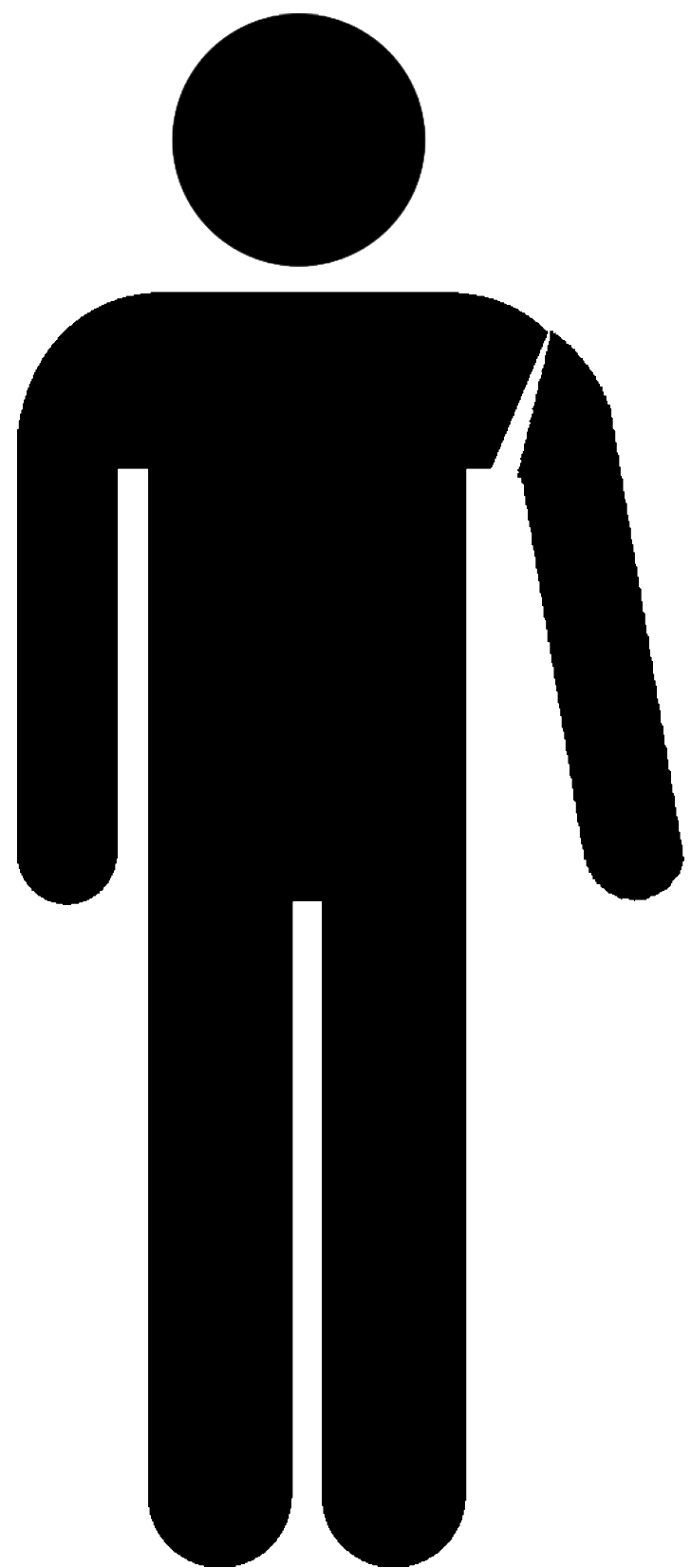
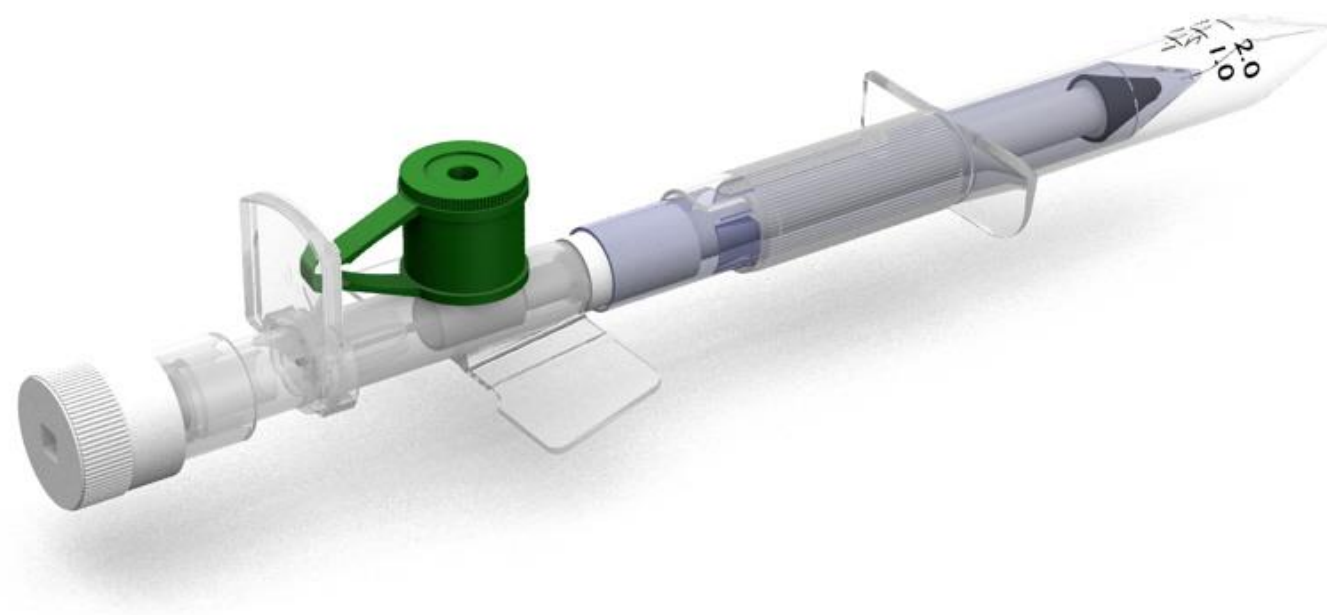




