5 challenges successful lab managers need to overcome

How the right partner can help set you up for success

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Lab managers share these common goals

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Defining your goals: Lab managers share these common goals

Key objectives for labs[1]

#1

Ensuring high throughput/ productivity

#2

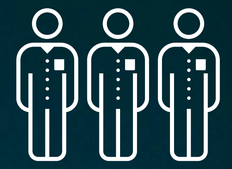
Improving system efficiency

#3

Developing new services needed by the organization

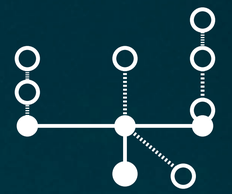
Top 3 personal goals for lab managers[1]

#1



Developing staff

#2



Expanding lab services

#3

Improving the working environment for staff

5 challenges successful lab managers need to overcome

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Challenge #1

Instrument maintenance and downtime

The essentiality of a successful preventive maintenance plan

In an environment facing increasing pressure to diminish costs while assuring high quality service and safety, companies realize that their competitiveness, performance, and thus future are heavily linked to instrument reliability and the effectiveness and efficiency of maintenance management.[2] Implementation of a successful preventive maintenance program can help save precious time and money, and is imperative to providing highly dependable results.[2-5]

Benefits of preventive maintenance[2-5]

Costly major repairs reduced

- Avoid loss of revenue due to interruption of services
- Overcome need to outsource testing, potentially leading to unreliable or non-standardized results
- Reduce staffing inefficiency and disengagement due to hours spent fixing breakdowns

Increased life expectancy of assets

- Avoid costs of having to purchase new instruments prematurely

Accurate and reliable results

- Assist physicians to confidently diagnose and treat patients
- Positively impact your lab's reputation

Challenge #1

Instrument maintenance and downtime

How to overcome this challenge

When purchasing new instruments, consider the following:

- ☑ High instrument reliability can reduce unexpected downtime, which prevents your lab from producing results until the instrument is back up and running
- ☑ Be informed about the manufacturer's maintenance requirements
- ☑ Be aware of innovative features that may reduce dedicated hours spent on maintenance, such as:
  - Automated maintenance functions that run without operator intervention
  - Integrated and parallel maintenance options that can be performed during routine operations
  - Step-by-step guidance

Unplanned downtime will inevitably occur:

- ☑ Consider purchasing instrument from a trusted provider with proven system reliability and high uptime
- ☑ Some providers may offer automated remote support solutions, or remote access connectivity for problem identification, training, and monitoring

Challenge #2

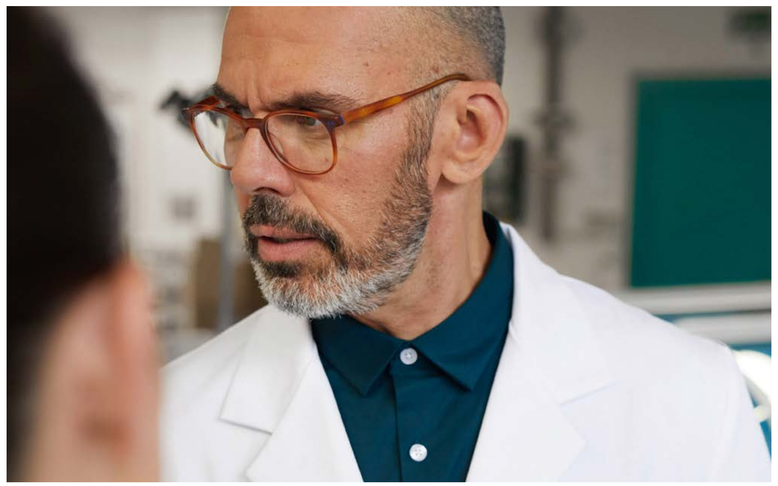
Meeting sustainability goals

Implementing a green purchasing policy as a move towards sustainability

Healthcare laboratories are significant producers of waste.[6,7] As expectations on corporate responsibility and transparency increase, it is exceedingly important for businesses to implement initiatives to grow sustainably. Not only does this benefit the environment, but can help boost business and long-term performance.[6,8]

Business incentives for sustainability:

- Improving waste management and costs
- Meeting environmental regulations and avoiding potential future legislative costs to “go green”
- Differentiating your business from competitors to add value
- Achieving an attractive work environment



Challenge #2

Meeting sustainability goals

How to overcome this challenge

One key method to achieve sustainability, which can be implemented right away, is to adopt a green purchasing policy[6]. The manufacturers of lab instruments are aware of the importance of good environmental practices, and should be committed to supply ecologically efficient instruments.

