

PRD: UriTrack

Mohak Garg

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Vision

Millions of people who rely on routine urine testing, especially older adults, chronic-condition patients, and busy professionals, struggle with a process that is inconvenient, uncomfortable, and easy to delay. These barriers lead to missed early warning signs, preventable complications, and added strain on individuals and the healthcare system.

UriTrack's vision is to make urinary health monitoring simple, accessible, and consistently supported. By enabling people to stay aware of their health without extra effort or stress, we aim to shift urinary care from a reactive, infrequent task to a natural, proactive part of everyday well-being

Motivation

There are millions of people managing chronic conditions like diabetes, kidney disease, or recurrent UTIs who face the same challenge: inconvenient, infrequent, and manual urinary testing. Current methods, including lab visits, test strips, and collection kits, are messy, time-consuming, and prone to delays, causing many to skip tests or miss early warning signs.

Personas

Ambrish Kumar

Chronic Kidney disease.

Profile Overview

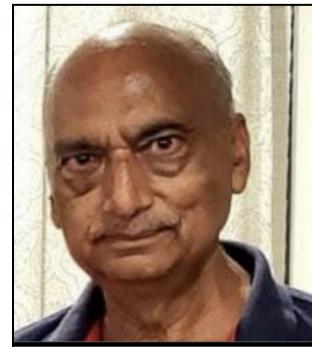
Age: 71

Location: Charlotte, North Carolina, USA

Living Situation: Lives with his daughter

Health Condition: Chronic Kidney Disease (CKD)

Tech Habits: Moderate, uses smartphone and WhatsApp; prefers simple interfaces



Behavioral Information

- Often postpones biweekly urine tests due to fatigue and discomfort.
- Finds lab visits stressful and physically tiring.
- Reluctant to handle urine samples because it feels undignified.
- Depends on his daughter for transportation and reminders.
- Trusts doctor-endorsed tools but avoids anything that looks complex.

Goals, Needs, and worries

Quote: ***"If testing didn't feel like such a burden, I'd never delay it."***

- Needs a hygienic, low-effort way to complete regular tests.
- Wants early alerts and simple summaries he can understand.
- Worries about declining health from skipped tests.
- Wants to reduce dependency on family and maintain dignity.

Implications for Our Product

- Interface must be simple, visual, and senior-friendly.
- Device must be contactless and hygienic and require no manual sample handling.
- Auto-sharing with clinicians is essential to reduce his burden.
- Alerts must be clear, calm, and easy to interpret.

Summary of Persona

An elderly CKD patient who delays testing due to discomfort, effort, and dependence. He needs a dignified, hands-free monitoring system that keeps him informed without requiring extra steps.

Key Interview Insights

- **Testing Fatigue:** Biweekly lab visits feel physically draining, leading him to delay or cancel appointments.
- **Hygiene Concerns:** Handling samples feels undignified and is a major emotional barrier.
- **Dependence Stress:** Feels guilty relying on his daughter for transport, reducing willingness to test.
- **Clarity Over Complexity:** Wants simple visuals and doctor-approved information; avoids anything technical.
- **Adoption Potential:** Very receptive to a hygienic, automatic system that eliminates travel and manual handling.

Manju Agarwal

Recurrent UTI

Profile Overview

Age: 62

Location: New Jersey, USA

Living Situation: Lives with her husband

Health Condition: Recurrent UTIs, Hypertension, Medication Side Effects

Tech Habits: Basic smartphone user; prefers simple, low-effort tools



Behavioral Information

- Frequently forgets to drink water, triggering recurring UTIs.
- Delays medical checkups until pain increases.
- Struggles to track multiple medications accurately.
- Relies on her husband for reminders but dislikes feeling dependent.
- Avoids tools that require complex steps or frequent manual input.

Goals, Needs, Worries

Quote: ***"I only remember to drink water when it already hurts."***

- Needs gentle hydration and checkup reminders.
- Wants an easy system to track symptoms and medications in one place.
- Worries about recurring infections affecting her daily comfort.
- Wants to maintain independence without relying on her husband.

Implications for Our Product

- Must include hydration tracking and non-intrusive reminders.
- Should consolidate symptom logging, medication reminders, and test results.
- Optional caregiver alerts improve safety without reducing independence.
- UI must be clean, calming, and extremely intuitive.

Summary of Persona

An elderly user who struggles with hydration, medication consistency, and early detection of UTIs. She needs a simple, supportive system that helps her prevent infections and maintain independence.

Key Interview Insights

- **Low Hydration Awareness:** Only reacts once symptoms worsen.
- **Medication Overwhelm:** Difficulty managing multiple prescriptions.
- **Desire for Independence:** Depends on partner but dislikes feeling reliant.
- **Trust & Comfort:** Needs simple, reassuring experiences.
- **Adoption Potential:** High if reminders and alerts feel effortless and supportive

Nalin Malik

Busy Professional with UTI & Kidney Stone History.



Profile Overview

Age: 32

Location: Austin, Texas, USA

Living Situation: Lives alone, works full-time in tech

Health Condition: Frequent UTIs, Kidney Stone History, Chronic

Dehydration

Tech Habits: Highly tech-savvy; regularly uses wearables and productivity apps

Behavioral Information

- Works long hours, often skipping hydration and meals.
- Uses painkillers to push through work, masking kidney stress.
- Frequently delays medical checkups due to schedule pressure.
- Comfortable using automated systems but avoids anything manual.
- Tracks fitness metrics but lacks internal biomarker insight

Goals, Needs, Worries

Quote: “*If something reminded me quietly before things got bad, I'd actually use it.*”

- Needs passive hydration and risk alerts that don't interrupt workflow.
- Wants health data synced across devices for quick review.
- Worries about long-term kidney damage from neglect.
- Wants a system that runs in the background with no setup effort.

Implications for Our Product

- Must provide passive monitoring and subtle, well-timed alerts.
- Wearable and cloud integrations will increase adoption.
- Should enable remote access for frequent travellers.
- Insights should be simple, direct, and actionable.

Summary of Persona

A busy, tech-forward professional who neglects preventive care due to workload. Needs automated monitoring, seamless alerts, and integrated wellness data without adding tasks to his day.

Key Interview Insights

- **Work Dominance:** Productivity overrides health tasks.
- **Painkiller Dependence:** Masks early symptoms, delaying care.
- **Automation Preference:** Wants tools that require zero effort.
- **Insight-Driven:** Values meaningful data over raw numbers.
- **Adoption Potential:** Strong if the system is passive and integrated.

Dr Vishesh Kumar

Family Medicine Physician

Profile Overview

Age: 45

Location: Chicago, Illinois, USA

Living Situation: Lives with family, busy clinical schedule



Health Condition: None mentioned; focus on preventive care

Tech Habits: Regular EHR user; comfortable with the clinical platform.

Behavioral Information

- Reviews patient labs quickly between appointments.
- He frequently needs to follow up on missing or delayed urine tests.
- Struggles with fragmented reports from different labs.
- Adopts tools only if they integrate seamlessly with EHR workflows.
- Prioritises early detection to prevent avoidable hospitalisations.

Goals, Needs, Worries

Quote: *“Real-time urinary data could prevent half the hospitalisations I see.”*

- Needs continuous, validated urinary biomarker visibility.
- Wants automated alerts for high-risk patients.
- Worries about patient deterioration between visits.
- Needs tools that reduce workload, not add to it.

Implications for Our Product

- Must support FHIR and EHR integration.
- Provide clear trend data and risk scores.
- Alerts must be medically meaningful and accurate.
- High data reliability is essential to clinician adoption.

Summary of Persona

A clinician focused on prevention who struggles with incomplete and delayed urine data. Needs real-time insights integrated into his workflow to improve early intervention and patient outcomes.

Key Interview Insights

- **Visibility Gap:** Limited insight between patient visits.
- **Admin Burden:** Too much time spent chasing labs.
- **Integration Priority:** Adoption depends on seamless EHR sync.
- **Risk Awareness:** Wants automated risk alerts for early action.
- **Adoption Potential:** High if product reduces workload and improves outcome
- **Adoption Potential:** Very high if the product is sustainable and credible.

Barnie Phillips

Preventive Wellness Enthusiast

Profile Overview

Age: 26

Location: New York, USA



Living Situation: Rents apartment, urban lifestyle

Health Condition: No chronic illness; wellness-focused

Tech Habits: Uses Fitbit, Apple Health, and nutrition apps daily

Behavioral Information

- Tracks hydration, fitness, and diet as part of daily routine.
- Researches health tools thoroughly before adopting them.
- Prefers minimal, aesthetically clean interfaces.
- Avoids products with wasteful or disposable components.
- Values verified, science-backed health insights

Goals, Needs, Worries

Quote: *“My smartwatch tells me my steps, but not what’s really happening inside my body.”*

- Needs deeper internal biomarker insights (hydration, nutrition trends).
- Wants eco-friendly, reusable monitoring solutions.
- Worries about relying on surface-level wellness data.
- Prefers tools that integrate seamlessly with existing apps.

Implications for Our Product

- Highlight sustainability and reusability of UriTrack.
- Provide validated biomarker insights (not generic wellness guesses).
- Integrate with Apple Health, Fitbit, and other health apps.
- Must maintain a minimalist, calm, non-intrusive UI.

Summary of Persona

A health-conscious designer seeking deeper, science-backed wellness insights that align with her sustainability values and preference for integrated digital ecosystems.

Key Interview Insights

- **Wearable Limitations:** Current tools lack internal biomarkers.
- **Eco-Mindset:** Dislikes disposable test strips and wasteful products.
- **Validation-Orientated:** Needs evidence and credibility behind insights.
- **Minimalist Standards:** Rejects cluttered or intrusive apps.
- **Adoption Potential:** Very high if the product is sustainable and credible.

Persona Summary Grid

PERSONA	CORE PAIN POINT	DESIRED GAIN	KEY PRODUCT IMPLICATION
 Ambrish CKD Patient	Exhausting lab visits, unhygienic sample handling	Comfort, dignity, effortless testing	Contactless testing, senior-friendly UI, auto doctor-sharing
 Manju Recurrent UTI	Forgetting hydration and medications	Early alerts, independence	Gentle reminders, simple tracking, caregiver alerts
 Nalin Busy Professional	Skips hydration and checkups due to workload	Passive monitoring	Automated alerts, wearable integration
 Barnie Wellness Enthusiast	Wearables lack internal insights; waste concerns	Science-backed insights + sustainability	Validated biomarker trends, reusable design
 Dr. Kumar Physician	Missing or late urine data, admin burden	Real-time visibility + workflow efficiency	EHR/FHIR integration, clinical risk alerts

The persona grid above summarizes the core user segments influencing UriTrack's feature priorities and product direction

Unmet Needs

Across patients, caregivers, and clinicians, a consistent pattern emerged: people want urinary health monitoring to be **easy, hygienic, continuous, and intelligent**. These unmet needs highlight clear gaps in today's urine-testing landscape and reveal a high-value market opportunity for UriTrack.

1. The Convenience Gap: Need for Frictionless, Passive Testing

Across all user segments, elderly CKD patients, busy professionals, and wellness users; testing inconvenience is the dominant barrier to adherence.

Qualitative interviews show that users perceive **lab visits and manual kits** as disruptive, messy, and time-consuming.

- Older adults like **Ambrish** and **Manju** struggle with scheduling, transportation, and physical fatigue.
- Professionals like **Nalin** skip testing entirely due to workload pressure.
- Wellness users like **Barnie** consider current tools intrusive and incompatible with daily routines.

Survey data echoes this sentiment: **68% of users prefer preventive diagnostics only when the process is passive and embedded in daily environments.**

Why Current Solutions Fail

Manual urine kits require **active participation**, physical handling, and scheduling—all of which reduce compliance and delay early detection.

Opportunity

UriTrack delivers a **fully passive, seamless testing experience**, transforming a clinical task into a frictionless daily habit. This enables higher adherence and unlocks a market underserved by inconvenient legacy solutions.

2. Hygiene & Trust Barrier: Need for Clean, Hands-Free, Reliable Testing

Manual urine collection consistently triggers discomfort, embarrassment, and mistrust for patients, caregivers, and even clinicians.

- **Ambrish** and **Manju** cite hygiene and exposure concerns as major reasons for delaying tests.
- **Dr. Vishesh** notes that contamination and mishandling reduce clinical accuracy.
- **Barnie** rejects disposable test kits due to environmental waste and lack of sustainability.

These concerns are not just emotional—they directly impact compliance, accuracy, and long-term health outcomes.

Why Current Solutions Fail

Existing at-home kits and strips lack **medical-grade validation**, require direct contact with bodily fluids, create chemical waste, and do not offer privacy or trust in the results.

Opportunity

UriTrack's **closed, automated, contactless ecosystem** ensures hygienic, clinically validated testing with no handling, no waste, and built-in privacy protections—solving both emotional and practical barriers at scale.

3. Lack of Continuous, Actionable Health Data

Today's urine testing provides **episodic snapshots**, leaving large blind spots between visits.

- Patients lack awareness of emerging risks.
- Caregivers struggle to monitor trends consistently.
- Physicians lack the continuous visibility needed for early intervention.
- Younger users like **Nalin** and **Barnie** observe wearables limited to surface-level metrics, with no internal biomarker insights.

Industry reports confirm that consumers increasingly expect **AI-driven insights, real-time alerts, and longitudinal tracking**, not one-off lab results.

Why Current Solutions Fail

Current systems are fragmented:

- Wearables monitor external data
- Lab tests are infrequent.
- No solution offers continuous, proactive risk prediction

Opportunity

UriTrack's real-time biomarker analysis and AI-powered insights transform preventive care from **reactive to predictive**, offering continuous visibility and earlier intervention. This positions UriTrack at the intersection of **preventive health, IoT, and clinical decision support**—a rapidly growing market valued at over **\$6.5B in digital urinary diagnostics alone**.

Existing Solutions

The current urinary-health ecosystem is fragmented across clinical labs, disposable at-home kits, early smart-toilet prototypes, and general wellness wearables. While each category addresses parts of the problem, none fully meets the combined user needs of convenience, hygiene, trust, and continuous insight. Behavioral patterns from interviews clearly explain why adoption remains low and adherence is inconsistent.

1. Clinical Lab Tests: Accurate but Burdensome

Description:

Doctor-ordered lab tests are the gold standard for medical accuracy and diagnosis

Why Users Stick With It:

- High trust due to medical oversight
- Required for chronic-care patients (CKD, diabetes, UTI recurrence)
- Insurance coverage reduces cost barriers

Why Users Abandon It:

- Requires travel, waiting rooms, and appointments
- Physically tiring for elderly users like **Ambrish** and **Manju**
- Long turnaround times : often delayed action
- Handling samples feels uncomfortable and undignified

Behavioural Insight:

Patients do not avoid labs because they distrust them; they avoid them because the process is exhausting, cumbersome, and emotionally uncomfortable.

Market Gap:

High reliability but **low convenience**, making it unsuitable for preventive or frequent monitoring.

 HUMAN CARE LAB CLINICAL LABORATORY <i>It's All About Your Care</i>		Patient ID: 0061193-1001  Lab #: 24-042020-51194 	
M.R. No:			
Patient Name:	HINA	Registration Date:	24-Apr-2020 4:51 pm
Father/Husband Name:		Registration Location:	HUMAN CARE LAB
N.I.C:		Conducted at:	HUMAN CARE LAB
Age / Sex:	17 Year(s)/Female	Reporting Location:	HUMAN CARE LAB
Mobile No:		Sampling Location:	Taken by Lab Staff
Consultant:	DR.ALLAH BUKHSH SB	Reference:	SUB-AKRAM CLINIC
URINE EXAMINATION REPORT			
		RESULT  24-042020-51194 24-Apr-2020 4:51 pm	
TEST	NORMAL RANGE	UNIT	
Physical Examination Colour Yellow Specific Gravity 1.020 Turbidity Nil Deposit Nil			
Chemical Examination pH 6.0 Sugar Nil Ketones Nil Proteins Nil Blood Nil Urobilinogen Normal Bilirubin Nil			
Microscopic Examination/HPP Pus Cells 4-6 Epithelial Cells 1.2 Red Blood Cells Nil Casts/HPP Nil Crystals Nil Crystals Nil Amorphous Nil Organisms Nil			
HEMATOLOGY REPORT			
		RESULT  24-042020-51194 24-Apr-2020 4:51 pm	
TEST	NORMAL RANGE	UNIT	
Hb (Hemoglobin)	12.00 - 15.50	g/dl	10.6
Electronically verified report. No signature(s) required			
Issued By: DR. AFZAAL AHMED MBBS, RMP		DR. RIAZ UL HAQ B.Sc, MBBS, DCP M. Phil (Hematology)	
TAHIR ZAHOR Lab. Technologist		MR. JUNAID JAFAR MSc M.L.T BSc M.L.T	
Prime Care Hospital Main Boulevard, Defence Lahore, Pakistan Tel: 042-36478616		Tree Tops Medical Center Plot No. 3, Block F1, Phasae1 Wapda Town Lahore Tel: 042-35181060, 35181090	
Liaqat Hospital 264-E-PIA Society Near Wapda Town, Lahore. Tel: 042-35181060		Areeb Hospital Kahna Nau Lahore TEL:0423-5272190 Cell #: 0331-0487818	

Figure 1: Traditional lab results are accurate but slow, inaccessible, and not designed for continuous monitoring.

2. At-Home Test Kits / Disposable Strips: Convenient but Unhygienic and Inconsistent

Description:

Colour-changing strips for protein, ketones, nitrites, and glucose, sold OTC.

Why Users Stick With It:

- Fast and inexpensive
- Easy to purchase at pharmacies
- Familiar to chronic-diabetes and UTI-prone users

Why Users Abandon It:

- Requires direct contact with urine → hygiene concerns
- Hard to interpret: color charts are inconsistent
- Low accuracy due to lighting, timing, user error
- Creates plastic + chemical waste
- Wellness users like **Barnie** reject disposables due to sustainability concerns

Behavioural Insight:

Users abandon kits not because testing is “hard” but because it feels **messy, imprecise, and embarrassing.**

Market Gap:

Low hygiene + low trust + zero continuity.

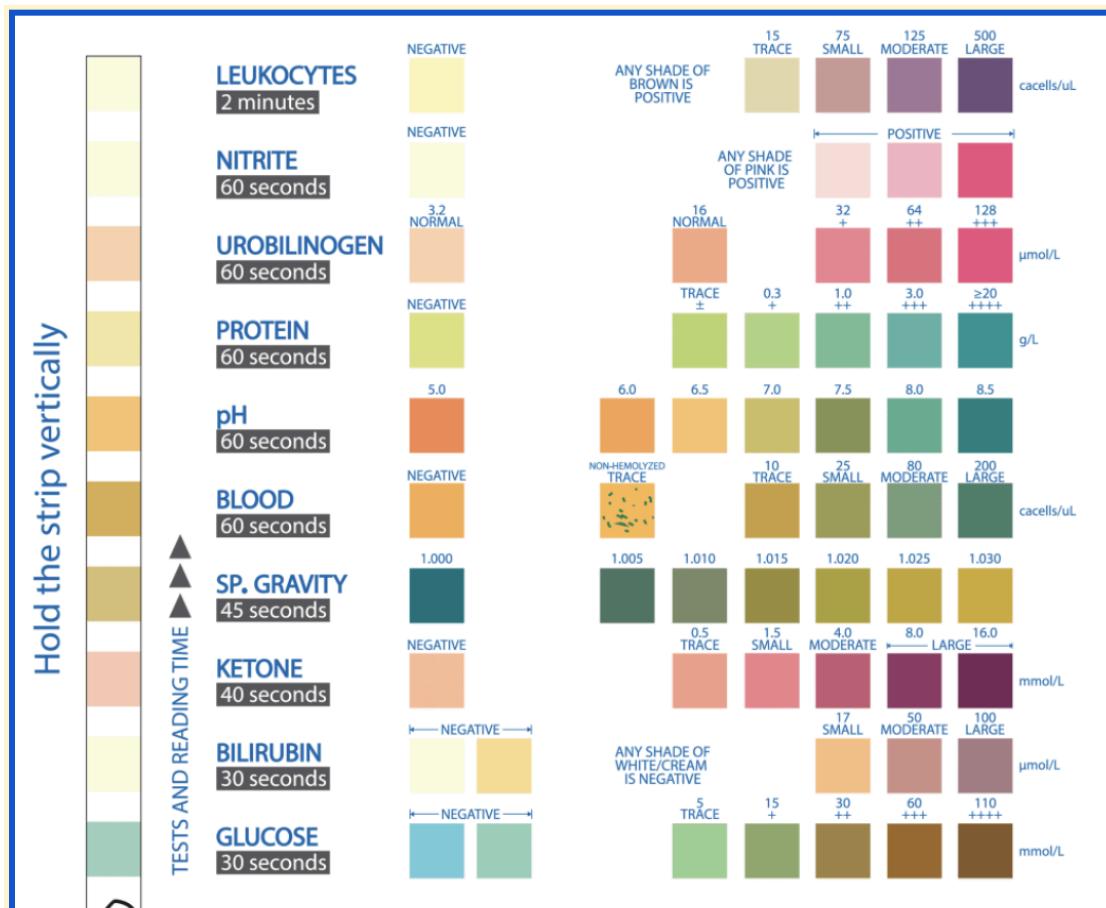


Figure 2: “Home test strips offer quick results but are messy, subjective, and environmentally wasteful.”

3. Smart Toilet Prototypes: Promising but Not Ready for Daily Reality

Description:

Emerging devices like Withings U-Scan and prototype smart toilets by Panasonic.

Why Users Show Interest:

- Passive testing requires no manual effort
- Tech-forward appeal for demographics like Nalin and Barnie
- Potential for continuous data collection

Why Users Abandon/Hesitate:

- Very high cost (\$500+ plus cartridge subscriptions)
- Limited biomarker range → not clinically useful for CKD/UTI patients
- Requires installation and maintenance
- Privacy concerns in shared restrooms
- Still early-stage, not widely validated

Behavioural Insight:

People *want* passive testing, but prototypes fail because they are **too expensive, too limited, or not clinically reliable**.