CLINICAL**DESIGN**







Health

Hope of a 'pain-free needle' to end injection trauma

By Philippa Roxby
Health reporter, BBC News

🕒 24 March 2012 | [Health](#)

Who would argue with a pain-free injection?

Nobody loves the thought of a needle piercing their skin, least of all doctors and dentists who have to deal with stressed and anxious patients.

Scientists have been working on this problem for a while, but a young British inventor based in Somerset may have come up with the solution.

Oliver Blackwell's device looks like the typical cannulas used in hospitals and doctors' surgeries around the country, with one crucial difference.

On the front is a much smaller needle which injects a tiny amount of local anaesthetic to ease the pain of the larger needle which follows.

It is essentially two injections in one - the first one, virtually pain-free, paving the way for the second one, which is rendered painless.

The first injection is "like a fly landing on your palm", the inventor says.

Blackwell, who is 29 and graduated in industrial design from the University of Plymouth, UK, in 2005, says his pain-free needle could be used in millions of procedures every year and reduce the risk of contamination or confusion because staff will only have to deal with one device.

"At the moment, if they want to use a local anaesthetic they have to use two needles, find keys and go to the medicine cupboard separately and it all takes time and effort," he says.

He involved experts in his design, enrolling the help of two family doctors and a former president of The Royal College of Anaesthetists.



Oliver Blackwell, on the right, used the insights of GPs and anaesthetists in his design



On the front of the cannula is a small needle which administers around 0.2ml of local anaesthetic

Top Stories

Corbyn unveils 'unifying' top team

Jeremy Corbyn completes his shadow cabinet team with half of roles going to women - while left-winger John McDonnell becomes shadow chancellor.

