MRD OUTLINE: **UriTrack**

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Vision

Millions of people **delay routine urine tests** because the process is i**nconvenient, uncomfortable, and costly,** leading to missed early detection of preventable diseases.

UriTrack **transforms everyday restrooms into effortless health checkpoints**, enabling instant, **hygienic urinary screening** through **smart urinals t**hat analyze key biomarkers and share results directly to users' phones.

By integrating preventive health into daily life, UriTrack empowers individuals and institutions to monitor wellness continuously—reducing costs, waste, and medical delays while **turning public infrastructure into a proactive public-health utility.**

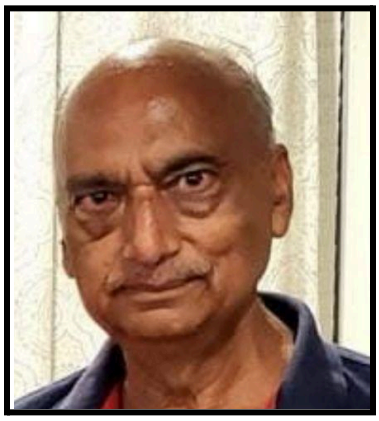
Motivation

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



Age: 71
Location: Charlotte, North Carolina, USA
Living Situation: Lives with his daughter
Health Condition: Chronic Kidney Disease **(CKD)**
Tech Habits: Not highly tech-savvy but regularly uses a smartphone and social media apps to stay connected.

User Problem
He requires **biweekly urine tests** to monitor his CKD status. Frequent lab visits feel **exhausting, time-consuming, and unhygienic**. The manual process of collecting and transporting samples makes him uncomfortable, leading him to postpone testing, risking delayed medical intervention.

Pain Points

- Bi-weekly lab visits are tiring and difficult to schedule
- Handling urine samples feels unhygienic
- Coordination with labs causes stress and confusion
- Often delays testing, increasing risk of health complications

Goals

- Automatic, hygienic, and reliable urine testing
- Clear trend visibility and early alerts before complications
- Peace of mind through continuous, effortless tracking

Statement:
"If there was a simple and clean way to test at my convenience without all this hassle, I'd never miss a check-up."

Motivation
During our interview, Ambrish expressed a desire for a solution that preserves dignity, comfort, and independence. He wants a reliable testing device that provides instant results and keeps his doctor updated automatically—without him having to visit labs.

Summary
Aging CKD patient who seeks a comfortable, hygienic, and effortless home-testing experience that restores independence and reduces hospital dependency.

Manju Agarwal

Age: 62
Location: New Jersey, USA
Living Situation: Lives with her husband; frequently visits her son and grandchildren nearby.
Health Condition: Mild Hypertension, Recurrent Urinary Tract Infections (UTIs), recovering from Brain Tumor Medication Side Effects.
Tech Habits: Not highly tech-savvy but uses a smartphone for calls, WhatsApp, and YouTube. Occasionally checks health-related videos online.

User Problem

She struggles to stay hydrated, misses routine checkups, and often seeks medical help only

when symptoms become severe. Her low fluid intake and poor tracking of medications worsen her UTI symptoms, causing pain and recurring infections. She feels dependent on her hsuband for reminders and follow-ups, which affects her sense of independence.

Pain Points

- Forgets to drink enough water, triggering UTI recurrence
- Delays medical checkups until pain worsens
- Finds it difficult to track multiple medications (brain tumor + UTI + hypertension)
- Feels overwhelmed managing symptoms with limited support
- Pain and discomfort interfere with sleep and daily comfort

Goals

- Reduce UTI frequency and discomfort
- Receive hydration and checkup reminders
- Easily track symptoms and medications in one place
- Get timely alerts for potential infections after urine tests.
- Maintain independence while managing her health safely
- Minimise lab visits.

Statement: *"I only remember to drink water when it hurts. If something could remind me before it gets worse, life would be much easier."*

Motivation
During the interviews she shared that her decisions are shaped by **comfort, reassurance, and ease of use**. She prefers tools that don't demand constant technical engagement. A solution like UriTrack, which offers **hydration alerts and caregiver notifications**, aligns with her desire to stay in control while feeling supported.