When purchasing a new analyzer, consider the 6 following factors that can help mitigate your environmental impact.

#1

Reagent stability
Long onboard stabilities and large pack sizes will significantly decrease the amount of reagent carriers to be produced, shipped, and discarded

#2

Supply of reagent in appropriately sized reagent carriers
Smaller regent carriers for low volume tests will avoid unnecessary waste, and require less packaging and refrigeration space

#3

Sample and reaction volumes
Small sample and reaction volumes optimize patient blood management and help minimize liquid waste

#4

Test consolidation
Consolidating assay technologies on one instrument will save space and resources

#5

Solid consumable usage
Intelligent use of plastic consumables, such as reagent carriers, will help minimize solid waste

#6

Environmental practices of manufacturer
Give preference to those who strive for sustainability and are environmentally friendly

Challenge #3

Time consuming manual steps

Beneficial solution features to help overcome the hidden costs of manual tasks

Tasks requiring staff intervention are time consuming and costly. These include manual jobs such as sample and reagent preparation, calibration, and the exchange of consumables to maintain operation. In addition, severe hidden costs include:

Introduction of test error

- 60 – 70% of all diagnoses are based on lab tests[9]
- Thus, even low rates of errors introduced through manual interventions translates into significant absolute numbers of occurrences and opportunities for adverse patient outcomes[10]

Staff endangerment

- The manual handling of potentially infectious samples exposes staff to biohazards
- Risk of human error is amplified by ever-increasing workloads and reduction in personnel, which can lead to the physical and mental fatigue of staff[9]

Staff disengagement and high turnover

- Employees who work in jobs with scripted, repetitive tasks tend to have increased boredom, stress, and isolation within the workplace[11]
- As a result, staff disengagement and high turnover may occur[11-15]

Challenge #3

Time consuming manual steps

How to overcome this challenge

When purchasing a new instrument, it is important for lab managers to consider the availability of features that may decrease manual manipulation. These may include:

- ☑ Ready to use reagents
- ☑ Automated maintenance
- ☑ Automated calibration
- ☑ Loading of reagents and consumables while analyzer is in operation
- ☑ Integration into lab automation

The potential benefits of minimizing manual tasks:

- ☑ Reduction in test errors
- ☑ Decreased potential for biological risks attributable to manual handling
- ☑ Decreased total laboratory costs
- ☑ Improved sample turnaround time
- ☑ Increased sample integrity
- ☑ Decreased potential for staff disengagement and high employee turnover rates by removing scripted and repetitive tasks
- ☑ Improved efficiency management of reruns and reflex testing with integration to automation

Challenge #4

Suboptimal data management

Management of large data in current lab settings requires an IT management solution

Better management of data has been cited as one of the top 5 challenges faced by lab managers.[1] As complex instrumentation has become increasingly automated, data and information have become the main products of analytical labs.[16] Many terabytes of data can be generated in just a few days, requiring labs to have an effective software-based management solution.[16,17]

Transforming the vast amount of information into actionable healthcare insights that can demonstrate value is another essential reason to optimize data management.

Reasons to implement an effective IT solution[16,17]

