

Several ways to improve productivity in Pathology

How to enhance service *and* cut cost

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The NHS is trying hard to reconfigure Pathology services – to reduce the cost per test and improve the service. While Boards discuss large-scale and long-term restructuring and consolidation, managers have to deal with pressure on departmental budgets and rising demand in the here and now. The trick is to figure out how to keep service up and to take cost down. Laboratory managers must be wondering what else they can do to improve. We hope this paper helps.

Productivity is a simple concept. How much output is produced for a given input? To increase productivity means to make people or machines work better: not harder, but more effectively and efficiently. It may not be easy to make improvements, let alone to sustain them. But ways to do it do exist – and can form vital parts of a wider plan for change. But think on: the options set out below are not mutually exclusive or exhaustive. Some, or maybe most, are likely to apply.

Start with clear measures and visual management

Before current productivity can be understood, or targets set to improve it, it must be measured. Measures of safety, quality, provision and cost should now be well established. But many laboratories hide such graphs in a computer or managerial report. So the staff and clinicians may be unaware of performance, progress or targets. And efforts to communicate these rarely go far enough.

Visual management is often talked about. But it is not always used well in Pathology laboratories. The aims are to make visible the 'normal condition'; to highlight any 'abnormal conditions'; and to set out the actions required to

rectify any abnormalities. Simple, clear, visual indicators should set out what should happen at each step, where the backlogs lie, and what the standard of work must be.

Start by taking a critical look at how measures, visual management and briefings are used in your laboratory. To sustain improvements in productivity, it is essential to involve the staff. So consider how actively people are contributing, and what can be done to improve participation. And recognise that successful change needs to be managed – starting with a clear articulation of what success is.

Eliminate 'waste' and improve 'flow' – a Lean programme

Left unchecked, processes become inefficient. 'Lean thinking' is about giving 'the customer' for Pathology (to be defined in a later newsletter!) the most 'value' for the least effort. In Pathology, one thing is certain: it is not the employees or managers who define value! An activity that adds value directly and positively changes the 'item' or 'need' in line with the demands of the customers. Anything else is waste. Waste in the laboratory could be in the transport of materials or information, inventory, movement of the staff, inappropriate automation, over-production and unnecessary tests, over-processing (duplication or repeat testing), defects (errors and omissions), excessive space, unused buildings, unnecessary services, and so on.

Once employees and managers are trained to recognise waste, they start to spot it in most operations. It is up to employees throughout Pathology to work together to

recognise, categorise, and eliminate waste in all its forms and to stop it recurring: to tackle its causes, not its effects; to meet the required turnaround times (TATs); and to eliminate errors. Laboratory Information Management Systems (LIMS) can appear to dictate how work is organised. They may need to be challenged. Operating processes should not depend on what is easy for a software provider to program.

It is then up to the manager to take that cost out permanently. This is often the hard bit, requiring support from outside the laboratory. It is important to recognise that some of the savings are likely to be made by reducing the staff. But this must be done in a manner that keeps the workforce 'on side' – fairly, with dignity, after clear explanation of the reason for the change, and legally.

Conduct focused improvements – team-based events

Draw up a logical plan to change one clearly defined process at a time. Then do it. Keep the activity in one area to ease the strain on the organisation and reduce the risk. A series of small improvements can soon show real results. Involve the front-line staff, to get new ideas adopted quickly and sustained. The manager's task is to decide on the phasing of improvements.

'Lean' approaches are becoming more common in the NHS. Some have had good results (although the transfer of learning between organisations and departments has been patchy). A complete lean programme would have to map and redesign multiple 'patient pathways' from beginning to end. Innovation of this type can be time-consuming at first. But it becomes quicker with practice – and the potential waste to be removed appears (to us at least!) to justify the investment. In contrast, focused improvements need small, dedicated teams

paying 'narrow and deep' attention to local concerns. They use Plan-Do-Check-Act (W Edwards Deming) to solve problems and they select techniques to achieve success quickly; to run small projects that then start to reveal the 'bigger picture'; and to fit with the constraints and 'culture' of the hospital. Focused improvements should be concerned with effectiveness ('doing the right things'), efficiency ('doing things the right way') and economy ('doing things at the lowest cost').

The staff in laboratories has the knowledge needed to improve. But what it often lacks is the focused approach, tools and confidence to do so effectively. This is when a facilitator may be required to fire the initiative: to define the start and end of the process; to set targets for early success; and to convince the staff that it has the skills to effect the change.

Orchestrate enabling processes – or change layouts!