🕒 2 hours ago

Australia PM Abbott ousted by rival

🕒 30 minutes ago

Austria to use troops in migrant crisis

🕒 38 minutes ago

Features

Human has-been

Enter your job title - see if a robot could replace you at work

Stolen lives

The country where thousands of women vanish without a trace



2.8 Billion

(Source: Siemens Healthcare)



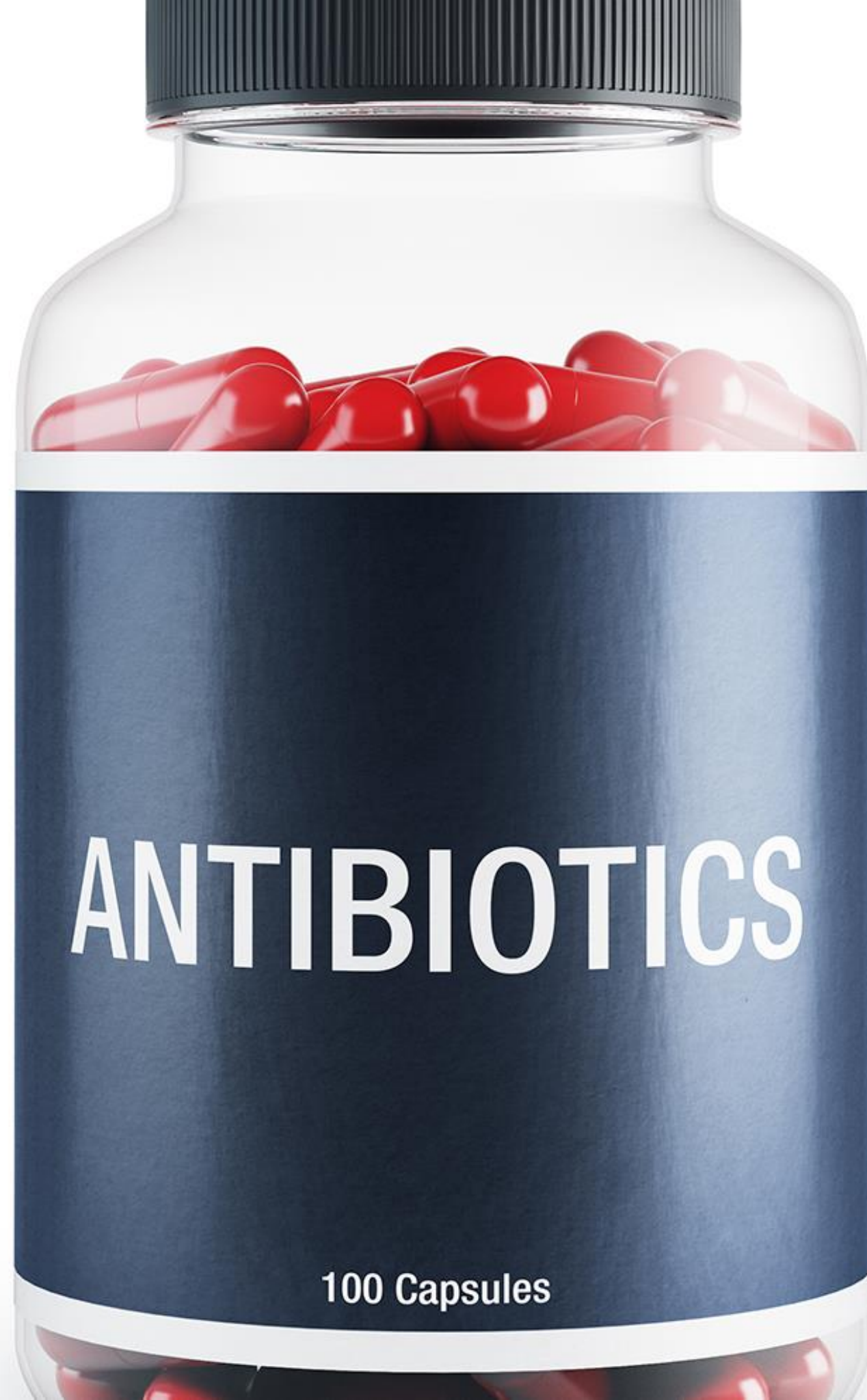