Market Gap:

Prototype stage; lacks validation, accessibility, and mainstream readiness.



Figure 3: SWithings U-Scan Device

4. Wearables (Fitbit, Apple Watch, Oura Ring): Great for Lifestyle, Useless for Urinary Health

Description:

Devices that track steps, heart rate, sleep, HRV, and hydration approximations.

Why Users Stick With It:

- Seamlessly integrated into daily routines
- Excellent app experience + habit formation
- Real-time feedback

Why Users Abandon It (for urinary health):

- No internal biomarkers (protein, ketones, infection markers)
- No UTI or CKD risk detection
- No clinical accuracy
- Data limited to “external signals”

Behavioural Insight:

Users mistakenly think wearables cover “overall wellness” but quickly realise they provide **no visibility into internal organ health**, especially kidneys and urinary biomarkers.

Market Gap:

High convenience but **zero relevance** to urinary health.



Figure 4: fitbit dashboard

Why Existing Solutions Fail

Behavioural Trend Across All Categories:

Users are either overwhelmed (lab tests), disgusted (home kits), priced out (smart toilets), or misled (wearables).

The combined unmet need is clear: a solution that is passive, hygienic, accurate, and continuous, none of today's solutions deliver all four.

Market Gap Created:

A multi-billion dollar opportunity in preventive urinary diagnostics that sits between:

- Clinical accuracy
- Passive automation
- Hygienic experience
- Continuous health insights

This is the precise gap UriTrack is designed to fill

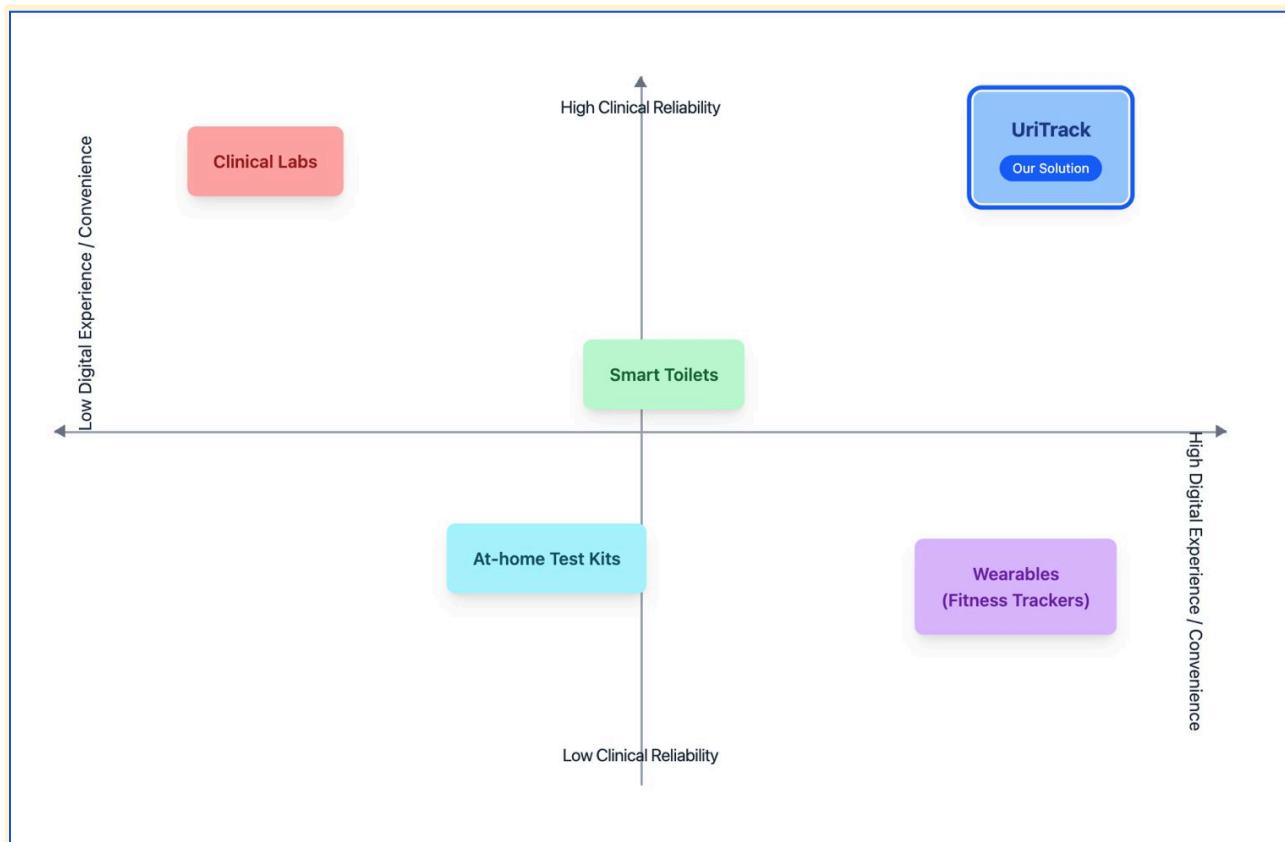


Figure 5: Existing Solutions Positioning Map

Differentiation

UriTrack stands apart by addressing the core behavioral, emotional, and clinical gaps left by current urine-testing solutions. While existing options offer either accuracy without convenience (labs) or convenience without reliability (test strips, wearables), UriTrack uniquely integrates **passive automation, hygienic workflow, clinical trust, and continuous biomarker insights**, the four pillars users consistently expressed as unmet.

Differentiation Summary Table

Category	UriTrack Advantage (User-Centered Impact)
Automation	Passive, hands-free urinary testing during normal restroom use; zero manual steps, improving adherence dramatically.
Multi-Biomarker Detection	Detects protein, ketones, hydration, and infection markers in one automated scan, giving users and clinicians early warnings.
Integration	App-based trend visualization, clinician auto-sharing, and EHR compatibility reduce administrative burden and confusion.
Sustainability	Eliminates disposable strips and chemical waste with a reusable testing ecosystem.
User Experience	A clean, dignified, hygienic workflow that removes emotional discomfort for elderly users.
Time-Saving	Instant, automatic results without scheduling, travel, or sample handling.

Why Now?

Preventive Healthcare Market Growth

- The global preventive healthcare technologies & services market was valued at **USD 243 billion in 2022** and is projected to reach **USD 585.6 billion by 2030** (CAGR ~11.8 %) [Grand View Research](#)
- Another source projects it will hit **USD 773.1 billion by 2034**, growing at ~10.6% CAGR from 2024 to 2034 [TMR Insights](#)
- A more aggressive projection cites USD 300.58 billion in 2024 to USD 920.31 billion by 2034 (CAGR ~11.84%) [Precedence Research](#)
- The preventive healthcare market is currently estimated at USD 240–300 billion and is forecast to surpass **USD 580–920 billion** by 2030–2034.”

Diagnostic/Testing Market Trends

- The global diagnostic testing market is estimated at **USD 210.58 billion in 2023**, growing to **USD 284.38 billion by 2033** (CAGR ~3.05%) [BioSpace](#)

- The global medical devices market is forecast to reach **USD 1,146.95 billion by 2034**, from lower base in 2025 (CAGR ~6%) [Precedence Research](#)

Disposable Sensors/Test Strip Waste & Biosensor Advances

- The review paper “Disposable Paper-Based Biosensors for the Point-of-Care” discusses the environmental burden and limitations of disposable biosensor strips [PMC](#)
- Another source discussing “Disposable Sensors in Diagnostics, Food, and ...” covers how single-use sensors create waste and their limitations in sustainability [Wiley Online Library](#)
- A recent review, “Recent Advances in Biosensor Technologies for Point-of-Care”, highlights ongoing progress toward miniaturized, integrated, more sustainable biosensors capable of detecting urinary biomarkers (MDPI).

Sensor Miniaturization / Feasibility of Embedded Testing

- The broader biosensor review “Biosensors for Public Health and Environmental Monitoring” covers advances in electrochemical, optical, nano biosensors and trends toward integrated miniaturized sensors [PMC+1](#)
- The same review, “Recent Advances in Biosensor Technologies for Point-of-Care”, specifically addresses progress in urine-based biomarker detection and challenges for translation into home devices [MDPI](#)

This secondary research reinforces our hypothesis that consumers and healthcare providers are ready for contactless, embedded health diagnostics, especially when the solution minimises waste and integrates with digital records.

Market Size

Based on global health data (Statista, Grand View Research):

- **TAM (Total Addressable Market):** \$50B+, global smart healthcare devices and urine analysis market
Sources: Grand View Research, 2024 – “Urinalysis Market Size”
(Reference: <https://www.grandviewresearch.com/industry-analysis/urine-analysis-market>)
- **SAM (Serviceable Available Market):** \$6.5B , digital urinary diagnostics and smart toilets sector.
Source: MarketsandMarkets, 2025, “Smart Toilet Market Forecast”: (References: <https://www.grandviewresearch.com/industry-analysis/urine-analysis-market>)
- **SOM (Serviceable Obtainable Market):** \$200M, early adopters among diabetic, kidney-risk, and wellness users in North America

UriTrack's initial rollout targets **urban diabetic populations (U.S., Canada)** and **wellness tech consumers**, capturing ~0.4% of SAM in 2 years.

Unit Economics

Unit Definition:

One "active user" (either a consumer or an institution) who is onboarded to the UriTrack service and whose device or subscription remains engaged throughout their lifetime.

1. Key Assumptions:

Revenue

- **Annual revenue per user:** US\$300
(subscription + device amortization + data services + analytics)
- **Average tests per user/year:** 12
- **Customer lifetime:** 3 years
- **Lifetime Revenue (LTV): US\$900**

Costs

- **Device amortization:** ~US\$100/year → US\$300 lifetime
- **Data, analytics, customer support:** ~\$50/year → **US\$150 lifetime**
- **Total Cost to Serve: US\$450**

CAC (Customer Acquisition Cost): US\$200 (Marketing, onboarding, device logistics)

2. Core Unit Economics

- **LTV:** US\$900
- **Lifetime Cost to Serve:** US\$450
- **Gross Profit (before CAC): US\$450**
- **Net Profit (after CAC): US\$250**
- **LTV/CAC = 4.5x** (excellent; SaaS benchmark = 3x)
- **Payback Period:** < 6 months
- **Contribution Margin:** ~27.8%

These economics highlight a viable, scalable subscription model with strong margin potential.

Lifetime Unit Economics

Scenario	Tests /yr	Lifetime (yrs)	ARPU/yr	LTV	Cost/yr	Lifetime Cost	CAC	Gross Profit	Net Profit
Conservative	8	2	US\$200	US\$400	US\$150	US\$300	US\$250	US\$100	-US\$150
Base Case	12	3	US\$300	US\$900	US\$150	US\$450	US\$200	US\$450	US\$250
Upside	16	4	US\$400	US\$1,600	US\$120	US\$480	US\$150	US\$1,120	US\$970

Key Path Scenarios

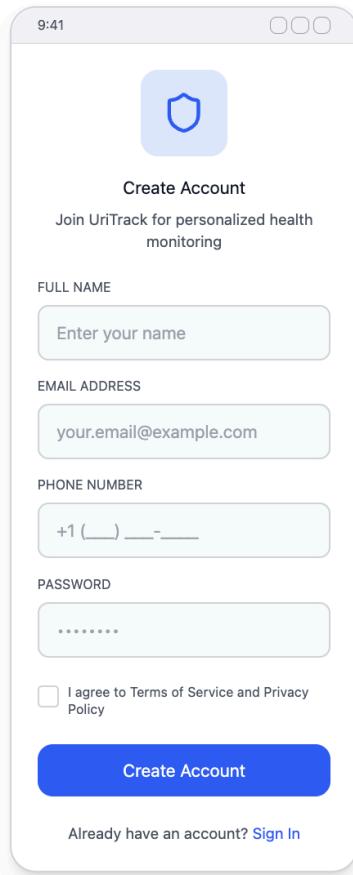
Scenario 1: New Patient Journey

	Scenario 1: New Patient Journey Complete end-to-end flow from registration to first health reading	Duration 15-20 minutes
USER TYPE Patient (Mobile)	KEY USER ACTIONS <ol style="list-style-type: none">1 Account creation & authentication2 Device pairing via Bluetooth3 Initial health profile setup4 First urine sample reading5 Baseline establishment	SYSTEM RESPONSES <ol style="list-style-type: none">S1 Send verification email/SMSS2 Establish secure Bluetooth connectionS3 Process sample data with AIS4 Generate initial insightsS5 Create health baseline
JOURNEY STEPS 7		

	Scenario 1: New Patient Journey Complete end-to-end user journey from initial app download to receiving first health insights. This critical path establishes the patient's baseline health profile and ensures successful device integration.
User Type: New Patient (Mobile App)	Duration: 15-20 minutes
Duration: 15-20 minutes	Steps: 7 screens

1

Step 1: Account Creation



USER ACTION

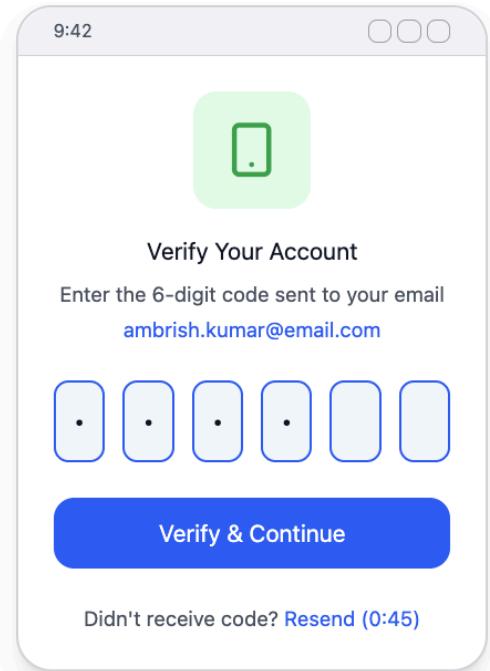
- Downloads UriTrack mobile app
- Taps "Create New Account"
- Enters personal information
- Accepts terms & conditions
- Taps "Create Account" button

SYSTEM RESPONSE

- Validates email format
- Checks password strength (min 8 chars)
- Verifies phone number format
- Creates user account in database
- Sends verification email/SMS
- Navigates to verification screen

2

Step 2: Account Verification



USER ACTION

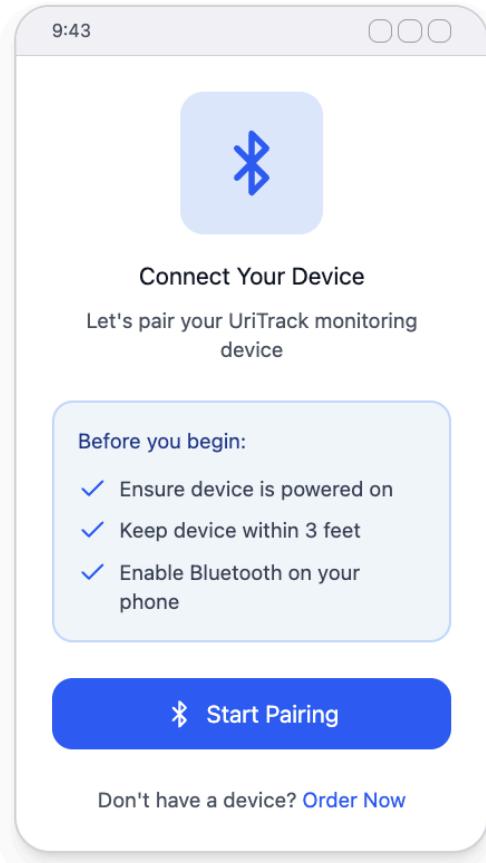
- Receives verification code via email/SMS
- Enters 6-digit code
- Taps "Verify & Continue"

SYSTEM RESPONSE

- Validates verification code
- Marks account as verified
- Logs successful authentication
- Proceeds to device pairing flow

3

Step 3: Device Pairing Introduction



USER ACTION

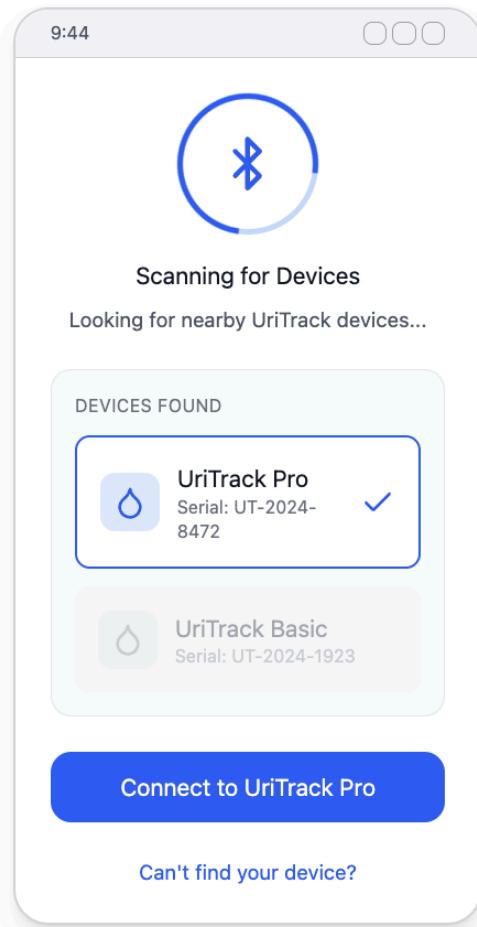
- Reads pairing instructions
- Powers on UriTrack device
- Enables Bluetooth on phone
- Taps "Start Pairing" button

SYSTEM RESPONSE

- Checks Bluetooth permissions
- Initiates device scan
- Shows scanning screen

4

Step 4: Scanning & Connection



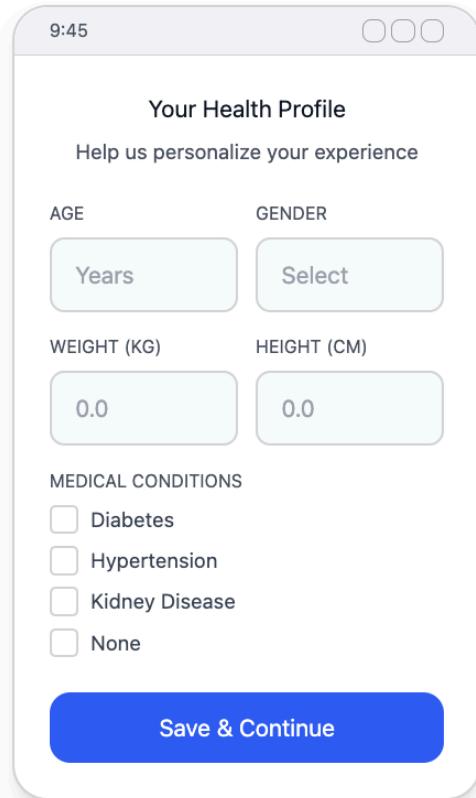
USER ACTION

- Waits for device detection
- Identifies their device (serial match)
- Selects "UriTrack Pro" device
- Taps "Connect" button

SYSTEM RESPONSE

- Scans for Bluetooth devices
- Displays available UriTrack devices
- Initiates secure pairing
- Establishes encrypted connection
- Stores device credentials

Step 5: Initial Health Profile



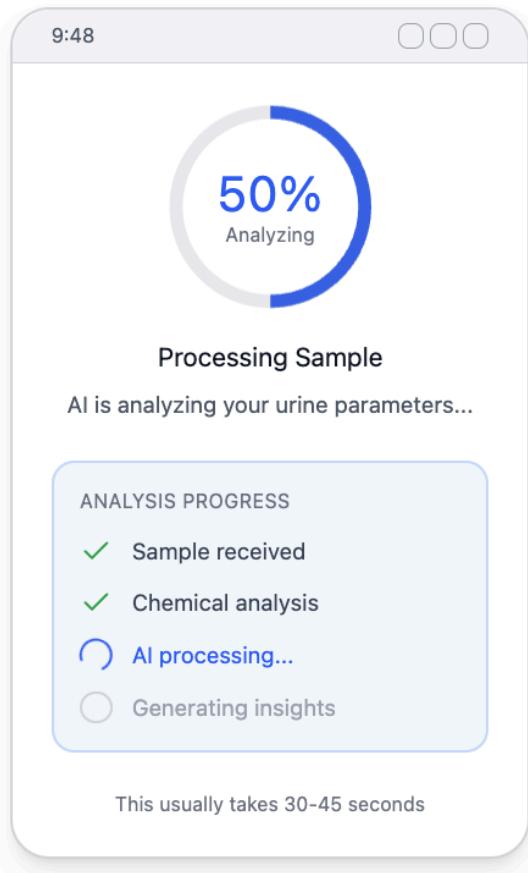
USER ACTION

- Enters age, gender, weight, height
- Selects existing medical conditions
- Taps "Save & Continue"

SYSTEM RESPONSE

- Validates input data
- Calculates BMI
- Stores health profile
- Configures AI parameters
- Proceeds to first reading

Step 6: First Sample Reading



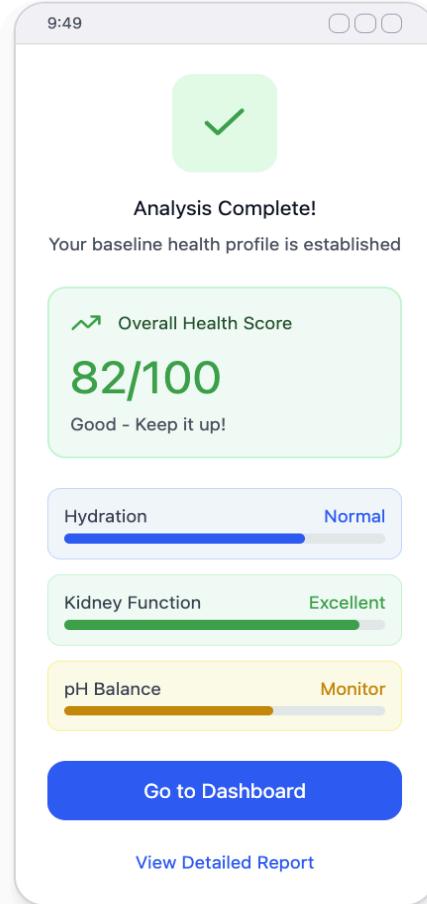
USER ACTION

- Provides first urine sample to device
- Waits for analysis completion
- Observes processing progress

SYSTEM RESPONSE

- Device sensors capture sample data
- Transmits data via Bluetooth
- AI analyzes 12 key parameters
- Compares against baseline
- Generates health insights

Step 7: First Health Insights



USER ACTION

- Reviews first health insights
- Understands health score
- Checks parameter status
- Taps "Go to Dashboard"

SYSTEM RESPONSE

- Displays comprehensive results
- Establishes baseline values
- Creates health timeline
- Navigates to main dashboard
- Journey complete ✓



Patient Onboarding Complete

Ambrish Kumar successfully completed account creation, device pairing, and first health reading. Patient is now ready for continuous monitoring.

