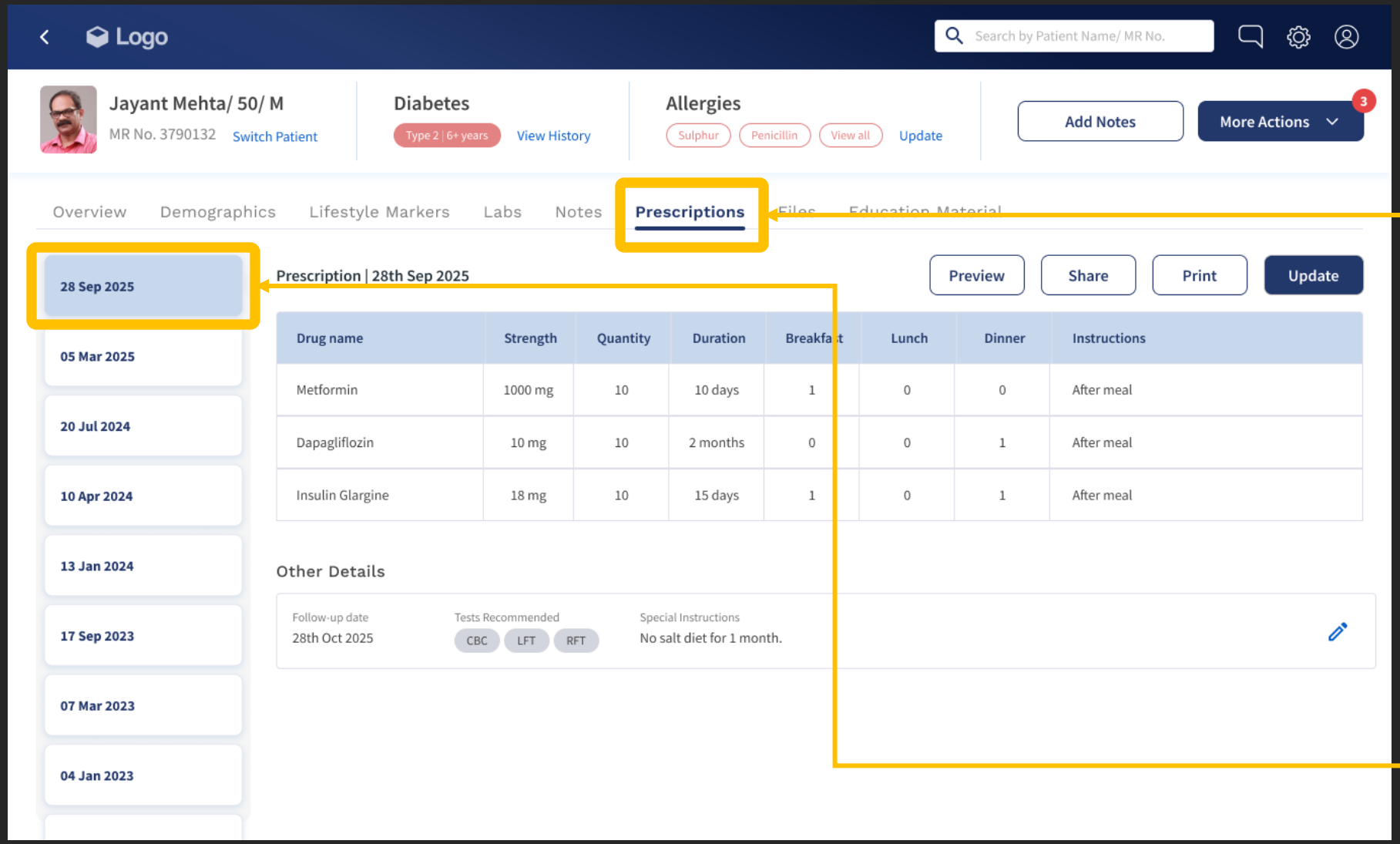
Navigation Simplicity



Reduce complexity by avoiding deep multi-level nested menus, and limiting menu levels to 2-3 max.