HIGH % False Positive



ANTIBIOTICS

100 Capsules























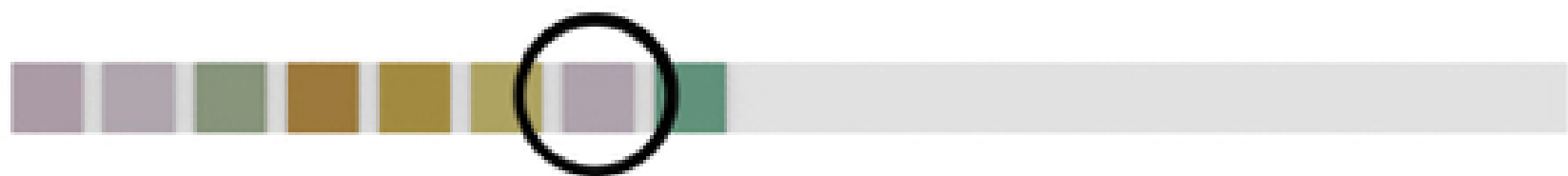


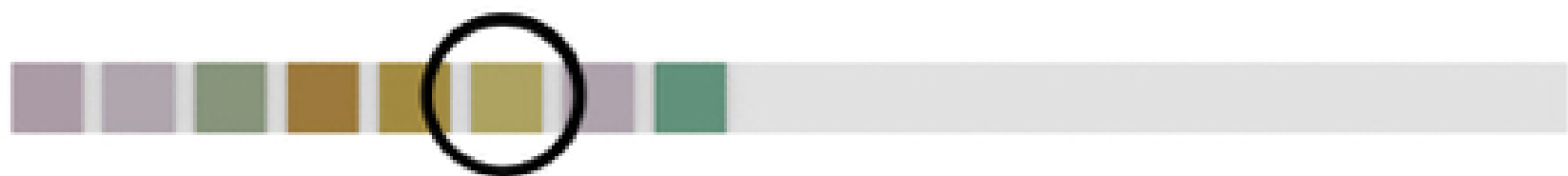


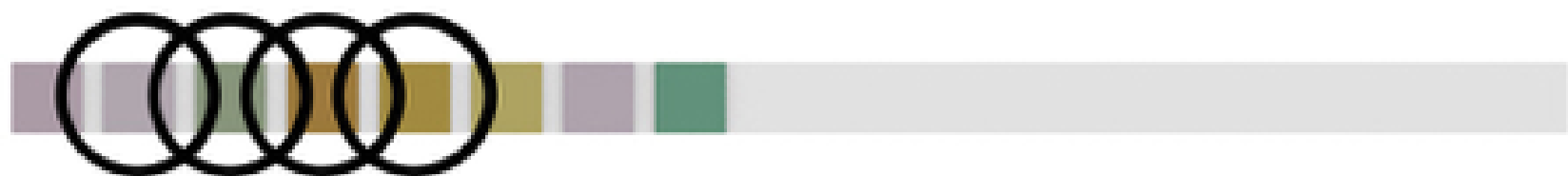


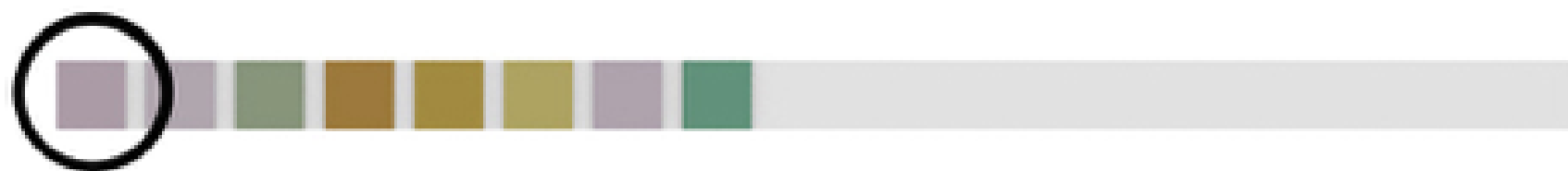


















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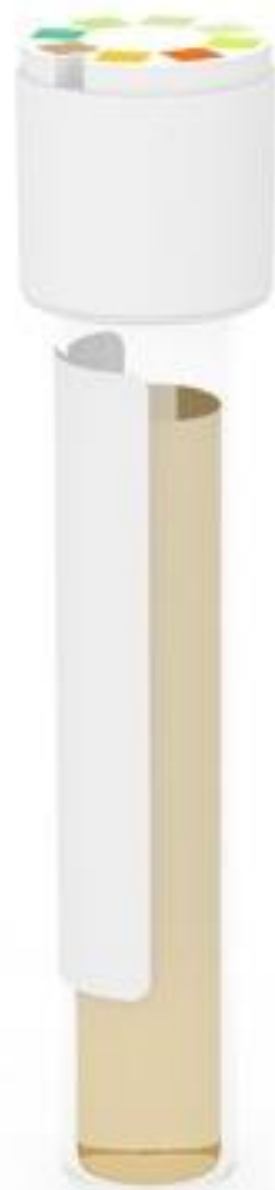