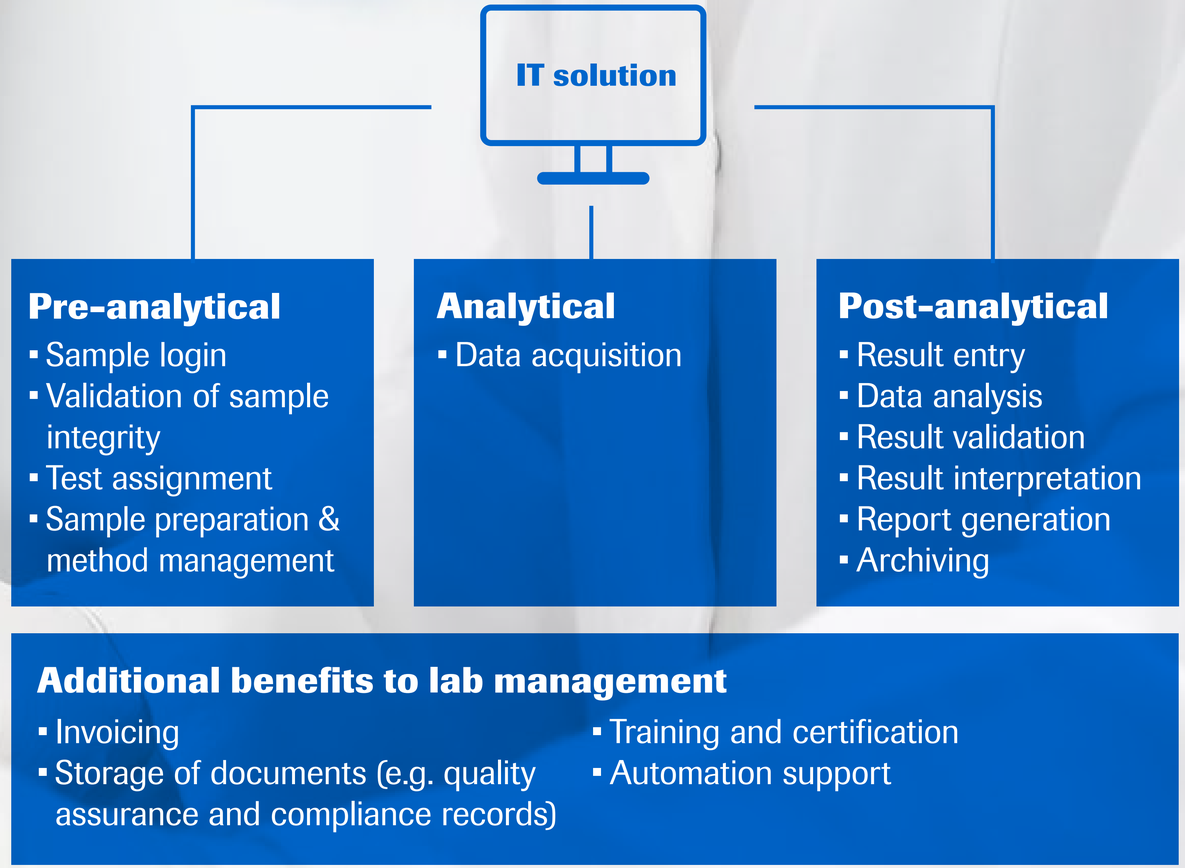
- Manage large and increasing sample throughput and generated data
- Share data with remote collaborators
- Comply with stricter and detailed compliance requirements
- Improve accuracy
- Deal with increased demands for efficiency and documentations, such as delivering results in clear, understandable format for physicians

Challenge #4

Suboptimal data management

How to overcome this challenge

From pre- to post-analytics, an effective IT solution (such as a laboratory information system (LIS), or integrated management solution) can help maximize workflow efficiency and increase productivity.[16,17]



Information handling requirements vary greatly between laboratories. When selecting an IT solution for your lab, be clear on the following:

- **What workflow and business functions must it support to help you improve operations?**
- **What is the installation process, design and user interface? Simplicity and commonality across laboratory disciplines will help ensure success.**
- **Are the solutions offered by potential partner flexible, modular, and configurable to grow with your lab's need?**