Scenario 2: Critical Alert Flow

	Scenario 2: Critical Alert Flow System detection of abnormal parameters and immediate notification	Duration 2-5 minutes
USER TYPE	KEY USER ACTIONS	SYSTEM RESPONSES
Patient + Doctor	<ol style="list-style-type: none">1 Abnormal reading detected2 Patient receives push notification3 Patient views detailed alert4 Doctor receives urgent notification5 Doctor reviews patient data	<ol style="list-style-type: none">S1 AI analyzes parameters against thresholdsS2 Trigger multi-channel alertsS3 Log event in health timelineS4 Escalate to healthcare providerS5 Update patient status



Scenario 2: Critical Alert Flow
System detection of abnormal urine parameters triggers immediate multi-channel notifications to patient and healthcare provider, enabling rapid medical intervention.

User Type: **Patient + Doctor** Duration: **2-5 minutes** Steps: **5 screens**

Step 1: AI Detects Abnormal Parameters

 System Analysis Log

```
09:32:15 [INFO] Sample received from device UT-2024-8472
09:32:18 [INFO] Processing 12 parameters...
09:32:24 [PASS] Hydration: Normal (within range)
09:32:25 [PASS] pH Level: 6.2 (normal)
09:32:26 [ALERT] Protein: 450 mg/dL (HIGH - Normal: 0-150)
09:32:27 [WARN] Glucose: 180 mg/dL (Elevated)
09:32:28 [CRITICAL] Multiple abnormalities detected
09:32:29 [ACTION] Triggering alert protocol...
```

 Critical Thresholds Exceeded

Protein Level
3x normal range

Risk Score
High (8.7/10)

TRIGGER EVENT

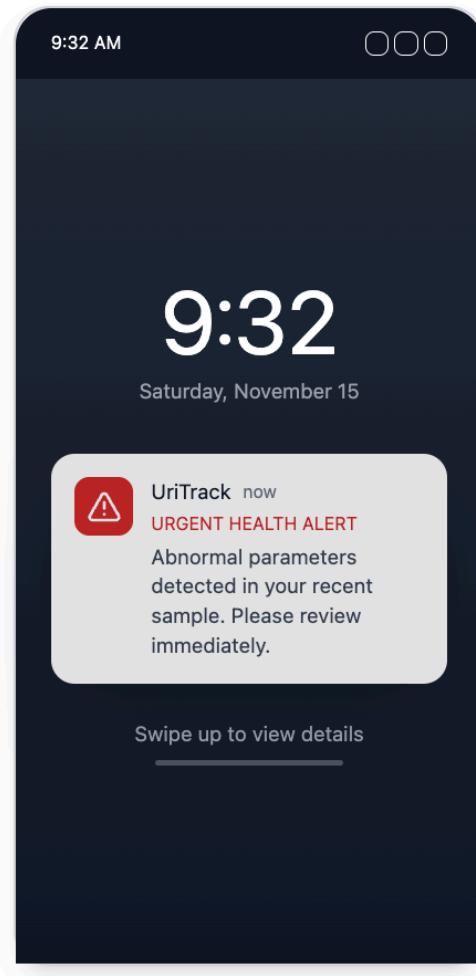
- Routine sample analysis at 9:32 AM
- Patient: Manju Agarwal
- Device: UT-2024-8472

SYSTEM RESPONSE

- AI detects protein 3x normal
- Compares vs patient baseline
- Calculates risk score: 8.7/10
- Initiates critical alert protocol

2

Step 2: Patient Receives Push Notification



USER ACTION

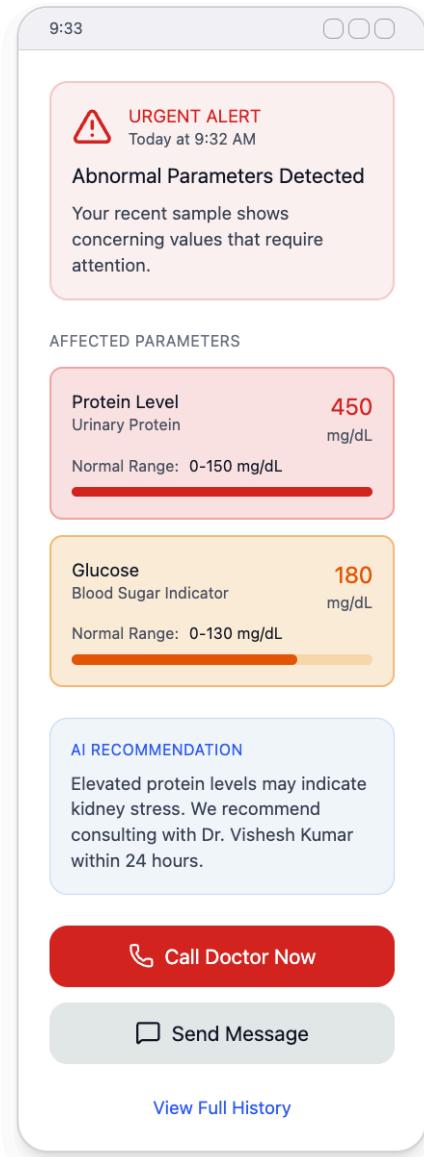
- Receives urgent push notification
- Phone vibrates & displays alert
- Taps notification to open app

SYSTEM RESPONSE

- Sends push notification (priority: high)
- Triggers phone vibration
- Displays on lock screen
- Logs notification delivery

3

Step 3: Patient Reviews Alert Details



USER ACTION

- Opens app from notification
- Reviews abnormal parameters
- Reads AI recommendations
- Decides on action (call/message)

SYSTEM RESPONSE

- Displays detailed alert view
- Shows parameter comparisons
- Provides AI insights
- Offers communication options

4

Step 4: Doctor Receives Urgent Notification

dashboard.uritrack.com/doctor

URGENT: Critical Alert for Patient
Manju Agarwal - Abnormal protein levels detected

View Now

Dr. Vishesh Kumar
Nephrology Department

RECENT ALERTS

Manju Agarwal **URGENT**
Patient ID: PA-2024-3847 • 9:32 AM
Protein: 450 mg/dL (3x normal) • Glucose: 180 mg/dL
Risk Score: 8.7/10 - Immediate review recommended

Review

Nalin Malik
Hydration below optimal - 8:15 AM

TRIGGER EVENT

- System escalates to doctor
- High-priority notification sent
- Email + Dashboard alert

SYSTEM RESPONSE

- Identifies assigned physician
- Sends urgent notification
- Updates dashboard in real-time
- Logs escalation event



Step 5: Doctor Reviews Patient Data & Takes Action

● ● ● dashboard.uritrack.com/doctor/patient/PA-2024-3847

Manju Agarwal
Female, 58 years • ID: PA-2024-3847 URGENT REVIEW

Current Alert

Protein: 450
mg/dL (3x normal)

Secondary Concern

Glucose: 180
mg/dL (elevated)

AI ANALYSIS
Sudden elevation in urinary protein suggests possible kidney inflammation or diabetic nephropathy. Patient history shows controlled diabetes. Recommend immediate follow-up and additional kidney function tests.

DOCTOR'S NOTES
Patient showing signs of proteinuria. Schedule for comprehensive kidney panel and adjust diabetes medication. Follow-up in 3 days.

/

Send Message to Patient Schedule Appointment

DOCTOR ACTION

- Reviews complete patient data
- Analyzes AI recommendations
- Adds clinical notes
- Sends message to patient
- Schedules follow-up appointment

SYSTEM RESPONSE

- Saves doctor's notes
- Sends message to patient app
- Creates appointment record
- Updates care timeline
- Marks alert as reviewed ✓

Heart rate monitor icon **Critical Alert Flow Complete**

Total response time: 2 minutes 34 seconds. Patient notified, doctor reviewed, and action plan established. System demonstrates effective emergency response protocol.

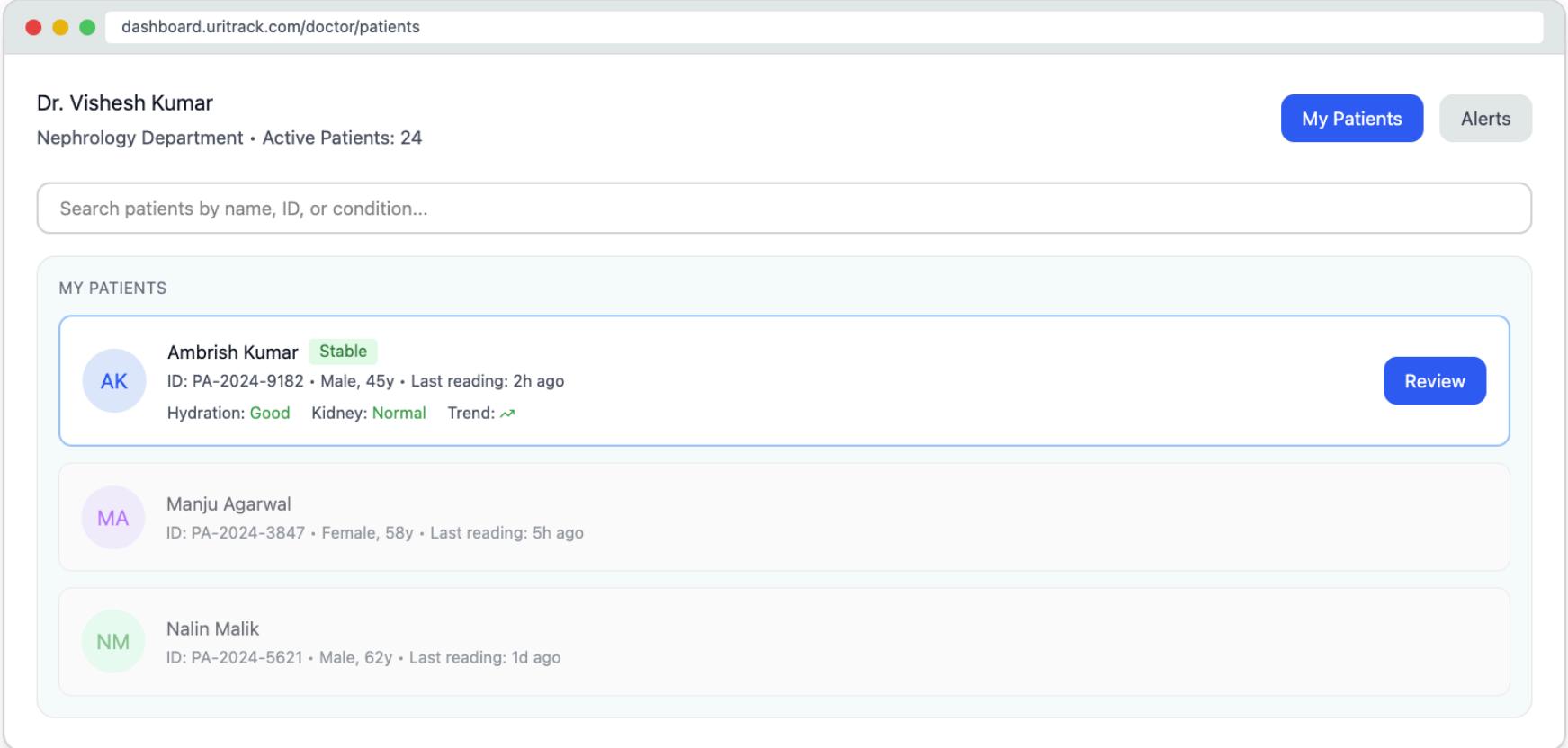
Scenario 3: Doctor Review & Recommendation

 Scenario 3: Doctor Review & Recommendation	Healthcare provider reviews patient data and provides medical guidance	Duration 10-15 minutes
USER TYPE	KEY USER ACTIONS	SYSTEM RESPONSES
Doctor (Web Dashboard)	<ol style="list-style-type: none">1 Access patient dashboard2 Review health trends & analytics3 Analyze AI-generated insights4 Add clinical notes5 Send recommendation to patient6 Schedule follow-up	<ol style="list-style-type: none">S1 Load patient health recordsS2 Display comprehensive analyticsS3 Highlight concerning trendsS4 Save medical notes securelyS5 Notify patient of new recommendationS6 Update care timeline

 Scenario 3: Doctor Review & Recommendation
Healthcare provider conducts comprehensive review of patient's health data, analyzes trends, adds clinical notes, and provides medical recommendations for continued care and treatment adjustments.
User Type: Doctor (Web Dashboard) Duration: 10-15 minutes Steps: 6 screens

1

Step 1: Doctor Accesses Patient Dashboard



The screenshot shows a web browser window for 'dashboard.uritrack.com/doctor/patients'. The title bar says 'Dr. Vishesh Kumar' and 'Nephrology Department • Active Patients: 24'. There are 'My Patients' and 'Alerts' buttons in the top right. A search bar at the top says 'Search patients by name, ID, or condition...'. Below it, a 'MY PATIENTS' section lists three patients: Ambrish Kumar (Stable), Manju Agarwal, and Nalin Malik. Each patient card shows their initials, name, status, ID, gender, age, last reading, and hydration/kidney/trend information. A 'Review' button is on the right of the Ambrish Kumar card. The Ambrish Kumar card is highlighted with a blue border.

Initials	Name	Status	ID	Gender	Age	Last reading	Hydration	Kidney	Trend	Action
AK	Ambrish Kumar	Stable	PA-2024-9182	Male	45y	2h ago	Good	Normal	↗	Review
MA	Manju Agarwal	Stable	PA-2024-3847	Female	58y	5h ago	Good	Normal	↗	
NM	Nalin Malik	Stable	PA-2024-5621	Male	62y	1d ago	Good	Normal	↗	

USER ACTION

- Logs into doctor dashboard
- Views patient list
- Selects "Ambrish Kumar"
- Clicks "Review" button

SYSTEM RESPONSE

- Authenticates doctor credentials
- Loads assigned patients
- Displays patient status overview
- Navigates to patient detail view

Step 2: Review Patient Health Trends

● ● ● dashboard.uritrack.com/doctor/patient/PA-2024-9182

Ambrish Kumar
Male, 45 years • ID: PA-2024-9182
Stable • Diabetes Type 2

7 Days 30 Days 90 Days

Overall Health
85
↑ +3 from last week

Hydration Avg
78%
Within target

Glucose Trend
142
↑ Slightly elevated

Total Readings
87
Last 30 days

Hydration Levels - 30 Day Trend

Nov 1
Nov 15
Nov 30

Kidney Function
Normal
eGFR: 92 mL/min

Protein Level
Normal
45 mg/dL

pH Balance
Optimal
6.4

USER ACTION

- Reviews 30-day health trends
- Examines hydration chart
- Checks key parameters
- Identifies patterns

SYSTEM RESPONSE

- Loads patient health records
- Generates trend visualizations
- Calculates average values
- Highlights concerning trends

Step 3: Analyze AI-Generated Insights



AI-Generated Health Insights

Based on 87 readings over 30 days



Positive Trend: Improved Hydration

Patient's hydration levels have improved by 12% over the past 2 weeks, indicating better compliance with fluid intake recommendations.

Confidence: 94% • Data points: 64



Attention: Glucose Variability

Glucose levels show higher variability in the evening hours (6-9 PM), suggesting possible dietary or medication timing adjustment needed.

Confidence: 87% • Pattern detected: 18 occurrences



Clinical Recommendation

Based on diabetic patient profile and current trends, consider:

- Reviewing evening meal composition and timing
- Adjusting diabetes medication schedule
- Scheduling HbA1c test for comprehensive assessment

Based on clinical guidelines for Type 2 Diabetes management

PREDICTED OUTCOMES

7-Day Outlook

Stable

87% probability

Risk Score

Low (2.4/10)

Minimal intervention

USER ACTION

- Reviews AI insights carefully
- Validates recommendations
- Considers clinical context
- Plans intervention strategy

SYSTEM RESPONSE

- AI analyzes patterns across 30 days
- Identifies positive and concerning trends
- Generates evidence-based recommendations
- Provides confidence scores

Step 4: Add Clinical Notes

 Medical Notes

PREVIOUS NOTES

Dr. Vishesh Kumar

Oct 28, 2024

Patient showing good compliance with treatment plan. Hydration improving. Continue current medication dosage. Follow-up in 2 weeks.

NEW CLINICAL NOTE

Review of 30-day trend data shows positive improvement in hydration levels (+12%), indicating good patient compliance. However, glucose readings show increased variability during evening hours, particularly between 6-9 PM.

Assessment:

- Overall diabetes management: Satisfactory
- Hydration improvement: Excellent progress

~~Glucose control: Requires minor adjustment~~

PRIORITY LEVEL

Routine

NEXT REVIEW

2 weeks

 Save Notes Cancel

USER ACTION

- Reviews previous notes
- Documents current assessment
- Creates care plan
- Sets priority and review schedule
- Saves clinical notes

SYSTEM RESPONSE

- Displays note history
- Validates input format
- Timestamps note entry
- Saves to patient record
- Updates care timeline

Step 5: Send Recommendation to Patient



Send Message to Patient

Ambrish Kumar will receive this via mobile app

MESSAGE SUBJECT

Follow-up: Medication Timing Adjustment

MESSAGE

Dear Ambrish,

I've reviewed your health data from the past 30 days, and I'm pleased to see your hydration levels have improved significantly - great work on following the fluid intake recommendations!

However, I've noticed some variability in your glucose levels during the evening hours. To address this, I'm recommending the following adjustments:

1. ****Medication Timing**:** Please take your evening diabetes medication at 5:00 PM instead of 6:00 PM
2. ****Dietary Review**:** I'd like you to schedule an appointment with our nutritionist to review your evening meal composition

 Mark as important (patient will receive push notification)

Send to Patient

Save as Draft

USER ACTION

- Composes patient message
- Explains findings and recommendations
- Marks as important
- Sends message to patient

SYSTEM RESPONSE

- Validates message content
- Sends notification to patient app
- Stores message in communication log
- Triggers push notification



Step 6: Schedule Follow-up Appointment

Schedule Appointment

APPOINTMENT DATE

29/11/2024

TIME

10:00 AM



APPOINTMENT TYPE

Medication Review



NOTES FOR APPOINTMENT

Review HbA1c test results. Discuss medication timing adjustment and dietary modifications. Assess overall diabetes management progress.

APPOINTMENT SUMMARY

Patient:

Ambrish Kumar

Date & Time:

Nov 29, 2024 at 10:00 AM

Duration:

30 minutes

Type:

Medication Review

Confirm Appointment

Cancel

USER ACTION

- Selects appointment date and time
- Chooses appointment type
- Adds appointment notes
- Confirms booking

SYSTEM RESPONSE

- Checks calendar availability
- Creates appointment record
- Sends confirmation to patient
- Updates doctor's schedule
- Sets reminder notifications ✓



Review & Recommendation Complete

Dr. Vishesh Kumar successfully reviewed Ambrish Kumar's health data, analyzed AI insights, documented clinical notes, sent personalized recommendations, and scheduled follow-up appointment. Patient will receive all updates via mobile app.