The textbooks teach that lean practitioners should 'orchestrate enabling processes'. That sounds like 'management-speak'! But it does describe (vaguely) what needs to be done. Many older laboratories have layouts that demand lots of unnecessary movement – of the staff, stock, materials and information. Even new workspaces can have practices 'designed in' that constrict effective 'flow'.

Yet even within the structural constraints of an old building, a new layout and design for work-cells can make a big improvement:

- Move the steps that add value so close together that waste is impossible. Use standard work and balance

it for better flow. Set up a self-contained unit: equipment, people and benches

- Create standard working arrangements. Use quick changeovers to minimise batch sizes and provide the flexibility to meet 'spikes' in demand
- Train the staff to increase flexibility. Involve the team through process controls and improvement boards. When problems occur, stop and fix them.

Simulations allow experiments with configuration. The best ideas then inform the final design. Supporting processes must be planned carefully and orchestrated (that word again!) to support flow. Without effort, it is easy for the benefits of a new layout to fade.

Match capacity more closely to demand

The study of demand, capacity, backlogs and bottlenecks in a process can be enlightening. Often the procedures, staff and shifts do not match the workload, particularly if the work is set up to suit the staff rather than to speed the flow. And internal practices – such as patterns of transportation, bureaucratic steps, and batch processing – can put strain on a team at certain points in the day.

We recognise that only some 'spikes' in demand can be levelled. But all are worth challenging, even though some parts of the service will be beyond the influence of a laboratory manager. In principle, a department should be organised to be as flexible as possible to react to changing demand.

An understanding of patterns of demand can help to plan improvements in productivity. But not all laboratories systematically track data on demand for similar types of test. And there are many ways of matching capacity more closely (some of which will require the involvement of HR):

- Use standard work to assist planning and eliminate as much variation as possible
- Design processes to be more flexible
- Flex the number, roles and skills of the employees at peak (and quiet!) times
- Train the staff to be multi-skilled and loosen departmental boundaries
- Respond to change better by working in self-managed teams
- Change shift patterns, as appropriate.

Spend time thinking about constraints (or 'bottlenecks'). Small improvements here are likely to provide a great opportunity to improve throughput. A minute lost at a bottleneck is a minute lost for the whole department. So they demand constant attention. Understanding and focusing improvement on such restrictions can free flow and release savings.

Reduce variation – a Six Sigma project

A laboratory comprises interconnected processes, all subject to inherent variation. Efforts to understand, eliminate and control that variation can enable you to improve service and to cut turnaround times and costs.

Six Sigma is a rigorous, quantitative way to improve how processes perform. It recognises cause and effect; improves the process by reducing variation in the inputs; and attempts to control performance to achieve consistently acceptable outputs at least 99.9997% of the time (limiting defects to 3.4 in every million opportunities). A structured, team-based

approach to improvement is applied – in discrete projects. Simple tools and complex statistical techniques are used. Six Sigma lends itself best to persistent, complex and major problems. But the techniques used can be extended to all processes and used to transform the wider organisation.

Although Six Sigma can involve the use of complex statistics, it does not always have to. A structure to problem-solving forms the backbone. In our experience, it is the rigorous DMAIC (Define-Measure-Analyse-Improve-Control) approach that provides the real power.

Invest in automation?

More automation is often considered the best way to boost productivity. But it is not always the case. Bigger and / or faster doesn't always mean better! Automated systems can reduce turnaround time and allow standard tests to be performed by the junior staff, thereby reducing the cost per test and releasing the time of the senior staff. But the calculations of payback can be flawed - the economic benefits (ROI) of automation might only be realised in systems with very high volumes. And it is easy to lose sight of alternatives for removing current inefficiencies; or ignore the potential to boost the capacity of the present equipment. Expensive 'tracked' biochemistry systems may cost more per test than old semi-automated systems, if the laboratory doesn't have sufficient volumes to justify the investment.

Now that new budgets are leading laboratories to prioritise the reductions in cost, managers must ask:

- How can productivity be improved *without* investment?
- Does capacity exist in other laboratories nearby?
- Can the overall effectiveness or running time of the current equipment be improved?
- Can simple mechanisations be used to give the same effect as (over-complex) automation?
- What will the return on investment be if volume does not increase?
- How can the benefits of the investment be realised? What will be the impact on batch sizes? What will this mean for non-standard requests? How will supporting processes need to change? How will the profile of the workforce need to change? And how will these savings be realised?