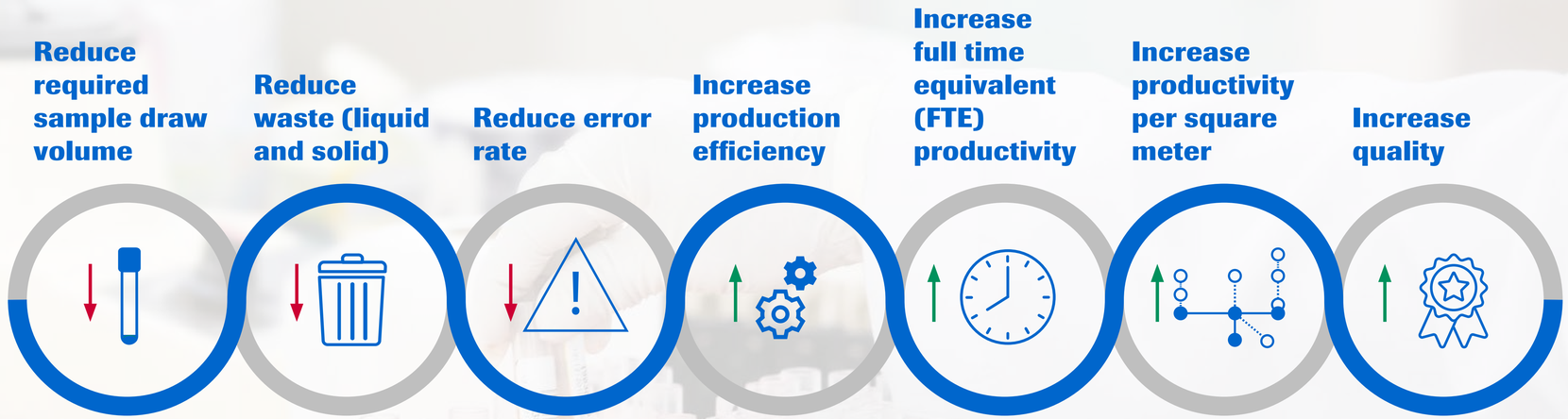
Challenge #5

Inefficient workflow

7 ways to optimize your workflow to maximize your earnings

Key measurable characteristics for workflow excellence[18,19]

How to help overcome this challenge when selecting a new instrument?



Reduce required sample draw volume

- Small sample pipetting volume per test

Reduce waste (liquid and solid)

- Relatively low water usage per test
- Conservative use of plastics in consumables (eg. reagent packs and pipette tips)
- Small reaction volumes
- High onboard reagent stability and shelf life

Reduce error rate

- Automated sample integrity check
- Safety features to improve test reliability (e.g. disposable tips and assay cups, ready to use reagents)
- Electronic tagging of reagents and consumables

Increase production efficiency

- Fast and predictable turnaround times
- Smart sample routing
- High system reliability
- High number of assays may be run simultaneously

Increase full time equivalent (FTE) productivity

- Little hands-on time for maintenance
- Automated maintenance
- Automated calibration
- Connectivity to automation

Increase productivity per square meter

- High number of reagent positions
- Broad assay menu
- High test consolidation

Increase quality

- Trusted provider with experience and dedication to research & development and support

Keeping your staff engaged by implementing time-saving technologies

The top personal goals of managers have been identified as:[1]

- **Developing staff**
- **Expanding services provided**
- **Improving working environment for staff**

Two out of three of the goals are focused on staff well-being and ultimately relate to employee engagement (the third goal of expanding services provided will be covered in the next chapter).

It is not surprising that lab managers wish to have high employee engagement. In addition to being an important competitive differentiator during difficult economic times, employee engagement is essential for company success.[15,20]

Companies with high employee engagement have:[15]

- **Lower absenteeism**
- **Lower turnover**
- **Fewer safety and quality incidents**
- **Increased customer engagement**
- **Increased productivity**
- **Higher profit**

Keeping your staff engaged by implementing time-saving technologies

How equipment selection plays a role in fostering a culture of employee engagement

In summary, employee engagement requires leaders to:[21-23]

- **Empower staff to discover their full potential**
- **Detect and encourage the most positive capabilities in people**
- **Provide development opportunities**
- **Allow employees to be in a position of influence**
- **Recognize team for their hard work to create a culture of collaboration**

Accomplishing the above requires time. In a lab environment, which faces increasing pressures to process more samples per week,[1] selecting equipment that maximizes staff stay away time is essential.

Freeing-up staff from manual, repetitive tasks can ensure they have the chance to pursue development and training opportunities.

In turn, they will gain the necessary skills to engage in more valuable, fulfilling work and give your organization an important competitive edge.

10 solution features that increase staff stay away time

#1

Exceptional uptime to maximize operational time

#2

Fast turnaround times

#3

Possibility to replace reagents, wash solutions and remove waste while instrument is in use

#4

Automated maintenance functions

#5

Automated adjustment of calibration curves

#6

Ready to use reagents that eliminate preparation time

#7

Capacity to run a large number of high medical value tests on one consolidated system

#8

Ability to operate uninterrupted for long stretches of time

#9

Automated sample integrity checks to decrease need for manual error handling

#10

Ability to quickly and efficiently access key information (e.g. assay performance and quality assurance data)

Thinking ahead: Expanding lab services and delivering value

Clinical labs are in a unique position to help bring the promise of healthcare innovations to patients.[24,25] For labs to remain competitive, understanding and demonstrating how their offerings can help health systems and payers create value and improve outcomes for patients is imperative.[25]

Laboratories can add value in one of two ways:[26]

1. Conducting cost-effective lab operations

- **Processes and events within lab boundaries with a focus on efficiency**
- **Performance measures include cost, analytical performance, turnaround time, test availability**

