



An interview with
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How Stago's Expert Rules help
in lab's clinical interpretation
of patient result



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With Nina Harrison MSc MIBMS.

The Haemophilia, Haemostasis and Thrombosis Centre is based at Basingstoke and North Hampshire Hospital, part of Hampshire Hospitals NHS Foundation Trust. It provides a wide range of clinical and laboratory services to patients with haemophilia and other inherited or acquired bleeding and thrombotic disorders.

Nina Harrison is the Special Coagulation Operations Manager at Basingstoke and North Hampshire Hospital, having worked there since 2006 and as Operations Manager since 2024.

What is your experience with Stago?

With having a lot of liquid ready reagents and pre-calibration, the Stago solution really speeds things along, and with the capability of the analysers to prioritise workloads, thanks to true random access, the turnaround times are much improved, especially for the routine tests and factor assays.

Supply is also working really well. We have had a few bumps along the road, but it's always been overcome and Stago work closely with the team to sort things out.

Stago offers a comprehensive IT solution that is easy to use. As a specialist centre, we don't necessarily have the same sort of criteria as other labs, we want to have an extensive look at patient results. One of the benefits of the Stago data manager is that we can set up our own algorithms and validation rules, based on our local SOPs, for example, to automatically trigger extra dilutions or add-ons.

What about the Stago team?

When in need of support, you've got friendly people on the other end of the line, and people who actually know what they're doing. That really makes a difference.



We are a specialist center with really specific needs, and we do so many things differently compared to other labs. It's important that our Haemostasis provider has a good grasp of what we're doing and offers personalised support. And everybody at Stago always works really hard to achieve what we want to achieve.

I would like to praise the Application Specialists and Engineering team too. Hapinder Dhillon is worth his weight in gold, and before that, we had Draga Tchipeva who was just fabulous. They are so good to work with, from their knowledge of the tests to their support with our request in a timely manner. We also always get a fast response from the engineering team as well. John Jackson, who is really experienced, is always here quickly and we love him for it.

The Southern Haemophilia Network (SHN) is the first network of its kind in the UK. It has been commissioned, by NHS England – Wessex, for the purpose of delivering a consistent standard of care to patients with inherited and acquired bleeding disorders across the region. So, it really takes the pressure off to be able to lean on the Stago team to help us deliver a high standard of patient care.

Why did you select the Stago solution for your laboratory?

I have been working with Stago for quite some time now and I can confidently say that Stago has a proven track record of resilient and reliable service. Stago provides an all-inclusive IT solution that is user-friendly, with full audit trail and traceability along with a document library. That helps considerably with our quality management system and UKAS accreditation.

Some of the key factors that stood out when we selected Stago were:

- Capability of analysers to prioritise workload with true random access and fast TATs for routine tests
- A comprehensive IT solution that remains easy to use and offers a full audit trail for traceability. Information is also easy to retrieve
- Ability to load 3rd party reagents and the ease with which they are handled
- Remote access support from hotline staff and application specialists
- Great supply chain
- User definable result validation
- Fast response from the engineering team when required

What are the benefits of the Stago solution in terms of patient management?

I've already mentioned Stago's impressive turnaround times. Being able to get a result out quicker means that we can help get a faster diagnosis, and ultimately, faster treatment for patients.

Stago has a wide range of tests available, so even if results are detected very early as being abnormal, we can then very quickly move on to running advanced tests, which are going to benefit the patient. And by using the Stago data manager, we have automated these steps to be even quicker. We want the highest standard for our patients and Stago helps us achieve this.

We know that up to 70% of testing errors occur in the pre-analytical phase¹ and that around 35% of these problems are due to problematic samples (with interfering substances or inappropriate volume)². Is the Stago solution helping you address this?

In addition to Stago's viscosity-based detection system, which is insensitive to HIL, we also have the Expert Pre-analytical module on our Stago systems. It is a bonus as it automatically detects HIL interferences and standardises practice across the network. It can also check the fill level of the tubes for us.

With our Stago analysers we can run a lot of different types of tubes, which is great because we receive a variety of tube types, including paediatrics, from the wards or from other hospitals and we're able to run those without any hassle. We can use small paediatric tubes whilst retaining high quality results.

What are the benefits of the Stago solution in terms of QC data management?

In addition to using Westgard Rules, we have the ability to monitor and view QC by Levy-Jennings, tabular or number format, including third-party QC. The displays are really easy to interpret, and it is simple to select and manage the required IQC data. Trend analysis is straightforward, and we have more people now who are capable to do it. We can keep a better eye on our QCs and we can make changes very quickly. We can add comments to monitor any discrepancies, and we have a full audit trail on the system, which is brilliant for troubleshooting. It really is a bonus for UKAS Assessors.