Provide clear location cues

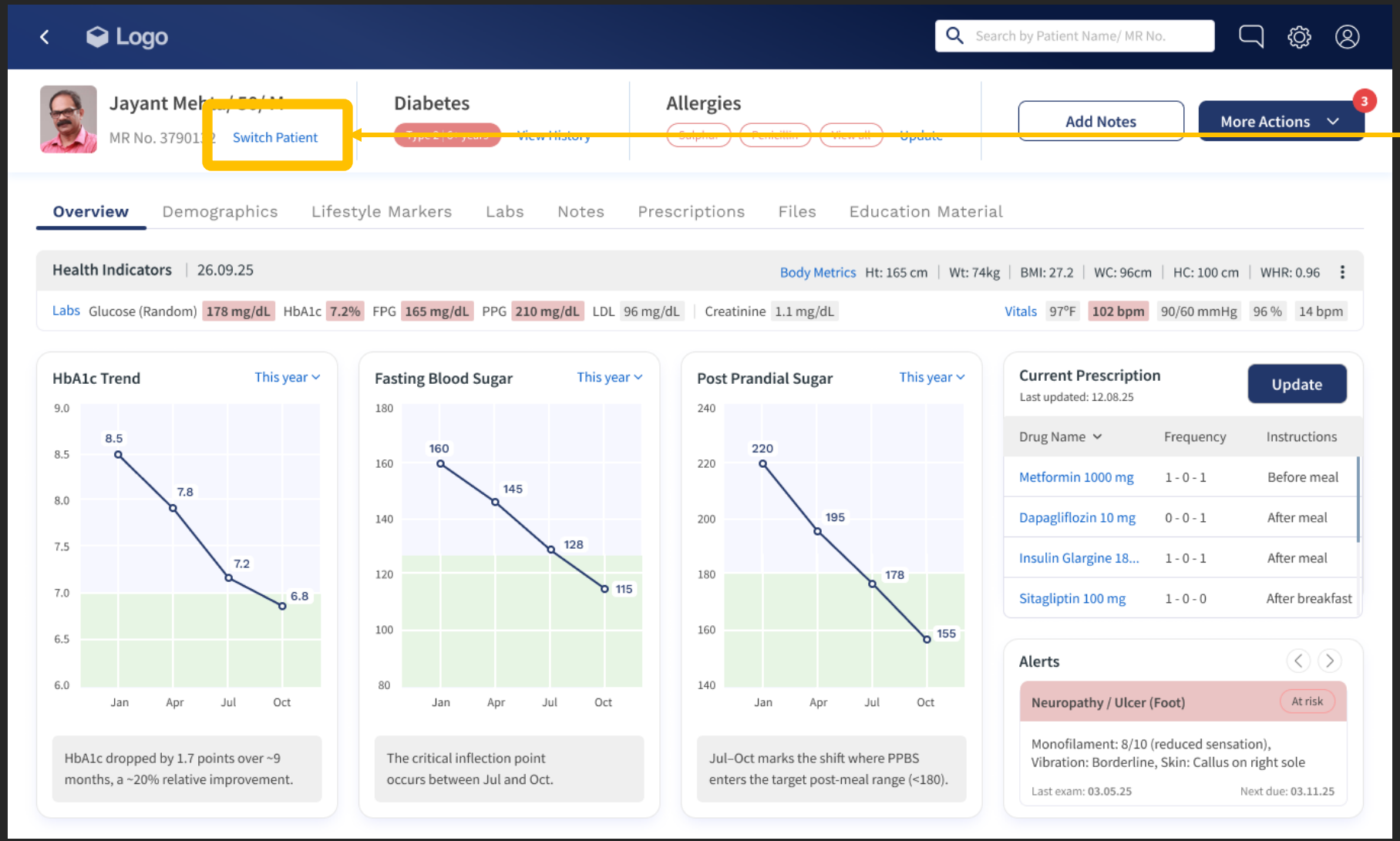
Navigation Simplicity



Always indicate where the user is by providing clear location cues.