Challenge the profile of the workforce

The costs of the staff in Pathology, as in any other workforce, depend on how many people are required, what it costs to employ them, and what they do. Having seniors do jobs that juniors could do is simply inefficient. In some cases this is unavoidable – such as when qualified members of staff are working out of hours. And no doubt there are historical reasons why other arrangements exist. But they need to be challenged repeatedly – particularly where new technology has been introduced.

The work done and the skills (and pay bands) of the people doing it need to be properly profiled. Consider the mix of skills that may be required - not just the immediate shortfall. The Department of Health has provided a Workforce Re-profiling tool for the purpose. It can be used to optimise the number of people needed, change the mix of skills, work out new shift patterns and achieve more value from the payroll. But be careful before proceeding with any change. The implications need careful consideration, consultation with those affected, and systematic implementation.

Model the causes of cost to inform decisions

Demands for improvement are relentless. But the information available, though overwhelming, is incomplete. And even the best managers make mistakes. When making changes to improve productivity, it is better for the decision-maker to lay hold of the main causes of cost and workload than to be swept away in a flood of data.

One approach is to build a cost model from first principles. This is sometimes known as 'zero-based budgeting'. An accurate evaluation has to be made of what work needs to be done in a defined period: how this is broken down into different tasks; how long each task should take; what

allowances should be built in for supervision, personal development, absence, et cetera; and what supporting functions are necessary and what their cost will be.

Detailed analysis of costs can be mundane. And most laboratory managers simply have no time to do it and document it closely enough. But, as in many managerial tasks, it is as important to travel as to arrive. Analysing and mapping can open the analyst's eyes to the opportunities for improvement. Then the 'vital few' relevant measures will provide enough evidence to permit the right decisions.

What else is there to say?

Quite a lot, but some other approaches demand greater changes to the service and decisions beyond the immediate remit of the laboratory manager. Here are a few to consider:

- **Reduce spending** – Managers must pay close attention to costs incurred. Find novel ways to consume less and buy better. Cooperate with others to achieve savings
- **Reduce overhead costs** – Bring into question the cost and value of activities provided by supporting functions. Detailed scrutiny will reveal which activities to cut and which to increase
- **Contract out or contract in** – An external provider might manage the Pathology services more efficiently (although you should ask how!). Or there may be savings from bringing a service back in-house. The benefits in cost, quality and service need to be clear

- **Learn from other organisations** – Benchmarking has become popular with managers who want to mimic high-performing laboratories
- **Create 'networks', consolidate into 'a hub and spokes' or form 'joint ventures' with other organisations** – Amongst all the inevitable debate over organisational forms, do not lose sight of the need to make the internal service more cost-effective – technical efficiency is as telling as economy of scope or scale.

Many of these changes raise wider questions – particularly for the Human Resources Department – that will tell heavily on the way forward.

A word about Collinson Grant, and our work on productivity (and in Pathology)

Collinson Grant, a management consultancy set up in 1970, has grown steadily and undramatically. Our head office is in Worsley, near Manchester. We serve clients at the top of organisations in the UK, throughout Europe and in the United States. We have considerable recent experience in support of Pathology in England – at the Department of Health – for Lord Carter's Independent Review – and at over 50 Pathology services, networks and regional groups. And we work with the Modernising Scientific Careers team, supporting the re-profiling of the Pathology workforce.

We are accredited to ISO 9001: 2008 (Quality management) and ISO 14001: 2004 (Environmental management). Many of our consultants are experts in implementing Lean and Six Sigma. Most are trained in Prince 2 – and an increasing number are qualified practitioners in 'Managing Successful Programmes' (MSP). Our consultants have practical skills and a deep understanding of how to improve productivity.

We dig deep to unearth the causes of problems and the potential solutions – immediate and long-term. We recognise that every laboratory manager faces different challenges and priorities. The devil is in the detail. Off-the-shelf packages rarely work. Our support is tailored to the circumstances of each Pathology department. We galvanise laboratory managers and their staff to make real improvements in their everyday work.

Please do not hesitate to contact me if you would like to discuss any aspect of our work, or simply to chat. I can always be reached on 07715 495711 or at phudson@collinsongrant.com. If you or one of your team would like to discuss how to boost productivity in more detail, please contact my colleague, Richard Daley, on 07920 268150 or at rdaley@collinsongrant.com

Phil Hudson



Collinson Grant Healthcare Limited
Ryecroft Aviary Road Worsley Manchester M28 2WF United Kingdom
Telephone (0)161 703 5600 Facsimile (0)161 790 9177 Web www.collinsongranthealthcare.com
In London 33 St James's Square London SW1Y 4JS Telephone (0)20 7661 9382 Facsimile (0)20 7661 9400

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