Stago's QC management solution has been very highly praised by the UKAS assessors when they've come in. They really like that you can easily see your target ranges and how they are currently performing. You can then toggle between the range you have, the running mean and the running SD. This allows us to do trend analysis much more easily. With our factor assays, for instance, we want to make sure that we always get the right answer and that our dilutions are running consistently. So, it's really important to us that our IQC is really tight. Having the ability to change the ranges and identify any issues earlier means we are providing better quality results.

What are the benefits of the Stago solution in terms of reagent management?

Stago offers many liquid ready reagents, which saves a lot of time and means that you can be more confident in your results because there's no manual errors that could have occurred with the reconstitution. And the same is true with the barcoded pre calibrated tests such as Free protein S, Fibrinogen or D-dimer. It saves us time and removes potential risks or errors.

We also love how the software quickly highlights when more reagent is required when adding workload. You know whether you need to make up more reagent sooner and it gives you plenty of notice. That means we are not delaying anything. It gives us all the information we need to prepare and organise our workload.

We use the Stago Microcups to further extend reagent use, they really help with conserving the reagents as we want to get the best use out of each reagent vial.

And in terms of QMS, the Stago data manager provides complete traceability of all reagents loaded which is fully auditable.

About Stago data manager, which Expert Rules do you use and how do you use them?

We use a lot of different algorithms, it really takes the work out for you. The first one we set up was for factor assays and inhibitor detection. It will automatically run 3 dilutions, and then follow a decision tree: anything low, the rules will add a lower dilution. If the algorithm recognises that the values are not consistent between dilutions, and it could potentially be a lupus patient, it will then also add on further dilutions. The algorithm allows a faster diagnosis, earlier detection of inhibitors, and automatically adds further testing according to the patient's results.

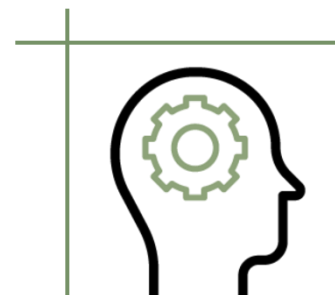
We have also implemented a Von Willebrand algorithm. Whenever a low von Willebrand is detected, it will then reflex on to doing further dilutions. We can detect very low levels of Von Willebrand factors, which are great for monitoring pre and post treatment patients.

The algorithm that has saved us the most time and effort is the Lupus Anticoagulant algorithm. We have gone from manually calculating, manually diluting the mixes and manually reporting, to doing it all on the analyser. It is saving us a substantial amount of time, whilst reducing the possibility of manual errors ensuring more consistency and better quality results.

During the CE marking evaluation study of Stago Lupus Anticoagulant algorithm³ and factor algorithm⁴, we have demonstrated that we can reduce reagent consumption, reduce hands-on time by 60% and reduce staff fatigue. Would you agree on that?

Yes. Now we can get a run done in a few hours, when it used to take a whole entire day for one person. We can plan our workload with known volumes of reagents allowing for better batch testing. It really improved the way we manage reagents, with less waste.

The rules enable very little input from Scientists once the samples have been loaded, allowing their time to be used on other tasks. It is a much leaner process now and it has standardised our way of working. And it saves a lot of time and effort, as you don't have to do the calculations, retesting or manually diluting the mixes. The risk of transcription errors was just immense without it. Now all is calculated and transmitted automatically by the Stago data manager. It really alleviates the stress on our staff.



Do you use Stago algorithms available from our library of rules and CE marked algorithms?

Yes, we use the Stago algorithm for the factor assays. We started with FVIII and Factor IX and we have extended to all factors now. For the lupus anticoagulant, we have adapted the Stago algorithm to our specific needs, with the support of the Stago Application Specialist team. They are always available to help us and tweak a rule to meet our need or comply with new or updated guidelines, but it is then our responsibility to validate the rules locally.

What improvements in productivity have you seen with the Expert Rules?

Productivity at the moment is a big topic for the NHS in general, but also for the lab. We are asked to do more and more with less resources. Productivity is key and the expert rules really help with time efficiency. We have halved our turn-around time for antiphospholipid syndrome diagnosis. That's a fantastic improvement. With the algorithm, we have increased the number of series run per week and we can now offer more frequent testing for our patients.

With a fully automated solution, it speeds up and standardises the whole process. It helps less expert Scientists being put under so much pressure. By taking manual steps out, for example having to make a calculation, puts people at ease and gives time back. It allows them to complete other jobs, which is a definite benefit. It also gives better reagent control and more confidence in the volumes required. So we spend less time deciding how much reagent is needed: we can plan our workload with known volumes of reagents allowing for better batch testing.

How has the daily life of laboratory staff been simplified/optimised?

We used to have a sheet to work out our calculations before doing our dilutions and deciding on the next steps. We don't have to do any of that anymore or any transcription, and it really does make a massive difference.

And then of course, because it's simplified, we can get people in and trained a lot quicker to be able to run lupus. And that also gives us the flexibility, if needed, to get a BMS who is not a coagulation expert to run complex haemostasis testing. They'll just need to make reagents up, put them on the machine and let it run. We know it's that much easier.