Simplify switching between patients

Navigation Simplicity



Simplify navigation for fast patient record switching between appointments

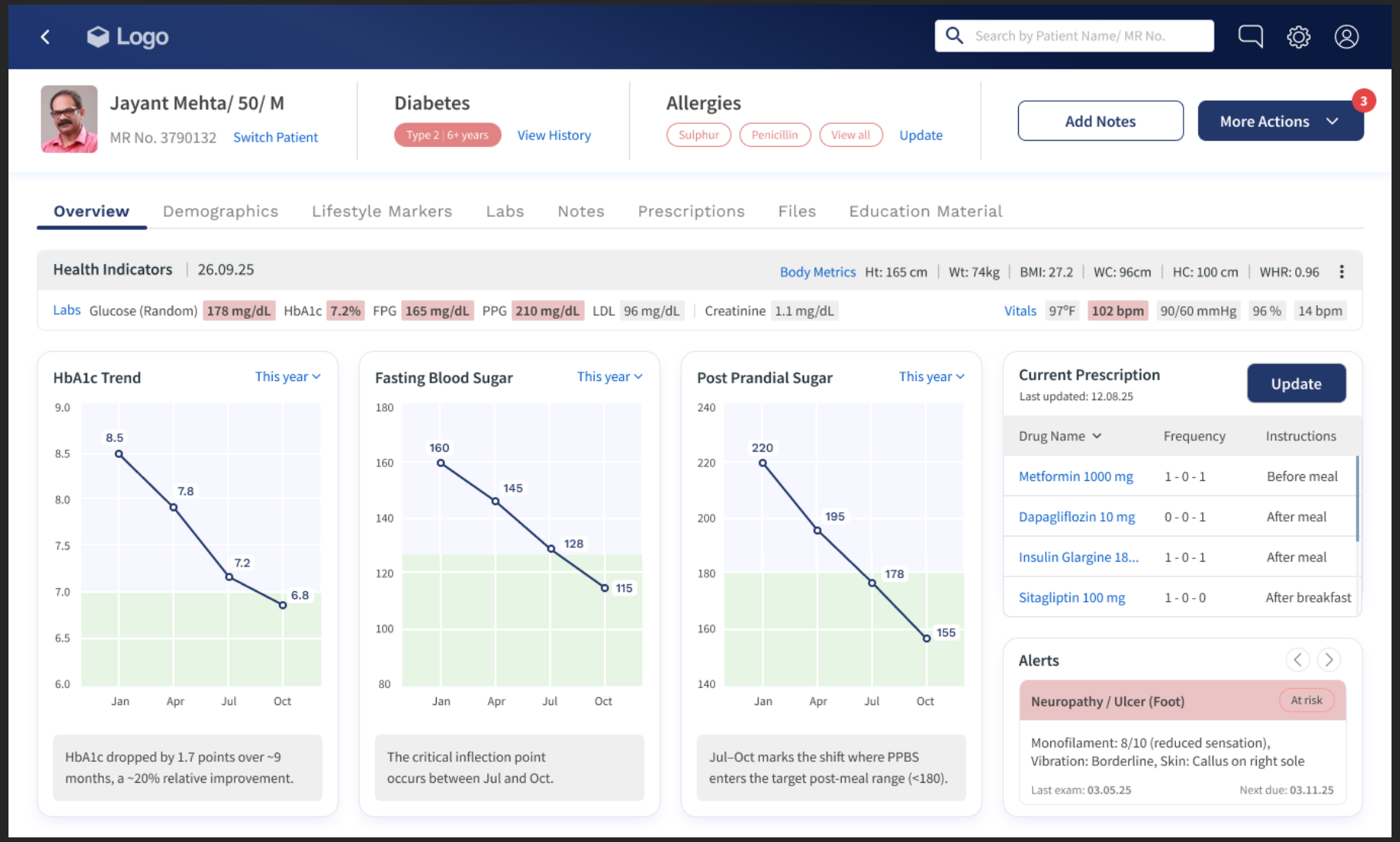
G Growth-oriented

Build the system with scalability and adaptability in mind, allowing it to grow and evolve alongside advancements in treatment, healthcare practices, and technological innovations.

- **Reuse existing templates and components**
- **Design for scalable processes**
- **Design for scalable actions**