CLINICAL**DESIGN**



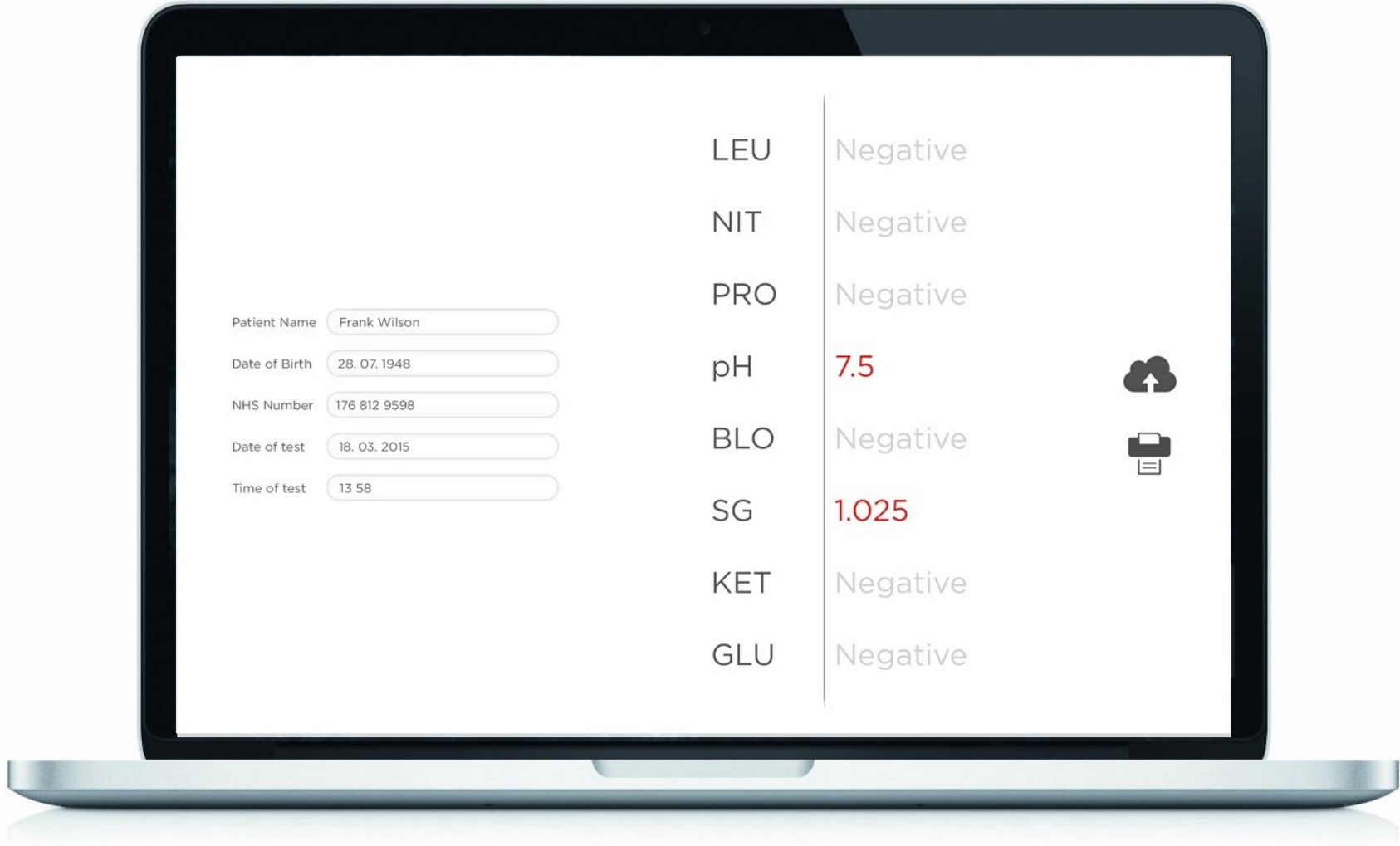














CLINICAL**DESIGN**

£1.8m









GWR

Isambard Kingdom Brunel

800004

MIND THE GAP









































GWR

Isambard Kingdom Brunel

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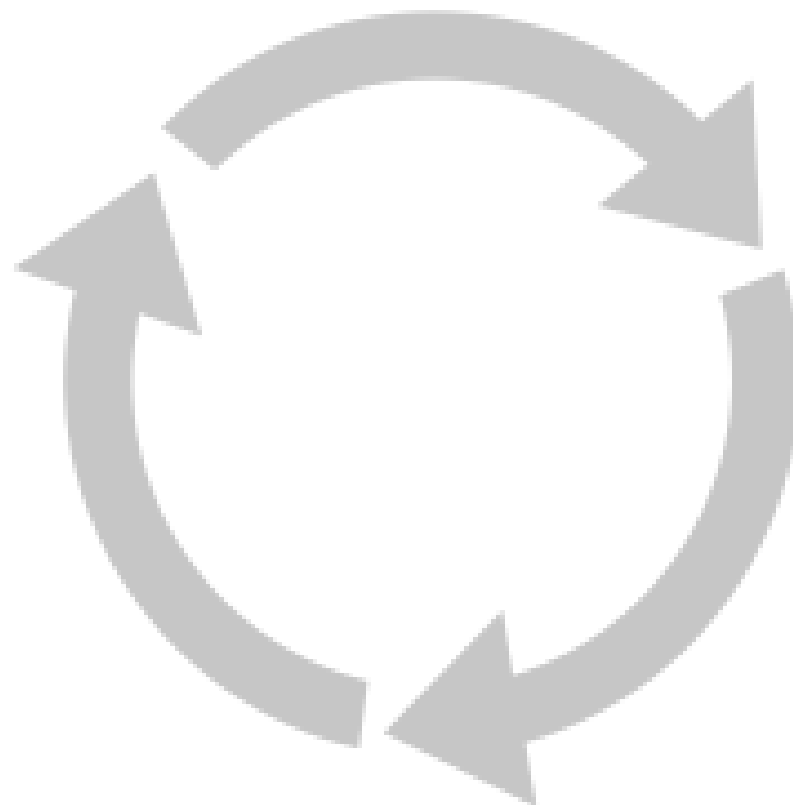














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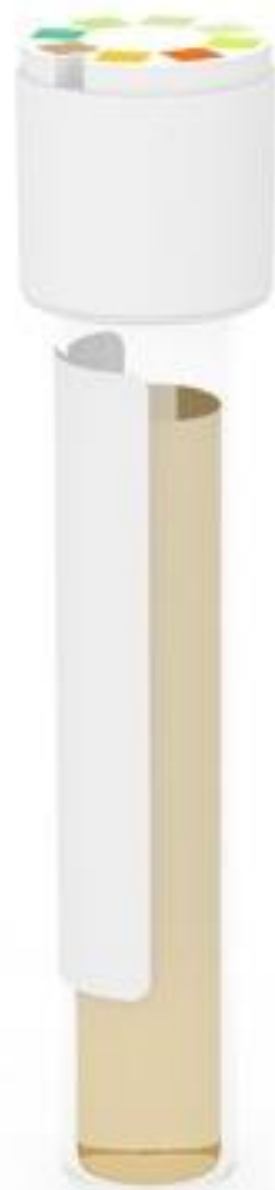












THE DEFINITIVE RANKING OF THE RICHEST PEOPLE IN AMERICA

SPECIAL EDITION

Forbes



THE
FRESHMAN

ELIZABETH
HOLMES
LEADS THE
CLASS OF 2014

400
THE
FORBES













=



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Urine test strip systems

It is difficult to standardize visual evaluation of urine test strips, and a number of environmental factors can have a negative effect on the quality of the result. These include:

- Differences in light conditions at the workplace
- Individual differences in color differentiation
- Declining concentration when examining long series of samples
- Differences in the accuracy of compliance with the specified test strip reaction time

Instrumental evaluation of urine test strips virtually eliminates the described factors and guarantees rapid, standardized measurement and immediate reliable documentation of the result.