Summary
An elderly woman coping with recurrent UTIs and multiple medications, seeking a simple, non-intrusive tool to stay hydrated, track symptoms, and detect early warning signs - restoring comfort and confidence in daily health managemen**t.**

Nalin Malik

Age: 32
Location: Austin, Texas, USA
Occupation: Software Engineer (IT Professional)
Health Condition: Frequent UTIs, History of Kidney Stones, High Stress, Risk of CKD due to dehydration and painkiller overuse
Tech Habits: Highly comfortable with technology - uses health tracking apps, productivity tools, and smartwatches; open to app-based wellness management.

User Problem

Nalin's hectic routine leads to chronic dehydration and neglected medical follow-ups. He often misses meals, forgets to drink water, and postpones checkups until symptoms worsen. Painkiller overuse and poor hydration have increased his long-term risk of CKD, but his busy schedule and lack of symptom tracking make preventive care difficult.

Pain Points

- Forgets to drink water and skip hydration breaks during work
- Overuses painkillers for headaches, masking kidney stress
- Misses early UTI signs due to workload and stress
- Lacks a system to test it at his convenience
- Finds it hard to balance productivity with wellness habits

Goals

- Reduce frequency of UTIs and kidney stones
- Maintain hydration and healthy routines despite workload
- Monitor painkiller use and symptom trends
- Receive early alerts for kidney stress and dehydration
- Simplify tests without disrupting work

Statement: *""Work always comes first, so I just grab painkillers and push through. I wish I had something that quietly reminded me and helped me test before things get bad."*

Motivation
In our interview, Nalin's decisions are driven by **convenience and automation**. He embraces technology that fits seamlessly into his workday but avoids anything requiring manual input. UriTrack's background tracking and **passive hydration alerts,** along with the urine test facility available at his workplace, directly align with his productivity mindset.

Summary
A tech-savvy professional with poor lifestyle habits seeking an intelligent, low-effort testing system that monitors hydration and predicts risks early—allowing him to sustain health without compromising work.

Barnie Phillips

Age: 26
Location: New York, USA
Occupation: Product Designer at a tech startup and Preventive Health Enthusiast
Health Profile: No chronic illness, tracks hydration, diet, and fitness
Tech Habits: Owns a Fitbit, uses Apple Health and nutrition apps daily
Lifestyle: Active, urban, sustainability-minded

User Problem
Barnie wants to understand her body in a better manner and catch early signs of health issues, but current wellness apps don't measure internal health indicators like hydration or kidney function. She's curious about biomarkers but doesn't want invasive tests or disposable kits cluttering her space.

Pain Points

- No easy way to monitor internal health beyond wearables
- Frustrated by wasteful test kits
- Seeks verified data, not just "wellness guesses"

Goals

- Integrate biometric data seamlessly into daily life
- Monitor hydration and nutrient balance sustainably
- Feel empowered through science-based insights

Statement: "My smartwatch tells me my steps, but not what's really happening inside my body."

Motivation
Barnie's adoption decisions are guided by **sustainability, minimalism, and credibility**. She experiments with many devices but only retains those that match her eco-conscious values and integrate seamlessly with her lifestyle. UriTrack's **reusable design and data-backed insights**

resonate with her pursuit of a “smarter, greener” wellness routine.

Summary:
A health-conscious professional seeking a smart, sustainable, and non-invasive wellness solution that provides verified internal health insights and complements her eco-friendly lifestyle.

Dr. Vishesh Kumar

Age: 45
Location: Chicago, Illinois, USA
Occupation: Family Medicine Doctor
Patient Base: Diabetic and kidney-risk adults (ages 40–70)
Tech Habits: Regular user of Electronic Health Record (EHR) systems such as Epic; open to adopting digital health tools that improve efficiency and patient outcomes
Lifestyle: Balances a demanding clinical workload with a strong focus on preventive healthcare and chronic disease management

User Problem
Dr. Kumar spends valuable time chasing incomplete lab results and reminding patients to complete their urine tests. These delays lead to missed early interventions and preventable hospitalizations. He needs accurate, continuous urinary health data that integrates directly into his EHR system without adding extra administrative steps.

