The 'wicked problem' of the cardiology clinic

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Abstract

A major concern in cardiology in the UK has been the waiting times for patients referred from primary care to secondary care, which are often long. We have addressed this problem in our Trust. At various times the Trust had funded waiting list initiative clinics but, apart from small and transitory improvements, the situation continued to worsen. Various solutions to the out-patient services problems have been implemented. However, there is a lack of published information about system redesign.

In this article we present some of the principles we are currently employing to redesign our out-patient service with a view to improve its efficiency. Our results are being published separately.

Key words: waiting times, out-patient clinics, 'wicked problem', action research, lean thinking.

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Introduction

Coronary heart disease (CHD) remains a major cause of mortality and morbidity in the UK. More than 125,000 people died of CHD in the year 2000,[1] yet there is considerable evidence that deaths may be delayed by a range of treatment and interventional procedures. Therefore, the National Service Framework (NSF) for CHD lays great emphasis on the delivery of appropriate care.

A significant concern in cardiology in the UK has been the often long waiting times for patients referred from primary care to secondary care for diagnosis and treatment. As an example, in the year 2003 we had 1,400 patients awaiting their first clinic appointment. We attempted to limit the clinical risk by a complex system of investigation and risk stratification prior to clinical appointment. Our Trust had funded waiting list initiative clinics but, apart from small transitory improvements, the situation had worsened. (This has been a common experience in cardiology and in some other specialties.)

Various solutions to out-patient services problems have been implemented, including general practitioner-led clinics, one-stop clinics and open-access tests. However, system redesign generally amounts to a leap into the unknown, as there is a lack of published information about the forces that drive the problem and the impact of innovation on a service as a whole. This lack of useful analysis reflects the fact that cardiology out-patient services constitute a classic 'wicked problem', a jargon term appropriate for many healthcare service delivery challenges.[2]

'Wicked problems' are unique problems that are not easily defined. They have better or worse solutions rather than right or wrong ones; the solutions generally become apparent only after a period of change and evaluation. They may contain strong moral, political or professional dimensions that contribute to system failure. These characteristics are commonly encountered within a resource-limited service such as the NHS and they must be considered before changes can be planned confidently or implemented.

Berwick states that every system is perfectly designed to achieve the results it achieves.[3] Thus, poor performance is created by poor system design, which is generally accidental. To change outcomes we need to redesign, not just invest more resources in the same system. This might be a lesson for the government as a whole since NHS productivity has increased at a slower rate than recent investment.[4]

Solving wicked problems

Strictly speaking, you cannot fully 'solve' wicked problems, but there are approaches that help us to understand the problems and make improvements. We are redesigning our out-patient service at present, attaching high importance to evaluating the impact of changes on our service as a whole. We set out below some of the methods that we are trying to implement.

The first obvious step in dealing with most system problems is to recognise them. Such problems are characterised by diverse perceptions of the problems among the stakeholders, shifting targets, continuously changing constraints and limited resources. If a significant amount of time and effort has been spent with no improvement, then the problem may be considered wicked.[5]

Good management of out-patient waiting lists requires understanding of how patients flow through the system. Patient flow data need to be monitored regularly. Such data include

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Table 1. Lean thinking principles when applied to the NHS

Excessive stocks	Waiting lists
Overproduction	Clogging of system by initiative clinics that shifts patients from OP waiting lists to ECG department or angiography waiting lists Multiple tests on patients, which are not required
Correction	Unnecessary follow-up clinic appointments and the need to repeat out-dated investigations
Material and information	Complex paper trail created by the need to investigate all patients, even those at low risk Paper records being carried around and lost in the hospital
Processing	Complex office procedures to deal with waiting lists, investigations and referrals from primary care
Waiting	Waiting for a routine appointment for the GP Waiting for an out-patient appointment
Motion	Unnecessary steps involved in the movement of patients from primary to secondary care Unnecessary movement of patients around the hospital

Key: OP = out-patient; ECG = electrocardiogram; GP = general practitioner

demand (the number of referrals from all sources), activity (the number of patients actually seen in the clinic per week) and capacity (the ability to see patients, which is different from the number actually being seen). Only when a system is 100% efficient will capacity be equal to activity. We found that the demand was constant and that activity was over 90% of capacity: the system was efficient even though it was failing in terms of waiting lists, a typical wicked problem.

Before attempting to make changes in a system, we need to understand the current process as a whole, as the patient experiences it. A patient's journey in our healthcare system is typically complicated. Process mapping helps us to understand the whole picture and to identify the main problems. Mapping represents visually the activities and the steps followed by the patients. It is undertaken by staff who are associated with every stage of the patient's journey through the system, and who would be participants in any future change.[6]

Making changes

Action research is a practical approach to change in healthcare systems.[7] It is a particular style of research which involves cycles of action and reflection. Action research is now widely used in healthcare systems, as it is ideally suited to solve wicked problems[8] or 'messes'[9] within complex patterns of health service delivery.

An action research approach can involve the use of Nolan's model of improvement.[10] The model consists of three questions and a cycle. The three essential questions involve the main aims and goals of change, the measurements to demonstrate change and, finally, the potential of change to be tested. The change can

Key messages

- We have attempted to address long waiting times for patients referred from primary care to secondary care
- 'Wicked problems' are commonly encountered within the NHS
- Principles such as obtaining accurate patient flow data, action research and lean thinking may be applied to reduce out-patient waiting times

then be tested using PDSA (Plan-Do-Study-Act) cycles of learning.[10] A PDSA cycle is a method of testing changes on a small scale before introducing them into the system. Through planning small, multiple cycles of change and analysing each cycle with a view to improving it further or discarding it, change on a wider scale can be implemented.

Such inductive learning is useful in a clinical environment as it is acceptable to patients and staff alike. Moreover, it involves less time and fewer resources than other methods of instituting change.

Lean thinking

Lean thinking is a term, coined by a Toyota executive, that refers to thinking which seeks to deliver more output with less effort, less waste, less time and less space.[11] It aims to achieve radical improvements via new design rather than just by minor changes in the old one. Some of the ideas described above are examples of lean thinking.

Lean thinking aims to eliminate the various forms of waste from the system by reducing inventory (excessive stocks), overproduction (too much, too fast), correction (inspection and rework), material and information movement (too much, too far), processing (adds n° value), waiting (idle time) and motion (inefficient movement). These principles can be applied to redesign organisations such as the NHS to improve the efficiency of the systems (table 1).

The human dimension

Last, but not least, is the human dimension of change. Every member of staff has different needs and attitudes, and may have a reason for accepting or rejecting change. A good change manager must recognise what change means to each member of the team and employ approaches to maximise participation and engagement and minimise threat.

In conclusion

The rule of thumb is that we aim to do today's work today, not in 18 months' time (the current cardiology out-patient waiting time target in NHS Wales). Early cardiological interventions, whether medical or surgical, can help diminish the burden of disease and relieve pressure on acute services. Therefore, out-

patient services should be redesigned into systems that tailor methods of clinical assessment to the needs of the patients and deliver interventions rapidly. Removing the backlog will provide better services (and ultimately outcomes) for patients and greater job satisfaction for staff.

Conflict of interest

None declared.

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