Photometry

Urinalysis systems evaluate test strips by reflectance photometry using selective light-emitting diodes (LEDs) with a wavelength and measurement time tailored exactly to the chemical reaction and color development of the test field concerned. Compared to visual assessment, this produces improved accuracy near the limit of detection.

Measuring head (sensor)

Scheme

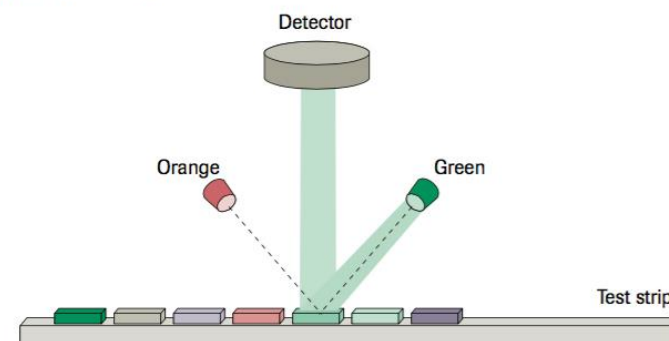
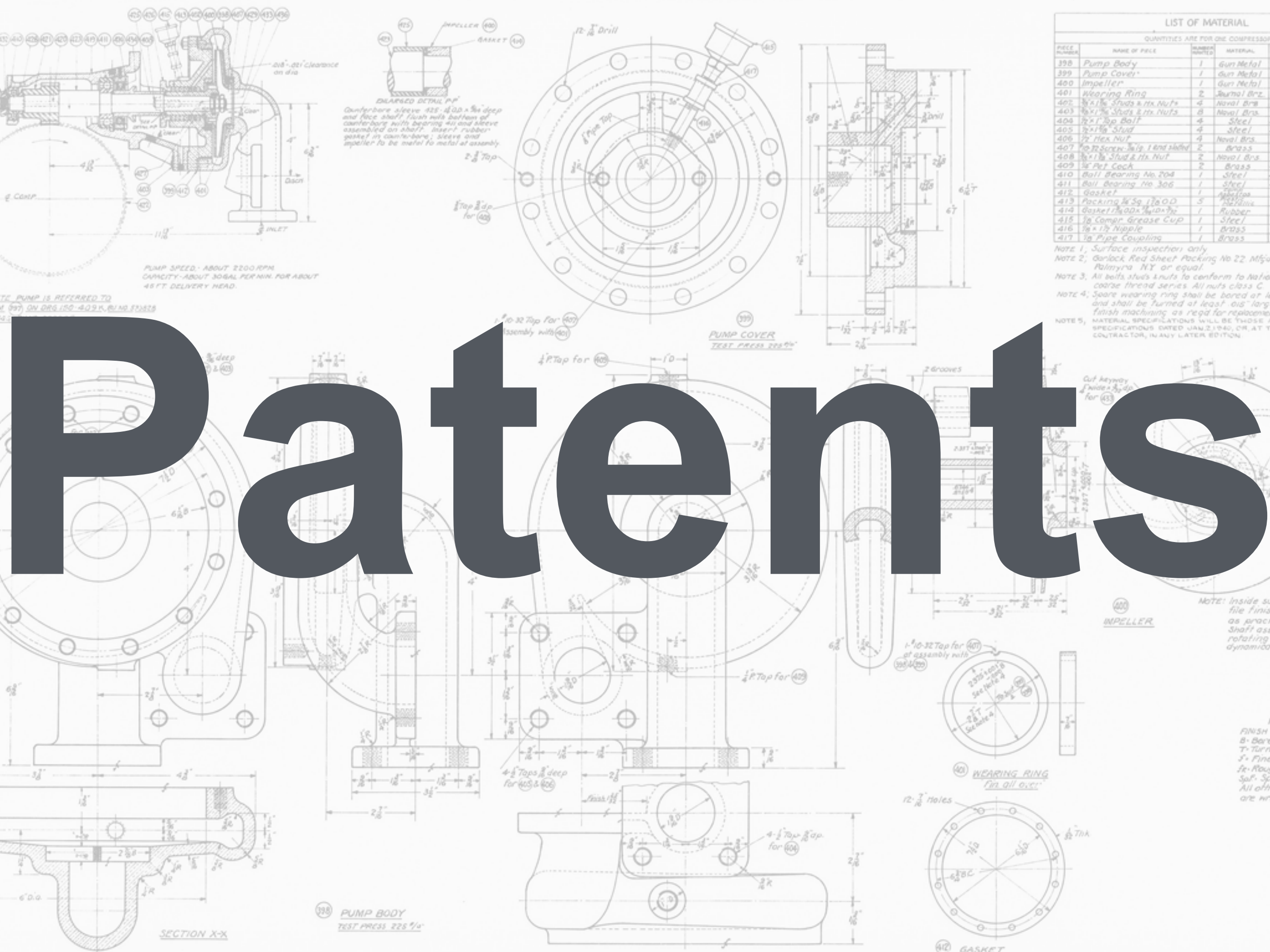


