



# IMPACT BRIEF

## Inside the Ripple Effect

*“Xpert® Norovirus test will provide accurate results fast enough to make the right decisions for better patient management, improved safety and saving scarce hospital resources.”*

Dr. Shabnam Iyer  
The Royal Berkshire NHS Trust

- Clinical turn-around-time (sample collection - results) in less than 4 hrs
- Turn an annual opportunity loss of £302,688 into a financial gain of £254,000<sup>4</sup>

Accurate diagnosis of norovirus infection is difficult in hospitalised patients where similar symptoms can be due to many causes<sup>1</sup>. However the necessity to rapidly detect and isolate suspected norovirus cases and/or close beds in order to prevent the spread of infection can significantly increase seasonal pressure for hospitals beds. In 2010 the additional cost of norovirus outbreak management to the hospital trust was estimated to be £646,000<sup>2</sup>. Following the publication of national guidelines<sup>3</sup>, PCR testing was introduced to compliment insensitive norovirus antigen Enzyme Immuno-Assay (EIA) tests. However the requirement to batch 3 or more samples limited its use and the mean time to results was 2.5 days. Although the shift from EIA to batch PCR demonstrated that two thirds of the suspected patients were negative for norovirus, the inability to provide on-demand results at point of admission continues to impact bed management and staff utilisation<sup>4</sup>.



### PROFILE

With just under 700 beds and capacity for over 200 day patients, the Royal Berkshire Hospital is one of the largest general hospital foundation trusts in the UK. It also provides specialist services to a population of one million across Berkshire and its borders. In 2013 the trust met its performance targets for A&E whilst demand for urgent service increased and cases for *C. difficile* came significantly below its trajectory for the year<sup>5</sup>.



Royal Berkshire Hospital

#### Institution

Royal Berkshire NHS Foundation Trust, Reading UK

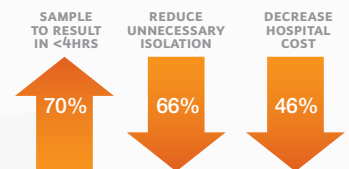
#### Challenge

- Implement PCR testing for all clinically suspected norovirus cases (to prevent pseudo outbreak)
- To achieve a sample to results turn-around time of <4hrs
- Test that can be performed by all staff with minimal hands on time

#### Solution

On-demand random access Xpert Norovirus testing in normal laboratory hours 7 days a week.

#### Impact



#### Impact on Hospital Resources

- + Prevent bed closures 656 bed days p.a equivalent to **£164,000**
- + Save additional nursing costs **£115,688**
- + Reduce deep clean costs **£23,000**

#### Annual Financial Impact

£302,688	OPPORTUNITY GAIN
- £47,040	XPERT NOROVIRUS TESTING INVESTMENT
- £948	STAFF TIME COST
<b>£254,700</b>	<b>FINANCIAL IMPACT</b>

## VISION

- To deliver norovirus results that enhance clinical decisions and improve patient management from the start of hospital treatment
- To report norovirus results before patients are admitted to medical beds from emergency admission (4 hrs)
- Rapid re-opening of closed beds/bay or wards when patients are confirmed norovirus negative
- To prevent outbreaks with early, rapid, and accurate identification of true norovirus cases



## RIPPLE EFFECT

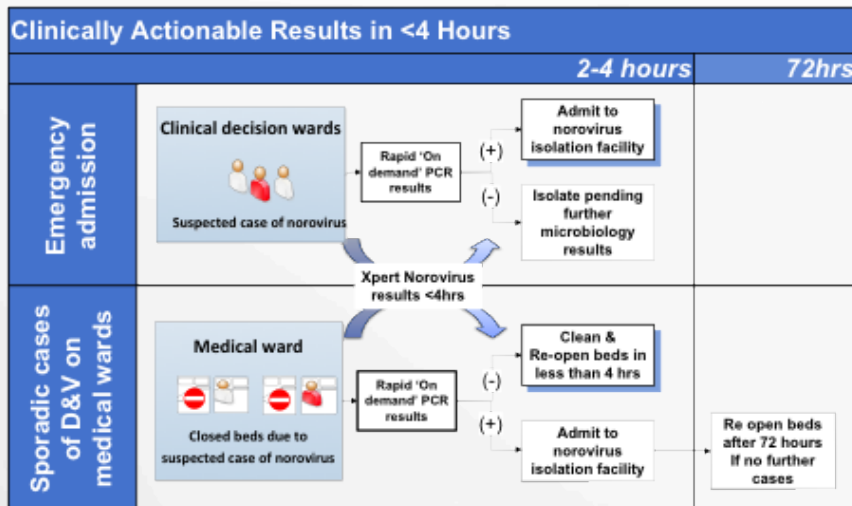


## BENEFIT

- Rapid and reliable norovirus test for all samples
- Reduce strain on winter bed pressure by preventing pseudo outbreaks and ward closures
- The ease-of-use and on-demand availability of Xpert Norovirus versus batch PCR tests, with consequent potential savings in hospital resources is likely to outweigh the cost the test
- Avoid the need for additional agency staffing for nursing and cleaning services
- Financial gain of £254,700 by preventing bed closures and unnecessary isolation
- Enhance molecular diagnostic capability through utilisation of other available tests on a single platform: Flu, Norovirus, *C. difficile*, MTB, MRSA, Carba-R, CT/NG and more
- Drive optimal patient safety while optimizing organizational resources



## IMPLEMENTATION



### References:

1. Danial, J, Cepeda J. A, Cameron F, Cloy K, Wishart D, Templeton K. Epidemiology and costs associated with norovirus outbreaks in NHS Lothian Scotland . 2007-2009. Journal of hospital infection 79: 2011
2. J. Wyeth, N. Virgincar, A. Stacey, S. Chrisopoulos, C. Honor: Norovirus outbreaks versus operational activity: a balancing act, Journal of Hospital Infection - J HOSP INFECT 01/2010; 76. DOI:10.1016/S0195-6701(10)60147-8
3. Guidelines for the management of norovirus outbreaks in acute and community health and social care settings. Produced by the Norovirus Working Party: an equal partnership of professional organisations 2013
4. Iyer S, McAulay K, Fletcher A, Wyeth J, Lock V, Virgincar N. Comparative Evaluation 2 Commercial Norovirus Real-time PCR assays for Hospital Outbreak Management. Federation of Infection society p192 11th-14th Nov. 2013
5. Royal Berkshire NHS Foundation Trust. Annual Report and Financial Statements for the year ended 31 March 2013. <http://www.royalberkshire.nhs.uk/Downloads/About%20us/Annual%20Report%202013.pdf>

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