Pain Points

- Limited visibility into patient health between clinic visits
- Manual follow-ups for patients who skip or delay urine testing
- Fragmented reports from multiple laboratories
- Increased administrative workload for his care team

Goals

- Access to continuous, validated urinary data for high-risk patients

- Automated early-alert notifications embedded within EHR workflows
- Improved preventive care and reduced avoidable hospitalizations
- Streamlined coordination and reduced clinic workload
- Feel empowered through science-based insights

Statement: ""If I could get real-time urinary health data between visits, I could prevent half the hospitalizations I see each year."

Motivation
Dr. Kumar's adoption decisions depend on **clinical credibility and workflow impact**. He prioritizes tools that provide validated data without adding administrative burden. UriTrack's ability to **auto-sync with EHRs** and offer continuous patient tracking fits his efficiency-focused mindset.

Summary:
A prevention-driven physician who values reliable data, seamless integration, and workflow efficiency—seeking connected solutions like UriTrack that enhance early detection, strengthen patient compliance, and simplify chronic-care management**.**

Interview Guide

Purpose

To explore behaviors, 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 behavioral 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 behavior 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 programs 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 UtiTrack 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 & behavior 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 emphasized that continuous, validated data could prevent 40–50 % of hospitalizations linked to delayed diagnostics.

Next Steps

Insights from these interviews will guide **prototype usability testing** and **survey validation** in the next research phase, ensuring UriTrack's design and positioning are **deeply grounded in user reality**.

Unmet Needs

Across patients, caregivers, and clinicians, a shared story emerged—people want urinary health monitoring to be easy, clean, and insightful. These unmet needs define where existing solutions fall short and where UriTrack can lead.

1. The Convenience Gap: Frictionless, Passive Testing

Across all user types—from chronic kidney patients to busy professionals; testing **inconvenience** remains the primary adoption barrier.

Lab visits and manual home kits are perceived as **disruptive, messy, and time-consuming**, leading to delayed or skipped urine tests.

- **Ambrish and Manju** struggle with physical fatigue and coordination for biweekly testing.
- **Nalin** prioritizes work over self-care, skipping testing entirely.
- **Barnie** finds current solutions too intrusive for daily use.

Users consistently expressed a desire for **automation that integrates into their existing routines**, requiring *no extra steps, no discomfort, and no cognitive load*.

Industry research supports this behavioral insight: **over 68% of users adopt preventive diagnostics only when the process is passive and embedded** within daily environments.

Why current solutions fail: Manual urine kits demand active participation, scheduling, and physical handling—factors that inherently reduce compliance and adherence.

Opportunity: UriTrack bridges this gap through seamless, passive testing—transforming a clinical process into a frictionless daily habit.

2. Hygiene and Trust Barrier: Clean, Hands-Free, Reliable Testing

Manual urine collection and disposable test kits consistently evoke **discomfort, disgust, and mistrust** among both patients and caregivers.

- **Elderly users** (Ambrish, Manju) cite hygiene and exposure concerns as reasons for avoiding frequent testing.
- **Clinicians** like Dr. Vishesh highlight that **sample handling errors and missed submissions** compromise diagnostic accuracy.
- **Wellness users** like Barnie express frustration with the **environmental waste** of single-use kits.

Across interviews, users emphasized that a truly adoptable solution must be **contactless, hygienic, and clinically validated**, ensuring privacy and precision without the unpleasant manual steps.

Why current solutions fail: Existing kits lack medical-grade validation, create waste, and fail to eliminate contamination risk.

Opportunity: UriTrack's closed, automated ecosystem provides **hygienic, hands-free testing**

that builds trust through certified accuracy and privacy compliance.

3. Lack of Continuous, Actionable Health Data

Today's urine testing methods provide **episodic data snapshots**, not real-time insights.