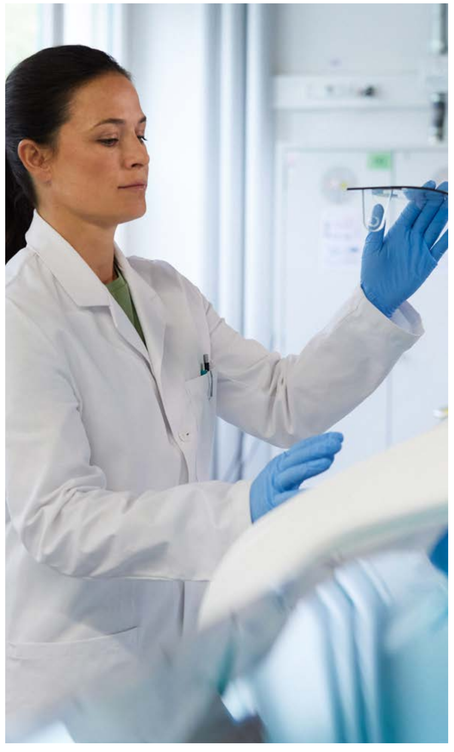
2. Practicing resourceful lab medicine[3]

- **Processes and events beyond lab boundaries with a focus on effectiveness**
- **Includes consultation on topics such as test selection, test performance and investigation, and test interpretation**

Thinking ahead: Expanding lab services and delivering value

The practice of lab medicine is an area less exploited and where labs can add value.[26]

Crawford et al. (2017) proposed this be accomplished via the evolution of the clinical laboratory business model from “Clinical Lab 1.0” (transactional) to “Clinical Lab 2.0” (integrative).[24]



Clinical Lab 1.0 *transactional*	**Clinical Lab 2.0** *integrative*

Sick Care
▪ Receive test sample
▪ Result test sample
	Health Care
	▪ Population health using lab data
	▪ Total cost-of-care leveraging lab data
	  ▪ Time-to-diagnosis
	  ▪ Diagnostic optimization
	  ▪ Care optimization
	  ▪ Therapeutic optimization
	  ▪ Monitoring optimization
	  ▪ Screening optimization

Disease Screening ▪ Protocol-driven ▪ Scheduled by treating physician ▪ Lab is derivative	**Risk Management** ▪ Identification of risk ▪ Real-time tracking of risk ▪ Escalation /De-escalation of acuity
Wellness Programming ▪ Managed by treating physician ▪ Lab is derivative	**Wellness Programming** ▪ Gaps-in-care closed using lab data ▪ Outcomes of program using lab data
	Predictive Analytics ▪ What will happen? When? Why?
Payment Models ▪ Lab is a commodity ▪ Value is cost-per-test	**Payment Models** ▪ Value of lab for total cost-of-care

Table adapted from Crawford et al. (2017).[24]

Thinking ahead: Expanding lab services and delivering value

How to influence the transition to a value-based lab and expand services

Laboratory analytics and the active involvement with clinicians are key to expand services and transition to a value-based care model.[26] Due to the increasing complexity and number of diagnostic tests available, healthcare professionals are challenged to know and apply the vast wealth of information, which surpasses their human capabilities.[24,28]

Inappropriate test selection can lead to adverse clinical outcomes for patients and financial consequences to healthcare institutions.[26,29-32] To help address this serious challenge, leading labs have begun to partner with companies that offer health IT solutions.[30-33]

Analytic tools may provide:

- **Meaningful insights to physicians concerning test utilization[30,33]**
- **Test ordering recommendations[30-33]**
- **Improvement in the accuracy and speed of the diagnostic workup[27,28]**

*Overall mean rates of test over- and underutilization were recently reported as **20.6%** and **44.8%** respectively.[29]*

Thinking ahead: Expanding lab services and delivering value

How to influence the transition to a value-based lab and expand services

Over time, with the advancement of analytics and artificial intelligence, clinical labs could further drive better outcomes for patients, providers, and financial stakeholders. For instance, integrating diagnostic, treatment and outcome data from a large data set of patients, may help stratify patients into responding and non-responding subpopulations for a particular treatment.[34] This knowledge could bypass costly treatment trial-and-error for future patients.[34]

Partner with a company that realizes the immense value that big data has and is underway in providing and integrating these tools in their core lab offerings.

Summary:

- **Laboratory analytics are key to expand lab services**
- **Analytics-based insights can help achieve therapeutic optimization as fast as possible**
- **Over time, analytics and artificial intelligence will drive better outcomes for patients, providers, and financial stakeholders**
- **Partnering with a company that can provide these tools will ensure a competitive advantage**

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