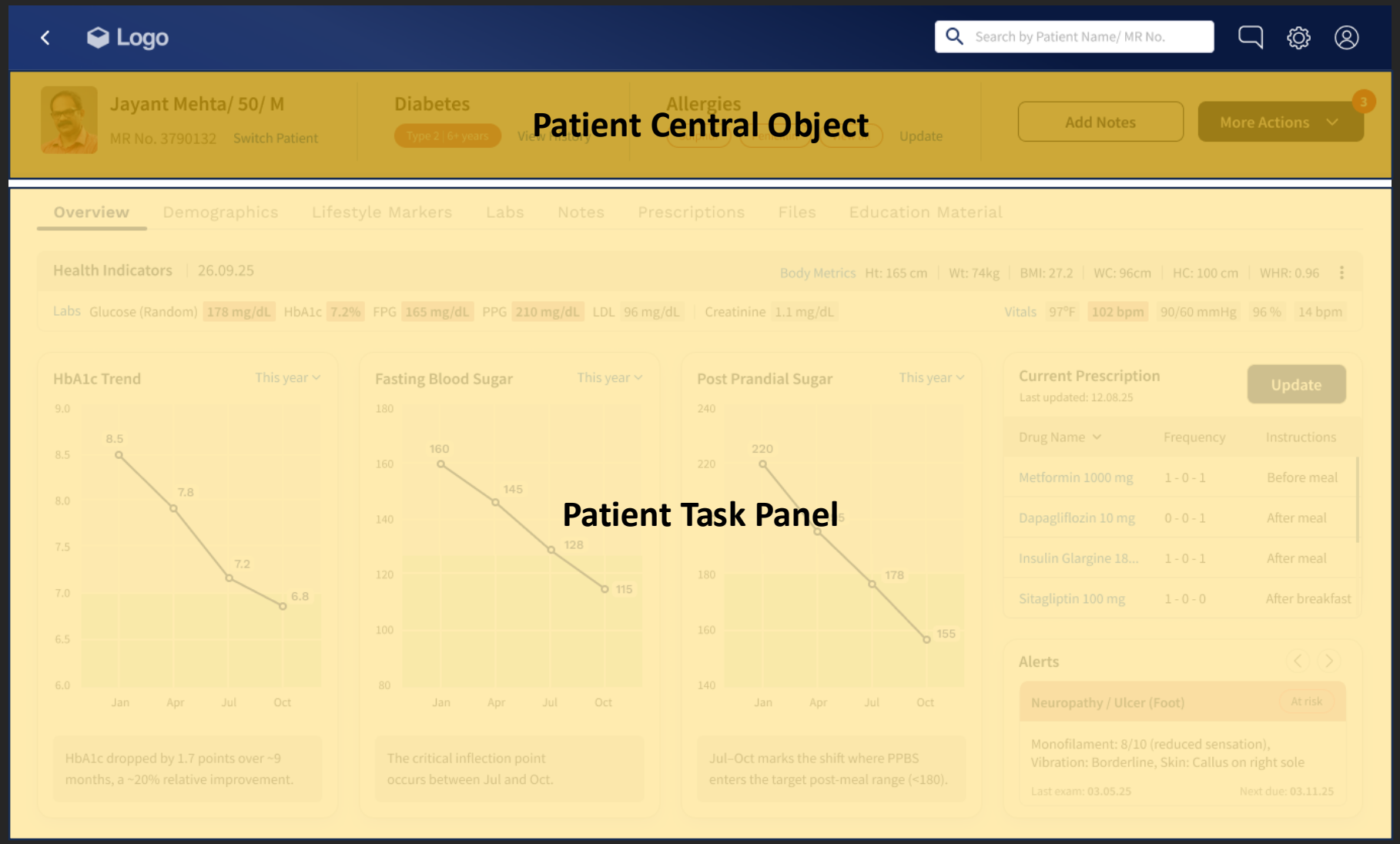
Reuse existing templates & components

Growth-oriented



Reuse existing templates & components

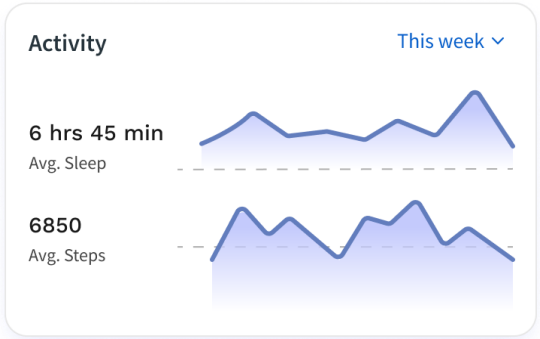
Growth-oriented

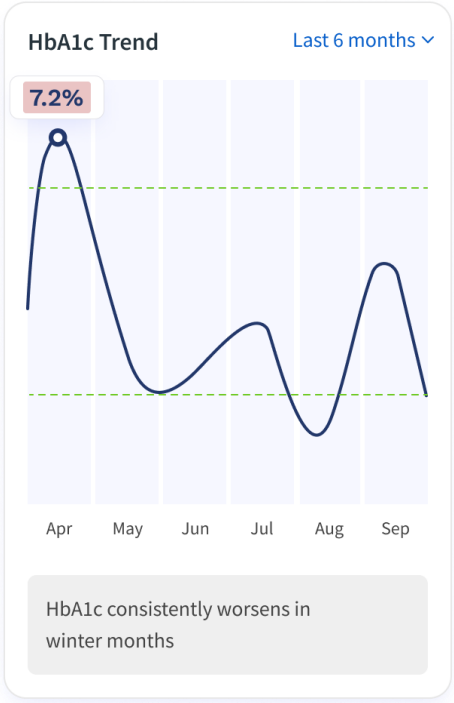


Reuse existing templates & components

Growth-oriented

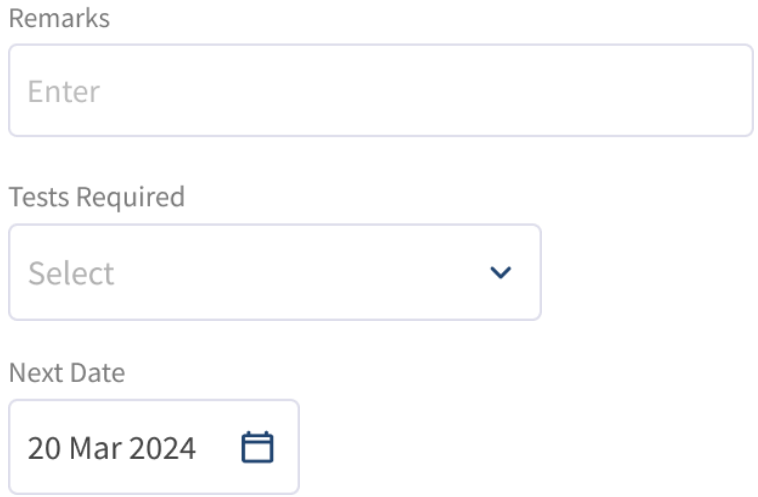
Cards





Buttons

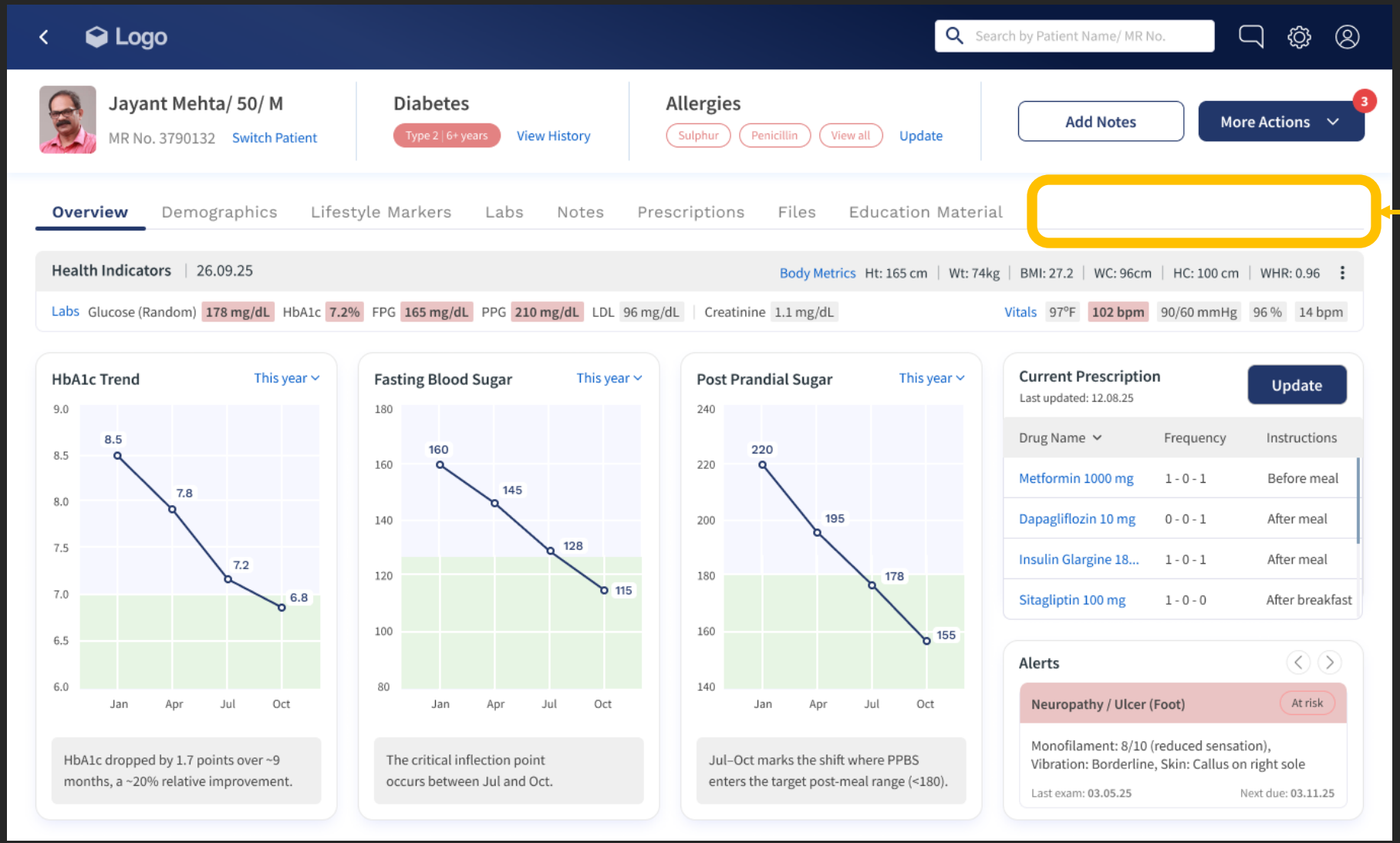
Text fields



Checkboxes & Radio Buttons

Design for scalable processes

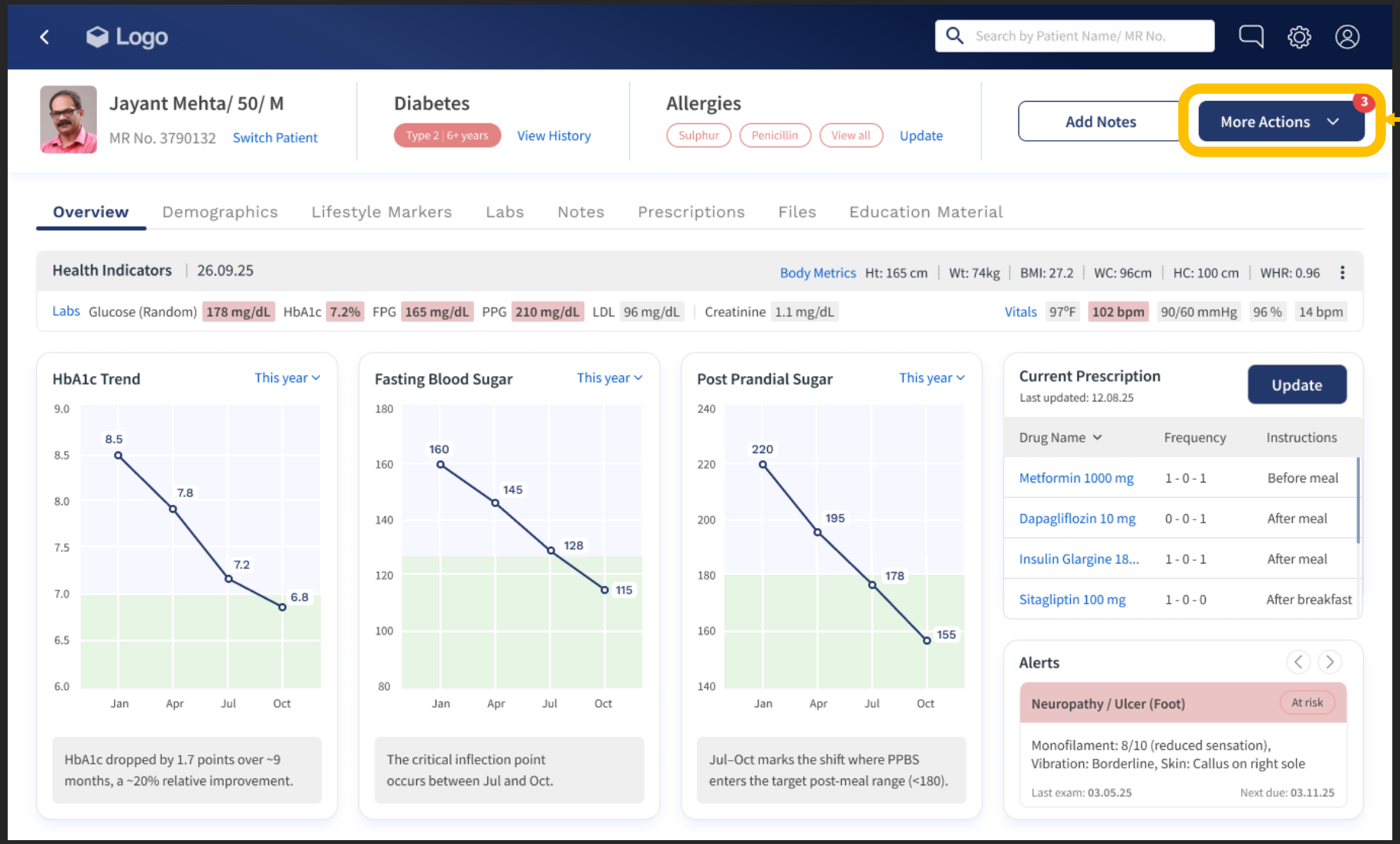
Growth-oriented



Ensure the system architecture can easily accommodate future features.

Design for scalable actions

Growth-oriented



Design for scalability to accommodate future functionalities

Design Framework

H	Human-centered Design
E	Efficiency
A	Accuracy
L	Lifecycle Support
I	Idiot-proofing
N	Navigation Simplicity
G	Growth Oriented

HEALING Self-Assessment Checklist

The HEALING Self-Assessment Checklist is a structured, 20-item questionnaire. It serves as a quantitative benchmark to evaluate how well a Diabetes Management System aligns with the HEALING framework.

Designed for use by

- CMS vendors
- Digital health startups