- **Patients and caregivers** are left unaware of emerging risks between tests.
- **Doctors** lack continuous visibility into biomarker fluctuations.
- **Younger users** (like Nalin and Barnie) find existing wellness trackers superficial—limited to calories and steps rather than internal biomarkers.

Interviews and secondary market data show **strong demand for integrated dashboards** that deliver **AI-driven insights, early alerts, and longitudinal trend tracking**. Users want to *understand their bodies in real time*, not react after symptoms appear.

Why current solutions fail: Current systems are fragmented—wearables monitor externals, labs test intermittently, and none offer proactive intervention.

Opportunity: UriTrack's AI-powered analytics and real-time reporting empower patients, caregivers, and physicians with **continuous, actionable data**, transforming preventive care from reactive to predictive.

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 behavioral 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 behavioral 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 emphasized 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 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%** favored 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.

3 – 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.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 ≈ 11.8%).
- The **urinary-diagnostics segment** alone represents a **$6.5 B+ TAM**, fueled 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.

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

4 – 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—both are strongly supported by user behavior and market trends.

Existing Solutions

Solution Type	Description	Shortcomings
Clinical Lab Tests	Accurate but require in-person visits, appointments, and costs	Low frequency, long feedback loop
At-Home Test Kits / Strips	Disposable kits for glucose, ketones, or proteins	Messy, low hygiene, inconsistent accuracy
Smart Toilets (Prototype)	Research-grade prototypes by Panasonic, Withings	Limited biomarkers, not consumer-ready
Wearables (Fitbit, Apple Watch)	Track heart, sleep, etc.	Cannot detect urinary health metrics

UriTrack bridges the **accuracy of labs**, **ease of use of smart devices**, and **eco-efficiency** absent in all current solutions.

Differentiation

Category	UriTrack Advantage
Automation	Passive testing during normal use, zero manual input
Multi-Biomarker Detection	Protein, ketones, infection markers, hydration levels
Integration	App-based tracking, trend visualization, and doctor sharing
Sustainability	Reduces disposable kits and chemical waste

User Experience	Seamless, hygienic, and proactive
Time Saving	The test resulta are much more quick in comparison to the existing solutions

Where existing solutions either provide accuracy without convenience (labs) or convenience without reliability (test strips), **UriTrack delivers both**. It merges **medical-grade testing** with **consumer-friendly usability**, transforming a routine daily behavior into a source of preventive health intelligence.
In addition to consumer wellness, UriTrack differentiates itself through its **shared-access diagnostic network,** enabling health monitoring at scale without the need for home installations or disposables.

Why Now?

1. **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."

2. **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

3. **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
4. **Sensor Miniaturization / Feasibility of Embedded Testing**

- 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
- 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

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

Use Scenarios/User Stories

Ambrish Kumar: Elderly CKD Patient

Goal: Comfort, hygiene, and independence while managing chronic testing.

- As a CKD patient, I want to get urine tests done automatically during daily use so that I don’t have to visit labs frequently.
- As a senior user, I want to receive clear and simple test summaries on my phone so that I can easily understand my kidney health trends.
- As a hygiene-conscious user, I want a contactless testing experience so that I feel comfortable and safe.
- As a patient living with family, I want my results to auto-share with my doctor so that I don’t forget follow-ups.
- As a low-tech user, I want the device to work with minimal setup so that I can use it independently.
- As a health-conscious senior, I want early alerts before complications occur so that I can prevent hospital visits.
- As a time-sensitive patient, I want test data automatically logged in my app so that I don’t have to maintain records manually.

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: Elderly Woman with Recurrent UTIs & Medication Load

Goal: Hydration, symptom tracking, and independence.

- As a user prone to UTIs, I want reminders to drink water regularly so that I can reduce infection frequency.
- As someone who often delays checkups, I want gentle reminders for routine urine tests so that I can act early.
- As an elderly user, I want the system to alert my caregiver if symptoms worsen so that I can receive timely help.
- As a patient with limited mobility, I want an at-home or in-facility testing option so that I don't depend on frequent lab visits.
- As someone managing side effects, I want to see correlations between hydration and pain episodes so that I can manage my comfort better.