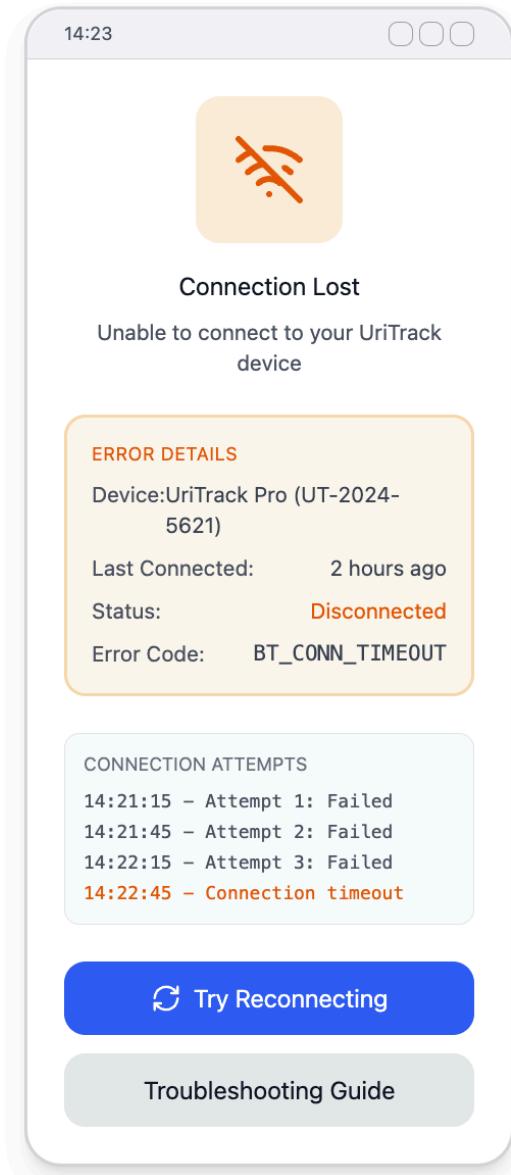
Scenario 4: Device Troubleshooting

	Scenario 4: Device Troubleshooting Technical issue detection and resolution flow	Duration 5-10 minutes
USER TYPE	KEY USER ACTIONS	SYSTEM RESPONSES
Patient + Technician	<ol style="list-style-type: none">1 Device connectivity issue detected2 Patient attempts basic troubleshooting3 Request technical support4 Technician receives support ticket5 Remote diagnostics & resolution	<ol style="list-style-type: none">S1 Detect connection failureS2 Provide guided troubleshooting stepsS3 Create support ticketS4 Route to available technicianS5 Log resolution & update device status

	Scenario 4: Device Troubleshooting Patient experiences device connectivity issues. System provides guided troubleshooting, and if unresolved, escalates to technical support team for remote diagnostics and resolution.
User Type: Patient + Technician	Duration: 5-10 minutes

1

Step 1: Device Connection Failure Detected



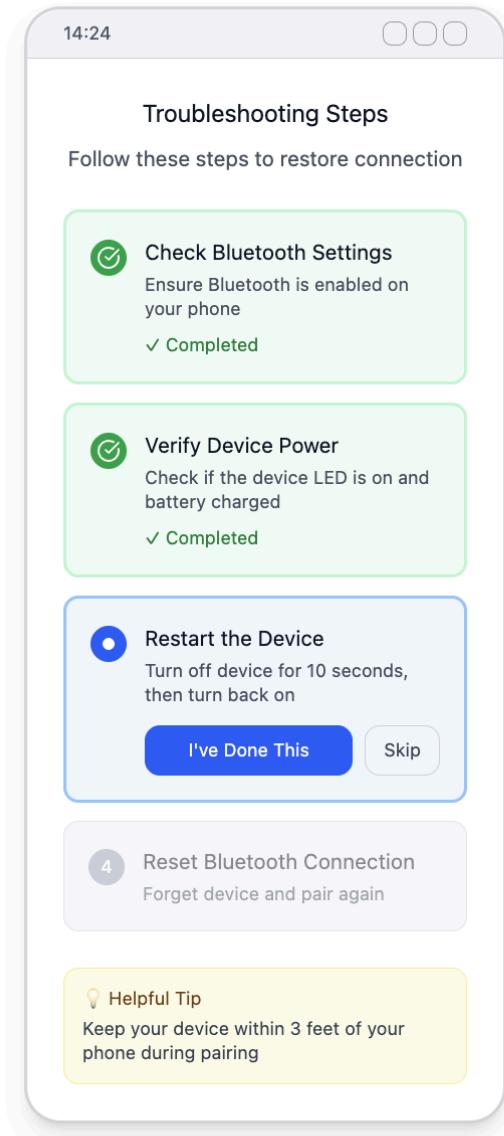
TRIGGER EVENT

- Patient: Nalin Malik
- Device loses Bluetooth connection
- Multiple reconnection attempts fail
- Patient taps "Troubleshooting Guide"

SYSTEM RESPONSE

- Detects connection timeout
- Logs error with timestamp
- Displays error notification
- Offers troubleshooting options

Step 2: Patient Follows Troubleshooting Steps



USER ACTION

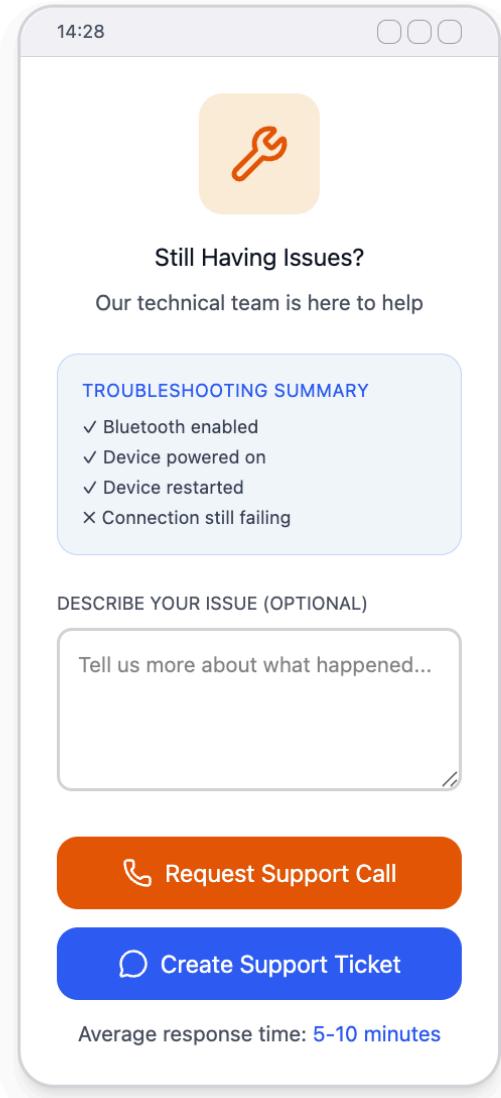
- Checks Bluetooth settings ✓
- Verifies device power ✓
- Attempts device restart
- Marks steps as completed

SYSTEM RESPONSE

- Displays step-by-step guide
- Tracks completion status
- Provides helpful tips
- Monitors for reconnection

3

Step 3: Request Technical Support



USER ACTION

- Troubleshooting steps unsuccessful
- Describes the issue (optional)
- Clicks "Create Support Ticket"

SYSTEM RESPONSE

- Collects troubleshooting history
- Creates support ticket
- Assigns to available technician
- Sends confirmation to patient

4

Step 4: Technician Reviews Support Ticket

support.urittrack.com/tickets

Support Dashboard

Technical Support Team

3 Active Tickets

OPEN TICKETS

Nalin Malik - Connection Issue NEW

Ticket #TK-2024-0847 • Device: UT-2024-5621 • Created: Just now

Issue: Bluetooth connection timeout after multiple reconnection attempts

Troubleshooting History:

- ✓ Bluetooth enabled
- ✓ Device powered on
- ✓ Device restarted
- ✗ Still unable to connect

Error Code: BT_CONN_TIMEOUT

Start Diagnosis

Barnie Phillips - Battery Issue

Ticket #TK-2024-0846 • 15 mins ago

TRIGGER EVENT

- Support ticket created
- Assigned to available technician
- Technician clicks "Start Diagnosis"

SYSTEM RESPONSE

- Displays ticket in dashboard
- Shows troubleshooting history
- Provides device diagnostics data
- Updates ticket status to "In Progress"



Step 5: Technician Performs Remote Diagnosis & Resolution

support.uritrack.com/tickets/TK-2024-0847

Ticket #TK-2024-0847 In Progress

Nalin Malik - Bluetooth Connection Issue

REMOTE DIAGNOSTICS

Device Power:	✓ Normal (Battery: 78%)
Firmware Version:	⚠ Outdated (v2.1.3)
Bluetooth Module:	✓ Functioning
Pairing Cache:	⚠ Corrupted

ROOT CAUSE IDENTIFIED

Outdated firmware (v2.1.3) with known Bluetooth pairing cache bug. Current version: v2.4.1 includes fix.

RESOLUTION ACTIONS

- ✓ Cleared device pairing cache
- ✓ Pushed firmware update (v2.4.1)
- ✓ Initiated automatic re-pairing
- ✓ Connection restored successfully

TECHNICIAN NOTES

Issue resolved via remote firmware update. Device was running outdated firmware v2.1.3 which had a known Bluetooth caching bug. Updated to v2.4.1 and cleared pairing cache. Device reconnected successfully. Advised patient to keep app notifications enabled for future firmware updates.

MESSAGE TO PATIENT

Good news! We've identified and resolved the issue. Your device had an outdated firmware version that was causing Bluetooth connection problems. We've remotely updated your device to the latest version and restored the connection. Everything should be working normally now. Please test it out!

✓ Close Ticket (Resolved) 💬 Message Patient

Scenario 5: Emergency Health Event

	Scenario 5: Emergency Health Event Critical health parameter detection and emergency protocol activation	Duration 1-3 minutes
USER TYPE	KEY USER ACTIONS	SYSTEM RESPONSES
Patient + Doctor + Emergency Contact	<ol style="list-style-type: none">1 Severe abnormality detected2 Immediate emergency alert sent3 Doctor receives critical notification4 Emergency contact notified5 Emergency guidance displayed	<ol style="list-style-type: none">S1 AI detects life-threatening parametersS2 Activate emergency protocolS3 Send alerts to all stakeholdersS4 Display first-aid instructionsS5 Log emergency event for medical records



Scenario 5: Emergency Health Event

AI detects life-threatening parameters in urine sample, immediately activating emergency protocol with simultaneous alerts to patient, doctor, and emergency contacts. System provides first-aid guidance while routing critical data to healthcare provider.

User Type: **Patient + Doctor + Emergency Contact** Duration: **1-3 minutes** Priority: **CRITICAL**

Step 1: AI Detects Life-Threatening Parameters



CRITICAL ALERT - System Analysis Log

Emergency Protocol Activated

03:47:32 [INFO] Sample received from device UT-2024-3847
03:47:35 [INFO] Patient: Manju Agarwal (PA-2024-3847)
03:47:38 [INFO] Processing emergency parameter analysis...
03:47:42 [CRITICAL] Blood in urine: SEVERE (Hematuria)
03:47:43 [CRITICAL] Protein: 1850 mg/dL (CRITICAL - 12x normal)
03:47:44 [CRITICAL] Kidney Failure Markers: DETECTED
03:47:45 [AI-ANALYSIS] Pattern matches: Acute Kidney Injury (98.7% confidence)
03:47:46 [EMERGENCY] LIFE-THREATENING CONDITION DETECTED
03:47:47 [ACTION] Activating Emergency Protocol Alpha-1...
03:47:48 [ACTION] Notifying patient, doctor, emergency contacts...



MEDICAL EMERGENCY DETECTED

Risk Level

CRITICAL

Risk Score

9.8/10

Action Required

IMMEDIATE

TRIGGER EVENT

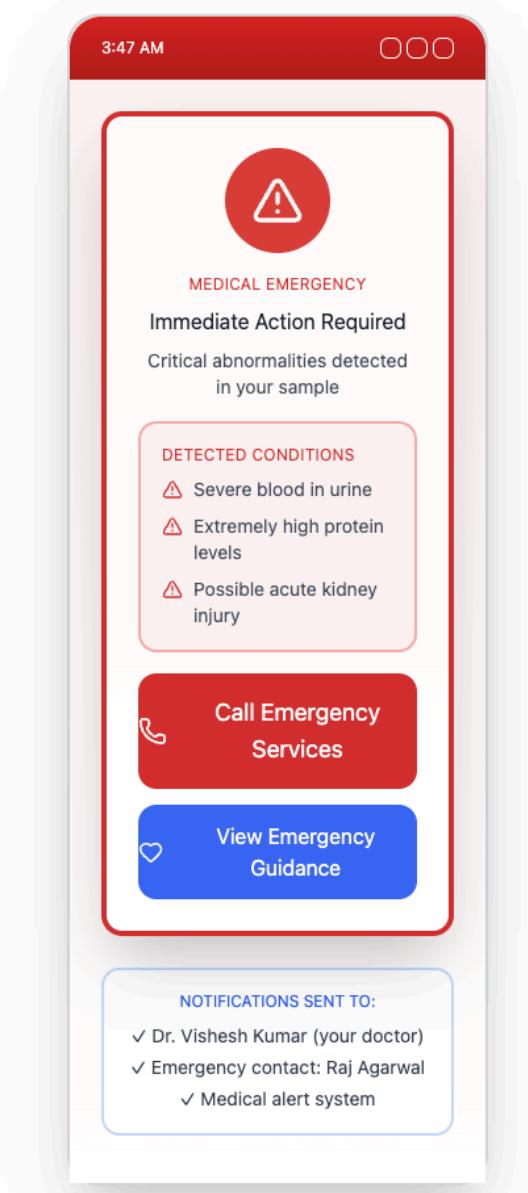
- Routine sample at 3:47 AM
- Patient: Manju Agarwal (diabetic)
- Device: UT-2024-3847

SYSTEM RESPONSE

- AI detects severe hematuria
- Protein 12x normal range
- Pattern: Acute Kidney Injury (98.7%)
- EMERGENCY PROTOCOL ACTIVATED

2

Step 2: Patient Receives Emergency Alert



USER ACTION

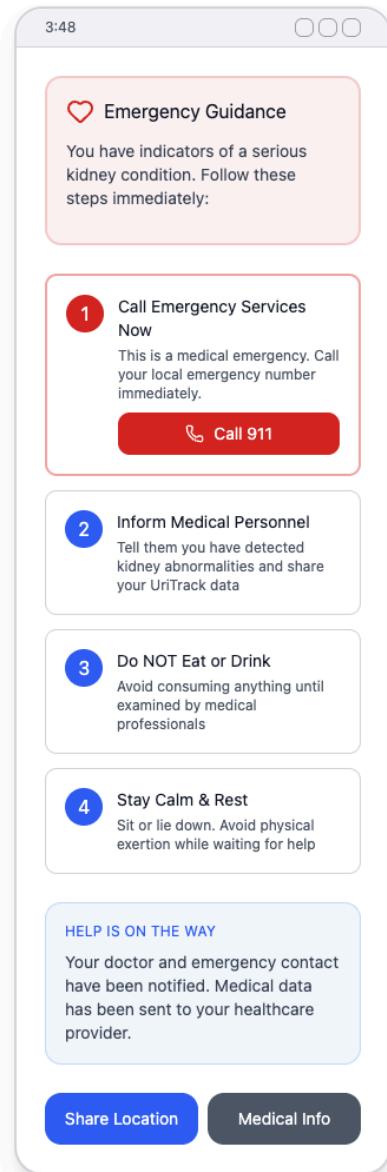
- Receives emergency alert (3:47 AM)
- Phone rings with max volume
- Vibration at maximum intensity
- Views emergency details
- Taps "View Emergency Guidance"

SYSTEM RESPONSE

- Sends CRITICAL push notification
- Overrides Do Not Disturb
- Triggers maximum alert level
- Displays emergency UI
- Shows first-aid guidance

3

Step 3: Patient Views Emergency Guidance



USER ACTION

- Reads emergency guidance
- Follows first-aid instructions
- Calls emergency services (911)
- Shares location if needed

SYSTEM RESPONSE

- Displays step-by-step guidance
- Provides emergency call button
- Offers location sharing
- Shows medical information access

4

Step 4: Doctor Receives Critical Emergency Alert

dashboard.uritrack.com/doctor/emergency

MEDICAL EMERGENCY
Patient in Critical Condition
 Manju Agarwal - Immediate intervention required

Alert Time
 3:47 AM

View Patient Data **Call Patient**

Protein Level
1850
 12x NORMAL

Hematuria
SEVERE
 CRITICAL

Risk Score
9.8/10
 EMERGENCY

AI Emergency AI Analysis

Probable Diagnosis: Acute Kidney Injury (AKI)
Confidence: 98.7%
Recommended Action: Immediate hospitalization. Patient requires emergency dialysis and IV fluids. Given diabetic history, suspect diabetic nephropathy with acute decompensation.

CRITICAL ALERTS

- Emergency services notification recommended
- Patient has been alerted with emergency guidance
- Emergency contact notified: Raj Agarwal

PATIENT INFORMATION

Name: Manju Agarwal Age: 58 years, Female

Medical History: Type 2 Diabetes, Hypertension Last Visit: Oct 28, 2024

IMMEDIATE ACTIONS

Call Patient Now **Call Emergency Contact**

Admit to Hospital **Emergency Orders**

TRIGGER EVENT

- Simultaneous alert sent to doctor
- Critical priority notification
- Overrides all notification settings

SYSTEM RESPONSE

- Sends emergency alert to doctor
- Displays critical patient data
- Provides AI emergency analysis
- Offers immediate action buttons



Step 5: Emergency Contact Receives Alert

SMS Message

From: UriTrack Alert System
To: Raj Agarwal (Emergency Contact)

⚠ MEDICAL EMERGENCY

Your emergency contact, Manju Agarwal, has a critical health alert from their UriTrack monitoring system.

Condition: Possible acute kidney injury detected

Status: Patient alerted, doctor notified

Action: Please check on patient immediately or call: [+1 \(555\) 234-5678](tel:+15552345678)

Alert sent: Nov 15, 2024 at 3:47 AM

Email Alert

From: alerts@urittrack.com
To: raj.agarwal@email.com

⚠ URGENT: Emergency Health Alert for Manju Agarwal
Nov 15, 2024 3:47 AM

Dear Raj Agarwal,

MEDICAL EMERGENCY ALERT

This is an automated emergency notification from the UriTrack Health Monitoring System.

Patient: Manju Agarwal
Alert Level: Critical
Detected Condition: Acute Kidney Injury (Probable)
Time: November 15, 2024 at 3:47 AM

Immediate Actions Taken:

- ✓ Patient has been alerted with emergency guidance
- ✓ Dr. Vishesh Kumar (attending physician) notified
- ✓ Emergency contact protocol activated
- ✓ Medical data sent to healthcare provider

What You Should Do:

1. Contact the patient immediately
2. Ensure they have called emergency services
3. Offer to accompany them to hospital
4. Contact: [+1 \(555\) 234-5678](tel:+15552345678)

This is a critical medical situation. Please act immediately.

UriTrack Emergency Alert System
Do not reply to this email. For support: support@urittrack.com

NOTIFICATION CHANNELS

- SMS text message (immediate)
- Email alert with full details
- Phone call (if configured)
- Mobile app push notification

SYSTEM RESPONSE

- Sends multi-channel alerts
- Provides patient contact info
- Lists actions already taken
- Gives clear guidance to contact



Emergency Protocol Complete

Total response time: 18 seconds from detection to full notification cascade.

EMERGENCY TIMELINE

⌚	AI detects critical parameters	3:47:46 AM
⌚	Emergency protocol activated	3:47:47 AM
⌚	Patient alert sent	3:47:48 AM
⌚	Doctor notified	3:47:49 AM
⌚	Emergency contact alerted (SMS + Email)	3:47:52 AM
⌚	All stakeholders notified ✓	3:48:04 AM

SYSTEM PERFORMANCE

The emergency detection and notification system successfully identified a life-threatening condition and alerted all relevant parties within 18 seconds. This rapid response time enables immediate medical intervention, potentially saving the patient's life. The AI achieved 98.7% diagnostic confidence for Acute Kidney Injury, and all emergency protocols executed flawlessly with multi-channel redundancy.

Wire Frames:

UriTrack Health Monitoring System

Detailed Interface Wireframes - MRD Documentation

Patient Journey

Screen 1: Welcome Screen

UriTrack logo

Smart Health Monitoring for Better Kidney Care

Real-time hydration tracking

Kidney health insights

Share with your doctor

Get Started

I Already Have an Account

By continuing, you agree to our Terms & Privacy Policy

User Action
User taps "Get Started" for registration or "I Already Have an Account" for login

System Response
Navigates to respective screen with slide animation

Screen 2: Login

Welcome Back

Sign in to continue monitoring your health

Email Address: your.email@example.com

Password: Enter your password

Remember me

Forgot Password?

Sign In

Or continue with

Google

Facebook

Don't have an account? [Sign Up](#)

User Action
Enter credentials and tap Sign In, or use social login

System Response
Validates credentials, shows loading state, navigates to dashboard on success

Screen 3: Registration (Personal Info)

Step 1 of 2 50%

Create Account

Enter your personal information

Full Name *: John Doe

Email Address *: your.email@example.com

Phone Number *: +1 (555) 000-0000

Password *: Create a strong password
At least 8 characters with numbers and symbols

Confirm Password *: Re-enter your password

Continue

User Action
Fill in required personal details and create password

System Response
Validates email format and password strength, proceeds to health info step

Screen 4: Registration (Health Profile)

Step 2 of 2 100%

Health Information

Complete your health profile

Health ID Number *: HID-123456789
Your national or insurance health ID

Date of Birth *: mm/dd/yyyy

Gender *: Male, Female, Other

Weight (Optional): 70 kg

Height (Optional): 175 cm

Existing Conditions (Optional): Diabetes

Create Account

User Action
Complete health profile with ID, demographics, and medical history

System Response
Creates account, sends verification email, navigates to verification screen

Screen 4: Registration (Health Profile)

Step 2 of 2 100%

Health Information
Complete your health profile

mm/dd/yyyy

Gender * Male Female Other

Weight (Optional)
70 kg

Height (Optional)
175 cm

Existing Conditions (Optional)

Diabetes
 Hypertension
 Kidney Disease

I agree to the Terms of Service and Privacy Policy. I consent to share my health data with healthcare providers.

Create Account

User Action
Complete health profile with ID, demographics, and medical history

System Response
Creates account, sends verification email, navigates to verification screen

Screen 5: Email Verification

Verify Your Email

We've sent a verification code to ambrish.kumar@example.com

Enter 6-digit code

5

Didn't receive the code? [Resend Code \(0:45\)](#)

Verify Email

User Action
Enter 6-digit verification code from email

System Response
Validates code, activates account, navigates to device pairing screen

Screen 6: Success & Next Steps

Account Created!

Welcome to UriTrack, Ambrish! Your health monitoring journey starts now.

