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## testcard

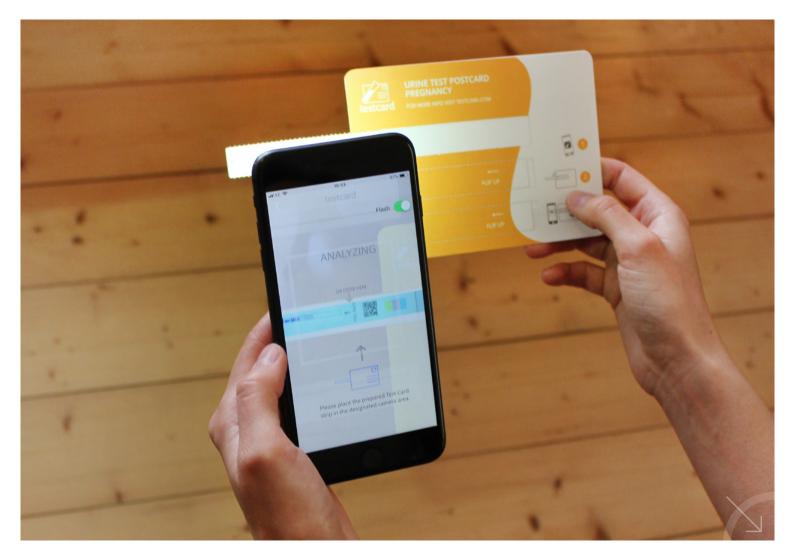
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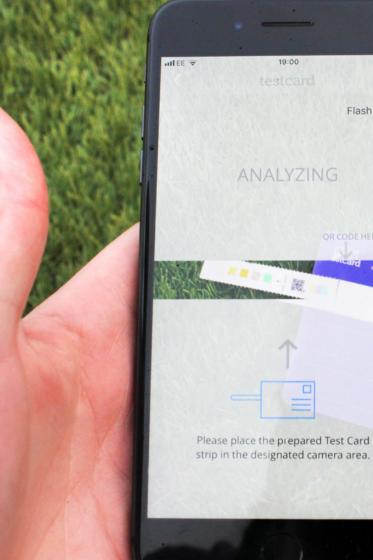




# What is TestCard?

TestCard is a medical diagnostic test contained within a traditional postcard. The unique, patent-pending 'flat-pack' product is embedded with three fold-out urine dipsticks. The accompanying easy-to-use mobile application turns a mobile phone's camera into a clinical grade scanner, providing the user with an immediate and accurate result from the TestCard, communicated in easy-to-understand wording on the phone screen.



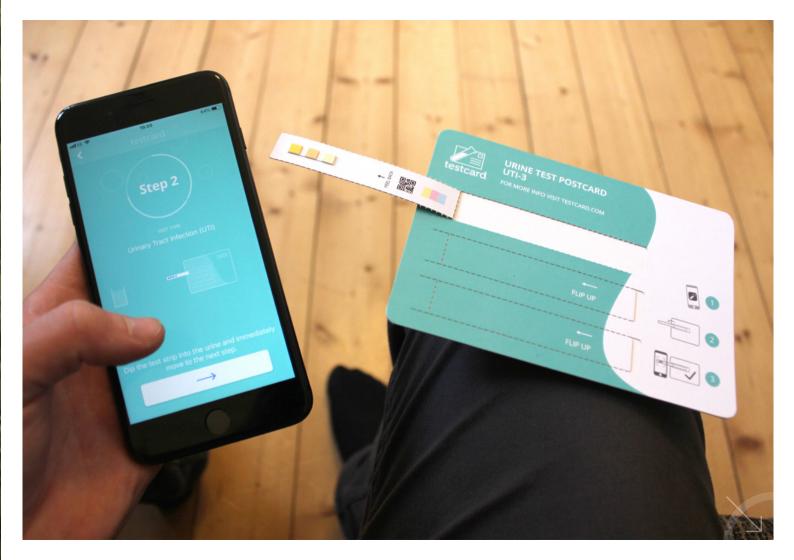


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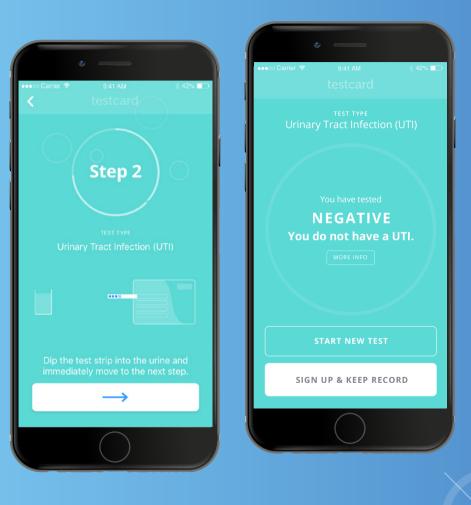


