

Selecting a UK Laboratory Information Management System (LIMS) for Blood Transfusion

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Introduction

The selection and implementation of a new Laboratory Information Management system (LIMS) is one of the most stressful events that a laboratory manager will undertake during their working life.

It is stressful for many reasons, not least that it will influence how that laboratory functions for the next 10+ years.

The requirements and specification of any new LIMS are critical for laboratory functionality and need to cover current clinical requirements. Ideally you should try and think about what your laboratory may want to introduce going forward and try and ensure to include this functionality too. It will be almost impossible to total futureproof a system but any functionality you know you will want in the near future should be included as part of implementation.

The Process

The exact process of procurement and implementation will vary by organisation, but this is an overview of the steps you will need to go through.

Decision to replace the LIMS

The decision to replace the LIMS in a Hospital/Trust or Network is very unlikely to be the decision of the transfusion laboratory alone. It is likely to be influenced by the laboratory sections with the biggest workload (Blood sciences (Haematology/Biochemistry)).

In more recent years since the introduction of pathology networks across England , it may well be a network wide decision to replace all the LIMS systems in the network either as part of unification or to improve the service.

The Blood Transfusion laboratories may feel like a small part of the Laboratory medicine network, but it should be recognised that it is critical to both the routine and urgent working of a hospital, especially those who undertake major surgical procedures or are part of a trauma network. Therefore, it is important that the requirements of the blood transfusion service are not lost and are treated as important as any other laboratory section requirements. If possible, ask that there is transfusion representation on the project board (if this is how the service is being managed)

The driver for the change may well be financial and the decision has been made to procure a new LIMS because there is funding available to do so which not be so freely available in the future.

Blood Transfusion standing

Blood Transfusion is the 1 discipline which in some hospitals has a standalone LIMS system, whilst in others it is part of a wider pathology wide LIMS.

This is the first decision when you are procuring a LIMS to think about.

There are advantages and disadvantages to both set ups, and each Hospital/Trust/Network will need to make the final decision.

The following is a brief summary of each option set up.

Pathology Wide system

- It is a team solution.
- The decisions are shared and overall, which means less work for everyone, e.g., shared entry of codes including those for consultants, locations, clinical details etc.
- For hospitals which rotate staff between disciplines (even if just between Haematology and Transfusion) there is less training and less change of errors.
- It should be recognised that the influence of transfusion in a pathology wide system is likely to be limited
- Shared test codes across disciplines can lead to less user-friendly test sets especially in the smaller disciplines.
- The problem of staff in other disciplines being able to change the patient demographics in the transfusion patient database needs considering and a risk reduction strategy included in implementation

Single Discipline solution

- The advantages of a single discipline system are fairly clear as the critical transfusion set up isn't influenced or impacted by any other discipline.
- The issue of staff in other disciplines being able to change the patient demographics associated with transfusion are removed. It also allows downtime across the disciplines to be staggered which is good for contingency planning.
- But there is considerably more work associated with implemented and running 2 separate LIMS systems. Codes such as locations, consultants and clinical details will all need entering twice and will mean increased maintenance of codes etc.
- The staff who work across disciplines will also need training and ongoing competency assessments on both systems. There will be 2 sets of back-ups and server maintenance to fund and perform etc, so this is a more costly solution.

System demonstrations

Supplier demonstrations are a big part of procurement, they allow you to see the basic functionality and set up of a system.

You should ensure your procurement department are happy for demonstrations to take place, if you are already out to tender to ensure you aren't in breach of tender legislation. We'd recommend having a standard set of questions for all demonstrations to allow an easier comparison.

Remember the version of the software you are shown at a demonstration is very unlikely to be the version you would be receive at implementation. It will be a basic set up to show functionality. When arranging a demonstration if there is some specific functionality you want to see, it is worth flagging this with the supplier in advance so they can ensure they can show this.

Deciding on what you need your system to do

A key step in the procurement step is deciding what you want your new system to do and getting it down on paper in a standard format so you can compare systems.

This is done by developing what is called a URS (User requirement specification) but can also be called an OBS (Output based specification).

This is basically a document which sets out what you expect a system to be able to do. It doesn't set out how you want the system to do something.

This is not a simple task and is best undertaken as a team.

Depending on the type of system you are procuring you may or may not need to include generic functionality in the URS.

We suggest talking the other transfusion laboratory leads who have recently procured a system, they may be willing to share their URS for you to update for your own requirements.

How to start

When writing a User Requirement Specification (URS) – start with the basics, there is a temptation to start with the complex requirements but 90+% of your workload will be covered by the basic functions like

- Accepting samples
- Testing and reporting of results
- Receipt and issuing of blood components and products

Remember to keep things generic and include items such as interfaces for analysers, electronic tracking systems and reporting systems.

For each functionality, indicate what is an essential function for a safe system and what is a desirable function.

Consider putting a scoring weighting for each item – that could be as simple as 3 for essential, 2 for desirable and 1 for a nice to have.

Next steps

Once your URS is completed, then procurement will take the lead in running the tender.

The actual process will vary a little depending on your Hospital/Trust/Network. The next involvement of the laboratory is with the marking of submitted tender responses from suppliers.

Making the decision

The Procurement department will advise on how the decision will be made and this will have been agreed prior to the tender process starting. It is usually done in 2 sections.

- Technical evaluation , which will be in sections for a pathology wide section with each section being given a weighting.
- The financial scoring – which will be undertaken by procurement.

How to do your marking

- Start with the URS items which you indicated were essential.
- If a system can't do the essentials – then it's not a viable solution. This should be indicated to the procurement team as soon as possible. It may mean that there is no mean for any further marking .

Once you are happy the system can provide all the essential functionality move on to the desirable items and again mark then accordingly.

Once you are finished the scoring will be sent to procurement for collating with others (if needed).

Who is making the final decision?

It's extremely unlikely to a Transfusion person making the final decision unless you are procuring a single discipline system.

It's important that you understand who is marking the final decisions.

Any critical deficiencies for transfusion should be flagged with the decision makers as soon as possible. If there are critical deficiencies, then this may lead to discussions with the supplier on these issues as it may be possible to get them corrected but this would need to be included in the contract negotiations.

Once the final decision is made, then procurement and the legal departments begin contract discussions, you made be needed to clarify issues but if there is something you need to be included in the contract make sure that procurement are aware of the requirement and ask to check its included.

Other hints and tips

- Make sure you URS is generic. E.g., Instead of saying the System must interface to a specific analyser – say Interfaces to all commonly used transfusion analysers must be available
- Consider including items which you won't currently use but may do some in the future. This means functionality will be included in the cost of the system and it will be available when you are ready to consider doing something new.
- Talk to other Transfusion leads you may know about their systems – what they like, what works well and what doesn't work so well.
- Is the supplier open to new suggestions?
- How frequently are upgrades expected?
 - Frequent upgrades are a lot of work but long periods between upgrades means you could be waiting some considerable time for any change requests.

- It's a difficult task selecting a LIMS – don't try and do it alone.
- Make sure that pathology wide systems will work for transfusion too. If you have concerns flag this with the decision-making team early – they will want to procure a suitable system for everyone.

Final thoughts

A new LIMS is an opportunity to change things, consider how your work flows through the department, it may be an advantage to review the process and try things differently.

Have realistic expectations.

Your new system will never be identical to your old one so be open to changes.