- Healthtech solution providers

HEALING Scale

H - Human-centered design

1. Does the system identify different user types, understand their objectives & pain points, and provide role-appropriate workflows?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

2. Does the system provide at-a-glance insights into patient history and treatment plan?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

3. Does the system support multilingual communication for patients?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

E - Efficiency

4. Does the system land users on a default view/dashboard that surfaces all critical patient information first?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

5. Does the system persistently display decision-aiding data (e.g., abnormal lab results, high-risk alerts) across workflows?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

6. Does the interface minimize typing through features like auto-fill defaults, single-click inputs, and smart form design?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

A - Accuracy

7 Does the system prevent errors through validation & alerts?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

8 Does the system use clear visual markers to represent key statuses?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

9 Does the system indicate when data is outdated or not synced (e.g., timestamp or warning label)?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

L - Lifecycle Support

10 Can patients manage their treatment and lifestyle in one continuous, guided experience?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

11 Can patients easily sync their wearable device data with the app?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

12 Does the system allow easy access to all historical data (consultations, labs, prescriptions, notes)?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

I - Idiot Proofing

13 Does the interface minimize ambiguous icon use, preferring text & standard icons?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

14 Does the system provide contextual reference information wherever required (tooltips, pop-ups, embedded help)?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

15 Does the system include redundancies for critical actions and information?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

N - Navigation simplicity

16 Does the system maintain flat menu structures (no more than 2–3 levels)?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

17 Does the interface provide clear location cues (highlights, headers, etc.)?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

18 Does the system allow quick switching between patients and processes?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

G - Growth oriented

19 Does the system reuse existing templates and UI components consistently across modules?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

20 Is the system designed for scalable phases, actions and processes?

○ Not implemented ○ Minimally implemented ○ Partially implemented ○ Well implemented ○ Fully implemented

Scoring

Total Questions: 20

Maximum Score: 100 (20 questions × 5 points each) | Minimum Score: 20 (if all responses are 1)

Each question is rated from **1 to 5**:

- **1 = Not Implemented**
- **2 = Basic**
- **3 = Partially Implemented**
- **4 = Well Implemented**
- **5 = Fully Implemented**

Add up the selected ratings for all 20 questions.

HEALING Scale Score

Thank You