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Easy to use, produced, sold and delivered at a low cost; TestCard's solution is a cost-effective tool that promotes clinical grade health monitoring with the convenience and privacy of at-home-testing. Earlier diagnosis leads to earlier intervention which ultimately improves healthcare outcomes whilst avoiding the problems commonly associated with point of care testing. TestCard is an exponential organisation; ie a company that delivers a solution that is 10 times better, 10 times faster and 10 times cheaper.

Research confirms that every year over 14m patients (in the UK alone) will not be promptly or accurately diagnosed from their urine specimens. This equates to over 55,000 patients every day who will not be effectively treated, leading to serious health and financial repercussions.

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Step 1
Have your Test Card ready. Peel back a test strip and we will use your phone's camera to scan the QR code inside.
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# The very real problems with existing Point of Care Testing (POCT)

### **Expensive:**

Cost of existing testing is unsustainably high.

#### Inaccurate:

Despite being more expensive (compared to the TestCard solution); test results from POCT are less precise. Overall, decidedly lower quality standards.

## **Uncontrolled:**

The following are uncontrolled elements in current POCT: Expiry, lotto-lot variation, calibration, method, process, interference, adulteration, moisture, temperature.

### Nobody is trained:

Ironically those trained in POCT are lab scientists. Royal College of Nurses and the British Medical Association state there is no room in the syllabus for POCT training, so the status quo will remain.

## More questions than answers:

Current POCT provides numbers which are meaningless to a user (patient/ nurse/clinician). This can confuse and confound at a time when follow-on care and support are needed.

## Does NOT improve outcomes:

No research has ever been able to show an improvement in patient outcomes due to POCT.

Testcard believes this is because it is carried out by doctors and nurses in clinics and practices. So the patient is already being managed in the healthcare system. In short, it's already too late!

# Why is TestCard **THE** solution?

## The alternative to TestCard is prohibitively expensive:

The TestCard form factor is a postcard, which keeps costs low, both in terms of the unit cost and delivery to the user.

## The alternative to TestCard is inaccurate:

With TestCard, there is no subjectivity, no ambient light interference and the sample is tested within the correct timeframe. The TestCard solution is standardised to optimise results. In short, TestCard delivers accurate, precise, high-quality results.

# The alternative to TestCard is uncontrolled:

With TestCard, QR codes control which method protocols are used as well as monitoring expiry information and lot variations. Additional controls can be built in on a test-by-test basis as required. TestCard has complete control built-in.

## Training not required:

The TestCard mobile application guides the user through the simple process and ensures the user takes the right actions, at the right time, ensuring the right results.

## TestCard provides clear & immediate results:

The algorithms built into the TestCard application provide context and advice, combining results to inform rather than overwhelm and confuse the user with excessive data.

## TestCard can IMPROVE outcomes:

By pushing high-quality, easy to use diagnostics into the home we promote earlier interventions. Earlier interventions definitively improve healthcare outcomes and slash the total cost of healthcare.

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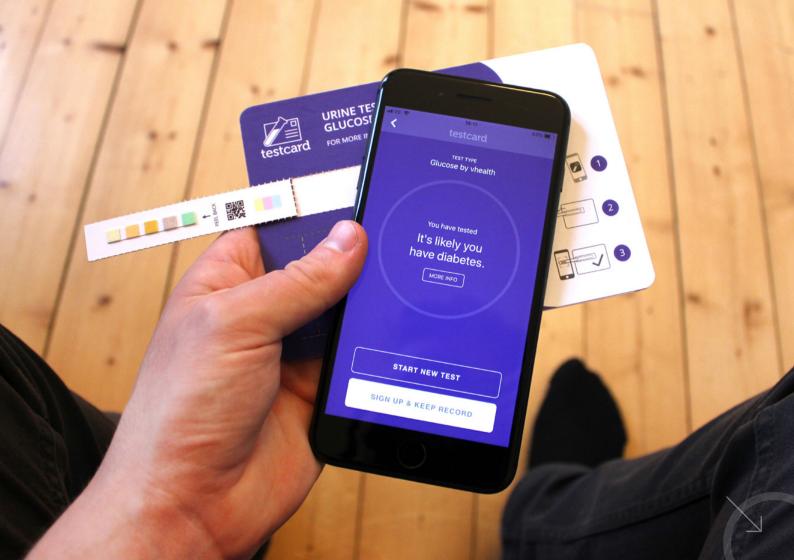
# What is the TestCard Solution?

