Good Hope Hospital NHS Trust's project Re-design of a vascular surgical outpatient service using discrete event simulation wins the Best use of IT in the Health Service and Best innovative use of technology awards.

"The judges were simply bowled over by this project and its potential outcome for UK's NHS and patients."

Consultant vascular surgeon Mr Simon Dodds, who also has a degree in computer science, developed the software and led this ambitious project to re-design the vascular surgery outpatient service at Good Hope Hospital. Its objectives were to reduce long waiting times and meet increasing demand. A new Workflow Model Discrete Event Simulation (WFM-DES) software tool was used in the design of a new combined vascular clinic and vascular laboratory in the new treatment centre. It allowed the capacity of the new clinic (due to open in Spring 2005) to be predicted using existing staff resources and to inform the architectural design of the new facility. In this way the hospital has been able to develop a robust business case for offering an expanded range of one-stop vascular outpatient services to the local healthcare community.

http://www.healthcare-computing.co.uk/hitea/index.html

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http://www.healthcare-computing.co.uk/hitea/hitea2005/goodhopehospital.htm

Good Hope Hospital: redesign of vascular surgery outpatient services

By working smarter, the vascular surgery team at Good Hope Hospital, Sutton Coldfield has achieved a better, faster and cheaper clinical service. They set out to reduce waiting times for patients' access to their specialist services and to balance work across the members of the whole outpatient services team, to make optimum use of their existing skills, resources and experience. They also aimed to improve the effectiveness of care and thereby reduce the need for long-term follow-up and multiple hospital visits.

Consultant Vascular Surgeon Simon Dodds, who also has a degree in computer science, said the service had been gradually re-engineered over the past four years "through an evolutionary cycle of clinical-process analysis, modification and targeted use of innovative ICTs". The overhaul, driven forward almost entirely by the team's desire to improve their service, has been carried out so far in two phases: the first phase was an informal, user-driven reorganisation of the outpatient services; the second was a more formal redesign of services, initiated in 2002 by the opportunity to design a new outpatient-treatment centre, which opens this spring.

A literature search showed that healthcare processes are considered too unpredictable and complex for the process-design tools used in other disciplines, such as engineering. But, as the team was focused on a single clinical area with a limited number of highly related and well-understood clinical problems, they decided to try discrete-event simulation (DES). Financial constraints and the unavailability of commercial DES tools for healthcare purposes caused Mr Dodds to apply his knowledge of IT to the adaptation of existing software. With the resulting tool — known as WFM-DMS — he was able to design new care pathways, resource allocations, booking schedules and financial models for the new outpatient services. The WFM-DES tool allowed the capacity of the new clinic to be predicted using existing staff resources. It was also used to inform the architectural design of the new facility and to develop a robust business case for offering an expanded range of one-stop vascular outpatient services to the local community.

The reorganisation of the outpatient service as a one-stop clinic meant that a new patient would have an assessment, investigations and review in one visit instead of three. The patient experience has been improved and administrative overheads reduced. Waiting time for patients with leg ulcers has also dropped from 24 to two weeks, and the throughput of patients has improved by 15–20%. Use of a shared EPR, the subject of a related development project, added benefits for patients with leg ulcers because the initial referral was made electronically, complete with digital images. The management plan was immediately available to the community nurses, who could also request further specialist advice at any time and receive it via the EPR within 24 hours without the patient attending the hospital. The specialist team could also follow the progress of the patient without further hospital visits. A randomised trial revealed that the combination of improved process and communication improved healing rates of leg ulcers from 35% to 64% at 12 weeks and reduced the number of hospital follow-up visits from an average of five to two.

The informally redesigned process had increased the service capacity by making better use of the combined resources of the community and hospital-based specialists. This delivered a better quality of service with no increased costs. The overall improved efficiency and effectiveness was associated with a measurable reduction of 26% in the cost of treating leg ulcers. It is estimated that the reduction in costs, if extrapolated across the UK, would equate to a saving in the order of £150m per annum.

Mr Dodds told the HITEA judges: "The success of the project is down to three factors: a clinical team that is focused clearly on delivering better care for patients by improving the whole process of care; a supportive environment where innovation is encouraged and change is facilitated rather than forced or blocked; and the development of multi-skilled personnel and cross-boundary thinking to bridge the knowledge and communication voids between different groups within the team and wider organisation. "By combining innovative ICT with clinical process redesign we have achieved the elusive win-win-win outcome: a better, faster and cheaper clinical service"

The achievements of Mr Dodds and his team have been short-listed for both the Best innovative use of technology and the Best use of IT in the Health Service awards.