 Ambrish Kumar
ambrish.kumar@example.com

Health ID: HID-123456789
Phone: +1 (555) 000-0000

Next Steps:

- 1 Connect your UriTrack device
- 2 Complete initial health baseline
- 3 Start monitoring your health

Connect Device

Skip for Now

User Action
User proceeds to device pairing or skips to explore app

System Response
Navigates to device onboarding (existing Screen 1) or home dashboard

Device Setup

Screen 1: Device Selection

9:41

UriTrack

Welcome to UriTrack
Select your device model to begin setup

UriTrack Pro
Advanced monitoring

UriTrack Basic
Essential features

Continue

Step 1 of 3

User Action
User selects device model from list

System Response
Enables Continue button when selection made

Screen 2: Bluetooth Pairing

9:41

Step 2 of 3

Pairing Device

Searching for UriTrack Pro...
Make sure your device is powered on

Available Devices:

UriTrack Pro #A1B2C3
Signal: Strong

Connect

Can't find your device? Check if Bluetooth is enabled

User Action
User taps Connect on detected device

System Response
Initiates Bluetooth pairing sequence, shows loading animation

Screen 3: Connection Success

9:41

Step 3 of 3

Connected Successfully!
Your UriTrack Pro is ready to use

Device ID: A1B2C3
Model: UriTrack Pro
Battery: 100%

Start Monitoring

View Tutorial

User Action
User proceeds to home dashboard or views tutorial

System Response
Displays device info and saves pairing credentials

Mobile App: Home Dashboard

Home Dashboard - Daily View

9:41

Good Morning, Ambrish
Friday, October 17, 2025

Hydration: Low (Orange)

Urine Quality: Good (Green)

Kidney Stress: Moderate (Yellow)

Hydration Trends

Hydration Trends chart showing daily hydration levels from Monday to Sunday. The chart is a line graph with a light blue line and a light blue shaded area representing the range. The y-axis is labeled from 0% to 100% in 50% increments. The x-axis is labeled with the days of the week: Mon, Tue, Wed, Thu, Fri, Sat, Sun.

Day	Hydration Level (%)
Mon	45
Tue	55
Wed	50
Thu	60
Fri	60
Sat	65
Sun	70

Today's Insight: Your hydration is below target. Drink 2-3 more glasses of water to reach optimal levels.

[View Details](#) [Share Report](#)

Navigation Bar: Home, Insights, History, Profile

Component Breakdown

Header Section
Personalized greeting with date, notification bell, and settings access

Quick Status Cards
Three key metrics displayed with color-coded status indicators:

- Orange: Low hydration alert
- Green: Normal/good status
- Yellow: Moderate concern

Trend Visualization
Interactive chart with daily/weekly toggle showing hydration patterns over time

AI Insight Card
Contextual health recommendations based on current readings

Navigation Bar
Bottom navigation for quick access to main app sections

User Actions & System Responses

1. Tap Quick Status Card
→ Navigate to detailed view of that metric
2. Toggle Daily/Weekly View
→ Chart updates with animated transition
3. Tap "View Details"
→ Opens comprehensive insights page
4. Tap "Share Report"
→ Opens share dialog to send to doctor
5. Pull to Refresh
→ Syncs latest data from device

Mobile App: Detailed Insights Page

Insights & Analytics Dashboard

Health Insights

Overall Health Score: 72/100 (Needs Attention)

Time Range Selector: Week

Detailed Analysis

Hydration Level: Below Target (Decreased by -12%)

35% of daily goal (Target: 8 glasses)

AI Recommendation: Increase water intake by 500ml every 2 hours. Set reminders in app.

Urine Quality: Good

pH Level: 6.2, Clarity: Clear, Color: Light Yellow, Protein: Normal

Kidney Stress: Moderate Level (Increased by +8%)

Creatinine: 1.2 mg/dL (Normal: 0.7-1.3)

AI Recommendation: Monitor salt intake. Consider reducing protein consumption. Schedule check-up if persists.

Compare with Previous Period: Last Week, Last Month

Schedule Doctor Consultation

Analytics Components

Time Range Selector: Allows users to view data across different time periods (day/week/month/year)

Health Score Ring: Circular progress indicator showing overall health status (0-100 scale)

Metric Cards: Color-coded expandable cards for each health parameter:

- Header with icon and trend indicator
- Progress bar visualization
- Detailed readings and parameters
- AI-generated recommendations

Trend Indicators: Arrow icons with percentage change compared to previous period

Comparison Tools: Quick buttons to compare current metrics with historical data

Color-Coded Health Status

- Green - Optimal**: All parameters within healthy range
- Yellow - Moderate**: Requires attention, monitor closely
- Orange - Low/Concerning**: Action needed, follow recommendations
- Red - Critical**: Immediate medical attention recommended

User Interactions

- 1. Select Time Range**
→ All metrics update with animated transition
- 2. Tap Metric Card**
→ Expands to show detailed graph and history
- 3. Tap Download Icon**
→ Generates PDF report of current view
- 4. Tap Share Icon**
→ Opens share dialog (email/doctor portal)
- 5. Tap "Compare" Button**
→ Shows side-by-side comparison view
- 6. Tap AI Recommendation**
→ Opens detailed explanation with actionable steps

Doctor Onboarding Wireframes:

Professional Healthcare Provider Registration Flow

 **Join UriTrack**
Healthcare Professional Registration

SCREEN 1: Doctor registration with basic personal information

Full Name: Dr. Vishesh Kumar

Email Address: vishesh.kumar@hospital.com

Phone Number: +91 98765 43210

Password: *****

Minimum 8 characters

Continue

Already registered? [Sign In](#)

 **Professional Credentials**
Verify your medical license and qualifications

SCREEN 2: Medical credentials verification with license number and specialization

1 — 2 — 3

Medical License Number: MCI-123456789
Medical Council of India registration number

Specialization: Nephrologist

Years of Experience: 10

Medical Degree: MBBS, MD (Nephrology)

Upload License Document

Click to upload or drag and drop
PDF, JPG or PNG (Max 5MB)

Back **Continue**

 **Practice Information**
Where do you practice?

SCREEN 3: Hospital/clinic affiliation and practice location details

1 — 2 — 3

Hospital/Clinic Name: Apollo Hospital, Delhi

Department: Nephrology & Urology

Address: 123 Medical District, Delhi 110001

City: Delhi State: Delhi

Consultation Hours: Monday - Friday 9:00 AM - 5:00 PM

+ Add Hours

Expected Patient Load: 50-100 patients/month

Back **Continue**

Complete Your Profile

Add a photo and bio for your patients

SCREEN 4: Profile completion with photo and professional bio



Upload Photo

Professional Bio

Tell your patients about your experience and approach to care...

0 / 500 characters

Languages Spoken

English Hindi + Add Language

Services Offered

General Consultation Kidney Disease Management Urinary Tract Monitoring Preventive Care

Skip **Complete Setup**



Verification In Progress

Thank you for registering, Dr. Vishesh Kumar! Your credentials are being verified by our team.

SCREEN 5: Verification pending status with timeline

Verification Timeline

-  Profile Submitted Completed
-  License Verification In Progress (1-2 business days)
-  Account Activation Pending verification

What happens next?
We'll verify your credentials with the Medical Council of India. You'll receive an email once your account is activated.

Return to Home

Questions? [Contact Support](#)



Account Approved!

Welcome to UriTrack, Dr. Vishesh Kumar! Your account has been verified and is now active.

SCREEN 6: Account approved with next steps for doctor

 Dr. Vishesh Kumar
Nephrologist Verified

License MCI-123456789	Experience 10 years
---------------------------------	-------------------------------

Get Started

- 1 Access Clinical Dashboard**
Monitor your patients' health data
- 2 Add Your First Patient**
Start monitoring kidney health
- 3 Setup Notifications**
Receive alerts for critical readings

Go to Dashboard

Web Dashboard: Doctor/Clinician View

UriTrack Clinical Dashboard
Patient Monitoring System

Dr. Vishesh Kumar
Nephrologist 3

Total Patients 👤
127
+5 this month

Critical Alerts ❗
3
Requires immediate attention

Moderate Concerns ↗
12
Monitor closely

Healthy Status 📅
112
Within normal ranges

Search patients by name or ID... All Critical Moderate Normal Filters Export

Patient Info	Device ID	Hydration	Urine Quality	Kidney Stress	Last Reading	Status	Actions
👤 Ambrish Kumar ID: P-2847	USP-A1B2C3	<div style="width: 28%;">28%</div>	Poor	High	2 hours ago	Critical	View Details
👤 Manju Agarwal ID: P-2851	USB-D4E5F6	<div style="width: 52%;">52%</div>	Good	Moderate	30 mins ago	Monitor	View Details
👤 Nalin Malik ID: P-2856	USP-G7H8I9	<div style="width: 82%;">82%</div>	Good	Normal	1 hour ago	Healthy	View Details
👤 Barnie Phillips ID: P-2862	USP-J1K2L3	<div style="width: 76%;">76%</div>	Good	Normal	3 hours ago	Healthy	View Details

Showing 1-4 of 127 patients Previous 1 2 3 Next

Detailed Design & Features Description

Design Principles

UriTrack's design principles are rooted in the core emotional, behavioral, and clinical needs identified from personas, interviews, and unmet needs. Each principle ensures the system remains effortless, hygienic, clinically trustworthy, and scalable.

1. Effortless by Default

Users made it clear that any additional steps, even small ones, reduce adoption. UriTrack eliminates friction by ensuring all testing is fully passive.

Principle: *"If a step requires unnecessary user effort, it does not belong in the design."*

2. Dignified & Hygienic Interaction

Discomfort and hygiene concerns were the strongest emotional blockers in our MRD. The experience must always feel clean, private, and noninvasive.

Inspired by the seamlessness of Dyson washroom products and the discretion of modern medical devices.

3. Clinically Trustworthy, Never Confusing

Vulnerable users and clinicians need clarity. Data must be medically credible, validated, and transparent—no gimmicks, no vague “wellness” metrics.

The interface emphasizes clear risk levels, confirmed biomarkers, and intuitive visuals similar to Withings Health Mate

4. Human Data, Not Technical Data

Users want guidance, not charts. Insights should feel like helpful nudges rather than medical reports.

Principle: *Show trends, actions, and meaning—not raw numbers unless required.*

5. Accessible for All Abilities

Senior users (like Ambrish and Manju) shaped this requirement. Large typography, high contrast, minimal cognitive load, and easy-to-understand labels are non-negotiable.

6. Privacy & Control First

Restrooms are sensitive environments. UriTrack defaults to strict privacy controls, encryption, and explicit user consent for data sharing. No data is shared with clinicians or caregivers unless permission is granted.

7. Modular & Scalable Architecture

UriTrack must support both single-home users and large facility deployments. The design separates hardware, analytics, and UI layers—allowing updates without breaking device compatibility. Hardware + cloud-software scalability is a fundamental principle.

8. Omit Anything That Compromises Simplicity

Tradeoffs are explicit:

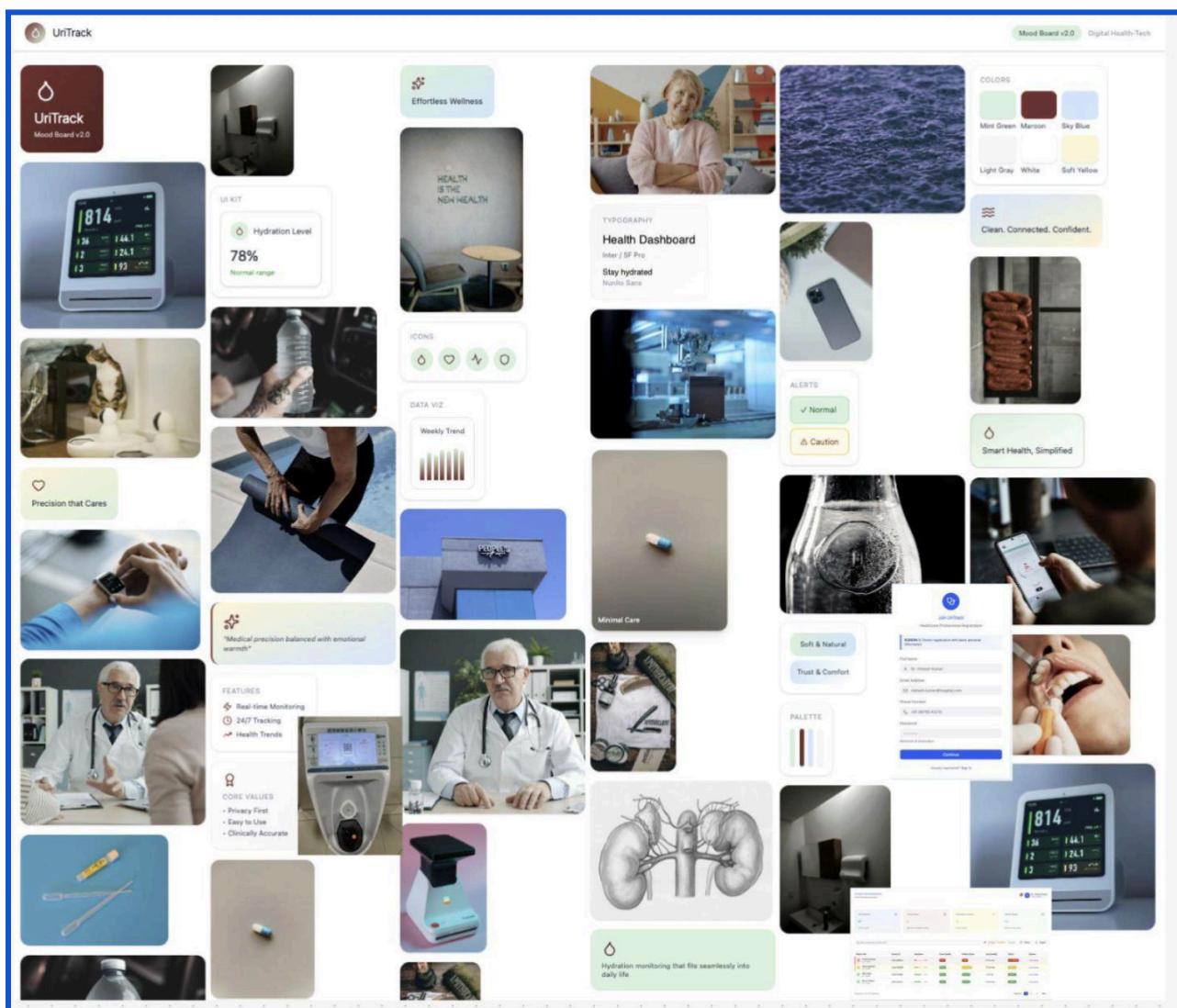
We choose simplicity and dignity over feature bloat.

We choose correctness over convenience when clinical accuracy is involved.

We choose minimal touchpoints over excessive customization.

Visual Direction & Mood Board

The mood board defines the visual identity of UriTrack, emphasizing cleanliness, trust, and effortless preventive care. It brings together calming blues, medical-grade neutrals, and minimalist forms that evoke hygiene, precision, and peace of mind. Soft gradients, subtle technology cues, and unobtrusive interface elements reflect the product's promise of passive, dignified health monitoring. These visuals guide the UI and experience design, ensuring every touchpoint feels reassuring, hygienic, and clinically credible—while remaining simple enough for all users to navigate with confidence.



Suggested Information Architecture

1. Model Layer (Data layer)

The Model layer stores, structures, and manages all persistent health, device, and user data. It is organized into tightly defined entities aligned with the system's primary workflows:

Core Data Entities

- **User Data:** profiles, demographics, permissions, health history, notification preferences
- **Biomarker Results:** protein, ketones, nitrites, hydration/SG, timestamps, device ID, risk level
- **Device & Installation Data:** device ID, firmware, calibration status, environment (home, clinic, workplace)
- **Alerts & Insights:** alert type, severity, timestamps, escalation state
- **Clinician Notes:** doctor comments, follow-up recommendations, linked results
- **Facility Data:** installation locations, anonymized usage logs, uptime metrics

This layer ensures **HIPAA-compliant**, secure, and clinically meaningful data persistence

2. Controller Layer (Logic Layer)

The Controller orchestrates all system behavior, processing sensor data, enforcing security, and routing information to the correct views.

Core Responsibilities

- Authentication & role-based access management
- Processing raw biosensor data into validated biomarker results
- Trend analysis, early-warning detection, and risk scoring
- Triggering alerts and escalation logic
- Managing clinician portal access and EHR/FHIR integrations
- Device diagnostics, calibration monitoring, and maintenance scheduling
- Multi-user mapping & anonymization in shared environments

The Controller ensures workflows remain **accurate, safe, and consistent** across all interactions.

3. View Layer (Interface Layer)

Each persona interacts with a dedicated interface tailored to their needs, cognitive load, and decision workflows.

- **Patient View:** simple daily summaries, trend charts, hydration reminders, privacy controls
- **Caregiver View:** dependent monitoring, alerts, safety notifications
- **Clinician Dashboard:** longitudinal biomarker trends, risk flags, EHR-synced insights
- **Facility Administrator View:** device uptime, usage analytics, maintenance alerts
- **Installation/Setup View:** pairing, calibration, network configuration

Views display only what each role needs, keeping the experience **clear, accessible, and context-aware**.

MVC Mapping Table:

Model (Data Layer)	View (UI Layer)	Controller (Logic Layer)
User profiles, health history, permissions	Patient dashboard, caregiver view, clinician portal	Authentication, role-based access
Biomarker results (protein, ketones, nitrites, SG/hydration)	Daily results, trend charts, alerts	Analytics engine, trend detection, risk scoring
Device data (ID, calibration, location)	Device status view	Device health monitoring, firmware logic
Alerts (severity, timestamps)	Notifications, alert center	Alert routing, escalation logic
Facility installation data	Facility admin dashboard	Multi-user mapping, anonymization, usage analytics

Architecture Justification

UriTrack uses the MVC pattern to maintain a **modular, scalable architecture**—allowing UI updates without backend changes and enabling hardware, analytics, and interface layers to evolve independently. This structure supports both **single-user home deployments** and **high-volume shared environments** such as workplaces, clinics, and campuses.

Persona Alignment

The architecture directly reflects user needs uncovered in the MRD and personas:

- Seniors need simple, visual, low-cognitive-load interfaces
- Caregivers need timely alerts without data overload
- Clinicians require validated biomarker data with longitudinal context
- Facility admins need uptime visibility and anonymous usage metrics

This ensures every user interacts only with what is relevant to them—no clutter, no confusion.



Model (Database)

Patient Data:

- Patient Profiles
- Personal Information
- Medical History
- Health Conditions
- Emergency Contacts
- Family Members

Health Data:

- Urine Analysis Results
- Health Parameters (12 metrics)
- Historical Readings
- Trend Data & Analytics
- Baseline Values
- Health Score Calculations

Device Information:

- Device ID & Serial Number
- Bluetooth Pairing Data
- Firmware Version
- Battery Status
- Calibration Data
- Device Health Logs

Doctor/Provider Data:

- Doctor Profiles
- Credentials & Licenses
- Specializations
- Patient Assignments
- Clinical Notes
- Practice Information

Authentication:

- Username & Email
- Password (Encrypted)
- Phone Number
- Verification Tokens
- Session Management

System Data:

- Alerts & Notifications
- Support Tickets
- Event & Audit Logs
- Privacy Settings
- Subscription & Billing



Views

Patient Mobile App:

- Login & Signup Screens
- Email/SMS Verification
- Onboarding Wizard
- Device Pairing Interface
- Home Dashboard
- Real-time Health Monitor
- Health Insights & Analytics
- Trend Charts & Graphs
- Alert Notifications
- Emergency Guidance
- Profile & Settings
- Medical History Input
- Family Management
- Doctor Messaging
- Report Export

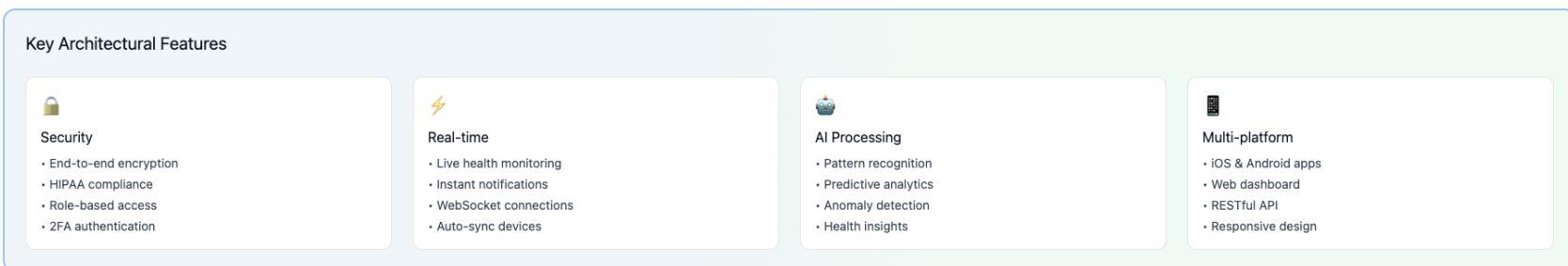
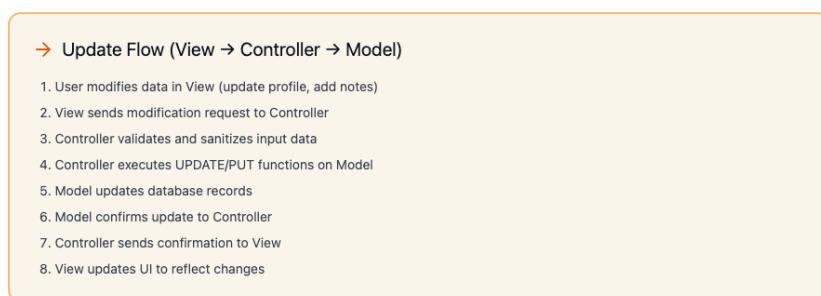
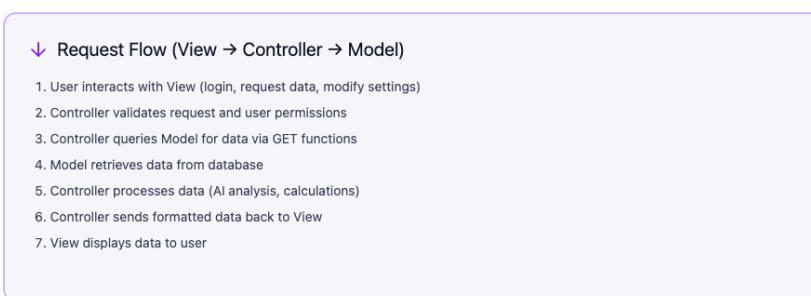
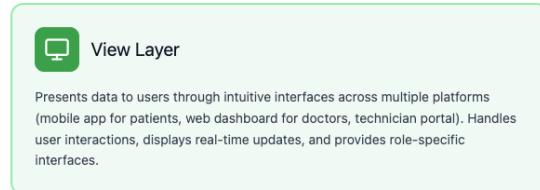
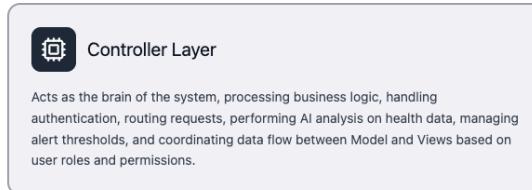
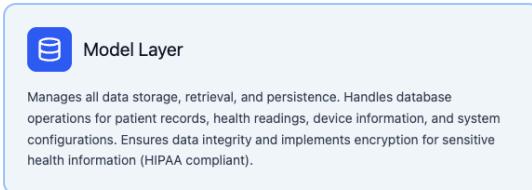
Doctor Web Dashboard:

- Doctor Login Portal
- Credential Verification
- Multi-patient Dashboard
- Patient Search & Filters
- Patient Detail View
- Health Analytics
- Trend Analysis Charts
- AI Insights Review
- Clinical Notes Editor
- Alert Management
- Patient Messaging
- Appointment Scheduler

Technician Interface:

- Support Dashboard
- Device Diagnostics
- Remote Management
- Firmware Updates
- Installation Tools
- Troubleshooting Guides





Technical Highlights

IoT Hardware:

Embedded multi-biomarker biosensors with BLE/Wi-Fi connectivity, onboard calibration, and secure firmware for passive restroom-based monitoring.