TestCard is an at-home testing solution that provides immediate and accurate results at a low cost. Testcard is a combination of a non-invasive urine test kit embedded into a postcard, with an accompanying mobile application that turns a mobile phone's camera into a clinical grade scanner.

The postcard and the use of the user's own phone, keep the overall cost to the user low, whilst the delivery mechanism is biodegradable providing true environmental credentials. The smartphone app controls the whole process and guides the user with an easy-to-use interface. The app makes sure every aspect of the test is optimised to provide high-quality results, removing all ambiguity, confusing data and medical jargon. Algorithms in the application provide meaningful results to users along with context and advice.

The delivery mechanism is biodegradable providing true environmental credentials.





# Inaccessibility **KILLS**



#### **Geographically:**

Remote regions where travel to doctors/clinics is difficult and time consuming, TestCard can provide a solution.



#### **Socially:**

Some conditions may have a social stigma attached. For example, sexually transmitted diseases/infections. A reliable at home solution means visits to clinics are only required when absolutely necessary. Testcard effectively becomes a form of triage.



#### **Economically:**

TestCard users can avoid a significant outlay on a doctor visit when it may not be necessary.



### **Disability and Infirmity:**

Those caring for loved ones can gain a greater confidence in taking decisions on treatment, by using TestCard. Moving the frail and infirm patients to treatment centres unnecessarily can cause significant distress and cost, which is unpleasant for the carer and the individual and can impact the quality of any test results produced.

# The Secret Sauce? Making testing accessible to **EVERYONE**

TestCard is accessible to all. Isolation is THE biggest issue impacting equality and quality of healthcare provision. TestCard destroys these barriers by providing a superior point of care product at the precise point and location of need in a form factor that lends itself to quick and cost effective delivery. It can provide immediate results to those isolated from healthcare.

# Pipeline of Products

TestCard's initial focus is on the launch of 2 products that demonstrate the two unique, algorithmic skillsets required for its follow-on products. The company's core technology allows it to read and analyse colorimetry and density in urine based dip-sticks; these disciplines cover the vast majority of TestCard's product pipeline.

Product sets are focused on two principal categories. Isolated event testing and ongoing health monitoring, the latter is subscription based. Some products fall into both categories, whilst it should also be pointed out that isolated event testing doesn't mean a one-off sale, rather the test itself is being taken in isolation and is not a part of a connected, on-going health monitoring plan.





## **Pregnancy Testing**

Pregnancy tests detect the presence of human chorionic gonadotropin (hCG). The pregnancy and fertility devices market is mainly driven by factors such as the rising demand for fast and self-contained tests, growing prevalence of infertility and gynaecological disorders and of course the accessibility of decentralised diagnostic tests being a preference over time-consuming laboratory tests. The Global Market for at-home Pregnancy testing, which is valued at \$1.1 billion per year, is segmented further into product type and test type. These test kits are further sub segmented into Strips/Dip Sticks & Cards, Mid-Stream, Cassette and Digital Devices.

TestCard straddles existing product types into its hybrid solution, using the most accurate and balanced dip sticks, delivered with the speed and efficiency that the unique form factor allows, and leveraging the technology embedded in the user's phone to deliver more accurate results. The pregnancy testing market is expected to grow at 4.7% per annum, however, we anticipate that the growth will come in conjunction with a migration towards more convienient solutions that offer better results at a lower cost. For equivalent quality results with at-home pregnancy testing; a large amount of single-use disposable technology and plastic is required.

## **Urinary Tract Infections - UTIs**

The incidence of UTIs is higher in women compared with men across all age groups. For example, the frequency of infections are especially high among young sexually active women with annual rates of 0.6 instances per person per year, while in young men aged 18–24, the reported incidence of UTIs is 0.01 per person per year. The NHS in England has consistently spent in excess of £400 million per year on hospital admissions for UTIs. In 2013/14, the figure was £434 million spent on treating 184,000 hospital admissions for UTIs (£2,358 per admission). Additionally, data from Public Health England confirms that UTIs are responsible for 45% of gram-negative blood infections, which can lead to sepsis. Early diagnosis is critical.