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: Busy Professional with UTI & Kidney Risk

Goal: Seamless integration into a high-stress, tech-driven lifestyle.

- As a busy professional, I want automatic hydration reminders during work hours so that I can prevent dehydration.
- As a tech-savvy user, I want my urinary data to sync with my smartwatch so that I can monitor health trends easily.
- As someone who skips tests, I want passive testing integrated into restrooms so that I don't have to schedule labs.
- As a frequent traveler, I want cloud access to my results so that I can share them across locations.
- As a user who often overuses painkillers, I want alerts when biomarkers indicate kidney strain so that I can adjust my behavior.
- As a goal-driven individual, I want progress dashboards that visualize trends so that I stay motivated to maintain wellness.
- As a privacy-aware user, I want my data encrypted so that I feel secure using public restroom devices

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 – Preventive Health Enthusiast

Goal: Sustainability, holistic health insights, and empowerment.

- As a wellness user, I want UriTrack to integrate with my fitness apps so that I can view internal and external metrics together.
- As an eco-conscious individual, I want the device to be reusable and waste-free so that it aligns with my sustainability values.
- As a data-driven user, I want to track hydration and nutrient balance so that I can fine-tune my diet.
- As a lifestyle optimizer, I want non-intrusive health summaries so that I can act early without medical appointments.
- As a curious user, I want validated biomarker insights so that I can trust the data and share it confidently.

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 – Family Medicine Physician

Goal: Continuous visibility, workflow efficiency, and preventive intervention.

- As a clinician, I want to receive real-time urinary health data from patients so that I can intervene early.
- As a doctor managing chronic patients, I want automated alerts when biomarkers cross thresholds so that I can prioritize follow-ups.
- As a practitioner using EHRs, I want UriTrack data to integrate directly with my records

so that I avoid manual entry.
- As a care coordinator, I want trend graphs over time so that I can analyze disease progression.
- As a preventive health advocate, I want to recommend reliable, hygienic devices so that patients maintain testing consistency.
- As a physician, I want anonymized aggregate data so that I can study population-level trends without breaching privacy.

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

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.

Adoption Barriers

Barrier	Description	Mitigation
Trust in Accuracy	Users may doubt reliability vs lab tests	Partner with certified labs for validation
Privacy Concerns	Health data sensitivity	HIPAA-compliant encryption, local data control
Hardware Cost	Smart device premium	Offer subscription model for accessibility
Behavioral Change	Users not used to automated testing	Educate via physician endorsements, app coaching

Risks/Key Dependencies

Risk	Description	Mitigation
Regulatory Approval	Requires FDA or Health Canada clearance	Pursue Class II device pathway, partner with diagnostics firm
Hardware Reliability	Sensor calibration drift	Periodic firmware updates, quality testing
Data Privacy	Breach or misuse of health data	End-to-end encryption, anonymized cloud
Manufacturing Dependency	Supply chain bottlenecks	Diversify component suppliers

Strategic Considerations

UriTrack aligns with global trends in **preventive care, sustainability, and IoT health ecosystems.**
Potential strategic partnerships include:

- **Withings/Fitbit Health** (data ecosystem integration)
- **Insurance providers** (for preventive care incentives)
- **Hospitals & clinics** (for remote patient monitoring pilots)
- **Corporate Wellness Programs** (employee health benefits)
- **Facility Management & IoT Integrators** (smart building partners for airports, malls, and campuses)
- **Insurance & Public Health Agencies** (population-level wellness data aggregation)

This model supports **subscription-based or leasing revenue streams**, offering analytics dashboards for administrators while maintaining user privacy through app-linked personal results.

Team Members

Mohak Garg

Go/No Go Recommendation

UriTrack's unique combination of hygiene, automation, and scalable shared-access deployment positions it as a strong candidate for institutional partnerships across hospitals, offices, and public wellness infrastructure.

Next phase: prototype testing, user interviews (10–15 diabetic and wellness users), and pilot partnerships.

Customer Research Data Appendices

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 behavior, 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**.