BD case study

Improving workflow efficiency and standardisation of flow cytometric immune cell subset counts in immunology labs

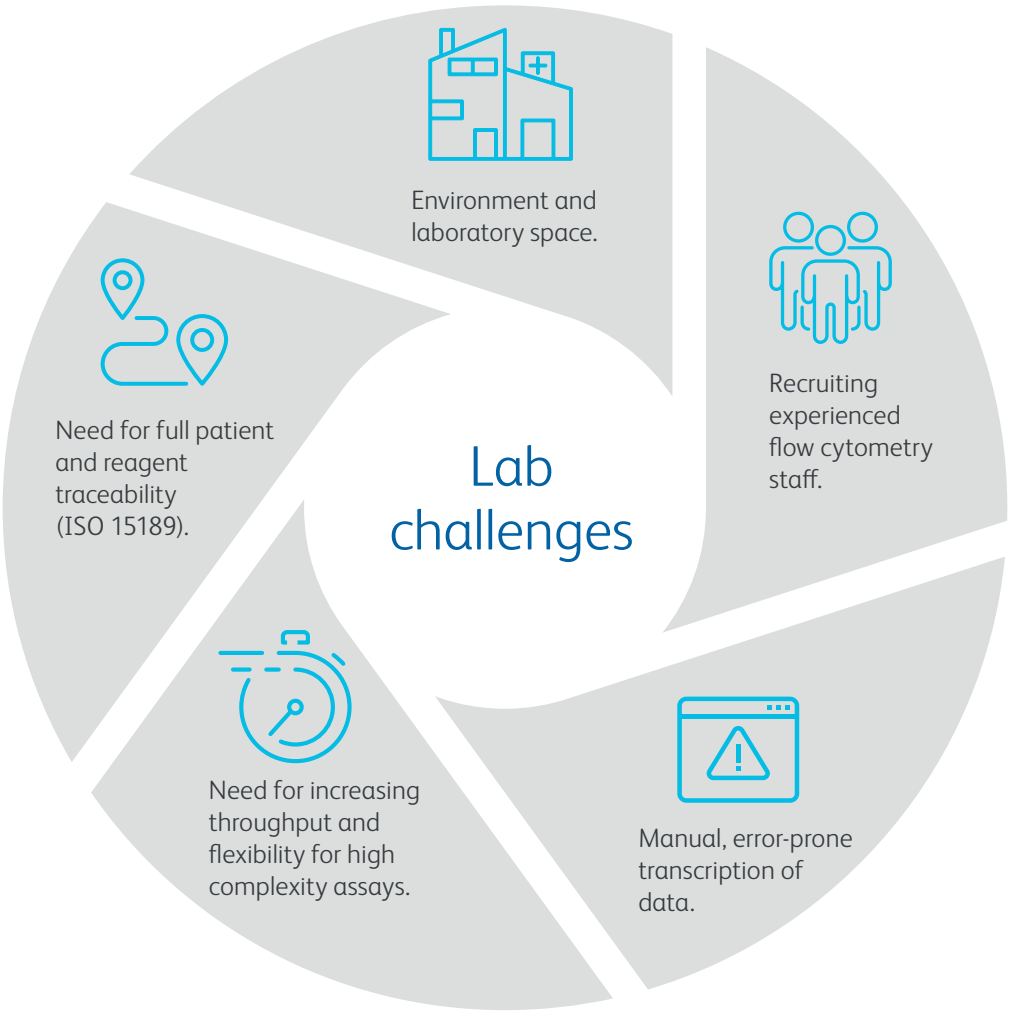
BD

Evidence statement

98%

of the in-patients will undergo a diagnostic lab test during a hospital stay.[1]

Accurate diagnostics and subsequent treatment decisions are dependent upon standardised testing to produce consistent, timely and quality results.[2]



Why automation?

- **Automation enables laboratory scaling capacity, helping to ensure surges in patient specimen volumes do not impact quality and turn-around-time (TAT)[3] and subsequently, the ability for clinicians to manage patient care effectively and safely.[4,5]**
- **Through automation, processes are also standardised, driving quality and consistency.**