The Stago data manager frees up time for us to do other jobs. Keeping on top of our Quality Management System and meeting ISO 15189 requirements for UKAS inspections are time-consuming but the data manager allows us to get our patients sorted quickly and then focus on our QMS.

What are the benefits/positive impacts for your clinical teams?

Implementing the Stago rules has brought numerous benefits, not only to our team, but also to the Clinical team, and our patients. With faster turn-around times, we've been able to diagnose and treat patients more quickly. The Clinical team has noticed a significant reduction in the need to contact us for results, and they have greater confidence in our results as they do not rely on manual calculations/dilutions.

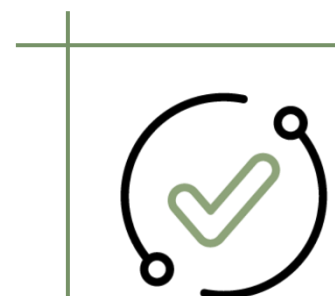
How did Stago UK support you in the installation, training and daily support?

Stago supported us with dedicated advanced training. When the analysers were brought in, we were taken off site to do the training, which is a massive bonus because, it can be hard to focus on learning when you are in the lab. So, to be off site, means that you can truly focus on what you're doing, especially when it is going into such advanced detail. It allows for better understanding of the performance of the analyser as a whole.

There is a knowledgeable, helpful and cooperative team at Stago that offer support with every aspect of analyser use and assays. They assist us at every step so that we either have people on-site, on the end of the phone or logging in remotely, regardless of how we're communicating with them. And they've always been there and very helpful. They have a good understanding of our needs and we're able to truly collaborate. It's not just Stago telling us how the system works but we can come to Stago if we feel we need to get something implemented or changed. Stago's team is very willing to find out the information and work with us to improve our workflow and enhance our test repertoire. For example, implementing new tests but also improving our daily working life and then ultimately care for the patient. That's our main aim.

And the level of support for implementing and validating rules is also outstanding. Hapinder, our local Application Specialist, is very knowledgeable and knows the system capabilities. So, if we have a question about implementing a rule or changing one of them, he will explain step-by-step what can be done, and then remotely assist us for the implementation with minimal laboratory involvement. Rules can be tested on analysers at Stago UK before being applied through remote access.

The remote assistance is a real time-saver for everyone. Once we accept the connection, the Stago team can log in and help us. It saves them having to travel and get to us and we get support instantly. It's a definite blessing.



What value do you perceive in the education content Stago creates and shares?

There is something available for everybody, in a variety of ways, because people learn in different ways. I'm the training officer in our lab, so I know how some of my team like to hear what's the new thing going on and some people prefer to be shown and some people like to read. Stago has their Practical Manual series and I preciously keep those on my shelf. They're available for anyone to come and have a look at. They are also very valuable for those completing their specialist portfolio. Stago also has their website, free webinars and podcasts. It's always recommended to everybody to log on, have a look and see what is there.

And there's something for everyone. It goes right from the sort of basic, routine coagulation through to more advanced haemostasis. So, I believe it does benefit everybody.

I have also subscribed to the Stago newsletter. It keeps you up to date with any changes with relation to guidelines, new products etc.

And I would also recommend the Stago UK Scientific Symposium. It is always good fun and the topics covered are always relevant. They cover new and emerging assays or guidelines and lab best practices. It's always informative and gives me plenty of ideas on how to improve things in my lab when I come back. It is also very good for networking. We have started projects with other labs, through meeting at the Stago symposium.

Overall, how do you feel about the Expert Rules?

I don't know how we would cope without them now and I couldn't do without them in the future. They have made such a big difference in the management of day-to-day running of the laboratory that I don't think we would be able to run as we used to. It can be daunting making such a change to practices but just give it a try as you'll never look back. To someone who is not using Stago rules now, I would say that they should at least try them because they will see for themselves that they just make your life 1000 times easier. Being able to give a new staff member an SOP, associated reagents and just say "load all of those, get your samples on and it does it all for you"; it's worth its weight in gold. It takes that fear factor out and gives people more confidence in interpreting.

And although they do a lot of the work for you, you still need to maintain a knowledgeable team to understand the algorithms and the interpretation so it's not taking away any of the valuable knowledge that we know biomedical scientists have. They are actually helping us to better allocate our resources to patient care.



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¹ This service is already available under the name My Expert QC

² Cost Per Reportable Result

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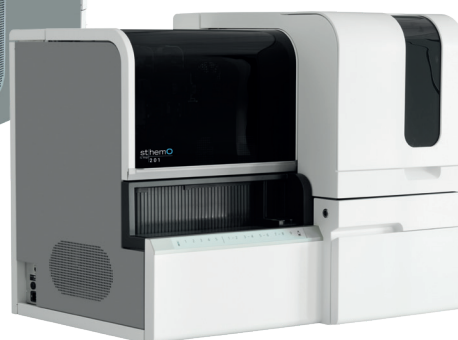
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