Backend Infrastructure:

AWS IoT Core + Lambda microservices architecture with DynamoDB for scalable event storage and FHIR-compliant API Gateway for clinician/EHR integrations.

Analytics & Intelligence:

AWS SageMaker-powered pipelines for predictive modelling, anomaly detection, hydration scoring, and early-risk alerts using longitudinal biomarker data.

Security & Compliance:

AES-256 at rest, TLS 1.3 in transit, role-based access control, and full HIPAA/GDPR compliance for medical data protection and audit logging.

Frontend Applications:

React Native mobile app for patients/carers and React/Next.js web dashboards for clinicians and facility administrators.

Features

v1 – Minimum Viable Product (Launch Version)

Features were prioritized based on direct user pain points surfaced in interviews and MRD findings—primarily hygiene concerns, testing inconvenience, and lack of continuous insights. MVP features focus on delivering passive, accurate testing and immediate value to high-risk users. vNext expands clinical and multi-persona functionality, while vLongTerm reflects scalable preventive health innovation

Feature	Description	Dependencies	Priority
Passive Urine Detection	Automatically detects urine flow and initiates testing with zero	Sensor hardware, calibration module,	v1

	user action.	firmware	
Core Biomarker Analysis	Detects hydration (SG), protein, ketones, and nitrites for UTI/CKD indicators.	Biosensors, analytics engine, cloud pipeline	v1
Patient Results Dashboard	Simple, senior-friendly UI showing daily results and weekly trends.	Patient app UI, results database, API gateway	v1
Alerts & Hydration Reminders	Sends nudges based on abnormal markers or dehydration risk.	Notification service, risk scoring logic	v1
Secure Cloud Sync & Encryption	Stores all results securely with HIPAA-compliant encryption.	AWS IoT Core, DynamoDB, encryption layer	v1
Single-User Mode	Supports one patient per device in home or clinic settings.	Device–user mapping table	v1

vNext – Next Version Functionality (Post-Launch)

This version enhances clinical value, ecosystem adoption, and multi-persona workflows.

Feature	Description	Dependencies	Priority
Clinician Dashboard	Web portal showing longitudinal biomarker trends and flagged risks.	Web app (React), analytics engine, clinician role permissions	vNext
EHR/FHIR Integration	Sends clinically validated results to Epic/Cerner systems.	FHIR API, OAuth, clinician approval	vNext
Caregiver Monitoring	Allows approved caregivers to receive alerts for elderly patients.	Role-based access, alert routing logic	vNext
Facility/Workplace Mode	Supports multi-user anonymized restroom deployments (campus, workplace).	Multi-user mapping logic, installation database	vNext
Advanced Trend Analysis	Weekly/monthly risk patterns and biomarker interpretations.	Longitudinal data, analytics/ML modules	vNext
Device Health & Maintenance Alerts	Auto-detection of calibration needs, low signal, or hardware	Diagnostics module, device telemetry	vNext

	issues.		
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vLongTerm – Mature Product Vision

Transforms UriTrack into a predictive, ecosystem-level preventive health platform.

Feature	Description	Dependencies	Priority
Predictive Health Models	AI forecasts CKD progression, UTI onset, and hydration cycles.	SageMaker ML models, large historical dataset	vLongTerm
Wearable Integrations	Syncs with Apple Health, Fitbit, Garmin for combined insights.	Health APIs, OAuth connectors	vLongTerm
Population Health Dashboard	Aggregate, anonymized insights for hospitals, employers, and campuses.	Data aggregation engine, privacy layer	vLongTerm
Insurance & Reimbursement Support	Preventive screening coverage, claims automation, incentives.	Payer integrations, billing API	vLongTerm
Expanded Biomarker Panel	Additional markers for metabolism, inflammation, kidney stress.	New biosensor modules, updated analytics	vLongTerm
Multi-Fluid Diagnostics	Unified platform for urine + saliva + sweat biomarkers.	Additional hardware modules, multimodal ML	vLongTerm
Smart Restroom Networks	National diagnostic grid in airports, malls, universities, workplaces.	Scalable IoT deployment, fleet management	vLongTerm

This prioritization ensures that the MVP delivers core user value immediately while later iterations scale clinical utility, multi-user environments, and predictive insights aligned with long-term strategy.

Roadmap

UriTrack's roadmap is structured across three phases—MVP (v1), short-term expansion (vNext), and mature vision (vLongTerm). Each phase builds on validated user needs, biosensor feasibility, and technical prerequisites uncovered in early pilots.

v1—Minimum Viable Product (Q1–Q2)

Goal: Validate passive biomarker detection, user acceptance, and clinical feasibility.

Timeline

- **Q1:** Hardware prototype finalization, biosensor calibration, mobile app basics
- **Q2:** Home + clinic pilot deployments with high-risk patients

Included Features

- Passive urine detection
- Core biomarker testing (SG/hydration, protein, ketones, nitrites)
- Patient dashboard (daily + weekly insights)
- Alerts & reminders
- HIPAA-compliant cloud storage
- Single-user mode

Dependencies

- Biosensor validation
- Stable firmware
- Patient app baseline UI
- Secure cloud pipeline

vNext—Short-Term Expansion (Q3–Q4)

Goal: Scale from individual users to clinicians and facility environments.

Timeline

- **Q3:** Clinician dashboard release + caregiver monitoring
- **Q4:** Facility/workplace multi-user mode + EHR/FHIR integration

Included Features

- Clinician dashboard
- EHR/FHIR integration
- Caregiver monitoring
- Facility/workplace mode
- Advanced trend analysis
- Device health/maintenance alerts

Dependencies

- Successful MVP biomarker accuracy
- Sufficient longitudinal data
- Role-based access controls
- FHIR compliance testing

vLongTerm – Mature Vision (Year 2+)

Goal: Transform UriTrack into a predictive, population-scale preventive health platform.

Timeline

- **Years 2–3:** Predictive models, insurance pathways, wearable integration
- **Year 3+:** Facility networks + expanded diagnostics

Included Features

- Predictive health analytics
- Wearable device integrations
- Population health dashboards
- Insurance/reimbursement support
- Expanded biomarker panel
- Multi-fluid diagnostics (urine + saliva + sweat)
- Smart restroom networks at airports, malls, campuses, workplaces

Dependencies

- Large dataset for ML models
- Institutional partnerships
- Additional biosensor R&D
- Regulatory approvals for clinical-grade expansion

UriTrack Product Development Timeline & Feature Priorities

Features	Now	Next	Later
	Current Sprint	Q3-Q4 2024	2025 & Beyond
Patient Onboarding	Create patient account	Social login integration (Google, Apple)	Single Sign-On (SSO) for healthcare systems
	Sign in / Sign up	Biometric authentication	Voice-based authentication
	Email & SMS verification	Multi-device login	
	Basic profile setup		
Device & Monitoring	Bluetooth device pairing	Multiple device support	Wearable device integration
	Real-time urine sample analysis	Automatic sample detection	Advanced biomarker detection
	Basic health parameter tracking	Continuous monitoring mode	Predictive device maintenance
	Device battery monitoring	Device firmware updates	
Health Data & Analytics	Health dashboard with real-time data	Advanced AI analysis & predictions	Machine learning-driven diagnostics
	Parameter trend visualization	Personalized health recommendations	Integration with genetic data
	Daily/weekly health reports	Health goal tracking	Long-term health forecasting
	Basic AI health insights	Comparative analysis with baselines	Population health analytics
Alerts & Notifications	Critical health parameter alerts	Smart alert scheduling	AI-powered alert prioritization
	Push notifications	Emergency contact notifications	Integration with emergency services
	Doctor notification on abnormalities	Multi-channel alerts (SMS, Email, Call)	
	Basic alert customization	Alert history & management	Predictive alerts before critical events

Doctor Dashboard	Multi-patient monitoring	Advanced patient filtering & search	AI-assisted diagnosis support
	Patient health data review	Appointment scheduling	Hospital system integration (EMR/EHR)
	Clinical notes & annotations	Prescription management	Collaborative care team features
	Doctor-patient messaging	Telehealth video consultations	Research & clinical trial tools
		Batch patient review	
Privacy & Security	End-to-end data encryption	Granular data sharing controls	Blockchain-based health records
	HIPAA compliance framework	GDPR compliance	Zero-knowledge encryption
	Secure authentication	Data anonymization options	Advanced threat detection
	Basic privacy settings	Security audit logs	Compliance with international standards
		Two-factor authentication (2FA)	
Family & Care Network	Emergency contact setup	Family health dashboard	Multi-generational health tracking
	Basic family member profiles	Care team invitations	Family health trends & insights
		Shared health timeline	Hereditary condition monitoring
		Family notification settings	Family care coordination tools
		Caregiver access controls	
Integration & Export	PDF health report export	Apple Health & Google Fit integration	Direct EHR/EMR system sync
	Email report sharing	HL7/FHIR API for healthcare systems	Insurance portal integration
		CSV data export	Research data contribution platform
		Third-party app integrations	Smart home health ecosystem

Subscription & Payment	Basic subscription plans	Multiple payment methods	Flexible corporate/enterprise plans
	Credit card payments	Family subscription plans	Government healthcare program support
	Billing dashboard	Healthcare provider pricing	Value-based care reimbursement
Support & Education	In-app help documentation	Video tutorials & onboarding	AI-powered virtual health assistant
	FAQs & troubleshooting	Live chat support	Personalized health education
	Customer support tickets	Health education content library	Peer support groups
		Community forums	Certified health coaching

Now - Current Sprint

Features currently in development or being actively worked on. These are our immediate priorities and will be released in the current development cycle.

Next - Q3-Q4 2024

Features planned for the next development phase. These have been prioritized and scheduled for implementation within the next 3-6 months.

Later - 2025 & Beyond

Future vision and long-term roadmap items. These features are planned for 2025 and beyond, subject to market needs and strategic priorities.

Product Roadmap Documentation

This roadmap outlines the strategic direction and feature development priorities for the UriTrack smart health monitoring system. The roadmap is aligned with our vision to provide comprehensive health monitoring solutions for patients, healthcare providers, and care networks. All features are subject to change based on user feedback, technical feasibility, and market demands. This document is part of the academic MRD submission for project planning and stakeholder communication.

Feature Categories Overview

 Patient Onboarding

 Device & Monitoring

 Health Data & Analytics

 Alerts & Notifications

 Doctor Dashboard

 Privacy & Security

 Family & Care Network

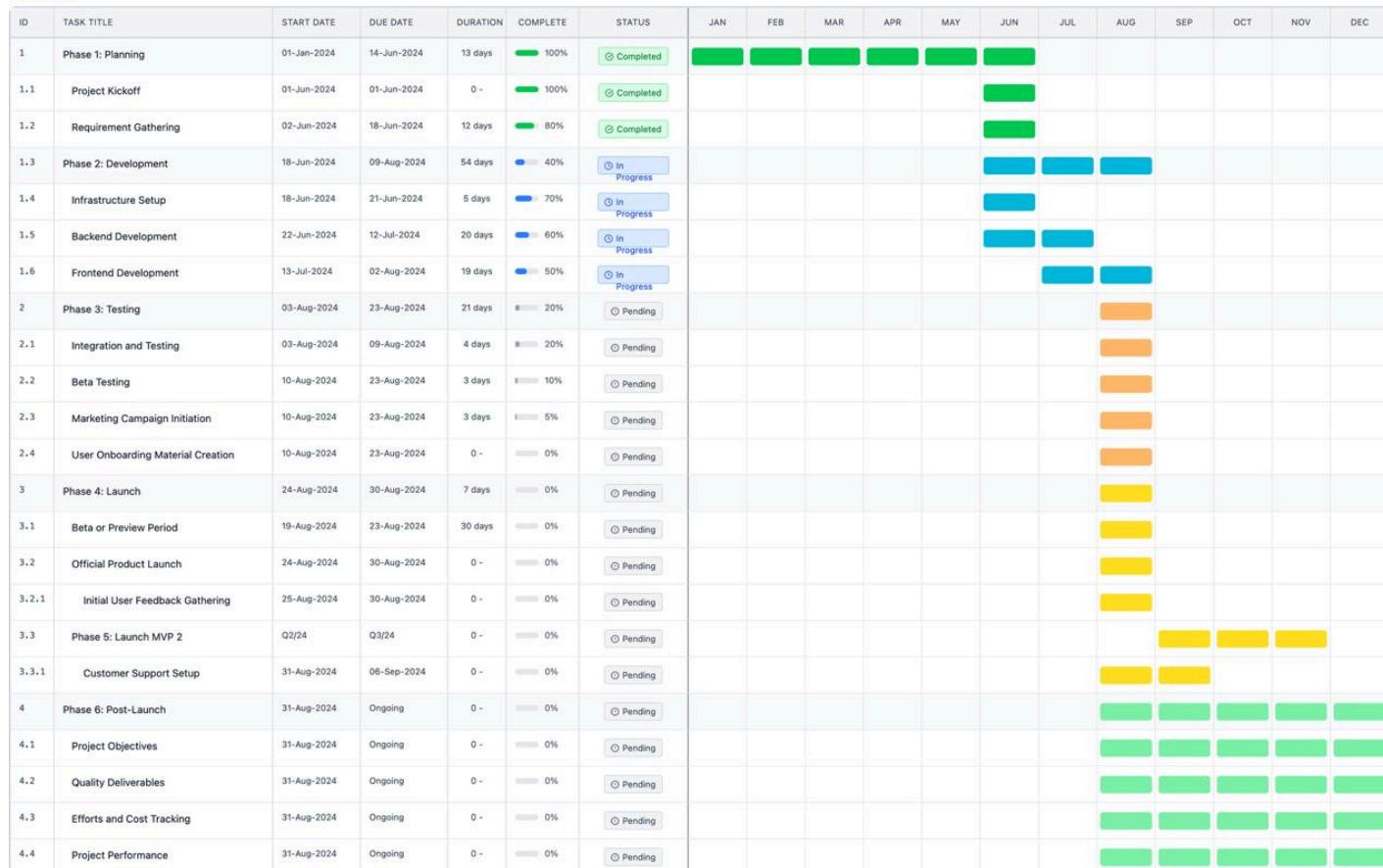
 Integration & Export

 Subscription & Payment

 Support & Education

Each phase aligns with user needs, biosensor maturity, and technical feasibility. v1 focuses on proving accuracy and usability; vNext expands value to clinicians and shared spaces; vLongTerm unlocks predictive care and large-scale deployment

Milestones/Timing



Timeline Overview

Project Duration:

January - December 2024

Total Tasks:

23 tasks

Completed:

3 tasks

In Progress:

4 tasks

Pending:

16 tasks

Status Legend

Completed Task finished successfully

In Progress Currently being worked on

Pending Not yet started

Academic MRD Documentation

This Gantt chart represents the complete project timeline for the UriTrack smart health monitoring system from conception through launch and post-launch operations. All milestones, deliverables, and timelines are documented for academic submission and project tracking purposes.

Sprint Planning

UriTrack Sprint Board

Complete Development Timeline - 6 Sprints | Oct 2024 - Feb 2025

Total Progress **30%** 212/698 pts

Team Velocity **90 pts** per sprint

Team Size **12** active members

Sprint Overview Board

Sprint	Start Date	End Date	Tasks	Points
Sprint 1 - Foundation	Oct 1 - Oct 21, 2024		9 tasks	89/89 pts
Sprint 2 - Core Features	Oct 22 - Nov 11, 2024		9 tasks	92/92 pts
Sprint 3 - AI & Messaging	Nov 12 - Dec 2, 2024		14 tasks	31/103 pts
Sprint 4 - Analytics	Dec 3 - Dec 23, 2024		10 tasks	0/95 pts
Sprint 5 - Technician Portal	Dec 24 - Jan 13, 2025		10 tasks	0/88 pts
Sprint 6 - Polish & Launch	Jan 14 - Feb 3, 2025		10 tasks	0/91 pts

Sprint 1 - Foundation

Oct 1 - Oct 21, 2024

9 tasks 89/89 pts

Engineering **Completed**
Patient Registration & Login System
AJ Alex ↗ 13

Engineering **Completed**
Email & SMS Verification System
RK Raj ↗ 8

Engineering **Completed**
Doctor Registration & Credentials
MG Maria ↗ 8

Engineering **Completed**
Database Schema Design - All Tables
RK Raj ↗ 13

Engineering **Completed**
API Gateway Setup & Configuration
RK Raj ↗ 8

Design **Completed**
+ Add a card

Sprint 2 - Core Features

Oct 22 - Nov 11, 2024

9 tasks 92/92 pts

Engineering **Completed**
Bluetooth Device Pairing Module
AJ Alex ↗ 13

Engineering **Completed**
Patient Onboarding Wizard - Mobile
AJ Alex ↗ 8

Engineering **Completed**
Home Dashboard - Real-time Monitor
AJ Alex ↗ 13

Engineering **Completed**
Doctor Dashboard - Patient List View
MG Maria ↗ 8

Engineering **Completed**
Multi-Patient Monitoring Grid
MG Maria ↗ 8

Design **Completed**
+ Add a card

Sprint 3 - AI & Messaging

Nov 12 - Dec 2, 2024

14 tasks 31/103 pts

Engineering **In Progress**
AI Model Training - Health Patterns
DPS Dr. ↗ 13

Engineering **In Progress**
Real-time Alert Notifications (Push)
BT Backend ↗ 8

Engineering **In Progress**
AI Anomaly Detection Algorithm
DPS Dr. ↗ 13

Engineering **In Progress**
Doctor-Patient Chat Component
MG Maria ↗ 8

Engineering **Completed**
Emergency Contact Integration
AJ Alex ↗ 5

Design **Completed**
+ Add a card

Sprint 4 - Analytics

Dec 3 - Dec 23, 2024

10 tasks 0/95 pts

Engineering **Planned**
Health Trend Analysis Charts
RK Raj ↗ 13

Engineering **Planned**
AI-Generated Health Insights
RK Raj ↗ 13

Engineering **Planned**
Clinical Notes Management System
RK Raj ↗ 8

Engineering **Planned**
Patient History Timeline View
RK Raj ↗ 8

Engineering **Planned**
Export Reports (PDF/CSV)
RK Raj ↗ 5

Engineering **Planned**
+ Add a card

Sprint 5 - Technician Portal

Dec 24 - Jan 13, 2025

10 tasks 0/88 pts

Design **Planned**
Technician Dashboard Design
RK Raj ↗ 8

Engineering **Planned**
Remote Device Diagnostics
RK Raj ↗ 13

Engineering **Planned**
Firmware Update System
RK Raj ↗ 13

Engineering **Planned**
Device Health Monitoring
RK Raj ↗ 8

Engineering **Planned**
Critical Alert Escalation
RK Raj ↗ 8

Engineering **Planned**
+ Add a card

Sprint 6 - Polish & Launch

Jan 14 - Feb 3, 2025

10 tasks 0/91 pts

Engineering **Planned**
Performance Optimization - Mobile
RK Raj ↗ 8

Engineering **Planned**
Performance Optimization - Web
RK Raj ↗ 8

Legal **Planned**
HIPAA Compliance Audit
RK Raj ↗ 13

QA/Testing **Planned**
Security Penetration Testing
RK Raj ↗ 13

UI/UX **Planned**
Accessibility Features (WCAG 2.1)
RK Raj ↗ 8

Engineering **Planned**
+ Add a card

UriTrack Sprint Board

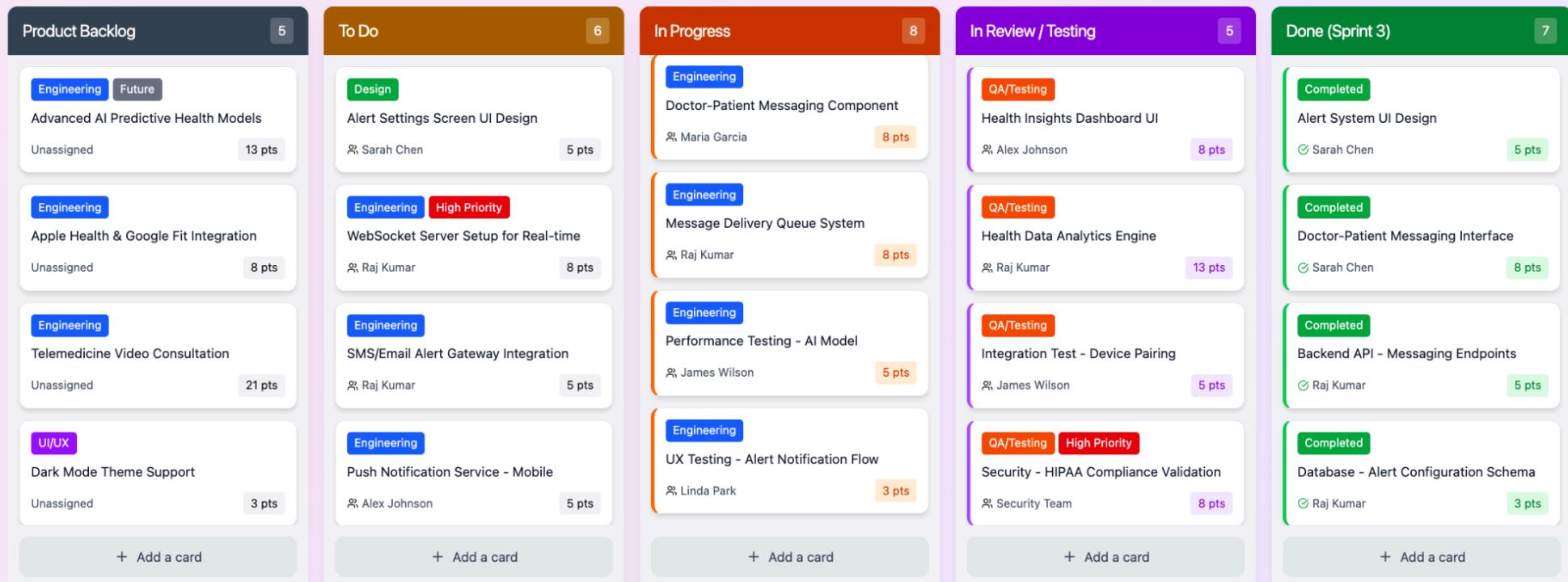
Complete Development Timeline - 6 Sprints | Oct 2024 - Feb 2025