Fig. 20: Measuring head (schematic)



EUROPEAN UNION
EUROPEAN REGIONAL
DEVELOPMENT FUND



LIST OF MATERIAL

QUANTITIES ARE FOR ONE COMPRESSOR			
PIECE NUMBER	NAME OF PIECE	NUMBER REQUIRED	MATERIAL
398	Pump Body	1	Gun Metal
399	Pump Cover	1	Gun Metal
400	Impeller	1	Gun Metal
401	Wearing Ring	2	Journal Brz.
402	3/16" Studs & Nuts	4	Naval Brz.
403	1/4" Studs & Nuts	8	Naval Brz.
404	1/2" Top Bolt	4	Steel
405	3/16" Stud	4	Steel
406	1/2" Hex Nut	4	Naval Brz.
407	10-32 Screw-1/2" 1 end threaded	2	Brass
408	3/16" Stud & Nuts	2	Naval Brz.
409	1/4" Flat Cock	2	Brass
410	Ball Bearing No. 204	1	Steel
411	Ball Bearing No. 306	1	Steel
412	Gasket	1	Graphite
413	Packing 1/4" Sq. 1 1/2" O.D.	5	Natural
414	Gasket 1/4" O.D. x 1 1/2" I.D.	1	Rubber
415	1/4" Compressed Grease Cup	1	Steel
416	1/4" x 1 1/2" Nipple	1	Brass
417	1/4" Pipe Coupling	1	Brass

NOTE 1: Surface inspection only.
NOTE 2: Garlock Red Sheet Packing No. 22, Milroya, N.Y. or equal.
NOTE 3: All bolts, studs & nuts to conform to National coarse thread series. All nuts & washers to be turned at least .015" long finish machining as req'd for replacement.
NOTE 4: Spare wearing ring shall be bored at 1/4" and shall be turned at least .015" long finish machining as req'd for replacement.
NOTE 5: MATERIAL SPECIFICATIONS WILL BE THOSE IN THE SPECIFICATIONS DATED JAN. 2, 1940, OR AT THE CONTRACTOR, IN ANY LATER EDITION.

NOTE: Inside surface finish as per drawing. Shaft assembly rotating dynamically.

FINISH
B- Bore
T- Turn
F- Fine
R- Rough
S- Sp
All other are as shown

398 PUMP BODY
TEST PRESS 225 PSI

399 PUMP COVER
TEST PRESS 225 PSI

401 WEARING RING
Fin. all over

412 GASKET







Sealed & Hygienic

Affordable





Fast definitive results

Integrated

Patient Name	Frank Wilson
Date of Birth	28. 07. 1945
NHS Number	176 812 9598
Date of test	18. 03. 2015
Time of test	13:58

LEU	Negative
NIT	Negative
PRO	Negative
pH	7.5
BLO	Negative
SG	1.025
KET	Negative
GLU	Negative



CLINICAL**DESIGN**