Meanwhile in the United States, there are an estimated 10.5 million annual clinic visits for UTI symptoms (constituting 0.9% of all ambulatory visits) and 2–3 million emergency/A&E department visits. The average cost of treating a UTI in the US is \$2,598. The market size is therefore considerable and ripe for disruption by providing an efficient, cost-effective and simple to use 'at-home' solution.



#### **Drug Testing**

The TestCard Drug Testing product analyses urine for the presence of certain illegal drugs and prescription medications. Typically, the product set can screen for: amphetamines, methamphetamines, benzodiazepines, barbiturates, marijuana, cocaine, PCP, methadone opioids (narcotics). In addition, alcohol can also be included in screening tests, but it's usually detected through breath tests rather than urine screens. Urine drug testing can help a doctor detect potential substance abuse problems.



#### **Ovulation Optimisation**

The TestCard ovulation optimisation product detects the preovulatory luteinizing hormone (LH) surge present in a urine sample. It is the detection of this LH surge which acts as an accurate and reliable marker of impending ovulation. Our accompanying mobile application will provide immediate insight and guidance on the optimal time to conceive.



#### Glucose Pre-Screen

Typically, little to no glucose can be detected in urine. However, when blood sugar levels are running high, glucose will also appear in the urine. High blood sugar levels may be an indication of uncontrolled diabetes and thus TestCard's Glucose product can be used as part of a screening process for diabetes or as part of the monitoring of known diabetics. The TestCard Glucose testkit is essentially a diabetes pre-screen and provides actionable information. It offers a significant and meaningful insight into the trajectory or likelihood that a patient might be prone to/or already have diabetes.





#### **Prostate Health Screen**

Testcard Prostate Health Screen is able to detect levels or prostatic specific antigen (PSA) in urine. PSA is a sensitive marker of prostate hypertrophy and cancer. Using demographic information about the individual our mobile app algorithm can provide an adjusted risk score for prostate health.



#### **Pregnancy Management Subscription**

Fertility testing, ovulation optimisation (as above), pregnancy testing. And beyond: Gestational diabetes diagnosis and monitoring and pre-eclampsia warning. Monitoring from before conception through to birth.



#### Monitoring of Long-term Health Conditions e.g. Diabetes, Kidney Disease

TestCard Monitor is able to detect the presence of glucose and ketones in the urine and apply its relevance to pre-existing conditions. Urine ketone testing is most often necessary in people with type 1 diabetes, but the market potential is significantly broader. Meanwhile, urinalysis can also screen for the presence of protein and blood in the urine. There are many reasons for protein in urine, not all of which are related to disease. Infection increases urine protein, but so does a heavy physical workout and so context is king and the accompanying TestCard application manages this by considering all relevant user information/data.





STIs

Early intervention and treatment for STIs prevents further spread and long term effects such as infertility. The social stigma attached to in-clinic screening prevents individuals accessing much needed healthcare. TestCard's STI products provide discrete, rapid tests combined with a mobile app to remove uncertainty and give control to the user, providing the highest quality results.



# Where, What, Why & Who will use TestCard?

Every day in the UK, over 55,000 patients will not be accurately diagnosed from their urine specimen. This will lead to health deterioration and significant long-term financial repercussions.

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# Where will TestCard be sold?



TestCard is pursuing a multi-channel approach, initially led by brand partnerships and promotions alongside Facebook driven app installs and web promotions. However, the product will also be sold via retail outlets and online retailers (Amazon). The company reached a partnership agreement with the NHS in January (2018), through which it is now delivering a bespoke trial product of its mobile application for use within a hospital setting. Going forward, TestCard anticipates partnering with Healthcare Trusts and GP (General Practitioner) surgeries to distribute tests, not least as the economics of the TestCard solution are so favourable, as TestCard delivers immediate and more accurate results at a lower cost and without the requirement of in-person doctor contact. These purchasing decisions are made at a local level; TestCard has over 600 GPs pre-registered as 'early adopters', which the company anticipates converting into sales. Meanwhile, a commercial letter of intent has been received from the leading insurance and services company 'Aetna' to roll TestCard out across its global client base.

## TestCard: Innovation & Disruption within the NHS



Following the signing of an agreement in January 2018; TestCard is now working directly with a leading NHS Trust in Yorkshire on a programme targeted at improving the provision of point of care testing and governance. The company anticipates a successful outcome from this trial period, following which it expects to reach further similar such agreements with other trusts and CCGs around the United Kingdom for the provision of its mobile app technology and in due course, its TestCard kit also.