Sprint Overview Board

Sprint 2 - Core Features	Sprint 3 - AI & Messaging	Sprint 4 - Analytics	Sprint 5 - Technician Portal	Sprint 6 - Polish & Launch	Product Backlog
<p>Oct 22 - Nov 11, 2024</p> <p>9 tasks 92/92 pts</p> <p>Engineering Completed Bluetooth Device Pairing Module AJ Alex 13</p> <p>Engineering Completed Patient Onboarding Wizard - Mobile AJ Alex 8</p> <p>Engineering Completed Home Dashboard - Real-time Monitor AJ Alex 13</p> <p>Engineering Completed Doctor Dashboard - Patient List View MG Maria 8</p> <p>Engineering Completed Multi-Patient Monitoring Grid MG Maria 8</p>	<p>Nov 12 - Dec 2, 2024</p> <p>14 tasks 31/103 pts</p> <p>Engineering In Progress AI Model Training - Health Patterns DPS Dr. 13</p> <p>Engineering In Progress Real-time Alert Notifications (Push) BT Backend 8</p> <p>Engineering In Progress AI Anomaly Detection Algorithm DPS Dr. 13</p> <p>Engineering Completed Emergency Contact Integration AJ Alex 5</p>	<p>Dec 3 - Dec 23, 2024</p> <p>10 tasks 0/95 pts</p> <p>Engineering Planned Health Trend Analysis Charts AJ Alex 13</p> <p>Engineering Planned AI-Generated Health Insights BT Backend 8</p> <p>Engineering Planned Clinical Notes Management System DPS Dr. 8</p> <p>Engineering Planned Patient History Timeline View AJ Alex 8</p> <p>Engineering Planned Export Reports (PDF/CSV) AJ Alex 5</p>	<p>Dec 24 - Jan 13, 2025</p> <p>10 tasks 0/88 pts</p> <p>Design Planned Technician Dashboard Design AJ Alex 8</p> <p>Engineering Planned Remote Device Diagnostics AJ Alex 13</p> <p>Engineering Planned Firmware Update System AJ Alex 13</p> <p>Engineering Planned Device Health Monitoring AJ Alex 8</p> <p>Engineering Planned Critical Alert Escalation AJ Alex 8</p>	<p>Jan 14 - Feb 3, 2025</p> <p>10 tasks 0/91 pts</p> <p>Engineering Planned Performance Optimization - Mobile AJ Alex 8</p> <p>Engineering Planned Performance Optimization - Web AJ Alex 8</p> <p>Legal Planned HIPAA Compliance Audit AJ Alex 13</p> <p>QA/Testing Planned Security Penetration Testing AJ Alex 13</p> <p>UI/UX Planned Accessibility Features (WCAG 2.1) AJ Alex 8</p>	<p>Future Features</p> <p>11 tasks 0/140 pts</p> <p>Engineering Future Telemedicine Video Consultation AJ Alex 21</p> <p>Engineering Future Apple Health & Google Fit Integration AJ Alex 13</p> <p>Engineering Future Apple Watch Integration AJ Alex 13</p> <p>Engineering Future Multi-language Support (10 languages) AJ Alex 13</p> <p>Engineering Future Voice Commands & Input AJ Alex 13</p>

⌚ Current Sprint Detailed Workflow - Sprint 3

Kanban board showing detailed task flow: Backlog → To Do → In Progress → In Review → Done



👤 Core Team Members



Raj Kumar
Backend Lead



Alex Johnson
Mobile Lead



Maria Garcia
Web Lead



Dr. Priya Shah
AI/ML Engineer



Sarah Chen
Lead Designer



James Wilson
QA Lead

Task Categories & Labels

█ **Engineering**
Development tasks

█ **Design**
UI/UX design work

█ **QA/Testing**
Quality assurance

█ **UI/UX**
User experience

█ **In Progress**
Active development

█ **Completed**
Done & deployed

█ **Planned/Future**
Not started yet

█ **High Priority**
Critical path

User Stories:

AI-Powered Health Pattern Recognition

In list [Sprint 3 Backlog](#)

Labels

[Engineering](#) [High Priority](#) [+](#)

Notifications

[Watch](#)

≡ Description

Purpose: As a patient, I want UriTrack to use AI to analyze my historical data and identify concerning patterns for early health warnings.

In Scope: AI pattern analysis, trend predictions, personalized recommendations based on 30+ days of historical data.

Out of Scope: Medical diagnosis, treatment recommendations, or external medical database integration.

Requirements Defined: Train ML models on anonymized datasets, pattern detection algorithms, human-readable insights.

Acceptance Criteria:

1. AI model trained on 10,000+ patient records (90%+ accuracy)
2. Daily analysis at 3am generates insights within 5 minutes
3. Insights display with confidence scores (0-100%)
4. Doctor notified for high-risk patterns (90%+ confidence)

Artifact Links:

Design:

- Successor: AI Model Performance Testing
- Predecessor: Health Data Collection API
- Parent: Sprint 3 - AI & Messaging Features

Story Points

13 points

Go-To-Market Plan (Sequential Order)

Clinical Pilots: Launch with nephrology, urology, and primary-care clinics to onboard high-risk patients and validate UriTrack's accuracy through EHR/FHIR-linked dashboards.

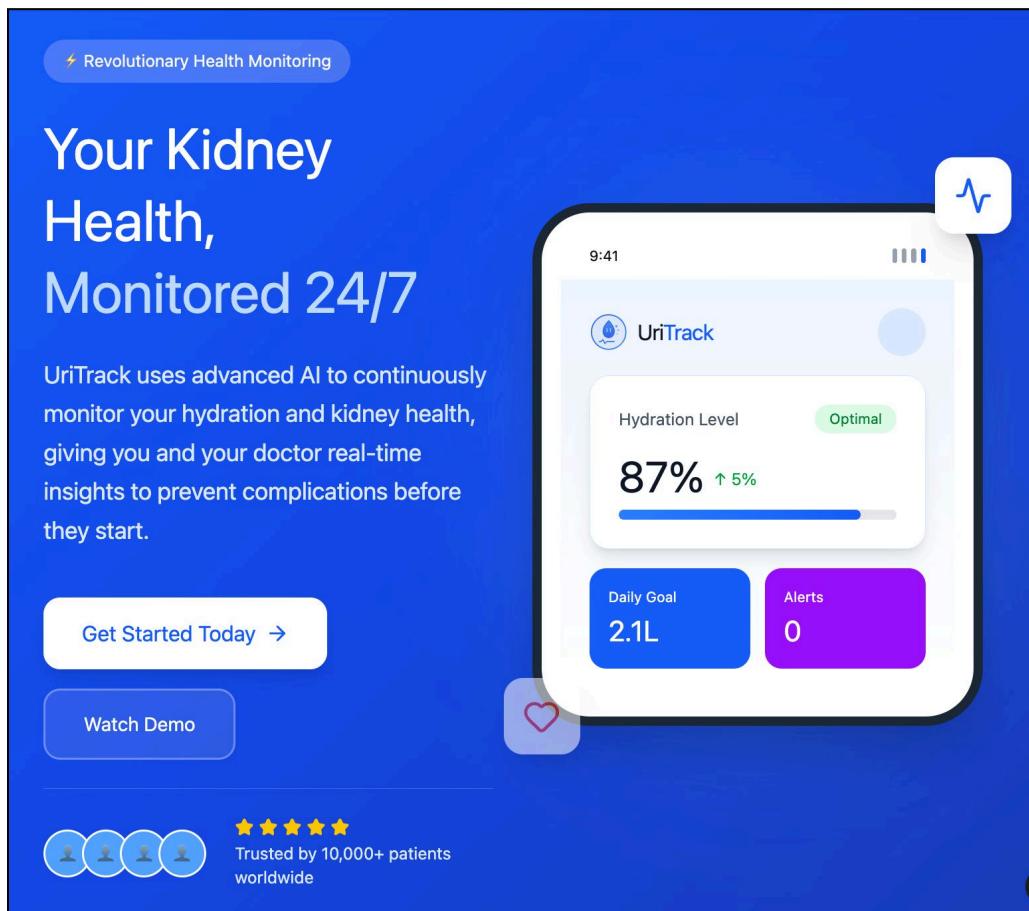
Workplace Wellness: Install UriTrack in corporate restrooms to support hydration and preventive-care programmes, providing anonymized population-health insights to employers.

Senior-Care Expansion: Deploy in assisted-living and rehab facilities to reduce dehydration- and UTI-related hospitalizations while preserving user dignity.

Influencer & Advocacy Partnerships: Collaborate with medical creators and patient advocacy groups (CKD, UTI, diabetes) to educate communities and showcase passive monitoring benefits.

Digital & Referral Growth: Run targeted ads for chronic-condition audiences, activate patient/caregiver referral incentives, and build early-access waitlists across clinics, universities, and wellness hubs.

Ads:



Metrics

North Star Metric

Weekly Active Urine Screenings (WAUS)

- **Definition:** Total number of urine screenings successfully processed by UriTrack smart urinals each week.
- **Why it matters:** This captures the core value UriTrack delivers—effortless, routine, preventive health screening integrated into daily life.
- **Calculation:** Count of all screenings with status = “Completed” within a 7-day period.
- **Source:** Device logs → Screening Events Table (timestamp, biomarker set, result status).

Key Influencers of North Star Metric

1. Users Activated (New Users Performing Their First Scan)

- **Definition:** Number of unique users who complete their first scan.
- **Calculation:** Count (user_id, where first_scan_date is within the period).
- **Source:** User Activation Table (first_scan_event).

2. Daily/Weekly Active Users (DAU/WAU)

- **Definition:** Number of unique users performing at least one scan during the period.
- **Calculation:**
 - DAU: Count of unique user_ids generating ≥ 1 scan/day
 - WAU: Count of unique user_ids generating ≥ 1 scan/week
- **Source:** Screening event logs (scan timestamps).

3. Avg. Screenings Per User per Week

- **Definition:** Frequency with which an average user uses UriTrack.
- **Calculation:** Total weekly screenings / WAU.
- **Source:** Screening events database.

4. Device Utilization Rate (Per Facility)

- **Definition:** Percentage of time the UriTrack device is actively used versus available.
- **Calculation:** (Total screening minutes / Total available minutes) $\times 100$.
- **Source:** IoT device logs (usage timestamps + idle time).

5. Biomarker Detection Events (Early-Risk Flags)

- **Definition:** Number of screenings that detect biomarkers outside normal ranges.
- **Calculation:** Count(scan_id where biomarker_result != “Normal”).
- **Source:** Biomarker Results Table.

- **Why it matters:** Indicates impact on preventive health outcomes (aligned with institutional value).

6. Repeat Screening Rate (Retention)

- **Definition:** Percentage of users who return for another screening within 7 or 30 days.
- **Calculation:**
 - 7-day retention: $(\text{Users with } \geq 2 \text{ scans within 7 days} / \text{Users with first scan}) \times 100$
 - 30-day retention: Same logic for 30 days
- **Source:** User Scan Event History.

7. Participation Rate per Facility

- **Definition:** Percentage of eligible individuals who use UriTrack within a week (e.g., employees, students, gym members).
- **Calculation:** $(\text{Unique users in facility} / \text{Total eligible population}) \times 100$
- **Source:** Facility roster + screening logs.

Levers (What Moves the NSM)

1. Scan Completion Rate

- **Definition:** % of initiated scans that complete successfully.
- **Calculation:** $(\text{Completed scans} / \text{Initiated scans}) \times 100$
- **Source:** Device event logs (scan_start, scan_end).

2. User Education Funnel Conversion

- **Definition:** % of users who see educational prompts and then initiate scans.
- **Calculation:** $(\text{Users who scanned after prompt} / \text{Users who viewed prompt}) \times 100$
- **Source:** In-app or facility display analytics.

3. Installation-to-Activation Conversion

- **Definition:** % of installed devices actively used within the first week.
- **Calculation:** $(\text{Devices with } \geq 1 \text{ scan} / \text{Total devices installed}) \times 100$
- **Source:** Device provisioning logs.

4. Facility Adoption Rate

- **Definition:** % of facilities that adopt UriTrack after the pilot period.
- **Calculation:** $(\text{Facilities converted} / \text{Facilities piloted}) \times 100$
- **Source:** Sales + deployment CRM.

Attention Gainers (Leading Indicators & Health Signals)

1. System Uptime (Device Reliability)

- **Definition:** Percentage of time the UriTrack system and IoT device are operational.
- **Calculation:** $(\text{Operational minutes} / \text{Total minutes}) \times 100$

- **Source:** Device health monitoring tools.

2. Sensor Accuracy & Error Rate

- **Definition:** Frequency of erroneous or incomplete readings.
- **Calculation:** $(\text{Error scans} / \text{Total scans}) \times 100$
- **Source:** Sensor logs, QC events.

3. Hygiene Compliance Alerts

- **Definition:** Number of cleaning or refill alerts triggered per device.
- **Calculation:** Count of hygiene alerts per week.
- **Source:** Device maintenance logs.

4. User Feedback (Trust, Ease, Comfort)

- **Definition:** Qualitative and quantitative feedback on experience and trust.
- **Measurement:** In-app surveys, QR-based restroom surveys, institutional feedback forms.
- **Source:** Feedback system logs.

5. Data Processing Latency

- **Definition:** Average time between scan completion and results sent to user.
- **Calculation:** $\text{Avg}(\text{result_timestamp} - \text{scan_timestamp})$.

Source: Backend processing logs.

Projected Costs & Revenue Model

A. Cost Structure

Category	Details	Cost per Unit	Units	Total Cost
Engineering & Technical Costs				
Backend Engineer	MVP backend development	\$45.00/hr	450 hrs	\$20,250.00
Firmware/IoT Engineer	Hardware integration + sensor logic	\$50.00/hr	300 hrs	\$15,000.00
ML/Signal Processing Engineer	Biomarker detection algorithms	\$60.00/hr	200 hrs	\$12,000.00
QA/Testing Engineer	Device + app QA cycles	\$30.00/hr	150 hrs	\$4,500.00
Subtotal –				\$51,750.00

Engineering				0
Server & Infrastructure Costs				
Compute (AWS EC2/Lambda)	Monthly	\$120.00	3 months	\$360.00
Storage	\$0.02 per GB per month	\$0.02	2,000 GB	\$40.00
Data Egress	Per GB	\$0.12	300 GB	\$36.00
Monitoring & Logging	CloudWatch / Datadog	\$80.00/month	3 months	\$240.00
Subtotal – Infra				\$676.00
Hardware & Deployment Costs				
UriTrack Sensor Kit	Hardware sensor + casing	\$180.00	5 units	\$900.00
Installation Labor	Technician deployment	\$150.00	5 facilities	\$750.00
Maintenance & Calibration	Monthly	\$50.00	3 months	\$150.00
Subtotal – Hardware				\$1,800.00
Marketing & Engagement Costs				
Pilot Educational Material	Posters, awareness displays	\$150.00	5 facilities	\$750.00
Engagement Campaigns	“Know Your Health” nudges	\$400.00	3	\$1,200.00
Explainer Video Content	Production of usage demo	\$1,000.00	1	\$1,000.00
Subtotal – Marketing				\$2,950.00
Operational Costs				
Customer Support Specialist	Salary per month	\$2,200.00	3 months	\$6,600.00
Facility Training Sessions	Per facility	\$120.00	5	\$600.00

Compliance & Security Review	HIPAA/GDPR alignment	\$500.00	1	\$500.00
Subtotal – Operations				\$7,700.00
Growth Loop Costs				
Early-User Incentives	Wellness credits per user	\$3.00	400 users	\$1,200.00
Facility Referral Program	Per converting facility	\$100.00	5	\$500.00
Subtotal – Growth				\$1,700.00
TOTAL COSTS (MVP + Pilot)				\$66,576.00

B. Revenue & Financial Model

B1. Pricing Strategy:

Revenue Stream	Details	Price	Units (Pilot)	Monthly Revenue
Facility Subscription (Primary)	Per device per month	\$150	5 devices	\$750.00
Analytics Dashboard Add-On	Facility advanced insights	\$80	2 facilities	\$160.00
Total Monthly Revenue (Pilot)				\$910.00

B2.CAC: Customer Acquisition Cost

CAC Component	Cost
Sales outreach + demos	\$400.00
Pilot educational materials	\$750.00
Engagement campaigns	\$1,200.00
Total Marketing Spend	\$2,350.00
Facilities Acquired	5
CAC per Facility (Total ÷ Facilities)	\$470.00

B3. LTV: Lifetime Value

LTV Formula	Value
Monthly Revenue per Facility	\$1,500
Retention	24 months
Gross Margin	65%
LTV = Revenue × Time × Margin	\$23,400 per facility

B4. LTV: CAC ratio

Metric	Value
LTV	\$23,400
CAC	\$470
LTV:CAC Ratio	49.7 : 1

B4. Payback Period

Metric	Value
CAC	\$470
Monthly subscription revenue	\$1,500
Payback Period = CAC ÷ Monthly Revenue	0.31 months (~9 days)

Operational Needs

Operational Support Plan

1. Infrastructure Management

- **Cloud Hosting:** AWS-based scalable compute and storage.
- **Backup & Recovery:** Automated daily backups; warm standby environment.
- **Security:** Encrypted data (AES-256 at rest, TLS 1.2+ in transit).

- **Monitoring & Alerts:** Real-time monitoring of device uptime, biomarker errors, and latency.

2. Device & Application Maintenance

- **Sensor Calibration:** Auto self-checks every 72 hours; manual monthly checks.
- **Firmware Updates:** OTA updates for sensor logic and new biomarker detection models.
- **Bug Tracking:** Centralised issue management system (Jira).
- **App & Backend Maintenance:** Monthly patch cycles, continuous bug fixes.

3. Testing & Quality Assurance

A. Hardware Testing

- **Sensor Accuracy Tests:**
 - Weekly variance checks against control samples
 - Threshold alignment for each biomarker
- **Environmental Stress Testing:**
 - Humidity, splash, temperature fluctuations (restroom-specific conditions)
- **Durability Testing:**
 - Impact and long-usage testing to ensure long-term reliability

B. Firmware Testing

- **Regression Testing:** Ensures existing biomarker features remain accurate after updates.
- **Integration Testing:** Confirms seamless operation between sensor, microcontroller, and cloud APIs.

C. Software Testing

- **Unit Tests:** Automated testing across biomarker pipeline, data API endpoints.
- **End-to-End Testing:** Simulates a full scan-to-result flow to validate processing latency and accuracy.
- **Load Testing:**
 - Ensures the system handles peak restroom usage (e.g., events, office breaks).
 - Data ingestion and result-generation stability.

D. Facility-Level Field Testing

- **Pilot Environment Tests:**
 - Install devices in controlled facility environments
 - Validate hygiene workflows and hardware placement
- **Custodial Interaction Testing:**
 - Cleaning cycle tests
 - Refill and maintenance reliability

E. Continuous QA Automation

- **CI/CD Pipeline:** Automated test suites triggered on every deployment.
- **Automated Alerts:** Detection of anomalies (false positives/negatives).

4. Data Management & Compliance

- **Data Storage:** 12-month retention with secure encrypted storage.
- **Data Privacy:** Full compliance with HIPAA/GDPR.
- **Audit Logs:** Quarterly reviews of data access and processing.

5. Customer & Facility Support Plan

- **Support Channels:** Email support, live chat, and help centre documentation.
- **Facility Training:** Deployment setup, sensor placement, and hygiene workflow training.
- **Knowledge Base:** Troubleshooting guides, calibration instructions.

6. Service Level Agreements (SLAs)

- **System Uptime:** 99.5% cloud uptime; 98% device uptime target.
- **Response Time:**
 - Initial facility response: <12 hours
 - Critical issues: 24–48 hours resolution
- **On-Site Support:** Device replacement within 72 hours.

