

# Using System Dynamics Hands-on Exercises to Convey Insight into the Dos and Don'ts of NHS Outpatient Service Management

Aneurin Bevan University Health Board

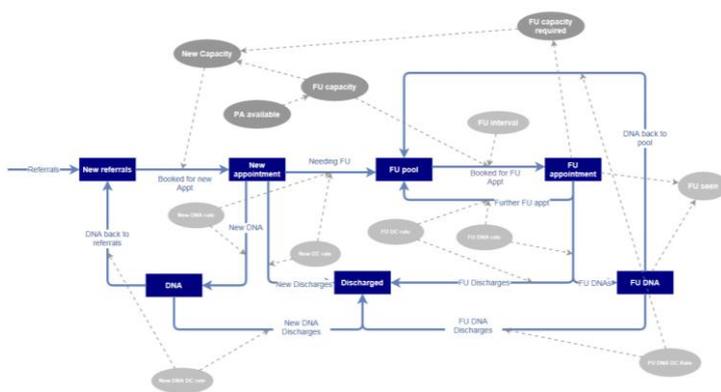
This approach demonstrates the value of using System Dynamics as a learning tool within the context of a Quality Improvement collaborative seeking to enhance outpatient services in Wales. For two years, the single-speciality pilot team realised cost savings of £21,500 per annum while ensuring excellence in the quality of patient care. The pilot team's successful strategy continues to be adopted and spread within other teams across the directorate, good practice principles also being shared at a national level.

## Background

Outpatient Department (OPD) appointments are a critical component of patient pathways. With an annual average of 800,000 attendances, Aneurin Bevan University Health Board (ABUHB) handles more than a quarter of the OPD activity in Wales. The associated cost for the health board amounts to roughly £122 million per annum. Like all health boards, ABUHB struggles with increasing OPD demands caused by an ageing population and higher prevalence of chronic conditions. The **performance measure for OPD management** in Wales is to reduce the time from **Referral To commencing Treatment (RTT)**. While RTT targets help understand new patient backlog, they fail to consider that most appointments are for patients who require follow-up review. The understanding of how the new and follow-up queues interact is poor. As a consequence, the favoured strategies for managing outpatient clinics are still focusing on the RTT target instead of ensuring capacity for *all* patients. This counterproductive tactic encourages 'quick fixes' – increasing waiting times and harming follow-up patients.

## How the Work Was Done

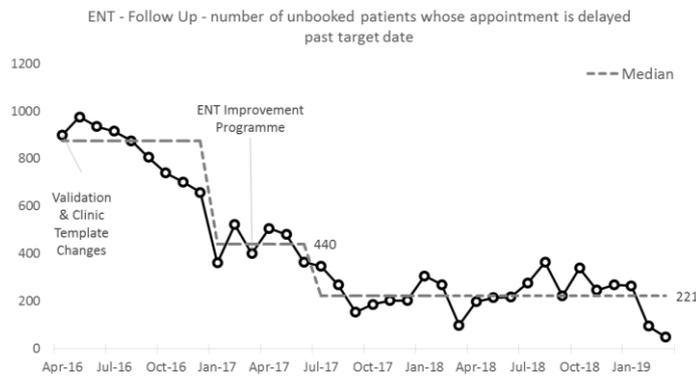
To ensure that patients with symptoms have timely access to information and specialist treatment, in 2017, ABUHB initiated an OPD Quality Improvement (QI) collaborative, involving nine specialities. The Aneurin Bevan Continuous Improvement (ABCi) team – at that time seeking to integrate QI and Mathematical Modelling capability – worked in partnership with the pilot speciality, Ear, Nose and Throat (ENT) to facilitate an interdisciplinary approach. The ENT team used the "Model for Improvement" to test changes and learn about what works and what doesn't to inform the OPD QI approaches across the health board. One component to share systems understanding, inspire sensible ideas for change and generate behaviour change involved System Dynamics.



Using the Insight-Maker® OPD model shown to the left, ABCi offered a set of hands-on exercises for clinical and non-clinical staff to **explore outpatient systems themselves and challenge written and unwritten management rules**. Among the features up for testing were (i) reconfigurations of the new-to-follow-up ratio, (ii) the introduction of one-stop clinics, (iii) alternative ways of managing the follow-up workload like seeing patients on symptoms instead of routinely, (iv) the effect

of reductions in the number of patients who Do Not Attend their appointments (so-called DNAs) and (v) running incentive clinics (in particular, waiting list initiatives to improve RTT times).

## Results



Individually exploring the System Dynamics OPD model helped managers to understand some shortcomings of daily practice and confirmed clinicians in their intuition of what was the right thing to do. The resulting change in the mindset led staff to test entirely different ideas in ongoing sets of Plan-Do-Study-Act (PDSA) cycles.

The ENT team developed, tested, and refined a **See On Symptoms (SOS) pathway**. Consultants discharged outpatients but guaranteed to see

them immediately if urgently needed. Within a year, this approach led to a 47% reduction in booked OPD appointments. Additionally, the proportion of cancelled appointments dropped from 23% to 7.5%, and patients stopped skipping their appointments. I.e. the DNA rate fell from 6% to incredible 0.4%. Moreover, the ENT team tested **Triage by Subspecialty Clinician**. This tactic ensured to only book appropriate patients for an urgent appointment which additionally cut the length of the 'Urgent' waiting list in half.

## Value and Learning

The use of System Dynamics modelling, and the engagement process that is an essential component of the approach, supported a QI collaborative to identify and subsequently test change ideas to improve outpatient services. Since 2017, the pilot team recurrently delivered savings of £21,500 per annum while ensuring an excellent standard of care quality. Rolling out the 'ENT approach' across the directorate is enabling more effective and efficient management of OPD demand, by ensuring to schedule appointments when needed rather than scheduling follow-up appointments at regular intervals.

For clinicians, the exploration of an SD model describing some paradigmatic speciality supported the understanding of their system. Non-clinical staff had a tough time carrying over abstract principles derived from exploring even identical underlying dynamics. Managers and admin staff needed to see *their* service, *their* numbers, *their* floor plans incorporated in the hands-on exercise. In the end, the engagement of booking clerks, clinic coordinators and directorate managers alongside the clinical staff was crucial for success. Only within this broad, psychologically safe improvement team characterised by strong relationships and trust between members and a shared language plus systems understanding, incremental learning led to the desired outcome for our patients.

## Further information

The mock-up of John Boulton's Rheumatology clinic to safely test current management strategies and new ideas to improve OPD flow is available on [www.insightmaker.com/](http://www.insightmaker.com/) → file: opd-v2.

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