The TestCard kit & mobile app controls the testing process, enables compliance with the new ISO 22870 regulations, whilst the proprietary algorithms provide decision support mechanisms permitting low graded staff to complete testing, ensuring 100% compliance to NICE guidelines and locally defined treatment pathways. The app finally allows an easy and reliable means to incorporate results into the electronic patient record; something previously difficult and costly to support for point of care testing.

## TestCard: Innovation & Disruption With major health insurers

The company received a commercial Letter of Intent from health insurer Aetna in September 2018 to rollout TestCard via its corporate and affinity relationships to approximately 1 million users in India. The stated intention is for the partnership to then extend to further deployments outside the United States.

Aetna's interest in Testcard revolves around the company's algorithms and innovation that allow for a high level of sensitivity and specificity; Specifically, Aetna is aware that no other company in the market has been able to achieve similar results. The ability to conduct urinalysis away from a clinic or hospital environment, at a low unit cost, gives the insurer an array of uses which range from potentially screening for prostate cancer to the detection of diabetes, from diagnosing sexually transmitted infections to identifying urinary tract infections.

In the first instance Aetna has requested a glucose TestCard product to act in a triage capacity as a diabetes pre-screen. TestCard anticipates reaching further similar such agreements with other health insurers.



# Who are We?



#### **George Sutherland, Chairman**

In addition to his role as Chairman of TestCard, George is the CEO of Sutherland Health Group, a leading innovator and supplier to the NHS and medical sector for 20 years. George previously headed up management and sales roles for Bristol-Myers Squibb; Chesebrough Ponds; Unilver; Mates Healthcare Ltd and Ansell. George's company has historically been a leading provider of diagnostics in both the private and public health sector spaces and continues to own a number of brands supplying the NHS.

#### Luke Heron, Co-Founder & CEO

Luke began his career at the British stockbroker Smith New Court, later acquired by Merrill Lynch before working with financial services startup Insensia Plc. Luke has written for many financial publications including iii, the Financial Times, The Herald and the Investors Chronicle, focusing on early stage bio-pharmaceuticals and technology businesses. Previously the founder of multiple iOS games and the chart-topping postcard app 'ByPost'.



#### Chris Hewitt. **CTO & UX**

Chris is the lead UX designer for TestCard, the diagnostic product design and mobile application. Additionally, he heads up the TestCard app development team. Chris was a co-founder of the award-winning Edinburgh based web agency 'Piranha'.

#### Atanas Tonchev. Lead Developer

Previously to leading TestCard's development team, Atanas co-founded the app development firm App Factory and was also the founder of 'Restaurant Week'; a niche restaurant booking and marketing tool focused on Eastern European markets.









#### Dr Andrew Botham, Co-Founder & CSO

Andrew was formerly Head of Research & Development for ACM Global Laboratory, later moving to become the Head of Laboratory testing at the department of blood sciences within the NHS (Biochemistry, Haematology, Immunology, Pre-analytical, Point of Care testing and Phlebotomy) in East Yorkshire, where he oversees the control and maintenance of blood science analytical services across all hospital sites.

#### **Greg Gormley, Financial Modelling** & Head of Advisory Panel



Greg co-founded the well-known loyalty platform Bink, raising £20 million in growth capital, striking deals with some of the worlds largest banks and retailers. Greg has developed and built the financial models for TestCard and is actively involved in partnership and joint venture negotiations, as well as heading the advisory panel.





Lance was formerly an investment banker at Barclays Corporate in London, prior to which he was an account manager for GE Capital. Later pursuing entrepreneurial endeavors of his own; Lance was most notably the founder of the well-known ski blog 'BanskoBlog.com'.

TestCard is initially focused on the lucrative UK market as a launchpad for its product set, however, it's solution is one that is needed globally. Improving patient outcomes by delivering an earlier diagnosis with a greater accuracy of testing, whilst simultaneously offering the convenience of at-home diagnostics at a lower cost; provides the company with the platform to deliver true healthcare disruption, globally. It is well documented that emerging technological innovations in smartphones, biosensors, lab-on-a-chip and wearable devices are transforming the point of care diagnostic market. The driving force behind these innovations in healthcare is the search for a solution to deliver an expedited diagnosis. Ultimately, this means providing the tools to individuals to self-diagnose at home with diagnostics that are easy to use and deliver a high level of accuracy. TestCard has created just such a solution and has now positioned itself at the heart of what will be a paradigm shift from curative medicine to predictive, personalised and preemptive healthcare.



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