Evaluation of the BD automated flow cytometry workflow

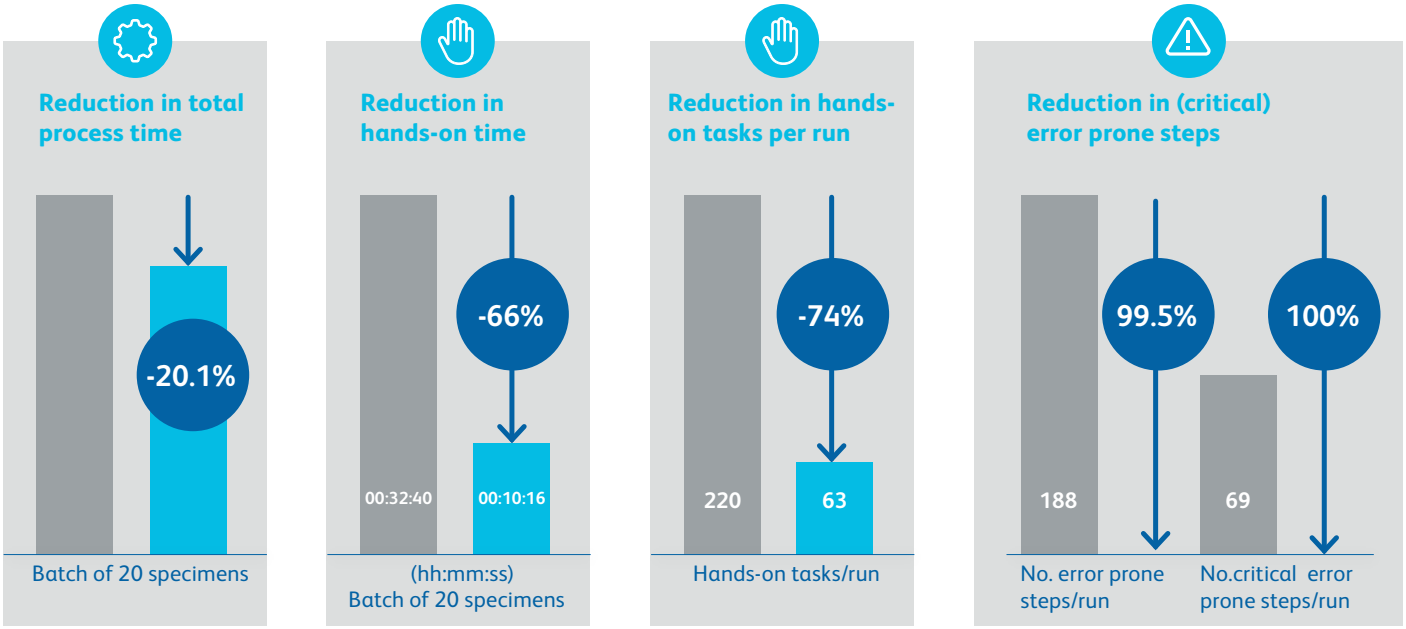
The workflow of the automated BD solution, consisting of an integrated BD FACSDuet™ Sample Preparation System and BD FACSLyric™ Flow Cytometer, was evaluated following a Lean Six-Sigma approach that compared with the existing laboratory manual workflow at the Department of Immunology, Barts Health NHS Trust, The Royal London Hospital.

Parameters measured

- Total process time (time taken for a specimen arriving on the bench to being reported)
- Total hands-on time (time staff are working directly in the process)
- Error-prone and critical error-prone steps (affecting the audit trail and the patient outcome respectively).

Results

Samples were prepared with BD Multitest™ 6-Color TBNK Reagent with BD Trucount™ Tubes and a manual workflow was compared to samples prepared and analysed on a fully integrated BD FACSDuet™ Sample Preparation System and BD FACSLyric™ Flow Cytometer.



The integrated BD FACSDuet™ Sample Preparation System and BD FACSLyric™ Flow Cytometer system helps the Barts Health NHS Trust at the Royal London Hospital by reducing hands on time, number of tasks, and the number of error prone steps/per run. It also eliminates the number of critical error prone steps/per run. With an average workload of 50 TBNK samples / day, the laboratory would benefit from a time-saving of 25 days per year of staff time, creating the needed capacity to process more specimens.

Time-saving of
25 days per year of staff time

"It reduces errors ....., leading to increased productivity and efficiency, ... provides a comprehensive fully audit-able account of the whole process. .... creates capacity to allow us to meet our key performance indicators."

Chris Scott, Lead Biomedical Scientist, Barts Health NHS Trust at the Royal London Hospital, UK

The integrated BD FACSDuet™ Sample Preparation System and BD FACSLyric™ Flow Cytometer system delivers process standardisation by minimising workflow error-prone steps whilst increasing workflow consistency and laboratory efficiency. Through delivering timely and accurate results to inform clinical decisions, the BD solution supports patient safety and good health outcomes[2].

Results presented are applicable to Barts Health NHS Trust at the Royal London Hospital, results will vary and may not be representative of those measured in other clinical laboratory settings.

Thank you to The Barts Health NHS Trust, The Royal London Hospital for their collaboration. The Institutions providing testimonials in this presentation were provided with reagents at no cost by BD and compensated by BD at fair market value for their time spent on the test studies to which the testimonials refer. However, the views, information, or opinions expressed during the testimonials are solely those of the individuals involved.

CE The BD FACSLyric™ Flow Cytometer with the BD FACSuite™ Clinical and BD FACSuite™ applications and BD FACSDuet™ Sample Preparation System are *in vitro* diagnostic medical devices bearing a CE mark.

CE 2797 BD Mulitest™ 6-Color TBNK with BD Trucount™ Tubes is an *in vitro* medical device bearing a CE mark and is CE certified by BSI Group the Netherlands B.V. (Notified Body Number = 2797).

BD Flow Cytometers and BD FACSDuet™ Sample Preparation System are Class 1 Laser Products.

1. Ngo A, Gandhi P, Miller WG. Frequency that laboratory tests influence medical decisions. J Applied Lab Med. 2017;1:410-414
2. WHO. Laboratory Quality Management System Handbook. 2011
3. Angeletti S, De Cesaris M, Hart JG, et al. Laboratory Automation and Intra-Laboratory Turnaround Time: Experience at the University Hospital Campus Bio-Medico of Rome. J Lab Autom. 2015;20(6):652-658.
4. Howanitz J.H. and Howanitz P.J. Laboratory results. Timeliness as a quality attribute and strategy. Am J Clin Pathol. 2001;116(3):311-5
5. Carraro P. and Plebani M. Errors in a Stat Laboratory: Types and Frequencies 10 Years Later. Clinical Chemistry 2007;53: 1338-1342

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