7. User Feedback & Continuous Improvement

- **In-App Surveys:** Collect user reactions to clarity, trust, and comfort level.
- **Facility Manager Feedback:** Monthly operational review.

Quarterly Releases: Feature upgrades and biomarker additions based on data.

Risk Register

Risk ID	Risk Description	Impact	Likelihood	Mitigation Strategies	Risk Topic	Status
---------	------------------	--------	------------	-----------------------	------------	--------

1	Sensor produces inaccurate biomarker readings	High	Medium	Implement calibration cycles and routine QA testing; compare readings with control samples; OTA firmware fixes	Hardware / QA	Open
2	Device goes offline due to power or connectivity issues	High	Medium	Add connectivity watchdog; power backup notification, and real-time monitoring dashboard	IoT Operations	Open
3	Data breach or unauthorized access to health data	Very High	Low	AES-256 encryption, RBAC, annual penetration testing, SOC2/HIPAA compliance audits	IT Security	Open
4	High false positives/negatives impact user trust	High	Medium	Improve ML model accuracy; expand biomarker dataset; automated anomaly detection	ML / Data	Open
5	Cloud processing latency delays results to users	High	Medium	Optimize pipeline; add edge preprocessing; autoscale compute resources	Backend Engineering	Open
6	Facilities fail to maintain device hygiene (cleaning agents/refills)	Medium	Medium	Automated hygiene alerts, facility training, simplified maintenance workflow	Operations	Open
7	Sensor hardware deterioration in restroom environment (humidity/splash)	Medium	Medium	Use IP-rated casing, routine environmental stress testing, and replaceable shield components	Hardware	Open

8	Regulatory non-compliance for health data processing (HIPAA/GDPR)	Very High	Low	Conduct legal reviews; explicit user consent flows; data minimisation, and de-identification for dashboards	Legal / Compliance	Open
9	Low adoption by users due to discomfort or privacy concerns	High	Medium	Clear in-restroom education; anonymized results; trust messaging, and optional opt-out	User Research / Marketing	Open
10	Facility partners churn after pilot due to unclear ROI	High	Medium	Provide analytics dashboards; cost-savings reports; early detection summaries, and facility onboarding	Business / Partnerships	Open
11	Server downtime disrupts screenings	High	Low	Multi-region failover, redundancy, automated recovery scripts, 99.5% uptime SLA	IT Operations	Open
12	Bugs introduced during firmware or app updates	Medium	Medium	CI/CD automated testing; staging environment for devices; rollback mechanism	QA / DevOps	Open
13	Budget overruns during hardware manufacturing	High	Medium	Negotiate supplier contracts; bulk ordering, and standardize components	Finance / Procurement	Open
14	Misinterpretation of biomarker results by users	Medium	Medium	Provide clear explanations and colour-coded risk indicators, and emphasise the “not diagnostic” message	UX / Medical Compliance	Open

15	Competitive products enter the market with lower pricing	Medium	High	Strengthen IP; differentiate with analytics; focus on early detection and facility ROI	Strategy / Marketing	Open
16	Device installation constraints in different restroom layouts	Medium	Medium	Conduct pre-install surveys; offer flexible mounting kits; technician-guided installation	Deployment	Open
17	Custodial workflow resistance (extra tasks for staff)	Medium	Medium	Simplify maintenance steps; provide QR-based quick guides; incentives for compliance	Operations	Open
18	High operational load from support tickets in early phase	Medium	High	Build knowledge base; add automated troubleshooting, and assign dedicated pilot support specialist	Support	Open
19	Edge-case biomarker samples not detected accurately	High	Medium	Expand ML training data; collaborate with labs; continuous field validation	ML/Research	Open
20	Inconsistent urine flow or splash pattern affecting readings	Medium	Medium	Add flow sensors; algorithmic error correction, and physical shielding around sensor module	Hardware / R&D	Open

International Considerations

UriTrack's launch strategy begins with the **United States** as the primary market due to its strong preventive-health focus, advanced restroom infrastructure in public facilities, and

clear regulatory frameworks (HIPAA). As the product matures, we will expand into **international markets** with similar health awareness, infrastructure readiness, and privacy standards, such as **Canada, the UK, the EU, Singapore, the UAE, and Japan**.

UriTrack is designed for diverse cultural, linguistic, and regulatory environments. Our international considerations include:

1. Localization & Translation

Primary Market: United States

- Default language: **English**
- Localisation within the U.S. for multicultural populations (Spanish, Chinese, Arabic, and Hindi availability).

For Global Expansion

Language Support

- Prioritise languages based on adoption potential (Spanish, French, Arabic, Japanese, and Mandarin).
- Provide multilingual interfaces for:
 - End-users receiving health summaries
 - Facility managers using dashboards
 - Custodial teams reading installation and maintenance guides

Translation Quality

- Use certified **medical translation providers** to ensure accuracy for biomarker explanations.
- Leverage a **Translation Management System (TMS)** for consistent updates.

Script & Unicode Support

- Full support for Unicode, RTL scripts (Arabic, Hebrew), and region-specific characters (Kanji, Korean Hangul).

2. Cultural Sensitivity

U.S. Cultural Considerations

- Sensitive communication around health risk markers.
- Clear messaging to address privacy concerns in tech-enabled restrooms.

Global Considerations

Health Perception Differences

- Adapt preventive health messaging for cultures where health screening may be:
 - Encouraged (Japan, Singapore)
 - Taboo or stigmatized (some Middle Eastern or South Asian regions)

Privacy & Comfort Norms

Prominently communicate:

- No cameras
- No identity capture
- Complete anonymity
- Provide culturally appropriate explanations of “health markers” vs “medical diagnosis”.

Restroom Norm Variations

- Support different restroom layouts:
 - Western seated toilets
 - Standing urinals
 - High-humidity environments (SEA)
 - Vandal-resistant public spaces (EU metros, UK rail stations)

3. Legal, Health, & Data Compliance

U.S. Compliance (Primary Market)

- **HIPAA** for protected health information
- **CCPA/CPRA** for California data protections
- Alignment with university/corporate IT governance standards

Global Regulations

- **GDPR** (Europe)
- **PIPEDA/PHIPA** (Canada)
- **PDPA** (Singapore)
- **UK Data Protection Act**
- Region-specific biometric and digital health regulations

Data Residency

- Store user data in-region if legally required (EU, UAE, Singapore).

Medical Device Classification

- Assess whether UriTrack requires:
 - **FDA Class I clearance** (U.S.)
 - **CE marking** (EU)
 - **MHLW compliance** (Japan)

4. Payment & Facility Billing

U.S. Billing Support

- ACH, credit cards, corporate invoicing, and university procurement systems.

Global Billing Support

- Multi-currency billing (USD, CAD, EUR, GBP, AED, SGD, JPY).
- Integration with country-specific payment rails:
 - SEPA (Europe)
 - Faster Payments (UK)
 - GIRO (Singapore)
 - Credit card rails in UAE, Japan

5. Infrastructure & Deployment

U.S. Infrastructure

- Strong enterprise WiFi; straightforward cloud connectivity.

Global Infrastructure Variability

- Provide device firmware adaptable to:
 - Region-specific WiFi protocols
 - LTE fallback modes
 - Offline buffering during outages
- Certification requirements:
 - **FCC** (U.S.)
 - **CE/UKCA** (EU & UK)

- **TELEC** (Japan)
- **IMDA** (Singapore)

Restroom Environment Variances

- Modular casing options for:
 - High humidity (SEA)
 - Low water pressure or splash variations
 - Vandalism-prone environments (public transport hubs)

6. User & Facility Support

United States

- English-first support; Spanish support available.
- Channels: Email, chat, facility onboarding calls.

Global

- Multilingual support across email, chat, and help centre.
- Region-specific help channels:
 - WhatsApp (India, Middle East)
 - LINE (Japan)
 - WeChat (China – future expansion)

Knowledge Base Localization

- Installation guides
- Maintenance manuals
- Facility admin dashboards

7. Marketing & Outreach

USA (Launch Market)

- Corporate wellness programs
- University partnerships
- Airport/mall adoption campaigns

Global Markets

- Adapt messaging based on:

- Trust in technology
- Public health culture
- Local privacy expectations
- Regional influencer partnerships (e.g., health educators, wellness communities).

Advertise on locally dominant platforms (LINE, Instagram, TikTok, and WhatsApp groups, depending on the region).

Group Members

1. Mohak Garg

Email: mohakgarg2026@u.northwestern.edu

Appendix

Table of Contents:

1. Interview Design Overview/Interview Guide
2. Summary Of evidence Collected
3. Summary of additional research to address hypotheses
4. User Stories
5. Affinity Map

1. Interview Design Overview/Interview Guide

Purpose

To explore behaviours, motivations, and pain points around urinary health monitoring, hygiene perception, and willingness to adopt automated or passive testing systems.

Section A—Patients/ End Users (e.g., Ambrish Kumar, Manju Agarwal)

Objective: Understand lifestyle barriers, emotional drivers, and expectations from hygiene-focused automation.

1. Can you describe your typical routine when you need to get a urine test done? What part feels most inconvenient or stressful?
2. How do you usually decide when it's time to get tested or visit a doctor?
3. What challenges have you faced with sample collection or coordinating with labs?
4. How do hygiene or privacy concerns influence your willingness to test regularly?
5. If a smart device could test automatically, what would make you trust its accuracy?
6. How comfortable are you with using technology for personal health monitoring?

7. What would give you peace of mind between doctor visits regarding your kidney or urinary health?
8. When you skip or delay a test, what's usually the reason behind it?

9. What features or notifications would make a digital testing device genuinely helpful, not overwhelming?
10. How would you want such data shared—with your family, caregiver, or doctor?

Section B – Health & Wellness Enthusiasts (e.g., Barnie Phillips, Nalin Malik)

Objective: Understand attitudes toward continuous tracking, sustainability, and behavioural reinforcement.

1. What motivates you to track your health metrics today, and which data do you trust most?
2. What gaps do you see in current wearables or health apps when it comes to internal health indicators?
3. How would you describe your comfort level with automated sensors operating in shared or public spaces (e.g., office restrooms)?
4. What would make you switch from manual or app-based logging to a passive testing solution?
5. How do environmental or sustainability factors influence your choice of health products?
6. What kind of insights would you find meaningful from regular urinary biomarker tracking—hydration, nutrition, or infection risk?
7. How should feedback or alerts be designed so they feel useful rather than intrusive?
8. If you received early warnings (e.g., dehydration or infection risk), how would that change your behaviour or daily choices?
9. What concerns, if any, would you have about privacy or data ownership in such systems?
10. How do you define the difference between “wellness tracking” and “preventive healthcare”?

Section C – Clinicians / Healthcare Professionals (e.g., Dr Vishesh Kumar)

Objective: Explore integration needs, clinical trust, and potential for workflow improvement.

1. How do you currently monitor urinary health trends between patient visits?
2. What challenges arise from delayed or inconsistent urine-test data?
3. How would continuous biomarker tracking impact early detection and treatment decisions?
4. What types of urinary data (e.g., protein, ketones, hydration, infection markers) would be most clinically actionable for you?
5. How important is data validation and integration with EHR systems (e.g., Epic, Cerner) when adopting a new tool?
6. What barriers typically prevent patients from completing recommended urine tests?

7. How could an automated device like UriTrack support preventive-care programmes in your clinic?
8. What concerns might you have around accuracy, liability, or patient-data privacy?
9. How would you envision sharing or reviewing such data with patients?
10. What would make you confident enough to recommend UriTrack to your patients?
11. How do you take urine tests now, and will UriTrack help you?

Structure & Flow

- **Warm-up:** Background and current habits (2–3 min)
- **Core Exploration:** Behavior, emotions, barriers (10–15 min)
- **Concept Discussion:** Reactions to automation, hygiene, and data sharing (10 min)
- **Wrap-up:** Trust, adoption triggers, and closing reflections (3 min)

Outcome Alignment

- **Hypothesis 1:** Automation increases adherence → tested via convenience & behaviour questions.
- **Hypothesis 2:** Hygiene & privacy drive trust → validated through hygiene and data-sharing questions.
- **Hypothesis 3:** Continuous insights improve outcomes → explored through usefulness and physician-impact questions.

Key Insights from Initial Interviews

- **Convenience and hygiene** remain the strongest motivators for adoption; users delay tests mainly due to discomfort and time burden.
- **Trust in data accuracy** and **integration with doctors** are decisive factors for both patients and clinicians.
- **Wellness users** value sustainability and real-time insights but expect effortless, non-intrusive experiences.
- Clinicians emphasised that continuous, validated data could prevent 40–50 % of hospitalisations linked to delayed diagnostics.

2. Summary of Evidence Collected

To validate UriTrack's user hypotheses and market opportunity, a mixed-method research approach was implemented, combining qualitative discovery, quantitative validation, and secondary market analysis. This structure ensured that behavioural insights, adoption barriers, and market potential were triangulated to inform product design and go-to-market direction.

1 – Qualitative Interviews

Method: Conducted 8-10 semi-structured interviews with diabetic patients, caregivers, and

family-medicine physicians.

Objective: Identify contextual pain points around manual urine testing, hygiene challenges, and behavioural triggers influencing adoption of automation in health monitoring.

Key Insights:

- Elderly users expressed strong discomfort with manual urine collection due to hygiene concerns.
- Working professionals delayed or skipped testing because of time constraints.
- Physicians emphasised the need for continuous, reliable biomarker data rather than intermittent lab results.

Implication for UriTrack: Validated the hypothesis that automation and hygiene are primary adoption enablers across both patient and clinician groups.

2 – Quantitative Validation

Method: Online survey of 25–30 respondents, including chronic-condition patients and wellness-focused users.

Objective: Quantify interest in automated urinalysis and understand the perceived value of continuous health tracking.

Findings:

- 72% of respondents expressed high interest in passive, at-home testing.
- 65% were willing to pay more for hygienic, contactless systems.
- 58% favoured solutions that could share results securely with their doctors.

Implication for UriTrack: Confirmed market readiness for a **connected, hygienic, and automated urinalysis solution** with integrated data-sharing capabilities.

Competitive & Secondary Research

Sources:

- Grand View Research (2024):
www.grandviewresearch.com/industry-analysis/preventive-healthcare-technologies-market
- <https://www.precedenceresearch.com/preventive-healthcare-market>
- <https://market.us/report/urine-monitoring-systems-market/>
- [MarketsandMarkets – Urinalysis Systems Market \(Report Code: MD153479294\)](https://www.marketsandmarkets.com/Market-Reports/urinalysis-systems-market-MD153479294.html)
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8583613/>

Findings:

- The **preventive-health-tech market** is projected to grow from approximately **\$300 B**

in 2024 to \$585 B by 2030 (CAGR \approx 11.8%).

- The **urinary-diagnostics segment** alone represents a **\$6.5 B+ TAM**, fuelled by advancements in non-invasive and wearable biosensors.
- More than **1.2 billion disposable test strips** are discarded annually, highlighting the sustainability advantage of reusable testing solutions.

Implication for UriTrack: Validates the long-term viability of **eco-friendly, contactless diagnostic systems** integrated with digital health ecosystems.

– Synthesis & Application

Integrating data from all phases produced three validated opportunity areas that directly inform **UriTrack's product and market strategy**:

1. **Convenience & Automation** – Users need passive, frictionless testing to maintain adherence.
2. **Hygiene & Sustainability**—High preference for hands-free, waste-free testing solutions.
3. **Continuous, Actionable Data**—Strong demand for real-time insights and clinical integration.

Overall Insight:

This evidence confirms that **UriTrack's core hypotheses**—automation improves compliance, hygiene builds trust, and continuous data enhances preventive care—are both strongly supported by user behaviour and market trends.

3. Summary of Additional Research to Address Hypotheses

To further validate UriTrack's user, market, and product hypotheses, a **structured multi-phase research plan** will be executed. Each phase is designed to deepen understanding of user behaviour, adoption readiness, and clinical feasibility while informing MVP development and market strategy.

Phase 1 – User Experience Validation

Method: Usability testing with 10–12 participants across key personas.

Objective: Assess clarity, comfort, and engagement with the UriTrack prototype.

Expected Insights: Identify UX friction points, refine information hierarchy, and ensure accessibility for elderly and low-tech users.

Phase 2 – Quantitative Adoption Study

Method: Online survey with 100–150 chronic and wellness users.

Objective: Evaluate adoption intent, price sensitivity, and feature priorities.

Expected Insights: Generate adoption forecasts and pricing strategy inputs for MVP launch.

Phase 3 – Clinical Feasibility Interviews

Method: Structured interviews with 3–5 physicians and nurses.

Objective: Validate trust, clinical accuracy expectations, and EHR integration requirements.

Expected Insights: Define clinical validation benchmarks and inform B2B adoption pathways.

Phase 4 – Competitive & Market Analysis

Method: Quarterly benchmarking of connected diagnostic and biosensor solutions.

Objective: Track innovation, regulatory updates, and sustainability trends.

Expected Insights: Maintain product differentiation and align UriTrack with evolving market standards.

Phase 5 – Pilot Field Study

Method: Six-week field test with 20–25 users (older adults and professionals).

Objective: Observe real-world use frequency, hygiene perception, and engagement.

Expected Insights: Validate long-term usability, retention, and readiness for scaled deployment.

Outcome

This plan establishes a **clear, actionable roadmap** linking each research activity to UriTrack's core hypotheses—automation increases adherence, hygiene builds trust, and continuous insights drive preventive outcomes.

Findings will directly shape **product refinement, pricing, and partnership strategy**, ensuring UriTrack's launch is **data-driven, user-validated, and clinically credible**

4. User Stories

Persona: Ambrish Kumar				
As a	When	Desire / Motivation	So that	Results / Outcome
CKD patient	I need to get regular urine tests to monitor my kidney health	I want to test automatically during my daily restroom routine	I don't need to travel to labs frequently	I can manage my condition with comfort and consistency
Elderly user	I use a public or home restroom	I want a hygienic, contactless testing experience	I don't feel discomfort handling samples	I maintain dignity and confidence during testing
Senior with low tech skills	I receive my results on my phone	I want simple, visual summaries	I can easily interpret my health trends	I stay engaged without external help
Dependent patient	My doctor requires updates	I want my results to auto-share securely	My doctor can monitor me remotely	I receive timely medical adjustments
Aging patient	I experience unusual readings	I want early alerts and guidance	I can take preventive action quickly	I avoid hospitalizations and severe complications
Mobility-limited patient	I use the system alone	I want it to be easy to set up	I don't need family assistance	I feel independent and empowered

Manju Agarwal				
As a	When	Desire / Motivation	So that	Results / Outcome
UTI-prone patient	I forget to drink water for long hours	I want gentle hydration reminders	I can stay hydrated regularly	I reduce the frequency and severity of UTIs
Elderly woman	I struggle with multiple medications	I want one place to track all my medicines	I don't mix or skip doses	My treatment remains consistent and safe
Patient with recurring pain	My symptoms start returning	I want early warnings and actionable alerts	I can see a doctor in time	I prevent infections from escalating
Dependent user	I live alone or have limited support	I want the system to alert my caregiver if something is wrong	I can get immediate help	I feel secure and supported
Low-tech user	I interact with digital tools	I want a clean, icon-based interface	I can navigate it confidently	I use the system independently
Health-conscious patient	I track my hydration and symptoms	I want to view correlations between both	I can understand what triggers my UTIs	I make smarter daily health decisions
Senior user	I have scheduled checkups	I want reminders for upcoming visits	I don't forget or delay them	I maintain consistent preventive care

Nalin Malik				
As a	When	Desire / Motivation	So that	Results / Outcome
Busy professional	I'm working long hours at my desk	I want smart hydration alerts	I remember to drink water	I prevent dehydration and kidney strain
Tech-savvy user	I use wearables and health apps	I want UriTrack to sync data automatically	I view all my metrics together	I get a full picture of my wellness
Overworked employee	I skip medical appointments	I want passive testing during normal restroom use	I can monitor my health effortlessly	I avoid neglected symptoms
Frequent traveler	I move between cities	I want my health records stored in the cloud	I can access results anywhere	I maintain continuity in care
Health-risk user	I take frequent painkillers	I want alerts when biomarkers indicate strain	I can stop harmful behavior	I protect my kidneys early
Data-driven user	I review progress	I want visual dashboards and goal tracking	I stay motivated to maintain habits	I build healthier long-term routines
Privacy-aware individual	I use shared restrooms	I want my data encrypted	I feel safe using the system anywhere	I trust and continue using UriTrack

Barnie Phillips				
As a	When	Desire / Motivation	So that	Results / Outcome

Wellness-focused professional	I use multiple fitness apps	I want UriTrack to integrate with them	I can view internal and external metrics together	I manage holistic well-being effortlessly
Eco-conscious user	I purchase health tech	I want the product to be reusable and sustainable	I align with my environmental values	I feel good about long-term use
Data-driven individual	I monitor wellness	I want validated, science-backed insights	I can trust the data accuracy	I make credible, informed health choices
Lifestyle optimizer	I review weekly summaries	I want personalized recommendations	I can adjust diet and water intake	I see tangible improvements
Minimalist user	I get notifications	I want them to be non-intrusive	I don't feel overwhelmed	I continue using the product daily

Dr. Vishesh Kumar

As a	When	Desire / Motivation	So that	Results / Outcome
Family doctor	My patients delay urine tests	I want automatic updates from UriTrack	I can monitor them remotely	I detect issues before they escalate
Clinician	A patient's biomarker crosses thresholds	I want automated risk alerts	I can prioritize high-risk cases	I prevent unnecessary hospitalizations
Practitioner using EHR	I log patient data	I want UriTrack to integrate with Epic/Cerner	I avoid manual data entry	My workflow becomes more efficient
Preventive-care advocate	I track chronic patients	I want to see biomarker trends over time	I can adjust treatments early	I improve long-term patient outcomes
Physician-researcher	I study population trends	I want anonymized aggregate data	I can analyze preventive health patterns	I contribute to public-health insights

5. Affinity Map

